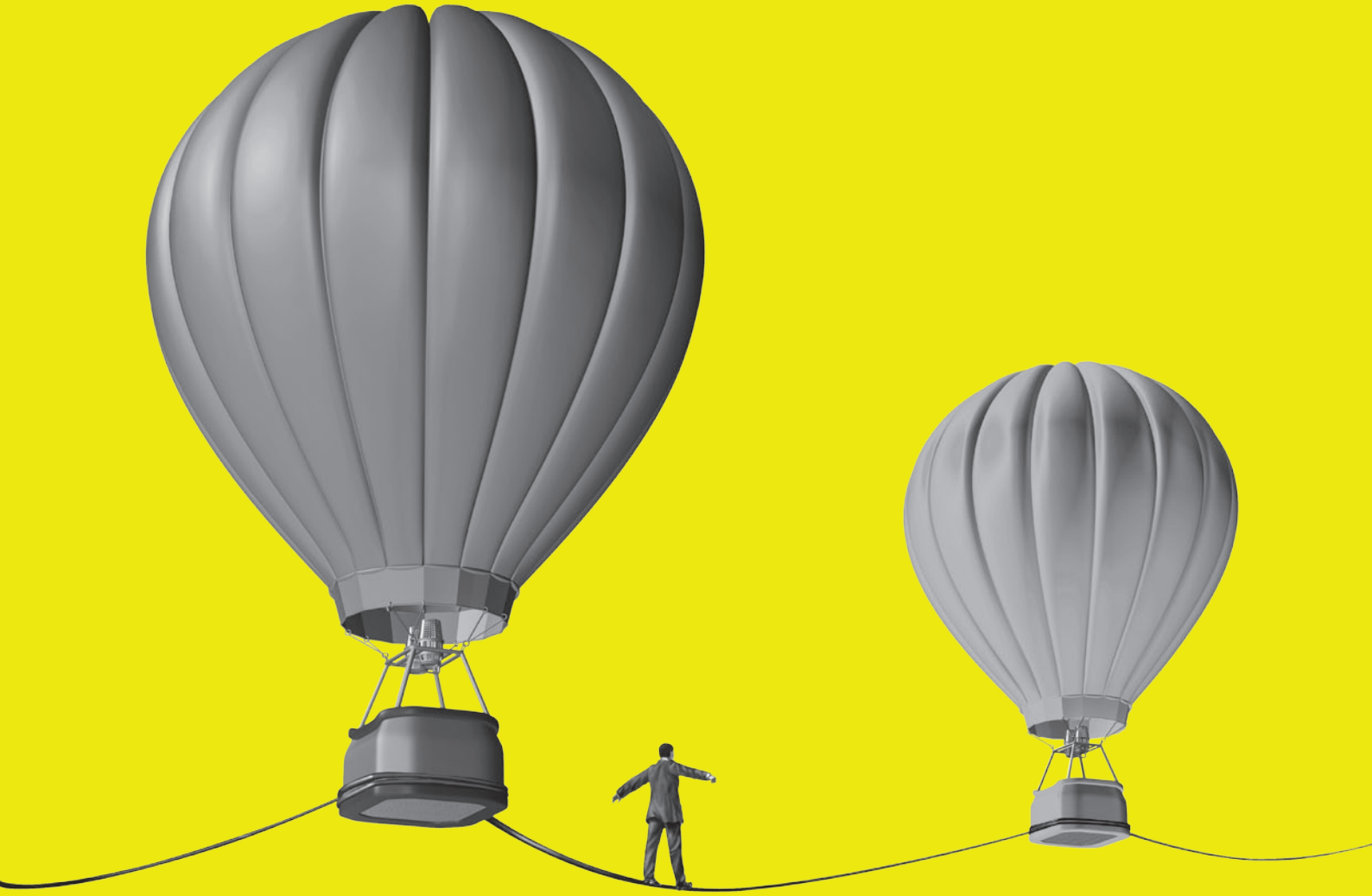
ALTO DI GAMMA

general catalogue



etelec®
electrical technology

KEY

Connectors > Terminal blocks > Accessories


U connector


Connector with shear head bolts


Insulated compression connector


Three-pole insulated connector


Three-pole insulated terminal block


Five-pole insulated terminal block


Insulated U connector


Five-pole insulated terminal block


Cores separator


Cable strain relief

Number of cores


Single-core cable


Two-core cable


Three-core cable


Four-core cable


Five-core cable

Heat shrink tubing

Shrink ratio 2:1

Shrink ratio 3:1

Shrink ratio 4:1

Certifications > Compliance


CE label


IMQ label
Istituto Italiano del Marchio di Qualità
(Italian Institute of Quality Label)


RINA approval
Registro Italiano Navale ed Aeronautico
(Italian Register of Shipping)

TÜV-Rheinland certification


CSA approved

Compliance with ROHS 2 standard

Halogen Free

Available colours

black

blue

green

red

brown

yellow

grey

white

transparent

yellow/green

etelec®
electrical technology

general catalogue

LEDJOY®

SMART CONNECTION

BRAND NEW

Through thick and thin.

LEDJOY®, the tiny junction device that loves narrow spaces.

Watch now!

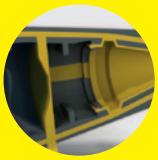
etelec electrical technology

IP68 gel insulated junction device

LEDJOY® is a revolutionary **gel insulated junction device** with IP68 protection degree for **connecting small cross-section cables** from 0.5 to 1.5 mm².
Its innovative design and patented solutions guarantee reliable performance in narrow spaces and under all conditions.

MINIMUM SIZE, MAXIMUM PERFORMANCE

CO-MOULDED TECHNOLOGY



FLEXIBLE WALLS

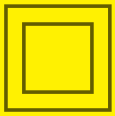
INSULATED 2-POLE SPRING-LOADED CONNECTOR

INSULATED 3-POLE SCREW-TYPE CLAMPING CONNECTOR

CABLE BLOCKING SYSTEM

The safety of gel technology

ZERO CAPILLARITY



DOUBLE INSULATION

TOTAL PROTECTION UNDER ALL INSTALLATION CONDITIONS

ECO-FRIENDLY

VERSATILITY OF USE

TABLE OF CONTENTS

01 LOW VOLTAGE

Gel solutions 7

01.1
Gel insulated joints
SHARK® SIXEIGHT® Series - IP68 8
SHARK® CLASSIC Series - straight 16
SHARK® 600 Series - Y branch 32
SHARK® 400 Series - T branch 36

01.2
Gel fillers
MPGEL PLUS - fast cross-linking 42
CRYSTALGEL - crystal clear 46
REPLAYGEL - repositionable 48
ONE GEL - in ready-to-use cartridge 50

01.3
Gel insulated connecting devices
LEDJOY® - IP68 gel insulated junction device 52
SHELL BOX® - IPX8 gel insulated connecting device with Spring Box® lever connectors 58

Solutions in re-enterable silicone resin 63

01.4
Silicone resin fillers
RESIL® - Re-enterable two-component silicone resin 66

01.5
Silicone resin insulated joints
RESIL JOINT® RJA series - straight 68
RESIL JOINT® RJB series - Y branch 70

Resin solutions 73

01.6
Final solid state polyurethane resin
SUBMARINE® Straight Series 74
SUBMARINE® Branch Series 84

01.7
Final solid state resin fillers
RS - final solid state polyurethane resin in bags 92
RS 5000 - final solid state epoxy resin in cans 93

Heat shrink solutions 94

01.8
Heat shrink joints
GBT-C - straight with connectors 96
GBT / GBT-S - straight 97

01.9
Heat shrink terminations
TTBT - heat shrink terminations 98

01.10
Premoulded heat shrink parts
CTC - sealing caps 100
TBT - sealing breakout boots 101

01.11
Heat shrink tubing
Thin walls
GTUC - black and coloured spools 104
GTGV - yellow-green spool 104
ROLLBOX - dispenser box 105
TUBINGS - bars 105
Medium walls
GTMS - spool / bars with sealant 106
With wrap-around sleeve
GTCR - with wrap-around sleeve and sealant 107
Anticorrosive for pole protection
GTPA - sleeves for pole installation 108
RJS - spools for already installed poles 108

Installation tools for heat shrink tubing 110

02 CONNECTING COMPONENTS

02.1
Connectors
SPRING BOX® - compact insulated lever connectors 116
TBOX® - insulated connectors with screw-type clamping 117
MU - U connector with screw-type clamping 118
MU-RJ - insulated terminal block for branch joints 118
MC - cylindrical end-to-end connector 119
MC-RJ - insulated terminal block for straight joints 119
CTT - pre-insulated heat shrink compression connector 120
CP - insulated compression connector 120
MR - cylindrical end-to-end connector with shear head bolts clamping 121

02.2
Armouring repair kit
BEK - cable armouring repair kit 121

03 TAPES, LUBRICANTS FOR CABLE PULLING, SILICONES

03.1
Insulating tapes
ISOEL® 8900 - PVC IMQ certified 124
ISOEL® 633 - PVC for professional use 125
ISOEL® EPR - self-amalgamating EPR 126
ISOFIL 626 - filler 127

03.2
Lubricants for cable pulling
FLO 950 - lubricant gel for cable pulling 128
FLO 350 - fluid lubricant emulsion for cable pulling 128

03.3
Silicones
EASYL 100 - pure acetic silicone for professional use 129

04 MEDIUM VOLTAGE

Medium voltage terminations 131

04.1
Heat shrink terminations

TTMT - heat shrink terminations 132
ENEL-approved heat shrink terminations 138
TF - sets of three single-core cables with heat shrink terminations 139

04.2
Cold shrink terminations

TAMT - cold shrink terminations 140

04.3
Separable terminations

TSD/TSS - 250 A straight and elbow separable terminations 145
TS/TS-CA - 630 A joinable elbow separable terminations 147
ENEL-approved separable terminations 148

Medium voltage joints 153

04.4
Heat shrink joints

JTMT - heat shrink joints 154
ENEL-approved heat shrink joints 158
Transition joints 159

04.5
Cold shrink joints

JAMT - cold shrink joints 160

Heat shrink tubings and tapes for medium voltage 165

04.6

GPSM - tubings for bus bar insulation up to 24 kV 166
GPSA - tubings for bus bar insulation up to 36 kV 168
NTMT - heat shrink tapes for bus bar insulation 170
FTMT - heat shrink sheets for bus bar insulation 171

Cable lugs, connectors, and connecting components for medium voltage 173

04.7

CMMT - lugs for MV cables 174
GMMT - connectors for MV cables 174
RS034 - stainless steel scroll springs for restoring shielding and armouring 175
ARMT-JTMT - kit to restore armouring on MV cable joints 175

05 WIRING AND FIXING

05.1
Cable ties, clips, and collars

FB / FN - Nylon cable ties 178
UFF-8 - pliers for applying cable ties 180
BB/BN - Nylon adhesive anchor clips 180
CL - Nylon fixing collars 181
UFC-9 - pliers for applying collars 181

05.2
Braided sleeves

COBRABOX - braided sleeve in dispenser 182
RHB - braided sleeves spool 183

06 HEATING CABLES

06.1
Constant power heating cables

Trace heating for pipes

EASY TRACE - constant power heating cable 186

Trace heating for ramps and pavements

HOT TRACE - constant power heating mat 188
KT1040 - constant power heating mat kit with accessories 189

01 LOW VOLTAGE

etelec
electrical technology

GEL SOLUTIONS

01.1 GEL INSULATED JOINTS

SHARK® SIXEIGHT® Series - IP68

SHARK® CLASSIC Series - straight and parallel branch

SHARK® 600 Series - Y branch

SHARK® 400 Series - T branch

01.2 GEL FILLERS

MPGEL PLUS - fast cross-linking

CRYSTALGEL - crystal clear

REPLAYGEL - repositionable

ONE GEL - in ready-to-use cartridge

01.3 GEL INSULATED CONNECTING DEVICES

LEDJOY® - IP68 gel insulated junction device

SHELL BOX® - IPX8 gel insulated connecting device with Spring Box® lever connectors

LOW VOLTAGE

SHARK SIXEIGHT series 68

IP68 GEL INSULATED JOINTS

Intertek FIRST TESTED AND CERTIFIED

The first IP68 tested and certified gel joint.
Under ordinary conditions, the IP protection degree certified by Intertek guarantees a value of 68:

68

IMPENETRABILE · 100% · DUST-TIGHT

Total protection from dust

The fully closed joint with the cable inside
is totally protected from dust and access to live parts

68

IMPERMEABILE · 100% · WATER-TIGHT

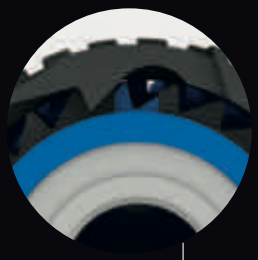
Protection from water

The fully closed joint with the cable inside
is totally water resistant allowing
permanent immersion
at up to 10 metres in depth

DESIGN INDEX ADI — PREMIO 2015 PRODOTTO DI DESIGN ITALIANO

Shark SIXEIGHT has been selected by the Permanent Observatory of Design of the ADI (the Industrial Design Association) for inclusion in the ADI Design Index, ADI's annual publication that brings together the best Italian design.

etelec electrical technology

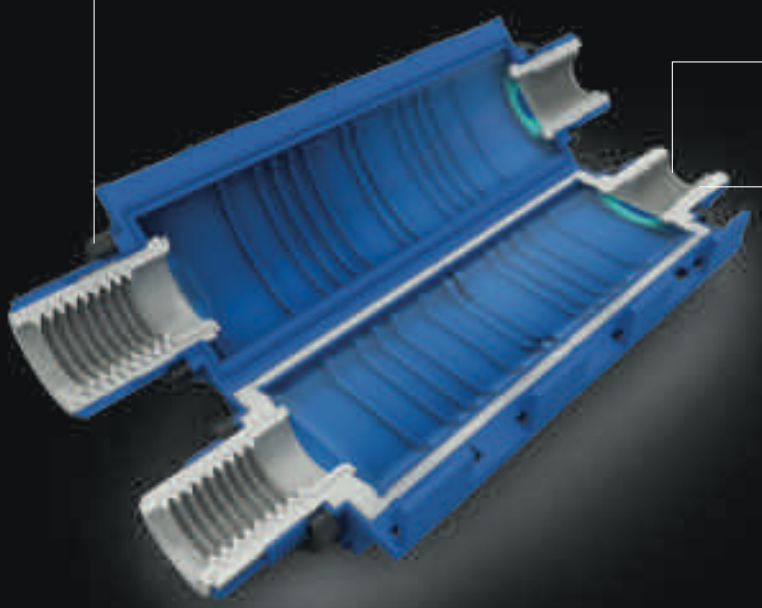


safety racks

prevent the reopening of the joint without the use of tools, ensuring no accidental contact with live parts, as required by IEC 60364 standard

no walls

for even quicker and easier installation



modular gaskets

to guarantee optimal installation and sealing performance for cables of varying cross-sections and external diameters

modular nuts

for safe and easy installation, even after cable connection

Available in 3 sizes

Intertek

EN 50393
EN 60529

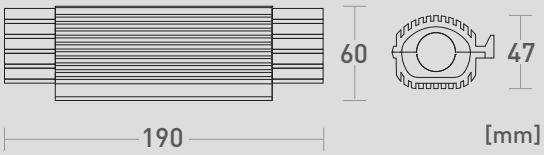
CE

etelec electrical technology

SHARK SIXEIGHT series 68

SIZE 1

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- **IP68 protection level** (in accordance with CEI EN 60529 standard) tested in water at a depth of 10 metres with independent certification by Intertek
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Installation in permanent immersion
- Underground installation
- Overhead installation
- Installation in cable ducts
- Temporary installations

Advantages

- 100% water resistant
- 100% impenetrable
- Ready to use
- Re-enterable
- No resin or gel to cast
- Usable immediately
- Excellent electrical insulation
- No accidental access to live parts
- Good mechanical resistance
- No expiry date
- Non-hazardous product

IP68 10 m
officially tested by Intertek

100% impenetrable

100% water resistant

ready to use

permanent immersion

Shark 6801

IP68 10 m CE

code SH6801

IP68 gel joint
Straight connections
Cables up to five cores *

Kit contents

- Gel joint - size 1
- Tightening and joint insulating nuts
- Assembly instructions

Table of use

IP68 STRAIGHT connections

Cores	Conductor cross-section (mm²) min	max
●	25 *	50 *
●●●	1.5 *	6 *

Cable diameter (min-max): 12-18 mm

** with suitable connectors*

etelec electrical technology

Shark 6801 > IP68 gel joint
Optional connectors

STRAIGHT connection IP68

MR 10

code MR0050

Cylindrical end-to-end connector with shear head bolts

- Tin-plated aluminium connector with steel shear head tightening bolts **suitable for copper-copper, aluminium-aluminium, and copper-aluminium connections**
- Can be installed without the use of seaming tools

Watch the video

Table of use

Cores	Conductor cross-section (mm²) min	max
⊙	25	50
Cable diameter (min-max): 12-18 mm		

MH0306

code MH0306

Three-pole insulated terminal block

- **Compliant with DIN EN 60998 and CSA/UL standards**
- **VDE label** - Current 20 A

Watch the video

Table of use

Cores	Conductor cross-section (mm²) min	max
⁂	2.5	6
Cable diameter (min-max): 12-18 mm		

MC306-RJ

code MC0306RJ

Pre-assembled three-pole insulated terminal block

- Brass connectors
- PA insulating body
- Steel hex head grubs
- **Available upon request a version suitable for copper-copper, aluminium-aluminum, and copper-aluminium connections**

Table of use

Cores	Conductor cross-section (mm²) min	max
⁂	2.5	6
Cable diameter (min-max): 12-18 mm		

CP0306

code CP0306

Kit of 5 insulated compression connectors

- Tin-plated copper conductors
- **Suitable for copper-copper and aluminium-aluminum connections**
- Supplied in a pack of 5 pieces.

Watch the video

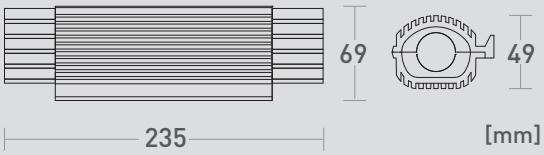
Table of use

Cores	Conductor cross-section (mm²) min	max
⁂⁂	2.5	6
Cable diameter (min-max): 12-18 mm		

SHARK SIXEIGHT series 68

SIZE 2

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- **IP68 protection level** (in accordance with CEI EN 60529 standard) tested in water at a depth of 10 metres with independent certification by Intertek
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Installation in permanent immersion
- Underground installation
- Overhead installation
- Installation in cable ducts
- Temporary installations

Advantages

- 100% water resistant
- 100% impenetrable
- Ready to use
- Re-enterable
- No resin or gel to cast
- Usable immediately
- Excellent electrical insulation
- No accidental access to live parts
- Good mechanical resistance
- No expiry date
- Non-hazardous product

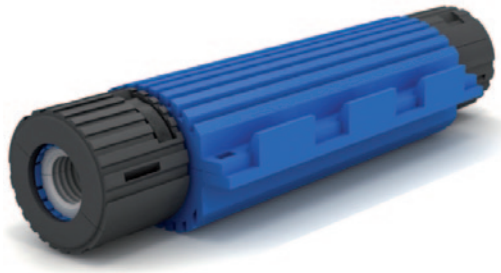
IP68 10 m — officially tested by Intertek

100% impenetrable

100% water resistant

ready to use

permanent immersion



Shark 6802

IP68 10 m CE

code SH6802

IP68 gel joint
Straight connections
Cables up to 5 cores*

Kit contents

- Gel joint - size 2
- Tightening and joint insulating nuts
- Assembly instructions

Table of use

IP68 STRAIGHT connections

Cores	Conductor cross-section (mm²)	
	min	max
●	50 *	95 *
●●	2.5 *	10 *
●●●		
●●●●		
	Cable diameter (min-max): 14-21 mm	

** with suitable connectors*

etelec electrical technology

Shark 6802 > IP68 gel joint
Optional connectors

STRAIGHT connection IP68

MR 11

code MR0051

Cylindrical end-to-end connector with shear head bolts

- Tin-plated aluminium connector with steel shear head tightening bolts **suitable for copper-copper, aluminium-aluminium, and copper-aluminium connections**
- Can be installed without the use of seaming tools

Table of use

Cores	Conductor cross-section (mm²) min	max
⊙	50	95
Cable diameter (min-max): 14-21 mm		

MC510-RJ

code MC0510RJ

Pre-assembled five-pole insulated terminal block

- Brass connectors
- PA insulating body
- Steel hex head grubs
- **Available upon request a version suitable for copper-copper, aluminium-aluminum,and copper-aluminium connections**

Watch the video

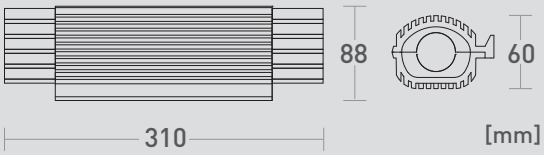
Table of use

Cores	Conductor cross-section (mm²) min	max
⊙⊙⊙	2.5	10
Cable diameter (min-max): 14-21 mm		

SHARK SIXEIGHT series 68

SIZE 3

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- **IP68 protection level** (in accordance with CEI EN 60529 standard) tested in water at a depth of 10 metres with independent certification by Intertek
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Installation in permanent immersion
- Underground installation
- Overhead installation
- Installation in cable ducts
- Temporary installations

Advantages

- 100% water resistant
- 100% impenetrable
- Ready to use
- Re-enterable
- No resin or gel to cast
- Usable immediately
- Excellent electrical insulation
- No accidental access to live parts
- Good mechanical resistance
- No expiry date
- Non-hazardous product

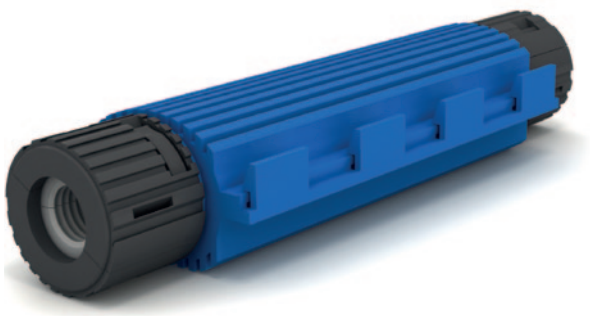
IP68 10 m — officially tested by Intertek

100% impenetrable

100% water resistant

ready to use

permanent immersion



Shark 6803

IP68 10 m CE

code SH6803

IP68 gel joint
Straight connections
Cables up to 5 cores*

Kit contents

- Gel joint - size 3
- Tightening and joint insulating nuts
- Assembly instructions

Table of use

IP68 STRAIGHT connections

Cores	Conductor cross-section (mm²)	
	min	max
●	120 *	240 *
●●	10 *	25 *
●●●		
●●●●		
●●●●●		
	Cable diameter (min-max): 20-30 mm	

** with suitable connectors*

etelec electrical technology

Shark 6803 > IP68 gel joint
Optional connectors

STRAIGHT connection IP68

MC525-RJ

code MC0525RJ

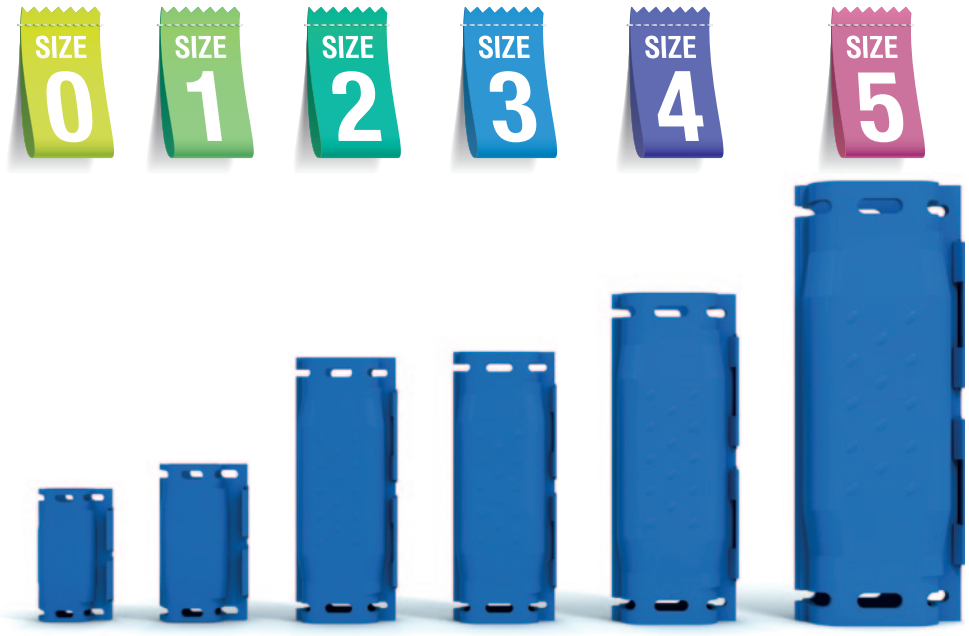
Pre-assembled five-pole insulated terminal block

- Brass connectors
- PA insulating body
- Steel hex head grubs
- **Available upon request a version suitable for copper-copper, aluminium-aluminum,and copper-aluminium connections**

Table of use

Cores	Conductor cross-section (mm^2)	
	min	max
	2.5	25
	Cable diameter (min-max): 20-30 mm	

SHARK®
GEL INSULATED JOINTS



SHARK® Classic Series Gel insulated joints for straight connections

SHARK® Classic Series gel insulated joints can be used to make straight connections on 0.6/1 kV single or multicore low voltage cables with up to five cores.

Thanks to the greater space available inside the joint, the **versions without terminal blocks** are suitable for straight connection of single-core cables, and for the connection and insulation of electronic boards and components.

The **versions with terminal block** allow straight connection with double insulation of cables with up to five cores and are available upon request with tin-plated aluminium connectors for copper-copper, aluminium-aluminum, and copper-aluminium connections.

Technical specifications

- Compliant with CEI EN 50393 standard for low voltage joints
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529)
  tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- No accidental contact with live parts: the cable ties supplied prevent the reopening of the joint without the use of tools, as required by IEC 60364 standard
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)

Applications

- Straight connections of single and multicore cables with up to 5 cores
- Versions without terminal blocks: insulation of connections on multi-paired telecommunications cables and insulation of electronic boards and components
- Installation in cable ducts, underground, overhead, or underwater
- Street lighting systems

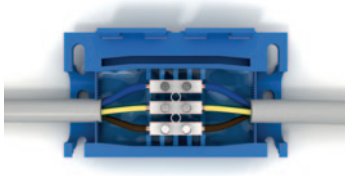
Advantages

- Ready to use
- Re-enterable
- No resin mixing and casting
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No expiry date
- 6 sizes and 12 versions for use with a wide range of cables

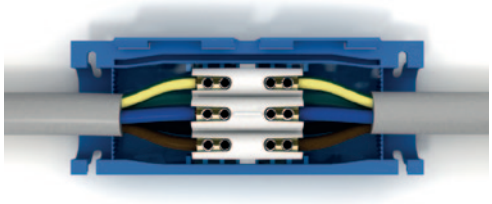
NEW

Versions with terminal block are available upon request with tin-plated aluminium connectors for **copper-copper, aluminium-aluminum and copper-aluminium connections**

Examples of application



Shark 315 - Shark 325
Straight connection on three-core cables with insulated three-pole terminal block



Shark 506 - 516
Straight connection on five-core cables with five-pole insulated terminal block

SHARK®
GEL INSULATED JOINTS

SHARK® Classic Series · Gel joints

Straight connections

SIZE	ITEM	CONNECTOR/ TERMINAL BLOCK/ ACCESSORIES	SINGLE-CORE CABLES		MULTICORE CABLES		CODE
			CORES	CONDUCTOR CROSS-SECTION MIN – MAX [mm²]	MAX CORES	CONDUCTOR CROSS-SECTION MIN – MAX [mm²]	
SIZE 0	SHARK **125**		⊙	2.5 – 10			**SH0125**
	SHARK **315**				⁂	0.5 – 1.5	**SH0315BL**
SIZE 1	SHARK **150**		⊙	6 – 35			**SH0150**
	SHARK **325**				⁂	0.5 – 2.5	**SH0325**
SIZE 2	SHARK **306**				⁂	1.5 – 6	**SH0306**
	SHARK **406/S**	–	⊙	10 – 50			**SH1406**
SIZE 3	SHARK **506**				⁂	1.5 – 6	**SH0506**
	SHARK **410/S**	–	⊙	70 – 150			**SH1410**
SIZE 4	SHARK **516**				⁂	6 – 16	**SH0516**
	SHARK **416/S**	–	⊙	95 – 240			**SH1416**
	SHARK**506WS**	 	⊙	95 – 240 *	⁂	1.5 – 6	**SH0506WS**
SIZE 5	SHARK **525WS**	 	⊙	95 – 240 *	⁂	6 – 25	**SH0525WS**

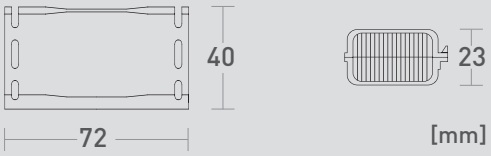
NOTES:
* SHARK 506WS - 525WS: without use of terminal block

etelec® electrical technology

SHARK®
GEL INSULATED JOINTS

SIZE 0

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts
- Street lighting systems

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

SIZE 0

Shark 125

code SH0125

Watch the video

Gel joint
Straight connections
Single-core cables

Single-pole connector included

- IMQ approved (cert. no. CA01-00297)
- RINA approved (cert. no. ELE 153611CS)

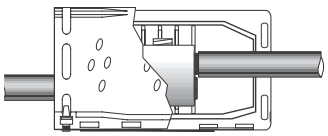
Kit contents

- Joint with gel - size 0
- Brass connector
- Allen key
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
⊙	2.5	10



Straight connection on single-core cables

etelec electrical technology

SIZE 0

Shark 315

code SH0315BL

Gel joint
Straight connections
Three-core cables

Insulated three-pole terminal block included

- Double insulation

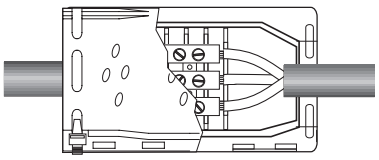
Kit contents

- Joint with gel - size 0
- **Indirect contact** insulated three-pole terminal block **with conductor protection blades for narrow cross-section cables**
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
	0.5	1.5

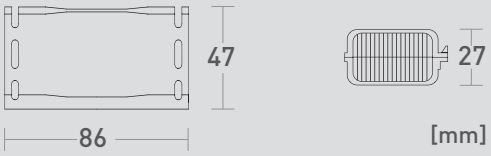


Straight connection on three-core cables with three-pole insulated terminal block

SHARK®
GEL INSULATED JOINTS

SIZE 1

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts
- Street lighting systems

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

SIZE 1

Shark 150

code SH0150

Gel joint
Straight connections
Single-core cables

Single-core connector included

- IMQ approved (cert. no. CA01-00297)
- RINA approved (cert. no. ELE 153611CS)

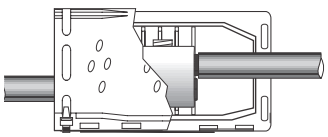
Kit contents

- Joint with gel - size 1
- Brass connector
- Allen key
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
⦿	6	35



Straight connection on single-core cables

etelec electrical technology

SIZE 1

Shark 325

code SH0325

Gel joint
Straight connections
Three-core cables

Three-pole insulated terminal block included

- Double insulation

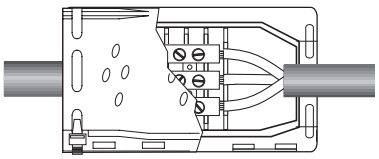
Kit contents

- Joint with gel - size 1
- **Three-pole insulated terminal block - VDE label** compliant with DIN EN 60998 and CSA/UL standards - Current 20 A
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
	1.5	2.5

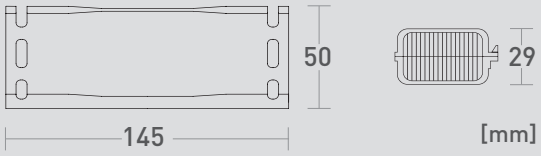


Straight connection on three-core cables with three-pole insulated terminal block

SHARK®
GEL INSULATED JOINTS

SIZE 2

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

SIZE 2

Shark 306

CE

code SH0306

Gel joint
Straight connections
Three-core cables

Three-pole insulated terminal block included

- **Double insulation**

Kit contents

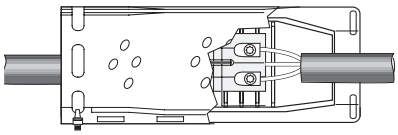
- Joint with gel - size 2
- Three-pole insulated terminal block and Allen key
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
	1.5	6

Available on request with terminal block suitable for copper-copper, aluminium-aluminum, and copper-aluminium connections



Straight connection on three-core cables with insulated terminal block

etelec electrical technology

SIZE 2

Shark 406/S

code SH1406

Gel joint
Straight connections
Single-core cables

Without cores separator

Watch the video

- **IMQ approved** (cert. no. CA01-00298)
- **RINA approved** (cert. no. ELE 153611CS)
- Thanks to the greater space inside the joint, it can be used on wide cross-section cables and/or for the insulation of electronic boards and components

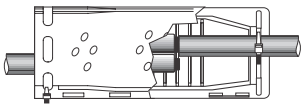
Kit contents

- Joint with gel - size 2
- Cable ties
- Assembly instructions

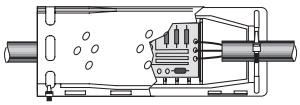
Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
⦿	10	50



Straight connection on single-core cable

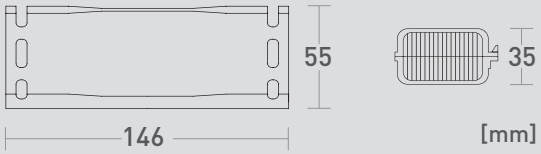


Insulation of electronic components

SHARK®
GEL INSULATED JOINTS

SIZE 3

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

SIZE 3

Shark 506

code SH0506

Watch the video

Gel joint
Straight connections
Five-core cables

Five-pole insulated terminal block included

- **Double insulation**

Kit contents

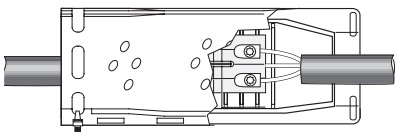
- Joint with gel - size 3
- Five-pole insulated terminal block and Allen key
- Cable ties
- Assembly instructions

Table of use

Straight connections

Max cores	Conductor cross-section (mm²)	
	min	max
	1.5	6

Available on request with tin-plated aluminium terminal block suitable for copper-copper, aluminium-aluminum, and copper-aluminium connections



Straight connection on five-core cables with insulated terminal block

etelec electrical technology

SIZE 3

Shark 410/S

code SH1410

Watch the video

Gel joint
Straight connections
Single-core cables

Without cores separator

- **IMQ approved** (cert. no. CA01-00298)
- **RINA approved** (cert. no. ELE 153611CS)
- Thanks to the greater space inside the joint, it can be used on wide cross-section cables and/or for the insulation of electronic boards and components

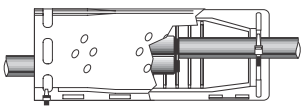
Kit contents

- Joint with gel - size 3
- Cable ties
- Assembly instructions

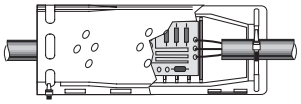
Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
⊙	70	150



Straight connection on single-core cable

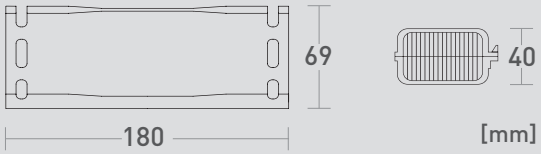


Insulation of electronic components

SHARK®
GEL INSULATED JOINTS

SIZE 4

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

Shark 516

CE

code SH0516

Watch the video

Gel joint
Straight connections
Five-core cables

Five-pole insulated terminal block included

- **Double insulation**

Kit contents

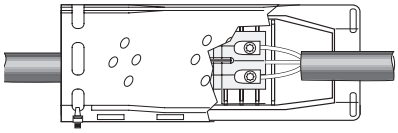
- Joint with gel - size 4
- Five-pole insulated terminal block and Allen key
- Cable ties
- Assembly instructions

Table of use

Straight connections

Max cores	Conductor cross-section (mm²)	
	min	max
	6	16

Available on request with terminal block suitable for copper-copper, aluminium-aluminum, and copper-aluminium connections



Straight connection on five-core cables with insulated terminal block

etelec electrical technology

SIZE 4

Shark 416/S

code SH1416

Watch the video

Gel joint
Straight connections
Single-core cables

Without cores separator

- **IMQ approved** (cert. no. CA01-00298)
- **RINA approved** (cert. no. ELE 153611CS)
- Thanks to the greater space inside the joint, it can be used on wide cross-section cables and/or for the insulation of electronic boards and components

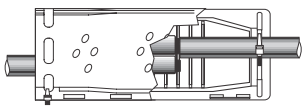
Kit contents

- Joint with gel - size 4
- Cable ties
- Assembly instructions

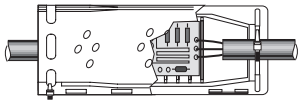
Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
⦿	95	240



Straight connection on single-core cable

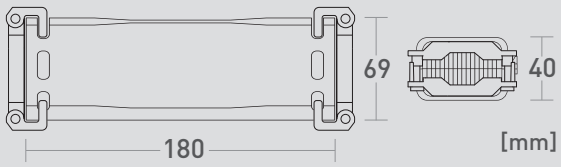


Insulation of electronic components

SHARK®
GEL INSULATED JOINTS

SIZE 4

- Compliant with CEI 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

Strain relief included

Shark 506WS

code SH0506WS

Gel joint
Straight connection
Cables up to 5 cores

Insulated five-pole terminal block and strain relief included

- **Double insulation**

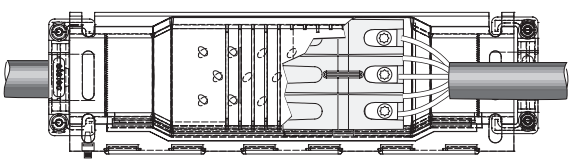
Kit contents

- Joint with gel - size 4
- Insulated five-pole terminal block
- Allen terminal block key
- Strain relief
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
●	95 *	240 *
●●	1.5	6
●●●		
●●●●		
●●●●●		
* without use of terminal block		
Maximum cable diameter: 28 mm		



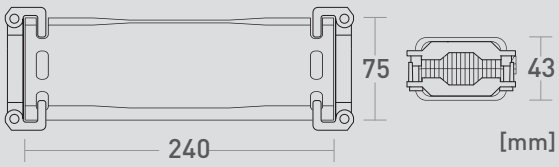
Straight connection on five-core cables with insulated terminal block and strain relief

etelec electrical technology

SHARK®
GEL INSULATED JOINTS

SIZE 5

- Compliant with CEI EN 50393 standard for 0.6/1 kV low voltage joints
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 °C to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts

Advantages

- Ready to use
- Re-enterable
- No gel or resin to cast
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No accidental access to live parts
- No expiry date

Strain relief included

Shark 525WS

CE

code SH0525WS

Gel joint
Straight connection
Cables up to 5 cores

Insulated five-pole terminal block and strain relief included

- **Double insulation**

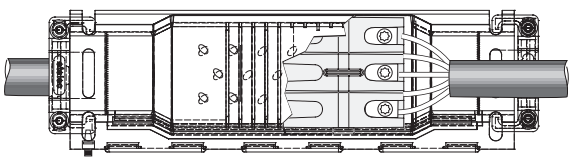
Kit contents

- Joint with gel - size 5
- Insulated five-pole terminal block
- Allen terminal block key
- Strain relief
- Cable ties
- Assembly instructions

Table of use

Straight connections

Cores	Conductor cross-section (mm²)	
	min	max
●	95 *	240 *
●●	6	25
●●		
●●●		
●●●		
* without use of terminal block		
Maximum cable diameter: 29 mm		



Straight connection on five-core cables with insulated terminal block and strain relief

SHARK®
GEL INSULATED JOINTS

SHARK® 600 Series
Gel insulated joints
for Y branch connections

Gel insulated 30° branch connections for single and multicore 0.6/1 kV cables with up to five conductors.
The innovative insulated terminal blocks supplied with the joints allow branch connections without interrupting the main cable and ensure double insulation and correct positioning and securing of the cable inside the joint.
The Allen key necessary for tightening the terminal screws is also included in the kit, and reduces the number of tools required to make the connection.
The nylon cable ties supplied with the kit, once inserted and secured in the slots located at both ends of the joint, ensure that it cannot be reopened without the use of tools, in accordance with EN 60364 standard.

Technical specifications

- Compliant with CEI EN 50393 standard for low voltage joints
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)

Applications

- Y branch connections on 0.6/1 kV single and multicore cables with up to five cores type FG7, FG16, and RG16
- For installation in cable ducts, underground, overhead, and underwater
- Temporary and permanent installation
- Street lighting systems, light fixtures, galleries, and environments at risk of fire

Advantages

- Connection without interrupting main cable
- Ready to use
- Re-enterable
- No resin mixing and casting
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No expiry date

Pre-assembled terminal blocks provided with Shark® 600 Series joints have brass contacts with screw-type clamping and PA 6.6 insulating body self-extinguishing of class V2

etelec electrical technology

SHARK® 600 Series · Gel joints

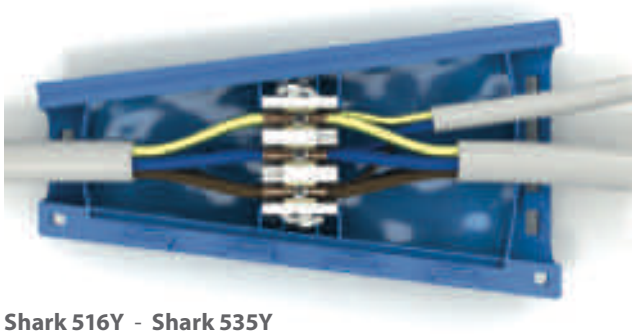
Y branch connections

	ITEM	CONNECTOR / TERMINAL BLOCK	MAX NO. OF CORES	CONDUCTOR CROSS-SECTION [mm²] MIN MAIN CABLE	MIN BRANCH CABLE	MAX MAIN CABLE	MAX BRANCH CABLE	CODE
Single-core cables	SHARK **150Y**			6	1.5	50 *	25 *	**SH6150**
Multicore cables	SHARK **516Y**			6	2.5	16	16	**SH6516**
	SHARK **535Y**			16	2.5	35	35	**SH6535**

* for an uninterrupted main cable with a cross-section of 35 mm², maximum branch cable cross-section is 10 mm²
for an uninterrupted main cable with a cross-section of 50 mm², maximum branch cable cross-section is 6 mm²

Examples of application

Shark 150Y
Y branch connection on single-core cables
with single-pole insulated connector



Shark 516Y - Shark 535Y
Y branch connection on multicore cables
with insulated multi-pole terminal block

SHARK®
GEL INSULATED JOINTS

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)

Applications

- Underground installation
- Overhead installation
- Installation in cable ducts
- Street lighting systems, tunnels, and areas at risk of fire

Advantages

- Ready to use
- Re-enterable
- No gel and no resin to cast
- Usable immediately
- Branch connection **without interrupting main cable**
- Excellent electrical insulation
- **Double insulation**
- Good mechanical resistance
- The connector or terminal block supplied, placed in the seat, ensure that the cables are blocked inside the joint
- **No accidental access to live parts:** the nylon cable ties supplied ensure that the joint cannot be reopened without the use of tools, in compliance with EN 60634 standard
- No expiry date

Shark 150Y

CE

code SH6150

Watch the video

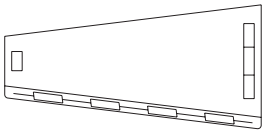
Gel joint
Y branch connections
Single-core cables

Single-pole insulated connector included

- **Double insulation**

Kit contents

- Joint with gel
- Single-pole insulated connector
- Allen key
- Cable ties
- Assembly instructions



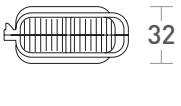
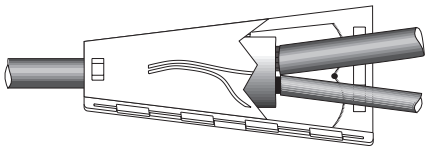


Table of use

Y branch connections

Cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
⊙	6	1.5	50 *	25 *

* for a main cable of 35 mm², max branch cable cross-section is 10 mm²
for a main cable of 50 mm², max branch cable cross-section is 6 mm²



Y branch connection on single-core cables with insulated connector

etelec electrical technology

Shark 516Y

code SH6516

Watch the video

Gel joint
Y branch connections
Five-core cables

Five-pole insulated terminal block included

- **Double insulation**

Kit contents

- Joint with gel
- Pre-assembled five-pole insulated terminal block
- Allen key
- Cable ties
- Assembly instructions

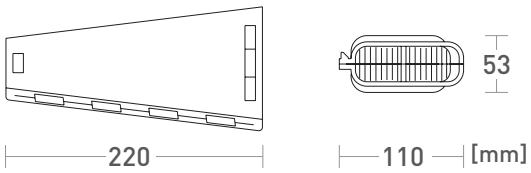
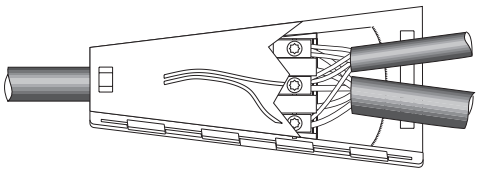


Table of use

Y branch connections

Max cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
	6	2.5	16	16



Y branch connection on five-core cables with insulated terminal block

Shark 535Y

code SH6535

Watch the video

Gel joint
Y branch connections
Five-core cables

Five-pole insulated terminal block included

- **Double insulation**

Kit contents

- Joint with gel
- Pre-assembled five-pole insulated terminal block
- Allen key
- Cable ties
- Assembly instructions

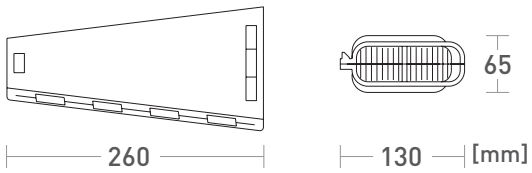
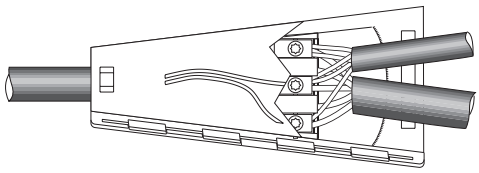


Table of use

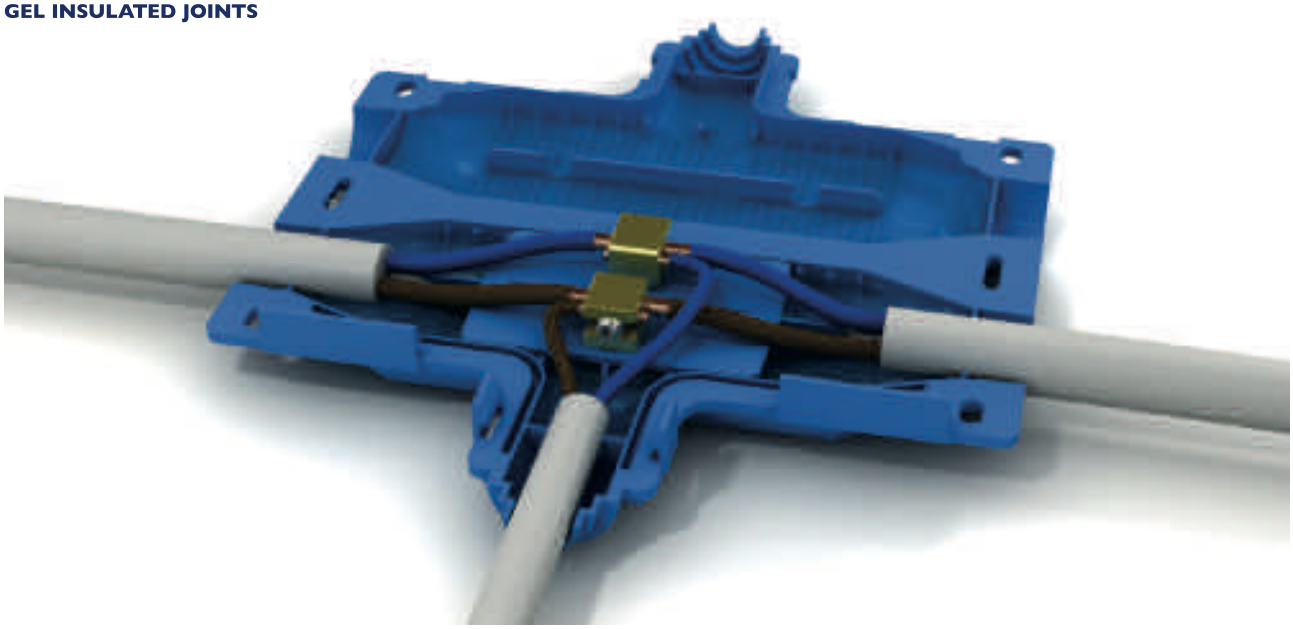
Y branch connections

Max cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
	16	2.5	35	35



Y branch connection on five-core cables with insulated terminal block

SHARK®
GEL INSULATED JOINTS



SHARK® 400 Series
Gel insulated joints
for T branch connections

SHARK® 400 Series gel insulated joints kits allow T branch connections for single and multicore 0.6/1 kV cables with up to four cores.
The versions for single-core cables are without separators, while the versions for multicore cables are provided with a patented separator system that ensures the securing of the cable inside the joint and allows the assembly and insulation of four non-insulated connectors lined up in the centre of the joint.
Shark 400 Series joints are IMQ and RINA approved.

Technical specifications

- Compliant with CEI EN 50393 standard for low voltage joints
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- No accidental access to live parts: the cable ties supplied ensure that the joint cannot be reopened without the use of tools, in compliance with EN 60364 standard
- IMQ approved (certificate no. CA01-00299)
- RINA approved (certificate no. ELE 153611CS)
- Operating temperature: -20 to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)

Applications

- T branch connections on single and multicore cables with up to four cores
- For installation in cable ducts, underground, overhead, and underwater
- Street lighting systems

Advantages

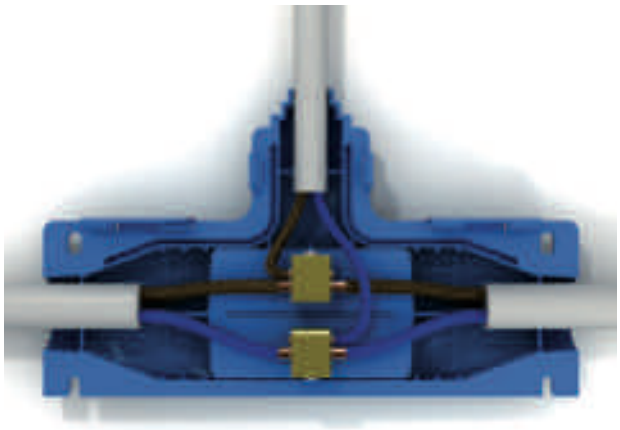
- Connection without interrupting main cable
- Ready to use
- Re-enterable
- No resin mixing and casting
- Usable immediately
- Excellent electrical insulation
- Good mechanical resistance
- No expiry date

SHARK® 400 Series · Gel joints

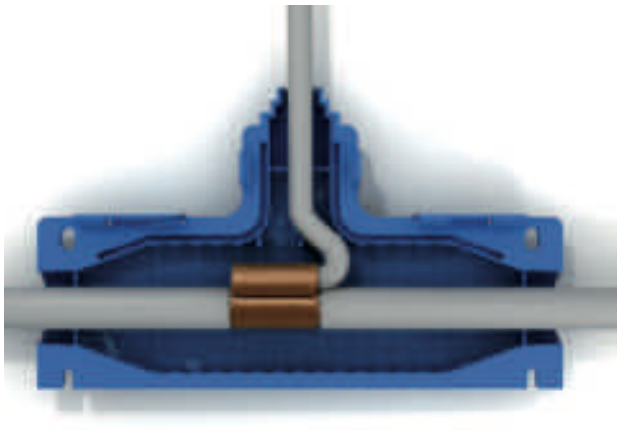
T branch connections

ITEM	SEPARATORS / CONNECTORS		MAX NO. OF CORES	CONDUCTOR CROSS-SECTION [mm²] MIN MAIN CABLE	MIN BRANCH CABLE	MAX MAIN CABLE	MAX BRANCH CABLE	CODE
SHARK **425**		optional connectors		6	1.5	25	16	**SH0425**
SHARK **425/S**		–		70	10	150	50	**SH1425**
SHARK **435**		optional connectors		10	2.5	35	25	**SH0435**
SHARK **435/S**		–		95	50	240	120	**SH1435**

Examples of application



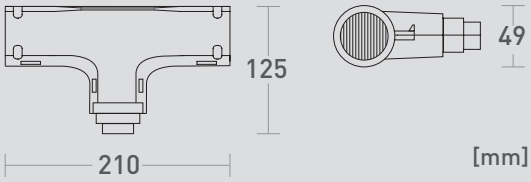
Shark 425 e Shark 435
T branch connection on multicore cables
with cores separator



Shark 425/S e Shark 435/S
T branch connection on single-core cables
(connector not included)

SHARK®
GEL INSULATED JOINTS

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts
- Street lighting systems

Advantages

- Ready to use
- Re-enterable
- No gel and no resin to cast
- Usable immediately
- Branch connection **without interrupting main cable**
- Excellent electrical insulation
- Good mechanical resistance
- **No accidental access to live parts**: the cable ties supplied ensure that the joint cannot be reopened without the use of tools, in compliance with EN 60364 standard
- No expiry date

Shark 425

code SH0425

Watch the video

Gel joint
T branch connections
Four-core cables

Cores separator included

- **IMQ approved** (cert. no. CA01-00299)
- **RINA approved** (cert. no. ELE 153611CS)
- The separator ensures the securing of the cables inside the joint and allows the use of four non-insulated connectors without needing staggered assembly

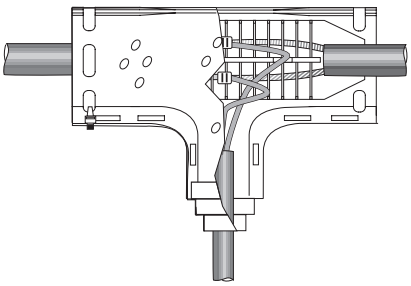
Kit contents

- Joint with gel
- **Cores separator**
- Cable ties
- Assembly instructions

Table of use

T branch connections

Max cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
	6	1.5	25	16



T branch connection on multicore cables

etelec electrical technology

Shark 425/S

code SH1425

Gel joint
T branch connections
Single-core cables

Without separator

- **IMQ approved** (cert. no. CA01-00299)
- **RINA approved** (cert. no. ELE 153611CS)
- The greater space inside the joint allows its use on wide cross-section cables

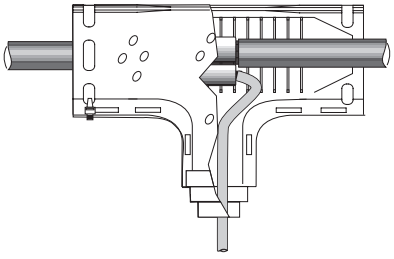
Kit contents

- Joint with gel
- Cable ties
- Assembly instructions

Table of use

T branch connections

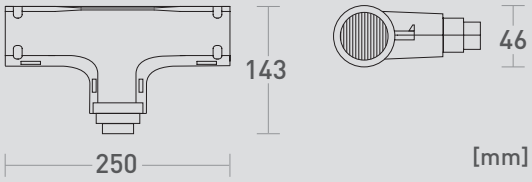
Cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
⊙	70	10	150	50



T branch connection on single-core cables

SHARK®
GEL INSULATED JOINTS

- Compliant with CEI EN 50393 standard for low voltage joints 0.6/1 kV
- Self-extinguishing in accordance with EN 60695-2-11 standard
- Low smoke and toxic gas emission in accordance with CEI 20-37/2-1 and CEI 20-37/4 standards
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Compliant with directive 2011/65/UE (RoHS 2)



Applications

- Underground installation
- Overhead installation
- Installation in cable ducts
- Street lighting systems

Advantages

- Ready to use
- Re-enterable
- No gel and no resin to cast
- Usable immediately
- Branch connection **without interrupting main cable**
- Excellent electrical insulation
- Good mechanical resistance
- **No accidental access to live parts**: the cable ties supplied ensure that the joint cannot be reopened without the use of tools, in compliance with EN 60364 standard
- No expiry date

Shark 435

code SH0435

Watch the video

Gel joint
T branch connections
Four-core cables

Cores separator included

- **IMQ approved** (cert. no. CA01-00299)
- **RINA approved** (cert. no. ELE 153611CS)
- The separator ensures the securing of the cables inside the joint and allows the use of four non-insulated connectors without needing staggered assembly

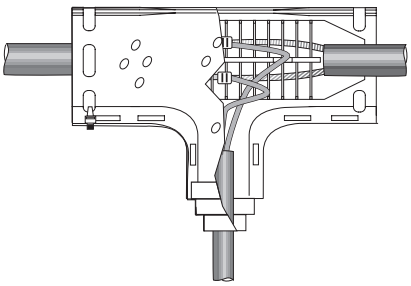
Kit contents

- Joint with gel
- **Cores separator**
- Cable ties
- Assembly instructions

Table of use

T branch connections

Max cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
	10	2.5	35	25



T branch connection on multicore cables

etelec electrical technology

Shark 435/S

code SH1435

Gel joint
T branch connections
Single-core cables

Without separator

- **IMQ approved** (cert. no. CA01-00299)
- **RINA approved** (cert. no. ELE 153611CS)
- The greater space inside the joint allows its use on wide cross-section cables

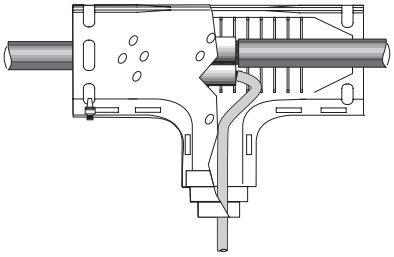
Kit contents

- Joint with gel
- Cable ties
- Assembly instructions

Table of use

T branch connections

Cores	Conductor cross-section (mm²)			
	min		max	
	main cable	branch cable	main cable	branch cable
⊙	95	50	240	120



T branch connection on single-core cables

mpgel PLUS

Fast cross-linking two-component silicone gel

MPgel PLUS is a re-enterable two-component silicone gel for insulated filling and sealing of casings and junction boxes housing electrical connections of up to 1 kV or electronic components, suitable for a wide range of applications.

Simple

The two components are supplied in separate containers, thus ensuring the correct 1:1 mixing ratio.
MPgel PLUS may be partially used as needed, and reused even after the pack has been opened, providing maximum yield.

Rapid cross-linking

MPgel PLUS has an extremely short **cross-linking time**, allowing rapid installation and reducing delays before activation.

NEW
1 LITER JUG

Fast and accurate mixing

The measuring jug provided with the 1 and 10-liter sizes ensures accurate mixing and prevents waste.
MPgel 100 is supplied with a **new 1 liter jug**, which allows to mix the entire contents of the bottles in one go, making installation even faster.
MPgel bags are provided with a special **Perforation Pouring System (PPS)** which allows the operator to avoid contact with the gel when opening it.
The nozzle has a toothed cylindrical end that fits securely into a ring inside the bag and punctures it, allowing the gel to flow evenly without accidental spills.

Low viscosity

Its low viscosity makes **MPgel PLUS** easy to pour and also ensures fast and **safe filling** of the containers and gaps.

Re-enterable and removable

Once cross-linked, **MPgel PLUS** can easily be removed without the need for tools even after long periods of time.

Safe

MPgel PLUS is non-toxic, non-irritating, odourless, and solvent-free, and is classified as non-hazardous under European Regulation no. 1272/2008 (CLP).

High performance

High dielectric strength (25.5 kV/mm).
Wide operating temperature range (-60 to 200 °C).
MPgel plus is resistant to **UV rays** and so can also be used outdoors and exposed to the elements.

Packaging

MPgel PLUS is available in bags with removable baffle, in bottles of different sizes, and in jerrycans, for efficient use whatever the quantity of product required.


Low viscosity


Re-enterable and removable


Eco-friendly


Odourless


Non-irritating


High dielectric strength


High moisture protection

No expiry date

Available sizes

bottles in 2 sizes

0.3 L 1 L

bags in 4 sizes

0.17 L 0.24 L 0.42 L 0.6 L


jerrycans

10 L

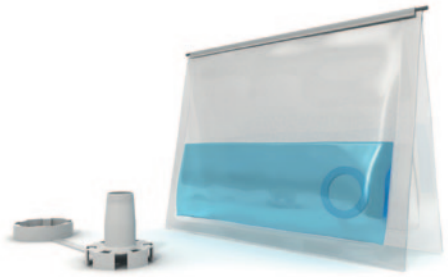
- **Very fast cross-linking:**
  Cross-linking time: 12 min at 23 °C
- Dielectric strength: 25.5 kV/mm
- Mixing ratio 1:1
- Working time at 23 °C: 5 min
- Operating temperature: -60 to 200 °C
- Colour: pale blue
- Classified as non-hazardous according to European Regulation no. 1272/2008 (CLP)

Applications

- Filling of electrical junction boxes
- Insulation of 0.6/1 kV electrical connections
- Insulation of electronic boards and components

Advantages

- Non-toxic
- Re-enterable
- Eco-friendly
- Easy pouring
- **Very fast cross-linking**
- Excellent electrical insulation
- Good mechanical resistance
- UV resistant
- Protection from elements (rain, moisture), dust, animals, insects, leaves
- No expiry date
- Reusable after opening
- **Available in 7 sizes**



MPgel PLUS

Fast cross-linking silicone gel in bags

re-enterable two-component for insulated filling and sealing

Watch the video

- **No waste** thanks to PPS
- Suitable when a **limited amount** of product is needed

Kit contents

- Bags with removable baffle
- Perforation Pouring System (PPS)

Available sizes

item	volume (liters)
MPGEL 170	0.170
MPGEL 240	0.240
MPGEL 420	0.420
MPGEL 600	0.600

Filling capacity (calculated for completely empty boxes)

		ROUND BOXES Ø × H (mm)		SQUARE BOXES A × B × H (mm)				
	volume (liters)	65×35	80×40	100×100×50	120×80×50	150×110×70	190×140×70	240×190×90
Bags	**0.170**	1	1	-	-	-	-	-
	0.240	2	1	-	-	-	-	-
	0.420	4	2	-	-	-	-	-
	0.600	5	3	1	1	-	-	-
Bottles	**0.300**	3	2	-	-	-	-	-
	1.000	9	5	2	2	1	-	-
Jerrycans	**10.0**	86	50	20	21	9	5	2

MPgel PLUS

Fast cross-linking silicone gel in bottles

re-enterable two-component
for insulated filling and sealing

Watch the video

- **No waste** thanks to separate bottles and measuring jug
- Can be mixed in one go with the new 1 lt jug (supplied with MP0100)

Kit contents

- 2 transparent 150 ml or 500 ml bottles
- 1 litre measuring jug (MP0100)

Available sizes

item	volume (liters)
MPGEL 30	0.3
MPGEL 100	1

MPgel PLUS

Fast cross-linking silicone gel in jerrycans

re-enterable two-component
for insulated filling and sealing

- **No waste** thanks to separate jerrycans and measuring jug
- Suitable when a **large amount of product** is needed and/or **for later use**

Kit contents

- 2 transparent 5 litres jerrycans
- Measuring jug

Available sizes

item	volume (liters)
MPGEL 1000	10.0

crystalgel

Two-component silicone gel crystal clear

Crystalgel is a transparent and re-enterable two-component silicone gel for insulated filling and sealing of casings and junction boxes housing electrical connections of up to 1 kV or electronic components, suitable for a wide range of applications.

Crystal clear

Crystalgel is extremely transparent, which means that the contents of the casing are always visible.

Easy and without waste

The two parts supplied **in separate containers** always guarantee the correct 1:1 mixing ratio.

Crystalgel is supplied with a **new 1 liter jug**, which allows to mix the entire contents of the bottles in one go, making installation even faster.

NEW
1 LITER JUG

Crystalgel may be partially used as needed, and reused even after the pack has been opened, providing maximum yield.

High performance

High dielectric strength: 24.5 kV/mm.
Wide operating temperature range:
-60 to 200 °C.

Re-enterable and removable

Once cross-linked, **Crystalgel** can easily be removed without the need for tools even after long periods of time.

Low viscosity

Its low viscosity makes **Crystalgel** easy to pour and ensures fast and safe filling of the containers and gaps.

Safe

Crystalgel is non-toxic, non-irritating, odourless, and solvent-free, and is classified as non-hazardous under European Regulation no. 1272/2008 (CLP).

crystalgel

- **Colour: crystal clear**
- Dielectric strength: 24.5 kV/mm
- Mixing ratio 1:1
- Working time at 23 °C: 10 min
- Cross-linking time: 24 min at 23 °C
- Operating temperature: -60 to 200 °C
- Classified as non-hazardous under European Regulation no. 1272/2008 (CLP)

Applications

- Filling of electrical junction boxes
- Insulation of 0.6/1 kV electrical connections
- Insulation of electronic boards and components

Advantages

- Crystal clear
- Non-toxic
- Re-enterable
- Eco-friendly
- Easy pouring
- No waste thanks to separate bottles and measuring jug
- Excellent electrical insulation
- Protection from elements (rain, moisture), dust, animals, insects, leaves
- Good mechanical resistance
- No expiry date
- Reusable after opening


Low viscosity


Re-enterable and removable


Eco-friendly

No expiry date


Odourless


Non-irritating


High dielectric strength


High moisture protection

Crystalgel

HF RoHS CE

Silicone gel crystal clear in bottles

re-enterable two-component for insulated filling and sealing

Watch the video

- **No waste** thanks to separate bottles and measuring jug
- Can be mixed in one go with the new 1 lt jug (provided with Crystalgel 1 lt)
- Suitable when it is necessary to keep the visibility of the connection and/or the casing

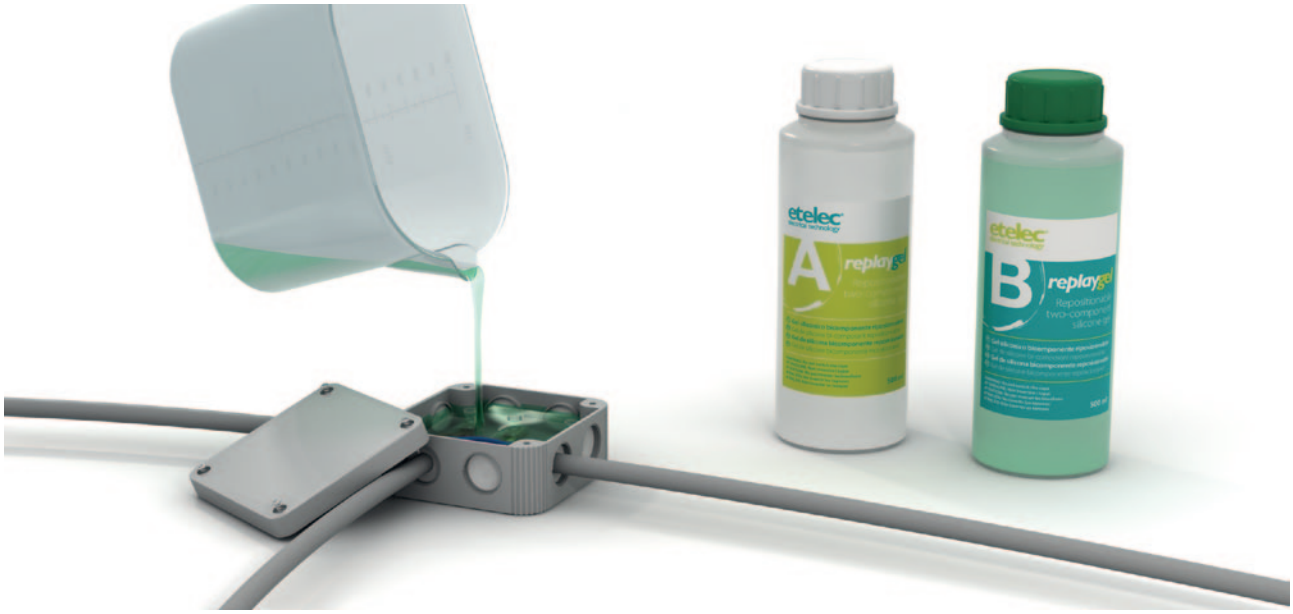
Kit contents

- 2 transparent bottles
- Measuring jug

Available size

item	volume (liters)
CRYSTALGEL 1L	1.0
CRYSTALGEL 2L	2.0

replaygel



Two-component silicone gel transparent repositionable

Replaygel is a **repositionable**, **reusable** and re-enterable two-component silicone gel for insulated filling and sealing of casings and junction boxes housing electrical connections of up to 1 kV or electronic components, suitable for a wide range of applications.

Repositionable and reusable

Thanks to its innovative formula, it is possible to reposition and reuse **Replaygel** inside the casing even after long periods of time from the initial cross-linking: **Replaygel** coalesces easily and quickly while maintaining its characteristics.

Easy and without waste

The two components are supplied in separate containers to always guarantee the correct 1:1 mixing ratio.
The **new 1 liter measuring jug** ensures a precise waste-free mix and allows to mix the entire contents of the bottles in one go, making installation even faster.

Replaygel may be partially used as needed, and reused even after the pack has been opened, providing maximum yield.
Being repositionable, the gel can be cross-linked before use.

NEW 1 LITER JUG

Re-enterable

Replaygel can be penetrated using tools such as screwdrivers, thus enabling work on the connection without removing the gel.

Low viscosity

Its low viscosity makes **Replaygel** easy to pour and also ensures fast and **safe filling** of the containers and gaps.

High performance

High dielectric strength: 24 kV/mm.
Wide range of operating temperatures (-60 to 200 °C).

Safe

Replaygel is non-toxic, non-irritating, odourless, solvent-free, and is classified as non-hazardous under European Regulation no. 1272/2008 (CLP).

replaygel

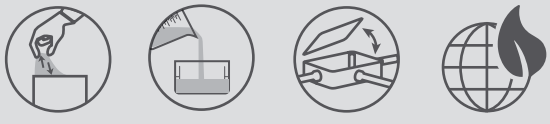
- Repositionable
- Dielectric strength: 24 kV/mm
- Mixing ratio 1:1
- Working time at 23 °C: 10 min
- Cross-linking time at 23 °C: 25 min
- Operating temperature: -60 to 200 °C
- Colour: pale green
- Classified as non-hazardous under European Regulation no. 1272/2008 (CLP)

Applications

- Filling of electrical junction boxes
- Insulation of 0.6/1 kV electrical connections
- Insulation of electronic boards and components
- Suitable in cases of difficult installation conditions
- Suitable for vertical or upside down installation

Advantages

- Repositionable
- Non-toxic
- Re-enterable
- Eco-friendly
- Easy pouring
- No waste thanks to separate bottles and measuring jug
- Excellent electrical insulation
- Protection from elements (rain, moisture), dust, animals, insects, leaves
- Good mechanical resistance
- No expiry date
- Reusable after opening



Repositionable | Low viscosity | Re-enterable and removable | Eco-friendly

Odourless | Non-irritating | High dielectric strength | High moisture protection

No expiry date

Replaygel

HF RoHS CE

Repositionable silicone gel in bottles

Re-enterable two-component for insulated filling and sealing

Watch the video

- **No waste** thanks to separate bottles and measuring jug
- Can be mixed in one go with the new 1 liter jug

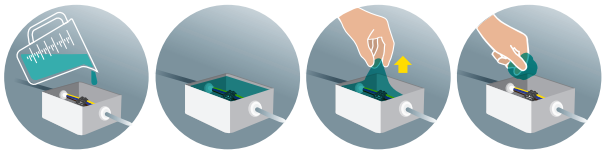
Kit contents

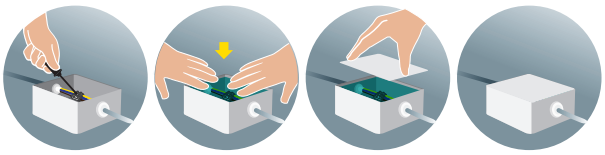
- 2 transparent 500 ml bottles
- 1 liter measuring jug

Available size

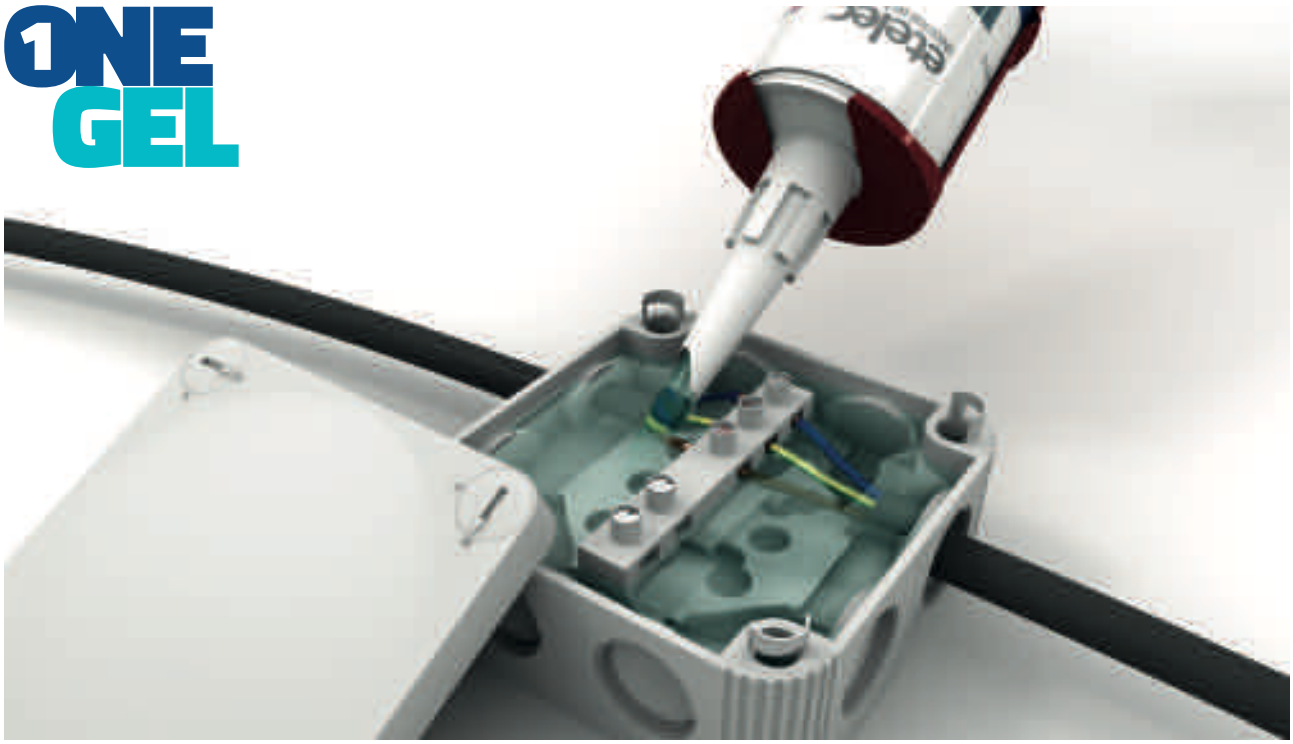
item	volume (liters)
REPLAYGEL 1L	1.0

Example of application





ONE GEL



Single-component silicone gel in ready-to-use cartridge

ONE GEL is a **single-component** silicone gel for insulated filling and sealing of casings and junction boxes housing electrical connections of up to 1 kV or electronic components.

Ready to use

ONE GEL is already cross-linked and **ready to use straight away** with no need for mixing or waiting for cross-linking as with conventional two-components gels.
Thanks to its special characteristics, ONE GEL comes in a **standard cartridge** that can be used with a normal sealant gun, allowing rapid installation.

Re-enterable

ONE GEL does not dry, and **always stays soft**, preserving its characteristics and remaining **re-enterable** over time.

Insulates and protects

Its excellent chemical and physical properties make it ideal for a wide range of applications requiring a **high level of electrical insulation and protection from moisture.**

Easy installation in all conditions of use

Its excellent adhesive properties ensure rapid and correct application of **ONE GEL** even **in vertical position** or in cases of difficult access to a casing or connection.

Eco-friendly

ONE GEL is non-toxic, and is classified as non-hazardous under European Regulation no. 1272/2008 (CLP).


Ready to use


Re-enterable and removable


Eco-friendly


Odourless


Non-irritating


High dielectric strength


High moisture protection

No expiry date

etelec electrical technology

TECHNICAL SPECIFICATIONS	TYPICAL VALUE	TESTING METHOD
dielectric strength	25 kV/mm	-
operating temperature	–60 / 200 °C	-
density	0.97 g/l	ISO 3219
penetration	300 mm/cone 100 g	ISO 2137
self-extinguishing class	HB	UL 94
resistivity	10 GΩ/mm	IEC 93
volume contraction	< 0.01%	

300 ml

ONE GEL

code ONEGEL

Single-component silicone gel re-enterable in ready-to-use cartridge

Features

- Single-component silicone gel
- Thixotropic consistency
- Colour: transparent pale blue
- Odourless
- Solvent-free
- 300 ml cartridge
- Classified as non-hazardous under European Regulation no. 1272/2008 (CLP)

Applications

- Filling of electrical junction boxes
- Insulation of 0.6/1 kV electrical connections
- Insulation of electronic boards and components
- Suitable in cases of difficult access to a casing and/or connection
- Suitable for vertical or upside down installation
- For use in civil, industrial, nautical, aeronautical, and automotive areas

Advantages

- **No mixing**
- Ready to use
- **Cartridge that can be used with a normal sealant gun**
- Precise waste-free dosage
- Re-enterable
- Removable
- Transparent
- Eco-friendly
- High electrical insulation
- Protection from elements (rain, moisture), dust, animals, insects, leaves
- UV rays resistant
- No expiry date

LEDJOY®
SMART CONNECTION

BRAND NEW

IP68 gel insulated junction device

LEDJOY® is a revolutionary gel insulated junction device with IP68 protection degree for connecting small cross-section cables from 0.5 to 1.5 mm^2.
Its innovative design and patented solutions guarantee reliable performance in narrow spaces and under all conditions.

Co-moulding technology

LEDJOY® shell is made up of:

- a self-extinguishing **rigid plastic outer shell** that guarantees the mechanical protection of the connection, also suitable for underground installation;
- co-moulded **flexible walls** for gel retention, allowing easy cable housing with no need to break or remove any rigid walls;
- **watertight gaskets** and cable housing, also co-moulded with the outer shell.

IP68: total protection

IP68

The innovative features of LEDJOY® shell together with silicon gel technology **guarantee IP68 protection degree** without the need for cable glands.

Total protection from water, dust, debris, and weathering under all installation conditions.

Double insulation

thanks to the insulated connector included in the kit.

Two connectors included

2-pole insulated spring connector makes the connection quick and easy with no need for tightening tools, and guarantees a high resistance to traction without compromising the integrity of narrow cross-section conductors.

Indirect contact **3-pole insulated screw-type clamping connector** with protection blades for narrow cross-section conductors.

Zero capillarity, no condensation

The silicone gel inside LEDJOY® guarantees high long-term protection and insulation, preventing moisture entering the shell, the rise of moisture along the cable due to capillary action, and the formation of condensation inside the appliances, a frequent cause of damage (especially LED lighting fixtures).

Cable blocking system

specially designed and easy to apply without tools and tightening screws, heightening the safety of the connection, securing the cable in the event of traction or external mechanical stress.

Minimum size, maximum performance

With its compact circular shape and small size, LEDJOY® can also be installed in narrow spaces, and can be used in cable ducts, corrugated pipes, poles, and supporting structures, with no need for supplementary junction boxes.

LEDJOY® is easy and quick to instal even in limited operating space as it requires no tools, cable gland or components to pull over the cables.

The reduced number of components, the absence of gaskets to be assembled, and the few and easy operations to carry out allow quick and reliable installation

Re-enterable connection

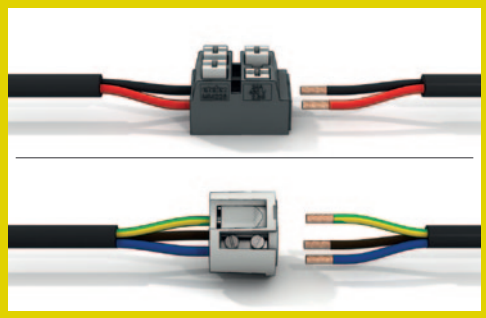
The features of LEDJOY® and gel technology allow re-entry to the connection.

Eco-friendly

The gel inside LEDJOY® is non-toxic, and has no expiry date. Its ability to protect and insulate connections does not change with time.
It is classified as a non-hazardous product under European Regulation no. 1272/2008 (CLP).

Secure and protected connections in 3 simple steps

1

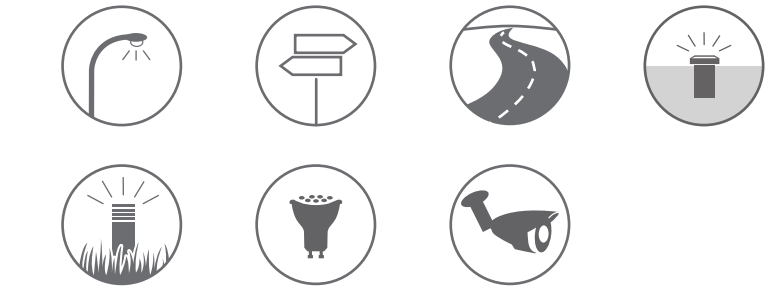


2

3

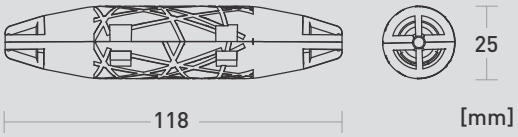
Versatility of use

- Urban and civic lighting, even in contact with water (street lighting systems, road and carriageway signs, gardens, fountains, walkover ground lighting)
- Indoor residential and ambient lighting
- LED lighting systems
- Video-surveillance systems
- Industrial and civil automation (barriers, gates, machine board systems)



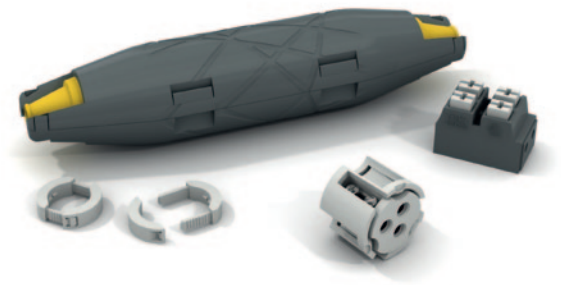
LEDJOY
SMART CONNECTION

- IP68 protection degree (in accordance with CEI EN 60529 standard)
- Double insulation
- Self-extinguishing
- Compliant with Directive 2011/65/UE (RoHS 2)
- Silicone gel inside the shell classified as a non-hazardous product under European Regulation no. 1272/2008 (CLP)
- 2-pole insulated spring connector
- 3-pole insulated screw-type clamping connector
- Conductor cross-section (rigid and flexible): 0.5–1.5 mm^2
- Rated voltage 450 V
- Rated current 24 A



Applications

- Urban and civic lighting, even in contact with water (street lighting systems, road and carriageway signs, gardens, fountains, walkover ground lighting)
- Indoor residential and ambient lighting
- LED lighting systems
- Video-surveillance systems
- Industrial and civil automation (barriers, gates, machine board systems)



Ledjoy

code LDJ01

IP68 gel insulated junction device

2-pole insulated spring connector and 3-pole insulated screw-type clamping connector included

Watch the video

Advantages

- Quick and reliable installation without tools for limited operating space
- Reduced number of parts to be assembled
- No cable gland or components to pull onto the cables
- No rising of moisture along the cable due to capillary action
- Total protection from dust, water, debris, and weathering
- Installation in narrow spaces
- Compact size for installation in cable ducts, corrugated pipes, poles
- Mechanical safety securing the cable in the event of traction or external mechanical stress
- Re-enterable connection
- Versatility of use
- Halogen-free
- Eco-friendly

Kit contents

- Co-moulded rigid polymeric plastic shell with snap-shut closure, integrated gaskets and flexible walls
- 2-pole insulated connector with spring-loaded clamps
- 3-pole insulated screw-type clamping connector with wire-protection sheets
- Cable blocking system

Table of use

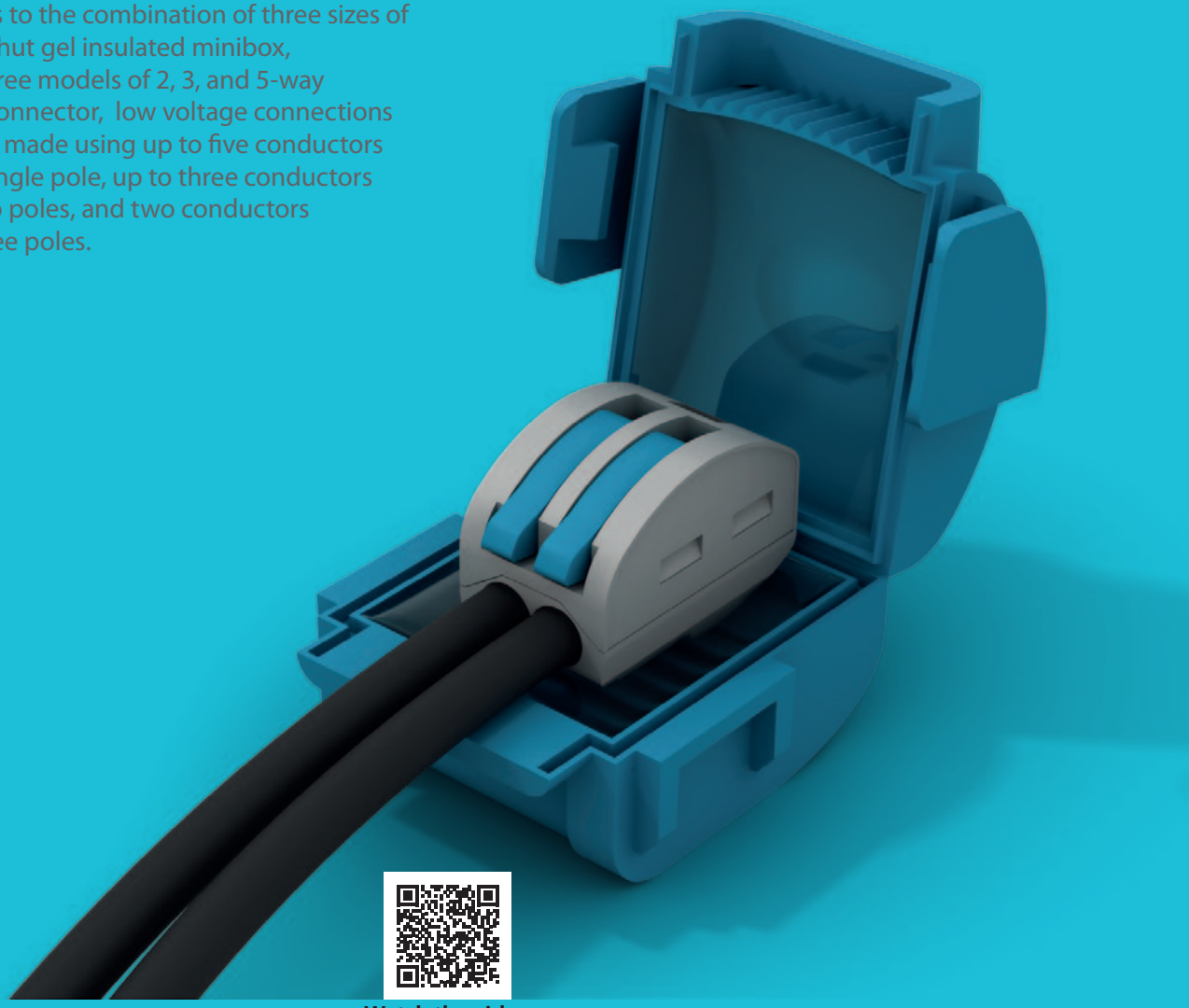
item	number of cores	conductor cross-section (mm^2)	rated voltage (V)	rated current (A)
LEDJOY	2 – 3	0.5–1.5	450	24
cable diameter: 5–9 mm				

SHELL BOX®
mini junction box

IPX8 gel insulated minibox with connectors. Protected and secure connections in 3 simple steps.

3 sizes of gel insulated miniboxes
3 models of Spring Box® lever insulated connectors
6 solutions for insulating and protecting your connections

Shell Box® is the quickest and easiest solution to create, insulate, and protect electrical connections in a wide range of civil and industrial applications. Thanks to the combination of three sizes of snap-shut gel insulated minibox, and three models of 2, 3, and 5-way lever connector, low voltage connections can be made using up to five conductors on a single pole, up to three conductors on two poles, and two conductors on three poles.



Watch the video

Protection from water and weathering

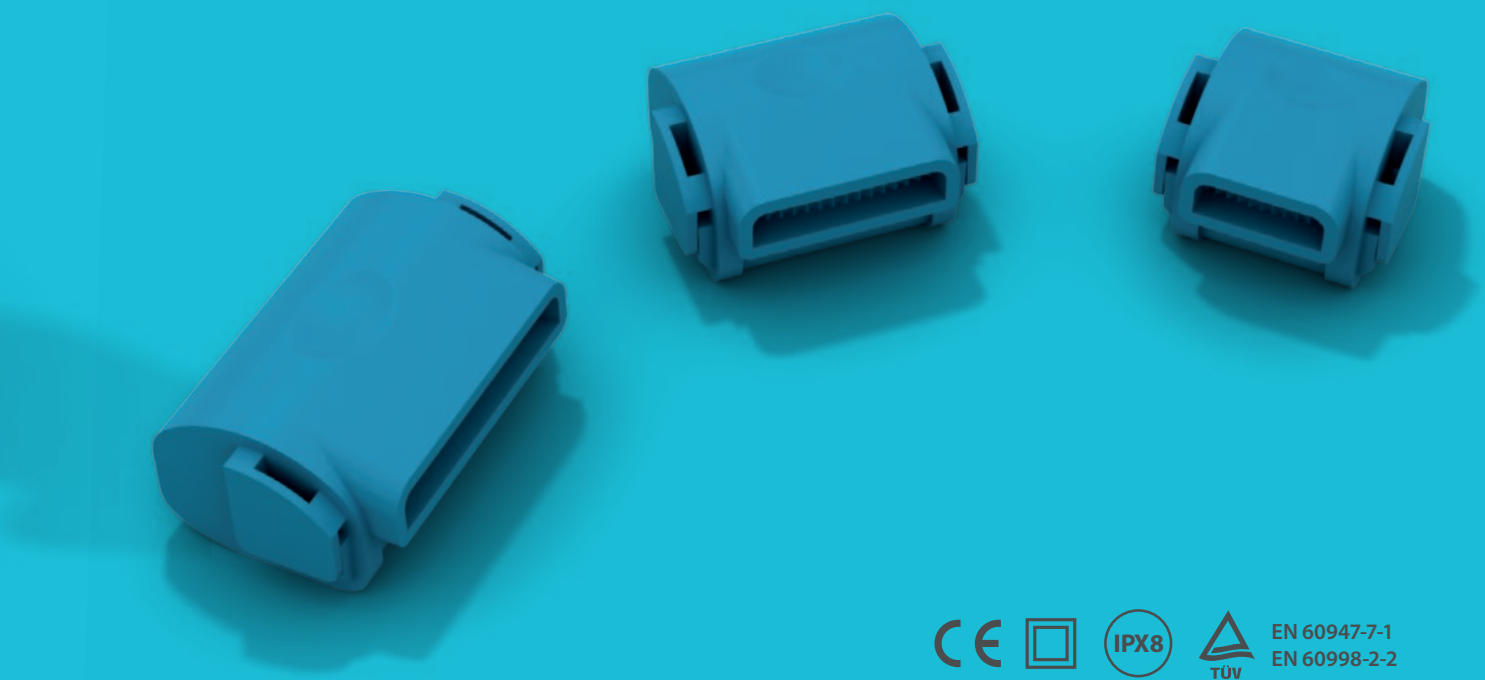
The **silicone gel** inside the minibox insulates and protects the connections from water, moisture, and weathering, and ensures an **IPX8 protection degree** (certified by independent laboratory Intertek).
The snap-shut closure and the design of the minibox prevent accidental gel leakage, except on the cable inlet side, where it ensures that the connection is properly sealed.

Re-enterable

With its soft-drying gel and Spring Box® technology, it is possible to re-enter the connection at any time to check the voltage thanks to the integrated test-point, or to work individually on any of the conductors.

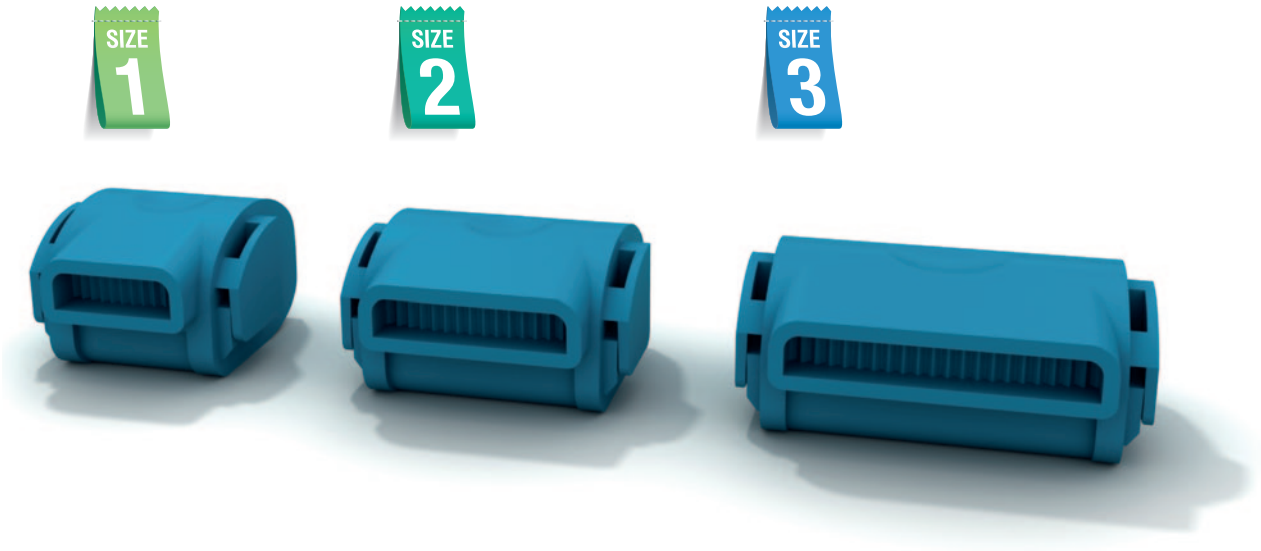
Eco-friendly

The gel inside the minibox is non-toxic, and is classified as non-hazardous under European Regulation no. 1272/2008 (CLP).



EN 60947-7-1
EN 60998-2-2

SHELL BOX®
mini junction box



IPX8 gel insulated minibox with Spring Box® connectors

Shell Box® is an innovative series of gel insulated connecting devices with IPX8 protection degree, complete with Spring Box® lever connectors, to quickly and safely make, insulate, and protect electrical connections in any number of home and industrial applications with no need for tools.

Thanks to its silicone gel insulation, **Shell Box®** protects narrow cable (0.2 - 4 mm^2) connections from water, moisture, and dust both indoors and outdoors and can be used for lighting fixtures, pumps, automation for windows, doors, and gates, telephone and telecommunications systems, sound systems, and cable radio.

Three sizes and six versions allow low-voltage connection of up to five conductors on a single phase, up to three conductors on two phases, and two conductors on three phases.

SPRING BOX® lever connectors

Spring Box® included

Shell Box® kits retain the innovative features and benefits of Spring Box® insulated connectors with lever clamps:

- Can be used with a wide range of rigid and flexible cable cross-sections: 0.2 - 4 mm^2
- Rated voltage 600 V
- Rated current 32 A
- No risk of damage to even small cross-section wires
- Compliant with Low Voltage Directive 2014/35/EU according to EN 60947-7-1 and EN 60998-2-2 standards with TÜV-Rheinland certificate

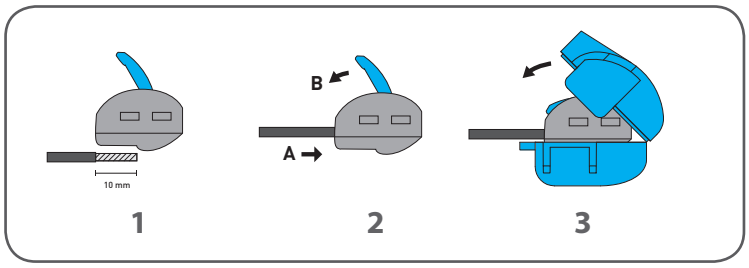
Advantages

- Compact size
- Quick and easy installation without tools
- Re-enterable
- Work on each conductor individually
- Double insulation
- No accidental gel leakage
- Versatility of use
- Reliable connections thanks to spring-loaded technology
- Use with both rigid and flexible narrow cross-section cables
- No risk of damaging wires
- Good mechanical resistance
- Eco-friendly, non-toxic with no expiry date

Applications

- Insulation and protection, even in contact with water, of low voltage electrical connections using narrow cross-section cables (lighting fixtures, automation for windows, doors and gates, telephone and telecommunications systems, sound systems, and cable radio)
- Wiring junction boxes for ceilings or outdoors
- Insulation and additional protection for junction box connections
- Terminal insulation for live cables
- Connection capacity: up to five conductors on a single pole, up to three conductors on two poles, and two conductors on three poles.

Connessioni protette e sicure in 3 semplici passi



1 Strip the cables exposing 10 mm of wire.

2 Insert the cable into one of the openings of the Spring Box® connectors and lower the clamping lever with simple finger pressure. Repeat for all the cables to be connected.

3 Place the connector/s in the gel insulated Shell Box® and snap it shut. The gel will leak out from the cable entry openings and will seal the connector and the connection against water, moisture, and dust.

The shell + connector system is immediately ready for use.

Shell Box 222
Connecting two-core cables

Shell Box 332
Connecting three-core cables

SHELL BOX mini junction box

- **IPX8 protection degree (in accordance with CEI EN60529) certified by Intertek** (no. 200018187UDI-NSR)
- **Spring Box® connectors** comply with the Low Voltage Directive 2014/35/EU in accordance with EN 60947-7-1 and EN 60998-2-2 standards TÜV-Rheinland certificate (no. R 50349910)
- Rated voltage: 600 V
- Rated current: 32 A
- Conductor cross-section (rigid and flexible): 0.2 - 4 mm²
- The gel inside the shells is classified as non-hazardous according to European Regulation no. 1272/2008 (CLP)

Applications

- Insulation and protection, even in contact with water, of low voltage electrical connections for narrow cross-section cables (lighting fixtures, automation for windows, doors and gates, telephone and telecommunications systems, audio systems, and cable radio)
- Junction boxes for ceilings or outdoors
- Insulation and additional protection for connections in junction boxes
- Terminal insulation for live cables

Advantages

- Compact size
- Quick and easy installation without tools
- Re-enterable
- Work on each conductor individually
- Double insulation
- No accidental gel leakage
- Versatility of use
- Reliable connections thanks to spring-loaded technology
- For use with both rigid and flexible narrow cross-section cables
- No risk of damaging wires
- Good mechanical resistance
- Eco-friendly, non-toxic with no expiry date

Features

- Pre-filled shell with silicone gel and snap-shut closure
- Compact Spring Box® lever connectors included (p. 116)

Selection table

item	shell size	number of poles	no. wires/ pole
Shell Box 112	size 1	1	2
Shell Box 113	size 1	1	3
Shell Box 222	size 2	2	2
Shell Box 215	size 2	1	5
Shell Box 332	size 3	3	2
Shell Box 323	size 3	2	3

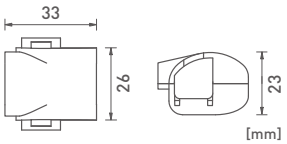
NEW

Shell Box 112

SIZE 1 IPX8

code MJB112

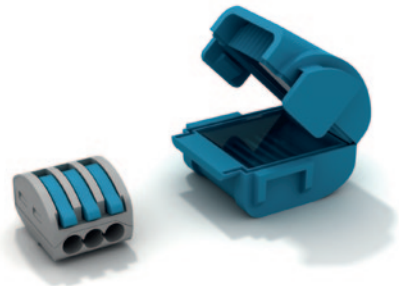
Gel insulated minibox with 1 Spring Box 2 connector



Connection and protection
1 pole - 2 conductors

Connection capacity

no. poles	no. wires/ pole	sect. (mm²)
1	2	0.2 – 4

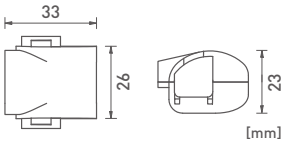


Shell Box 113

SIZE 1 IPX8

code MJB113

Gel insulated minibox with 1 Spring Box 3 connector

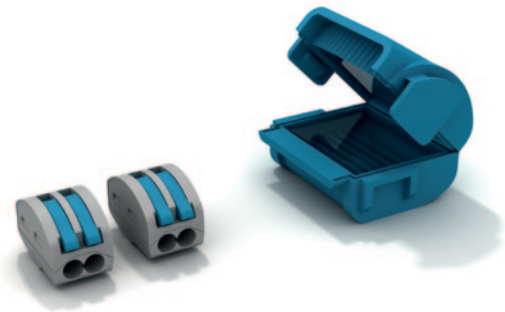


Connection and protection
1 pole - 3 conductors

Connection capacity

no. poles	no. wires/ pole	sect. (mm²)
1	3	0.2 – 4

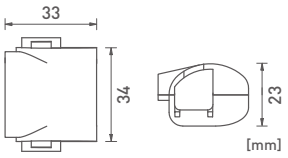
etelec electrical technology



Shell Box 222

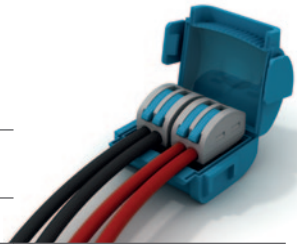
SIZE 2 · IPX8

code MJB222



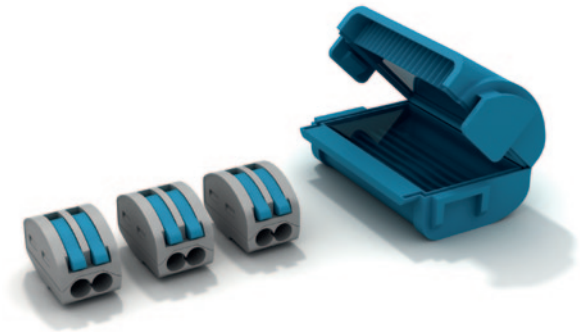
Gel insulated minibox with 2 Spring Box 2 connectors

Connection and protection
2 poles - 2 conductors



Connection capacity

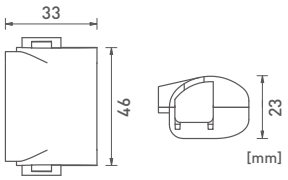
no. poles	no. wires/ pole	sect. (mm^2)
2	2	0.2 – 4



Shell Box 332

SIZE 3 · IPX8

code MJB332

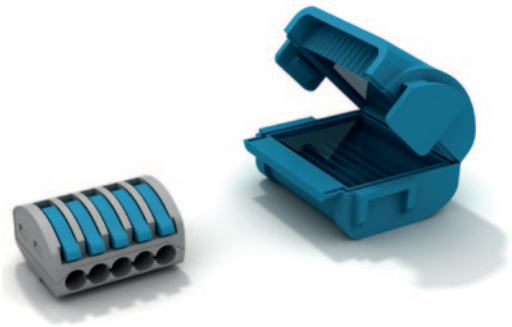


Gel insulated minibox with 3 Spring Box 2 connectors

Connection and protection
3 poles - 2 conductors

Connection capacity

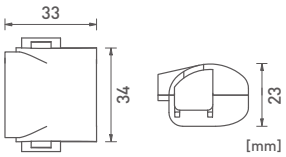
no. poles	no. wires/ pole	sect. (mm^2)
3	2	0.2 – 4



Shell Box 215

SIZE 2 · IPX8

code MJB215

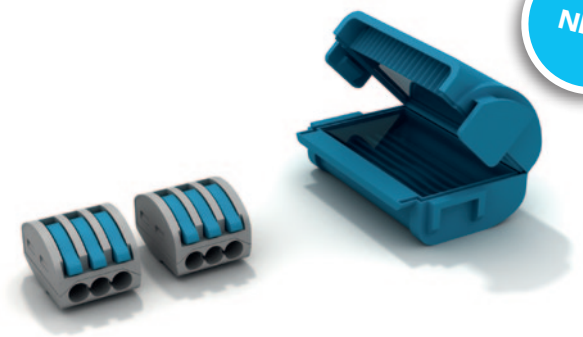


Gel insulated minibox with 1 Spring Box 5 connector

Connection and protection
1 pole - 5 conductors

Connection capacity

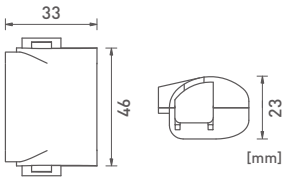
no. poles	no. wires/ pole	sect. (mm^2)
1	5	0.2 – 4



Shell Box 323

SIZE 3 · IPX8

code MJB323



Gel insulated minibox with 2 Spring Box 3 connectors

Connection and protection
3 poles - 2 conductors

Connection capacity

no. poles	no. wires/ pole	sect. (mm^2)
2	3	0.2 – 4

01 LOW VOLTAGE

SOLUTIONS IN RE-ENTERABLE SILICONE RESIN

01.4 SILICONE RESIN FILLERS

RESIL® - Re-enterable two-component silicone resin

01.5 SILICONE RESIN INSULATED JOINTS

RESIL JOINT® RJA Series - straight

RESIL JOINT® RJB Series - Y branch

resil®
silicone resin

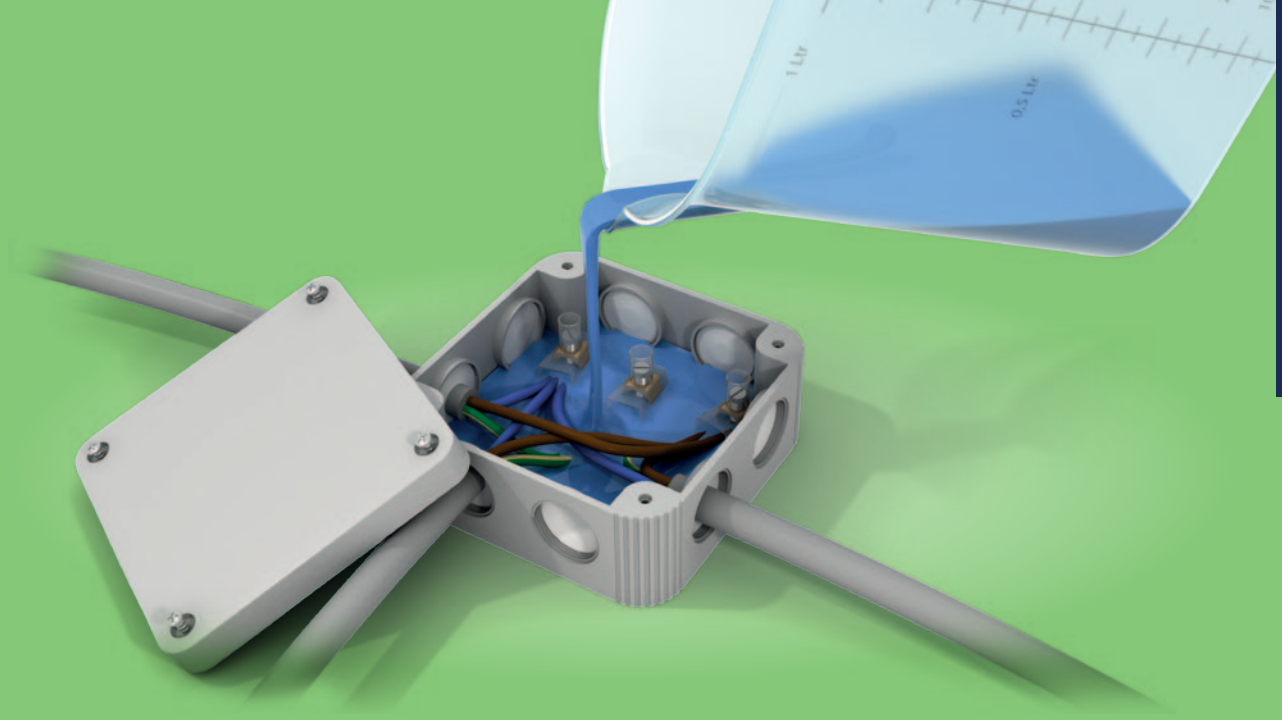
The first re-enterable two-component silicone resin. It will revolutionize the way you work.

0.6/1 kV

Insulation and protection
from water and dust

Resil® is a re-enterable two-component silicone resin for low voltage filling and insulating. Together with GSA and GSB Series shells, Resil® can be used to make Resil JOINT®, low voltage straight (RJA Series) and branch (RJB Series) joints, compliant with CEI EN 50393 standard.

Watch the video



Non-toxic and eco-friendly

Resil® is classified as non-hazardous under European Regulation 1272/2008 (CLP). The product is safe to handle.

The two components, supplied in special containers, are mixed in a measuring jug that ensures the correct 1:1 dose however much product is used. The components polymerize quickly and fill the shell rapidly and safely thanks to their low viscosity.

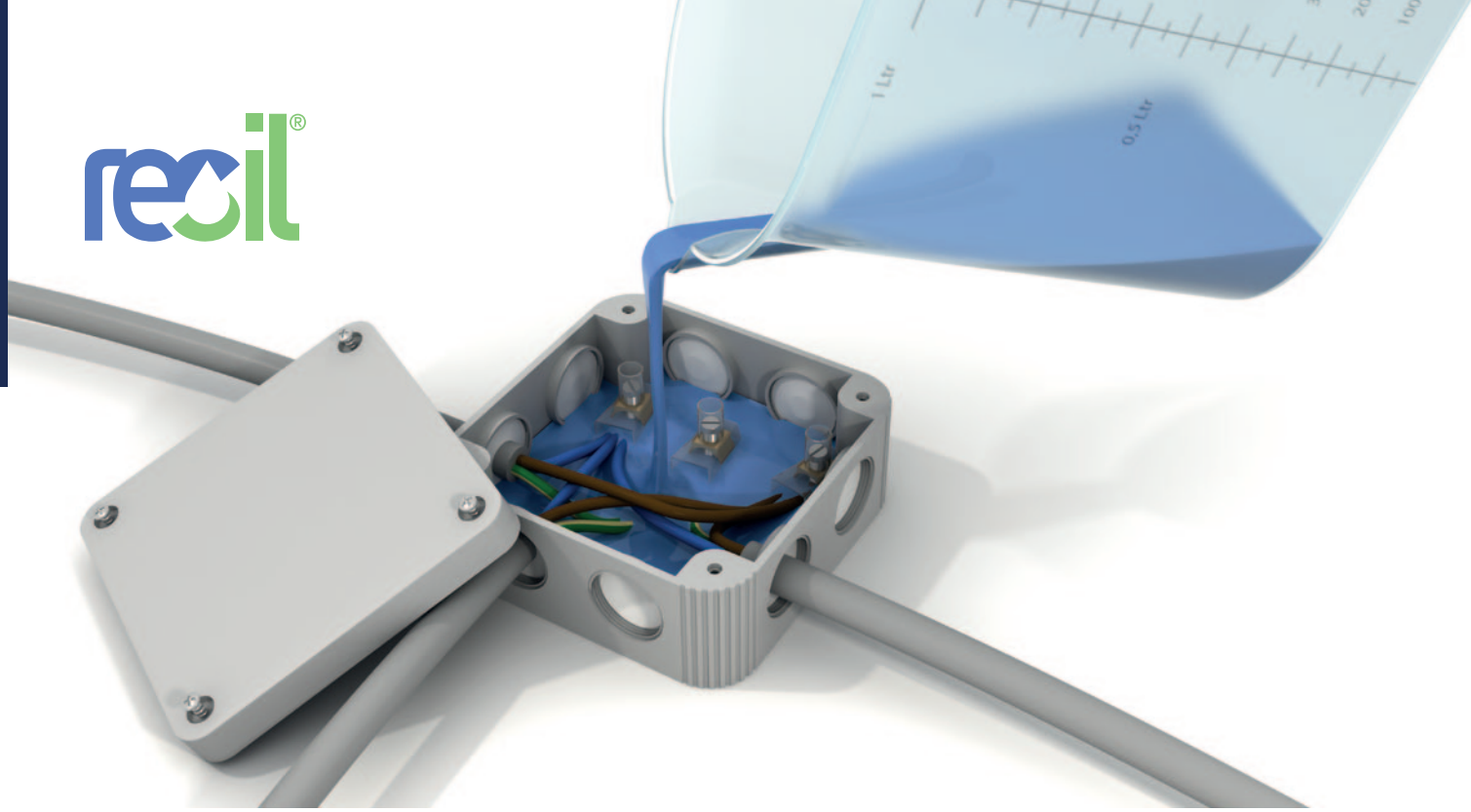
USE & REUSE

Thanks to RESIL®'s innovative formula, unlike traditional resins, **it is possible to use only the amount required**, keeping the remainder for **later use**: no waste of product, **maximum yield and versatility of use**.

resiljoint®

Watch the video

resil®



Re-enterable two-component silicone resin

Re-enterable

Resil®, unlike traditional polyurethane and epoxy resins, allows re-entering long after cross-linking has taken place, and ensures good mechanical strength and protection against accidental contact with live parts.

High performance

Resil®'s fast cross-linking reduces installation and activation time, as well as labour costs. The process is non-exothermic and so it causes no damage to the components and the parts to be insulated. High dielectric strength: 23 kV/mm. Wide operating temperature range (-40 to 180 °C).

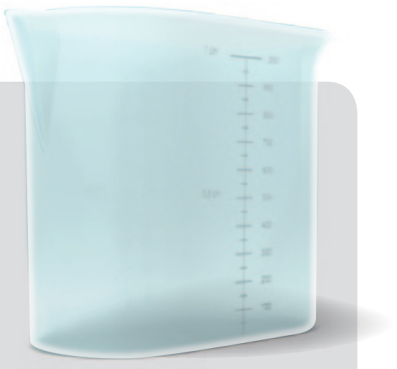
Safe

Resil® contains no isocyanates and ensures maximum safety levels for the environment and operators. Resil® is classified as non-hazardous under European Regulation no. 1272/2008 (CLP) and can be disposed of as solid waste.

Available size

Resil® is available in 2 sizes: 1 and 4-liters bottles, both with measuring jug.

NEW 1L AND 5L MEASURING JUGS



Easy and waste-free

The two components used to make **Resil®** come in separate containers to ensure the correct 1:1 mixing ratio.
The new 1 and 5-liter measuring jugs allow waste-free, thorough and rapid mixing, even if the whole content of resin is mixed in one go.

- Re-enterable
- Dielectric strength: 23 kV/mm
- Mixing ratio 1:1
- Density: 1.3 g/cm^3
- Working time at 23 °C: 5 min
- Cross-linking time at 23 °C: 12 min
- Operating temperature: -40 to 180 °C
- Color: blue
- Storage temperature: 5 to 25 °C
- Self-extinguishing class V0
- Classified as non-hazardous under European Regulation no. 1272/2008 (CLP)

Applications

- Electrical junction boxes filling
- Insulation of 0.6/1 kV electrical connections
- Insulation of electronic boards and components
- Ideal for low voltage Resil Joint® joints: straight (RJA Series) with GSA Series shells, and branch (RJB Series) with GSB Series shells

Advantages

- Re-enterable
- May be partially used as needed
- Can be mixed in one go in the jugs provided
- Easy pouring
- Rapid and non-exothermic cross-linking
- Excellent electrical insulation
- Non-hygroscopic
- Good mechanical strength that prevents accidental contact with live parts
- Protection from elements (rain, moisture), dust, animals, insects, leaves
- Self-extinguishing class V0
- Non-toxic (isocyanate-free)
- Eco-friendly
- Easy-to-clean reusable jug

Resil 100

CE

Two-component re-enterable silicone resin - 1 liter

Kits contents

- 2 transparent 500 ml bottles
- 1-liter measuring jug

item	volume (liters)	weight (kg)
RESIL 100	1.0	1.3

Resil 400

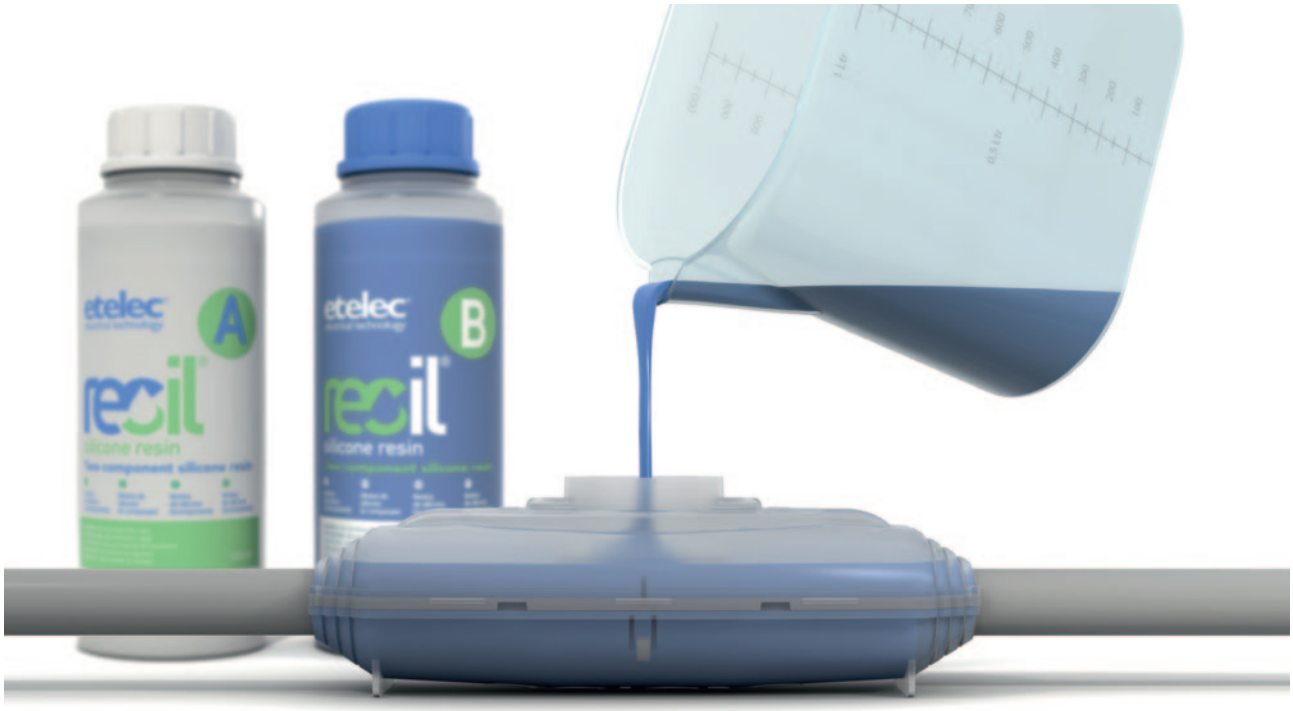
CE

Two-component re-enterable silicone resin - 4 liters

Kits contents

- 2 transparent 2-liters bottles
- 5-liter measuring jug

item	volume (liters)	weight (kg)
RESIL 400	4.0	5.2



Resil Joint® RJA series
Silicone resin insulated joints for straight connections

Resil joint® is a new line of silicone resin insulated joints for low-voltage (0.6/1 kV) straight connections for single and multicore cables with up to 4 cores compliant with EN 50393 standard, made using **Resil®** silicone resin as a filler for GSA Series shells.

Thanks to Resil's USE & REUSE feature, it is possible to mix only the amount of silicone resin required, keeping the remainder for later use.
The new measuring jug supplied with Resil 100 is marked with the filling levels specific to commonly used GSA shells, thus allowing for easy, fast and precise dosage of each part.

RJA joints made in this way keep all the structural characteristics and advantages of Resil® silicone resin, allowing possible re-entering and at the same time providing protection from accidental contact with the live parts of the connection.

Unlike joints made with polyurethane and epoxy resins, Resil Joint® joints, using Resil® silicone resin, contain no isocyanates, and ensure maximum safety for the environment and operators.

RJA Series joints are classified as non-hazardous under European Regulation no. 1272/2008 (CLP), so any waste resulting from installation or the products themselves at the end of their life cycle can be disposed of as common solid waste.

Applications

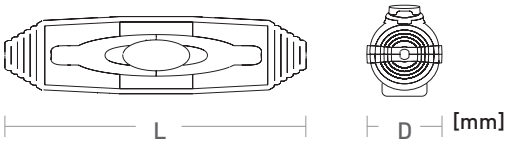
- Straight connections on 0.6/1 kV single and multicore cables with up to four cores (up to 5 cores with optional terminal block)
- For installation in cable ducts, underground, overhead, or submersed
- Street lighting systems

Advantages

- Re-enterable
- Flexibility of use
- Excellent electrical insulation up to 0.6/1 kV
- Good mechanical strength that prevents accidental contact with live parts
- Non-toxic and isocyanate-free

Resil Joint® RJA Series · Silicone resin joints

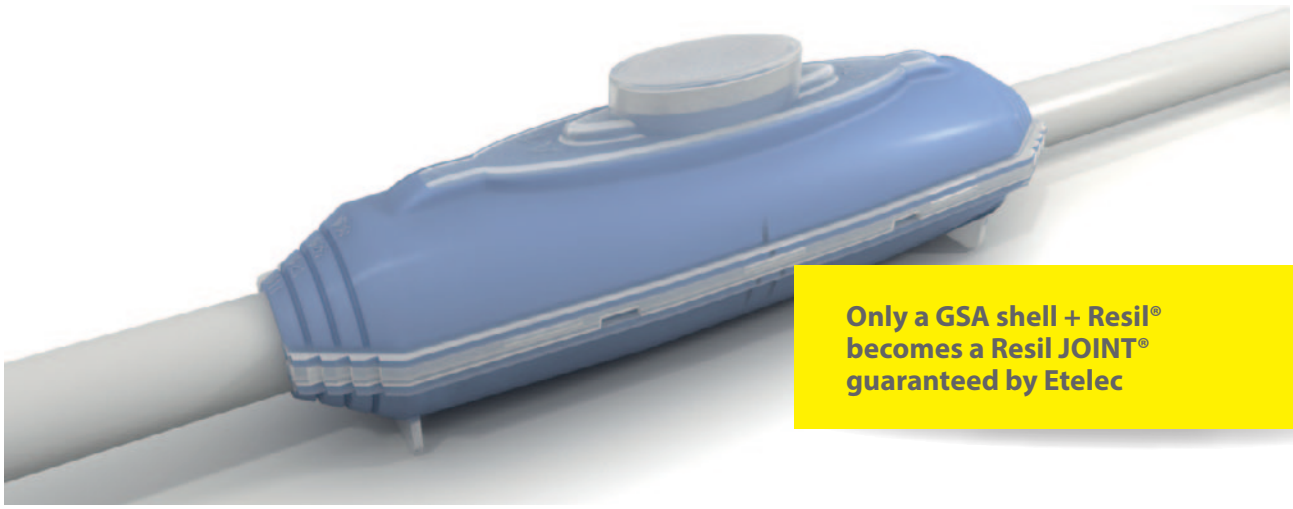
Straight connections



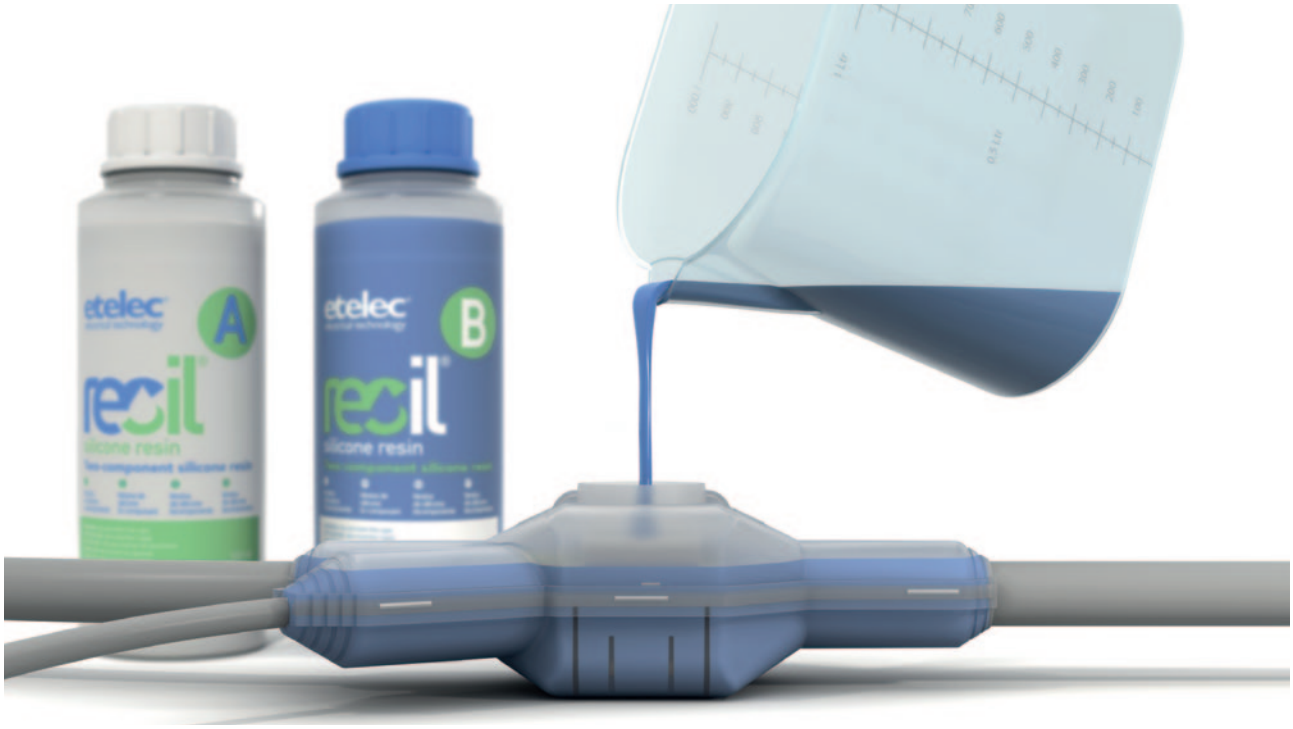
JOINT	GSA SHELL	+ RESIL® [liters]	DIMENSIONS (L × D) (mm)	CABLE DIAMETER MIN-MAX [mm]	SINGLE-CORE CABLES		MULTICORE CABLES		OPTIONAL CONNECTOR/ TERMINAL BLOCK **	
					CORES	CONDUCTOR* CROSS-SECTION MIN – MAX [mm²]	MAX CORES	CONDUCTOR* CROSS-SECTION MIN – MAX [mm²]		
RJA0	GSA0	0.13	190 × 45	8 – 26	⊙	6 – 35	⊛	1.5 – 10		-
RJA1	GSA1	0.20	190 × 51	7 – 30	⊙	6 – 35	⊛	1.5 – 16		-
					⊙	6 – 50		-		MR10
						-	⊛	1.5 – 10		MC510-RJ
RJA2	GSA2	0.33	240 × 62	8 – 35	⊙	25 – 185	⊛	4 – 25		-
					⊙	50 – 95		-		MR11
						-	⊛	2.5 – 25		MC525-RJ
RJA3S	GSA3S	0.55	357 × 62	23 – 35	⊙	50 – 185	⊛	25 – 50		-
					⊙	95 – 240		-		MR12
RJA3	GSA3	1.40	325 × 95	20 – 54	⊙	95 – 400	⊛	25 – 95		-
					⊙	150 – 300		-		MR13
RJA4	GSA4	2.90	520 × 100	33 – 55	⊙	240 – 500	⊛	95 – 150		-
RJA5	GSA5	6.50	670 × 120	45 – 73	⊙	400 – 630	⊛	150 – 300		-
RJA6	GSA6	9.80	870 × 200	55 – 80		-	⊛	185 – 400		-

* In the versions without connector/terminal block, the cross-section may vary depending on the connector/terminal block used.
** Technical specifications of connectors and terminal blocks on pages 121 and 119.

BEK armour continuity restoration kit for armoured cables is available (see page 121).



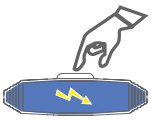
Only a GSA shell + Resil® becomes a Resil JOINT® guaranteed by Etelec



Resil Joint® RJB series
Silicone resin insulated joints for branch connections

Resil Joint® is a new line of silicone resin insulated joints for low voltage 0.6/1 kV branch connections of single and multicore cables with up to four cores compliant with EN 50393 standard, made using **Resil®** silicone resin as a filler for GSB Series shells.

Thanks to Resil's USE & REUSE feature, it is possible to mix only the amount of silicone resin required, keeping the remainder for later use.
The new measuring jug supplied with Resil 100 is marked with the filling levels specific to commonly used GSB shells, thus allowing for easy, fast and precise dosage of both parts.



RJB joints made in this way keep all the structural characteristics and advantages of Resil® silicone resin, allowing possible re-entering and at the same time providing protection against accidental contact with the live parts of the connection.

Unlike joints made with polyurethane and epoxy resins, Resil Joint® joints, using Resil® silicone resin, contain no isocyanates, and ensure maximum safety for the environment and operators.

RJB Series joints are classified as non-hazardous under European Regulation no. 1272/2008 (CLP) so any waste resulting from installation or the products themselves at the end of their life cycle can be disposed of as municipal solid waste.

Applications

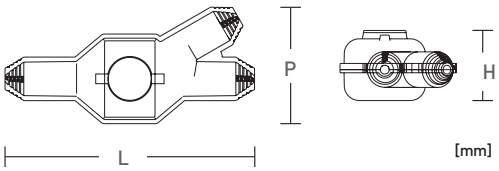
- Branch connections on 0.6/1 kV single-core cables and multicore cables with up to four cores (up to 5 cores with optional terminal block)
- For installation in cable ducts, underground, overhead, and submersed
- Street lighting systems

Advantages

- Re-enterable
- Flexibility of use
- Excellent electrical insulation up to 0.6/1 kV
- Good mechanical strength that prevents accidental contact with live parts
- Non-toxic and isocyanate-free

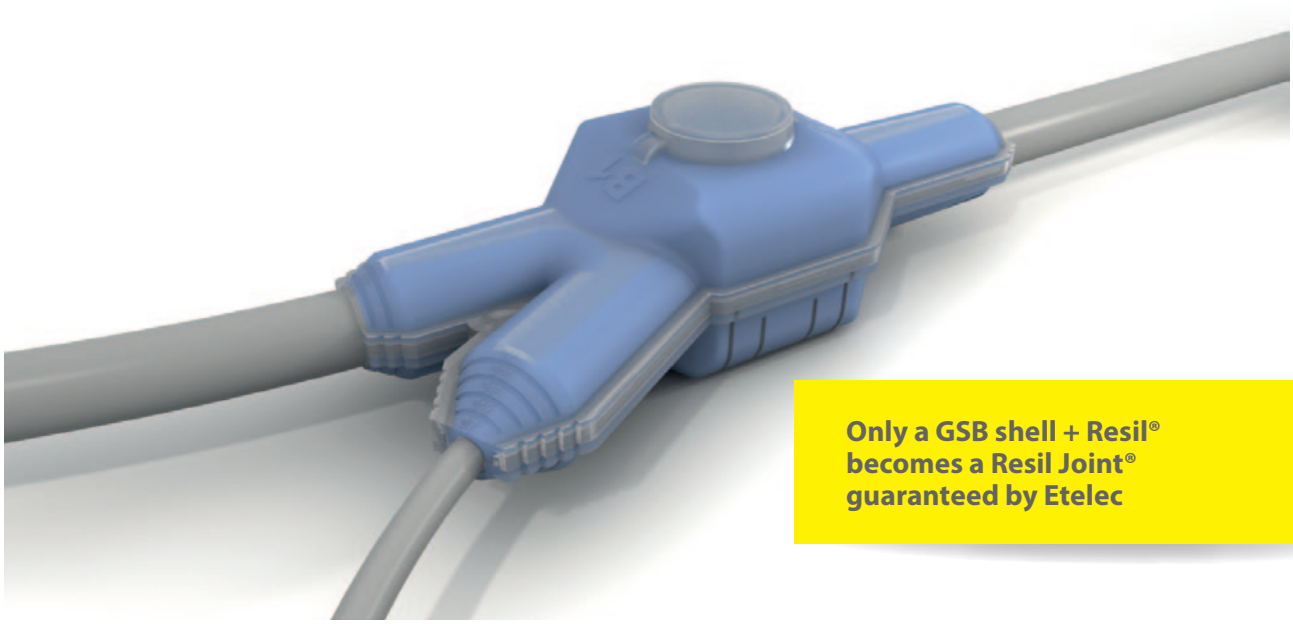
Resil Joint® RJB Series · Silicone resin joints

Y branch connections



JOINT	GSB SHELL	+ RESIL® [liters]	DIMENSIONS (L × P × H) [mm]	CABLE DIAMETER [mm] MAIN CABLE MIN-MAX	CABLE DIAMETER [mm] BRANCH CABLE MIN-MAX	MAX CORES	CONDUCTOR* CROSS-SECTION [mm²] MIN MAIN CABLE	MIN BRANCH CABLE	MAX MAIN CABLE	MAX BRANCH CABLE	OPTIONAL TERMINAL BLOCK **
RJB0	GSB0	0.10	140 × 60 × 43	7 – 23	7 – 23		1.5	1.5	6	6	-
RJB1	GSB1	0.25	200 × 94 × 55	7 – 23	7 – 23		4	2.5	6	6	-
							4	2.5	6	6	MU50610-RJ
RJB2	GSB2	0.40	240 × 113 × 68	12 – 27	12 – 27		6	2.5	25	25	-
							6	2.5	16	16	MU51635-RJ
RJB3	GSB3	1.60	360 × 155 × 90	13 – 45	13 – 45		25	25	95	95	-
							10	2.5	35	35	MU51635-RJ
RJB4	GSB4	2.00	298 × 128 × 128	35 – 51	17 – 33		50	25	120	50	-
RJB5	GSB5	2.90	430 × 130 × 130	30 – 55	17 – 40		50	50	185	70	-

* In the versions without terminal block, section may vary depending on the terminal block used.
** See the technical specifications of the terminal blocks on pages 121 and 119.



Only a GSB shell + Resil® becomes a Resil Joint® guaranteed by Etelec

01 LOW VOLTAGE

RESIN SOLUTIONS

01.6 FINAL SOLID STATE POLYURETHANE RESIN

SUBMARINE® Straight Series

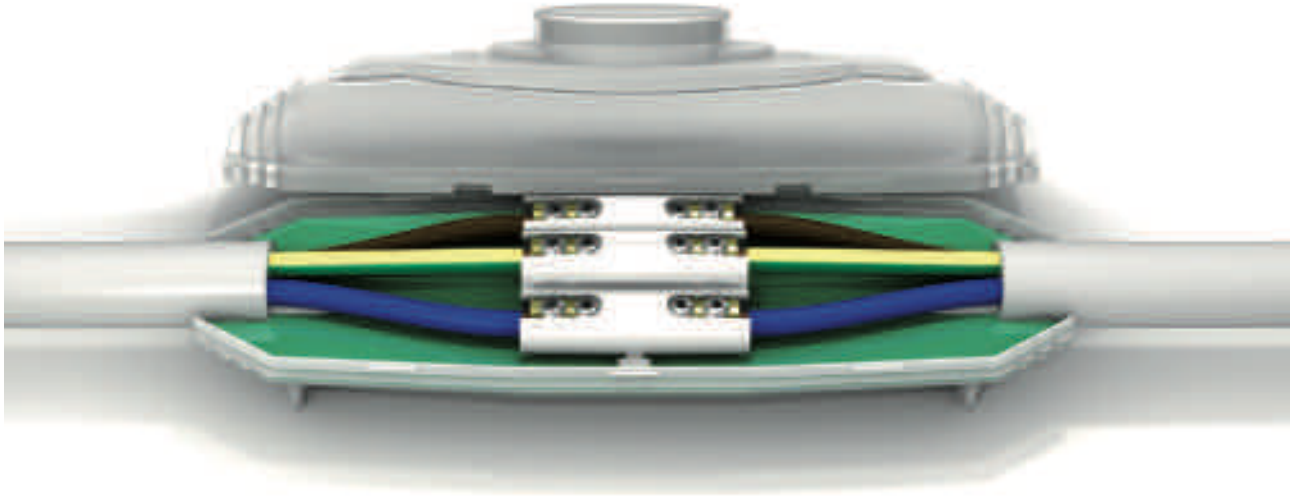
SUBMARINE® Branch Series

01.7 FINAL SOLID STATE RESIN FILLERS

RS - final solid state polyurethane resin in bags

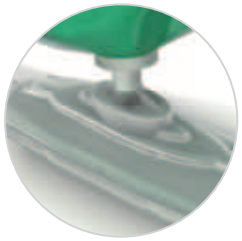
RS 5000 - final solid state epoxy resin in cans

LOW VOLTAGE CAST RESIN JOINT
submarine®



SUBMARINE® Straight Series
Cast resin joints for straight connections

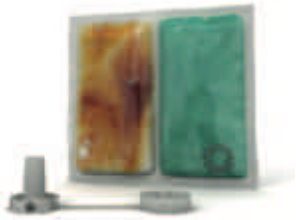
The SUBMARINE® Straight Series kits allow 0.6/1 kV single and multicore cable connections with up to five conductors. Kits include:



- two transparent half-shells with snap-shut closure, so that the connection is visible before the resin is poured;
- two-component final solid state polyurethane resin, already in the correct mixing ratio;
- **Direct Injection pouring system (DIPS)** allows to inject the pre-mixed resin inside the joint without contact with the external environment. No leakage and no personal contact, ensuring maximum safety for the operator and the environment;
- modular cores separator;
- in some versions, a pre-assembled insulated five-pole terminal block with Allen key

Technical specifications

- Compliant with the standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Double insulation (in versions with terminal block)
- Final solid state polyurethane resin (green colour)
- Shelf life: 3 years



Applications

- Straight connections on 0.6/1 kV single-core cables and multicore cables with up to five cores
- For installation in cable ducts, underground, overhead, submersed
- Street lighting systems

Advantages

- Permanent installation
- Excellent resistance at great depths
- Direct Injection pouring system (DIPS)
- Transparent shell
- Integrated cores separator
- Excellent electrical insulation
- Good mechanical resistance
- 7 sizes for conductors with cross-section up to 630 mm^2

Watch the video

SUBMARINE® Straight Series • final solid state polyurethane resin joints

Straight connections

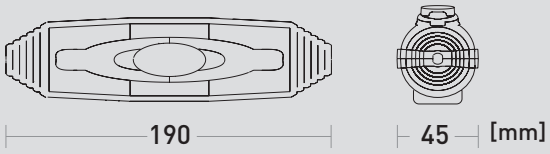
SIZE	CODE	SEPARATOR/ TERMINAL BLOCK	DIRECT INJECTION POURING SYSTEM	CABLE DIAMETER MIN-MAX [mm]	SINGLE-CORE CABLES		MULTICORE CABLES	
					NO. CORES	CONDUCTOR CROSS-SECTION MIN – MAX [mm²]	MAX NO. OF CORES	CONDUCTOR CROSS-SECTION MIN – MAX [mm²]
0	**SKA0**	✓		8 – 26	⊙	6 – 35	⁘	1.5 – 10
1	**SKA1**	✓	✓	7 – 30	⊙	6 – 35	⁘	1.5 – 16
	A10410	✓	✓			–	⁘	1.5 – 10
2	**SKA2**	✓	✓	8 – 35	⊙	25 – 185	⁘	4 – 25
	A20425	✓	✓			–	⁘	4 – 25
3S	**SKA3S**	✓	✓	23 – 35	⊙	50 – 185	⁘	25 – 50
3	**SKA3**	✓	✓	20 – 54	⊙	95 – 400	⁘	25 – 120
							⁘	25 – 95
4	**SKA4**	✓	✓	33 – 55	⊙	240 – 500	⁘	70 – 185
							⁘	95 – 150
5	**SKA5**	✓	✓	45 – 73	⊙	400 – 630	⁘	150 – 300
6	**SKA6**	✓	✓	55 – 80		–	⁘	185 – 400

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) are available in alternative

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 0

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



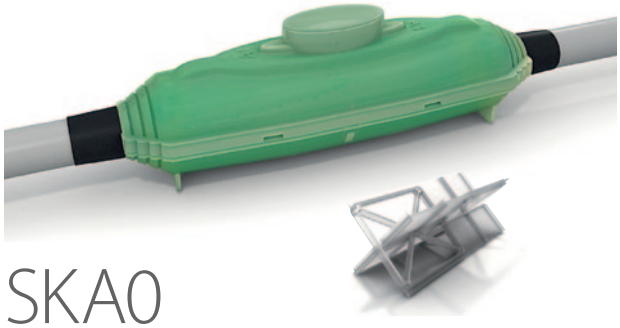
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA0

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 0
- Four-poles cores separator
- Bag of two-component resin
- Insulating tape

Table of use

STRAIGHT connections

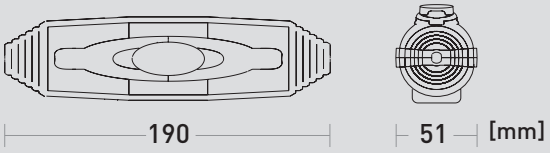
Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²)	
		min	max
●	8 – 26	6	35
●●		1.5	10
●●			
●●			

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 1

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



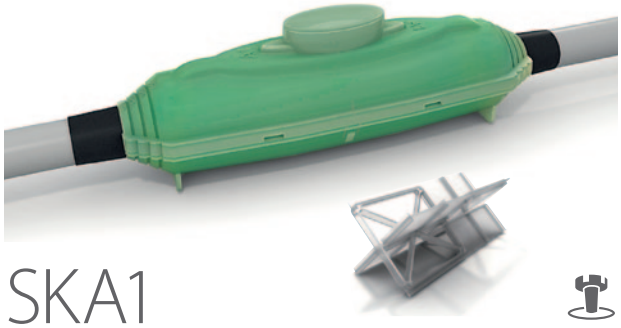
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA1

Polyurethane resin joint
Straight connections - cables up to 4 cores

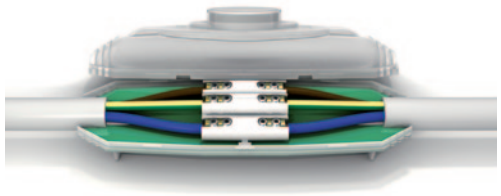
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 1
- Cores separator
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²) min	max
●	7 – 30	6	35
●● ●●● ●●●●		1.5	16



A10410

Polyurethane resin joint
Straight connections - cables up to 5 cores

Insulated five-pole terminal block included

- Double insulation

Kit contents

- Same as SKA1 kit plus:
- Pre-assembled insulated five-pole terminal block
- Allen key for the terminal block

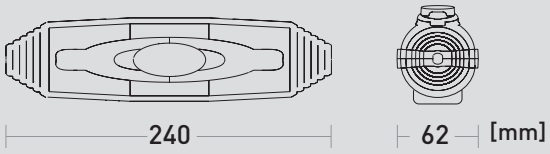
STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²) min	max
●●●●	7 – 30	1.5	10

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 2

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



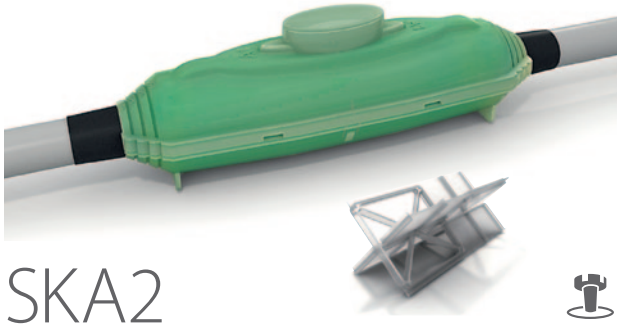
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA2

Polyurethane resin joint
Straight connections - cables up to 4 cores

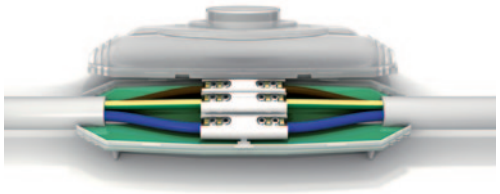
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 2
- Cores separator
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²) min	max
●	8 – 35	25	185
●●●		4	25



A20425

Polyurethane resin joint
Straight connections - cables up to 5 cores

Insulated five-pole terminal block included

- Double insulation

Kit contents

- Same as SKA2 kit plus:
- Pre-assembled insulated five-pole terminal block
- Allen key for the terminal block

STRAIGHT connections

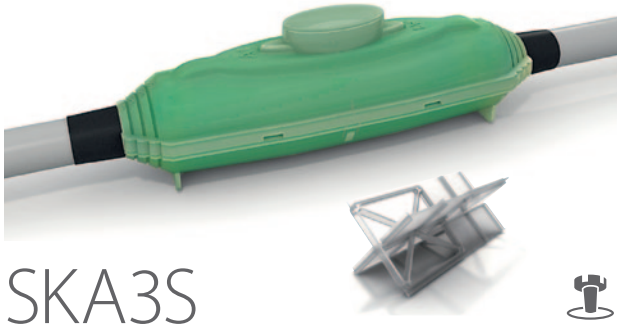
Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²) min	max
●●●	8 – 35	4	25

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

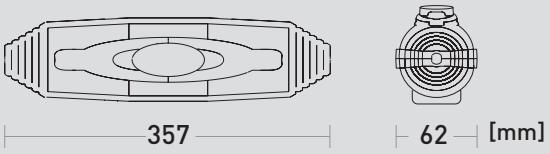
SIZE 3S

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



SKA3S

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included



Kit contents

- Two transparent polypropylene half-shells - Size 3S
- Four-pole cores separator
- Bag of two-component resin
- Direct Injection pouring system (DIPS)
- Insulating tape
- Latex protective gloves

Applications

- Underground installation
- Submersed installation
- Overhead installation

Table of use

STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²)	
		min	max
●	23 – 35	50	185
●●		25	50
●●			
●●			

Advantages

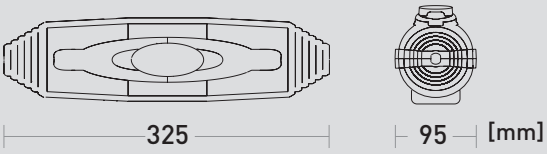
- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 3

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



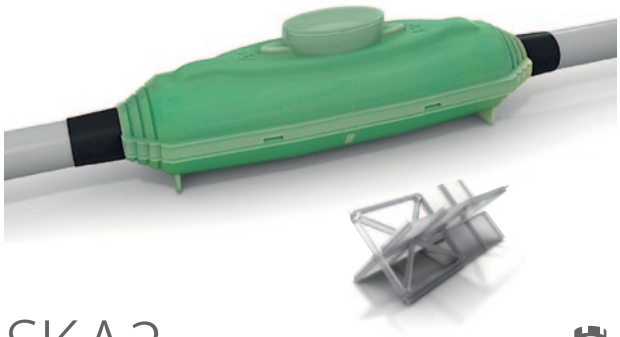
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA3

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 3
- Four-pole cores separator
- Bag of two-component resin
- Direct Injection pouring system (DIPS)
- Insulating tape
- Latex protective gloves

Table of use

STRAIGHT connections

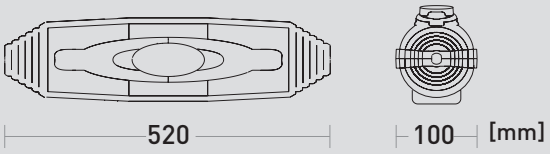
Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²)	
		min	max
●	20 – 54	95	400
●●		25	120
●●●			
●●●●		25	95

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 4

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



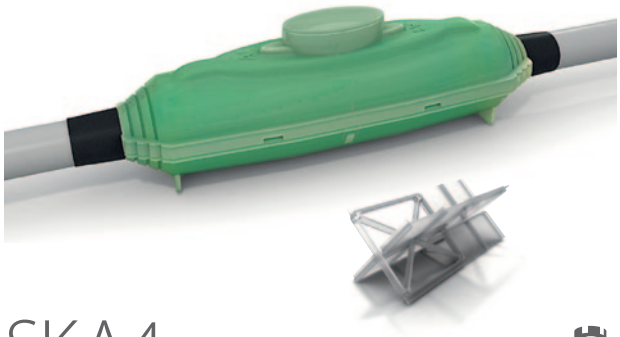
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA4

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 4
- Four-pole cores separator
- Bag of two-component resin
- Direct Injection pouring system (DIPS)
- Insulating tape
- Latex protective gloves

Table of use

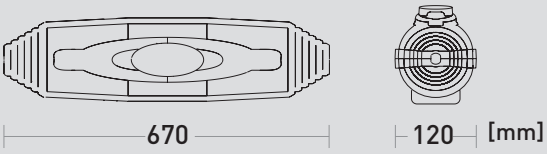
STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm²)	
		min	max
●	33 – 55	240	500
●●		70	185
●●●			
●●●●		95	150

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 5

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



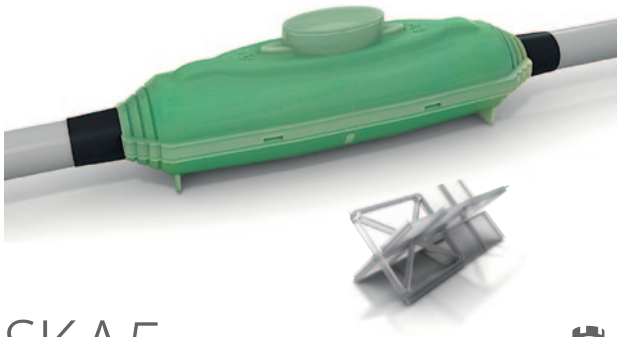
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA5

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 5
- Four-pole cores separator
- Bag of two-component resin
- Direct Injection pouring system (DIPS)
- Insulating tape
- Latex protective gloves

Table of use

STRAIGHT connections

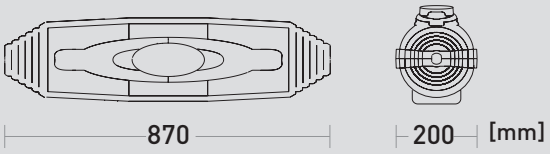
Cores	Cable diameter Ø (mm)	Conductor cross-section (mm^2) min	max
●	45 – 73	400	630
●●		150	300
●●			
●●			

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 6

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



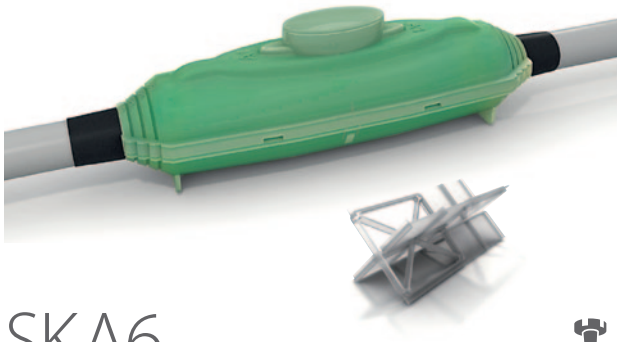
Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJA Series joints (page 68) available in alternative



SKA6

Polyurethane resin joint
Straight connections - cables up to 4 cores
Cores separator included

Kit contents

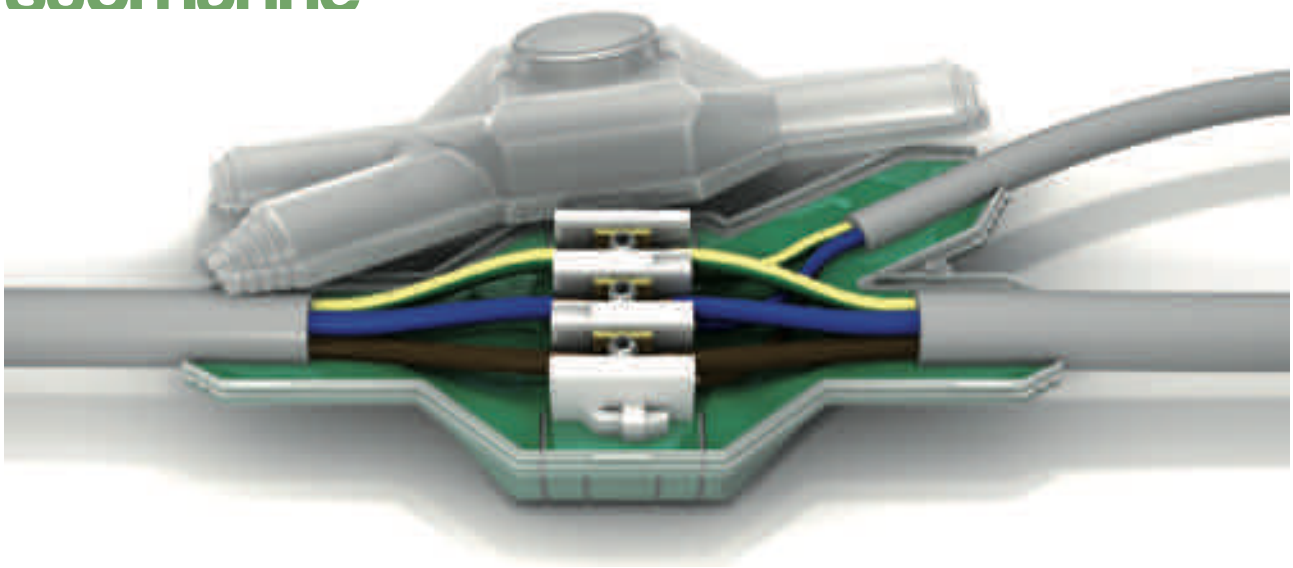
- Two transparent polypropylene half-shells - Size 6
- Four-pole cores separator
- Bag of two-component resin
- Direct Injection pouring system (DIPS)
- Insulating tape
- Latex protective gloves

Table of use

STRAIGHT connections

Cores	Cable diameter Ø (mm)	Conductor cross-section (mm^2)	
		min	max
●	55 – 80	185	400
●●			
●●			
●●			

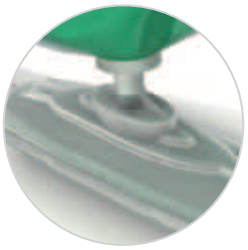
LOW VOLTAGE CAST RESIN JOINT
submarine®



SUBMARINE® Branch Series Cast resin joints for Y branch connections

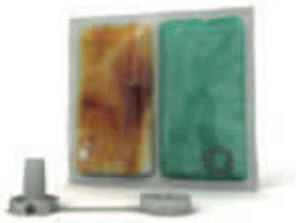
The SUBMARINE® Branch Series kits allow 0.6/1 kV single and multicore cable connections with up to five conductors. Kits include:

- two transparent half-shells with snap-shut closure and a 30° branch connector, so that the connection is visible before the resin is poured
- two-component solid state polyurethane resin, already in the correct mixing ratio
- **Direct Injection pouring system (DIPS)** allows to inject the pre-mixed resin inside the joint, without contact with the external environment. No leakage and no personal contact, ensuring maximum safety for the operator and the environment
- cores separator and in some versions an insulated five-pole terminal block – which enables connection without interrupting the main cable – and Allen key.



Technical specifications

- Compliant with the standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection degree: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI EN 50393 par. 8.6.3)
- Operating temperature: -20 to 90 °C
- Double insulation (in the version with terminal block)
- Final solid state polyurethane resin (green colour)
- Shelf life: 3 years



Applications

- Y branch connections for single and multicore 0.6/1 kV cables with up to five cores
- For installation in cable ducts, underground, overhead, underwater
- Street lighting systems

Advantages

- Permanent installation
- Excellent resistance at great depths
- Direct Injection Pouring System (DIPS)
- Transparent shell
- Integrated cores separator
- Excellent electrical insulation
- Good mechanical resistance
- 6 sizes for conductors with cross-section up to 630 mm^2

etelec® electrical technology

SUBMARINE® Branch Series • Resin joints

Y branch connections

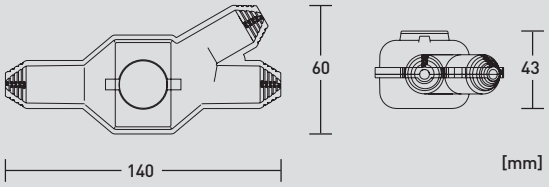
SIZE	CODE	SEPARATOR / TERMINAL BLOCK	DIRECT INJECTION POURING SYSTEM	NO. MAX CORES	MAIN CABLE DIAMETER MIN-MAX [mm]	BRANCH CABLE DIAMETER MIN-MAX [mm]
0	SKB0	–	–		7 – 23	7 – 23
1	SKB1				7 – 23	7 – 23
	B10406					
2	SKB2				12 – 27	12 – 27
	B20416					
3	SKB3				13 – 45	13 – 45
	B30435					
4	SKB4				35 – 51	17 – 33
5	SKB5				30 – 55	17 – 40

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) are available in alternative

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 0

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

SKB0

Polyurethane resin joint
Branch connections - cables up to 4 cores

Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 1
- Cores **separator**
- Bag of two-component resin
- Insulating tape
- Latex protective gloves

Branch connections

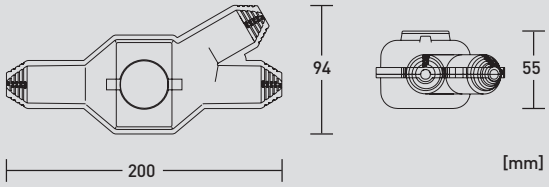
Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
⊙	7 – 23	7 – 23	1.5	1.5	50	50
⊙⊙ ⊙⊙⊙			1.5	1.5	10	10
⊙⊙⊙			1.5	1.5	6	6

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 1

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

SKB1

Polyurethane resin joint
Branch connections - cables up to 4 cores

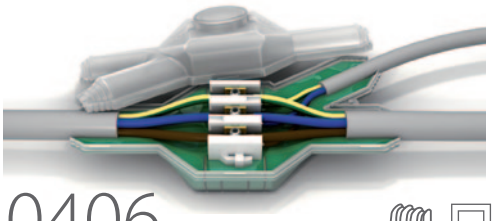
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 1
- Cores **separator**
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●	7 – 23	7 – 23	4	4	70	70
●● ●●●			4	2.5	16	16
●●●			4	2.5	6	6



B10406

Polyurethane resin joint
Branch connections - cables up to 5 cores

Insulated five-pole terminal block included

- Double insulation
- **Connection without interrupting the main cable**

Kit contents

- Same as SKB1 kit plus:
- Pre-assembled insulated **five-pole terminal block** with Allen key

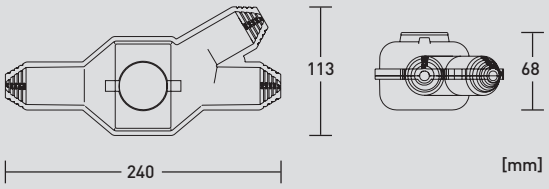
Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●●●	7 – 23	7 – 23	4	2.5	6	6

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 2

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

SKB2

Polyurethane resin joint
Branch connections - cables up to 4 cores

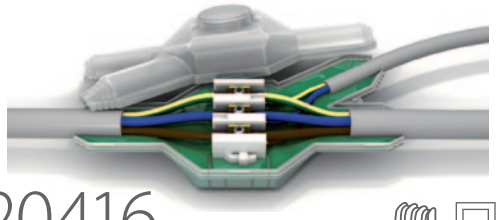
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 2
- Cores **separator**
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●	12 – 27	12 – 27	35	35	150	150
●●			6	6	25	25
●●●			6	6	25	25
●●●			6	2.5	25	25



B20416

Polyurethane resin joint
Branch connections - cables up to 5 cores

Insulated five-pole terminal block included

- Double insulation
- **Connection without interrupting the main cable**

Kit contents

- Same as SKB2 kit plus:
- Pre-assembled insulated **five-pole terminal block** with Allen key

Branch connections

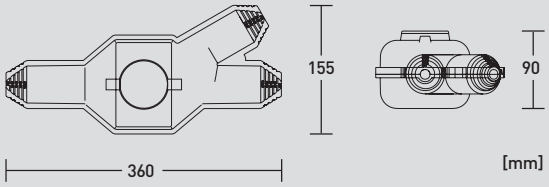
Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●●●	12 – 27	12 – 27	6	2.5	16	16

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

SIZE 3

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included



Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

SKB3

Polyurethane resin joint
Branch connections - cables up to 4 cores

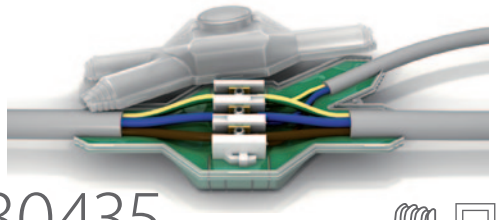
Cores separator included

Kit contents

- Two transparent polypropylene half-shells - Size 3
- Cores **separator**
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●	13 – 45	13 – 45	50	50	400	400
●●			25	25	150	150
●●●			25	25	120	120
●●●●			25	25	95	95



B30435

Polyurethane resin joint
Branch connections - cables up to 5 cores

Insulated five-pole terminal block included

- Double insulation
- **Connection without interrupting the main cable**

Kit contents

- Same as SKB3 kit plus:
- Pre-assembled insulated **five-pole terminal block** with Allen key

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
●●●●	13 – 45	13 – 45	10	2.5	35	35

LOW VOLTAGE CAST RESIN JOINT
submarine

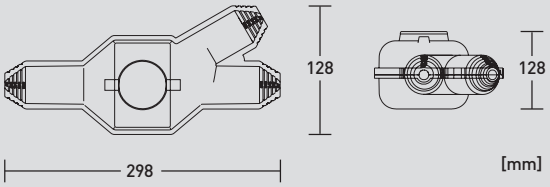
SIZE 4

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included

SKB4

Polyurethane resin joint
Branch connections - cables up to 4 cores

Cores separator included



Kit contents

- Two transparent polypropylene half-shells - Size 4
- Cores **separator**
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves

Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

Table of use

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm^2)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
⊙	35 – 51	17 – 33	300	300	500	400
⊙⊙			50	50	240	50
⊙⊙⊙			50	50	150	50
⊙⊙⊙⊙			50	25	120	50

etelec electrical technology

LOW VOLTAGE CAST RESIN JOINT
submarine

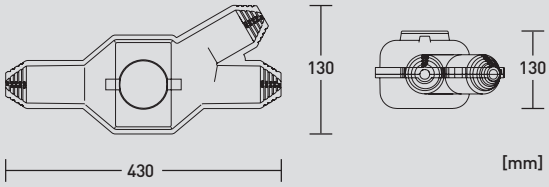
SIZE 5

- Compliant with standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- Protection level: equivalent to IPX8 (CEI EN 60529) tested in water at a depth of one metre (CEI 50393 par. 8.6.3)
- Final solid state polyurethane resin
- Operating temperature: -20 to 90 °C
- Shelf life: 3 years
- Cores separator included

SKB5

Polyurethane resin joint
Branch connections - cables up to 4 cores

Cores separator included



Kit contents

- Two transparent polypropylene half-shells - Size 5
- Cores **separator**
- Bag of two-component resin with DIPS
- Insulating tape
- Latex protective gloves
- Instructions

Applications

- Underground installation
- Submersed installation
- Overhead installation

Advantages

- Excellent electrical insulation
- Watertight sealing of the connection
- Excellent protection against corrosion
- Excellent mechanical resistance

Re-enterable, reusable, and eco-friendly silicone resin Resil Joint RJB Series joints (page 70) available in alternative

Table of use

Branch connections

Cores	Cable diameter Ø (mm)		Conductor cross-section (mm²)			
			min		max	
	main	branch	main cable	branch cable	main cable	branch cable
⊙	30 – 55	17 – 40	300	300	630	400
⊙⊙			120	120	300	120
⊙⊙⊙			70	70	185	95
⊙⊙⊙⊙			50	50	185	70

Final solid state polyurethane resin

TECHNICAL SPECIFICATIONS	NORMAL VALUE
colour	green
dielectric strength	>20 kV/mm
working time at 23 °C	15 min
cross-linking time at 23 °C	25 min
density	1.37 g/cm^3
SHORE D hardness	55
storage temperature	5 to 40 °C
shelf life	3 years

RS

Two-component polyurethane resin final solid state in bags

Applications

- All types of filling and insulation of electrical junction boxes with operating voltages of up to 1 kV

Contents of package

- Bag with removable baffle
- **Perforation Pouring System (PPS)**
- Instructions

Advantages

- Watertight sealing of casing and/or connection
- Excellent mechanical protection thanks to the final solid state
- Fluid and even pouring without accidental spillage, thanks to the **Perforation Pouring System (PPS)**

Available size

item	weight (g)	volume (L)
RS 150	150	0.110
RS 300	300	0.220
RS 400	400	0.290
RS 550	550	0.400
RS 650	650	0.470
RS 1650	1650	1.200

Final solid state epoxy resin

TECHNICAL SPECIFICATIONS	NORMAL VALUE
colour	grey
dielectric strength	>20 kV/mm
working time at 23 °C	15 min
cross-linking time at 23 °C	50 min
density	1.14 g/cm^3
SHORE D hardness	85
shelf life	2 years

RS 5000

Three-component epoxy resin
quartz-loaded
final solid state

Applications

- All types of filling and insulation of electrical junction boxes with operating voltages of up to 1 kV
- Ideal for filling even large spaces (thanks to quartz aggregate)

Advantages

- Watertight sealing of casing and/or connection
- Excellent mechanical protection thanks to the final solid state

Contents of package

- Can of resin
- Can of hardener
- Bag of powdered quartz
- Stirring stick

Available size

item	weight (kg)	volume (liters)
RS 5000	5	4.4

HEAT SHRINK SOLUTIONS

01.8 HEAT SHRINK JOINTS

GBT-C - straight with connectors

GBT / GBT-S - straight

01.9 HEAT SHRINK TERMINATIONS

TTBT - heat shrink terminations

01.10 PREMOULDED HEAT SHRINK PARTS

CTC - sealing caps

TBT - sealing breakout boots

01.11

HEAT SHRINK TUBING

THIN WALLS

GTUC - black and coloured spools
GTGV - yellow-green spool

ROLLBOX - dispenser box

TUBINGS - bars

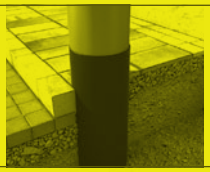
MEDIUM WALLS

GTMS - spool / bars with sealant

WITH WRAP-AROUND SLEEVE

GTCR - with wrap-around sleeve and sealant

ANTICORROSIVE FOR POLE PROTECTION



GTPA - sleeves for pole installation
RJS - spools for already installed poles

Installation tools
for heat shrink tubing

GBT
Heat shrink joints

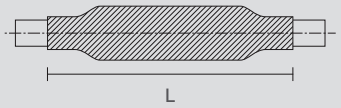
GBT-C

Heat shrink joint for power cables

Metal connectors with shear head bolts included

- Compliant with the standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- For up to 4-core extruded insulation cables

Watch the video



Applications

- Installation underwater, underground, in cable ducts
- **Ideal for submersed pipe joints**

Advantages

- Less bulky
- Available for a wide range of conductor cross-sections
- Resistance to chemicals and weathering
- Excellent electrical insulation
- Excellent sealing
- Good mechanical resistance
- UV resistant
- No expiry date

Kit contents

- Sheaths for insulating each core
- Sleeve with sealant for reconstructing the outer jacket of the cable
- **End-to-end connectors in tin-plated copper** with shear head bolts suitable for copper-copper, aluminum-aluminum, and copper-aluminum connections

Table of use

STRAIGHT connections

item	cable			joint
	max number of cores	conductor cross-section (mm^2)		length L (mm)
		min	max	
GBT-0416-C		10	16	330
GBT-0450-C		25	50	500
GBT-0495-C		50	95	500
GBT-4240-C		95	240	750
GBT-4300-C		150	300	750

GBT

Heat shrink joint for power cables

- Compliant with the standard for 0.6/1 kV low voltage joints (CEI EN 50393)
- For up to 4-core extruded insulation cables
- Metal connectors not included
- Available on request for three-core concentric neutral cables (GBT-N series) or armoured cables (GBT-A series)

Kit contents

- Sheaths for insulating each core
- Sleeve with sealant for reconstructing the outer jacket of the cable
- Tin-plated copper braid for concentric neutral connection (**GBT-N kit only**) or armouring continuity elements (**GBT-A kit only**)

Table of use

STRAIGHT connections

item	cable			joint
	max number of cores	conductor cross-section (mm^2) min	conductor cross-section (mm^2) max	length L (mm)
GBT-1016	●	10	16	250
GBT-1070	●	25	70	250
GBT-1150	●	95	150	330
GBT-1300	●	185	300	330
GBT-0406	✤	1.5	6	200
GBT-0416	✤	10	16	330
GBT-0435	✤	25	35	500
GBT-0470	✤	50	70	500
GBT-4150	✤	95	150	750
GBT-4300	✤	185	300	750

GBT-S

Heat shrink joint for signal and control cables

- Compliant with the standard for 0.6/1 kV low voltage joints (CEI EN 50393)

Kit contents

- Sleeve with sealant for reconstructing the outer jacket of the cable
- Pre-insulated compression connectors to insulate each conductor

Table of use

STRAIGHT connections

item	cable		joint
	number of conductors	conductor cross-section min – max (mm^2)	length L (mm)
GBT-007-S	4 – 7	1.5 – 2.5	330
GBT-014-S	10 – 14		330
GBT-030-S	16 – 30		375

Heat shrink terminations for low voltage

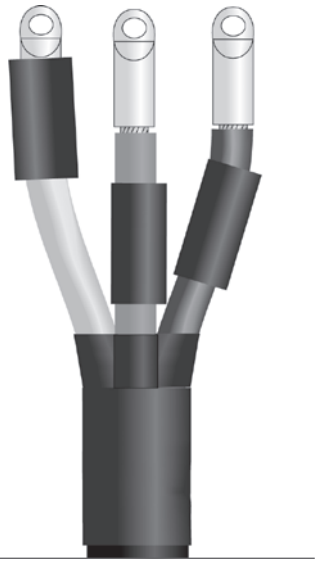
TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	10.5 MPa (min)	ISO 37
maximum stretch	300% (min)	ISO 37
density	1.0-1.3 g/cm^3	ISO 1183 Method A
hardness	40-60 SHORE D	ISO 868
accelerated aging		7 days at 150 °C ISO 188
- tensile strength	8.5 MPa (min)	ISO 37
- maximum stretch	100% (min)	ISO 37
low temperature flexibility	no cracks	4h at –40 °C ASTM D2671
dielectric strength	100 kV/cm	IEC 60243
volume resistivity	1×10^{12} Ω cm	IEC 60093
water absorption	0.5% (max) after 14 days at 23 °C	ISO 62 Method 1

Applications

- Breakout boot for LV 3, 4, and 5-cores cable heads up to 0.6/1 kV
- Suitable for use on copper and aluminium cables

Advantages

- Excellent mechanical protection
- Resistance to chemicals and weathering
- Excellent electrical insulation
- Excellent sealing
- UV resistant



TTBT

Heat shrink terminations kit for low voltage 0.6/1 kV

cables up to 3, 4, and 5-cores

Kit contents

- Heat shrink sheath cable lug protection
- TBT premoulded polyolefin heat shrink component with hot melt sealant

Metal cable lugs not included

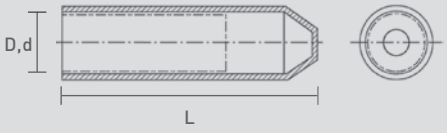
Versions for armoured cables or with longer sleeves available on request

Selection table

item	max conductor cross-section (mm^2)	
	min	max
TTBT-3 Terminations for three-core cables		
TTBT-3/16	4	16
TTBT-3/50	25	50
TTBT-3/150	70	150
TTBT-3/300	185	300
TTBT-4 Terminations for four-core cables		
TTBT-4/16	4	16
TTBT-4/50	25	50
TTBT-4/150	70	150
TTBT-4/300	185	300
TTBT-5 Terminations for five-core cables		
TTBT-5/10	4	10
TTBT-5/50	16	50
TTBT-5/95	70	95
TTBT-5/240	120	240

Premoulded heat shrink parts

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	12 MPa (min)	ISO 37
maximum stretch	200% (min)	ISO 37
density	0.9-1.2 g/cm^3	ISO 1183 Method A
hardness	50-70 SHORE D	ISO 868
accelerated aging		7 days at 150 °C ISO 188
- tensile strength	12 MPa (min)	ISO 37
- maximum stretch	200% (min)	ISO 37
low temperature flexibility	no cracks	4 h at –40 °C [ASTM D2671]
dielectric strength	100 kV/cm	IEC 60243
volume resistivity	1×10^{12} Ω cm	IEC 60093
water absorption	0.5% (max) after 24 h at 23 °C	ISO 62 Method 1



D *Diameter* **before** *shrinkage*
d *Diameter* **after** *shrinkage*
L *Supply length*

Advantages

- Excellent mechanical protection
- Resistance to chemicals and weathering
- Excellent electrical insulation
- Excellent sealing
- UV resistant

CTC

Premoulded heat shrink cap for single-core cable breakout boot up to 1 kv

in polyolefin with hot melt sealant

Applications

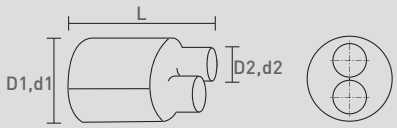
- Insulation of single-core cable heads up to 0.6/1 kV
- Sealing and protection of cable breakout boot during transport or installation

Selection table

item	dimensions		max cable diameter	
	D/d (mm/mm)	L (mm)	min (mm)	max (mm)
CTC-10/4	10/4	35	4.0	8.0
CTC-20/7,5	20/7.5	55	8.0	17.0
CTC-35/15	35/15	90	17.0	30.0
CTC-55/25	55/25	125	30.0	45.0
CTC-75/32	75/32	140	45.0	65.0
CTC-100/45	100/45	160	65.0	95.0
CTC-120/70	120/70	160	95.0	115.0

Premoulded heat shrink parts

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	10.5 MPa (min)	ISO 37
maximum stretch	300% (min)	ISO 37
density	1.0-1.3 g/cm^3	ISO 1183 Method A
hardness	40-60 SHORE D	ISO 868
accelerated aging		7 days at 150 °C ISO 188
- tensile strength	8.5 MPa (min)	ISO 37
- maximum stretch	100% (min)	ISO 37
low temperature flexibility	no cracks	4 h at –40 °C ASTM D2671
dielectric strength	100 kV/cm	IEC 60243
volume resistivity	1×10^{12} Ω cm	IEC 60093
water absorption	0.5% (max) after 14 days at 23 °C	ISO 62 Method 1



D1, D2 *Diameter* **before** *shrinkage*
d1, d2 *Diameter* **after** *shrinkage*
L *Supply length*

Advantages

- Excellent mechanical protection
- Resistance to chemicals and weathering
- Excellent electrical insulation
- Excellent sealing
- UV resistant

TBT/B

Premoulded heat shrink part for two-core cables breakout boot up to 1 kv

in polyolefin with hot melt sealant

Applications

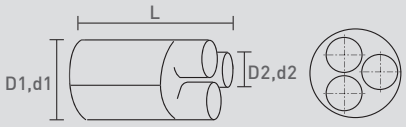
- Insulation of two-core cable heads up to 0.6/1 kV
- Sealing and protection of two-core LV cable division points

Selection table

item	dimensions (mm)			max conductor cross-section (mm^2)	
	D1/d1	D2/d2	L	min	max
TBT/B-25	32/10	14/4	70	5	25
TBT/B-150	48/32	22/7	172	35	150
TBT/B-300	86/42	40/16	200	185	300

Premoulded heat shrink parts

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	10.5 MPa (min)	ISO 37
maximum stretch	300% (min)	ISO 37
density	1.0-1.3 g/cm^3	ISO 1183 Method A
hardness	40-60 SHORE D	ISO 868
accelerated aging		7 days at 150 °C ISO 188
- tensile strength	8.5 MPa (min)	ISO 37
- maximum stretch	100% (min)	ISO 37
low temperature flexibility	no cracks	4 h at –40 °C ASTM D2671
dielectric strength	100 kV/cm	IEC 60243
volume resistivity	1×10^{12} Ω cm	IEC 60093
water absorption	0.5% (max) after 14 days at 23 °C	ISO 62 Method 1



D1, D2 *Diameter* **before** *shrinkage*
d1, d2 *Diameter* **after** *shrinkage*
L *Supply length*

Advantages

- Excellent mechanical protection
- Resistance to chemicals and weathering
- Excellent electrical insulation
- Excellent sealing
- UV resistant

TBT/T

Premoulded heat shrink part for three-core cables breakout boot up to 1 kv

in polyolefin with hot melt sealant

Applications

- Insulation of two-core cable heads up to 0.6/1 kV
- Sealing and protection of three-core LV cable division points

Selection table

item	dimensions (mm)			max conductor cross-section (mm^2)	
	D1/d1	D2/d2	L	min	max
TBT/T-35	38/13	15/4	85	4	35
TBT/T-150	53/20	25/8	160	50	150
TBT/T-300	79/33	39/12	200	185	300
TBT/T-500	110/48	55/18	215	185	500
TBT/T-630	140/56	70/27	245	400	630

TBT/Q

Premoulded heat shrink part for four-core cables breakout boot up to 1 kv

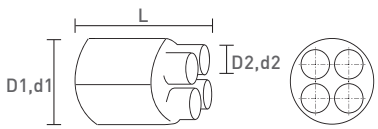
in polyolefin with hot melt sealant

Applications

- Insulation of two-core cable heads up to 0.6/1 kV
- Sealing and protection of four-core LV cable division points

Selection table

item	dimensions (mm)			max conductor cross-section (mm^2)	
	D1/d1	D2/d2	L	min	max
TBT/Q-35	41/16	14/4	80	4	35
TBT/Q-70	50/17	15/4	80	50	70
TBT/Q-150	58/26	21/7	140	95	150
TBT/Q-300	110/43	41/14	180	185	300



TBT/P

Premoulded heat shrink part for five-core cables breakout boot up to 1 kv

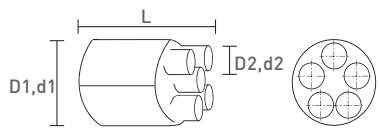
in polyolefin with hot melt sealant

Applications

- Insulation of two-core cable heads up to 0.6/1 kV
- Sealing and protection of five-core LV cable division points

Selection table

item	dimensions (mm)			max conductor cross-section (mm^2)	
	D1/d1	D2/d2	L	min	max
TBT/P-10	32/11	10/3	55	4	10
TBT/P-50	57/17	15/4	80	16	50
TBT/P-95	80/32	26/8	135	70	95
TBT/P-240	100/33	32/8	145	120	240



D1, D2 *Diameter* **before** *shrinkage*
d1, d2 *Diameter* **after** *shrinkage*
L *Supply length*

Heat shrink tubing
in low thickness polyolefin for general use

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	14.8 MPa	-
% stretch	460 %	-
tensile strength after aging	14.5 MPa	UL 224
% stretch after aging	480 %	UL 224
dielectric strength	17 kV/mm	UL 224
flammability	VW-1	UL 224
working temperature	–55 to +125 °C	-
minimum shrinkage temperature	70 °C	-

D *Diameter* **before** *shrinkage*
d *Diameter* **after** *shrinkage*
s *Thickness* **after** *free shrinkage*
L *Length*

Applications

- Electrical insulation up to 0.6/1 kV
- Protection of electrical cables and conductors from abrasion and corrosion
- Reconstruction of LV cable insulation
- Identification of cables and electrical conductors

Advantages

- Excellent mechanical protection
- Resistance to weathering
- Excellent electrical insulation
- High tensile strength
- UV resistant
- Can replace adhesive insulating and self-amalgamating tapes

Features

- Cross-linked polyolefin
- Thin walls
- Shrink ratio 2:1
- Halogen-free
- Flame retardant
- Good flexibility
- Compliant with directive 2011/65/UE (RoHS 2)

2:1

RoHS

GTUC
GTGV

Heat shrink tubing in spool

GTUC - black and coloured

item	tubing parameters			max cable diameter	
	D/d (mm)	s (mm)	L (m)	min (mm)	max (mm)
GTUC-1,2/0,6	1.2/0.6	0.45	300	0.7	0.9
GTUC-1,6/0,8	1.6/0.8	0.45	300	0.9	1.4
GTUC-2,4/1,2	2.4/1.2	0.50	150	1.4	1.8
GTUC-3,2/1,6	3.2/1.6	0.50	150	1.8	2.7
GTUC-4,8/2,4	4.8/2.4	0.50	150	2.7	3.6
GTUC-6,4/3,2	6.4/3.2	0.65	75	3.6	5.7
GTUC-9,5/4,8	9.5/4.8	0.65	75	5.7	8.5
GTUC-12,7/6,4	12.7/6.4	0.65	75	8.5	11.4
GTUC-19/9,5	19/9.5	0.75	75	11.4	18.0
GTUC-25,4/12,7	25.4/12.7	0.90	30	18.0	23.0
GTUC-38/19	38/19	1.00	30	23.0	35.0
GTUC-51/25,4	51/25.4	1.15	30	35.0	47.0
GTUC-76/38	76/38	1.27	15	47.0	70
GTUC-102/51	102/51	1.40	15	70	95

Available colours

0 *2* *4* *5* *6* *9* *X*

To complete the item reference, add the colour code at the end (eg, GTUC-1,2/0,6-0)

GTGV - yellow-green

item	tubing parameters			max cable diameter	
	D/d (mm)	s (mm)	L (m)	min (mm)	max (mm)
GTGV-3/1,5	3/1.5	0.51	150	1.7	2.8
GTGV-6/3	6/3	0.58	75	3.2	5.6
GTGV-8/4	8/4	0.64	75	4.5	7.6
GTGV-10/5	10/5	0.64	75	5.5	9.5
GTGV-12/6	12/6	0.64	75	6.5	11.5
GTGV-19/9	19/9	0.76	75	9.8	18.3
GTGV-26/13	26/13	0.89	30	14.0	25.0
GTGV-38/19	38/19	1.00	30	23.0	35.0
Colour					

ROLLBOX

Heat shrink tubing in dispenser box

black and coloured

item	tubing parameters			max cable diameter	
	D/d (mm)	s (mm)	L (m)	min (mm)	max (mm)
ROLLBOX 1,6	1.6/0.8	0.45	10	0.9	1.4
ROLLBOX 2,4	2.4/1.2	0.50	10	1.4	1.8
ROLLBOX 3,2	3.2/1.6	0.50	10	1.8	2.7
ROLLBOX 4,8	4.8/2.4	0.50	10	2.7	3.6
ROLLBOX 6,4	6.4/3.2	0.65	8	3.6	5.7
ROLLBOX 9,5	9.5/4.8	0.65	6	5.7	8.5
ROLLBOX 12,7	12.7/6.4	0.65	5	8.5	11.4
ROLLBOX 19	19/9.5	0.75	5	11.4	18.0
ROLLBOX 25,4	25.4/12.7	0.90	4	18.0	23.0

Available colours

BK RD BE

To complete the item reference, add the colour code at the end (eg. ROLLBOX 1.6 BK)

yellow-green

item	tubing parameters			max cable diameter	
	D/d (mm)	s (mm)	L (m)	min (mm)	max (mm)
ROLLBOX 6,4 YG	6.4/3.2	0.65	5	3.6	5.7
ROLLBOX 9,5 YG	9.5/4.8	0.65	3	5.7	8.5
ROLLBOX 12,7 YG	12.7/6.4	0.65	3	8.5	11.4
ROLLBOX 19 YG	19/9.5	0.75	2	11.4	18.0
ROLLBOX 25,4 YG	25.4/12.7	0.90	1.5	18.0	23.0

Colour

TUBINGS

Heat shrink tubing in 1 metre bars

TUBINGS

item	tubing parameters			max cable diameter	
	D/d (mm)	s (mm)	L (m)	min (mm)	max (mm)
GTUC/B-2,4/1,2	2.4/1.2	0.50	1.0	1.4	1.8
GTUC/B-3,2/1,6	3.2/1.6	0.50	1.0	1.8	2.7
GTUC/B-4,8/2,4	4.8/2.4	0.50	1.0	2.7	3.6
GTUC/B-6,4/3,2	6.4/3.2	0.65	1.0	3.6	5.7
GTUC/B-9,5/4,8	9.5/4.8	0.65	1.0	5.7	8.5
GTUC/B-12,7/6,4	12.7/6.4	0.65	1.0	8.5	11.4
GTUC/B-19/9,5	19/9.5	0.75	1.0	11.4	18.0
GTUC/B-25,4/12,7	25.4/12.7	0.90	1.0	18.0	23.0
GTUC/B-38/19	38/19	1.00	1.0	23.0	35.0
GTUC/B-51/25,4	51/25.4	1.15	1.0	35.0	47.0

Available colours

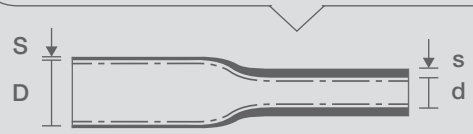
BK BE VE RD BW

YE GR WH TR YG*

To complete the item reference, add the colour code at the end (eg. GTUC/B-2.4/1.2-BK)

** Yellow-green tubing is available only from measure 3.2/1.6 to measure 38/19*

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	14 MPa	ISO 37
elongation at break	350 %	ISO 37
hardness	50-70 SHORE D	ISO 868
dielectric strength	20 kV/mm	IEC 60243
water absorption	0.25% max after 14 days at 23 °C	ISO/R 62
working temperature	–55 °C to +125 °C	
minimum shrinkage temperature	70 °C	
resistance to weathering	GTMS sleeves contain carbon black for UV protection	



D *Diameter* **before** *shrinkage*
S *Thickness* **before** *shrinkage*
d *Diameter* **after** *shrinkage*
s *Thickness* **after** *free shrinkage*
L *Length*

Applications

- Electrical insulation up to 0.6/1 kV
- Protection of electrical cables and conductors from abrasion and corrosion
- Reconstruction of LV cable insulation
- Permanent installation under water (for bar version with sealant)

Advantages

- Excellent mechanical protection
- Resistance to weathering
- Excellent electrical insulation
- High tensile strength
- UV resistant
- Can replace adhesive and self-amalgamating insulating tapes

Features

- Cross-linked polyolefin
- Medium walls
- High shrink ratio (3:1)
- Halogen-free
- Flame retardant
- Colour black
- Compliant with directive 2011/65/UE (RoHS 2)

GTMS

Heat shrink tubing
bars with sealant
and spool without sealant
Medium-walled polyolefin

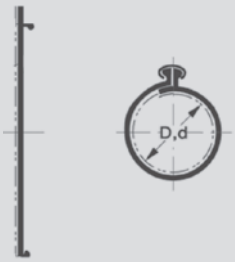
Tubing bars with sealant

item	tubing **parameters**				max cable diameter	
	D/d (mm/mm)	S (mm)	s (mm)	L (m)	min (mm)	max (mm)
GTMS-10/3-1000/S	10/3	0.3	1.0	1.0	3.5	9.0
GTMS-16/5-1000/S	16/5	0.3	1.4	1.0	5.5	14.0
GTMS-25/8-1000/S	25/8	0.4	2.0	1.0	8.5	22.0
GTMS-35/12-1000/S	35/12	0.4	2.0	1.0	13.0	32.0
GTMS-50/16-1000/S	50/16	0.5	2.0	1.0	17.5	45.0
GTMS-63/19-1000/S	63/19	0.6	2.4	1.0	21.0	57.0
GTMS-75/22-1000/S	75/22	0.6	2.7	1.0	24.0	68.0
GTMS-85/25-1000/S	85/25	0.6	2.8	1.0	28.0	77.0
GTMS-95/29-1000/S	95/29	0.7	3.1	1.0	32.0	86.0
GTMS-115/34-1000/S	115/34	0.7	3.1	1.0	37.0	104.0
GTMS-140/42-1000/S	140/42	0.7	3.1	1.0	46.0	126.0
GTMS-160/50-1000/S	160/50	0.7	3.2	1.0	55.0	144.0
GTMS-180/60-1000/S	180/60	0.7	3.2	1.0	66.0	162.0

Tubing spool without sealant

item	tubing **parameters**				max cable diameter	
	D/d (mm/mm)	S (mm)	s (mm)	L (m)	min (mm)	max (mm)
GTMS-10/3-A/U	10/3	0.3	1.0	40	3.5	9.0
GTMS-16/5-A/U	16/5	0.3	1.4	40	5.5	14.0
GTMS-25/8-A/U	25/8	0.4	2.0	40	8.5	22.0
GTMS-35/12-A/U	35/12	0.4	2.0	30	13.0	32.0
GTMS-50/16-A/U	50/16	0.5	2.0	25	17.5	45.0
GTMS-63/19-A/U	63/19	0.6	2.4	15	21.0	57.0
GTMS-75/22-A/U	75/22	0.6	2.7	10	24.0	68.0

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
tensile strength	17 MPa [min]	ISO 37
maximum stretch	350 % [min]	ISO 37
density	1.0-1.2 g/cm^3	ISO 1183 Method A
hardness	50-70 SHORE D	ISO 868
accelerated aging		ISO 188 [7 days at 150 °C]
- tensile strength	14 MPa [min]	ISO 37
- maximum stretch	300% [min]	ISO 37
thermal endurance	120 °C	IEC 60216
low temperature flexibility	No cracks	ASTM D2671 [4 h at -40 °C]
dielectric strength	180 kV/cm (1 mm wall) 120 kV/cm (3.5 mm wall)	IEC 60243
volume resistivity	1×10^{12} Ω cm	IEC 60093
water absorption	0.5% max after 14 days at 23°C	ISO 62 Method 1
resistance to fluids	certified	ISO 1817 [7 days in transformer oil]
fungus-resistant	certified	ASTM G21

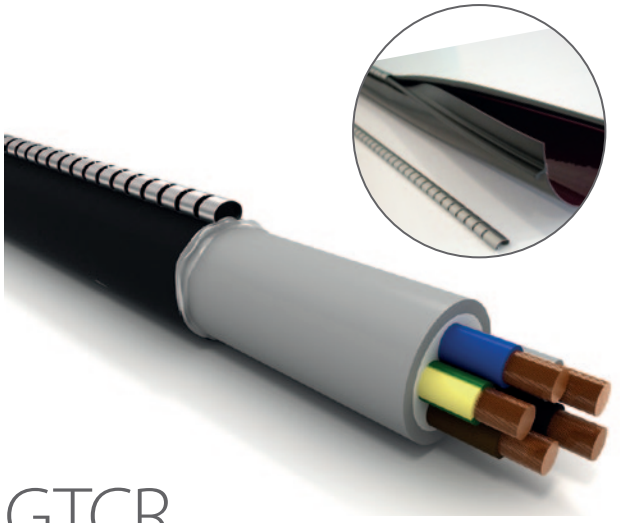


D = Diameter before shrinkage

d = Diameter after shrinkage

Advantages

- High resistance to abrasion and impact
- High resistance to weathering and UV rays
- Can replace adhesive and self-amalgamating insulating tapes



GTCR

Heat shrink wrap-around zip sleeve

Thick-walled polyolefin - with sealant
1 metre bars

Applications

- Electrical insulation up to 0.6/1 kV
- Suitable for repairs to the outer sleeve of installed cables

Features

- Thick-walled cross-linked polyolefin with hot melt sealant
- Shrink ratio 3:1
- Halogen-free
- Supplied in 1 m bars
- Colour black

Selection table

item	tubing **parameters**				max cable diameter	
	D/d (mm/mm)	T (mm)	t (mm)	L (m)	min (mm)	max (mm)
GTCR-34/10-1000/S	34/10	0.3	2.4	1.0	11	21
GTCR-53/13-1000/S	53/13	0.3	2.0	1.0	17	32
GTCR-84/20-1000/S	84/20	0.3	2.0	1.0	24	50
GTCR-107/29-1000/S	107/29	0.3	2.0	1.0	31	65
GTCR-143/36-1000/S	143/36	0.3	1.8	1.0	33	86
GTCR-198/55-1000/S	198/55	0.3	2.1	1.0	56	120
GTCR-250/98-1000/S	250/98	0.4	1.7	1.0	103	150

TECHNICAL SPECIFICATIONS	NORMAL VALUE	TESTING METHOD
dielectric strength	25 kV/mm	ASTM D149
maximum stretch	500 %	ASTM D638
water absorption	0.5% max after 14 days at 23°C	ASTM D570
impact resistance	> 15 J	DIN 30672
puncture voltage	40 kV	ASTM D149
thickness	1.5 mm [max]	-

D *Diameter* **before** *shrinkage*
d *Diameter* **after** *shrinkage*
L *Length*

Applications

- Corrosion protection for metal poles
- Street lighting
- Electric traction
- Traffic lights
- Signs and signals

Features

- Cross-linked polyolefin
- Thick walls
- With hot melt sealant
- Colour black
- Supplied in 450 mm sleeves (GTPA series) or in 430 mm spools (RJS series)

Advantages

- Anticorrosive
- Perfect seal against moisture

GTPA

Anticorrosive heat shrink sleeve for pole protection

Tubular sleeve for pole installation

Selection table

item	tubing **parameters** D/d (mm/mm)	L (mm)	pole diameter min – max (mm)
GTPA-90/50-450	90/50	450	60 – 80
GTPA-125/60-450	125/60		85 – 110
GTPA-150/60-450	150/60		115 – 140
GTPA-200/75-450	200/75		145 – 190
GTPA-252/95-450	252/95		175 – 245

RJS

Anticorrosive heat shrink sleeve for pole protection

Spool for installed poles

item	Spool size length (m)	height (mm)
RJS-430X30M/C	30	430

WPCP

Anticorrosive heat shrink sleeve for pole protection

Closure for open-end RJS

item	tubing parameters length (mm)	height (mm)
WPCP-IV-100X438	100	430

Installation tools for heat shrink tubing

AB 76 BR

code AB76BR

Portable gas heat gun

Advantages

- Portable, affordable, lightweight, and safe

Applications

- Installation of sleeves and heat shrink accessories

Features

- Autonomy: 1 hour and 30 minutes
- Maximum burner outlet temperature: 750 °C
- 340 gram replaceable gas bottle (item AC 19 BP)

EXTRATOOLS

Air·on

code HL1606

Portable electric heat gun
with adjustable temperature

Advantages
- Temperature adjustable air flow
- Also suitable for working on small sheaths, thanks to its adjustable temperature and air flow

Applications
- All-purpose electric air gun, suitable for installing heat shrink sleeves and accessories

Features
- Temperature adjustment knob
- Air flow temperature: 50-400/550 °C
- 2-level adjustable air flow: 190 or 350 l/min
- Reduction nozzle included
- Power 1800 W

Air·on display

code HL1610

Portable electric heat gun
with temperature control and display

Advantages
- Fast and precise air flow temperature control
- Also suitable for working on small sheaths, thanks to its adjustable temperature and air flow

Applications
- All-purpose electric air gun, suitable for installing heat shrink sleeves and accessories

Features
- Button and LCD temperature control display
- Air flow temperature: 50-450/650 °C
- 2-level adjustable air flow: 250 or 550 l/min
- Reduction nozzle included
- Power 2000 W

Button and LCD temperature control display

02 CONNECTING COMPONENTS

etelec
electrical technology

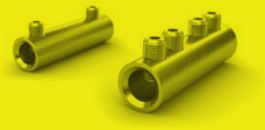
02.1 CONNECTORS

SPRING BOX® - compact insulated lever connector

TBOX® - insulated screw terminals with screw-type clamping

MU - U connector with screw-type clamping

MU-RJ - insulated terminal block with screw-type clamping for branch joints



MC - cylindrical end-to-end connector with screw-type clamping

MC-RJ - insulated terminal block with screw-type clamping for straight joints

CP - compression connector

CTT - pre-insulated heat shrink compression connector

MR - cylindrical end-to-end connector with shear head bolts

02.2 ARMOURING REPAIR KIT

BEK - cable armouring repair kit

BOX SPRING®
lever connectors

Compact insulated lever connectors.

Protected and secure connections in 2 simple steps.

- Compliant with Low Voltage Directive 2014/35/EU in accordance with EN 60947-7-1 and EN 60998-2-2 standards TÜV-Rheinland certificate (no. R 50349910)
- Rated voltage: 600 V
- Rated current: 32 A
- Cable cross-section (rigid and flexible): 0.2 - 4 mm^2
- IP20 protection degree
- With voltage test point

etelec
electrical technology

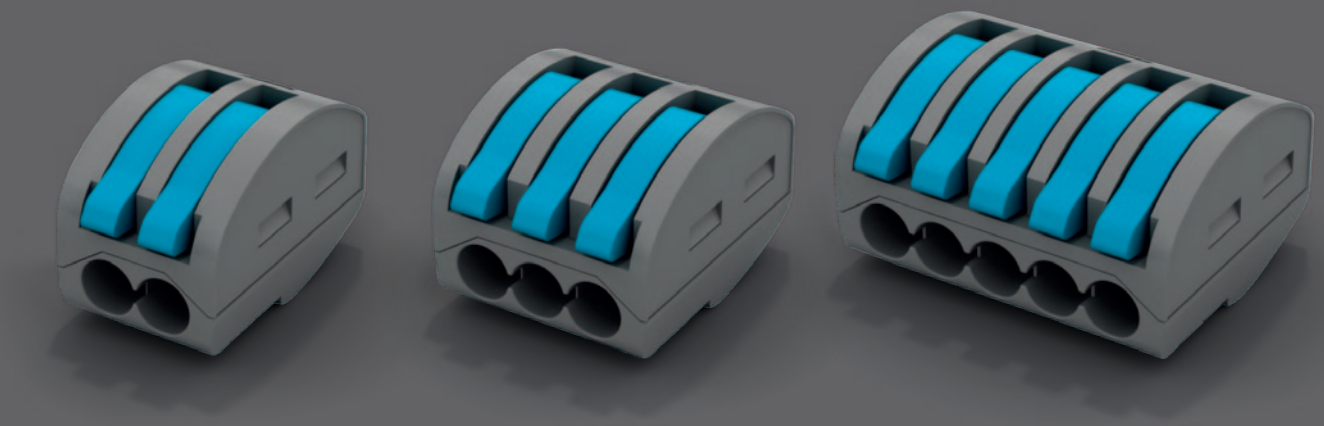
Applications

- Connecting low voltage small cross-section cables (lighting fixtures, automation for windows, doors, and gates)
- Connecting telephone system and telecommunications cables
- Connecting audio systems and cable radio
- Terminal insulation for live cables

Advantages

- Compact size
- Quick and easy installation without tools
- Reliable connections thanks to spring-loaded technology
- For use with both rigid and flexible small cross-section cables
- No risk of damage to cores
- Connect and disconnect each conductor without shutting off the line
- Ideal for connecting conductors of different sized cross-sections
- Voltage test point

CE TÜV **EN 60947-7-1**
EN 60998-2-2



SPRING BOX lever connectors

- Compliant with Low Voltage Directive 2014/35/EU in accordance with EN 60947-7-1 and EN 60998-2-2 standards
  TÜV-Rheinland certificate (n. R 50349910)
- Rated voltage: 600 V
- Rated current: 32 A
- Core cross-section (rigid and flexible): 0.2 - 4 mm²
- IP20 protection grade
- With voltage test point

TÜV Rheinland

Spring Box®

Insulated lever connectors

Applications

- Connecting low voltage small cross-section cables (lighting fixtures, automation for windows, doors, and gates)
- Connecting telephone system and telecommunications cables
- Connecting audio systems and cable radio
- Terminal insulation for live cables

Advantages

- Compact size
- Quick and easy installation without tools
- Reliable connections thanks to spring-loaded technology
- For use with both rigid and flexible small cross-section cables
- No risk of damage to cores
- Connect and disconnect each conductor without shutting off the line
- Ideal for connecting conductors of different sized cross-sections
- Voltage test point

Selection table

item	number of ways	rated cross-section (mm²)	dimensions (mm)		
			width	depth	height
Spring Box 2	2	0.2–4	12.4	20.5	14.5
Spring Box 3	3		17.0		
Spring Box 5	5		26.6		

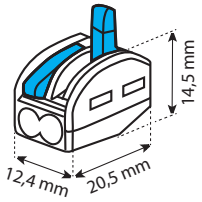
Spring Box 2

code SBOX2

2-way insulated lever connector

Connection capacity

no. poles	no. cables/ pole	cross-section (mm²)
1	2	0.2 – 4



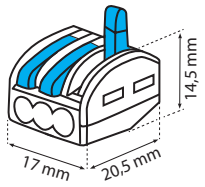
Spring Box 3

code SBOX3

3-way insulated lever connector

Connection capacity

no. poles	no. cables/ pole	cross-section (mm²)
1	3	0.2 – 4



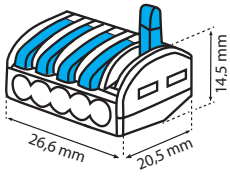
Spring Box 5

code SBOX5

5-way insulated lever connector

Connection capacity

no. poles	no. cables/ pole	cross-section (mm²)
1	5	0.2 – 4



etelec electrical technology

TBOX
WIRE CONNECTORS

- Transparent polycarbonate casing
- Brass conductor element
- IP20 protection grade
- CE marking
- IMQ approved

Applications

- Low voltage 0.6/1 kV cable connections inside junction boxes or for overhead connections (e.g., lighting fixtures, ceilings)
- Suitable for use in the home and in residential environments

Features

- Transparent polycarbonate casing
- Brass conductor element
- IP20 protection grade
- CE marking
- IMQ approved

Connection capacity

item	max core cross-section (mm^2)		
	2 cores (rated cross-section)	3 cores	4 cores
TBOX 015	1.5	1	0.75
TBOX 025	2.5	1.5	1
TBOX 040	4	2.5	1.5
TBOX 060	6	4	2.5
TBOX 100	10	6	4
TBOX 160	16	10	6
TBOX 250	25	16	10
TBOX 350	35	25	16

TBOX

Insulated screw terminal with screw-type clamping

10-pole strip

- Galvanized steel screws with slotted head (from TBOX 15 to TBOX 100) or Phillips head (TBOX 160)

Selection table

item	number of poles	rated cross-section (mm^2)	rated voltage (V)	rated current (A)
TBOX 15	10	1.5	450	24
TBOX 25		2.5		24
TBOX 40		4		32
TBOX 60		6	500	41
TBOX 100		10		57
TBOX 160		16		76

TBOX

Insulated screw terminal with screw-type clamping

1 pole

- Galvanized steel grain with Allen head

Selection table

item	number of poles	rated cross-section (mm^2)	rated voltage (V)	rated current (A)
TBOX 250	1	25	500	101
TBOX 350		35		125

MU

U connector with screw-type clamping

Applications

- Connection of electrical conductors up to 0.6/1 kV

Advantages

- Multi-section
- Allows connection without interruption of the main cable
- Can be installed without the use of seaming tools

Features

- Brass connector
- Steel hex head tightening grub

Selection table

item	Max conductor cross-section (mm^2)	
	main cable	branch cable
MU 6/10	25	10
MU 16/35	50	6

MU-RJ

Insulated terminal block with screw-type clamping for branch joints

Applications

- Resil Joint® silicone resin joints for branch cable connections (RJB Series, page 70)

Advantages

- Allows connection without interruption of the main cable
- Can be installed without the use of seaming tools
- Tightening key included

Features

- PA insulating body
- Brass connectors **suitable for copper-copper connections**
- Steel hex head tightening grubs

Selection table

item	cores	conductor cross-section (mm^2)				Terminal block length (mm)
		min		max		
		main cable	branch cable	main cable	branch cable	
MU50610-RJ	5	6	2.5	16	16	32
MU51635-RJ	5	16	2.5	35	35	38

MC

Cylindrical end-to-end connector with screw-type clamping

Applications

- Straight connection of electrical conductors up to 0.6/1 kV

Advantages

- Can be installed without the use of seaming tools

Features

- Brass connector
- Steel hex head tightening grubs

Selection table

item	Min-max conductor cross-section (mm^2)	Connector length (mm)
MC10	1.5 – 10	30
MC25	2.5 – 25	40

MC-RJ

Insulated terminal block with screw-type clamping for straight joints

Applications

- Shark Sixeight® gel insulated joints (pages 10, 12 and 14) and Resil JOINT® silicone resin joints (RJA Series, page 68) for straight cable connections

Advantages

- Can be installed without the use of seaming tools
- Tightening key included

Features

- PA insulating body
- Brass connectors **suitable for copper-copper connections**
- Steel hex head tightening grubs

- Available on request with tin-plated aluminium connectors for copper-copper, aluminium-aluminum, and copper-aluminium connections

Selection table

item	cores	Conductor cross-section min – max (mm^2)	Terminal block length (mm)
MC306-RJ	3	1.5 – 10	40
MC510-RJ	5	1.5 – 10	40
MC525-RJ	5	2.5 – 25	50

CP

Insulated compression connector

Applications

- Straight connection and insulation of electrical conductors up to 0.6/1 kV
- Connection of conductors for Shark Sixeight 6801 gel insulated joints (page 10)

Features

- Tin-plated copper conductor element suitable for copper-copper and aluminium-aluminium cables
- Supplied in a pack of 5 pieces

Selection table

item	Conductor cross-section min – max (mm^2)	Connector colour
CP 306	2.5 – 6	yellow

CTT

Insulated heat shrink compression connector with internal hot melt sealant

Applications

- Straight connection and insulation of electrical conductors up to 0.6/1 kV

Advantages

- Multi-section
- Easy, fast, and secure
- Sealing and protection against moisture, condensation, and corrosion
- Vibration protection
- The finished connection can be inspected through the transparent sheath

Features

- Insulating polyolefin
- Internal hot melt sealant
- Operating temperature: –55 to 125 °C

Selection table

item	Conductor cross-section min – max (mm^2)	Connector colour
CTT 0.5/1.5	0.5 – 1.5	red
CTT 1.5/2.5	1.5 – 2.5	light blue
CTT 3/6	3 – 6	yellow

MR

Cylindrical end-to-end connector with shear head bolts

Applications

- Straight connection of electrical conductors up to 0.6/1 / 1 kV

Advantages

- Can be installed without the use of seaming tools

Features

- Tin-plated aluminium connector
- Steel tightening bolt with shear head

Selection table

item	Min-max conductor cross-section (mm^2)	Connector length (mm)
MR10	6 – 50	53
MR11	50 – 95	58
MR12	95 – 240	119
MR13	150 – 300	130

BEK

Cable armouring repair kit

Applications

- Restoring electrical continuity in low voltage cable connection armouring up to 0.6/1 kV

Kit contents

- 2 steel constant force contact springs
- Tin-plated copper braid

Selection table

item	application on diameters (mm)	Conductor cross-section min - max (mm^2) number of cores				
		⊙	⊙⊙	⁂	⁂	⁂
BEKA1	12 – 20	10 - 25	1.5 - 10	1.5 - 10	1.5 - 10	1.5 - 6
BEKA2	17 – 28	16 - 150	-	10 - 35	6 - 25	4 - 16
BEKA3	40 – 60	95 - 300	-	25 - 95	25 - 95	25 - 95
BEKA4	40 – 60	240 - 400	-	70 - 150	70 - 150	95 -120
BEKA5	50 – 75	400 - 500	-	150 - 300	150 - 300	150 - 300

03 TAPES > LUBRICANTS FOR CABLE PULLING > SILICONES

etelec electrical technology

03.1 INSULATING TAPES

ISOEL® 8900 - PVC IMQ certified

ISOEL® 633 - PVC for professional use

ISOEL® EPR - self-amalgamating EPR

ISOFIL 626 - filler

03.2 LUBRICANTS FOR CABLE PULLING

FLO 950 - lubricant gel for cable pulling
FLO 350 - fluid lubricant emulsion for cable pulling

03.3 SILICONES

EASYL 100 - pure acetic silicone for professional use

ISOEL 8900

TECHNICAL SPECIFICATIONS	NOMINAL VALUES	TESTING METHOD
tensile strength	30 N/cm	CEI EN 60454
maximum stretch	180 - 170 %	CEI EN 60454
adhesion	1.8 N/cm²	CEI EN 60454
dielectric strength	40 kV/mm	CEI EN 60454
flammability	self-extinguishing	CEI EN 60454
operating temperature	0 / 105 °C	-
certified	IMQ	-

ISOEL 8900

PVC insulating tape for general use

Applications

- Insulation, protection, and identification of electrical connections, joints, and Low Voltage cables up to 0.6/1 kV
- For use in all areas of civil and industrial electrical systems

Features

- Self-extinguishing
- Compliant with CEI EN 60454-3-1 standard
- **IMQ approved**

Advantages

- Excellent electrical insulation
- High conformability
- High resistance to abrasion, corrosion, and moisture

Selection table

item	width (mm)	length (m)	thickness (mm)
ISOEL 15	15	10	0.15
ISOEL 19	19	25	0.15
ISOEL 25	25	25	0.15

Available colours

YE BE VE RD BW
BK GR WH YG

* To complete the item reference, add the colour code at the end (e.g. ISOEL 15 BK)

ISOEL 633 PROFESSIONAL

TECHNICAL SPECIFICATIONS	NOMINAL VALUES	TESTING METHOD
tensile strength	35 N/cm	CEI EN 60454
maximum stretch	180 %	CEI EN 60454
adhesion	1.8 N/cm^2	CEI EN 60454
dielectric strength	40 kV/mm	CEI EN 60454
flammability	self-extinguishing	CEI EN 60454
operating temperature	–18 / 105 °C	-
certified	CSA	-

Applications

- Suitable for use in all kinds of industrial electrical and electromechanical installations
- Insulation of electrical connections
- Protection of low voltage joints and cable connections up to 0.6/1 kV
- **Suitable for use at low temperatures**
- **Suitable for use as primary insulator on branches up to 600 V**

Advantages

- Excellent electrical insulation
- High conformability
- High elasticity
- Flame retardant
- High resistance to abrasion, corrosion, and moisture
- Supplied in plastic protective case

ISOEL 633

PVC insulating tape for professional use

Features

- Operating temperature: -18 to 105 °C
- Self-extinguishing
- Compliant with CEI EN 60454-3-1 standard
- Colour black
- **CSA approved** (Certificate no. 2714884)
- **Compliant with ASTM D3005 standard**

Selection table

item	width (mm)	length (m)	thickness (mm)
ISOEL 633	19	20	0.18

ISOEL EPR

TECHNICAL SPECIFICATIONS	NOMINAL VALUES 623	NOMINAL VALUES 723/823 923/1023	TESTING METHOD
maximum operating voltage	69 kV	69 kV	-
tensile strength	2.2 MPa		BS 903
maximum stretch	650 %	800 %	BS 903
volume resistivity	>1×10^{11} Ω m	1×10^{13} Ω m	ASTM D257
dielectric strength	>38 kV/mm	38 kV/mm	ASTM D150
operating temperature	–40 °C / 90 °C		-

ISOEL EPR

RoHS HF

Self-amalgamating EPR insulating tape

Features

- Self-amalgamating
- Colour black

Applications

- Insulation and protection of conductors, surfaces, cables, and electrical connections in general up to 132 kV
- Compatible with a wide range of rubbers and plastics used in cable insulation (Polyethylene, PVC, butyl, neoprene, ...)

Advantages

- Excellent electrical and mechanical properties
- High stability under all conditions of use
- The tape quickly amalgamates without the use of heat or external pressure after application
- High resistance to abrasion, corrosion, and moisture

up to 69 kV

item	width (mm)	length (m)	thickness (mm)
ISOEL 623	19	9.1	0.50
ISOEL 723	19	9.1	0.75
ISOEL 823	25		
ISOEL 923	38		
ISOEL 1023	51		

TECHNICAL SPECIFICATIONS	NOMINAL VALUES	TESTING METHOD
dielectric strength	23 kV/mm	ASTM D149
volume resistivity	$1x10^{12}$ Ω m	ASTM D257
tensile strength	0.1 MPa	BS 903

ISOFIL 626

Insulating filler tape in butyl rubber

Applications

- Sealing and reconstruction of all types of electrical insulation coating

Advantages

- Excellent electrical and mechanical properties
- High stability under all conditions of use
- Resistant to water and ozone

Features

- Operating temperature: -30 to 80 °C
- Supplied in plastic protective box

Selection table

item	width (mm)	length (m)	thickness (mm)
ISOFIL 626	38	1.5	3.2

flo 950
Cable lubricant gel

FLO 950

High-performance lubricant gel for cable pulling

Applications

- Suitable for all types of electrical and telecommunications cables
- Installation in pipes and sleeves, even with curves and difficult ascents
- Suitable for vertical cables

Advantages

- Excellent adhesion onto the cable
- Easy manual application
- Excellent friction reduction
- Slow drying
- Compatible with all types of cable insulation
- Non-toxic
- Non-hazardous
- No stains or residue after drying
- Chemically inert
- Odourless

Features

- Operating temperature: -5 / 50 °C
- Friction coefficient with PVC cables: 0.11
- Colour: light blue
- Storage temperature: +5 / +30 °C

Available sizes

item	volume
FLO 950	0.95 litre bottle
FLO 1890	18.90 litre drum

flo 350
cable pulling lubricant emulsion

FLO 350

Silicone fluid emulsion for cable pulling

Applications

- Suitable for all types of electrical and telecommunications cables
- Installation in pipes and sleeves, even with curves and difficult ascents
- Suitable for vertical cables

Advantages

- Eliminates 70% of friction
- Easy application
- Compatible with all types of cable insulation
- Non-hazardous
- Chemically inert
- Odourless

Features

- Operating temperature: -5 / 50 °C
- pH value: from 6 to 7
- Colour: milky white

Available size

item	volume
FLO 350	1 liter bottle

TECHNICAL SPECIFICATIONS	NOMINAL VALUES
application temperature	5 / 40 °C
working temperature	–50 / 120 °C
density	1.02 g/cm^3
hardness	ca. 25 SHORE A
shelf life	12 months

Measured values at 23 °C and 50% RH

EASYL 100

Pure acetic silicone sealant for professional use

Applications

- Sealing wall junction boxes, wiring and ducts, piping passages
- Suitable for application on non-porous materials
- Not recommended for use in permanent contact with water

Advantages

- Fast polymerization
- Excellent resistance to aging
- Good resistance to low and high temperatures
- Good resistance to lubricating oils and fluids
- Excellent resistance to mechanical stress
- Uniform and permanent elasticity over time
- UV resistant
- Safe and easy to install

Features

- Single-component silicone polymer base
- 280 ml cartridge
- Colour: transparent

- Compliant with ISO, ASTM, DIN UNI 9610, and UNI 9611 standards

04 MEDIUM VOLTAGE

MEDIUM VOLTAGE TERMINATIONS

04.1 HEAT SHRINK TERMINATIONS

TTMT - heat shrink terminations

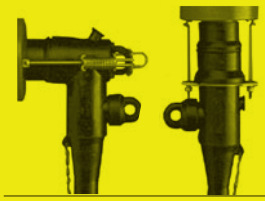
ENEL-approved heat shrink terminations

TF - sets of three single-core cables with heat shrink terminations

04.2 COLD SHRINK TERMINATIONS

TAMT - cold shrink terminations

04.3 SEPARABLE TERMINATIONS



TSD/TSS - 250 A straight and elbow separable terminations

TS/TS-CA - 630 A joinable elbow separable terminations

ENEL-approved separable terminations

TTMT
Heat shrink terminations for Medium Voltage

A Medium Voltage (MV) single or three-core cable termination with operating voltage up to 36 kV allows connection to switches, circuit breakers and transformers for both indoor and outdoor applications.
It consists of:
- cable lug for the connection of the conductor
- insulating jacket to control the electric field
- outer coating jacket with non-marking function
- copper braid to ground shield

TTMT kits include:
- high-performing internal **heat shrink jacket** (black), to control the electric field, made from special material with a specific impedance to distribute the electric field around the interruption of the semiconductive layer of the cable
- red **outer heat shrink jacket**, exceptionally resistant to marking, erosion, ageing and moisture, thanks to the presence of hot melt adhesive on the inner wall
- **hot melt sealing** tape to fill empty spaces, control the electric field, and protect metallic elements against moisture
- **heat shrink insulating rain sheds** to lengthen the creepage path, for outdoor applications or in polluted environments.

The **TTMT** kits, in both indoor and outdoor versions, are available in three-terminal kits for the installation of single-core cables and in complete kits with cable break-out for installation on three-core cables up to 36 kV.

Advantages

- A single product covers a wide range of cable cross-sections
- No need for special tools
- Reliability for installation in harsh environments
- Less bulky
- Reduced storage cost
- No expiry date

Kit choice factors

Choose the most suitable termination type according to:
- type of cable to be terminated, identified by its code
- cable insulation level U_0/U
- operating voltage U_M
- cable cross-section
- type of application, for example indoor or outdoor

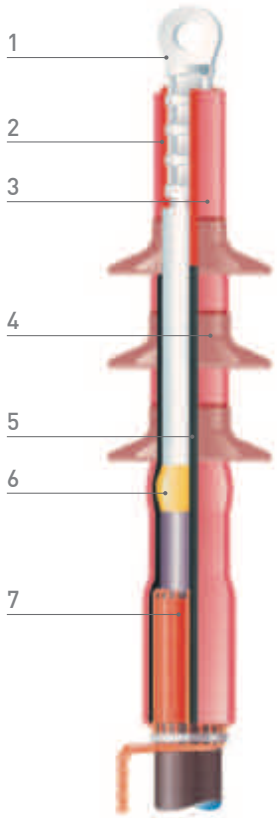
Specifications

TTMT kits comply with the international CENELEC HD 629.1 S2 standard.

Watch the video

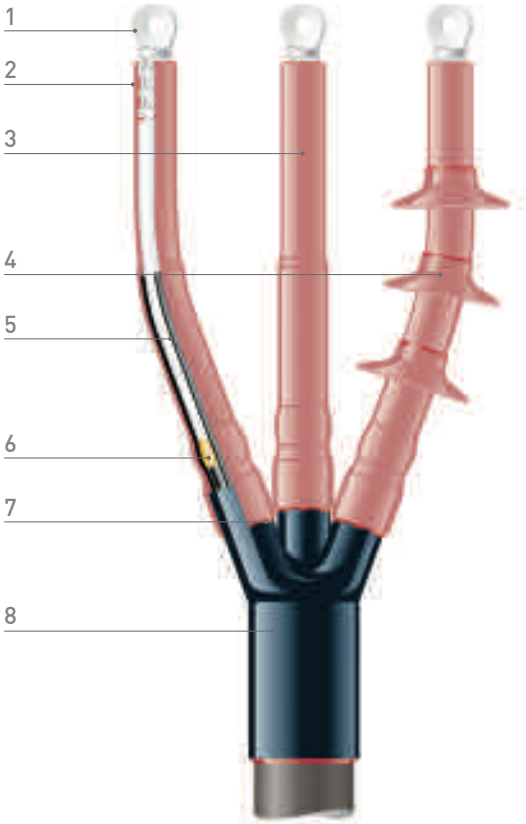
Single core heat shrink termination TTMT

1. **Metal cable lug** (not included in kit)
2. **Hot melt sealant tape,** for moisture protection
3. **Red external heat shrink jacket,** exceptionally resistant to marking, erosion, ageing and moisture, thanks to the presence of hot melt adhesive on the inner wall
4. **Insulating heat shrink rain sheds,** to lengthen external creepage path, for outdoor applications or in polluted environments (TTMT-E series)
5. **Black heat shrink jacket** to control the electric field, made from special material with a specific impedance to distribute the electric field around the interruption of the semiconductive layer of the cable
6. **Yellow finishing tape** for filling empty spaces and electric field control
7. **Hot melt sealant tape** for moisture protection



Three-core heat shrink termination TTMT-3

1. **Metal cable lug** (not included in kit)
2. **Hot melt sealant tape,** for moisture protection
3. **Red external heat shrink jackets** exceptionally resistant to marking, erosion, ageing and moisture, thanks to the presence of hot melt adhesive on the inner wall
4. **Insulating heat shrink rain sheds** to lengthen external creepage path, for outdoor applications or in polluted environments (TTMT-3E series)
5. **Black heat shrink jackets** to control the electric field, made from special material with a specific impedance to distribute the electric field around the interruption of the semiconductive layer of the cable
6. **Yellow finishing tape** for filling empty spaces and electric field control
7. **Hot melt sealant tape** for moisture protection
8. **Heat shrink premoulded 3-way breakout boot,** for sealing the breakout point of the three-core cable



TTMT
Heat shrink termination for Medium Voltage for single-core cables with extruded insulation up to 36 kV

Applications

Termination of MV single-core cables with extruded insulation type:

(A)RG5H1R,
(A)RG7H1R,
(A)RG7H1M1,
(A)RE4H1E-R

for indoor (TTMT-I) and outdoor (TTMT-E) use

Advantages

- a single product covers a wide range of cable cross-sections
- no need for special tools
- reliability for installation in harsh environments
- less bulky
- reduced storage cost
- no expiry date

TTMT-I

Heat shrink termination kits for indoor use

Single-core cables with extruded insulation up to 36 kV

Kit contents

Kit for three indoor single-core terminations:

- non-marking outer jackets
- inner jackets for electric field control
- insulating tapes
- assembly instructions

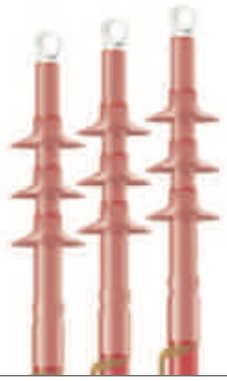
Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Max voltage U_M (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Indoor terminations for MV cables 3.6/6 kV			
TTMT-7/50-I	7.2	16 – 50	300
TTMT-7/120-I		70 – 120	
TTMT-7/240-I		150 – 240	
TTMT-7/500-I		300 – 500	
TTMT-7/1000-I		630 – 1000	
Indoor terminations for MV cables 8.7/15 kV			
TTMT-17/25-I	17.5	16 – 25	370
TTMT-17/70-I		35 – 70	
TTMT-17/240-I		95 – 240	
TTMT-17/400-I		300 – 400	
TTMT-17/800-I		500 – 800	
Indoor terminations for MV cables 12/20 kV			
TTMT-24/70-I	24	25 – 70	450
TTMT-24/240-I		95 – 240	
TTMT-24/400-I		300 – 400	
TTMT-24/800-I		500 – 800	
Indoor terminations for MV cables 18/30 kV			
TTMT-36/95-I	36	50 – 95	520
TTMT-36/185-I		120 – 185	
TTMT-36/500-I		240 – 500	
TTMT-36/1000-I		500 – 1000	

For armoured cables add the suffix /A to the item



TTMT-E

Heat shrink termination kits for outdoor use

Single-core cables with extruded insulation up to 36 kV

Kit contents

Kit for **three outdoor single-core** terminations:

- non-marking outer jackets
- inner jackets for electric field control
- insulating heat shrink rain sheds, to lengthen external creepage path,
- insulating tapes
- assembly instructions

Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Max voltage U_M (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Outdoor terminations for MV cables 8.7/15 kV			
TTMT-17/25-E	17.5	16 – 25	450
TTMT-17/70-E		35 – 70	
TTMT-17/240-E		95 – 240	
TTMT-17/400-E		300 – 400	
TTMT-17/800-E		500 – 800	
Outdoor terminations for MV cables 12/20 kV			
TTMT-24/70-E	24	25 – 70	520
TTMT-24/240-E		95 – 240	
TTMT-24/400-E		300 – 400	
TTMT-24/800-E		500 – 800	
Outdoor terminations for MV cables 18/30 kV			
TTMT-36/95-E	36	50 – 95	720
TTMT-36/185-E		120 – 185	
TTMT-36/500-E		240 – 500	
TTMT-36/1000-E		630 – 1000	

For armoured cables add the suffix /A to the item

TTMT-3
Heat shrink termination for Medium Voltage for three-core cables with extruded insulation up to 36 kV

Applications

Termination of MV three-core cables with extruded insulation type:

(A)RG5H1OR,
(A)RG7H1OR,
(A)RG7H1OM1,
(A)RE4H1OE-R

for indoor (TTMT-3I) and outdoor (TTMT-3E) use

Advantages

- a single product covers a wide range of cable cross-sections
- no need for special tools
- reliability for installation in harsh environments
- less bulky
- reduced storage cost
- no expiry date

TTMT-3I

Heat shrink termination kits for indoor use

Three-core cables with extruded insulation up to 36 kV

Kit contents

Kit for **one three-core indoor** terminations:

- non-marking outer jackets
- inner jackets for electric field control
- sealing 3-way breakout boot
- insulating tapes
- assembly instructions

Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Max voltage U_M (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Indoor terminations for MV cables 3.6/6 kV			
TTMT-7/50-3I	7.2	16 – 50	450
TTMT-7/120-3I		70 – 120	
TTMT-7/240-3I		150 – 240	
TTMT-7/500-3I		300 – 500	
Indoor terminations for MV cables 8.7/15 kV			
TTMT-17/25-3I	17.5	16 – 25	520
TTMT-17/70-3I		35 – 70	
TTMT-17/240-3I		95 – 240	
TTMT-17/400-3I		300 – 400	
Indoor terminations for MV cables 12/20 kV			
TTMT-24/70-3I	24	25 – 70	520
TTMT-24/240-3I		95 – 240	
TTMT-24/400-3I		300 – 400	
Indoor terminations for MV cables 18/30 kV			
TTMT-36/95-3I	36	50 – 95	720
TTMT-36/185-3I		120 – 185	
TTMT-36/500-3I		240 – 500	

Kits with a higher phase length are available on request
For armoured cables add the suffix /A to the item

TTMT-3E

Heat shrink termination kits for outdoor use

Three-core cables with extruded insulation up to 36 kV

Kit contents

Kit for **one outdoor three-core** termination:

- non-marking outer jackets
- inner jackets for electric field control
- sealing 3-way break-out boot
- insulating **heat shrink rain sheds** to lengthen external creepage path
- insulating tapes
- assembly instructions

Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Max voltage U_M (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Outdoor terminations for MV cables 8.7/15 kV			
TTMT-17/25-3E	17.5	16 – 25	720
TTMT-17/70-3E		35 – 70	
TTMT-17/240-3E		95 – 240	
TTMT-17/400-3E		300 – 400	
Outdoor terminations for MV cables 12/20 kV			
TTMT-24/70-3E	24	25 – 70	900
TTMT-24/240-3E		95 – 240	
TTMT-24/400-3E		300 – 400	
Outdoor terminations for MV cables 18/30 kV			
TTMT-36/95-3E	36	50 – 95	900
TTMT-36/185-3E		120 – 185	
TTMT-36/500-3E		240 – 500	

Kits with a higher phase length are available on request
For armoured cables add the suffix /A to the item

Heat shrink termination for Medium Voltage ENEL-approved

TMMT-I Indoor single-core terminals

item	cable type	Max voltage U_M (kV)	Conductor cross-section min – max (mm^2)	Terminal length (mm)	ENEL ID number	ENEL specification
Indoor single-core heat shrink termination for elicord cable						
TMMT-24/150-I/U	ARG7H5EXY	24	35 – 150	365	273044 (ex 273047)	DJ 4456/3
Indoor single-core heat shrink termination for wire-shielded cable						
TMMT-24/25-I/U	(A)RG7H1R(X)	24	25 – 50	360	273045	DJ 4456/1
TMMT-24/185-I/U		24	50 – 185	360	273040 (ex 273046)	DJ 4456/2
TMMT-24/240-I/U		24	240	360	273040 (ex 273048)	DJ 4456/4
TMMT-24/630-I/U		24	400 – 630	360	273049	DJ 4456/5
Indoor single-core heat shrink termination for cables shielded in aluminium tubes						
TMMT-24/185-I/U-H5	ARE4H5EX	24	70 – 240	350	273040	DJ 4456/6

Kit suitable for a single-core termination. Kits do not include metal cable lugs.

TMMT-E Outdoor single-core terminals

item	cable type	Max voltage U_M (kV)	Conductor cross-section min – max (mm^2)	Terminal length (mm)	ENEL ID number	ENEL specification
Outdoor single-core heat shrink termination for elicord cable						
TMMT-24/150-E/U	ARG7H5EXY	24	35 – 150	445	273066	DJ 4476/2
Outdoor single-core heat shrink termination for wire-shielded cable						
TMMT-24/185-E/U	(A)RG7H1R(X)	24	50 – 185	445	273065	DJ 4456/2
Outdoor single-core heat shrink termination for cables shielded in aluminium tubes						
TMMT-24/185-E/U-H5	ARE4H5EX	24	70 – 185	450	273064	DJ 4476/7

Kit suitable for single-core termination. Kits do not include metal cable lugs.

TF

Sets of three single-core 12/20 kV cables with heat shrink terminations

Applications

- Connecting MV devices (12/20 kV) with RG7H1M1 cable
- For indoor installations
- Alternative lengths, outdoor versions, or with separable terminals available on request

Features

- Sets of three RG7H1M1 single-core cables 12/20 kV by a leading manufacturer, with cable lugs and TTMT heat shrink terminations
- Supplied with internal test certificate

Compliant with the international CENELEC HD 629.1 S2 standard

Advantages

- Ready to use
- Low labour costs
- No need for special tools
- Reliability for installation in harsh environments
- Less chance of error
- No expiry date

Set of three 35 mm² 12/20 kV cables

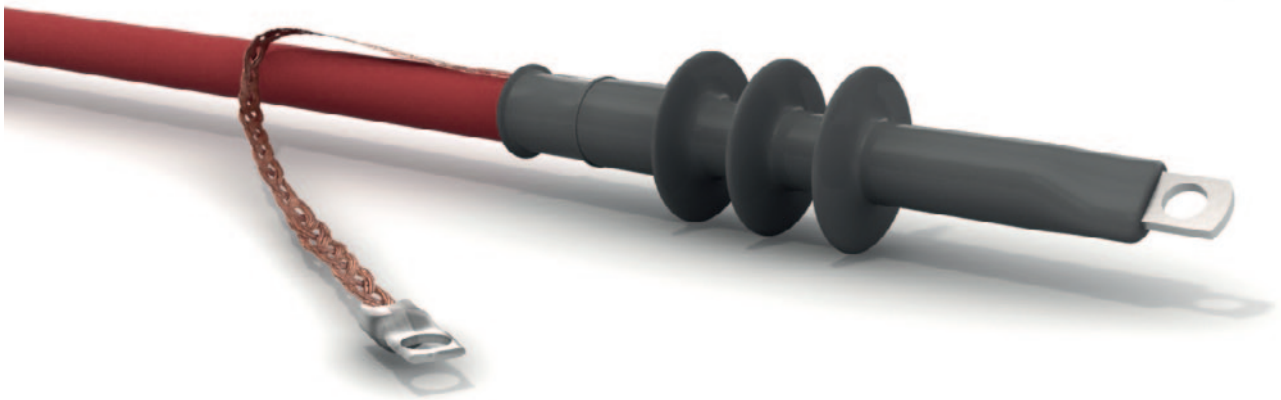
item	Conductor cross-section (mm²)	Length (m)
TF 35-3	35	3
TF 35-3.5		3.5
TF 35-4		4
TF 35-4.5		4.5
TF 35-5		5
TF 35-5.5		5.5
TF 35-6		6
TF 35-7		7
TF 35-8		8
TF 35-9		9
TF 35-10		10
TF 35-11		11
TF 35-12		12
TF 35-13		13
TF 35-14		14
TF 35-15		15

Set of three 50 mm² 12/20 kV cables

item	Conductor cross-section (mm²)	Length (m)
TF 50-3	50	3
TF 50-3.5		3.5
TF 50-4		4
TF 50-4.5		4.5
TF 50-5		5
TF 50-5.5		5.5
TF 50-6		6
TF 50-7		7
TF 50-8		8
TF 50-9		9
TF 50-10		10
TF 50-11		11
TF 50-12		12
TF 50-13		13
TF 50-14		14
TF 50-15		15

Set of three 95 mm² 12/20 kV cables

item	Conductor cross-section (mm²)	Length (m)
TF 95-3	95	3
TF 95-3.5		3.5
TF 95-4		4
TF 95-4.5		4.5
TF 95-5		5
TF 95-5.5		5.5
TF 95-6		6
TF 95-7		7
TF 95-8		8
TF 95-9		9
TF 95-10		10
TF 95-11		11
TF 95-12		12
TF 95-13		13
TF 95-14		14
TF 95-15		15



TAMT
Cold shrink terminations for Medium Voltage

A Medium Voltage (MV) cold shrink termination for single-core cables with an operating voltage up to 36 kV allows connection to circuit breakers, disconnecting switches, and transformers on both indoor and outdoor applications. It consists of:

- a cable lug to connect the conductor;
- an elastomeric body to control the electric field and non-marking functions;
- copper braid for cable shield earth connection.

TAMT kits include:

- a single silicone rubber **cold shrink body** serving both electric field control and non-marking functions; it is supplied pre-stretched on an unwindable plastic spiral tube, which has to be removed when installing the termination on the cable;
- the **integrated rain sheds**, present in both the indoor and outdoor versions, allow the termination to be installed even in polluted environments or with high moisture levels;
- silicone rubber **sealant and filler tape** for filling empty spaces, electric field control, and protecting the metallic elements against moisture;
- **liquid silicone lubricant** to facilitate installation on the cable.

TAMT kits, in both the indoor and outdoor versions, contain three terminations for installation on each conductor of three-core cables with a maximum voltage U_m of up to 36 kV.

spiral

integrated rain sheds

Advantages

- quick installation
- covers a wide range of cable sizes
- using a single product
- installation without heat, flame, or special tools
- reliable installation in harsh environments
- less bulky
- compact design
- integrated rain sheds
- line immediately operational
- reliable even in polluted environments
- reduced labour costs
- reduced storage costs
- no expiry date

Kit choice factors:

Choose the most suitable termination type according to:

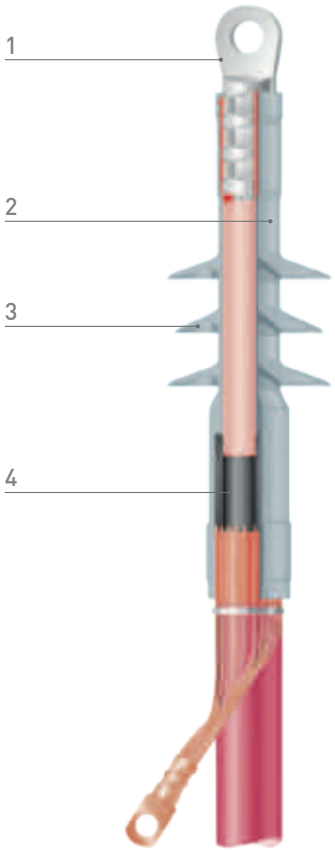
- type of cable to be terminated, identified by its code
- insulation level of the cable U_0/U
- operating voltage U_M
- cable cross-section
- type of installation, e.g. indoor or outdoor

Specifications

The **TAMT** kits comply with the international CENELEC HD 629.1 S2 standard

TAMT cold shrink single-core termination

1. **Metal cable lug** (not included in kit)
2. **Silicone rubber cold shrink body** to control the electric field and non-marking functions
3. **Integrated rain sheds**, also in the indoor version
4. Silicone rubber **sealant and filler tape** for filling empty spaces, electric field control, and the protection of metallic elements against moisture



Watch the video

TAMT
Cold shrink termination for Medium Voltage for single-core cables with extruded insulation up to 36 kV

TAMT-I

Cold shrink termination kits for indoor use

Single-core cables with extruded insulation up to 36 kV

Applications

Termination of MV single-core cables with extruded insulation type:

(A)RG5H1R,
(A)RG7H1R,
(A)RG7H1M1,
(A)RE4H1E-R

for indoor and outdoor use

Kit contents

Kit for **three single-core** terminations:

- silicone rubber body to control the electric field and non-marking functions
- sealant and filler tapes
- liquid silicone lubricant
- assembly instructions

Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Advantages

- **quick installation**
- covers a wide range of cable sizes
- using a single product
- **installation without heat, flame, or special tools**
- reliable installation in harsh environments
- less bulky
- **compact design**
- integrated rain sheds
- reliable even in polluted environments
- **reduced labour costs**
- reduced storage costs
- no expiry date

Selection table

item	Diameter on insulator min – max (mm)	Rated voltage U_0/U (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Indoor terminations up to 24 kV				
TAMT-24/95-I	14 – 25	8.7/15	25 – 120	305
		12/20	25 – 95	
TAMT-24/300-I	19 – 40	8.7/15	95 – 400	310
		12/20	95 – 300	
TAMT-24/630-I	30 – 50	8.7/15	300 – 800	410
		12/20	400 – 630	
Indoor terminations up to 36 kV				
TAMT-36/50-I	14 – 25	18/30	35 – 50	385
TAMT-36/300-I	19 – 40	18/30	70 – 300	390
TAMT-36/630-I	30 – 50	18/30	400 – 630	410

TAMT-E

Cold shrink termination kits for outdoor use

Single-core cables with extruded insulation up to 36 kV

Kit contents

Kit for **three single-core** terminations:

- silicone rubber body to control the electric field and non-marking functions
- sealant and filler tapes
- liquid silicone lubricant
- assembly instructions

Metal cable lugs not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Diameter on insulator min – max (mm)	Rated voltage U_0/U (kV)	conductor cross-section min – max (mm^2)	Termination length (mm)
Outdoor terminations up to 24 kV				
TAMT-24/95-E	14 – 25	8.7/15	16 – 185	385
		12/20	25 – 95	
TAMT-24/300-E	19 – 40	8.7/15	95 – 630	390
		12/20	95 – 300	
TAMT-24/630-E	30 – 50	8.7/15	300 – 800	490
		12/20	400 – 630	
Outdoor terminations up to 36 kV				
TAMT-36/50-E	14 – 25	18/30	35 – 50	385
TAMT-36/300-E	19 – 40	18/30	70 – 300	390
TAMT-36/630-E	30 – 50	18/30	400 – 630	490

TSD - TSS
Medium Voltage deadbreak separable terminations for single-core cables up to 24 kV

TECHNICAL SPECIFICATIONS	TYPICAL VALUES
maximum voltage U_m	24 kV
current rating	250 A
lightning impulse resistance	125 kV
partial discharge at $2U_0$	< 5 pC
AC resistance test (5 min)	54 kV
DC resistance test (30 min)	96 kV

Kit contents

Kit of **three single-core** terminations, each comprising:

- termination housing
- cable lug and contact plug
- sealing mastic
- self-amalgamating tape
- lubricant
- insulated earthing wire
- fixing system

Mounting accessories

Assembly instructions

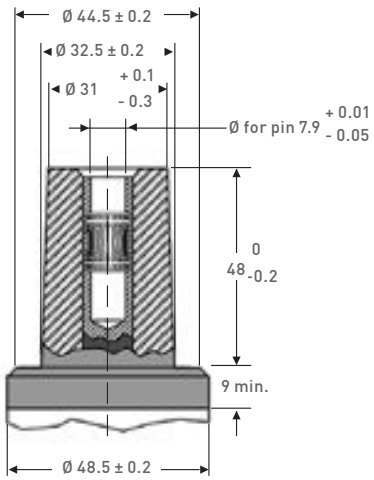
Applications

- Connecting extruded MV cables to
- electrical equipment with conical bushing feedthrough insulator
- compliant with CEI EN 50180-50181 standard
- For indoor and outdoor installation
- For copper and aluminium conductors

Features

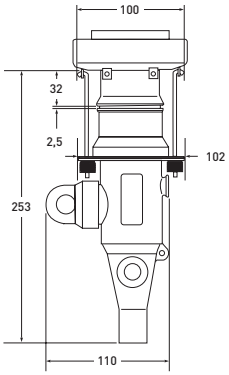
- Cross-linked EPDM unibody with semi-conductive shielding coating
- Type A interface
- Compliant with VDE 0278, IEC 502-4, and EDF HN 52-S-61 standards

TYPE A INTERFACE 250 A



MEDIUM VOLTAGE

etelec electrical technology



TSD

Straight separable termination kit

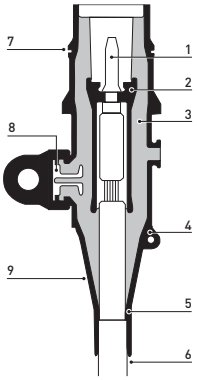
Deadbreak - Max current 250 A
Single-core MV cables up to 24 kV

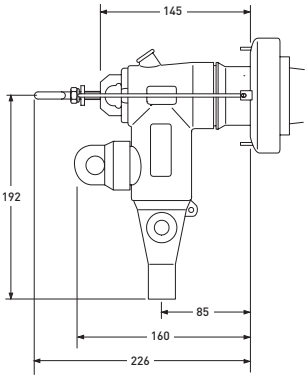
Selection table

item	Conductor cross-section (mm^2)	Cable insulation diameter min – max (mm)
TSD250-16/A	16	13.5 – 17.4
TSD250-16/B		16.3 – 20.8
TSD250-25/A	25	13.5 – 17.4
TSD250-25/B		16.3 – 20.8
TSD250-35/A	35	13.5 – 17.4
TSD250-35/B		16.3 – 20.8
TSD250-35/C		19.6 – 24.1
TSD250-50/A	50	13.5 – 17.4
TSD250-50/B		16.3 – 20.8
TSD250-50/C		19.6 – 24.1
TSD250-70/A	70	16.3 – 20.8
TSD250-70/B		19.6 – 24.1
TSD250-95/A	95	16.3 – 20.8
TSD250-95/B		19.6 – 24.1

Structural details

1. Pressure plug connector
2. Internal deflector
3. Insulator
4. Earthing eye
5. External screen
6. Cable entrance
7. Optional locking ring groove
8. Capacitive test point
9. Cone baffle





TSS

Separable elbow termination kit

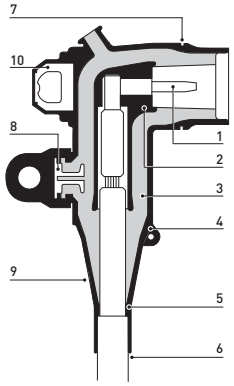
Deadbreak - Max current 250 A
Single-core MV cables up to 24 kV

Selection table

item	Conductor cross-section (mm^2)	Cable insulation diameter min – max (mm)
TSS250-16/A	16	13.5 – 17.4
TSS250-16/B		16.3 – 20.8
TSS250-25/A	25	13.5 – 17.4
TSS250-25/B		16.3 – 20.8
TSS250-35/A	35	13.5 – 17.4
TSS250-35/B		16.3 – 20.8
TSS250-35/C		19.6 – 24.1
TSS250-50/A	50	13.5 – 17.4
TSS250-50/B		16.3 – 20.8
TSS250-50/C		19.4 – 24.1
TSS250-50/D		23.1 – 28.7
TSS250-70/A	70	16.3 – 20.8
TSS250-70/B		19.6 – 24.1
TSS250-70/C		23.1 – 28.7
TSS250-95/A	95	16.3 – 20.8
TSS250-95/B		19.4 – 24.1
TSS250-95/C		23.1 – 28.7
TSS250-95/D		27.9 – 33.5
TSS250-120/A	120	19.6 – 24.1
TSS250-120/B		23.1 – 28.7
TSS250-120/C		27.9 – 33.5

Structural details

1. Pressure plug connector
2. Internal deflector
3. Insulator
4. Earthing eye
5. External screen
6. Cable entrance
7. Optional locking ring groove
8. Capacitive test point
9. Cone baffle
10. Pulling eye



TS
Medium Voltage joinable deadbreak separable terminations for single-core cables up to 24 kV

TECHNICAL SPECIFICATIONS	TYPICAL VALUES
maximum voltage U_m	24 kV
current rating	630 A
lightning impulse resistance	125 kV
partial discharge at $2U_0$	< 6 pC
AC resistance test (5 min)	57 kV
DC resistance test (15 min)	76 kV

Applications

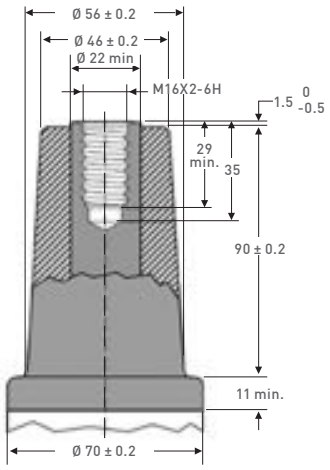
- Connecting extruded MV cables to electrical equipment with conical bushing feedthrough insulator compliant with CEI EN 50180-50181 standard
- **TS-CA terminations connect to the rear of TS series terminations**
- For indoor and outdoor installation
- For copper and aluminium conductors

Features

- Cross-linked EPDM unibody with semi-conductive shielding coating
- Type C interface
- Compliant with VDE 0278, IEC 502-4, and EDF HN 52-S-61 standards

Versions for cables up to 36 kV available on request

Type C interface 630 A



TS

Joinable T-body separable terminations kit

Deadbreak - Max current 630 A
Single-core MV cables up to 24 kV

Kit contents

Kit of **three single-core** terminations, each comprising:

- termination housing
- cable lug and contact plug
- sealing mastic
- self-amalgamating tape
- lubricant
- insulated earthing wire
- fixing system

Mounting accessories

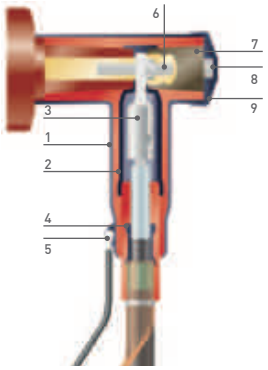
Assembly instructions

Selection table

item	Conductor cross-section (mm^2)	Cable insulation diameter min – max (mm)
TS630-24/25	25	16.3 – 19.3
TS630-24/35	35	
TS630-24/50	50	
TS630-24/70	70	18.3 – 21.0
TS630-24/95	95	20.0 – 24.1
TS630-24/120	120	
TS630-24/150	150	23.1 – 27.0
TS630-24/185	185	
TS630-24/240	240	24.9 – 28.9
TS630-24/300	300	27.7 – 32.6

Structural details

1. Shielded insulating body
2. Internal shield
3. Compression cable lug
4. Electric field control cone
5. Earthing eye
6. Threaded pin
7. Socket with test-point
8. Capacitive test point
9. Conduction cap



TS-CA

Joinable elbow separable terminations kit

Deadbreak - Max current 630 A
Single-core MV cables up to 24 kV

Kit contents

Kit of **three single-core** terminations, each comprising:

- termination housing
- cable lug and contact plug
- sealing mastic
- self-amalgamating tape
- lubricant
- insulated earthing wire
- fixing system
- joining element

Mounting accessories

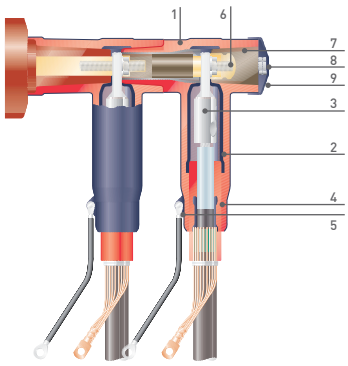
Assembly instructions

Selection table

item	Conductor cross-section (mm^2)	Cable insulation diameter min – max (mm)
TS-CA630-24/25	25	16.3 – 19.3
TS-CA630-24/35	35	
TS-CA630-24/50	50	
TS-CA630-24/70	70	18.3 – 21.0
TS-CA630-24/95	95	20.0 – 24.1
TS-CA630-24/120	120	
TS-CA630-24/150	150	23.1 – 27.0
TS-CA630-24/185	185	
TS-CA630-24/240	240	24.9 – 28.9
TS-CA630-24/300	300	27.7 – 32.6

Structural details

1. Shielded insulating body
2. Internal shield
3. Compression cable lug
4. Electric field control cone
5. Earthing eye
6. Threaded pin
7. Socket with test-point
8. Capacitive test point
9. Conduction cap



Separable termination for Medium Voltage ENEL-approved

item	Cable type	Max voltage U_m (kV)	Conductor cross-section (mm^2)	Max current (A)	ENEL ID number	ENEL specification
Single-core separable termination for cables shielded in aluminium tubes						
TS630-24/185-H5	ARE4H5EX, ARE4H5RX	24	185	630	273121	4155/19

Kit suitable for a single core termination.
More ENEL-approved separable termination kit available on request.

Tests and minimum requirements for Medium Voltage terminations TTMT up to 36 kV

TEST	METHOD	MAXIMUM TEST VOLTAGE U_M (KV)					REQUIREMENT
RATED CABLE VOLTAGE U_0/U (kV)		**3.6/6**	**6/10**	**8.7/15**	**12/20**	**18/30**	
AC voltage test 1 min • dry for indoor • in rain for outdoor	IEC 60060	27	35	45	55	75	No discharge or perforation
Partial discharge	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
• for indoors • for outdoors		60 70	75 95	95 110	125 150	170 200	
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Thermal short circuit	VDE 0278	1 s phase/phase at max cable temperature					No signs of damage
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
DC voltage test for 4 h	IEC 60060	14	24	36	48	73	No discharge or perforation
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
• for indoors • for outdoors		60 70	75 95	95 110	125 150	170 200	
DC voltage test for 30 min	IEC 60060	28	48	72	96	144	No discharge or perforation
Humidity test in saturated air • 100 h for indoors • 1000 h for outdoor	IEC 60466 VDE 0278	4.5	7.5	10.9	15	22.5	No discharge or perforation
		water conductivity 80 mS/m					
Dynamic short circuit (only for three-core cables)	VDE 0278	63 kA: standard 125 kA: high current					No visible damage
Salt spray (1 h) (only for outdoor)	IEC 60507	4.5	7.5	10.9	15	22.5	No discharge
		Salt concentration 224 kg/m3					

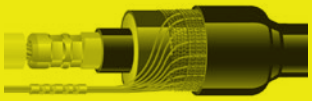
Tests and minimum requirements for Medium Voltage terminations TAMT up to 36 kV

TEST	METHOD	MAXIMUM TEST VOLTAGE U_M (KV)					REQUIREMENT
RATED CABLE VOLTAGE U_0/U (kV)		**3.6/6**	**6/10**	**8.7/15**	**12/20**	**18/30**	
AC voltage test 1 min • dry for indoor • in rain for outdoor	IEC 60060	27	35	45	55	75	No discharge or perforation
Partial discharge	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
• for indoors		60	75	95	125	170	
• for outdoors		70	95	110	150	200	
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) a 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Thermal short circuit	VDE 0278	1 s phase/phase at max cable temperature					No signs of damage
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
DC voltage test for 4 h	IEC 60060	14	24	36	48	73	No discharge or perforation
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
• for indoors		60	75	95	125	170	
• for outdoors		70	95	110	150	200	
DC voltage test for 30 min	IEC 60060	28	48	72	96	144	No discharge or perforation
Humidity test in saturated air • 100 h for indoors • 1000 h for outdoor	IEC 60466 VDE 0278	4.5	7.5	10.9	15	22.5	No discharge or perforation No visible damage
		[water conductivity 80 mS/m]					
Dynamic short circuit (only for three-core cables)	VDE 0278	63 kA: standard 125 kA: high current					No visible damage
Salt spray (1 h) (only for outdoor)	IEC 60507	4.5	7.5	10.9	15	22.5	No discharge
		[Salt concentration 224 kg/m³]					

04 MEDIUM VOLTAGE

MEDIUM VOLTAGE JOINTS

04.4 HEAT SHRINK JOINTS



JTMT - heat shrink joints

ENEL-approved heat shrink joints

Transition joints

04.5 COLD SHRINK JOINTS

JAMT - cold shrink joints

JTMT
Heat shrink joints for Medium Voltage

A Medium Voltage (MV) cable joint allows the connection of single or three-core cables with an operating voltage of up to 36 kV with extruded insulation, paper insulation, or a transition between the two types.
It consists of:

- a metal joint to connect the conductors;
- a double-layer insulating jacket for electric field control;
- copper braid to restore the shielding;
- external coating jacket for electrical and mechanical protection.

JTMT kits include:

- a non-linear impedance **heat shrink jacket** to distribute the electric field
- a double-layer **heat shrink jacket** to restore the primary insulator and the outer semiconductive layer
- a **tin-plated copper braid** to restore the shielding
- a thick wall **heat shrink outer** sealant **jacket** with high mechanical strength to ensure proper joint sealing and mechanical strength

Advantages

- Covers a wide range of cable sizes with a single product
- No need for special tools
- Reliability for installation in harsh environments
- Less bulky
- Reduced storage costs
- No expiry date
- Ready for use
- Line immediately operational

Kit choice factors

Choose the most suitable termination type according to:

- **type of connection** (between cables with the same characteristics, or a transition between cables with different characteristics);
- specifications of the cables to be connected:
  - **type of insulation** (extruded or paper);
  - **number of cores** (individual single-core cables, 3-set single-core cables, three-core cables, three-core jacketed cables);
- **rated voltage** of the U_0 /U, cable depending on insulation level;
- **conductor cross-section.**

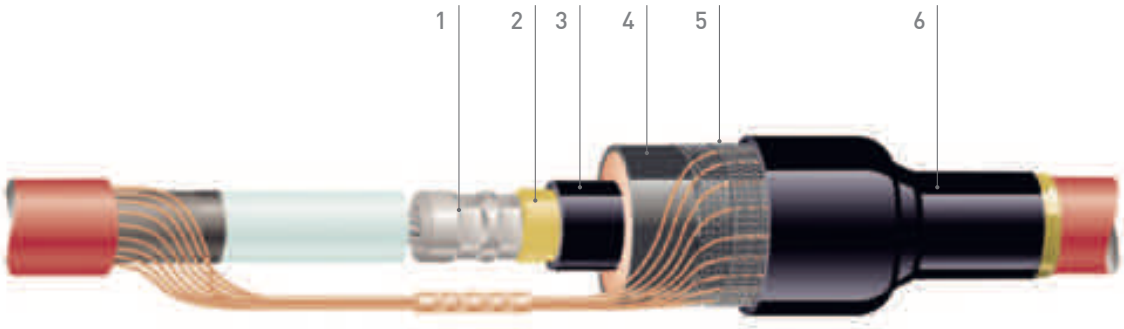
Specifications

JTMT kits comply with the international CENELEC HD 629.1 S2 standard.

Watch the video

Components

1. **Metal connector** (not included in kit)
2. **Yellow tape** for electric field control
3. **Heat shrink tubing with non-linear characteristic impedance** for the distribution of the electric field in the area of the connector where the semiconductive shielding has been interrupted
4. **Double-wall heat shrink tubing** comprising an inner layer of elastomeric material on a conductive heat shrink outer layer for one-step reconstruction of the insulation and external shielding
5. **Tin-plated copper braid** covering the entire surface of the joint to restore electrical continuity in the metal shielding
6. Extra thick wall **heat shrink outer jacket** with high mechanical strength to resist impact and abrasion with a layer of hot melt adhesive sealant on the inner wall to ensure adhesion of the jacket, forming a protective seal against moisture and corrosion of the underlying cable



JTMT
Heat shrink joints for Medium Voltage cables with extruded insulation

Advantages

- Covers a wide range of cable sizes with a single product
- No need for special tools
- Reliability for installation in harsh environments
- Less bulky
- Reduced storage costs
- No expiry date

JTMT-1X

Heat shrink joint kits for single-core MV cables up to 36 kV

non-armoured with extruded insulation

Applications

Connection of MV single-core non-armoured cables with extruded insulation type:

(A)RG5H1R(M1),
(A)RG7H1R(M1)

Kit contents

Kit for **one single-core** connection:

- co-extruded double-layer insulating jackets
- tin-plated copper braid
- external coating jackets with sealant
- assembly instructions

Metal cable lug not included

Complies with international CENELEC HD 629.1 S2 standard

Selection table

item	Max voltage U_M (kV)	Conductor cross-section min – max (mm^2)	Joint length (mm)
Joints for single-core cables 3.6/6 kV			
JTMT-7/70-1X	7.2	10 – 70	400
Joints for single-core cables 8.7/15 kV			
JTMT-17/50-1X	17.5	25 – 50	600
JTMT-17/120-1X		50 – 120	
JTMT-17/240-1X		120 – 240	700
JTMT-17/300-1X		300	750
Joints for single-core cables 12/20 kV			
JTMT-24/95-1X	24	25 – 95	650
JTMT-24/240-1X		95 – 240	700
JTMT-24/500-1X		240 – 500	800
Joints for single-core cables 18/30 kV			
JTMT-36/150-1X	36	50 – 150	1000
JTMT-36/300-1X		150 – 300	
JTMT-36/630-1X		400 – 630	

For armoured cables see page 175 (ARMT armour restoration kit)

Extruded single-core cable

Extruded single-core cable

MEDIUM VOLTAGE

JTMT-3X

Heat shrink joint kits for single-core MV cables up to 24 kV

non-armoured with extruded insulation

Applications

Connection of MV three-core non-armoured cables with extruded insulation type:

(A)RG5H1R(M1),
(A)RG7H1R(M1)

Kit contents

Kit for **three single-core** connection:

- co-extruded double-layer insulating jackets
- tin-plated copper braid
- external coating jackets with sealant
- assembly instructions

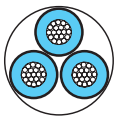
Metal cable lug not included

Complies with international CENELEC HD 629.1 S2 standard

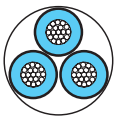
Selection table

item	Max voltage U_M (kV)	Conductor cross-section min – max (mm²)	Joint length (mm)
Joints for single-core cables 8.7/15 kV			
JTMT-17/50-3X	17.5	25 – 50	1250
JTMT-17/120-3X		50 – 120	1300
JTMT-17/240-3X		120 – 240	1500
Joints for single-core cables 12/20 kV			
JTMT-24/95-3X	24	25 – 95	1500
JTMT-24/240-3X		95 – 240	1600
JTMT-24/400-3X		300 – 400	

For armoured cables see page 175 (ARMT armour restoration kit)



Extruded three-core cable



Extruded three-core cable

Heat shrink joints for Medium Voltage ENEL-approved

item	cable type	Max voltage U_M (kV)	Conductor cross-section min – max (mm^2)	Joint length (mm)	ENEL ID number	ENEL specification
Single-core heat shrink joint for elicord cable						
JMMT-24/150-I/U	ARG7H5EXY	24	35 – 150	700	271072	DJ 4376/2
Single-core heat shrink joint for wire-shielded cable						
JMMT-24/185-I/U	(A)RG7H1R(X)	24	50 – 185	700	271071	DJ 4376/1
Single-core heat shrink joint for cables shielded in aluminium tubes						
JMMT-24/185-I/U-H5	ARE4H5EX	24	95 – 240	1000	271021	DJ 4387/2

Kit suitable for a single-core termination. Kits do not include metal cable lugs.

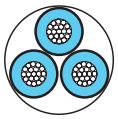
Heat shrink transition joints

JTMT-3X-1X

Heat shrink transition joint kit for extruded three-core cable and set of three extruded single-core cables
up to 24 kV

item	Max voltage U_M (kV)	Conductor cross-section 3X cable min – max (mm²)	Conductor cross-section 1X cable min – max (mm²)
JTMT-24/95-3X-1X	24	25 – 95	25 – 95
JTMT-24/240-3X-1X		95 – 240	95 – 240
JTMT-24/500-3X-1X		240 – 500	240 – 500

Kits do not include metal connectors



Extruded three-core cable (A)RG7H10R

3 extruded single-core cables (A)RG7H1R

JTMT-1X-1C

Heat shrink transition joint kit between an extruded single-core cable and a paper single-core cable
up to 24 kV

item	Max voltage U_M (kV)	Conductor cross-section 1X cable min – max (mm²)	Conductor cross-section 1C cable min – max (mm²)
JTMT-24/25-1X-1C	24	25	25
JTMT-24/240-1X-1C		50 – 240	35 – 185
JTMT-24/400-1X-1C		240 – 400	240 – 400

Kits do not include metal connectors

Extruded single-core cable (A)RG7H1R(X)

Paper single-core cable (A)RC1HLR(X)

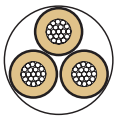
JTMT-1X-3C

Heat shrink transition joint kit between a set of three extruded single-core cables and paper three-core cable
up to 24 kV

item	Max voltage U_M (kV)	Conductor cross-section 1X cable min – max (mm²)	Conductor cross-section 3C cable min – max (mm²)
JTMT-24/25-1X-3C	24	25	25
JTMT-24/240-1X-3C		50 – 240	35 – 185
JTMT-24/400-1X-3C		300 – 400	240 – 400

Kits do not include metal connectors

3 extruded single-core cables (A)RG7H1R



Paper three-core cable (A)RC1HL0R(X)

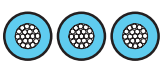
JTMT-3CC-1X

Heat shrink transition joint kit between belted three-core cable with insulating paper and a set of three extruded single-core cables
up to 17.5 kV

item	Max voltage U_M (kV)	Conductor cross-section 3CC cable min – max (mm²)	Conductor cross-section 1X cable min – max (mm²)
JTMT-17/70-3CC-1X	17.5	25 – 70	25 – 70
JTMT-17/150-3CC-1X		50 – 150	50 – 150
JTMT-17/300-3CC-1X		240 – 300	240 – 300
JTMT-17/500-3CC-1X		400 – 500	400 – 500

Kits do not include metal connectors

Belted paper three-core cable (A)SCOLR



3 extruded single-core cables (A)RG7H1R

JAMT
Cold shrink joints for Medium Voltage

A Medium Voltage (MV) cable joint allows connection of single-core cables with an operating voltage of up to 36 kV and extruded insulation.
It consists of:

- a metal joint to connect the conductors;
- a double-layer insulating silicone body for electric field control;
- copper braid to restore the shielding;
- external silicone coating body for electrical and mechanical protection.

JAMT kits include:

- a metal connector with shear head bolts;
- silicone rubber sealant and filler tape for filling empty spaces, electric field control and protection of metallic elements from moisture;
- liquid silicone lubricant to facilitate installation on the cables;
- a cold shrink silicone rubber body with both electric field control and non-marking functions; it is supplied pre-expanded on an unwindable plastic spiral tube, to be removed during cable installation;
- a tin-plated copper braid sleeve to restore the shielding;
- a cold shrink body with high mechanical strength to ensure that the joint is completely sealed and mechanically protected; it is supplied pre-expanded on an unwindable plastic spiral tube, to be removed during cable installation.

JAMT kits are available for installation on single-core cables with a maximum voltage U_m of up to 36 kV.

Advantages

- quick installation
- covers a wide range of cross-sections with a single product
- installation without heat, flames, or special tools
- reliability for installation in harsh environments
- less bulky
- compact design
- line immediately operational
- suitable for all installation conditions (underground, overhead, under water)
- reduced labour costs
- reduced storage costs
- no expiry date

Kit choice factors

- Choose the most suitable termination type according to:
- type of cable to be connected, identified by its code;
- cable insulation level;
- cable cross-section.

Specifications

The **JAMT** kits comply with the international CENELEC HD 629.1 S2 standard.

Watch the video

JAMT-1X

Cold shrink joint kit for MV single-core cables up to 36 kV
with extruded insulation

Applications

Jointing of MV single-core cables with extruded insulation type (A)RG5H1R, (A)RG7H1R, (A)RG7H1M1, (A)RE4H1E-R

Kit contents

Kit for **one single-core** joint comprising:
- cold shrink silicone rubber body
- cold shrink body for external joint sealing
- **metal connector** with shear head bolts
- silicone rubber sealant and filler tape
- liquid silicone lubricant
- tin-plated copper braid
- assembly instructions

Compliant with the international CENELEC HD 629.1 S2 standard

Selection table

item	Diameter on insulator min – max (mm)	Rated voltage U_0/U (kV)	Conductor cross-section min – max (mm^2)	Joint length (mm)
Joints up to 24 kV				
JAMT-24/95-1X	14 – 25	12/20	25 – 95	600
JAMT-24/240-1X	19 – 40		70 – 240	600
Joints up to 36 kV				
JAMT-36/95-1X	14 – 25	18/30	25 – 95	600
JAMT-36/240-1X	19 – 40		70 – 240	600

JAMT-1XM

Monobloc cold shrink joint kit for MV single-core cables up to 36 kV
with extruded insulation

Applications

Jointing of MV single-core cables with extruded insulation type (A)RG5H1R, (A)RG7H1R, (A)RG7H1M1, (A)RE4H1-R(X), (A)RP1H5EX, (A)RE4H5EX (**-H5** version)

Kit contents

Kit for **one single-core** joint comprising:
- cold shrink silicone rubber body
- **integrated** cold shrink body for external joint sealing
- **metal connector** with shear head bolts
- silicone rubber sealant and filler tape
- liquid silicone lubricant
- **integrated** tin-plated copper braid
- assembly instructions
- **metal grater** for earth connection of tube shielding on (A)RE4H5EX cables (**-H5** versions)

Compliant with the international CENELEC HD 629.1 S2 standard

Selection table

item	Diameter on insulator min – max (mm)	Rated voltage U_0/U (kV)	Conductor cross-section min – max (mm^2)	Joint length (mm)
Joints up to 24 kV				
JAMT-24/240-1XM	19 – 40	12/20	70 – 240	450
JAMT-24/240-1XM-H5	19 – 40	12/20	70 – 240	450
Joints up to 36 kV				
JAMT-36/240-1XM	19 – 40	18/30	70 – 240	450
JAMT-36/240-1XM-H5	19 – 40	18/30	70 – 240	450

Tests and minimum requirements for TTMT Medium Voltage terminations up to 36 kV

TEST	METHOD	MAXIMUM TEST VOLTAGE U_M (kV)					REQUIREMENT
CABLE RATED VOLTAGE U_0/U (kV)		3.6/6	6/10	8.7/15	12/20	18/30	
Impact test (armoured joints only)		A 4 kg weight is dropped on the joint 6 times from a height of 2 m					No visible damage
AC voltage test 1 min in rain	IEC 60060	27	35	45	55	75	No discharge or perforation
Partial discharge	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
		70	95	110	150	200	
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Thermal short circuit	VDE 0278	1 s phase/phase at max cable temperature					No signs of damage
Thermal cycles at a depth of 1 m in water	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
AC voltage test for 4 h	IEC 60060	14	24	36	48	73	No discharge or perforation
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
		70	95	110	150	200	
DC voltage test for 30 min	IEC 60060	28	48	72	96	144	No discharge or perforation
Dynamic short circuit (three-core cables only)	VDE 0278	63 kA: standard 125 kA: high current					No visible damage

Tests and minimum requirements for JAMT Medium Voltage terminations up to 36 kV

TEST	METHOD	MAXIMUM TEST VOLTAGE U_M (kV)					REQUIREMENT
CABLE RATED VOLTAGE U_0/U (kV)		3.6/6	6/10	8.7/15	12/20	18/30	
Impact test (armoured joints only)		A 4 kg weight is dropped on the joint 6 times from a height of 2 m					No visible damage
AC voltage test 1 min in rain	IEC 60060	27	35	45	55	75	No discharge or perforation
Partial discharge	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
		70	95	110	150	200	
Thermal cycles	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
Thermal short circuit	VDE 0278	1 s phase/phase at max cable temperature					No signs of damage
Thermal cycles at a depth of 1 m in water	VDE 0278	63 cycle (5 h/3 h) 95 °C:					No discharge or perforation
		9	15	22	30	45	
Partial discharge (kV)	IEC 60270	4.5	7.5	10.9	15	22.5	< 3 pC
		7.2	12	17.5	24	36	< 20 pC
AC voltage test for 4 h	IEC 60060	14	24	36	48	73	No discharge or perforation
Impulse voltage test	IEC 60060 IEC 60230	10 positive and 10 negative, 1.2/50 µs					No discharge or perforation
		70	95	110	150	200	
DC voltage test for 30 min	IEC 60060	28	48	72	96	144	No discharge or perforation

04 MEDIUM VOLTAGE

04.6

HEAT SHRINK TUBINGS AND TAPES FOR MEDIUM VOLTAGE

GPSM - tubings for bus bar insulation up to 24 kV

GPSA - tubings for bus bar insulation up to 36 kV

NTMT - heat shrink tapes for bus bar insulation

FTMT - heat shrink sheets for bus bar insulation

GPSM
Medium walls heat shrink tubing for Medium Voltage bus bar insulation up to 24 kV

TECHNICAL SPECIFICATIONS	TYPICAL VALUES	TEST METHOD
dielectric strength	200 kV/cm	IEC 243
volume resistivity	2×10^8 MΩ·cm	IEC 93
relative dielectric constant	3.0	IEC 250
tensile strength	14 MPa	ISO 37
maximum stretch	500 %	ISO 37
density	1.1 g/cm^3	ISO R1183
water absorption	0.3% [after 168 h at 120 °C]	ISO R62
accelerated ageing	[after 168 h at 120 °C]	ISO 188
- tensile strength	12 MPa	ISO 37
- maximum stretch	400 %	ISO 37

Applications

Bus bar insulation (copper or aluminium) in MV junction boxes with max 24 kV voltage

Advantages

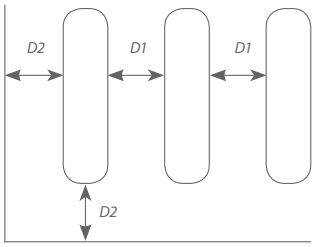
- Protection from accidental contact
- High flexibility after shrinkage to ease bending of the bus bars
- High mechanical resistance
- Reduction of approximately 50% of the space between the bus bars

Features

- Resistant to solvents
- UV resistant
- Resistant to weathering
- Halogen-free
- Code and the tubing dimensions stamped on each bar (only GPSM-1000)
- Supplied in spool (GPSM-A/U) or in 1 m bars (GPSM-1000)

Typical distances between rectangular bars for indoor applications

Max voltage U_M (kV)	Distances without insulation (mm)		Distances with GPSM (mm)	
	D1	D2	D1	D2
12	120	120	65	75
24	220	220	115	150



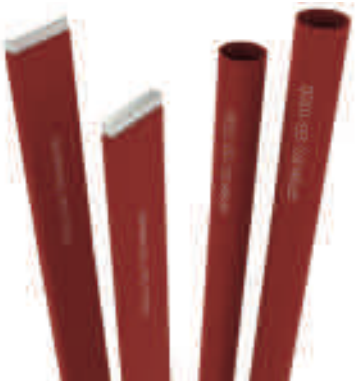
D1 *phase-phase distance*
D2 *phase-earth distance*

MEDIUM VOLTAGE

GPSM-A/U

Heat shrink tubing for MV bus bars up to 24 kV

medium walled
in spool



GPSM-1000

Heat shrink tubing for MV bus bars up to 24 kV

medium walled
in 1 metre bars

Selection table

item	Tubing parameters			
	D/d (mm)	S (mm)	s (mm)	spool (m)
GPSM-15/6-A/U	15/6	1.1	1.90	30
GPSM-30/12-A/U	30/12	1.1	2.20	30
GPSM-50/20-A/U	50/20	1.1	2.35	30
GPSM-75/30-A/U	75/30	1.1	2.35	20
GPSM-100/40-A/U	100/40	1.1	2.35	25
GPSM-120/50-A/U	120/50	1.3	2.80	25
GPSM-175/70-A/U	175/70	1.3	2.80	15
GPSM-205/110-A/U	205/110	1.3	2.80	10

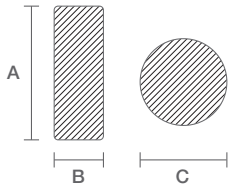
Selection table

item	Tubing parameters			
	D/d (mm)	S (mm)	s (mm)	spool (m)
GPSM-15/6-1000	15/6	1.1	1.90	1
GPSM-30/12-1000	30/12	1.1	2.20	1
GPSM-50/20-1000	50/20	1.1	2.35	1
GPSM-75/30-1000	75/30	1.1	2.35	1
GPSM-100/40-1000	100/40	1.1	2.35	1
GPSM-120/50-1000	120/50	1.3	2.80	1
GPSM-175/70-1000	175/70	1.3	2.80	1
GPSM-205/110-1000	205/110	1.3	2.80	1

Bus bar size ranges

A+B (mm)	C (mm)
min – max	min – max
12 – 18	6.5 – 12
22 – 38	13.5 – 25
36 – 65	22 – 43
55 – 95	33 – 63
70 – 130	44 – 86
90 – 165	55 – 105
125 – 235	80 – 150
200 – 276	127 – 190

D Diameter **before** shrinkage
d Diameter **after** shrinkage
S Thickness **before** shrinkage
s Rated thickness **after** free shrinkage



A *Rectangular bar long side dimension*
B *Rectangular bar short side dimension*
C *Round bar diameter*

GPSA
Thick walls heat shrink tubing for Medium Voltage bus bar insulation up to 36 kV

TECHNICAL SPECIFICATIONS	TYPICAL VALUES	TEST METHOD
dielectric strength	200 kV/cm	IEC 243
volume resistivity	2×10^8 MΩ·cm	IEC 93
relative dielectric constant	3.0	IEC 250
tensile strength	14 MPa	ISO 37
maximum stretch	500 %	ISO 37
density	1.1 g/cm^3	ISO R1183
water absorption	0.3% [after 14 days at 23 °C]	ISO R62
accelerated ageing	[after 168 h at 120 °C]	ISO 188
tensile strength	12 MPa	ISO 37
maximum stretch	400 %	ISO 37

Applications

Bus bar insulation (copper or aluminium)
in MV junction boxes with max 36 kV voltage

36 kV

Features

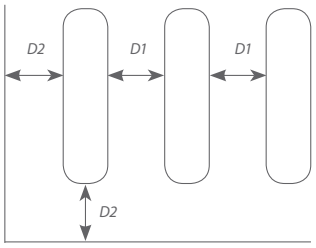
- Resistant to solvents
- UV resistant
- Resistant to weathering
- Halogen-free
- Code and the tubing dimensions stamped on each bar (only GPSA-1000)
- Supplied in spool (GPSA-A/U) or in 1 m bars (GPSA-1000)

Features

- Resistant to solvents
- UV resistant
- Resistant to weathering
- Halogen-free
- Code and the tubing dimensions stamped on each bar (only GPSA-1000)
- Supplied in spool (GPSA-A/U) or in 1 m bars (GPSA-1000)

Typical distances between rectangular bars for indoor applications

Max voltage U_M (kV)	Distances without insulation (mm)		Distances with GPSM (mm)	
	D1	D2	D1	D2
12	120	120	35	45
24	220	220	70	100
36	320	320	140	190



D1 *phase-phase distance*
D2 *phase-earth distance*

MEDIUM VOLTAGE

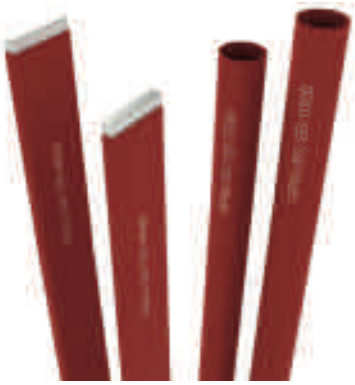
etelec electrical technology

GPSA-A/U

36 kV

Heat shrink tubing for MV bus bars up to 36 kV

medium walled
in spool



GPSA-1000

36 kV

Heat shrink tubing for MV bus bars up to 36 kV

medium walled
in 1 metre bars

Selection table

item	Tubing parameters			
	D/d (mm)	S (mm)	s (mm)	spool (m)
GPSA-25/10-A/U	25/10	1.6	3.6	25
GPSA-40/16-A/U	40/16	1.6	3.6	20
GPSA-65/25-A/U	65/25	1.6	3.6	15
GPSA-100/40-A/U	100/40	1.6	3.6	15
GPSA-150/60-A/U	150/60	1.6	3.6	15
GPSA-175/80-A/U	175/80	1.6	3.6	10

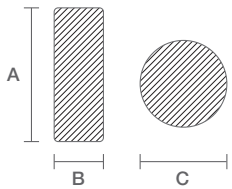
Selection table

item	Tubing parameters			
	D/d (mm)	S (mm)	s (mm)	bar (m)
GPSA-25/10-1000	25/10	1.6	3.6	1
GPSA-40/16-1000	40/16	1.6	3.6	1
GPSA-65/25-1000	65/25	1.6	3.6	1
GPSA-100/40-1000	100/40	1.6	3.6	1
GPSA-150/60-1000	150/60	1.6	3.6	1
GPSA-175/80-1000	175/80	1.6	3.6	1

Bus bar size ranges

A+B (mm)	C (mm)
min – max	min – max
17 – 28	11 – 20
28 – 45	18 – 32
44 – 69	28 – 47
69 – 102	44 – 72
102 – 148	65 – 105
133 – 196	85 – 125

D Diameter **before** shrinkage
d Diameter **after** shrinkage
S Thickness **before** shrinkage
s Rated thickness **after** free shrinkage



A *Rectangular bar long side dimension*
B *Rectangular bar short side dimension*
C *Round bar diameter*

TECHNICAL SPECIFICATIONS	TYPICAL VALUES	TEST METHOD
dielectric strength	160 kV/cm	IEC 243
volume resistivity	1×10^{8} MΩ·cm	IEC 93
relative dielectric constant	3.0	IEC 250
tensile strength	15 MPa	ISO 37
maximum stretch	400 %	ISO 37
density	1.0 g/cm^3	ISO R1183
water absorption	< 1 % [after 14 days at 23 °C]	ISO R62
copper corrosion	none	ASTM D2671

Applications

- Insulation of copper or aluminium bus bars and connections in complex shapes

Advantages

- Protection against accidental contacts
- High flexibility after heat shrinkage for bending the bars
- High mechanical strength
- Reduction of approximately 50% of the space between the phases

NTMT

Heat shrink tape

for MV bus bar insulation

Features

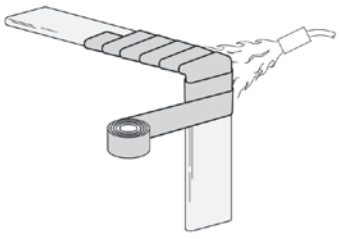
- Supplied in spool
- Hot melt adhesive on one side
- Installation using flame with
- overlap of 2/3 of the width
- Resistant to solvents
- UV resistant
- Resistant to weathering
- Halogen-free

Selection table

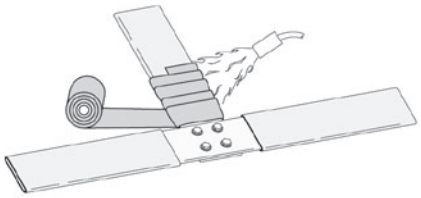
item	width (mm)	length (m)	thickness (mm)
NTMT-12-A	25	10	0.38
NTMT-14-A	50		
NTMT-15-A	75		
NTMT-16-A	100		

Typical applications

A



B



MEDIUM VOLTAGE

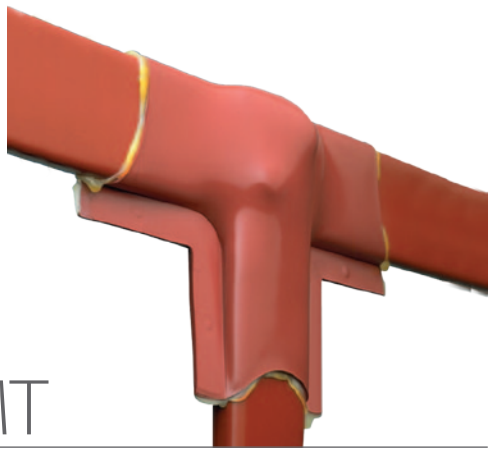
TECHNICAL SPECIFICATIONS	TYPICAL VALUES	TEST METHOD
dielectric strength	200 kV/cm	IEC 243
volume resistivity	1×10^9 MΩ·cm	IEC 93
relative dielectric constant	3.4	IEC 250
tensile strength	6 MPa	ISO 37
maximum stretch	590 %	ISO 37
density	1.1 g/cm³	ISO R1183
water absorption	0.5% [after 14 days at 23 °C]	ISO R62
copper corrosion	none	ASTM D2671
accelerated ageing	[after 168 h at 120 °C]	ISO 188
- tensile strength	5 MPa	ISO 37
- maximum stretch	550 %	ISO 37

Applications

- Insulation of copper or aluminium bus bars and connections in complex shapes that do not allow the use of tubings

Advantages

- Protection against accidental contact



FTMT

Heat shrink sheet

for MV bus bar insulation

Features

- Resistant to solvents
- UV resistant
- Resistant to weathering
- Halogen-free

FTMT-05

Supplied in a pack of 3 sheets each of 660 x 500 mm

FTMT-10

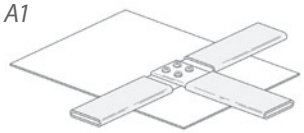
Supplied in a spool 660 mm x 10 m

Selection table

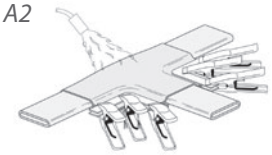
item	width (mm)	length (m)	thickness (mm)
FTMT-05	660	0.5	1.5
FTMT-10	660	10	

Typical applications

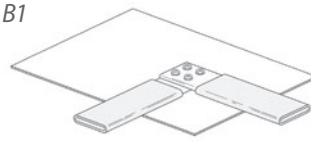
A1



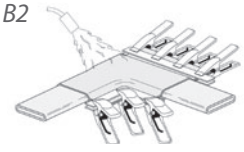
A2



B1



B2



04 MEDIUM VOLTAGE

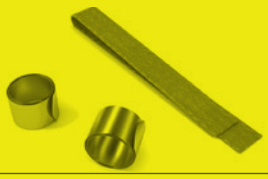
04.7

CABLE LUGS, CONNECTORS, AND CONNECTING COMPONENTS FOR MEDIUM VOLTAGE

CMMT - lugs for MV cables

GMMT - connectors for MV cables

RS034 - stainless steel scroll springs for restoring shielding and armouring



ARMT-JTMT - kit to restore armouring on MV cable joints

CMMT

Lug for MV copper cables

Applications

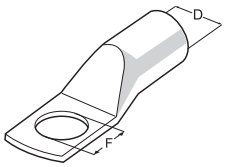
- Termination of copper conductors in MV cables

Features

- Copper with electroplated tin surface

Selection table

item	Conductor cross-section (mm²)	Housing diameter D (mm)	Hole diameter F (mm)
CMMT 25	25	7	12
CMMT 35	35	8.2	12
CMMT 50	50	9	12
CMMT 70	70	11.5	12
CMMT 95	95	13.5	12
CMMT 120/150	120–150	15	12
CMMT 185	185	19.2	12
CMMT 240	240	21.5	14



GMMT

Connector for copper MV cables

Applications

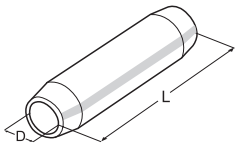
- Connecting copper conductors in MV cables

Features

- Copper with electroplated tin surface

Selection table

item	Conductor cross-section (mm²)	Housing diameter D (mm)	Connector length L (mm)
GMMT 25	25	7	60
GMMT 35	35	8.2	
GMMT 50	50	9	
GMMT 70	70	11.5	70
GMMT 95	95	13.5	80
GMMT 120/150	120–150	15	
GMMT 185	185	19.2	
GMMT 240	240	21.5	100



RS 034

Stainless steel scroll spring

Applications

- Restoring metal shielding and armouring continuity

Advantages

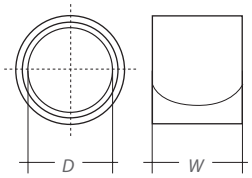
- Secure electrical contact thanks to spring contact pressure

Features

- Stainless steel springs

Selection table

item	Rewind diameter min–max (mm)	Spring size		
		length L	width W	diameter D
RS034-A	12 – 20	280	13	10
RS034-B	17 – 28	400	13	14
RS034-C	25 – 40	570	13	20
RS034-D	36 – 60	850	13	30
RS034-E	17 – 29	570	25	14
RS034-F	30 – 39	700	25	22
RS034-G	40 – 60	950	25	30
RS034-H	50 – 75	1100	30	38
RS034-I	50 – 75	1350	30	38
RS034-K	12 – 20	400	13	10
RS034-L	57 – 85	1350	30	45
RS034-M	33 – 45	850	25	25
RS034-N	25 – 34	650	25	19
RS034-O	85 – 110	1500	30	70



ARMT-JTMT

Kit to restore armouring on MV cable joints

Applications

- Restoring electrical continuity on MV cable joint armouring

Features

- 2 constant pressure steel contact springs
- Tin-plated copper braid

Selection table

item	Application on diameters (mm)	Number of cores	Cable rated voltage U_0 /U (kV)		
			8.7/15 kV	12/20 kV	18/30 kV
			Conductor cross-section min–max (mm^2)		
ARM-JTMT 25/40	25 – 40	●	25 – 240	25 – 185	35 – 95
		●●●	–	–	–
ARM-JTMT 40/60	40 – 60	●	300 – 630	240 – 630	120 – 150
		●●●	25 – 50	–	–
ARM-JTMT 50/75	50 – 75	●	12 – 20	–	630
		●●●	70 – 185	25 – 150	–
ARM-JTMT 57/85	57 – 85	●	–	–	–
		●●●	240 – 300	185 – 240	35 – 120
ARM-JTMT 85/110	85 – 110	●	–	–	–
		●●●	400	300	150 – 300

05 WIRING > FIXING

05.1 CABLE TIES, CLIPS, AND COLLARS

FB / FN - Nylon cable ties

UFF-8 - pliers for applying cable ties

BB/BN - Nylon adhesive anchor clips

CL - Nylon fixing collars

UFC-9 - pliers for applying collars

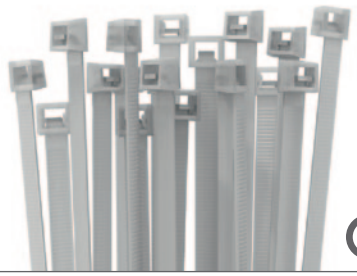
05.2 BRAIDED SLEEVES

COBRABOX - braided sleeve in dispenser

RHB - braided sleeves spool

Nylon cable ties

TECHNICAL SPECIFICATIONS	TYPICAL VALUES FB	FN
colour	white	black
operating temperature	–40 / 85 °C	
self-extinguishing rating	V2 according to UL 94	
water absorption	2.5% [at 23 °C and 50% RH]	
elastic modulus	2750 MPa	
elongation at break	70 %	
impact strength	16 kJ/m²	
chemical resistance	solvents, gasoline, hydrocarbons at low temperatures and low concentration	



FB

Nylon cable ties
Colour white

Applications

- Wiring and fixing of cables, hoses, and pipes

Features

- Nylon 6.6
- Colour white
- Compliant with EN 62275 standard
- Self-extinguishing rating: V2 according to UL 94
- Compliant with RoHS 2 (2011/65/EU) directive
- Halogen-free

Selection table

Item	Dimensions length (mm)	Dimensions width (mm)	Bundle diameter min – max (mm)	Tensile strength (N) *
FB07525	75	2.5	2 – 13	80
FB10025	100		3 – 20	80
FB13525	135		3 – 32	80
FB16025	160		3 – 33	180
FB20025	200		4 – 39	80
FB14035	140	3.5	5 – 35	220
FB20035	200		4 – 45	220
FB28035	280		4 – 50	80
FB36035	360		5 – 47	180
FB16045	160	4.5	5 – 47	220
FB18045	180		7 – 47	530
FB20045	200		7 – 56	530
FB25045	250		5 – 62	220
FB28045	280		7 – 75	180
FB36045	360		7 – 70	220
FB38045	380		8 – 68	530
FB43045	430		7 – 96	180
FB20075	200	7.5	7 – 96	220
FB24075	240		8 – 92	530
FB28075	280		7 – 101	220
FB36075	360		7 – 115	220
FB45075	450		11 – 117	530
FB54075	540		15 – 147	530
FB75075	750		12 – 205	530

* **1 kgf** = **1 kg** · 9.81 m/s² = 9.81 N ≈ **1 daN**

FN

Nylon cable ties
Colour black

Applications

- Wiring and fixing of cables, hoses and pipes
- Also suitable for outdoor installations

Features

- Nylon 6.6
- Colour black
- Additivated with carbon black
- Compliant with EN 62275 standard
- Self-extinguishing rating: V2 according to UL 94
- Compliant with RoHS 2 (2011/65/EU) directive
- Halogen-free

Selection table

Item	Dimensions		Bundle diameter min – max	Tensile strength
	length (mm)	width (mm)	(mm)	(N) *
FN07525	75	2.5	2 – 13	80
FN10025	100		3 – 20	80
FN13525	135		3 – 32	80
FN16025	160		3 – 33	180
FN20025	200		4 – 39	80
FN14035	140	3.5	5 – 35	220
FN20035	200		4 – 45	220
FN28035	280		4 – 50	80
FN36035	360		5 – 47	180
FN16045	160	4.5	5 – 47	220
FN18045	180		7 – 47	530
FN20045	200		7 – 56	530
FN25045	250		5 – 62	220
FN28045	280		7 – 75	180
FN36045	360		7 – 70	220
FN38045	380		8 – 68	530
FN43045	430		7 – 96	180
FN20075	200	7.5	7 – 96	220
FN24075	240		8 – 92	530
FN28075	280		7 – 101	220
FN36075	360		7 – 115	220
FN45075	450		11 – 117	530
FN54075	540		15 – 147	530
FN75075	750		12 – 205	530

* **1 kgf** = **1 kg** · 9.81 m/s^2 = 9.81 N ≈ **1 daN**

BB

Nylon adhesive anchor clips
4-way - colour white

Features
- Nylon 6.6
- colour white
- **Self-extinguishing rating: V2 according to UL 94**

Applications
- Anchorage of FB series cable ties to flat surfaces

Selection table

item	Dimensions (mm)	Max width of cable tie (mm)	Load at break (daN)
BB19194	19 x 19	4	10
BB27276	27 x 27	6	16

BN

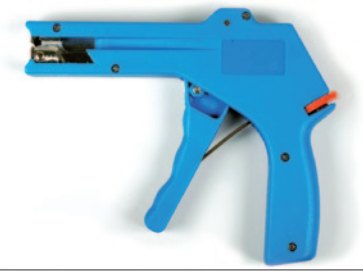
Nylon adhesive anchor clips
4-way - colour black

Features
- Nylon 6.6
- Colour black
- **Additivated with carbon black**
- **Self-extinguishing rating: V2 according to UL 94**

Applications
- Anchorage of FN series cable ties to flat surfaces
- Also suitable for outdoor installations

Selection table

item	Dimensions (mm)	Max width of cable tie (mm)	Load at break (daN)
BN19194	19 x 19	4	10
BN27276	27 x 27	6	16



UFF-8

Cable tie gun

Applications
- For the installation of cable ties up to a maximum width of 8 mm

Features
- Tension adjustment from 2.5 to 14 kg
- Cutting of the exceeding cable tie

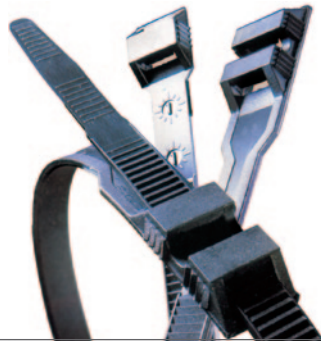
TECHNICAL SPECIFICATIONS	TYPICAL VALUES
colour	black
operating temperature	–40 / 65 °C
self-extinguishing rating	HB according to UL 94
water absorption	2.2 % [at 23 °C and 50% RH]
elastic modulus	2000 MPa
elongation at break	100 %
impact strength	45 kJ/m²
chemical resistance	solvents, gasoline, hydrocarbons at low temperatures and low concentration

Applications

- Wiring and fixing of cables, hoses and pipes
- Also suitable for outdoor installations and in marine environments

Advantages

- High mechanical strength



CL

Nylon fixing collars

colour black

Features

- Nylon
- Colour black
- Double locking tab

Selection table

item	Dimensions		Max bundle diameter	Tensile strength
	lenght (mm)	width (mm)	(mm)	(daN)
CL1809	180	9	45	50
CL2659	265		70	
CL3609	360		95	
CL5009	500		140	

UFC-9

Cable tie installation tool

Applications

- For the installation of collars up to a maximum width of 9 mm

Polyester braided sleeve

TECHNICAL SPECIFICATIONS	TYPICAL VALUES	TESTING METHOD
tensile strenght	4.80 kg/mm^2	ISO 37
elongation at break	28–35 %	ISO 37
specific weight	1.38 g/cm^3	ISO R1183
water absorption	0.5% max	ASTM D570
self-extinguishing rating	HB	UL 94

Applications

- Protection and assembly of electrical, electronic and telephone cables
- Civil, industrial, and automotive wiring

Advantages

- Good mechanical resistance
- High tensile strength
- Removable
- Good resistance to chemicals
- Good resistance to UV rays

Features

- Tubular braided sleeve
- Premium quality single thread polyester
- Self-extinguishing HB according to UL 94
- Operating temperature: -50 / 170 °C
- Melting pot: 260 °C
- Non-toxic
- Halogen-free

COBRABOX

Polyester braided sleeve
in dispenser

- Handy package
- Colour grey

Selection table

item	rated diameter (mm)	diameter of ligation (mm)		Spool length (m)
		min	max	
COBRABOX 03	3	2	8	25
COBRABOX 04	4	3	9	25
COBRABOX 05	5	4	11	25
COBRABOX 06	6	5	15	25
COBRABOX 08	8	6	18	20
COBRABOX 10	10	8	21	20
COBRABOX 12	12	10	20	10
COBRABOX 15	15	12	29	10
COBRABOX 20	20	15	33	10
COBRABOX 25	25	20	45	10
COBRABOX 30	30	25	48	5
COBRABOX 40	40	35	60	3
COBRABOX 50	50	45	75	3

RHB

Polyester braided sleeve
in spool

- Available in grey and black

Selection table

item*	rated diameter (mm)	diameter of ligation (mm)		Spool length (m)
		min	max	
RHB 03	3	2	8	200
RHB 04	4	3	9	200
RHB 05	5	4	11	100
RHB 06	6	5	15	100
RHB 08	8	6	18	100
RHB 10	10	8	21	100
RHB 12	12	10	20	100
RHB 15	15	12	29	100
RHB 20	20	15	33	50
RHB 25	25	20	45	50
RHB 30	30	25	48	50
RHB 40	40	35	60	50
RHB 50	50	45	75	50

Available colours

BK - Black *GR - Grey*

** To complete the item reference, add the colour code at the end (eg. RHB-03-BK for the back sleeve RHB-03)*

06 HEATING CABLES

06.1 CONSTANT POWER HEATING CABLES

TRACE HEATING FOR PIPES		EASY TRACE - constant power heating cable
TRACE HEATING FOR RAMPS AND PAVEMENTS		HOT TRACE - constant power heating mat KT1040 - constant power heating mat kit with accessories

Constant power heating cables for pipes

TECHNICAL SPECIFICATIONS	VALUES
heating cable type	shielded constant power
unit power	15 W/m
supply voltage	230 V c.a.
protection degree	IPX7
thermostat ignition	+3 / +13 °C
cable size (cross-section)	8 × 5.5 mm

Applications

- Freeze protection for iron or plastic pipes up to 38 mm diameter

Advantages

- Ready to use
- Very simple installation

EASY TRACE

Pre-assembled constant power heating cable kit

Features

- Pre-assembled constant power heating cable kit with:
  - power cable (length 2 m)
  - plug
  - thermostat
- PVC outer jacket

Selection table

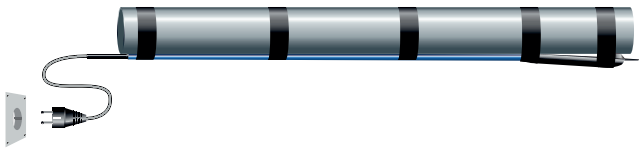
code	heating cable length (m)	total power (W)	resistance (Ω)
EASY02	2	35	1500
EASY04	4	71	750
EASY08	8	117	450
EASY12	12	187	283
EASY18	18	275	189

Example of application of the EASY TRACE kit to protect a water meter from freezing

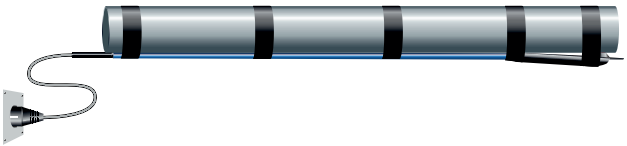
EASY TRACE
Installation

1.
Before installing the heating cable, ensure that the area around the cable is free of sharp objects and combustible materials.
If the heating cable is installed on plastic pipes in order to improve thermal conductivity we recommend covering the pipe with aluminium tape (ISOALL type) before installing the cable.
Stretch the cable along the bottom of the pipe, ensuring that the end with the plug is nearest to the power outlet.

2.
Begin fixing the thermostat with the side marked with a red dot in contact with the pipe, using PVC insulation tape (ISOEL type).
It is best to position the thermostat on the coldest end of the pipe, which is more exposed to low temperatures.
Continue fixing the heating cable on the pipe at intervals of approximately 300 mm, using the PVC insulating tape.



3.
It is advisable to fit a layer of insulation material round the pipe and the heating cable to improve the performance of the cable and reduce energy consumption.
When installation is complete, plug the power cord into the 230 V electrical outlet.



Example of application of the EASY TRACE kit to protect pipes from freezing

Constant power heating mats for ramps and pavements

TECHNICAL SPECIFICATIONS	HEATING MAT HOT TRACE
heating mat type	shielded constant power
specific power	225 W/m²
supply voltage	230 V c.a.
standard	CEI EN 60800
UV resistance	excellent
cable size (cross-section)	8 × 5.5 mm
max temperature resistance	270 °C

Applications

- Defrosting and melting snow and ice on access ramps and external surfaces used by pedestrians or vehicles
- Can be installed under concrete, brick paving, porphyry
- **Also suitable for direct installation under asphalt surfaces**

Advantages

- Ready to use
- Very simple installation

HOT TRACE

Pre-assembled constant power heating mat kit for trace heating of ramps and pavements

Features

- Heating mats comprising a pre-assembled constant power heating cable arranged in a zigzag pattern on a matrix of fiberglass reinforced tape
- Tin-plated copper conductors
- PVC outer jacket
- 7 mm shielding
- Connection to the power supply via cold cable (5 m length) already connected to the heating cable, with connection point identification

Installation accessories

SH0306	SHARK 306 gel joint with terminal block for hot cable-cold cable connection (page 24)
CTAHTC1	Thermostatic control unit
STUHTC1	Temperature and moisture sensor

Selection table

item	mat dimensions length (m)	width (m)	surface (m²)	total power (W)
HOT TRACE 4	4	0.5	2	450
HOT TRACE 8	8		4	900
HOT TRACE 12	12		6	1350
HOT TRACE 14	14		7	1575
HOT TRACE 20	20		10	2250

TECHNICAL SPECIFICATIONS	HEATING MAT
	KT1040
heating mat type	shielded constant power
specific power	225 W/m²
supply voltage	230 V c.a.
standard	CEI EN 60800
UV resistance	excellent
cable size (cross-section)	8 × 5.5 mm
max temperature resistance	270 °C

Applications

- Defrosting and melting snow and ice on access ramps and external surfaces used by pedestrians or vehicles
- Can be installed under concrete, brick paving, porphyry
- **Also suitable for direct installation under asphalt surfaces**

Advantages

- Ready to use
- Very simple installation

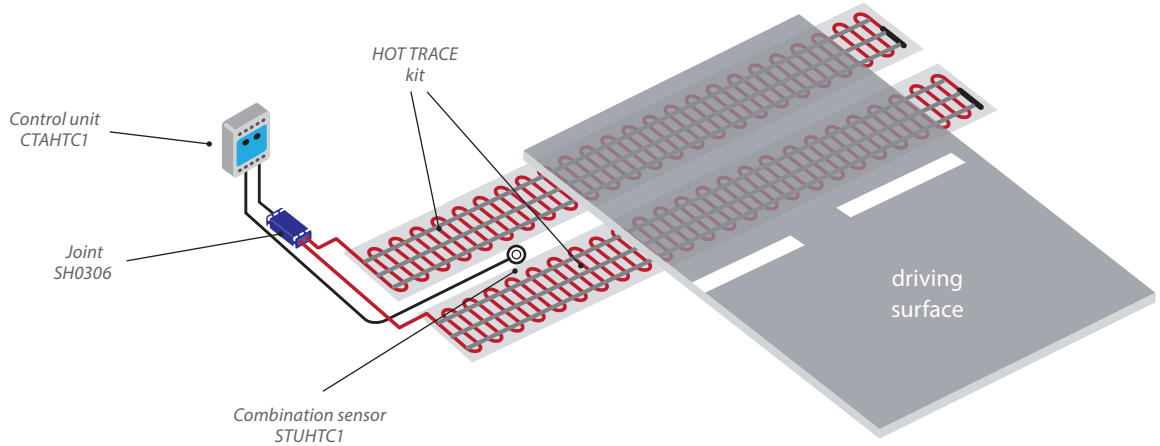
KT1040

Pre-assembled constant power heating mat kit provided with accessories for trace heating of ramps and pavements

Kit contents

- 2 **HOT TRACE 12**
  Heating mats comprising a pre-assembled constant power heating cable arranged in a zigzag pattern on a matrix of fiberglass reinforced tape
- 1 **CTAHTC1**
  Control unit
- 1 **STUHTC1**
  Heavy duty temperature and moisture sensor
- 1 **SHARK 306**
  Gel joint
  with insulated three-pole terminal block
- Assembly instructions

KT1040
Diagram of an example installation



Notes

sigla.it

Etelec Italia S.p.A.

tel. +39 081 5846610
+39 081 5848659
fax +39 081 2587166

Sales Department

export@etelec.com

etelec@etelec.it
www.etelec.com