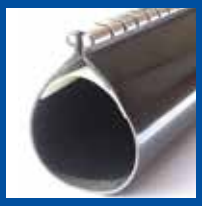
GREMTEK
A Tradename of GREMCO
Protective Sleeve Solutions

ENERGY PRODUCTS CATALOGUE



Heat-Shrink Tubing

LV-Products

MV-Products

Moulded Shapes

www.gremtek.com

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Protective Sleeve Solutions

Company History

1985 Foundation of GREMCO as a manufacturer of heat shrink tubing. The original company specialized in the distribution of insulation materials to the electrical industry.

1995 Development of expertise in the design and marketing of protective sleeves for cables and harness aasemblies for the automotive industry.

1996 International expansion of the company and the establishing of the GREMCO UK subsidiary.

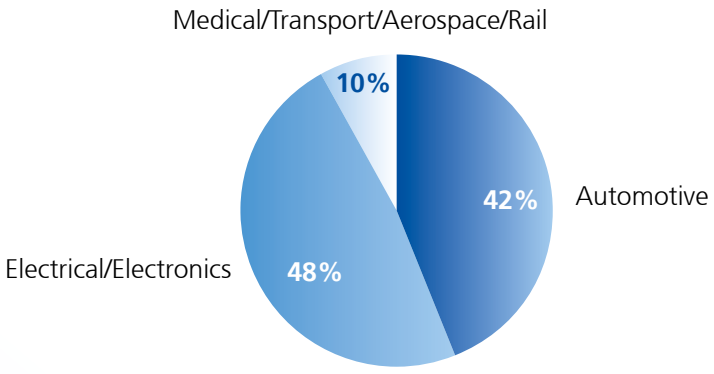
2002 Expansion of the product range came to include the supply of expandable braided sleeves and heat reflective tubing.

2007 Further investment to enhance market leading technical support and to offer a full range of protective sleeves for cables, hoses, pipes and other components destined for the automotive and electrical industries.

2010 Foundation of GREMTEK GmbH, with a new sales network across Europe, new warehouse and logistics centre set up in Germany.

2014 GREMTEC SAS moves into new own premises.

Markets



The GREMTEK range offers a comprehensive solution for all types of cable, hose and pipe protection whether the demands be thermal / mechanical protection, electrical insulation or acoustic dampening.
GREMTEK's R&D department is able to design tailor made solutions according to customer needs or according to the relevant industry standards (ISO, DIN ...).
GREMTEK's experience across a wide range of markets enables customers to draw upon our unique expertise and know-how.

Product Range

- Heat Shrinkable Products
  GREMTUBE® & GREMSHAPES®

- Fixing Systems and Solutions
  GREMFIX® & GREMRING®

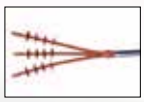
- Braided Sleeves
  GREMFLEX®

- Cable Identification Systems
  GREMARK®

- Heat Reflective Sleeves
  GREMSHIELD® & GREMWRAPS®

- Connection Systems
  GREMSEAL®

- Energy Products
  GREMTUBE® & GREMSHAPES®



Applications

Used in a variety of different applications and markets

Automotive

Assembly, Anti-Abrasion Protection, Thermal Protection, Acoustic Dampening:

- Protection of cables and under-bonnet applications
- Protection of pipes carrying fluids including oil, water and fuel
- Protection of air ducts
- Protection of engine components (pumps, generators)
- Protection of electrical connectors

Electrical / Electronics

Insulation, sealing and identifying:

- Harnesses
- Protection of electrical conductors, cables
- Connectors and sensors

Medical

Assembly, isolation, sealing, protection against chemical attack, identification, transfer of fluids:

- Sensor analysis
- Biological probes

Transport / Aerospace / Rail

- Electrical protection, cable identication

Design

GREMTEK research & development department has extensive knowledge of the capabilities of our products and application areas. They can advise customers on the most appropriate choice of materials in order to meet the stated requirements.

GREMTEK offers a complete service, from co-development of technical solutions, to prototyping, testing, submission of samples and delivery of pre-production and production parts.

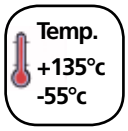
Production

GREMTEK production team aims at suppling the highest quality products whilst maintaining an "on time and in full" delivery philosophy. GREMTEK range is always supplied to our customers specifications.

Tests

GREMTEK laboratory includes a set of test equipment for carrying out the following tests : Impact test , Thermal test , Abrasion and Scratching test, Heat aging test , Fluids test. If unable to undertake a particular test in-house, GREMTEK will outsource this requirement.

How to read the icons



This icon indicates the operating temperature of the product.

This icon indicates the shrink ratio of the product.

This icon indicates the shrink recovery temperature of the product.

This icon indicates that the product is flame retardant.

This icon indicates that the product is made of halogen free polyolefin.

This icon indicates that the product meets MIL Specifications.

This icon indicates that the product is railway approved.

This icon indicates that the product is UL recognized.

This icon indicates that the product is resistant to diesel, petrol and oil.

How to order the products

To order the products please contact our sales team:
Contact details can be found on the back cover.

When you order the products please specify the following information:
Product name - Diameter - Colour of the product - Quantity - Packaging
(e.g. GREMTUBE® G61 3X - 12/4mm - Black - 200m - 1,2m)

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Protective Sleeve Solutions

Energy products Selection Guide

Type		Product	Description	Shrink Ratio	Recovery Temp. (°C)	Operating Temp. (°C)	Flame Retardant	Adhesive	UL	MIL Spec.	Page
Medium & Heavy Wall	GREMTUBE®	GMW	Medium wall tubing	3:1	+125	-55 to +105					8
		GMWA	Medium wall tubing with adhesive								8
		GHW	Heavy wall tubing								9
		GHWA	Heavy wall tubing with adhesive								9
		GHWA 6X	Heavy wall with adhesive, 6:1 shrink ratio	6:1							10
		GCPT	Corrosion protection tubing with black mastic adhesive	3:1	+135	-55 to +135					11
		GLV KIT	Cable joints low voltage kits		+125	-55 to +105					12
		GCST	EPDM Cold shrink tubing	2:1	+105						13
		GCSTS	Silicone Cold shrink tubing	3:1							15
Medium Voltage	GREMTUBE®	GTI/GTO	MV-Termination kit	3:1	+125						19
		GSJU	MV-Joint kit								22
		GTJ	MV-Transition joint kit								23
		GCSJU	Cold shrink cable joint medium voltage kits	2:1	+105						25
		GCSTO	Cold shrink cable termination medium voltage kits	2:1							26
		GATT	Anti-tracking tube	3:1	+125						27
		GSCON	Semi conductive tubiung	5:2 to 3:1		-40 to +100					28
		GSCT	Stress control tubing								29
		GDLT	Double Layer heat shrinkable tubing	3:1	+135	-55 to +135					30
		GBBM	Medium wall bus bar tubing	2:1	+125	-55 to +105					31
		GBBH	Heavy wall bus bar tubing	2:1							32
Specialty Products	GREMTUBE®	GWAS	Wraparound heat shrink sleeve	3:1	+90	-55 to +110					34
		GWAS-R	Wraparound reinforced repair sleeve	>4:1							35
	GREMSPOOL®	GMB	Thin wall tubing in a dispenser	2:1	n. a.	n. a.					36
		GMB A	Dual wall tubing in a dispenser	3:1	n. a.	n. a.					36
Moulded Parts	GREMSHAPES®	GCAPS	Cable end caps		+120	-55 to +110					38
		GCAPS CS	Cold shrink end caps		n. a.	-40 to +150					39
		GBOS 2-3	LV Cable breakout shapes 2-3 fingers		+130	-55 to +110					40
		GBOS 4-5	LV Cable breakout shapes 4-7 fingers								41
		GBOS-CS	LV Cold shrink cable breakout shapes 3-6 fingers	2:1	+105	-55 to +105					42
		GSMP	Cable straight boots MIL-Style		+130	-40 to +135					43
		GRMP	Cable right angled boots MIL-Style								44
		GBOS	Pre insulated pipe sealing cap	3:1		-55 to +110					45
		GBOS-AT	Anti-Tracking cable breakout 3 fingers		+120	-20 to +90					46
		GBOS-SC	Semi conductive cable breakout 3 fingers		+130	-55 to +105					47
		GCES	Creepage extension sheds	???	+125						48

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MEDIUM & HEAVY WALL TUBING

GREMTUBE® GMW / GMWA

GREMTUBE® GHW / GHWA

GREMTUBE® GHW A 6X

GREMTUBE® GCPT

GREMTUBE® GLV KIT

GREMTUBE® GCST

GREMTUBE® GCSTS

MEDIUM & HEAVY WALL TUBING
GREMTUBE® GMW / GMWA
Medium wall tubing (GMW), with adhesive (GMWA)

Temp. +105°C -55°C | Ratio 3:1 | Recovery Temp. +125°C | ZERO halogen

Features/Applications
GREMTUBE® GMW and GMWA are medium wall, halogen free, irradiated polyolefin heat shrink tubing (GMW), with adhesive (GMWA).
GREMTUBE® GMW and GMWA offer good electrical insulation properties, high resistance to impact, abrasion and UV radiation. 3:1 shrink ratio allows it to fit over irregular shapes and large connectors.
GREMTUBE® GMW and GMWA are suitable for a variety of low voltage (up to 15kV) electrical and telecomunication applications, cable joints and terminations where zero halogen properties are required.

Various
Standard colours: Black. Red available on request.

Specifications
Resistant to UV radiation.

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard Length (m)
GREMTUBE® GMW / GMWA	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Total Wall Thickness Nomi. (t)	
008,0	8,0	2,0	2,00	1,2
009,0	9,0	3,0	2,00	1,2
012,0	12,0	4,0	2,00	1,2
016,0	16,0	5,0	2,20	1,2
019,0	19,0	6,0	2,50	1,2
022,0	22,0	6,0	2,50	1,2
025,0	25,0	8,0	2,50	1,2
028,0	28,0	6,0	2,50	1,2
033,0	33,0	8,0	2,50	1,2
035,0	35,0	12,0	2,50	1,2
040,0	40,0	12,0	2,50	1,2
045,0	45,0	13,0	2,50	1,2
055,0	55,0	16,0	2,70	1,2
065,0	65,0	19,0	2,80	1,2
075,0	75,0	22,0	3,00	1,2
085,0	85,0	25,0	3,00	1,2
095,0	95,0	25,0	3,00	1,2
115,0	115,0	34,0	3,00	1,2
130,0	130,0	36,0	3,00	1,2
140,0	140,0	42,0	3,00	1,2
160,0	160,0	50,0	3,00	1,2
175,0	175,0	58,0	3,00	1,2
200,0	200,0	65,0	3,00	1,2
230,0	230,0	75,0	3,00	1,2
260,0	260,0	85,0	3,00	1,2

- Cut pieces available on request

Property			Values	Test Methods
Physical	Working temperature		-55°C to +105°C	-
	Tensile strength	Unaged	≥ 12 Mpa	ASTM D 2671
	Elongation at break	Unaged	≥ 400%	ASTM D 2671
	Tensile strength	Aged (168h @ 158°C)	≥ 12 Mpa	ASTM D 2671
	Elongation at break	Aged (168h @ 158°C)	≥ 350%	ASTM D 2671
	Heat shock	4h @ 200°C	No crack	ASTM D 2671
	Low temperature flexibility	4h @ -55°C	No crack	ASTM D 2671
Electrical	Dielectric strength		≥ 15 kV/mm	ASTM D 2671
	Volume resistivity		≥ 10^{14} Ω.cm	ASTM D 2671
Adhesive	Peel strength to steel		80 N/25 mm	ASTM D 2671
	Peel strength to XLPE		110 N/25 mm	ASTM D 2671

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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MEDIUM & HEAVY WALL TUBING
GREMTUBE® GHW / GHWA
Heavy wall tubing (GHW), with adhesive (GHWA)

Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications
GREMTUBE® GHW and GHWA are halogen free, heavy wall, irradiated polyolefin heat shrink tubing (GHW), with adhesive (GHWA).
GREMTUBE® GHW and GHWA offer good electrical insulation properties, high resistance to impact, abrasion and UV radiation. 3:1 shrink ratio allows it to fit over irregular shapes and large connectors.
GREMTUBE® GHW and GHWA are suitable for a variety of low voltage (up to 36kV) electrical and telecomunication applications, cable joints and terminations where zero halogen properties are required.

Various
Standard colour: Black. Red available on request.
Flame retardant version is available on request (GREMTUBE® GHW-FR / GHWA-FR)

Specifications
Resistant to UV radiation. UL496D.

Dimensions

GREMTUBE® GHW / GHWA	As supplied (mm)	After recovery (mm)		Standard length (m)
	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Mini. (t)	
9/3	9	3	2.6	1.2
12/4	12	4	2.8	1.2
16/5	16	5	3.0	1.2
19/6	19	6	3.0	1.2
22/6	22	6	3.25	1.2
25/8	25	8	3.25	1.2
33/8	33	8	3.25	1.2
40/12	40	12	3.95	1.2
45/13	45	13	3.95	1.2
55/16	55	16	4.05	1.2
65/19	65	19	4.05	1.2
75/22	75	22	4.05	1.2
85/25	85	25	4.05	1.2
95/25	95	25	4.05	1.2
100/30	100	30	4.05	1.2
115/34	115	34	4.05	1.2
130/36	130	36	4.05	1.2
140/42	140	42	4.05	1.2
150/42	150	42	4.05	1.2
150/50	150	50	4.05	1.2
160/50	160	50	4.05	1.2

●Other length and cut pieces available on request

Property	Values	Test Methods
Working temperature	-55°C to +105°C	-
Tensile strength	>12MPa	ASTM D 2671
Break down elongation	>400%	ASTM D 2671
Elongation at break after aging (168hrs at 150°C)	>350%	ASTM D 2671
Tensile strength after aging	12MPa	ASTM D 2671
Low temperature flexibility (4 hrs at -55°c)	No cracking	ASTM D 2671
Heat shock (30min.hrs at 200°C)	No cracking or flowing	ASTM D 2671
Adhésive softening point	85°C	ASTM-E28
Adhesive peel strength to PEX	>30N/cm	ASTM D 1000
Adhesive peel strength to steel	>30N/cm	ASTM D 100
Dielectric strength	>15kV/mm	ASTM D 2671
Water absorption	<0.5%	ASTM D 570

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

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Temp. +105°c -55°c | Ratio 6:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

GREMTUBE® GHWA 6X is a high shrink ratio, halogen free, heavy wall irradiated polyolefin heat shrink tubing with adhesive.
GREMTUBE® GHWA 6X offers excellent mechanical protection to cable joints and terminations, excellent encapsulation propertiy and outstanding resistance to impact and abrasion.
GREMTUBE® GHWA 6X is suitable for protection of cable and accessories (up to 36kV) where high shrink ratio and zero halogen properties are required.

Various

Standard colour: Black. Other available on request.

Specifications

Resistant to UV radiation.

Dimensions

GREMTUBE® GHWA 6X	As supplied (mm)	After recovery (mm)		Standard length (m)
	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Mini. (t)	
19,0	19	3,2	3,2	1-1,2
33,0	33	5,5	3,4	1-1,2
44,4	44,4	7,4	3,6	1-1,2
50,8	50,8	8,3	4,8	1-1,2
69,8	69,8	11,7	4,8	1-1,2
88,9	88,9	17,1	4,8	1-1,2
119,4	119,4	22,9	4,8	1-1,2
235,0	235	40	4,8	1-1,2

●Other length and cut pieces available on request

Property	Values	Test Methods
Working temperature	-55°C to +105°C	-
Tensile strength	12MPa	ASTM D 2671
Elongation	400%	ASTM D 2671
Specific gravity	1.15	ASTM D 792
Elongation at break after aging (168hrs at 150°C)	350%	ASTM D 2671
Tensile strength after aging	12MPa	ASTM D 2671
Low temperature flexibility (4 hrs at -55°c)	No cracking	ASTM D 2671
Hardness (shore D)	55~60D	ASTM D 2240
Heat shock (4hrs at 200°C)	No cracking or flowing	ASTM D 2671
Adhésive softening point	85°C	ASTM-E28
Adhesive peel strength to P.E.	110N/25mm	ASTM D 1000
Adhesive peel strength to aluminum	80N/25mm	ASTM D 100
Dielectric strength	20kV/mm	ASTM D 2671
volume resistivity	$10^{14}\Omega.cm$	ASTM D 257
Copper corrosion	No corrosion	ASTM D 2671
Water absorption	0.5%	ASTM D 570
Fungus resistance	No growth	ASTM G21

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

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MEDIUM & HEAVY WALL TUBING

GREMTUBE® GCPT

Corrosion protection tubing with black mastic adhesive

Temp. +135°C -55°C | Ratio 3:1 | Recovery Temp. +135°C | ZERO halogen

Features/Applications

GREMTUBE® GCPT is a dual wall, irradiated polyolefin heat shrink tubing, with black mastic adhesive.
GREMTUBE® GCPT offers good mechanical properties and an efficient protection against water, moisture and chemicals.
GREMTUBE® GCPT is suitable for protecting metal pipes against corrosion as well for low voltage (up to 1kV) cables and accessories insulation.

Various

Standard colour: Black.

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard length (mm)
GREMTUBE® GCPT	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Mini. (t)	
033,0	33,0	10,0	2,80	1,22
037,0	37,0	12,0	2,90	1,22
045,0	45,0	22,0	2,60	1,22
055,0	55,0	22,0	2,60	1,22
075,0	75,0	25,0	3,10	1,22
080,0	80,0	28,0	3,10	1,22
095,0	95,0	36,0	3,20	1,22
120,0	120,0	40,0	3,20	1,22
140,0	140,0	60,0	3,35	1,22
160,0	160,0	60,0	3,35	1,22
180,0	180,0	60,0	3,40	1,22
210,0	210,0	70,0	3,40	1,22
230,0	230,0	100,0	3,40	1,22
270,0	270,0	100,0	3,40	1,22
300,0	300,0	100,0	3,40	1,22
350,0	350,0	100,0	3,70	1,22
380,0	380,0	150,0	3,70	1,22
410,0	410,0	150,0	3,90	1,22

● Other length and cut pieces available on request

Property			Values	Test Methods
Physical	Working temperature		-55°C to +135°C	-
	Longitudinal shrinkage		±10%	UL 224
	Tensile strength	Unaged	17 MPa	ASTM D 2671
	Elongation at break	Unaged	≥ 400%	ASTM D 2671
	Tensile strength	Aged 168h @ 150°C	> 12 MPa	ASTM D 2671
	Elongation at break	Aged 168h @ 150°C	> 300%	ASTM D 2671
	Water absorption	24h @ 23°C	< 0,15%	ISO 62
	Density		1,05 g/cm³	ASTM D 792
Electrical	Dielectric strength		≥ 18 kV/mm	IEC 243
	Volume resistance		≥ 10^{14} Ω.cm	IEC 93
Chemical	Copper stability		Pass	ASTM D 2671
Adhesive	Water absorption		< 0,2%	ISO 62
	Resistance to fungus and decay		Pass	ISO 846
	Peel strength to steel at 23°C	Cross head speed 100mm/min	> 20 N/cm²	ISO 4587
	Shear strength at 23°C	Cross head speed 50mm/min	> 10 N/cm²	ISO 4587
	Softening point		105 - 115°C	ASTM E28

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

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www.gremtek.de

Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

GREMTUBE® GLV KIT is a medium & heavy wall, irradiated polyolefin heat shrink tubing kit.
GREMTUBE® GLV KIT offers good electrical insulation and mechanical protection. It ensures a total encapsulation of the component after shrinkage.The kit contains 1 outer and 4 to 5 cores insulating sleeves depending on the type of cable (NAYY, NAYBY, NA2XY).
GREMTUBE® GLV KIT is suitable for jointing 4 to 5 core 0,6kV Uo/1kV U plastic insulated armored or unarmored cables.

Various

Standard colour: Black.

Specifications

Resistant to UV radiation.

Part numbering system

GLPYJ-4X 150-240-SU

- G=GREMTEK®
- L=Low voltage;
- M=Medium voltage
- Type of cable
  - PY=Polymeric cable
  - PA=Paper
  - TR=Transition
- J=Joint; T=Termination;
- B=Branch
- Number of Core
- Size range
- Type of connector
  - C=Crimp connector
  - S=Screw connector
  - D=Deep indent
- Type of screen: U=Unarmoured
  - C=Concentric neutral
  - T=Taped armor
  - W=Steel wire armor
  - A=Aluminium wire armor

TERMINATIONS FOR 3.5, 4 AND 5-CORE PLASTIC CABLES

Description					Lug Dia. mm max
3.5 AND 4-CORE PLASTIC CABLE WITHOUT ARMOUR - CRIMP					
GLPYT - 4 x	4	-	35	'-CU	14
GLPYT - 4 x	25	-	70	'-CU	22
GLPYT - 4 x	70	-	150	'-CU	31
GLPYT - 4 x	150	-	300	'-CU	45
3.5 AND 4-CORE PLASTIC CABLE WITHOUT ARMOUR - MECH. LUG					
GLPYT - 4 x	25	-	70	'-SU	22
GLPYT - 4 x	50	-	150	'-SU	31
GLPYT - 4 x	120	-	240	'-SU	45
3.5 AND 4-CORE PLASTIC CABLE WITH TAPE ARMOUR - CRIMP					
GLPYT - 4 x	4	-	35	'-CT	14
GLPYT - 4 x	25	-	70	'-CT	22
GLPYT - 4 x	70	-	150	'-CT	31
GLPYT - 4 x	150	-	300	'-CT	45
3.5 AND 4-CORE PLASTIC CABLE WITH ARMOUR - MECH. LUG					
GLPYT - 4 x	25	-	70	'-ST	22
GLPYT - 4 x	50	-	150	'-ST	31
GLPYT - 4 x	120	-	240	'-ST	45
4-CORE PLASTIC CABLE WITH CONCENTRIC NEUTRAL - CRIMP					
GLPYT - 4 x	4	-	35	'-CC	14
GLPYT - 4 x	25	-	70	'-CC	22
GLPYT - 4 x	70	-	150	'-CC	31
GLPYT - 4 x	150	-	300	'-CC	45
4-CORE PLASTIC CABLE WITH CONCETRIC NEUTRAL - MECH. LUG					
GLPYT - 4 x	25	-	70	'-SC	22
GLPYT - 4 x	50	-	150	'-SC	31
GLPYT - 4 x	120	-	240	'-SC	45
4-CORE PLASTIC CABLE WITH CONCETRIC NEUTRAL - MECH. LUG					
GLPYT - 5 x	4	-	25	'-CU	14
4-CORE PLASTIC CABLE WITH CONCETRIC NEUTRAL - MECH. LUG					
GLPYT - 5 x	4	-	25	'-CU	45

RoHS

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

30/03/2012 Rev2

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PLASTIC CABLE INLINE JOINTS FOR 4-CORE CABLES

Description	Connector* Dia. mm max	Length mm max
4-CORE PLASTIC CABLE W/O ARMOUR - CRIMP		
GLPYJ - 4 x 1.5 - 10 `-CU	8	35
GLPYJ - 4 x 6 - 16 `-CU	10	50
GLPYJ - 4 x 6 - 25 `-CU	10	75
GLPYJ - 4 x 16 - 35 `-CU	18	95
GLPYJ - 4 x 16 - 50 `-CU	18	95
GLPYJ - 4 x 35 - 70 `-CU	22	105
GLPYJ - 4 x 70 - 150 `-CU	26	130
GLPYJ - 4 x 95 - 300 `-CU	37	150
4-CORE PLASTIC CABLE W/O ARMOUR - MECH. CONNECTOR		
GLPYJ - 4 x 1.5 - 6 `-SU	8	24
GLPYJ - 4 x 4 - 16re `-SU	10	30
GLPYJ - 4 x 10 - 35 `-SU	16	40
GLPYJ - 4 x 25 - 70 `-SU	26	60
GLPYJ - 4 x 70 - 120 `-SU	29	75
GLPYJ - 4 x 150 - 240 `-SU	38	85
4-CORE PLASTIC CABLE WITH CONCENTRIC NEUTRAL - CRIMP		
GLPYJ - 4 x 1.5 - 10 `-CC	8	35
GLPYJ - 4 x 6 - 25 `-CC	10	75
GLPYJ - 4 x 16 - 50 `-CC	18	95
GLPYJ - 4 x 70 - 150 `-CC	26	130
GLPYJ - 4 x 95 - 300 `-CC	37	150
4-CORE PLASTIC CABLE WITH CONCENTRIC NEUTRAL - MECH. CONNECTOR		
GLPYJ - 4 x 10 - 35 `-SC	16	40
GLPYJ - 4 x 25 - 70 `-SC	26	60
GLPYJ - 4 x 70 - 120 `-SC	29	75
GLPYJ - 4 x 150 - 240 `-SC	38	85
4-CORE PLASTIC CABLE WITH ARMOUR - CRIMP		
GLPYJ - 4 x 1.5 - 10 `-CT	8	35
GLPYJ - 4 x 6 - 25 `-CT	12	75
GLPYJ - 4 x 16 - 50 `-CT	18	95
GLPYJ - 4 x 70 - 150 `-CT	26	130
GLPYJ - 4 x 95 - 300 `-CT	37	150
4-CORE PLASTIC CABLE WITH ARMOUR - MECH. CONNECTOR		
GLPYJ - 4 x 10 - 35 `-ST	16	40
GLPYJ - 4 x 25 - 70 `-ST	26	60
GLPYJ - 4 x 70 - 120 `-ST	29	75
GLPYJ - 4 x 150 - 240 `-ST	38	85

*possible use (not included in the kit)

PLASTIC CABLE INLINE JOINTS FOR 3.5-CORE CABLES

Description	Connector* Dia. mm max	Length mm max
3.5-CORE PLASTIC CABLE W/O ARMOUR - CRIMP		
GLPYJ - 3 x 25-50 `/ 1x 16-25 `-CU	18	95
GLPYJ - 3 x 70-150 `/ 1x 25-70 `-CU	26	130
GLPYJ - 3 x 150-240 `/ 1x 70-120 `-CU	37	150
GLPYJ - 3 x 150-240 `/ 1x 95-120 `-CU	37	150
3.5-CORE PLASTIC CABLE W/O ARMOUR - MECH. CONNECTOR		
GLPYJ - 3 x 25-70 `/ 1x 16-35 `-SU	25	60
GLPYJ - 3 x 70-120 `/ 1x 25-70 `-SU	28	70
GLPYJ - 3 x 150 `/ 1x 70 `-SU	38	80
GLPYJ - 3 x 150-240 `/ 1x 70-120 `-SU	38	80
3.5-CORE PLASTIC CABLE WITH ARMOUR - CRIMP		
GLPYJ - 3 x 25-50 `/ 1x 16-25 `-CT	18	95
GLPYJ - 3 x 70-150 `/ 1x 25-70 `-CT	26	130
GLPYJ - 3 x 150-240 `/ 1x 70-120 `-CT	37	150
GLPYJ - 3 x 150-240 `/ 1x 95-120 `-CT	37	150
3.5-CORE PLASTIC CABLE WITH ARMOUR - MECH. CONNECTOR		
GLPYJ - 3 x 25-70 `/ 1x 16-35 `-ST	25	60
GLPYJ - 3 x 70-120 `/ 1x 25-70 `-ST	28	70
GLPYJ - 3 x 150 `/ 1x 70 `-ST	38	80
GLPYJ - 3 x 150-240 `/ 1x 70-120 `-ST	38	80

*possible use (not included in the kit)

PLASTIC CABLE INLINE JOINTS FOR 5-CORE CABLES

DESCRIPTION	Connector* Dia. mm max	Length mm max
5-CORE PLASTIC CABLE W/O ARMOUR - CRIMP		
GLPYJ - 5 x 1.5 - 10 `-CU	8	35
GLPYJ - 5 x 6 - 16 `-CU	10	50
GLPYJ - 5 x 6 - 25 `-CU	10	75
5-CORE PLASTIC CABLE W/O ARMOUR - MECH. CONNECTOR		
GLPYJ - 5 x 1.5 - 6 `-SU	8	24
GLPYJ - 5 x 4 - 16 `-SU	10	30
GLPYJ - 5 x 10 - 25 `-SU	16	40

*possible use (not included in the kit)

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Features/Applications

GREMTUBE®GCST is a halogen free, environmentally friendly EPDM based Cold shrink tube.
GREMTUBE®GCST offers good thermal stability, simple installation and is waterproofed.
GREMTUBE®GCST are suitable to cover for a wide range of cable diameter without using an open flame.

Various

Standard colour: Black.

Specifications

Cenelec HD 629

Dimensions

GREMTUBE® GCST	OD Size before - after (mm)	Standard Length (mm)
GCST/20-152	20 - 10	152
GCST/25-178	25 - 13	178
GCST/25-203	25 - 13	203
GCST/25-280	25 - 13	280
GCST/25-300	25 - 13	300
GCST/35-152	35 - 18	152
GCST/35-203	35 - 18	203
GCST/35-230	35 - 18	152
GCST/35-280	35 - 18	280
GCST/40-152	40 - 20	152
GCST/40-203	40 - 20	305
GCST/40-254	40 - 20	254
GCST/40-305	40 - 20	305
GCST/40-406	40 - 20	406
GCST/40-457	40 - 20	457
GCST/53-152	53 - 27	152
GCST/53-180	53 - 27	180
GCST/53-203	53 - 27	203
GCST/53-254	53 - 27	254
GCST/53-305	53 - 27	305
GCST/53-457	53 - 27	457
GCST/70-152	70 - 35	152
GCST/70-180	70 - 35	180
GCST/70-230	70 - 35	230
GCST/70-305	70 - 35	305
GCST/70-330	70 - 35	330
GCST/70-355	70 - 35	355
GCST/70-457	70 - 35	457
GCST/104-203	104 - 52	203
GCST/104-229	104 - 52	229
GCST/104-508	104 - 52	508

When ordering, specify product code and length required, please.

Property	Values	Test Methods
Working temperature	-55°C to +105°C	-
Tensile strength	12MPa	ASTM D 2671
Elongation at break after aging (168hrs at 150°C)	> 630%	ASTM D 2671
Tensile strength after aging	> 11MPa	ASTM D 2671
Hardness (shore D)	HA > 45D	ASTM D 2240
Dielectric strength	> 18kV/mm	ASTM D 2671
Water absorption (168hrs at 90°C)	< 3.0%	ASTM D 570
A.C. voltage withstand 2.4kV/min	Pass	
D.C. voltage withstand 1.0kV/1min	Pass	
Dielectric constant	5.0	IEC 250

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

30/03/2012 Rev1

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GREMTUBE® GCSTS

Silicone Cold shrink tubing

Features/Applications

GREMTUBE®GCSTS is a halogen free, environmentally friendly silicone based cold shrink tube.
GREMTUBE®GCSTS offers good thermal stability, simple installation and is waterproofed.
GREMTUBE®GCSTS are suitable to cover for a wide range of cable diameter without using an open flame.

Various

Standard colour: Grey.

Specifications

Cenelec HD 629

Dimensions

GREMTUBE® GCSTS	OD Size before - after (mm)	Standard Length (mm)
GCSTS 20/6	20 - 6	450
GCSTS 28/8	28 - 8	500
GCSTS 32/9	32 - 9	490
GCSTS 32/10	32 - 10	490
GCSTS 35/14	35 - 14	450
GCSTS 40/16	40 - 16	450
GCSTS 47/19	47 - 19	470
GCSTS 53/23	53 - 23	500
GCSTS 65/23	65 - 23	500
GCSTS 70/28	70 - 28	500
GCSTS 80/34	80 - 34	500
GCSTS 104/40	104 - 40	500
GCSTS 120/35	120 - 35	430
GCSTS 150/73	150 - 73	480

When ordering, specify product code and length required, please.

Property	Values	Test Methods
Working temperature	-55°C to +105°C	-
Tensile strength	12MPa	ASTM D 2671
Elongation at break after aging (168hrs at 150°C)	> 630%	ASTM D 2671
Tensile strength after aging	> 11MPa	ASTM D 2671
Hardness (shore D)	HA > 45D	ASTM D 2240
Dielectric strength	> 18kV/mm	ASTM D 2671
Water absorption (168hrs at 90°C)	< 3.0%	ASTM D 570
A.C. voltage withstand 2.4kV/min	Pass	
D.C. voltage withstand 1.0kV/1min	Pass	
Dielectric constant	5.0	IEC 250

30/3/2015 Rev2

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Notes

GREMTEK
A Tradename of GREMCO
Protective Sleeve Solutions

MEDIUM VOLTAGE PRODUCTS

GREMTUBE®
MV-Termination Kit
GREMTUBE® MV-Joint Kit
GREMTUBE®
MV-Transition Joint Kit
GREMTUBE®
CS-MV-Joint Kit
GREMTUBE®
CS-MV-Termination Kit
GREMTUBE® GATT
GREMTUBE® GSCON
GREMTUBE® GSCT
GREMTUBE® GBBH
GREMTUBE® GBBM

Medium Voltage Heat Shrinkable Joints & Terminations

Performance of Gremtek Heat Shrinkable Medium Voltage cable accessoties when tested according to IEC 60502.4

Requirements acc. to CENELEC.

Test sequence	Item	6.35/11 (12)kV	8.7/15 (17.5)kV	12/20 (24)kV	Performed test acc. to IEC 60502.4 Result
1	AC withstand voltage test (in air and ambient temperature)	AC for 5 min. at 29k.V. no breakdown, no flashover	AC for 5 min. at 39k.V. no breakdown, no flashover	AC for 5 min. at 54k.V. no breakdown, no flashover	PASS
2	Partial discharge	10pC max. at 11kV	10pC max. at 15kV	10pC max. at 20kV	PASS
3	Impulse withstand test	10 impulse of each polarity at 75kV	10 impulse of each polarity at 95kV	10 impulse of each polarity at 125kV	PASS
4	Heating cycles in air (Joints only)	30 cycles at 95°C -100°C and 16kV in air, no breakdown, no flashover	30 cycles at 95°C -100°C and 22kV in air, no breakdown, no flashover	30 cycles at 95°C -100°C and 30kV in air, no breakdown, no flashover	PASS
5	Heating cycles under water (Joints only)	30 cycles at 95°C -100°C and 16kV under water, no breakdown, no flashover	30 cycles at 95°C -100°C and 22kV under water, no breakdown, no flashover	30 cycles at 95°C -100°C and 30kV, under water, no breakdown, no flashover	PASS
6	Heating cycles in air (Termination only)	60 cycles at 95°C -100°C and 16kV in air, no breakdown, no flashover	60 cycles at 95°C -100°C and 22kV in air, no breakdown, no flashover	60 cycles at 95°C -100°C and 30kV in air, no breakdown, no flashover	PASS
7	Partial discharge at 95°C - 100°C	10pC max. at 11kV	10pC max. at 15kV	10pC max. at 20kV	PASS
8	Thermal short-circuit (screen)	No visible deterioration at 3.0 kA, 1s	No visible deterioration at 3.0 kA, 1s	No visible deterioration at 3.0 kA, 1s	PASS
9	Dynamic short-circuit (conductor)	No visible deterioration at 23.0 kA, 2s	No visible deterioration at 23.0 kA, 2s	No visible deterioration at 23.0 kA, 2s	PASS
10	Dynamic short-circuit	No visible deterioration at 81.0 kA, not less than 10 ms	No visible deterioration at 81.0 kA, not less than 10 ms	No visible deterioration at 81.0 kA, not less than 10 ms	PASS
11	Impulse withstand test	10 impulse of each polarity at 75kV	10 impulse of each polarity at 95kV	10 impulse of each polarity at 125kV	PASS
12	AC withstand voltage test	AC for 15 min.at 16kV. no breakdown, no flashover	AC for 15 min.at 22kV. no breakdown, no flashover	AC for 15 min.at 30kV. no breakdown, no flashover	PASS
13	Salt fog (Outdoor terminations only)	1000 houers 8kV, no breakdown, no flashover	1000 houers 11kV, no breakdown, no flashover	1000 houers 15kV, no breakdown, no flashover	PASS
14	Humidity(Indoor terminations only)	300 houers 8kV, no breakdown, no flashover	300 houers 11kV, no breakdown, no flashover	300 houers 11kV, no breakdown, no flashover	PASS

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Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

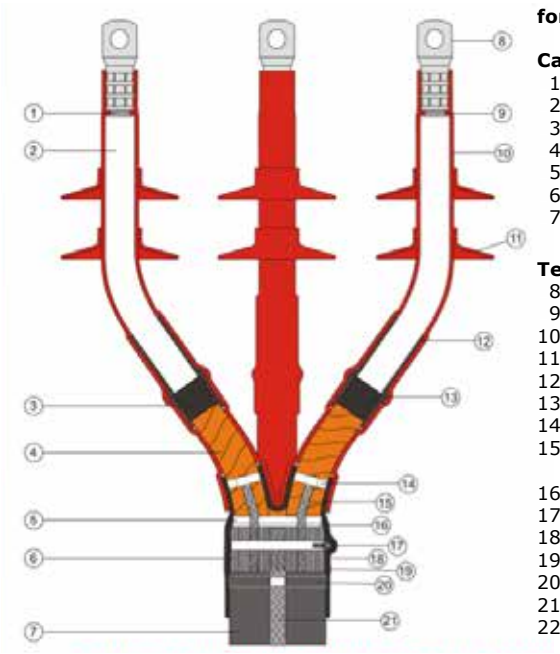
GREMTUBE® MV-Termination kit is a medium and heavy wall, irradiated polyolefin heat shrink tubing 3-core termination kit.
GREMTUBE® MV-Termination kit offers excellent electrical insulation and mechanical protection up to 7.2kV for 3-core indoor and outdoor applications.
GREMTUBE® MV-Termination kit is suitable from 35mm² to 300mm² XLPE cables.

Various

Standard colour: Black.

Specifications

Cenelec HD 629



Indoor & Outdoor Termination for 3 Core HT XLPE Cable

Cable Parts

1. Conductor
2. XLPE Insulation
3. Semicon
4. Metal Screen
5. Inner Sheath
6. Armour
7. Outer Sheath

Termination Kit Parts

8. Lug (optional)
9. Sealing Mastic
10. Non Tracking Tube
11. Creepage Extension Shed
12. Stress Control Tube
13. Stress Grading Mastic
14. Roll Spring (optional)
15. Screen Earthing Braid (optional)
16. Support Ring (optional)
17. T. C. Wire Mesh (otional)
18. S. S. Hose Clip (optional)
19. Black Mastic
20. Breakout
21. Sealing Mastic
22. T. C. Braid (optional)

Part. No.	Voltage Class	Description	complete with screen earthing
GTI 7.2X 35-95-3/e	7.2kV	Indoor termination for 3 x 35-95mm² XLPE cables	c/w sreen earthing
GTI 7.2X 120-300-3/e	7.2kV	Indoor termination for 3 x 120-300mm² XLPE cables	c/w sreen earthing
GTO 7.2X 35-95-3/E	7.2kV	Outdoor termination for 3 x 35-95mm² XLPE cables	c/w sreen + armour earthing
GTO 7.2X 120-300-3/E	7.2kV	Outdoor termination for 3 x 120-300mm² XLPE cables	c/w sreen + armour earthing

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/03/2012 Rev1

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Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

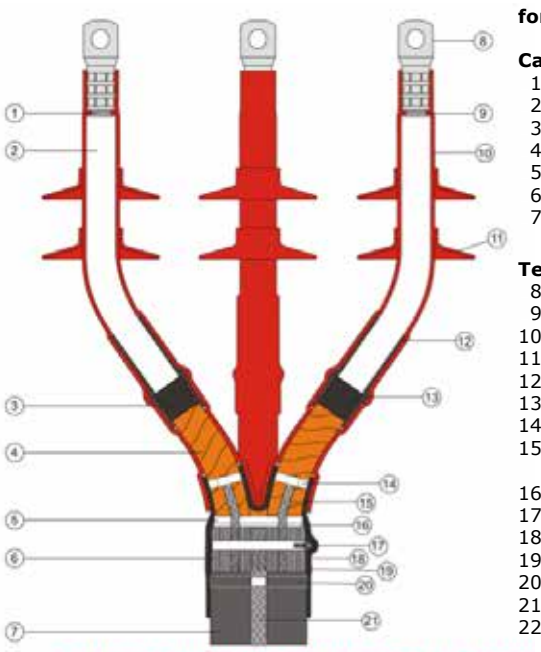
GREMTUBE® MV-Termination kit is a medium and heavy wall, irradiated polyolefin heat shrink tubing 1- and 3-core termination kit.
GREMTUBE® MV-Termination kit offers excellent electrical insulation and mechanical protection up to 11kV for 1 and 3-core indoor and outdoor applications.
GREMTUBE® MV-Termination kit is suitable from 35mm² to 1000mm² XLPE cables.

Various

Standard colour: Black.

Specifications

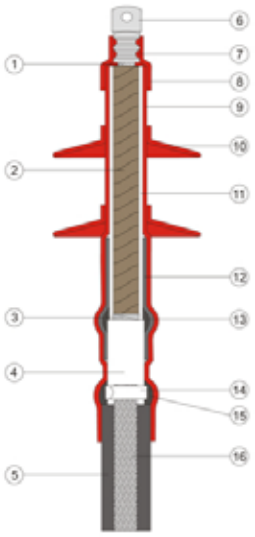
Cenelec HD 629



Indoor & Outdoor Termination for 3 Core HT XLPE Cable

Cable Parts
1. Conductor
2. XLPE Insulation
3. Semicon
4. Metal Screen
5. Inner Sheath
6. Armour
7. Outer Sheath

Termination Kit Parts
8. Lug (optional)
9. Sealing Mastic
10. Non Tracking Tube
11. Creepage Extension Shed
12. Stress Control Tube
13. Stress Grading Mastic
14. Roll Spring (optional)
15. Screen Earthing Braid (optional)
16. Support Ring (optional)
17. T. C. Wire Mesh (otional)
18. S. S. Hose Clip (optional)
19. Black Mastic
20. Breakout
21. Sealing Mastic
22. T. C. Braid (optional)



Indoor & Outdoor Termination for 1 Core HT XLPE Cable

Cable Parts
1. Conductor
2. XLPE Insulation
3. Semicon
4. Copper Tape Screen
5. Outer Sheath

Termination Kit Parts
6. Lug (optional)
7. Sealing Mastic
8. Non Tracking Tube
9. Creepage Extension Shed
10. Stress Control Tube
11. Stress Grading Mastic
12. Roll Spring (optional)
13. Sealing Mastic
14. T. C. Braid (optional)

Part. No.	Voltage Class	Description	complete with screen earthing
GTI 12X 35-95-1	11kV	Indoor termination for 35-95mm² XLPE/CWS cables	(set of 3 phases)
GTI 12X 95-185-1	11kV	Indoor termination for 95-185mm² XLPE/CWS cables	(set of 3 phases)
GTI 12X 185-300-1	11kV	Indoor termination for 185-300mm² XLPE/CWS cables	(set of 3 phases)
GTI 12X 95-300-1	11kV	Indoor termination for 95-300mm² XLPE/CWS cables	(set of 3 phases)
GTI 12X 300-630-1	11kV	Indoor termination for 300-630mm² XLPE/CWS cables	(set of 3 phases)
GTI 12X 630-1200-1	11kV	Indoor termination for 630-1200mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 35-95-1	11kV	Outdoor termination for 35-95mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 95-185-1	11kV	Outdoor termination for 95-185mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 185-300-1	11kV	Outdoor termination for 185-300mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 95-300-1	11kV	Outdoor termination for 95-300mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 300-630-1	11kV	Outdoor termination for 300-500mm² XLPE/CWS cables	(set of 3 phases)
GTO 12X 630-1200-1	11kV	Outdoor termination for 630-1000mm² XLPE/CWS cables	(set of 3 phases)

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

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Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

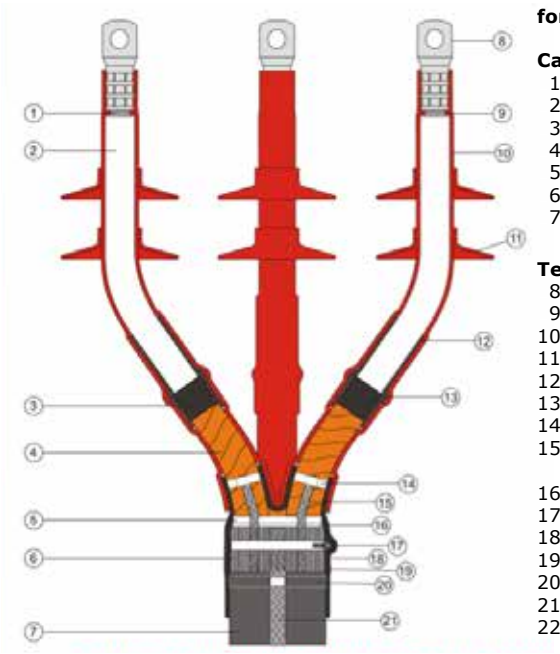
GREMTUBE® MV-Termination kit is a medium and heavy wall, irradiated polyolefin heat shrink tubing 1 and 3-core termination kit.
GREMTUBE® MV-Termination kit offers excellent electrical insulation and mechanical protection up to 24/36kV for 1 and 3-core indoor and outdoor applications.
GREMTUBE® MV-Termination kit is suitable from 35mm² to 1000mm² XLPE cables.

Various

Standard colour: Black.

Specifications

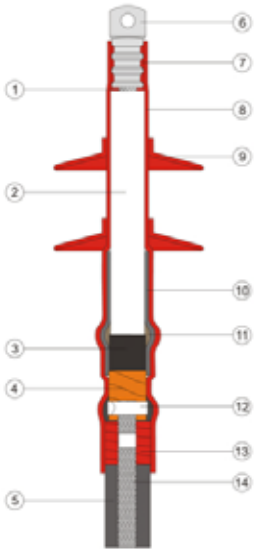
Cenelec HD 629



Indoor & Outdoor Termination for 3 Core HT XLPE Cable

Cable Parts
1. Conductor
2. XLPE Insulation
3. Semicon
4. Metal Screen
5. Inner Sheath
6. Armour
7. Outer Sheath

Termination Kit Parts
8. Lug (optional)
9. Sealing Mastic
10. Non Tracking Tube
11. Creepage Extension Shed
12. Stress Control Tube
13. Stress Grading Mastic
14. Roll Spring (optional)
15. Screen Earthing Braid (optional)
16. Support Ring (optional)
17. T. C. Wire Mesh (otional)
18. S. S. Hose Clip (optional)
19. Black Mastic
20. Breakout
21. Sealing Mastic
22. T. C. Braid (optional)



Indoor & Outdoor Termination for 1 Core HT XLPE Cable

Cable Parts
1. Conductor
2. XLPE Insulation
3. Semicon
4. Copper Tape Screen
5. Outer Sheath

Termination Kit Parts
6. Lug (optional)
7. Sealing Mastic
8. Non Tracking Tube
9. Creepage Extension Shed
10. Stress Control Tube
11. Stress Grading Mastic
12. Roll Spring (optional)
13. Sealing Mastic
14. T. C. Braid (optional)

Part. No.	Voltage Class	Description	complete with screen earthing
GTI 36X 35-95-1	24/36kV	Indoor termination for 35-95mm² XLPE/CWS cables	(set of 3 phases)
GTI 36X 95-185-1	24/36kV	Indoor termination for 95-185mm² XLPE/CWS cables	(set of 3 phases)
GTI 36X 185-300-1	24/36kV	Indoor termination for 185-300mm² XLPE/CWS cables	(set of 3 phases)
GTI 36X 300-630-1	24/36kV	Indoor termination for 300-630mm² XLPE/CWS cables	(set of 3 phases)
GTI 36X 630-1200-1	24/36kV	Indoor termination for 630-1200mm² XLPE/CWS cables	(set of 3 phases)
GTO 36X 35-95-1	24/36kV	Outdoor termination for 35-95mm² XLPE/CWS cables	(set of 3 phases)
GTO 36X 95-185-1	24/36kV	Outdoor termination for 95-185mm² XLPE/CWS cables	(set of 3 phases)
GTO 36X 185-300-1	24/36kV	Outdoor termination for 185-300mm² XLPE/CWS cables	(set of 3 phases)
GTO 36X 300-630-1	24/36kV	Outdoor termination for 300-630mm² XLPE/CWS cables	(set of 3 phases)
GTO 36X 630-1200-1	24/36kV	Outdoor termination for 630-1200mm² XLPE/CWS cables	(set of 3 phases)

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/03/2012 Rev1

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Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

GREMTUBE® MV-Joint kit is a medium and heavy wall, irradiated polyolefin heat shrink tubing 1- and 3-core joint kit.
GREMTUBE® MV-Joint kit offers excellent electrical insulation and mechanical protection from 12kV to 24/36kv for 1 and 3-core applications.
GREMTUBE® MV-Joint kit is suitable from 35mm² to 630mm² XLPE cables.

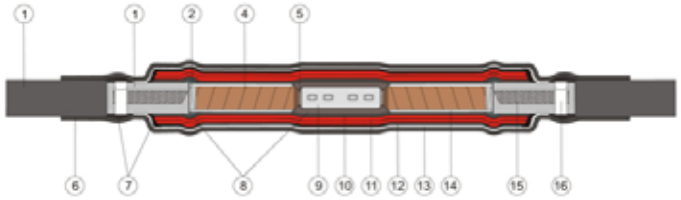
Various

Standard colour: Black.

Specifications

Cenelec HD 629

Straight Through Joint for 1 Core HT XLPE Cable

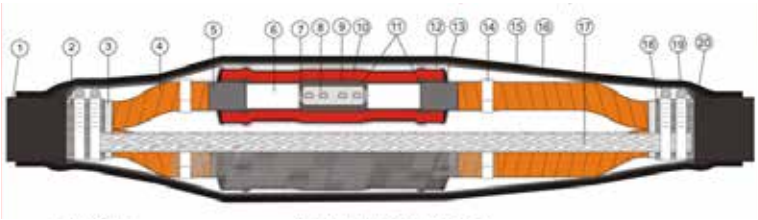


Cable Parts
1. Cable Outer Sheat
2. Copper Tape Screen
3. Semicon
4. Conductor
5. XLPE Insulation

Straight Through Joint Kit Parts
6. Corrosion Protection Tube
7. Black Mastic
8. Stress Grading Mastic
9. Connector (optional)
10. Stress Control Tube
11. Connector Insulating Tubes
12. Semiconductive Tube
13. T. C. Wire Mesh (optional)
14. T. C. Braid (optional)
15. Roll Spring (otional)

Part. No.	Voltage Class	Description
GSJU 12X 35-95-1	12kV	Straight Joint for 1 x 35-95mm² XLPE/CWS cables
GSJU 12X 95-185-1	12kV	Straight Joint for 1 x 95-185mm² XLPE/CWS cables
GSJU 12X 185-300-1	12kV	Straight Joint for 1 x 185-300mm² XLPE/CWS cables
GSJU 12X 95-300-1	12kV	Straight Joint for 1 x 95-300mm² XLPE/CWS cables
GSJU 12X 300-630-1	12kV	Straight Joint for 1 x 300-630mm² XLPE/CWS cables
GSJU 12X 630-1200-1	12kV	Straight Joint for 1 x 630-1200mm² XLPE/CWS cables

Straight Through Joint for 3 Core HT XLPE Cable



Cable Parts
1. Outer Sheat
2. Armour
3. Inner Sheat
4. Copper Tape Screen
5. Semicon
6. XLPE Insulation
7. Conductor

Straight Through Joint Kit Parts
8. Connector (optional)
9. Stress Control Tube
10. Dual Wall Tube
11. Stress Grading Mastic
12. T. C. Wire Mesh (optional)
13. Black Mastic
14. Roll Spring (otional)
15. Cannister (optional)
16. Corrosion Protection Tube
17. T. C. Braid (optional)
18. T. C. Wire Mesh (optional)
19. S. S. Hose Clip (optional)
20. Black Mastic

Part. No.	Voltage Class	Description
GSJU 36X 35-95-1	24/36kV	Straight Joint for 1 x 35-95mm² XLPE/CWS cables
GSJU 36X 95-185-1	24/36kV	Straight Joint for 1 x 95-185mm² XLPE/CWS cables
GSJU 36X 185-300-1	24/36kV	Straight Joint for 1 x 185-300mm² XLPE/CWS cables
GSJU 36X 95-300-1	24/36kV	Straight Joint for 1 x 95-300mm² XLPE/CWS cables
GSJU 36X 300-630-1	24/36kV	Straight Joint for 1 x 300-630mm² XLPE/CWS cables
GSJU 36X 630-1200-1	24/36kV	Straight Joint for 1 x 630-1200mm² XLPE/CWS cables

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/03/2012 Rev1

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GREMTUBE® MV-Transition Joint Kit

Cable transition joint medium voltage kits

Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications

GREMTUBE® MV-Transition Joint kit is a medium and heavy wall, irradiated polyolefin heat shrink tubing 1 and 3-core transition joint kit.
GREMTUBE® MV-Transition Joint kit offers excellent electrical insulation and mechanical protection from 12kV to 24/36kV for 1 and 3-core applications.
GREMTUBE® MV-Termination kit is suitable from 35mm² to 630mm² for various cable combinations.

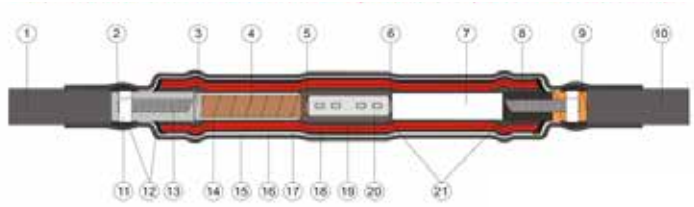
Various

Standard colour: Black.

Specifications

Cenelec HD 629

Transition Joint for 1 Core HT XLPE to PILC Cable



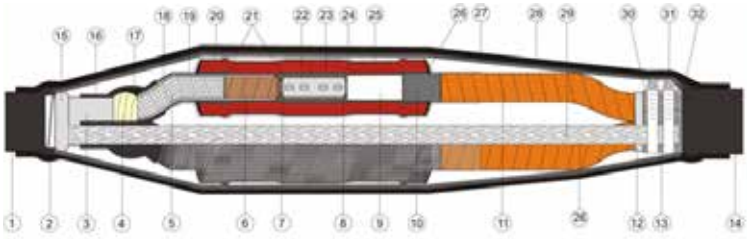
PILC Cable Parts
1. Cable Outer Sheath
2. Lead Sheath
3. Metalised Paper Screen
4. Paper Insulation
5. Conductor

XLPE Cable Parts
6. Conductor
7. XLPE Insulation
8. Semicon
9. Copper Tape Screen
10. Outer Sheath

Transition Joint Kit Parts
11. Roll Spring (optional)
12. Black Mastic
13. T. C. Copper Braid (optional)
14. Clear Insulating Tube
15. Corrosion Protection Tube
16. T.C. Copper Wire Mesh (opt.)
17. Semiconductive Tube
18. Connector Insulating Tube
19. Stress Control Tube
20. Connector (optional)
21. Stress Grading Mastic

Part. No.	Voltage Class	Description
GTJ 12X 35-95-1	12kV	Transition Joint for 1 x 35-95mm² XLPE/CWS cables
GTJ 12X 95-185-1	12kV	Transition Joint for 1 x 95-185mm² XLPE/CWS cables
GTJ 12X 185-300-1	12kV	Transition Joint for 1 x 185-300mm² XLPE/CWS cables
GTJ 12X 95-300-1	12kV	Transition Joint for 1 x 95-300mm² XLPE/CWS cables
GTJ 12X 300-630-1	12kV	Transition Joint for 1 x 300-630mm² XLPE/CWS cables
GTJ 12X 630-1200-1	12kV	Transition Joint for 1 x 630-1200mm² XLPE/CWS cables

Transition Joint for 3 Core HT XLPE to PILC Cable



PILC Cable Parts
1. Cable Outer Sheat
2. Armour
3. Lead Sheath
4. C W F Tape
5. Metalised Paper Screen
6. Paper Insulation
7. Conductor

XLPE Cable Parts
8. Conductor
9. XLPE Insulation
10. Semicon
11. Copper Tape Screen
12. Inner Sheath
13. Armour
14. Outer Sheath

Transition Joint Kit Parts
15. Plumb (optional)
16. Breakout
17. Filler Mastic
18. Clear Insulating Tube
19. Semiconductive Tube
20. T. C. Wire Mesh (optional)
21. Stress Grading Mastic
22. Connector (optional)
23. Stress Control Tube
24. Connector Insulating Tube
25. Semiconductive Tube
26. Black Mastic
27. Cannister (optional)
28. Corrosion Protection Tube
29. Stress Grading Mastic
30. T. C. Wire Mesh (optional)
31. S. S. Hose Clip
32. Black Mastic

Part. No.	Voltage Class	Description
GT JA 36X 35-95-1	24/36kV	Transition Joint for 1 x 35-95mm² XLPE/CWS cables
GT JA 36X 95-185-1	24/36kV	Transition Joint for 1 x 95-185mm² XLPE/CWS cables
GT JA 36X 185-300-1	24/36kV	Transition Joint for 1 x 185-300mm² XLPE/CWS cables
GT JA 36X 95-300-1	24/36kV	Transition Joint for 1 x 95-300mm² XLPE/CWS cables
GT JA 36X 300-630-1	24/36kV	Transition Joint for 1 x 300-630mm² XLPE/CWS cables
GT JA 36X 630-1200-1	24/36kV	Transition Joint for 1 x 630-1200mm² XLPE/CWS cables

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/03/2012 Rev1

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COLD SHRINK MEDIUM VOLTAGE TEST RESULTS

Medium Voltage Cold Shrinkable Joints & Terminations

Requirements acc. to CENELEC.

Test sequence	Item	18/30kV(36)	12/20kV(24)	6/10kV(12)	Performed test acc. to IEC 60502.4 Result
1	AC voltage (in air and ambient temperature)	AC for 5 min. at 81kV no breakdown, no flashover	AC for 5 min. at 54kV no breakdown, no flashover	AC for 5 min. at 27kV no breakdown, no flashover	PASS
2	Partial discharge test	≤10pC max. at 30kV	≤10pC at 20kV	10pC max. at 10kV	PASS
3	Impulse test	10 impulses of each polarity at 170kV	10 impulses of each polarity at 125kV	10 impulse of each polarity at 75kV	PASS
4	Heating cycles in air (for termination)	60 cycles at 95°C -100°C and 45kV in air, no breakdown	60 cycles at 95°C -100°C and 30kV in air, no breakdown	60 cycles at 95°C -100°C and 15kV in air, no breakdown	PASS
5	Heating cycles in air (for joints)	30 cycles at 95°C -100°C and 45kV in air, no breakdown	30 cycles at 95°C -100°C and 30kV in air, no breakdown	30 cycles at 95°C -100°C and 15kV in air, no breakdown	PASS
6	Heating cycle voltage test under water	30 cycles at 95°C -100°C and 45kV under water, no breakdown	30 cycles at 95°C -100°C and 30kV under water, no breakdown	30 cycles at 95°C -100°C and 15kV under water, no breakdown	PASS
7	Thermal shortcircuit (screen)	no visible deterioration at current 1.97kV for 2s	no visible deterioration at current 1.97kV for 2s	no visible deterioration at current 1.97kV for 2s	PASS
8	Thermal shortcircuit (conductor)	No visible deterioration at current 3.0 kA for 1s	No visible deterioration at current 3.0 kA for 1s	No visible deterioration at current 3.0 kA for 1s	PASS
9	Dynamic shortcircuit	No visible deterioration at 23.0 kA for 2s	No visible deterioration at 23.0 kA for 2s	No visible deterioration at 23.0 kA for 2s	PASS
10	AC voltage for 15 min	AC for 15 min at 45kV no breakdown, no flashover	AC for 15 min at 30kV no breakdown, no flashover	AC for 15 min at 15kV no breakdown, no flashover	PASS
11	Salt fog (for outdoor terminations only)	1000H at 22.5kV no breakdown, no flashover	1000H at 15kV no breakdown, no flashover	1000H at 7.5kV no breakdown, no flashover	PASS
12	Humidity(for indoor terminations only)	300H at 22 kV no breakdown, no flashover	300H at 15kV no breakdown, no flashover	300H at 7.5kV no breakdown, no flashover	PASS

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Features/Applications

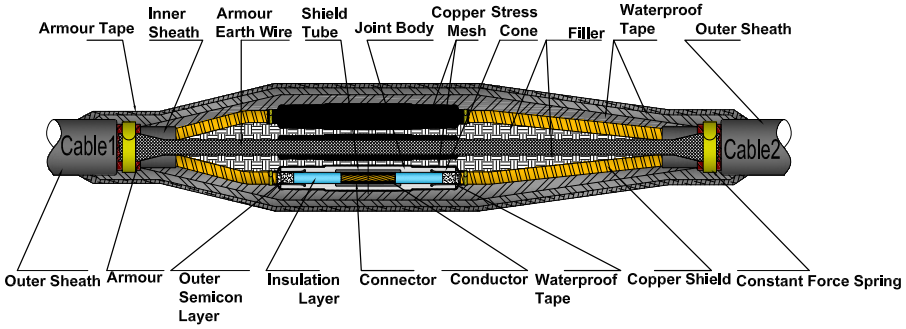
GREMTUBE®CS MV-Joint kit is a medium and heavy wall, cold shrinkable tubing 1- and 3-core joint kit for XLPE insulated cables.
GREMTUBE® CS MV-Joint kit offers excellent electrical insulation and mechanical protection from 12to 24/36kv for 1 and 3-core applications.
GREMTUBE® CS MV-Joint kit is suitable from 50mm² to 500mm² XLPE cables.

Various

Standard colour: Black.

Specifications

Cenelec HD 629



3-core Joint Installation Profile for 18/30kV

Part. No.	Voltage Class	Description
GCSJU 12 X 50-70-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 50-70mm² XLPE/CWS cables
GCSJU 12 X 95-150-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 95-150mm² XLPE/CWS cables
GCSJU 12 X 185-300-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 185-300mm² XLPE/CWS cables
GCSJU 12 X 300-400-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 300-400mm² XLPE/CWS cables
GCSJU 24 X 25-50-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 25-50mm² XLPE/CWS cables
GCSJU 24 X 70-120-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 70-120mm² XLPE/CWS cables
GCSJU 24 X 150-240-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 150-240mm² XLPE/CWS cables
GCSJU 24 X 300-400-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 300-400mm² XLPE/CWS cables
GCSJU 364 X 25-50-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 25-50mm² XLPE/CWS cables
GCSJU 36 X 70-120-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 70-120mm² XLPE/CWS cables
GCSJU 36 X 150-240-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 150-240mm² XLPE/CWS cables
GCSJU 36 X 300-400-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 300-400mm² XLPE/CWS cables

Property			Values	Test Methods
Physical	Working temperature		-40°C to +150°C	-
	Tensile strength	Unaged	10 MPa	ASTM D 415-75
	Elongation at break		600%	
	Tensile Stress at 300%	300% Modulus	4,2 MPa	ASTM D 412
	Fungus Resistance	28 days exposure	No Growth	ASTM G 21
	Moisture Absorption	168h @ 90°C in H²O	3.0% wt. Gain	ASTM D 792
	Tear Strength	Die C (Right Angle)	28,3 kN/m	ASTM D 624

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E-Mail: kontakt@gremtek.com
www.gremtek.de

Temp. +105°c -55°c | Ratio 2:1 | Recovery Temp. +105°c | ZERO halogen | MIL

Features/Applications

GREMTUBE®CS MV-Termination kit is a medium and heavy wall, cold shrinkable tubing 1- and 3-core Termination kit for XLPE insulated cables.
GREMTUBE® CS MV-Termination kit offers excellent electrical insulation and mechanical protection from 12to 24/36kv for 1 and 3-core applications.
GREMTUBE® CS MV-Termination kit is suitable from 50mm² to 500mm² XLPE cables.
For in- and outdoor applications.

Various

Standard colour: Grey.

Specifications

Cenelec HD 629

Outdoor Termination

Part. No.	Voltage Class	Description
GCSTO 12 X 25 - 35-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 25-35mm² XLPE/CWS cables
GCSTO 12 X 50 - 70-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 50-70mm² XLPE/CWS cables
GCSTO 12 X 95 -150-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 95-150mm² XLPE/CWS cables
GCSTO 12 X 185-300-1/3	12kV	Cold Shrink Straight Joint for 1/3 x 185-300mm² XLPE/CWS cables
GCSTO 24 X 25 - 50-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 25-50mm² XLPE/CWS cables
GCSTO 24 X 70 -120-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 70-120mm² XLPE/CWS cables
GCSTO 24 X 150-240-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 150-240mm² XLPE/CWS cables
GCSTO 24 X 300-400-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 300-400mm² XLPE/CWS cables
GCSTO 36 X 25 - 50-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 25-50mm² XLPE/CWS cables
GCSTO 36 X 70 -150-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 70-150mm² XLPE/CWS cables
GCSTO 36 X 185-400-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 185-400mm² XLPE/CWS cables
GCSTO 36 X 500-630-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 500-630mm² XLPE/CWS cables

Indoor Termination

Part. No.	Voltage Class	Description
GCSTI 24 X 25 - 50-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 25- 50mm² XLPE/CWS cables
GCSTI 24 X 70 -120-1/3	24kV	Cold Shrink Straight Joint for 1/3 x 70- 120mm² XLPE/CWS cables
GCSTI 24 X 150-240-1/3	24kV	Cold Shrink Straight Joint for 1/3 x150- 240mm² XLPE/CWS cables
GCSTI 24 X 300-400-1/3	24kV	Cold Shrink Straight Joint for 1/3 x300- 400mm² XLPE/CWS cables
GCSTI 36 X 25 - 50-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 25- 50mm² XLPE/CWS cables
GCSTI 36 X 70 -150-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 70- 150mm² XLPE/CWS cables
GCSTI 36 X 185-400-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 185- 400mm² XLPE/CWS cables
GCSTI 36 X 500-630-1/3	36kv	Cold Shrink Straight Joint for 1/3 x 500-630mm² XLPE/CWS cables

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www.gremtek.de

Temp. +105°C -55°C | Ratio 3:1 | Recovery Temp. +125°C | ZERO halogen

Features/Applications

GREMTUBE® GATT is a heavy wall, halogen free, specially formulated radiation cross-linked polyolefin tubing.
GREMTUBE® GATT offers very high creep resistance and anti-tracking properties of this product provide maximum operational reliability. (12kV, 24kV and 36kV)
GREMTUBE® GATT is suitable to provide insulation protection for cable termination, load-break switches power circuit breakers, etc.

Various

Standard colours: Red

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard Length (m)	
GREMTUBE® GATT	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Nom. (t)	Spool	Stick
019,0	19,0	6,0	2,50	15	1,2
030,0	30,0	10,0	3,00	15	1,2
035,0	35,0	12,0	3,00	15	1,2
040,0	40,0	16,0	3,00	15	1,2
045,0	45,0	18,0	3,00	15	1,2
054,0	54,0	24,0	3,00	15	1,2
060,0	60,0	29,0	3,00	15	1,2
076,0	76,0	38,0	3,00	15	1,2
100,0	100,0	49,0	3,00	15	1,2

●Cut pieces available on request

Property			Values	Test Methods
Physical	Working temperature		-55°C to +105°C	-
	Longitudinal change		0 to -10%	-
	Tensile strength	Unaged	≥ 10 Mpa	ASTM D 2671
	Elongation at break	Unaged	> 350%	ASTM D 2671
	Tensile strength	Aged 168h @ 130°C	≥ 8 Mpa	ASTM D 2671
	Elongation at break	Aged 168h @ 130°C	> 250%	ASTM D 2671
	Heat shock	1/2h @ 200°C	No drop, no flow	ASTM D 2671
	Low temperature flexibility	4h @ -40°C	No craking	ASTM D 2671
	Water absorption		≤ 0,5%	ASTM D 570
Electrical	Dielectric strenght		≥ 15 kV/mm	ASTM D 2671
	Voltage class		12 to 36 kV	-
	Tracking resistance	4h @ 3,75 kV/mm	Pass	ASTM D 2303
Chemical	Flame retardant (Oxygen index)		≥ 25%	ASTM D 2863

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

26/06/2014 Rev1

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We certify that the values provided are as accurate as possible. Use of these values, however, remains the sole responsibility of the customer and cannot in any way substitute for testing the product under real conditions of use. The user must assess whether this product is suitable for a particular use. Gremco shall not be held responsible for any loss or anomaly resulting from the correct or incorrect use of this product.

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MEDIUM VOLTAGE TUBING
GREMTUBE® GSCON
Semi conductive tubing

Temp. +100°c -40°c | Ratio 5:2 to 3:1 | Recovery Temp. +125°c

Features/Applications
GREMTUBE® GSCON is a heavy wall, specially formulated radiation cross-linked polymeric material tubing.
GREMTUBE® GSCON offers effective insulation screen on the high voltage cable connectors terminations.
GREMTUBE® GSCON is suitable to provide insulation protection for application in power cable accessory.

Various
Standard colours: Black

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard length (m)
GREMTUBE® GSCON	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Nom. (t)	Stick
45/18	45	18	2,4	1,2
50/20	50	20	2,4	1,2
55/23	55	23	2,4	1,2
65/26	65	26	2,4	1,2
75/29	75	29	2,8	1,2
90/30	90	30	2,8	1,2
100/36	100	36	2,8	1,2
120/37	120	37	2,8	1,2

Cut pieces available on request

Property			Values / Tolerances	Test Methods
Physical	Working temperature		-40°C to +100°C	IEC 216
	Tensile strength	Unaged	≥ 14 MPa	ASTM D 638
	Elongation at break	Unaged	≥ 300%	ASTM D 638
	Tensile strength	Aged (168h at 120°C)	≥ 12 MPa	ASTM D 2671
	Elongation at break after aging	Aged (168h at 120°C)	≥ 240%	ASTM D 2671
	Longitudinal change		≤15%	-
	Volume resistance		≥ 1x10³ Ω.cm	ASTM D 2303
	Eccentricity		≤ 30%	ASTM D 2671
	Water absorption		≤ 0,1%	ISO 62

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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Temp. +100°c -40°c

Ratio 5:2 to 3:1

Recovery Temp. +125°c

Features/Applications

GREMTUBE® GSCT is a heavy wall, specially formulated radiation cross-linked polymeric material tubing.
GREMTUBE® GSCT offers effective stress control for termination kits straight joints for XLPE cable and PILC cable up to 36kV.
GREMTUBE® GSCT is suitable for the high voltage systems. Control the high electrical stress present at insulation screen termination and joint of power cables.

Various

Standard colours: Black

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard length (m)
GREMTUBE® GSCT	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Nom. (t)	Stick
30/12	30	12	1,9	1,2
35/14	35	14	1,9	1,2
40/17	40	17	1,9	1,2
45/20	45	20	2,3	1,2
55/25	55	25	2,5	1,2
70/29	70	29	3,0	1,2
85/40	85	40	3,6	1,2

Cut pieces available on request

Property			Values / Tolerances	Test Methods
Physical	Working temperature		-40°C to +100°C	IEC 216
	Tensile strength	Unaged	≥ 10 MPa	ASTM D 638
	Elongation at break	Unaged	≥ 300%	ASTM D 638
	Tensile strength	Aged (168h at 130°C)	≥ 8 MPa	ASTM D 2671
	Elongation at break after aging	Aged (168h at 130°C)	≥ 220%	ASTM D 2671
	Longitudinal change		≤10%	-
	Volume resistance		≥ $1x10^{8\sim10}$ Ω.cm	IEC 93
	Eccentricity		≤30%	ASTM D 2671
	Water absorption		≤0,1%	ISO 62
Electrical	Dielectric strength		≥ 20	ASTM D 250

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

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MEDIUM VOLTAGE TUBING
GREMTUBE® GDLT
Double layer heat shrinkable tubing

Features/Applications
GREMTUBE®GDLT is a heavy wall, dual layer co-extruded tubing.
GREMTUBE®GDLT tube offers excellent electrical insulation and mechanical protection and reduces partial discharge.
GREMTUBE®GDLT is suitable for the high voltage systems. Controls the high electrical stress.

Various
Standard colour: Black / Red.

Specifications
Cenelec HD 629

Dimensions

GREMTUBE® GDLT	As supplied (mm)	After recovery (mm)		Standard length (m)
	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Mini. (t)	
38/13	38	13	5,3	1-1,2
45/17	45	17	5,8	1-1,2
55/20	55	20	8,5	1-1,2
65/25	65	25	6,3	1-1,2
75/30	75	30	6,3	1-1,2
85/35	85	35	6,5	1-1,2
95/40	95	40	6,5	1-1,2
115/50	115	50	6,5	1-1,2

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

30/3/2015 Rev2

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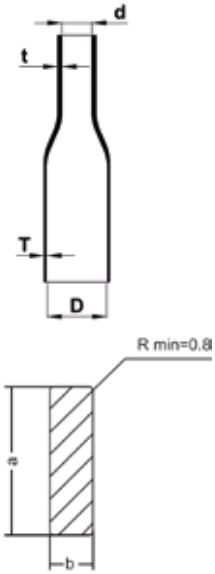
MEDIUM VOLTAGE TUBING
GREMTUBE® GBBM
Bus bar tubing medium voltage 6-24kV

Temp. +105°c -55°c | Ratio 2:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications
GREMTUBE® GBBM is a medium wall, halogen free, irradiated polyolefin heat shrink tubing.
GREMTUBE® GBBM offers high resistance to tracking and arcing (up to 24kV).
GREMTUBE® GBBM enhances the insulation properties of bus bars in switchgears and substations where zero halogen propertires are required.

Various
Standard colour: Orange.



Dimensions

GBBM Normal size (mm)	a+b		d Max (mm)	D Min (mm)	t Min for 6-24kV Shrink on The Bus Bar (mm)	Standard Length (m/spool)
	Min (mm)	Max (mm)				
25/10	15	25	10	18	1.6	25
30/12	22	35	15	25	1.6	20
40/16	28	45	20	30	1.6	20
50/20	38	55	25	40	1.6	20
65/25	45	65	35	50	1.6	20
85/35	55	90	40	60	1.6	20
100/40	70	110	50	80	1.6	20
120/50	90	140	60	95	1.6	20
150/60	105	180	70	120	1.6	20
175/75	130	210	85	140	1.6	20
210/85	140	260	95	170	1.6	20

Clearance reduction guide Bus Bar Type	Application Product	Min. Clearance Required (mm)			
		Test Value		Advice Value	
		Electrode To Electrode	Electrode To Ground	Electrode To Electrode	Electrode To Ground
Round sectional Up to 24kV	GBBM	75	85	85	95
Rectangle sectional Up to 24 kV	GBBM	85	95	90	100

Property		Values	Test Method
Physical	Tensile strength	ASTM D 2671	≥ 14 Mpa
	Density	ASTM D2671	1.1 to 1.15
	Tensile strength afer aging	ASTM D 2671/136°, 168 hrs.	≥ 12 Mpa
	Thermal Endurance	-	105°C
	Elongation at break	ASTM D 2671	≥ 500%
	Elongation at break after aging	ASTM D 2671 (136°/168 hrs.)	≥ 400%
	Low Temperature Flexibility 4hrs at -40°C	ASTM D 2671	no cracking
	Heat Shock 4hrs at 200°C	ASTM D 2671	No Drop No Flow
Electrical	Dielectric strength 2mm/0.08 inch wall 2.5mm/0.10 inch wall	ASTM D 2671	 > 25kV/mm > 20kV/mm
	Volume resistance	ASTM D 2671	≥ 10^{14} Ω.cm
Chemical	Tracking and erosion resistance	ASTM 2303	After 1hr at 2.5kV no tracking
	Flammability (oxygen index)	IEC 2863	≥25
	Water absorption	ASTM D570 (23°C/336hrs)	<0.2%
	Resistance to selected fluids 168hrs at 23°C Tensile Strength Ultimate elongation	IEC 60684-2	 >8Mpa >250%
	Copper corrosion 158°C for 168hrs	IEC 60684-3	Pass
	Long term aging 3000hrs at 120°C Elongation at break	IEC 60684-2	 >175°C
	Colour fastness to light	IEC 60684-3	Contrast between exposed and unexposed parts - The colour does not change

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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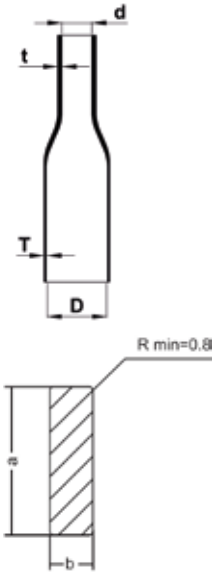
MEDIUM VOLTAGE TUBING
GREMTUBE® GBBH
Bus bar tubing medium voltage 36kV

Temp. +105°c -55°c | Ratio 2:1 | Recovery Temp. +125°c | ZERO halogen

Features/Applications
GREMTUBE® GBBH is a heavy wall, halogen free, irradiated polyolefin heat shrink tubing.
GREMTUBE® GBBH offers high resistance to tracking and arcing (up to 36kV).
GREMTUBE® GBBH enhances the insulation properties of bus bars in switchgears and substations where zero halogen propertires are required.

Various
Standard colour: Orange. [2]



Dimensions

GBBH Normal size (mm)	a+b		d Max (mm)	D Min (mm)	t Min for 36kV Shrink on The Bus Bar (mm)	Standard Length (m/spool)
	Min (mm)	Max (mm)				
25/10	15	25	10	18	2.5	15
30/12	22	35	15	25	2.5	15
40/16	28	45	20	30	2.5	15
50/20	38	55	25	40	2.5	15
65/25	45	65	35	50	2.5	15
85/35	55	90	40	60	2.5	15
100/40	70	110	50	80	2.5	15
120/50	90	140	60	95	2.5	15
150/60	105	180	70	120	2.5	15
175/75	130	210	85	140	2.5	15
210/85	140	260	95	170	2.5	15

Clearance reduction guide Bus Bar Type	Application Product	Min. Clearance Required (mm)			
		Test Value		Advice Value	
		Electrode To Electrode	Electrode To Ground	Electrode To Electrode	Electrode To Ground
Round sectional Up to 36kV	GBBH	160	220	200	270
Rectangle sectional Up to 36kV	GBBH	180	260	220	285

Property		Values	Test Method
Physical	Tensile strength <4.0mm/0.18 inch wall >4.0mm/0.18 inch wall	ASTM D 2671	> 14 Mpa > 12 Mpa
	Density	ASTM D2671	1.1 to 1.15
	Tensile strength afer aging	ASTM D 2671/136°, 168 hrs.	≥ 12 Mpa
	Thermal Endurance	-	105°C
	Elongation at break	ASTM D 2671	≥ 500%
	Elongation at break after aging	ASTM D 2671 (136°/168 hrs.)	≥ 400%
	Low Temperature Flexibility 4hrs at -40°C	ASTM D 2671	no cracking
	Heat Shock 4hrs at 200°C	ASTM D 2671	No Drop No Flow
Electrical	Dielectric strength 2mm/0.08 inch wall 2.5mm/0.10 inch wall 3mm/0.10 inch wall	ASTM D 2671	 > 25kV/mm > 20kV/mm >17kV/mm
	Volume resistance	ASTM D 2671	≥ 10^{14}Ω.cm
Chemical	Tracking and erosion resistance	ASTM 2303	After 1hr at 2.5kV no tracking
	Flammability (oxygen index)	IEC 2863	≥25
	Water absorption	ASTM D570 (23°C/336hrs)	<0.2%
	Resistance to selected fluids 168hrs at 23°C Tensile Strength Ultimate elongation	IEC 60684-2	 >8Mpa >250%
	Copper corrosion 158°C for 168hrs	IEC 60684-3	Pass
	Long term aging 3000hrs at 120°C Elongation at break	IEC 60684-2	 >175°C
	Colour fastness to light	IEC 60684-3	Contrast between exposed and unexposed parts - The colour does not change

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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SPECIALTY HEAT SHRINK PRODUCTS

GREMTUBE® GWAS
GREMTUBE® GWAS-R
GREMSPOOL® GMB
GREMSPOOL® GMB A

Temp. +110°c -55°c | Ratio 3:1 | Recovery Temp. +90°c

Applications

GWAS is a wraparound irradiated polyolefin splice closure system with adhesive.
GWAS offers superior mechanical protection, high resistance to impact and UV radiation and outstanding encapsulation properties.
GWAS is suitable to restore low voltage (up to 1kV) XLPE and paper insulated cable's outer jackets.

Various

Standard colour: Black.

Dimensions

GWAS	Max Cable Diam. (mm)	Min Cable Diam. (mm)	Lengths Supplied
34/8	42	15	500-1000-1500-2000 mm
42/10	42	15	500-1000-1500-2000 mm
53/13	50	15	500-1000-1500-2000 mm
75/20	75	22	500-1000-1500-2000 mm
93/25	93	36	500-1000-1500-2000 mm
105/30	130	38	500-1000-1500-2000 mm
135/34	198	55	500-1000-1500-2000 mm
146/38	146	38	500-1000-1500-2000 mm
164/42	164	42	500-1000-1500-2000 mm
175/50	175	50	500-1000-1500-2000 mm
198/55	198	55	500-1000-1500-2000 mm
220/65	220	65	500-1000-1500-2000 mm

Property	Test Condition and method	Requirement
Bursting Strength	Test temp: 23±5°C	Min 15MPa
Thermal Agening Bursting Strength	168 Hrs at 150±2°C (After free shrinkage)	Min 13.7MPa
Dielectric strength	Electrode Surface Dia: 6 mm Wight: 50±2gms Voltage steps: 2 KV/20sec.	Min 12 KV/mm
Split Resistance	Temp: 200±2°C Test time: 23±3°C	No split Propagation
Carbot Content UV Res of Out/layer	Heating rate: 20°C/min Gas flow rate: 300cc/min	Min 2.6±0.25%
Cold Crack resistance	Test temp≤-40°C	No cracking
Resistance to aggressive media Bursting Strength	Test media: Fuel oil, petroleum jelly Test temp: 70±2°C	Min 13.7MPa
Environmental Stress cracking	10% Igepal Co 630 solution immerson Time 30 days Test temp: 50±3°C	No cracking
Temp. indicating paint conversion	Completely conversion	Completely conversion
Hot melt adhesive		
Peel Strength	-PE at 23±2°C -PE at 23±2°C -Pb at 23±2°C	Min 100N/25mm
Shear Strength	At 23±2°C	Min200N
Corrosive Effect	Copper Mirror test Test time:16hrs Test temp:60±2°C	No effect

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

Other wrap around sleeves are also available on special request

- GWAS-R: fiber glass reinforcing layer
  Using the same compound as GWAS (hot melt adhesive), but with a special fiber glass reinforcing layer.
- GWAS-S: fiber glass reinforcing layer with aluminum moisture vapour barrier layer
  Using the same compound as GWAS (hot melt adhesive), but with fiber glass reinforcing with aluminum moisture vapour barrier layers.

30/3/2015 Rev2

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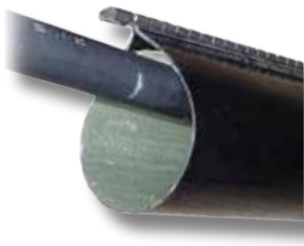
Temp. +110°C -55°C | Ratio > 4:1 | Recovery Temp. +90°C



Features/Applications

GWAS-R is a wraparound irradiated polyolefin splice closure system with a special fiber glass reinforcing layer with adhesive.
GWAS-R offers superior mechanical protection, high resistance to impact, UV radiation and outstanding encapsulation properties.
GWAS-R is suitable to restore low voltage (up to 1kV) XLPE and to repair of all types of non-pressurized cable: aerial, buried or ducted, non-filled or jelly filled with polyethylene or metal jackets.

Various

Standard colour: Black.

Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard length (mm)
GREMTUBE® GWAS-R	Max Cable Diam.	Min Cable Diam.	Wall Thickness	
043,0	43	8	4,5	500 - 1000 - 1500 - 2000
055,0	55	12	4,5	500 - 1000 - 1500 - 2000
075,0	75	15	4,5	500 - 1000 - 1500 - 2000
100,0	100	25	4,5	500 - 1000 - 1500 - 2000
125,0	125	30	4,5	500 - 1000 - 1500 - 2000
164,0	164	42	4,5	500 - 1000 - 1500 - 2000
198,0	198	55	4,5	500 - 1000 - 1500 - 2000

Property			Values	Test Methods
Physical	Working temperature		-55°C to +110°C	-
	Bursting strength	Unaged	> 250 DaN	-
	Bursting strength	Aged 168h @ 150°C	> 270 DaN	-
	Cold crack resistance	≤ -40°C	No cracking	-
	UV resistance of Out / layer	Carbot Content	> 2,5%	Heating rate: 20°C/min Gas flow rate: 300 cc/min
	Split resistance	@ 200°C	No split propagation	-
	Stress cracking	30 days @ 50°C	No cracking	10% Igepal Co 630
	Paint conversion		230 - 250°C	Scraped off paint from sleeve
Electrical	Dielectric strength		≥ 12 kV/mm	Electrode surface Ø 6 mm Wight: 50 ± 2 gms Voltage steps: 2 kV/20sec.
Chemical	Bursting strength	@ 70°C	> 200 DaN	Fuel oil, Petroleum jelly
Adhesive	Peel strength	PE @ 23°C PE @ 23°C	> 10 DaN/25mm	-
	Shear strength	16h @ 60°C	> 20 DaN/25mm	-
	Corrosive effect		No effect	ASTM D1693

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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Features/Applications

GREMSPOOL® is a range of heat shrink tubing available in a conveniently packaged dispenser. It is specially designed to meet the requirements of wholesalers, distributors repair shops or electrical work shops.

GREMSPOOL® GMB
Contains 2:1 ratio, 125°C, flexible, flame retardant irradiated polyolefin heat shrink tubing.
Refer to GREMTUBE® G55 data sheet for details.

GREMSPOOL® GMB A
Contains 3:1 ratio, 110°C, flexible, flame retardant irradiated polyolefin heat shrink tubing with adhesive.
Refer to GREMTUBE® G61A 3X data sheet for details.

Various

Available sizes:
From 1,6mm up to 25,4mm

Standard colours :
GREMSPOOL® GMB: Black, Clear, Red, Blue,Yellow, Green, White, Yellow/Green.
GREMSPOOL® GMB A: Black.
(others colours available on request)

Dimensions

Reference GREMSPOOL® GMB	As supplied (mm) Inside Diameter Min. (D)	After recovery (mm) Inside Diameter Max. (d)	Standard Dispenser Length (m)
160	1.6	0.8	15
240	2.4	1.2	15
320	3.2	1.6	15
480	4.8	2.4	12
640	6.4	3.2	12
950	9.6	4.8	8
1270	12.7	6.4	8
1910	19.1	9.5	5
2540	25.4	12.7	5

Reference GREMSPOOL® GMB A	As supplied (mm) Inside Diameter Min. (D)	After recovery (mm) Inside Diameter Max. (d)	Standard Dispenser Length (m)
300	3	1	4
600	6	2	4
900	9	3	3
1200	12	4	3
1800	18	6	2
2400	24	8	2

- Special printing on box and special tubing are available on request.

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

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GREMTEK
A Tradename of GREMCO
Protective Sleeve Solutions

MOULDED PARTS

GREMSHAPES® GCAPS
GREMSHAPES® GCAPS CS
GREMSHAPES® GBOS
GREMSHAPES® GBOS CS
GREMSHAPES® GSPM
GREMSHAPES® GRMP
GREMSHAPES® GPSC
GREMSHAPES® GBOS-AT
GREMSHAPES® GBOS-SC
GREMSHAPES® GCES

Temp. +110°c -55°c | Ratio 3:1 | Recovery Temp. +120°c

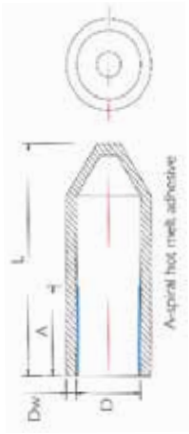
Features/Applications

GREMSHAPES® GCAPS is a hot melt lined polyolefin heat shrink moulded end cap.
GREMSHAPES® GCAPS offers a superior resistance to oxidation, UV radiation and excellent encapsulation properties.
GREMSHAPES® GCAPS are suitable for used both on open air and on underground power distribution (up to 1kV) and telecommunication cables with PVC or XLPE sheets.

Various

Standard colour: Black.

Dimensions



GREMSHAPES® GCAPS	As supplied (mm)	After recovery (mm)				Cable Diameter (mm)
	D (min)	D (max)	A (±10%)	L (±10%)	Dw (±10%)	
Standard length end caps						
6/2	6	2.0	10	25	2	2-4
12/4	12	4.0	15	38	2.3	4-8
14/4	14	4.0	18	58	2.3	4-11
20/7.5	20	7.5	25	55	2.3	8-16
25/7.5	25	7.5	30	75	2.3	8-20
30/11	30	11.0	30	75	2.5	12-26
35/11	35	11.0	30	75	2.5	12-30
40/15	40	15.0	40	90	3.3	16-35
55/25	55	25.0	55	125	3.8	25-47
63/25	63	25.0	65	125	3.5	30-60
75/35	75	35.0	70	140	3.8	35-68
100/45	100	45.0	70	160	4.0	45-90
130/60	130	60.0	70	160	4.6	64-120
154/60	154	60.0	70	165	4.6	70-145
230/125	230	125.0	70	180	4.0	140-200
310/125	310	125.0	70	185	4.0	140-280
400/204	400	204.0	75	220	6.0	230-360
500/200	500	200.0	75	220	6.0	230-460
Extended length end cap						
-L 12/4	12	4	30	58	2.3	4-8
-L 20/7.5	20	7.5	30	75	2.5	8-16
-L 40/15	40	15.0	40	125	3.3	16-35
-L 55/25	55	25.0	70	170	3.8	25-47
-L 63/25	63	25.0	70	125	3.8	25-55
-L 75/30	75	30.0	70	180	4.0	35-68
-L 100/45	100	45.0	70	200	4.0	45-90
-L 120/50	120	50.0	65	160	4.6	64-120

Property		Values	Test Methods
Physical	Operating temperature	-55°C to +110°C	IEC 216
	Tensile strength	12 N/mm2 (MPA) (min)	ASTM D 638
	Elongation at break	350% (Min.)	ASTM D 638
	Elongation at break after aging	300% (Min.)	150°C/168 hrs.
	Density	1.05 ± 0.2 gm/cm3	ASTM D 792
	Flammability	Flammable	/
	Dielectric strength	12 KV/mm. (Min.)	IEC 243
	Volume resistance	$>10^{14}\Omega$.cm	IEC 93

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

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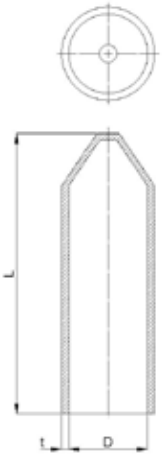
Features/Applications

GREMSHAPES® GCAPS CS is a EPDM rubber cold shrink end caps that are factory expanded and loaded onto a removable core.
GREMSHAPES® GCAPS offers a environmentally seal and mechanically protect exposed cable ends using no tools, mastics or tapes. They are easily installed and cleanly removable.
GREMSHAPES® GCAPS is suitable for protect cables, pipes and other cylindrical objects from exposure to moisture, contamination, corrosion, ozone, ultra-violet radiation, physical contact and other environmental hazards.

Various

Standard colour: Black.



Dimensions

Reference	As supplied (mm)	After recovery (mm)		Standard length (mm)
GREMTUBE® GCAPS CS	Inside Diameter Mini. (D)	Inside Diameter Maxi. (d)	Wall Thickness Mini. (t)	
020,0	20,0	12,0	2,50	70
028,0	28,0	16,0	2,50	70
047,0	47,0	23,0	2,60	70
080,0	80,0	46,0	2,60	70

Property			Values	Test Methods
Physical	Working temperature		-40°C to +150°C	-
	Tensile strength	Unaged	10 MPa	ASTM D 415-75
	Elongation at break		600%	
	Tensile Stress at 300%	300% Modulus	4,2 MPa	ASTM D 412
	Fungus Resistance	28 days exposure	No Growth	ASTM G 21
	Moisture Absorption	168h @ 90°C in H^2O	3.0% wt. Gain	ASTM D 792
	Tear Strength	Die C (Right Angle)	28,3 kN/m	ASTM D 624

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS
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Temp. +110°c -55°c | Ratio 3:1 | Recovery Temp. +130°c

Features/Applications

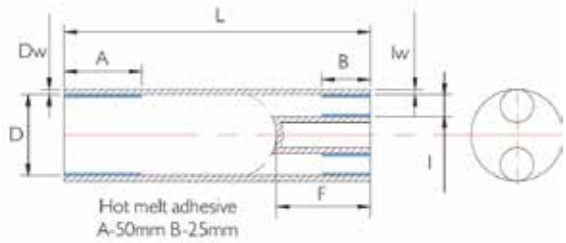
GREMSHAPES® GBOS is a hot melt lined polyolefin heat shrink moulded breakout.
GREMSHAPES® GBOS offers a superior resistance to oxidation, UV radiation and excellent encapsulation properties.
GREMSHAPES® GBOS are suitable for used both on open air and on underground power distribution (up to 1kV) and telecommunication cables with PVC or XLPE sheets.

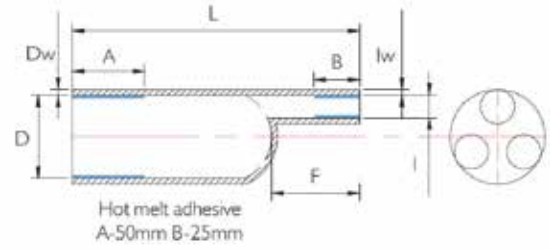
Various

Standard colour: Black.
2 cores and 3 cores versions.

Dimensions

GREMSHAPES® GBOS	D (mm)		I (mm)		Recovered length		Recovered wall thickness	
2 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV2 22/8	22	8	10	3	85	20	2.2	2.0
LV2 32/8	32	8	14	3	85	20	2.2	2.0
LV2 32/10	32	10	14	4	85	20	2.2	2.0
LV2 60/20	60	20	24	7	120	34	3.0	2.5
LV2 156/65	156	65	50	15	140	60	2.2	2.0
3 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV3 25/9	25	9	9	3	100	20	2.0	1.8
LV3 37/14	37	14	15	4	100	21	2.2	2.0
LV3 53/20	53	20	25	8	188	62	3.7	2.8
LV3 80/30	80	30	36	13	215	75	4.3	3.2
LV3 95/30	95	30	39	13	215	75	4.3	3.2
LV3 110/45	110	45	55	20	235	88	4.6	3.8
LV3 125/45	125	45	60	21	230	90	4.6	3.4
LV3 140/56	140	56	70	28	250	90	4.6	3.4
LV3 180/58	180	58	70	29	250	90	4.6	3.4





Property		Values	Test Methods
Physical	Operating temperature	-55°C to +110°C	IEC 216
	Tensile strength	13MPa (min.)	ASTM D 2671
	Tensile strength after thermal aging	10 MPa (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break after thermal aging	250% (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break	300% (min.)	ASTM D 2671
	Water absorption	1% (max.)	ISO 62
	Volume resistance	$10^{13}\Omega$ cm (min.)	IEC 93
	Dielectric strength	15kV/mm (min.)	IEC 243
	Flammability	Flammable	/

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/3/2015 Rev2

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Temp. +110°c -55°c | Ratio 3:1 | Recovery Temp. +130°c

Features/Applications

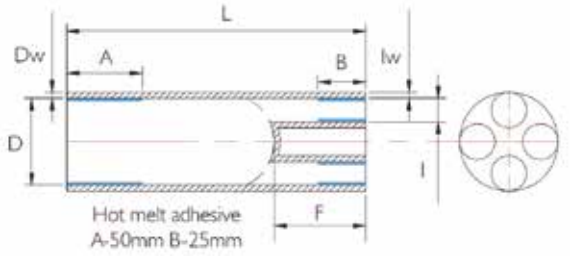
GREMSHAPES® GBOS is a hot melt lined polyolefin heat shrink moulded breakout.
GREMSHAPES® GBOS offers a superior resistance to oxidation, UV radiation and excellent encapsulation properties.
GREMSHAPES® GBOS are suitable for used both on open air and on underground power distribution (up to 1kV) and telecommunication cables with PVC or XLPE sheets.

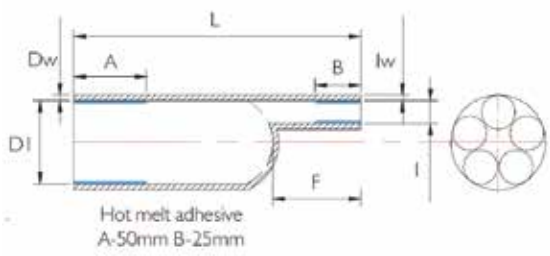
Various

Standard colour: Black.
4 cores and 5 cores versions.

Dimensions

GREMSHAPES® GBOS	D (mm)		I (mm)		Recovered length		Recovered wall thickness	
4 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV4 40/12	40	12	14	3	100	25	2.4	1.7
LV4 41/16	41	16	14	4	100	23	2.4	1.7
LV4 50/17	50	17	17	4	95	23	2.4	1.7
LV4 58/26	58	26	21	7	170	48	3.5	2.5
LV4 70/28	70	28	25	8	165	46	3.5	2.5
LV4 70/30	70	30	25	9	190	48	3.7	2.6
LV4 80/31	80	31	31	10	190	47	3.7	2.6
LV4 90/42	90	42	35	13	210	52	3.7	2.6
LV4 100/44	100	44	35	13	208	51	3.7	2.6
LV4 125/44	125	44	40	14	208	51	3.7	2.6
LV4 180/80	180	80	70	40	200	260	5.0	4.0
5 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV5 50/16	50	16	15	4	110	33	3.2	2.6
LV5 80/32	80	32	26	8	190	65	3.3	2.8
LV5 100/33	100	33	32	8	190	65	3.3	2.8
6 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV6 44/12	44	32	13	4	55	82	2.2	2.0
LV6 85/37	85	37	23	7	100	140	3.2	2.6
7 cores breakout	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
LV7 85/37	85	37	23	7	100	140	2.7	2.6
LV7 100/45	100	45	35	18	100	140	2.7	2.6





Property		Values	Test Methods
Physical	Operating temperature	-55°C to +110°C	IEC 216
	Tensile strength	13MPa (min.)	ASTM D 2671
	Tensile strength after thermal aging	10 MPa (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break after thermal aging	250% (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break	300% (min.)	ASTM D 2671
	Water absorption	1% (max.)	ISO 62
	Volume resistance	$10^{13}\Omega$ cm (min.)	IEC 93
	Dielectric strength	15kV/mm (min.)	IEC 243
	Flammability	Flammable	/

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

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GREMSHAPES® GBOS-CS

LV Cold shrink cable breakout shapes 3,4,5 and 6 fingers

Features/Applications

GREMTUBE®GBOS CS is a cold shrinkable 3,4,5 or 6 finger cable breakout made of liquid Silicone rubber.
GREMTUBE® GBOS CS breakout offers an easy and simple insulation and mechanical protection.
GREMTUBE® GBOS CS breakout is suitable from 3 up to 6 fingers and meets a variety of configuration requirements.

Various

Standard colour: Grey.
Material Liquid Silicone Rubber.

Dimensions

GBOS-CS	Body as supplied (ø mm)/ after recovery (ø mm)	Finger as supplied (ø mm)/ after recovery (ø mm)	Lengths (mm) Finger rec./Body rec.
CS3 80/36	80/36	32/14	45/130
CS3 86/43	86/43	35/16	45/135
CS3 104/50	104/50	40/20	45/150
CS3 120/59	120/59	47/23	45/165
CS3 140/72	140/72	60/28	55/180
CS3 150/72	150/72	65/28	55/180
CS3 165/72	165/72	70/28	55/180
CS4 65/20	65/20	20/6	35/126
CS4 80/28	80/28	25/8	40/137
CS4 88/40	88/40	32/10	40/145
CS4 120/45	120/45	47/15	40/145
CS3 80/26	80/26	20/6	40/123
CS5 88/36	88/36	25/8	40/134
CS5 110/47	110/47	35/11	45/138
CS5 120/47	120/47	40/11	45/138
CS6 104/35	104/35	32/10	60/135

Property			Values	Test Methods
Physical	Working temperature		-40°C to +150°C	-
	Tensile strength	Unaged	10 MPa	ASTM D 415-75
	Elongation at break		600%	
	Tensile Stress at 300%	300% Modulus	4,2 MPa	ASTM D 412
	Fungus Resistance	28 days exposure	No Growth	ASTM G 21
	Moisture Absorption	168h @ 90°C in H^2O	3.0% wt. Gain	ASTM D 792
	Tear Strength	Die C (Right Angle)	28,3 kN/m	ASTM D 624

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Temp. +135°c -40°c | Ratio 2:1 | Recovery Temp. +130°c

Features/Applications

GREMSHAPES® GSMP is a semi-rigid, flame retardant, cross-linked modified polyolefin heat shrink moulded boot with hot melt lined.
GREMSHAPES® GSMP offers a superior resistance to oxidation, UV radiation and excellent encapsulation properties featured with a lip for use with circular connectors.
GREMSHAPES® GSMP provides strong mechanical protection, excellent strain relief and complete environmental sealing specially for MIL-type applications

Various

Standard colour: Black.
Provided with or without adhesive lining.

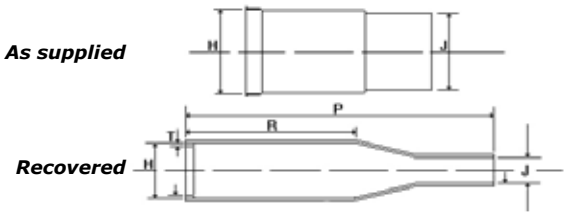
Specifications

MIL-I-81765/1 Type I.

Dimensions

Reference	H (mm)		J (mm)		Recovered length P (mm) (±10%)	Recovered wall thickness T (mm) (±10%)
GREMSHAPES® GSMP	a (min.)	b (max.)	a (min.)	b (max.)		
2011	24	10,5	24	6,0	42	1,5
2012	29	14,5	29	6,6	52	1,5
2013	31	18,0	31	7,1	65	1,8
2014	36	22,5	36	8,5	80	1,8
2015	43	28,0	43	10,0	103	2,0
2016	52	35,0	52	15,7	130	3,3
2017	66	44,5	66	20,5	165	4,0

• a : as supplied / b : after free recovery



Property			Values	Test Methods
Physical	Working temperature		-40°C to +135°C*	-
	Tensile strength	Unaged	15 Mpa	IEC 540
	Elongation at break	Unaged	450%	IEC 540
	Elongation at break after aging	Aged 168h @ 175°C	250%	IEC 540
	Low temperature flexibility	@ -55°C	No cracking	ASTM D 2671
	Heat shock	4h @ 225°C	No cracking or flowing	ASTM D 2671
Electrical	Dielectric strenght		10kV/mm	ASTM D 2671
Chemical	Water absorption	24h @ 50°C	0,1%	ASTM D 570
	Flammability		Non-burning (Self extinguishing within 15mm)	ASTM D 635
	Solvent resistance:			
	• Salt water solution / De-icing Fluid		Excellent	MIL-I-81765/1
	• Hydraulic / Lubricating oil		Very good	MIL-I-81765/1
	• Aviation / Automotive / Diesel Fuel		Good	MIL-I-81765/1

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

* outer jacket and unlined - max. temp. +100°C with adhesive inner liner

30/3/2015 Rev2

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Temp. +135°c -40°c | Ratio 2:1 | Recovery Temp. +130°c

Features/Applications

GREMSHAPES® GRMP is a semi-rigid, flame retardant, cross-linked modified polyolefin heat shrink moulded boot with hot melt lined.
GREMSHAPES® GRMP offers a superior resistance to oxidation, UV radiation and excellent encapsulation properties featured with a lip for use with circular connectors.
GREMSHAPES® GRMP provides strong mechanical protection, excellent strain relief and complete environmental sealing specially for MIL-type applications

Various

Standard colour: Black.
Provided with or without adhesive lining.

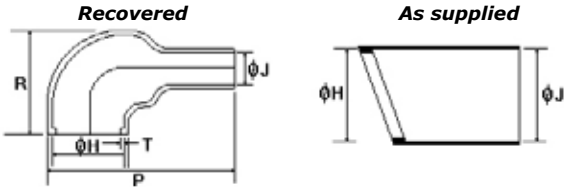
Specifications

MIL-I-81765/1 Type I.

Dimensions

Reference	H (mm)		J (mm)		Recovered length P (mm) (±10%)	Recovered wall thickness T (mm) (±10%)
GREMSHAPES® GRMP	a (min.)	b (max.)	a (min.)	b (max.)		
2011	24	10,5	24	6,0	30	1,5
2012	29	14,5	29	6,6	42	1,5
2013	31	18,0	31	7,1	49	1,8
2014	36	22,5	36	8,5	56	1,8
2015	43	28,0	43	10,0	68	2,0
2016	52	35,0	52	15,7	98	3,3
2017	66	44,5	66	20,5	126	3,8

• a : as supplied / b : after free recovery



Property			Values	Test Methods
Physical	Working temperature		-40°C to +135°C*	-
	Tensile strength	Unaged	15 Mpa	IEC 540
	Elongation at break	Unaged	450%	IEC 540
	Elongation at break after aging	Aged 168h @ 175°C	250%	IEC 540
	Low temperature flexibility	@ -55°C	No cracking	ASTM D 2671
	Heat shock	4h @ 225°C	No cracking or flowing	ASTM D 2671
Electrical	Dielectric strenght		10kV/mm	ASTM D 2671
Chemical	Water absorption	24h @ 50°C	0,1%	ASTM D 570
	Flammability		Non-burning (Self extinguishing within 15mm)	ASTM D 635
	Solvent resistance:			
	• Salt water solution / De-icing Fluid		Excellent	MIL-I-81765/1
	• Hydraulic / Lubricating oil		Very good	MIL-I-81765/1
	• Aviation / Automotive / Diesel Fuel		Good	MIL-I-81765/1

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

* outer jacket and unlined - max. temp. +100°C with adhesive inner liner

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Features/Applications

GREMSHAPES® GBOS is a hot melt lined pre-insulated sealing cap to protect joints of pipelines and other substrates.
GREMSHAPES® GBOS cap offers excellent insulation and mechanical protection and provides watertight sealing.
GREMSHAPES® GBOS is suitable to seal and protect any pipeline with excellent moisture protection.

Various

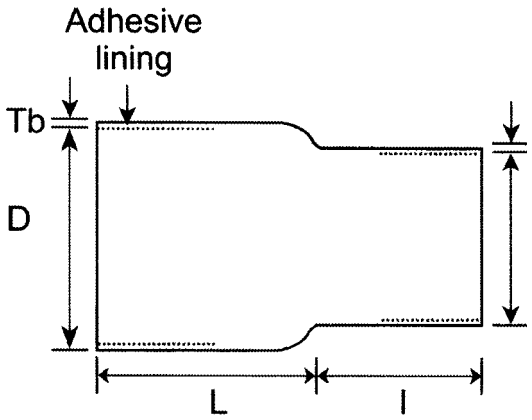
Standard colour: Black

Specifications

Resistant to UV and Ozone

Technical Specification

Properties	Value	Standard
Tensile strength	18 N/mm² (Mpa) (min.)	ASTM D638
Ultimate elongation	350 % (min.)	ASTM D638
Water absorption	0,1 % (max.)	ASTM D570
Adhesive peel strenght	100 N/25mm (min.)	ASTM D2671
Accelerated ageing	(120°C for 500 hrs)	ASTM D2671
Tensile strength	11 N/mm² (Mpa) (min.)	ASTM D638
Ultimate elongation	300 % (min.)	ASTM D638
Heat shock (250°C for 30 min.)	no cracking or flowing	ESI09-11
Continous temperature limit	-40to +100°C	IEC 216
Dielectric strength	12kv/mm (min.)	ASTM D149
Volume resistivity	1 x 10^{14} Ohm cm (min.)	ASTM D257



Selection Chart

GREMSHAPES® GBOS	D A	D B	D a	I b	Rec. lenghts L	Rec. lenghts I	Wall thickness Tb	Wall thickness Tc
6030	60	30	45	10	70	50	3.5	3.5
8524	85	24	42	24	60	40	4.0	4.0
10527	105	27	45	27	60	40	4.0	4.0
12532	125	32	65	32	60	40	4.0	4.0
14038	140	38	76	38	60	40	4.0	4.0
15045	156	45	95	45	60	40	4.2	4.2
17858	178	58	105	58	80	50	4.3	4.3

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

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GREMSHAPES® GBOS-AT

Anti-Tracking cable breakout 3 fingers

Features/Applications

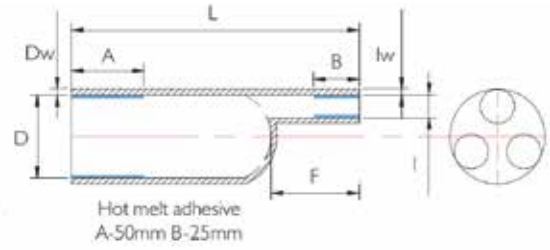
GREMSHAPES® ATGBOS is a anti tracking polyolefin heat shrink molded breakout, internally coated with water resistant mastic.
GREMSHAPES® ATGBOS offers a superior resistance to oxidation, UV radiation, chemical, solvent, corrosion and fungus.
GREMSHAPES® ATGBOS provides permanent environmental seal to the crutch of 3 core PVC&PILC cable rated up to 36kV.

Various

Standard colour: Red Brick.

Dimensions

GREMSHAPES® GABOS-MV	D (mm)		I (mm)		Recovered length		Recovered wall thickness	
	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
60/24	60	24	25	8.0	180	45	3.0	2.5
80/38	80	38	35	11.0	210	57	4.0	4.0
110/50	110	50	46	17.5	250	65	4.0	4.0
125/57	125	57	55	20.0	260	57	4.0	4.0
140/70	140	70	62	26.0	280	70	4.0	4.0
140/77	170	77	75	28.0	280	80	4.0	4.0



Property		Values	Test Methods
Physical	Operating temperature	-55°C to +105°C	IEC 216
	Tensile strength	8 MPa (min.)	ASTM D 2671
	Tensile strength after thermal aging	7 MPa (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break after thermal aging	200% (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break	300% (min.)	ASTM D 2671
	Water absorption	1% (max.)	ISO 62
	Volume resistance	$10^{13}\Omega$ cm (min.)	IEC 93
	Dielectric strength	20kV/mm (min.)	IEC 243
	Resistance to tracking	ASTM D 2303	No tracking

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS REACH compliant

30/03/2012 Rev1

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GREMSHAPES® GBOS-SC

Semi conductive cable breakout 3 fingers

Temp. +105°c -55°c | Ratio 3:1 | Recovery Temp. +130°c | ZERO halogen | MIL

Features/Applications

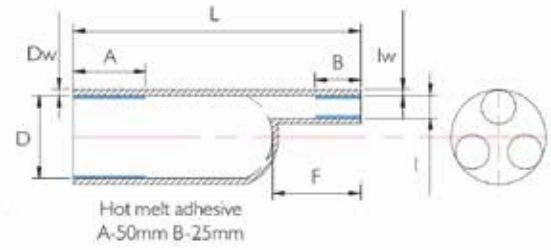
GREMSHAPES® SCGBOS is a semi conductive polyolefin heat shrink molded breakout, internal coated with water resistant red mastic.
GREMSHAPES® SCGBOS offers a superior resistance to oxidation, UV radiation, chemical, solvent, corrosion and fungus.
GREMSHAPES® SCGBOS is used for PILC cable to seal the crutch area as well as to provide individual screening to each core up to 36kV.

Various

Standard colour: Black.

Dimensions

GREMSHAPES® GABOS-CON	D (mm)		I (mm)		Recovered length		Recovered wall thickness	
	a (min.)	b (max.)	a (min.)	b (max.)	L (mm)	F (mm)	Dw (mm)	Iw (mm)
60/24	60	24	25	8.0	183	45	3.0	2.5
80/38	80	38	35	11.0	215	57	4.0	4.0
110/50	110	50	46	17.5	250	65	4.0	4.0
125/57	125	57	55	20.0	260	57	4.0	4.0
140/70	140	70	62	26.0	280	70	4.0	4.0



Property		Values	Test Methods
Physical	Operating temperature	-55°C to +105°C	IEC 216
	Tensile strength	12 MPa (min.)	ASTM D 2671
	Tensile strength after thermal aging	10 MPa (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break after thermal aging	200% (min.)	ASTM D 2671 (120°C/168hrs.)
	Elongation at break	250% (min.)	ASTM D 2671
	Water absorption	1% (max.)	ISO 62
	Volume resistance	10^4Ω cm (min.)	IEC 93

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS | REACH compliant

30/03/2012 Rev1

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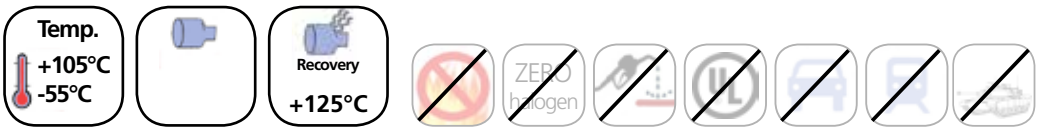


Features/Applications

GREMSHAPES® GCES is a holt melt lined polymeric shape.
GREMSHAPES® GCES offers a superior thermal stabilisation and non-tracking and weather resistant features.
GREMSHAPES® GCES are suitable to restrict the cable cores from over bending thus protection from damage in the terminations near the crutch area.

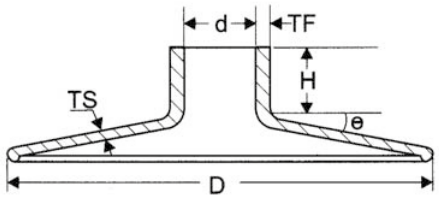
Various

Standard colour: Red.

Dimensions

Reference	D (mm) ±2	d (mm)		H (mm)	e (mm)	Recovered wall thickness (±20%)	
GREMSHAPES® GCES		a (min.)	b (max.)			TS (mm)	TF (mm)
GCES 1	92	35	13	17	10°	2,5	2,5
GCES 2	124	47	21	20	10°	2,8	2,8
GCES 3	142	57	31	24	10°	2,8	2,8
GCES 4	142	72	41	28	10°	2,8	2,8

- a : as supplied / b : after free recovery



Property			Values	Test Methods
Physical	Working temperature		-55°C to +105°C	-
	Specific gravity		1,19 ±0,2	ASTM D 1505
	Tensile strength Elongation at break	Unaged	≥ 6 Mpa ≥ 200%	ASTM D 412 / IS0 37
	Tensile strength Elongation at break	Thermal ageing 500h @ 120°C	≥ 5,5 Mpa ≥ 100%	ASTM D 412 / IS0 37
	Tensile strength Elongation at break	Weatherability 5000h in U.V. (Tester)	≥ 5,5 Mpa ≥ 200%	ASTM D 412 / IS0 37
	Water absorption	Aged 168h @ 120°C	< 1 %	ASTM D 570 / ISO 62
	Hardness		28 ± 3 shore D	ASTM D 2240
Electrical	Volume resistivity		≥ $1x10^{12}$ Ω.cm	ASTM D 257 / IEC 93
	Dielectric strength		≥ 15 kV/mm	ASTM D 149 / IEC 243
	Dielectric constant		< 5	ASTM D 150 / IEC 250

Recommended storage conditions: Keep in cool, dry, ventilated storage (maximum temperature of 35°C) and in closed containers.

RoHS
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04/07/2014 Rev0

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GREMTEK
A Tradename of GREMCO
Protective Sleeve Solutions

Quality policy

To ensure the consistent quality of its products, GREMTEK is committed to a policy of continuous quality improvement and rigorous traceability.

GREMTEK has implemented a quality system accredited to ISO 9001 version 2008.

Cutting tolerances

Cutting length (mm)	Tolerances (±) (mm)
5 to 50	1.50
50 to 100	1.50
100 to 150	2.00
150 to 300	3.00
300 to 700	5.00
700 to 1000	8.00
≥ 1000	1 %

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