CABLE JOINTS, CABLE TERMINATIONS, CABLE GLANDS, CABLE CLEATS
FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, CUT-OUTS

11KV 33KV CABLE JOINTS & CABLE TERMINATIONS
FURSE EARTHING
www.cablejoints.co.uk
Thorne and Derrick UK
Tel 0044 191 490 1547 Fax 0044 191 477 5371
Tel 0044 117 977 4647 Fax 0044 117 9775582

Electrical Markets Division

Product Catalogue





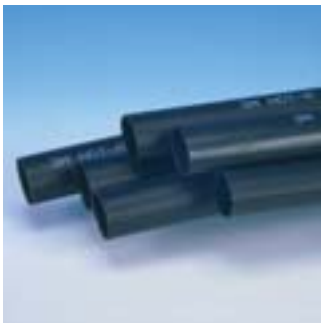



General Purpose Low & Medium Voltage Cable & Wire Accessories

Finding a better way...

3M

3M Electrical Markets Division Product Catalogue



Finding A Better Way

General Purpose Low & Medium Voltage Cable & Wire Accessories

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3M . . . Finding A Better Way

3M is continually finding new ways to make amazing things happen. It is inspired by working closely with its customers to create innovative products that help make the world smarter, faster, healthier and safer. Well-known 3M brands include Scotch®, Post-it®, Scotchgard®, Thinsulate™ and Scotch-Brite™.

3M was founded in 1902 and has pioneered technological innovation ever since, including reflective materials used in road signs, the latest flexible 'soft casts' for broken limbs, a new class of drugs to treat skin cancer, display enhancement films making electronic displays brighter and fire protection products that help against the spread of fire, smoke and toxic fumes.

Today 3M employs 67,000 people worldwide to deliver an extensive range of products, technologies and services to its customers in more than 200 countries. Its diverse technologies and products touch nearly every aspect of modern life, from consumer and office, display and graphics, electronics and telecommunications, safety, security and protection services, health care, industrial and transportation markets.

The UK and Ireland is home to one of the largest 3M subsidiaries outside the USA, employing 3300 people across 12 locations, including seven manufacturing sites. Products manufactured in the UK include coated abrasives, respirators, adhesive tapes and pharmaceuticals.

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Reliable & Efficient Performance with 3M Electrical Markets Division

- 3M has over 50 years experience in electrical products and processes.
- 3M developed electrical insulating PVC tape.
- 3M developed Cold Shrink more than 25 years ago. It is a safer, reliable and easy to install solution for medium voltage jointing and terminating.
- 3M has an ongoing commitment to research and development
- Jointing efficiency was further enhanced with the arrival of Closed-Mix and Pouring (CMP) nozzles.
- 3M wants to be your chosen supplier.

Superior Electrical Performance

Electrical power supply installations are required to operate efficiently over a long period. 3M products are designed to give lasting optimum performance.

Products Customised to your specific Requirements

Our range is comprehensive yet we recognise that many projects require a customised solution to meet individual needs. When a customized application is required , the 3M technical service and marketing teams are available to discuss a potential solution.We also have the 3M Electrical Group Mobile Innovation Facility which is available for site demonstration, product evaluation and training.

3M products are designed for optimum performance to ensure a safe and long-lasting installation. With a comprehensive range of quality products to choose from, backed by expert training and field support, when you select a 3M product you choose a business partnership you can be sure of for years to come.

Visit our website at www.3m.com/uk/electrical to view our latest updates to the product catalogue

3M European Technical Center in Neuss

3M's new research and development is a symbol of innovation and communication as well as of globalization and customer focus. 3M has built the European Technical Center at the seat of the headquarters of 3M Germany in Neuss. The facility, which is the largest 3M lab in Europe, will accommodate some 300 researchers, technical service and application engineers from 14 countries, who do significant research and development for the European market, transforming their visions into products. With the establishment of the European Technical Center, 3M has invested over £14 million in its future.

3M US Laboratory

The 3M cable accessories range is also backed by the 3M US laboratory. At this Austin, based facility, a team of expert scientists and engineers are dedicated to covering the following areas: Material science, mechanical and electrical engineering, product testing and analysis. Current developments include the evolution of the 3M range of high voltage products and environmentally-friendly resins.

T&D

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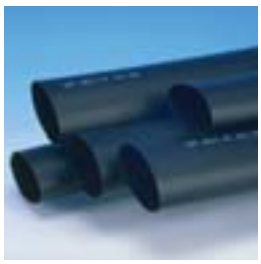
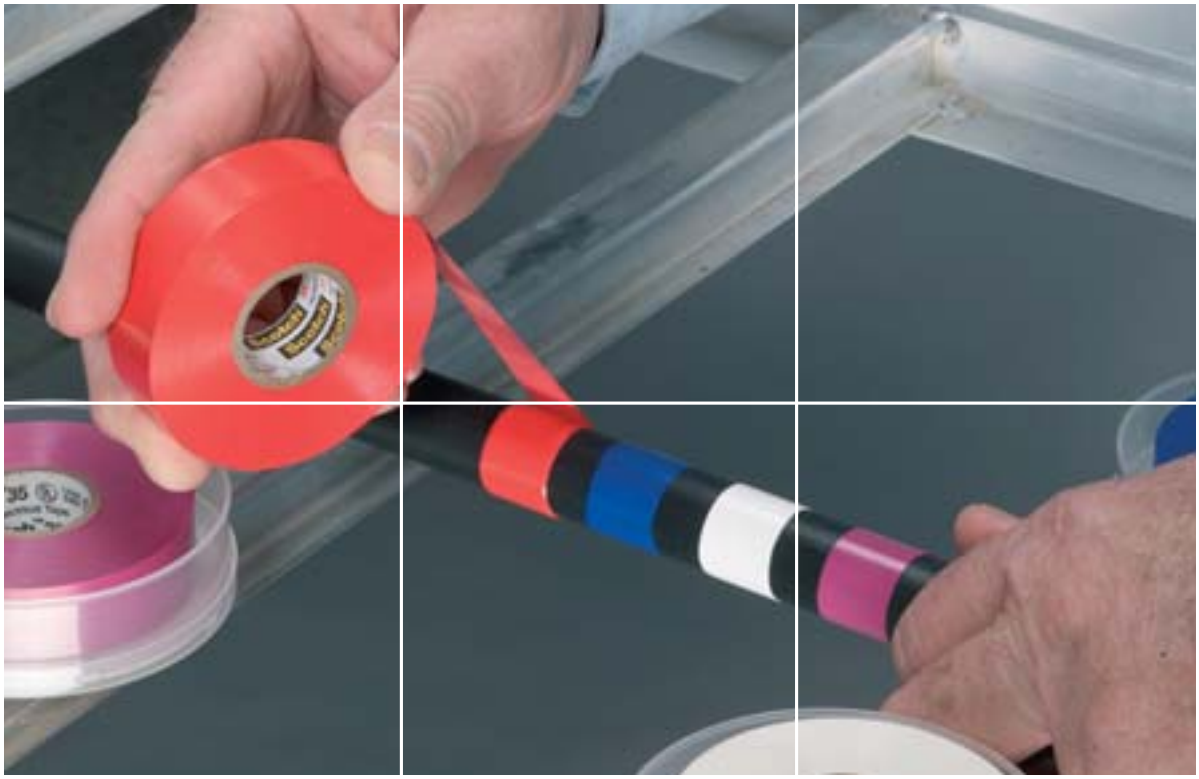


Electrical Tapes

Electrical Tapes

3M offer a range of over 30 electrical tapes and mastics for insulation, jointing, corrosion protection, all weather protection and environmental sealing tapes. From Scotch® 33+ vinyl tape to Scotch® 130C linerless rubber splicing tape to Scotch® 2200 mastic pads, 3M electrical tapes provide exceptional performance and reliability.



PVC Insulating Tape

Size	Colour
19mm x 20m	Black

Scotch® Super 33+ High Quality PVC

Scotch® Super 33+ Electrical Tape is a premium grade, 0.178mm thick, all-weather vinyl insulating tape. It is designed to perform continuously in a temperature ambient of up to 105°C (220°F). The tape is conformable for cold weather application down to –18°C (0°F). The combination of elastic backing and aggressive adhesive provides moisture-tight electrical and mechanical protection with minimum bulk.

Features

- It has excellent resistance to abrasion, moisture, alkalis, acids, corrosion and varying weather conditions (including ultraviolet exposure).
- Flame retardant
- Conforms to BS 3924 and UL510

Applications

- Primary electrical insulation for all wire and cable splices rated up to 600V and 105°C (220°F).

PVC Insulating Tape

Sizes
19mm x 20m
25mm x 33m
38mm x 33m

Scotch® Super 88 - All Weather PVC Tape

Scotch® Super 88 Electrical Tape is a premium grade, 0.216mm thick, all-weather vinyl insulating tape). It has excellent resistance to abrasion, moisture, alkalis, acids, corrosion and varying weather conditions (including ultraviolet exposure). The combination of elastic backing and aggressive adhesive provides moisture-tight electrical and mechanical protection with minimum bulk.

Features

- The tape is designed to perform continuously in a temperature ambient of up to 105°C (220°F) and Conformable for cold weather application down to - 18°C (0°F)
- Good elongation for excellent conformability to irregular surfaces
- Flame retardant
- Excellent abrasion and puncture resistance
- Meets BS 3924 and UL 510

Applications

- Primary electrical insulation (especially at low temperatures) for harnessing all wires and cable joints up to 600 volts and 105°C

Sizes	Colours
19mm x 20m	Red
19mm x 20m	Blue
19mm x 20m	Brown
19mm x 20m	Yellow
19mm x 20m	White

Scotch® 35 Tape - Colour Coding PVC

Scotch® 35 Vinyl Electrical Colour Coding Tape is an electrical grade, 0.178mm thick PVC tape with a pressure sensitive rubber adhesive, available in nine fade resistant colours. Roll size 19mm x 20m.

Features

- This abrasion and weather resistant tape has excellent electrical insulating properties, wraps smoothly, conforms well and holds over a wide range of temperatures. (0°C to 80°C)
- Resistant to moisture, alkalis, acids, U.V and corrosion.
- Conforms to BS 3924 and UL 510

Applications

- Scotch 35 Tape is designed for use in phase identification, Colour coding of motor leads and piping systems, and for marking safety areas
- Joint, termination and connector insulation up to 600V

Sizes
12mm x 33m
19mm x 33m
25mm x 33m
38mm x 33m
50mm x 33m

Scotch® 22 Tape - Heavy Duty PVC

Scotch® 22 Electrical Tape is a premium grade, 0.254mm thick, vinyl insulating tape. It is designed to perform continuously in ambient temperatures up to 80°C (176°F). The tape is conformable for cold weather applications down to –10°C (15°F). It has excellent resistance to abrasion, moisture, alkalis, acids, corrosion and varying weather conditions (including ultraviolet exposure).

Features

- High elastic memory
- Flame retardant
- Temperature rating from -10°C to 80°C
- High resistance to corrosion, U.V, moisture and chemicals
- Conforms to BS 3924 and UL 510

Application

- Suitable for all heavy-duty applications, including bus bar insulations, harnessing, cable sheath repair and sealing connectors

PVC Insulating Tape

Scotch® 33 Tape - General Purpose PVC

Scotch® 33 Electrical Tape is a quality, 0.178mm thick, general-purpose vinyl insulating tape. It has excellent resistance to; abrasion, moisture, alkalis, acid, copper corrosion and varying weather conditions (including sunlight). It is a polyvinyl chloride (PVC) tape that has a high dielectric strength, is flame -retardant and conformable, and provides excellent mechanical protection with minimum bulk. It is a UL Listed “Insulating Tape”

Features

- Flame retardant
- Wraps and conforms easily
- Forms a protective jacket (excellent abrasion resistance for high voltage cable joints and terminations)
- Conforms to BS 3924 and UL510

Applications

- The tape is designed to perform in a continuous temperature environment up to 80°C
- Indoor or outdoor insulations (especially in moisture and solvent vapour areas) for all general purposes wiring applications and cable joints up to 600V

Sizes
9mm x 33m
12.7mm x 33m
19mm x 33m
25mm x 33m
38mm x 33m
50mm x 33m

Scotch® 710 - PVC Electrical Tape

Scotch® 710 Electrical Tape is a good quality, 0.178mm thick, medium purpose PVC insulating tape.

It is a polyvinyl chloride (PVC) tape that has a high dielectric strength, is conformable and provides very good mechanical protection with minimum bulk.

Features

- Excellent resistance to abrasion, moisture, alkalis, acid and varying weather conditions (including sunlight)

Applications

- Primary electrical insulation for all wire and cable joints and repairs.
- Harnessing of wire and cables.
- Indoor and outdoor applications at temperatures from -10°C to +90°C.

Sizes
19mm x 20m

Temflex™ 1500 – PVC Electrical Tape

Temflex™ 1500 Electrical Tape is a good quality, 0.15mm thick, general-purpose PVC insulating tape. Available colours are: black, blue, brown, yellow, yellow/green, grey, orange, red, white, and green.

Features

- Good resistance to abrasion, moisture, alkalis, acid and varying weather conditions (including sunlight).
- High dielectric strength, conformable and provides good mechanical protection with minimum bulk.
- Meets requirements of IEC 60454-3-1-5/F-PVCP/90 and has VDE Marks Licence

Applications

- Primary electrical insulation for all wire and cable joints and repairs.
- Harnessing of wire and cables.
- For indoor and outdoor applications.

Sizes
19mm x 25m

Self Amalgamating, Insulating and Splicing Tape

Sizes
19mm x 9.15m
25mmx 9.15m
38mm x 9.15m
50mm x 9.15m

Scotch® 23 Tape - Premium Grade Self Bonding Rubber

Scotch® 23 Electrical Tape is a highly conformable 0.76mm thick, amalgamating EPR (Ethylene Propylene Rubber) based, high voltage jointing tape. It is a non-vulcanising, shelf-stable tape with excellent electrical properties. 23 Tape can be used as insulation for low-voltage applications as well as insulation for joints up to 69kV.

Features

- Physical and electrical properties are unaffected by the degree of stretch
- Can be stretched up to 100% to give void-free, moisture-resistant insulation
- Self-almalgamating tape
- Excellent electrical properties

Application

- Primary insulation for building stress cones on cables up to 35kV
- Primary electrical insulation for cable jointing and terminating up to 69kV with up to 90°C continuous operating temperatures and 130°C emergency overload temperature

Sizes
19mm x 9m
25mm x 9m
38mm x 9m
50mm x 9m

Scotch® 130C Linerless Self Bonding Tape – EPR

Scotch® 130C Electrical Tape is a highly conformable, 0.762mm thick, linerless Ethylene Propylene Rubber (EPR), high voltage insulating tape formulated to provide excellent thermal dissipation of splice heat. The tape is designed for use in splicing and terminating wires and cables.

Features

- Non-vulcanizing and highly conformable
- U.V, weather and corona resistant
- Flame retardant.
- Self-almalgamating tape

Applications

- Primary electrical insulation for cable jointing and terminating up to 69kV with up to 90°C continuous operating temperatures and 130°C emergency overload temperature
- Moisture sealing electrical connections.
- Bus bar insulations.
- End sealing high-voltage cables

Sizes
19mm x 9.15m

Temflex™ 2151 Economy Grade Self Bonding Rubber -

Temflex™ 2151 Electrical tape is a highly conformable, 0.51mm Thick, self-fusing EPR (Ethylene Propylene Rubber) based low voltage jointing tape.

Self Amalgamating, Insulating and Splicing Tape

Sizes
25mm x 9m

Scotch® 70 - Silicone Rubber Tape

Scotch® 70 Silicone Rubber Electrical Tape is a 0.3mm thick, high temperature arc-and track-resistant tape composed of self-fusing, inorganic silicone rubber and easy-tear and easy-strip liner.

Features

- Excellent track resistance
- Excellent arc resistance
- Excellent ozone resistance
- High dielectric strength
- Class “H” material (180°C continuous operation)
- Workable in extremely low temperatures
- Excellent conformability
- Excellent instantaneous fusion; does not need to be held down

Applications

- As an Over-wrap for protection of terminating high-voltage cables against arcing and tracking

Sizes
19mm x 4.5m

Scotch® 13 Tape - Semi Conducting EPR

The soft, black rubber tape is a 0.762mm thick, highly conformable, semi-conducting EPR (Ethylene Propylene Rubber) based high-voltage splicing tape. It is non-vulcanising and shelf stable, with stable conductivity over a wide temperature range. Its conductivity is not affected, except by low-viscosity oils. The conductivity of cable semi-conducting jackets is not affected by 13 Tape.

Features

- Remains stable at 130°C and is non-vulcanising
- Elongates easily to form irregular shapes
- Resist cracking, solvents, U.V and moisture
- Tape and liner boldly printed to distinguish from insulating tape
- Meets requirements of ADTM-D4388, Type IV

Application

- Electrically rounds-off high voltage connectors and lugs
- Provides screen continuation for high voltage joints and terminations
- Replaces semi-conducting layer beneath metallic shield of damaged cables
- Forms conductive portion of stress cones

Sizes
19mm x 4.5m

Scotch® 2220 - Stress Control Tape

0.762mm thick, mastic tape, for stress control applications in joints and terminations at all voltages.

Features

- Temperature rating: 90°C continuous operating with emergency overload temperature of 130°C
- Changes voltage distribution in the electrical field surrounding a high voltage termination or joint.
- Reduces stress concentration to values found in continuous cables

Applications

- Provides stress relief for all cable terminations and high voltage joints

Mastic, Sealing and Insulating Tapes

Sizes (2210 Tape)
19mm x6m
38mm x 6m
Backing and Mastic:
* Thickness 0.815mm (19x38mm rolls)
* Thickness 1.18mm (101mm rolls)

Sizes (2200 Pads)
114mm x 0.165m
Backing and Mastic:
* Thickness 3.2mm

Scotch® 2210 - Vinyl Mastic Tape
Scotch® 2200 Vinyl Mastic Pads

Scotch® Tape VM 2210 and 2200 Pads are self-fusing, rubber based insulating compounds, laminated to a flexible, all-weather grade vinyl (PVC) backing. These products are designed to insulate, moisture-seal all connections up to 600 volts, and have excellent resistance to abrasion, moisture, alkalis, acid, copper corrosion and varying weather conditions (including sunlight).

Features
- Compatible Rubber Mastic
- Flexible over wide range of temperatures
- Highly resistant to ultraviolet light
- Usable for indoor or outdoor applications

Applications (600V maximum)
- Bolted connections
- Service drops
- Traffic signal wire connections
- Lighting connections
- Transformer bushing protection

Size
50mm x 3.03m

Scotch® 2228 - Rubber Mastic Tape (EPR)

Scotch® 2228 is a 1.65mm thick, conformable self-fusing rubber electrical insulating and sealing tape. Scotch® 2228 consists of an ethylene propylene rubber (EPR) backing coated with aggressive, temperature-stable mastic adhesive. It is designed for electrical insulating and moisture sealing applications.

Features
- Conformable for application over irregular surfaces
- Compatible with solid dielectric cable insulations
- Self-fusing tape
- Flexible over wide temperature range
- Excellent weather and moisture resistance
- Excellent adhesion and sealing characteristics with copper, aluminum and power cable jacket materials

Applications
- Primary electrical insulation for cable and wire connections rated up to 1000 volts
- Primary electrical insulation for bus bar connections rated up to 35kV

Size
19mm x 1.5m

Scotch® 2221 - Mastic Tape

Scotch® 2221 Tape provides excellent oil barrier and shows good stress control characteristics. It is a 1.5mm thick, soft, self-fusing, oil resistant, elastomeric PU mastic tape on liner for medium voltage applications.

Features
- Good stress control
- Oil resistant

Applications
- Scotch® 2221 Tape is designed for use in oil barrier applications in paper, insulated MV cable joints and terminations

Mastic, Sealing and Insulating Tapes

Size
95mm x 3.08m

Scotch® 2229 - Mastic Tape

Scotch-Seal™ 2229 Mastic Tape is a 3.2mm thick, conformable, durable, tacky mastic coated on an easy release liner.
The product is designed for quick and easy insulating, padding and sealing of objects that need to be protected from adverse environmental conditions. It is well suited for corrosion protection.

Features

- Excellent adhesion and sealing characteristics to metals, rubbers, synthetic cable insulations and jackets
- Wide temperature stability while maintaining its sealing properties. (-34°C to 71°C)
- Conformable and moldable for easy applications over irregular surfaces
- Does not crack when subjected to repeated flexing
- Retains its flexibility at low temperatures resulting in ease of application and continuous performance at reduced temperatures

Applications

- For sealing high voltage cable splice and termination accessories
- For insulating electrical connections rated up to 1000 volts if over wrapped with vinyl or rubber electrical tape
- For padding irregular shaped connections
- For providing corrosion protection to a wide variety of electrical connections and applications
- For sealing ducts and cable end seals
- For sealing against dust, soil, water and other environmental conditions

Size
38mm x 1.5m

Scotchfil™ - Electrical Insulation Putty

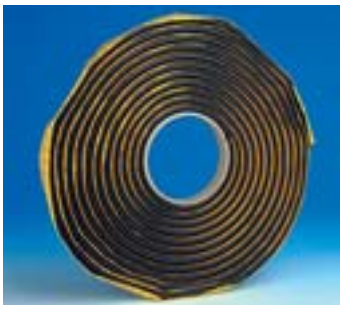
Scotchfil™ electrical insulation putty is a puttylike electrical grade compound in tape form. It is UL Recognised as a joint insulation for electrical conductors at temperatures up to 80°C (176°F) when over wrapped with either Super 33+ or Super 88 Vinyl Electrical Tape. 3.175mm thickness.

Features

- Non-corrosive, synthetic rubber
- Excellent electrical properties
- Excellent ageing properties
- Will not dry out
- Applies cleanly without waste

Applications

- To insulate low-voltage (600 volts and less) connections
- To build up cable joints and fill out major irregularities and voids in low-voltage joints (2300 volts and less) in order to obtain a uniform base for further taping
- To round out high-voltage connections to gear
- To smooth bus bar irregularities
- To create a resin dam in resin pressure joints
- To create a moisture seal at ground wire exit in high-voltage joints
- To moisture seal multi-conductor cable connections



Size	Colour
20mm x 10m	Black

Scotch-Seal™ - 5313 Preformed Sealant Strip

5313 is a tacky solid extrusion based on a synthetic rubber. High adhesive strength – sufficient to cause cohesive failure of the sealer before loss of adhesion to the substrate, when pulled with tension. The sealer is a non-curing type and retains the same properties and consistency after ageing in several different environments, including weathering.

Features

- High adhesive strength
- Excellent water / weathering resistance
- Ozone resistant
- Service temperature range -29°C to 135°C

Application

- Sealing applications in conjunction with 3M Cable Joints

General Purpose Tapes

Size
50mm x 46m

Scotch® 2000 - Duct Tape

Scotch® 2000 Electrician's Duct Tape is a 0.152mm thick, water resistant duct tape with polyvinyl chloride (PVC) backing and a rubber adhesive.
Note: This tape is not recommended for sealing air ducts

Features
- Easy tear
- No cloth – does not absorb water
- Clean removal (minimal residue)

Applications
- Scotch 2000 is designed to be an electrician's utility tape for holding and bundling applications.

Marking Tapes

Yellow	
Printed Character	Part Number
L1	SL1-R
L2	SL2-R
L3	SL3-R
N	SN-R
L	SL-R
White	
L1	SL1-RW
L2	SL2-RW
L3	SL3-RW
N	SN-RW
L	SL-RW

Scotch® 9545 Cloth Tape - Pre-printed Phase Marking

Scotch® 9545 is a heavy-duty cloth tape, pre-printed with phase marking identification characters. The tape has either a yellow or white background, with black printing. Rolls are 19mm x 10m Suitable for identification of electrical wires and cables. Tape thickness 0.27mm

Features
- Banding – a good adhesive and non-stretch strength for a reliable grip

Applications
- to assist in cable identification

White	
Printed Character	Part Number
L	T1700PL
L1	T1700PLI
L2	T1700PL2
L3	T1700PL3
N	T1700PN

Temflex™ 1700P Pre-printed Phase Marking Tape – PVC

Temflex™ PVC pre-printed with phase marking identification characters. The tape has a white background with black printing. Rolls are 15mm x 10m x 0.77mm

Features
- Flame retardent
- Operating temperature range - 10°C to 80°C

Applications
- To asist cable identification

Corrosion & Protection Tape

Sizes	
50 Tape (1)	51 Tape (2)
25mm x 30.5m	25mm x 30.5m
50mm x 30.5m	50mm x 30.5m
101mm x 30.5m	101mm x 30.5m
152mm x 30.5m	101mm x 30.5m

(1) Thickness 0.254mm
(2) Thickness 0.508mm

Scotchrap™ 50 and 51 Tape - All Weather Corrosion Protection

Scotchrap™ 50 and 51 Tapes are tough, polyvinyl chloride based tapes with special high tack adhesives formulated to resist corrosion of metal piping systems above and below ground, fittings and joints on all millcoated pipe and electrical conduit systems.

Features

- Resists abrasion, moisture, corrosive salt water, soil acids, and alkalis and salts
- Resistant to common chemicals, chemical vapours
- Resistant to outdoor weathering and sunlight
- Resistant to impact, abrasion, punctures and tears
- Both tapes have high electric strength, and excellent insulating properties.
- Continuous operating temperature range from -48°C to 80°C
- Application temperature from -12°C to 65.6°C

Applications

- Protection of metal pipe systems both above and below ground.
- Use Scotchrap Pipe primer to prepare surfaces for tape application
- Use Scotchfil Electrical Insulation putty* to build up irregular surfaces to provide a smooth, waterproof taping surface

Sizes
38mm x 6m
76mm x 6m

Scotch® 77 - Arc & Fire Proofing Tape

Scotch® 77 Tape is an arc and fireproofing tape designed to protect all types of electrical cables. Its unique formulation allows the manufacture of an unsupported elastomer that expands in fire to provide a thick char build-up between the flame and cable. This insulating firewall acts as a heat shield and flame barrier, thus protecting the cables and accessories. 0.762mm thickness

Features

- Clean and easy to apply
- Provides fault arc protection to adjacent wrapped cables
- Provides additional electrical insulation
- Resists U.V., water, salt water, acids and sewage

Applications

- To fire and arc proof high-energy power cables where exposed to failures of other high-energy cables (any cables within 45cm are considered to be exposed)
- To fire and arc proof control cables when high energy power cables are present
- To fire and arc proof all cables in areas where possibility of fire hazard exists
- To provide additional electrical insulation, thus reducing possibilities of transferred arcs
- To fire and arc proof piping systems (ie. gas, water, or oil lines)
- The installed tape to be secured with 2 layers of 69 glass cloth tape

*For information on Scotchfil Electrical Insulating Putty, see page 16

Glass Cloth Tapes

Scotch® 27 Tape - Glass Cloth

Scotch® 27 Tape is a 0.178mm thick, woven glass cloth tape designed to operate in applications requiring high mechanical strength and resistance to high temperatures. The glass cloth is specially treated and prepared to provide corrosion free protection. The adhesive is a rubber pressure-sensitive thermosetting system.

Features

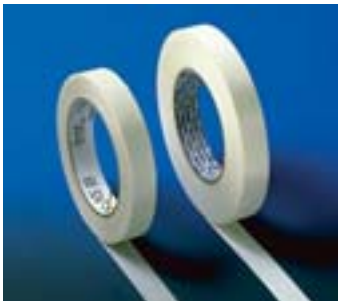
- The glass will not shrink, rot or burn and has a high tensile strength.
- The tape is designed for continuous use at class "B" (130°C) temperature with a high temperature thermosetting adhesive

Applications

- Useful applications include a heat-stable insulation for furnace and oven controls, motor leads and switches.

Size	Colour
12mm x 20m	White

Scotch® Number 69 Tape - Glass Cloth Printable Film / Silicone Adhesive



69 Glass Cloth Electrical Tape is a 0.177mm thick, white glass cloth tape with a high-temperature thermosetting silicone adhesive. The thermosetting adhesive provides an increased bond once applied in areas of high ambient temperatures.

Features

- 69 Tape is UL recognized for continuous use up to 200°C.
- Meets requirements of Military Specification No. MIL-I-19166C.

Applications

- Insulating electric and induction type furnace power supply leads
- Securing high temperature, non-PSA insulations (such as asbestos and glass) in high temperature areas
- To be used in conjunction with 77 Tape* for arc and fire proofing applications

Sizes	Colour
6mm x 33m	White
9mm x 33m	White
12mm x 33m	White
15mm x 33m	White
19mm x 33m	White
25mm x 33m	White
38mm x 33m	White
50mm x 33m	White

Scotch® 2510 - Cambric Tape

Scotch® Varnished Cambric Tape is made from straight-cut woven cotton cambric fabric. The fabric is oil primed and coated with a high-grade yellow electrical insulating varnish.

The tape is flexible, electrically insulating and moisture resistant with a smooth finish.

Features

- Designed to perform continuously in temperatures up to 105°C (220°F)
- Excellent resistance to abrasion, puncture and cut-through.

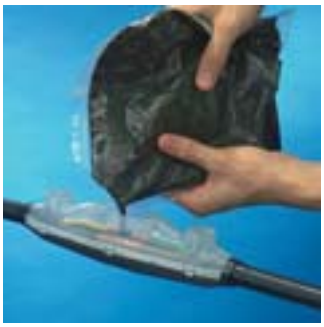
Application

- For insulating joints requiring rapid and clean re-entry such as motor lead and service drop
- Connections, heavy split bolts in raceways and bus bar insulating.

Sizes
19mm x 20m

*For information on 77 Tape, see page 18

Low Voltage Joints & Terminations



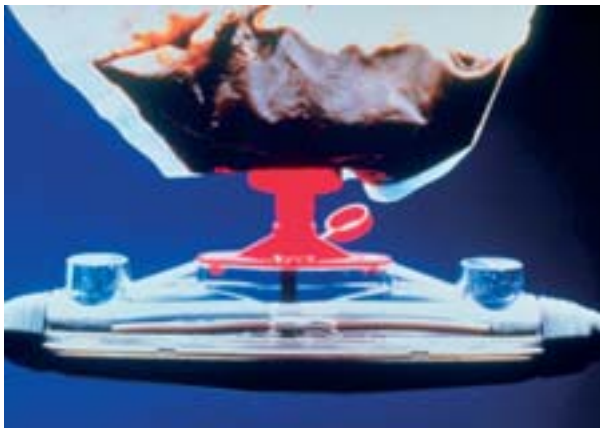
Low Voltage Joints

3M produce a full range of quality Jointing Systems suitable for a variety of diverse applications. Designed for PVC, XLPE, Paper, Armoured and Unarmoured Cables up to 3.3kV (up to 6.6kV for unscreened cables) using Scotchcast™ Resins, Heatshrink, and Coldshrink Options.

Resin Joints include the unique 3M Advanced Resin Delivery System – totally enclosed mixing and pouring system with no spillage (up to size 4).

Armour continuity is included where applicable using constant force springs, and connectors are available separately for all applications.

Low Voltage - Resin Joints



3M™ LA Kits with Armour Continuity - Up to 3.3kV (6.6kV for unscreened cables)

Inline joint for PVC/SWA/PVC & XLPE Insulated cables. Also suitable for Transition joints, and Paper joints, with the use of supplementary kits; see selection tables for details.

Safer Cable Jointing;

Unique 3M Advanced Resin Delivery System – totally enclosed mixing and pouring

- No spillage
- No accidental contact whatever your working conditions
- Conforms to BS7888 (HD623)

Faster and Easier;

Easy to use delivery system that gives you complete control

- No special tools required
- Short Curing time
- Simple step-by-step instructions

More Reliable;

Tough polyetherurethane resin power jointing resin – at least equal to the strength of the cable

- Transparent resin bag – ensures reliable mixing and installation
- Minimal risk of leakage
- Complete with Armour continuity – constant force springs
- Self-amalgamating tape provides high insulation value

Each kit includes two-part mould, polyetherurethane Resin No. 1471 (Closed Mix & Pour system), Armour Continuity, tapes, and full instructions. This kit can be upgraded for use with 3.3kv Cables, and is also suitable for 6.6kV Unscreened Cables, by using additional 23 Insulating tape. See instructions for full details.

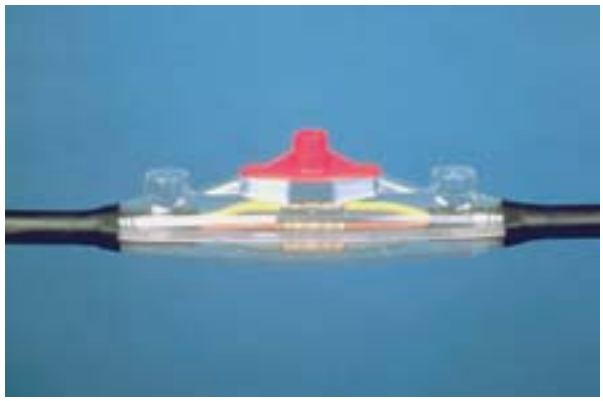
NOMINAL CONDUCTOR AREA (mm^2)	CORES	KIT REF
1.5	2	**LA21**
	3	**LA21**
	4	**LA21**
2.5	2	**LA21**
	3	**LA21**
	4	**LA21**
4	2	**LA21**
	3	**LA21**
	4	**LA22**
6	2	**LA22**
	3	**LA22**
	4	**LA22**
10	2	**LA22**
	3	**LA22**
	4	**LA22**
16	1	**LA22**
	2	**LA22**
	3	**LA23**
	4	**LA23**
25	1	**LA22**
	2	**LA22**
	3	**LA23**
	4	**LA24**
35	1	**LA22**
	2	**LA23**
	3	**LA24**
	4	**LA24**
50	1	**LA22**
	2	**LA23**
	3	**LA24**
	4	**LA24**

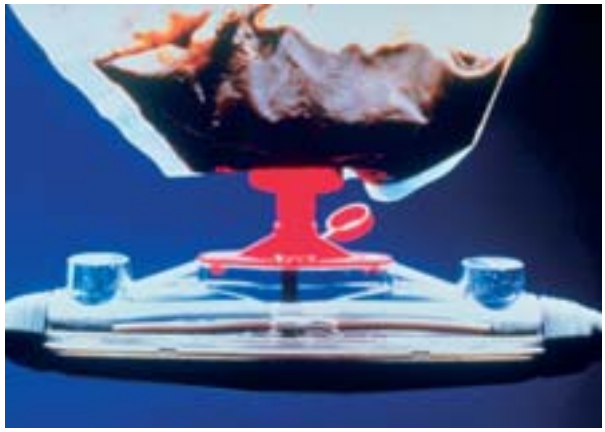
NOMINAL CONDUCTOR AREA (mm^2)	CORES	KIT REF
70	1	**LA22**
	2	**LA24**
	3	**LA25**
	4	**LA25**
95	1	**LA22**
	2	**LA24**
	3	**LA25**
	4	**LA25**
120	1	**LA23**
	2	**LA25**
	3	**LA25**
	4	**LA25**
150	1	**LA23**
	2	**LA25**
	3	**LA26**
	4	**LA26**
185	1	**LA23**
	2	**LA25**
	3	**LA26**
	4	**LA26**
240	1	**LA24**
	2	**LA26**
	3	**LA26**
	4	**LA27**
300	1	**LA24**
	2	**LA26**
	3	**LA27**
	4	**LA27**
400	1	**LA24**
	2	**LA27**
	3	**LA27**
500	1	**LA25**
630	1	**LA25**
800	1	**LA26**
1000	1	**LA26**

Low Voltage - Resin Joints

3M™ LA Inline Joint

Jointing Kit	Resin Volume	Cable Diameter	
	CC	Max	Min
LA21	173	26	8
LA22	400	32	14
LA23	673	37	23
LA24	1164	51	28
LA25	2909	60	33
LA26	6364	80	48
LA27	9545	90	45



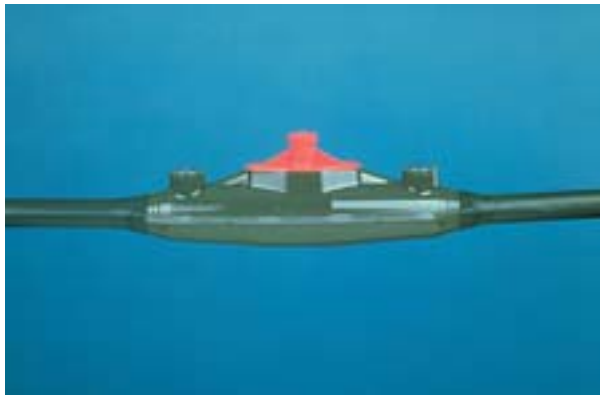


3M™ LA Transition Joint

Supplementary Kits for Transition, and Paper Cable Jointing

Use one supplementary kit for a Transition joint, and two for a Paper-to-Paper joint. Full instructions are supplied with the kit, which is designed to be used in conjunction with the standard LA Series Joints.

Jointing Kit	Supplementary Kit
LA23	TX3
LA24	TX4
LA25	TX5
LA26	TX6
LA27	TX7



Low Voltage - Resin Joints

3M™ BK Joints for Street Lighting - Up to 1kV

Inline joint for PVC/SWA/PVC & XLPE designed for street lighting applications.

Safer Cable Jointing;

- Closed mix system
- Conforms to BS7888 (HD623)

Faster and Easier;

- Self-amalgamating tape gives ease of handling when insulating connectors
- Excellent resin flow characteristics – eliminating any risk of voids
- Short Curing time
- Simple step-by-step instructions

More Reliable;

- Tough polyetherurethane resin power jointing resin – at least equal to the strength of the cable
- Transparent resin bag – ensures reliable mixing and installation
- Self-amalgamating tape provides high insulation value

Each kit includes two-part mould, polyetherurethane Resin No. 47, armour continuity, tape, and full instructions.

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
1.5	2	**BK1**	8	26
	3	**BK1**		
	4	**BK1**		
2.5	2	**BK1**	8	26
	3	**BK1**		
	4	**BK1**		
	4	**BK2**	14	32
6	2	**BK2**	14	32
10	2	**BK2**	14	32
	3	**BK2**		
	4	**BK2**		
16	1	**BK2**	14	32
	2	**BK2**		
	3	**BK3**	23	37
	4	**BK3**		
25	1	**BK2**	14	32
	2	**BK2**		
	3	**BK3**	23	37
	4	**BK4**	28	51

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
35	1	**BK2**	14	32
	2	**BK3**	23	37
	3	**BK4**	28	51
	4	**BK4**		
50	1	**BK2**	14	32
	2	**BK3**	23	37
	3	**BK4**	28	51
70	1	**BK2**	14	32
	2	**BK4**	28	51
95	1	**BK2**	14	32
	2	**BK4**	28	51
120	1	**BK3**	23	37
150	1	**BK3**	23	37
185	1	**BK3**	23	37
240	1	**BK4**	28	51
300	1	**BK4**	28	51
400	1	**BK4**	28	51

Low Voltage - Resin Joints

3M™ 91-A Joints without Armour Continuity - Up to 1kV

Inline joint for PVC / XPLE Cables

Each kit includes two-part mould, polyetherurethane Resin No. 1471 (Closed Mix & Pour system), and full instructions. This kit can be upgraded for use with 3.3kV Cables by using additional Insulating 23 Tape.

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
1.5	2	**91-A11**	8	26
	3	**91-A11**		
	4	**91-A11**		
2.5	2	**91-A11**	8	26
	3	**91-A11**		
	4	**91-A11**		
4	2	**91-A11**	8	26
	3	**91-A11**		
	4	**91-A12**	14	32
6	2	**91-A12**	14	32
	3	**91-A12**		
	4	**91-A12**		
10	2	**91-A12**	14	32
	3	**91-A12**		
	4	**91-A12**		
16	1	**91-A12**	14	32
	2	**91-A12**		
	3	**91-A13**	23	37
	4	**91-A13**		
25	1	**91-A12**	14	32
	2	**91-A12**		
	3	**91-A13**	23	37
	4	**91-A14**	28	51
35	1	**91-A12**	23	37
	2	**91-A13**		
	3	**91-A14**	28	51
	4	**91-A14**		
50	1	**91-A12**	14	32
	2	**91-A13**	23	37
	3	**91-A14**	28	51
	4	**91-A14**		

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
70	1	**91-A12**	14	32
	2	**91-A14**	28	51
	3	**91-A15**	33	60
	4	**91-A15**		
95	1	**91-A12**	14	32
	2	**91-A14**	28	51
	3	**91-A15**	33	60
	4	**91-A15**		
120	1	**91-A13**	23	37
	2	**91-A15**	33	60
	3	**91-A15**		
	4	**91-A15**		
150	1	**91-A13**	23	37
	2	**91-A15**	33	60
	3	**91-A16**	48	80
	4	**91-A16**		
185	1	**91-A13**	23	37
	2	**91-A15**	33	60
	3	**91-A16**	48	80
	4	**91-A16**		
240	1	**91-A14**	28	51
	2	**91-A16**	48	80
	3	**91-A16**		
	4	**91-A17**	45	90
300	1	**91-A14**	28	51
	2	**91-A16**	48	80
	3	**91-A17**	45	90
	4	**91-A17**		
400	1	**91-A14**	28	51
	2	**91-A17**	45	90
	3	**91-A17**		
500	1	**91-A15**	33	60
630	1	**91-A15**	33	60
800	1	**91-A16**	48	80
1000	1	**91-A16**	48	80

Low Voltage - Resin Joints

3M™ 90-A Joints for Street Lighting without Earth - Up to 1kV

Inline joint for PVC/XLPE Cables

Each kit includes two-part mould, polyetherurethane Resin No. 47, tape, and full instructions

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
1.5	2	**90-A1**	8	26
	3	**90-A1**		
	4	**90-A1**		
2.5	2	**90-A1**	8	26
	3	**90-A1**		
	4	**90-A1**		
4	2	**90-A1**	8	26
	3	**90-A1**		
	4	**90-A2**	14	32
6	2	**90-A2**	14	32
	3	**90-A2**		
	4	**90-A2**		
10	2	**90-A2**	14	32
	3	**90-A2**		
	4	**90-A2**		
16	1	**90-A2**	14	32
	2	**90-A2**		
	3	**90-A3**	23	37
	4	**90-A3**		
25	1	**90-A2**	14	32
	2	**90-A2**		
	3	**90-A3**	23	37
	4	**90-A4**	28	51
35	1	**90-A2**	14	32
	2	**90-A3**	23	37
	3	**90-A4**	28	51
	4	**90-A4**		
50	1	**90-A2**	14	32
	2	**90-A3**	23	37
	3	**90-A4**	28	51
	4	**90-A4**		

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
70	1	**90-A2**	14	32
	2	**90-A4**	28	51
	3	**90-A5**	33	60
	4	**90-A5**		
95	1	**90-A2**	14	32
	2	**90-A4**	28	51
	3	**90-A5**	33	60
	4	**90-A5**		
120	1	**90-A3**	23	37
	2	**90-A5**	33	60
	3	**90-A5**		
	4	**90-A5**		
150	1	**90-A3**	23	37
	2	**90-A5**	33	60
	3	**90-A6**	48	80
	4	**90-A6**		
185	1	**90-A3**	23	37
	2	**90-A5**	33	60
	3	**90-A6**	48	80
	4	**90-A6**		
240	1	**90-A4**	28	51
	2	**90-A6**	48	80
	3	**90-A6**		
	4	**90-A6**		
300	1	**90-A4**	28	51
	2	**90-A6**	48	80
	3	**90-A7**	45	90
	4	**90-A7**		
400	1	**90-A4**	28	51
	2	**90-A7**	45	90
	3	**90-A7**		
500	1	**90-A5**	33	60
630	1	**90-A5**	33	60
800	1	**90-A6**	48	80
1000	1	**90-A6**	48	80

Low Voltage - Resin Joints

3M™ 92-A Joints

High Humidity - Up to 1 kV Un-armoured Inline joint for armoured/Unarmoured PVC/XLPE cables, moisture resistant for high humidity areas.

Supplied with Epoxy Resin for use where there is a risk of water seepage or high humidity during curing.

Kit includes two-part mould, Epoxy Resin No. 4, and full instructions. Armour continuity is achieved by joining the armour wires together

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
1.5	2	**92-A1**	8	22
	3	**92-A1**		
	4	**92-A1**		
2.5	2	**92-A1**	8	22
	3	**92-A1**		
	4	**92-A1**		
4	2	**92-A1**	8	22
	3	**92-A1**		
	4	**92-A1**		
6	2	**92-A1**	8	22
	3	**92-A1**		
	4	**92-A1**		
10	2	**92-A2**	14	30
	3	**92-A2**		
	4	**92-A2**		
16	1	**92-A2**	14	30
	2	**92-A2**		
	3	**92-A2**		
	4	**92-A2**		
25	1	**92-A2**	14	30
	2	**92-A2**		
	3	**92-A2**		
	4	**92-A2**		

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	CABLE DIAMETER	
			Min (mm)	Max (mm)
35	1	**92-A3**	23	35
	2	**92-A3**		
	3	**92-A3**		
	4	**92-A3**		
50	1	**92-A3**	23	35
	2	**92-A3**		
	3	**92-A3**		
	4	**92-A3**		
70	1	**92-A4**	28	47
	2	**92-A4**		
	3	**92-A4**		
	4	**92-A4**		
95	1	**92-A4**	28	47
	2	**92-A4**		
	3	**92-A4**		
	4	**92-A4**		
120	1	**92-A4**	28	47
150	1	**92-A4**	28	47
185	1	**92-A4**	28	47
240	1	**92-A4**	28	47
300	1	**92-A4**	28	47
400	1	**92-A4**	28	47

Low Voltage - Resin Joints

3M™ 99 D Joints

Inline Joint for 0.6/1kV Pilot, Control and Telecommunications Cables

- Range of inline joints specifically designed for encapsulating connections in polyethylene and PVC insulated and sheathed cables
- Rigid, two-part mould designed to withstand chemical and physical attack
- Totally enclosed easy to use mixing and pouring with the unique Advanced Resin Delivery System
- Range accommodates cable sizes from 2 to 100 pairs
- Particularly suitable for low and medium pair or core count when used with Scotchlok™ connectors (available separately)

Each kit includes two part mould, polyetherurethane Resin No. 1471N, Tapes, and full instructions. The SB Earth Continuity Kit for an armoured cable joint is supplied separately.

PVC/PVC/SWA/PVC
Multipair Cables - 0.9mm Diameter

CABLE SIZE (PAIRS)	KIT TYPE	ARMOUR CONTINUITY KIT	RECOMMENDED S/LOK CONN
2	**99-D1**	**SB1**	**UR2**
5 - 15	**99-D2**	**SB2**	**UR2**
20 - 30	**99-D3**	**SB2**	**UR2**
40 - 50	**99-D4**	**SB4**	**UR2**
75 - 100	**99-D5**	**SB4**	**UR2**

PE/SWA/PVC
Multipair Cables - 0.9mm Diameter

CABLE SIZE (PAIRS)	KIT TYPE	ARMOUR CONTINUITY KIT	RECOMMENDED S/LOK CONN
4	**99-D2**	**SB2**	**UR2**
7	**99-D2**	**SB2**	**UR2**
19	**99-D3**	**SB3**	**UR2**
37	**99-D4**	**SB4**	**UR2**
61	**99-D5**	**SB5**	**UR2**

PVC/PVC/SWA/PVC Multicore Cables -
1.5 - 2.5mm 2 Conductor

CABLE SIZE (CORES)	KIT TYPE	ARMOUR CONTINUITY KIT	RECOMMENDED S/LOK CONN
2 - 4	**99-D2**	**SB2**	**C42-1101**
7 - 19	**99-D3**	**SB3**	**C42-1101**
27 - 37	**99-D4**	**SB4**	**C42-1101**

PVC Unarmoured Multipair Cables

0.4mm **UY Conn***	0.5mm **UY Conn***	0.63mm **UY Conn***	0.9mm **UR2 Conn***	KIT TYPE
20 pair	20 pair	20 pair	10 pair	**99-D1**
50 pair	50 pair	50 pair	30 pair	**99-D2**
100 pair	100 pair	100 pair	50 pair	**99-D3**
300 pair	200 pair	200 pair	150 pair	**99-D4**
400 pair	400 pair	400 pair	400 pair	**99-D5**

*Recommended

Additional Information

KIT TYPE	RESIN VOLUME			CABLE DIAMETER	
	GRAMMES	CC	LITRES	MIN	MAX
99-D1	170	153	0.156	8	26
99-D2	420	378	0.384	14	32
99-D3	720	649	0.659	23	37
99-D4	1230	1108	1.125	28	51
99-D5	3180	2865	2.909	33	60

Low Voltage - Resin Joints

Scotchcast™ 82-F Joints

Flexible Splice Kit

3M™ Scotchcast™ 82-F Series Flexible Power Cable Splicing Kits are a series of flexible inline and tap splices for use on non-shielded portable power cables and cords. They are designed to be used on single and multiple conductor cables rated up to 1000 Volts (600/2000 Volts mine portable cable rating). The 82-F Series will accommodate a single-conductor cable rated up to 5 kV.

Features

- Factory quality “permanent” joint; MSHA accepted equal to shop or factory vulcanizing
- Flexible compound allows joint to bend with cable; for installation, handling, reeling, etc
- Scotchcast™ 2130 Compound is self-curing; a cold cure requiring no torch, no heated mould and no cooking time
- Scotchcast™ 2130 Compound bonds to common jacket materials; neoprene, hypalon, PVC, nitrile/PVC, EPR, urethane, 2130 (itself)
- Scotchcast™ 2130 Compound forms a joint or repair that is abrasion resistant and flame retardant
- Smooth tapered joint profile eliminates cable hang-ups and joint end lifting.

Applications

To join or re-jacket non-Armoured portable power cable and portable cords
For inline single-conductor cables rated up to 5kV
For branch single-conductor cables rated up to 1000V
For inline and branch multi-conductor cables rated up to 1000V
For mine portable cable rated 600/2000V (P-145-5 MSHA)
For use with compression inline connectors (82-F) and compression “C” branch connectors (82-BF)
For jacket repairs
For indoor and outdoor applications:
- Weather exposed
- Direct burial
- Submerged
- Cable reels

Each kit contains sufficient quantities to make one splice or cable repair (connectors are available separately)

KIT No.	CABLE O.D. RANGE mm (inches)	CONNECTOR TYPE	No. of CONDUCTORS	CONNECTION MAX O.D. mm (inches)	VOLTAGE RATING (Max V)	CONDUCTOR SIZE RANGE (AWG)
82-F1	6 - 20 (0.25 - 0.80)	Compression Inline	1	16 (0.62) Connector	5000	6 - 1/0
			Multi	23 (0.90) Connector Bundle	1000*	**
82-F2	20 - 30 (0.80 - 1.20)	Compression Inline	1	21 (0.82) Connector	5000	2/0 - 4/0
			Multi	33 (1.30) Connector Bundle	1000*	**
82-BF1	6 - 20 (0.25 - 0.80)	Compression “C” Tap	1	-	1000*	Up to 1/0
			Multi	-	1000*	**

** Mine portable cable rating of 600/2000V.*
*** Base multi-conductor selection on cable O.D. range.*

Low Voltage - Resin Joints

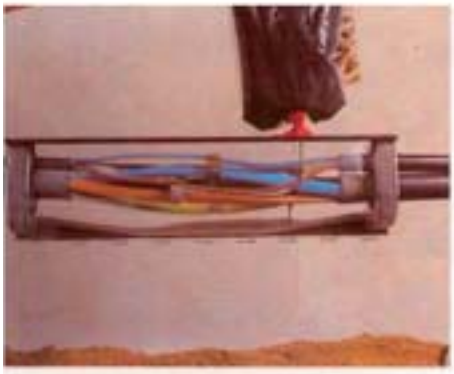
3M™ 91 AB Multi-purpose Joints

Branch / Double Branch / Inline joint for XLPE/PVC Insulated Unarmoured cables up to 1 kV

- Easy and safe to use
- The branch line runs parallel to the main cable
- Double branch joints can be accommodated
- Semi transparent mould enables correct positioning
- Supplied with 1471 Polyetherurethane resin

Each kit Includes two-part mould, polyetherurethane Resin No. 1471 (Closed Mix and pour system), and full instructions. This kit can be used with Armoured Cables, by ordering separate Armour Continuity Kits

MAIN CABLE			SERVICE BRANCH			KIT REF	MOULD		
NBR OF CORES	NOMINAL CONDUCTOR AREA (mm^2)	MAX CABLE OD (mm)	NBR OF CORES	NOMINAL CONDUCTOR AREA (mm^2)	MAX CABLE OD (mm)		LENGTH (mm)		INNER DEPTH (mm)
							INNER	OUTER	
2 - 4	2.5 - 4	22	2 - 4	2.5 - 4	21	**91-AB 112**	170	220	58
2 - 4	6 - 16	29	2 - 4	6 - 10	22	**91-AB 113**	225	300	75
2 - 4	16 - 35	35	2 - 4	16	25	**91-AB 114**	350	400	95
2 - 4	50 - 70	50	2 - 4	25 - 35	30	**91-AB115**	445	500	112
2 - 4	95	58	2 - 4	50	35	**91-AB116**	540	610	125



Low Voltage - Resin Joints

3M™ Resin Pressure Jointing Method

The resin pressure method provides a jointing system to suit all cables up to 33kV

The method involves the use of the same materials no matter what type of joint may be required

- Versatile – suitable for inline, branch, tee joints, and sheath repairs on all types of cable
- Insulation thickness on the sheath and armour is easily controlled
- Finished joint dimension is smaller than conventional methods
- Job is completed immediately after resin injection – no waiting or topping up
- Particularly suited to emergency joints when the type or size of cable or joint are not known in advance
- Suitable for vertical or overhead joints where resin pouring is not possible
- High performance and well-proven epoxy and polyetherurethane resins
- Safe and easy to mix resin packs
- Compatible with compression, or mechanical connectors
- Compatible with Scotchcast armour and earth continuity kits
- Water-resistant
- Mechanically strong

All components are available separately - please contact the customer service team for selection charts.

Specialist Resin Pressure Method Components;

E4F Resin pressure gun – enables easy delivery / injection of resin into the joint

P1B Injection Fitting / P5B Piercing Nozzle – to enable safe transfer of resin through gun and into the joint

P3F Spacer Tape – Used to build up voids in odd shaped splices, ensures full resin coverage, and forms a liquid tight mould.

P4 Restricting Tape – Provides outer layer to ensure safe and enclosed resin injection

Standard 3M products used in resin pressure jointing;

33+ Vinyl Tape
88 Vinyl Tape
23 Self amalgamating Tape
Epoxy Resin No4
Polyetherurethane Resin No1471
AC Type Armour continuity kits

Low Voltage - Cold Shrink Joints & Terminations

3M Cold Shrink Joints and Terminations use a series of Pre-stretched tubes, which are factory expanded and assembled onto a removable core. The core is removed after the tube is positioned for installation over an inline connection, or terminal lug, allowing the tube to shrink and provide a waterproof seal.

3M™ LC Series

Cold Shrink Splice Kits - Up to 3.3kV Cables

Suitable for Cable Types: XLPE/PVC Insulation, Lead Sheath, Steel Wire Armour, PVC Sheathed

For Cables rated: 0.6/1kV up to 1.9/3.3kV

Each kit includes EPDM Rubber Cold Shrink Tube, Armour continuity, Tape, and full instructions

Features

- Simple installation – no special tools required
- No torches or heat required
- Safe installation - replaces conventional resin jointing method
- Accommodates a wide range of cable sizes
- Improved tough rubber formulation withstands rough backfilling
- Resistant to acids, alkalis, ozone, UV light, and fungus
- Waterproof seal

Applications

Indoor, Outdoor, Overhead, or use in Cable Trays

NOMINAL CONDUCTOR AREA (mm^2)	2 CORE 1kv	3 CORE 1kv	4 CORE 1kv	3 CORE 3.3kv
1.5	**LC1**	**LC1**	**LC1**	N/A
2.5	**LC1**	**LC1**	**LC1**	N/A
4	**LC1**	**LC1**	**LC2**	N/A
6	**LC2**	**LC2**	**LC2**	N/A
10	**LC2**	**LC2**	**LC3**	N/A
16	**LC3**	**LC3**	**LC3**	**LC4**
25	**LC3**	**LC3**	**LC3**	**LC4**
35	**LC3**	**LC3**	**LC4**	**LC4**
50	**LC3**	**LC4**	**LC4**	**LC4**
70	**LC4**	**LC4**	**LC5**	**LC5**
95	**LC4**	**LC5**	**LC5**	**LC5**
120	**LC4**	**LC5**	**LC5**	**LC5**
150	**LC5**	**LC5**	**LC6**	**LC5**
185	**LC5**	**LC6**	**LC6**	**LC6**
240	**LC6**	**LC6**	N/A	**LC6**
300	**LC6**	N/A	N/A	N/A

Additional Information

KIT REF	ACCEPTED CABLE DIAMETER (COLDSHRINK TUBE)		DIAMETER OVER LEAD/ARMOUR (CONSTANT FORCE SPRING)	
	MIN (mm)	MAX (mm)	MIN (mm)	MAX (mm)
LC1	16.2	33.1	9	15
LC2	16.2	33.1	14	22
LC3	16.2	33.1	18.5	29
LC4	24.9	56.4	23.5	37
LC5	37.8	84.3	31	50
LC6	37.8	84.3	44	70

3M™ Network Rail Specification Products

APPLICATION	KIT	MIN DIA	MAX DIA	LENGTH
500/630/1000mm^2 3RD Rail Terminations	**LO41**	24.4	98.2	228mm
161/240mm^2 Inline joints or terminations	**LO42**	15.2	61	191mm
500/630/800/1000 Inline Joint	**LA11**	38.1	114	457mm

3M™ Cold Shrink Joints 92-AC Series 6.6kV Cables

Suitable for 3 core Polymeric insulated, unscreened, armoured cable, rated to 3.6/6.6kV

- Simple installation – no special tools required
- No torches or heat required
- Safe installation - replaces conventional resin jointing method
- Accommodates a wide range of cable sizes
- Improved tough rubber formulation withsta nds rough backfilling
- Resistant to acids, alkalis, ozone, UV light, and fungus
- Waterproof seal

Part Number	Accepted Cable CSA (mm^2)
92-AC62-3	50 – 150
92-AC63-3	185 – 240

Low Voltage - Cold Shrink Joints & Terminations

3M™ Cold Shrink Cable Abandonment Kits

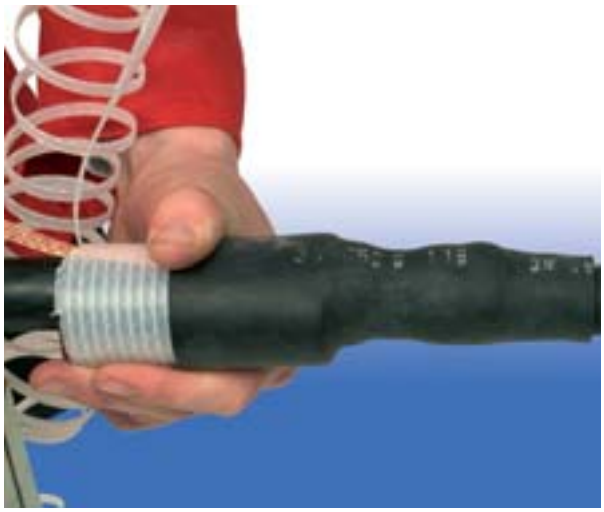
Suitable for Cable Types: XLPE/PVC Insulation, Lead Sheath, Steel Wire Armour, PVC Sheathed. Also suitable for Ship wiring Cables, Rubber/GSWB, and/or Unarmoured Cables

Up to and including 1.9/3.3kV. Single and Multi-core Cables

A complete kit with all the components required to abandon cables either temporarily or permanently. Provides environmental seal and mechanical protection, eliminates the requirements for heat during installation using 3M Cold Shrink technology.

Each kit includes Cold Shrink End Cap, Coldshrink Pre Stretched Tube, Armour continuity, tapes, and full instructions

ACCEPTED CABLE DIAMETER (mm)	KIT REFERENCE
12 -18	**CSCAK/1**
18 - 25	**CSCAK/2**
25 - 42	**CSCAK/3**
42 -55	**CSCAK/4**
56 -81	**CSCAK/5**



3M™ LCT Low Voltage Indoor Cold Shrink Terminations

For 3 Core Cables, Suitable for PILC, Steel Wire Armour, Sheathed, and / or XLPE/PVC, Lead Sheath, Steel Wire Armour, PVC Sheathed Cables, 0.6/1kV and 1.9/3.3kV

It is assumed that the Armour will be glanded separately.

NOMINAL CONDUCTOR AREA	KIT REF	ACCEPTED CABLE DIAMETER OVER LEAD SHEATH (CFS)		ACCEPTED CABLE DIAMETER OVER INSULATION (PST)	
		Max (mm)	Max (mm)	Max (mm)	Max (mm)
35 50	LCT/1 LCT/1	23.5	37	16	33
70 95 120	LCT/2 LCT/2 LCT/2	31	50	16	33
150 185	LCT/3 LCT/3	44	70	19	40
240 300 400	LCT/4 LCT/4 LCT/4	TBA	TBA	TBA	TBA

Low Voltage - Heat Shrink Joints & Accessories

3M™ 91-AHA Heat Shrink Cable Joints

Suitable for Cable Types: XLPE/PVC Insulation, Steel Wire Armour Cables rated to 0.6/1kV

Each kit includes Adhesive lined Heat Shrink Tubes, Armour Continuity, and full instructions

Connectors are available separately

- Quick and easy to use
- Designed to accommodate large range of cable sizes
- Excellent moisture sealing
- Flame retardant tubing

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	ACCEPTED CABLE DIAMETER (HEATSHRINK TUBE)		DIAMETER OVER ARMOUR (CONSTANT FORCE SPRING)	
			MIN (mm)	MAX (mm)	MIN (mm)	MAX (mm)
6	4	**91-AHA-21-S**	12	38	18.5	29
10	4	**91-AHA-21-S**				
16	4	**91-AHA-21-S**				
25	4	**91-AHA-22-S**	15	55	18.5	29
35	4	**91-AHA-22-S**				
50	4	**91-AHA-23-S**	15	65	23.5	37
70	4	**91-AHA-23-S**				
95	4	**91-AHA-24-S**	26	85	31	50
120	4	**91-AHA-24-S**				
150	4	**91-AHA-24-S**				
185	4	**91-AHA-25-S**	38	128	44	70
240	4	**91-AHA-25-S**				

3M™ 91-AHSC-A Heat Shrink Cable Joint

Suitable for Cable Types: XLPE/PVC Insulation, Steel Wire Armour Cables rated to 0.6/1kV

Kits include Heat Shrink Tubes, Armour Continuity, and full instructions

Complete with screw type mechanical connectors and installation tool

- Quick and easy to use
- Designed for cables from 1.0 to 6.0mm^2 Cross sectional area
- Excellent moisture sealing
- Flame retardant tubing
- Range taking connectors – no crimping tool required

NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	KIT REF	ACCEPTED CABLE DIAMETER (HEATSHRINK TUBE)		DIAMETER OVER ARMOUR (CONSTANT FORCE SPRING)	
			MIN (mm)	MAX (mm)	MIN (mm)	MAX (mm)
1 - 6	3 - 4	**91-AHSCA-6**	8	30	14	22

Low Voltage - Heat Shrink Joints & Accessories

3M™ LHT Low Voltage Indoor Heat Shrink Terminations Series Termination

For XLPE/PVC Insulation, Lead Sheath, Steel Wire Armour, Sheathed Cables rated from 0.6/1kV up to and including 1.9/3.3kV

NOMINAL CONDUCTOR AREA (mm^2)	2 CORE 0.6/1KV	3 CORE 0.6/1KV	4 CORE 0.6/1KV	3 CORE 0.6/1KV
2.5	LHT2/1	LHT3/1	LHT4/1	N/A
4	LHT2/1	LHT3/1	LHT4/1	N/A
6	LHT2/1	LHT3/1	LHT4/1	N/A
10	LHT2/1	LHT3/1	LHT4/1	N/A
16	LHT2/1	LHT3/1	LHT4/1	LHT3.3/1
25	LHT2/1	LHT3/1	LHT4/1	LHT3.3/1
35	LHT2/2	LHT3/2	LHT4/1	LHT3.3/1
50	LHT2/2	LHT3/2	LHT4/2	LHT3.3/1
70	LHT2/2	LHT3/2	LHT4/2	LHT3.3/1
95	LHT2/2	LHT3/2	LHT4/2	LHT3.3/2
120	LHT2/2	LHT3/2	LHT4/2	LHT3.3/2
150	N/A	LHT3/3	LHT4/2	LHT3.3/2
185	N/A	LHT3/3	N/A	LHT3.3/2
240	N/A	LHT3/3	N/A	LHT3.3/2
300	N/A	LHT3/3	N/A	LHT3.3/3

Low Voltage - Branch Joints

3M™ LB Joints with Armour Continuity - up to 3.3kV

Branch joint for Inline joint for PVC/SWA/PVC & XLPE insulated cables up to 1kV

Safer Cable Jointing;

- Unique 3M Advanced Resin Delivery System – totally enclosed mixing and pouring
- No spillage
- No accidental contact whatever your working conditions
- Conforms to BS7888 (HD623)

Faster and Easier;

- Easy to use delivery system that gives you complete control
- No special tools required
- Short Curing time
- Simple step-by-step instructions

More Reliable;

- Tough polyetherurethane resin power jointing resin – at least equal to the strength of the cable
- Transparent resin bag – ensures reliable mixing and installation
- Minimal risk of leakage
- Complete with Armour continuity – constant force springs
- Self-amalgamating tape provides high insulation value

Kit Includes two-part mould, polyetherurethane Resin No. 1471 (Closed Mix and pour system), armour continuity, tape, and full instructions.

This kit can be upgraded for use with 3.3kV Cables, by using additional 23 Insulating tape

MAIN CABLE		SERVICE BRANCH										
NOMINAL CONDUCTOR AREA (mm^2)	NBR OF CORES	NOMINAL CONDUCTOR AREA (mm^2)			KIT REF	RESIN VOLUME			CABLE DIAMETER (mm)			
									MAIN CABLE		BRANCH	
		2 Core	3 Core	4 Core		cc	Grammes	Litres	MIN	MAX	MIN	MAX
1.5 - 2.5	2 - 4	1.5 - 2.5	1.5 - 2.5	1.5 - 2.5	**LB21**	234	260	0.238	10	24	10	24
4 - 10	2 - 4	1.5 - 10	1.5 - 6	1.5 - 4	**LB22**	450	500	0.457	16	26	10	24
16 - 35	2 - 4	1.5 - 25	1.5 - 25	1.5 - 16	**LB23**	1441	1600	1.464	23	42	13	32
50 - 70	2 - 4	1.5 - 70	1.5 - 70	1.5 - 50	**LB24**	3784	4200	3.843	30	50	17	42
95 - 185	2 - 4	50 - 185	50 - 120	50 - 95	**LB25**	6314	7008	6.412	36	58	34	50

Funnels shown for illustration purposes only

Low Voltage - Branch Joints

3M™ 91 Joints for Unarmoured Cables - 1kV

Branch joint for XLPE/PVC insulated unarmoured cables up to 1 kV

Safer Cable Jointing;

- Unique 3M Advanced Resin Delivery System – totally enclosed mixing and pouring
- No spillage
- No accidental contact whatever your working conditions
- Conforms to BS7888 (HD623)

Faster and Easier;

- Easy to use delivery system that gives you complete control
- No special tools required
- Short Curing time
- Simple step-by-step instructions

More Reliable;

- Tough polyetherurethane resin power jointing resin – at least equal to the strength of the cable
- Transparent resin bag – ensures reliable mixing and installation
- Minimal risk of leakage
- Complete with Armour continuity – constant force springs
- Self-amalgamating tape provides high insulation value

Kit Includes two-part mould, polyetherurethane Resin No. 1471 (Closed Mix and pour system), and full instructions.

This kit can be used with Armoured Cables, by ordering separate Armour Continuity Kits.

MAIN CABLE OD (mm)	SERVICE BRANCH OD (mm)	KIT REF
14 - 30	8 - 24	**91-C11**
30 - 58	17 - 42	**91-B16**

3M™ 90-B1 Cathodic Protection with Armour Continuity up to 1kV

3M's 90-B1 Kit is ideal for single core unarmoured tee or branch jointing rated up to 1kV, above or below ground, e.g. traffic signal systems, cathodic protection and street lighting.

Each kit contains a clear two-part mould, epoxy Resin No.4, funnel, end-sealing tape and step by step instructions. The large mould body enables crimps or split-bolt connectors to be used.

		ACCEPTED CABLE DIAMETER mm			
	RESIN VOLUME	MAIN		BRANCH	
	cc	MAX	MIN	MAX	MIN
90-B1	187	20	12	9.5	8

Low Voltage - Cable Sheath Repair

3M™ Heavy Duty Wraparound HDCW

The HDCW Wraparound Heat Shrink Cable Repair Sleeve is designed to repair damaged cable sheaths. It is also suitable for use with cable joints and as additional corrosion protection on undamaged cables.

HDCW is made from modified cross-linked polyolefin with a hot-melt adhesive coated to the inner side of the sleeve. Upon heating, the sleeve shrinks and the adhesive melts, thereby achieving a safe and watertight bond between the sleeve and the cable. A corrosion proof metal clip is used to fully close the sleeve.

- Quick and easy to use
- Maximum protection against mechanical stress
- Good bonding to PE and PVC surfaces
- Excellent resistance to even the harshest environments
- Forms a perfect seal to prevent moisture ingress

CABLE DIAMETER MAX/MIN (mm)	EXPANDED INNER DIAMETER (mm)	RECOVERED INNER DIAMETER (mm)	PART NUMBER	LENGTH (mm)	MINIMUM RECOVERED WALL THICKNESS (mm)
35 / 10	50	8	HDCW 35/10-250	250	2.0
			HDCW 35/10-500	500	
			HDCW 35/10-750	750	
			HDCW 35/10-1000	1000	
55 / 15	75	13	HDCW 55/15-250	250	2.0
			HDCW 55/15-500	500	
			HDCW 55/15-750	750	
			HDCW 55/15-1000	1000	
80 / 25	100	23	HDCW 80/25-250	250	2.0
			HDCW 80/25-500	500	
			HDCW 80/25-750	750	
			HDCW 80/25-1000	1000	
110 / 30	132	25	HDCW 110/30-250	250	2.0
			HDCW 110/30-500	500	
			HDCW 110/30-750	750	
			HDCW 110/30-1000	1000	
140 / 40	145	32	HDCW 140/40-250	250	1.8
			HDCW 140/40-500	500	
			HDCW 140/40-750	750	
			HDCW 140/40-1000	1000	

Low Voltage - Cable Sheath Repair

3M™ Joint and Repair kit for flexible and trailing Cables up to 1kV

M Series / 91 AV Series

Scotchcast™ flexible power cable jointing and repair kits are a flexible cold pour resin system for the permanent jointing and repair of single or multi-core flexible power cables. The flexible Scotchcast resin bonds securely to the cable sheath, providing a permanent joint or repair with tight seal - a seal that won't tear or work loose after installation. They can be used to joint or repair frequently coiled power cables, and are tough enough to use in weather exposed, direct burial or submerged locations.

- Simple installation – no workshop needed.
- Non-vulcanising – no costly equipment needed.
- Drastic reduction in repair time – compared to vulcanising.
- No heat required – safer system, no permit for hot work required.
- High performance – repaired/jointed section can be reeled without sagging.
- Permanent – both electrically and mechanically.
- No end lifting – bonds to all modern cable sheath materials such as neoprene, polychoroprene and nitrile/PVC even PVC, EPR and hypalon.
- Abrasion resistant – equivalent to vulcanising.
- Weather resistant – over a wide temperature range.
- Flame retardant – resin system.

M Series Kits

Each kit includes a re-useable mould, with full instructions. 2130 Resin is required, and must be purchased separately. See selection tables below for guidelines

If Kit is to be used for a repair, all required components are included. If Kit is to be used for a Cable Joint, then additional components may be required. Full details are available on request.




3M 91-AV Series

KIT REF	CABLE DIAMETER		RESIN	RESIN VOLUME INCLUDED		
	Min (mm)	Max (mm)		Gram	cc	Litres
91-AV 120	16	26	2140U	420	389	0.349
91-AV 130	25	30	2140U	650	602	0.539
91-AV 140	29	34	2140U	840	778	0.697

3M M-Series

KIT REF	CABLE DIAMETER		RESIN	RESIN VOLUME REQUIRED*		
	Min (mm)	Max (mm)		Gram	cc	Litres
M20	40	63	2130	1232	1140	1.022
M30	47	100	2130	2464	2280	2.045
M40	27	150	2130	3696	3420	3.067

To Select Resin Packs

M20	Qty 2 packs of 616g
M30	Qty 4 packs of 616g
M40	Qty 6 packs of 616g

Low Voltage - Airfield Ground Lighting

NOMINAL CONDUCTOR AREA (mm²)	KIT REF	CABLE DIAMETER MIN (mm)	MAX (mm)
6	82-A1	6	16
10	82-A1		
16	82-A1		
25	82-A2	16	25
35	82-A2		
50	82-A2		
70	82-A3	25	36
95	82-A3		
120	82-A3		

Part Number	Application
AGL/CS001U	Cold Shrink Unscreened
AGL/CS001E	Cold Shrink External Earthed
AGL/CS001S	Cold Shrink Screened
AGL/HS001U	Heatshrink Unscreened
AGL/HS002U	Heatshrink Unscreened 2 Core
AGL/HS001S	Heatshrink Screened
AGL/HS001E	Heatshrink External Earthed

3M™ Airfield Ground Lighting Kit - Scotchcast 82 Series In-line Joint

Designed for single core screened airfield lighting cables rated up to 5kV, and Multi Core Unarmoured cables rated up to 1.1kV

3M Epoxy No 4 Resin is included, suitable for high humidity and wet areas. Approved by DOE (Department of the Environment)

3M Airfield Ground Lighting Kit - AGL Series - Available in Heat Shrink or Cold Shrink versions

Approved by Defence Estates, Ministry of Defence

Cold Shrink Tubes & End Caps

Cold Shrink Tubes & End Caps

Developed by 3M, the unique “Cold Shrink” product range is designed to make insulating as simple as possible. The E.P.D.M or silicone rubber is pre-stretched, and loaded onto a removable core. Cold Shrink products require no heat, and no tools to install. Once installed, a constant radial pressure is exerted, ensuring superior electrical and mechanical performance.

Cold Shrink tubes are available to accomodate a wide range of cable sizes, and are water resistant to 2 bar.

With 20 years of proven field history, 3M Cold Shrink products will retain performance and resiliency for the life of the cable.

Cold Shrink Tubes & End Caps

Features

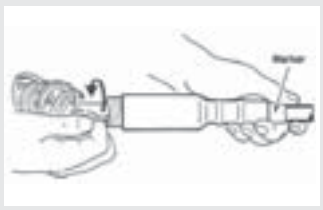
- Provides constant radial pressure
- Provides a pressure seal without adhesive
- Allows for expansion and contraction after installation
- No heat required
- No special tools required
- Easy to install
- Reduction of installation time
- Provides consistent installation
- Quality - long term reliability
- Fits over a wide application range
- Moisture resistant
- Available in EPDM rubber and silicone
- Meets worldwide standards ANSI, IEEE, VDE, JCAA, REA & CSA

Application

- Primary insulation for all solid dielectric insulated wire and cable splices up to 1000 volts
- Directly buriable or submersible
- Indoor, Outdoor or Overhead use
- Physical protection and moisture sealing for high voltage, air insulated connectors & lugs
- Sheath Repairs
- Electrical Aircraft cables

3M™ Cold Shrink Pre-stretched Tubes - EPDM Rubber

3M Brand PST Cold Shrink Connector Insulators are a series of open-ended, tubular rubber sleeves, which are factory expanded and assembled onto a removable core. They are supplied for field installation in this pre-stretched condition. The core is removed after the tube has been positioned for installation over an inline connection, terminal lug, etc, allowing the tube to shrink and form a waterproof seal - No torches or heat required



The insulating tube is made of EPDM rubber, which contains no chlorides or sulphurs.

Six diameter sizes will cover a range of 1000-volt cables, suitable for both copper and aluminium conductors

Selection Table

	MIN DIAMETER (mm)	MAX DIAMETER (mm)	LENGTH (mm)
8423-6	7.8	14.3	152
8425-8	10.2	20.8	203
8426-9	13.0	25.4	229
8426-11	13.0	25.4	279
8427-6	17.5	33.0	152
8427-12	17.5	33.0	406
8427-16	17.5	33.0	406
8428-6	24.0	49.3	152
8428-12	24.0	49.3	305
8428-18	24.0	49.3	609
8429-6	32.2	67.8	152
8429-9	32.2	67.8	229
8429-12	32.2	67.8	305
8429-18	32.2	67.8	457
8430-9	42.6	93.7	229
8430-18	42.6	93.7	457

Cold Shrink Tubes & End Caps

3M™ Cold Shrink Pre-stretched Tubes - Silicone Rubber

3M Brand 8440 Series Cold Shrink Lug and Connector Insulators are open ended, silicone rubber, tubular sleeves. The sleeves are factory expanded and assembled on a removable supporting plastic core. Each rubber assembly is supplied for field installation in the pre-stretched condition. As the core is unwound, the insulating sleeve shrinks to form a tight seal.

PART NO.	CABLE RANGE (mm2)	APPLICATION RANGE (mm)		DIMENSIONS (mm)	
		Min. Dia. for Seal	Max. Dia. for Insulator Covers	(A) Length	(B) ID
8443-2	10 - 35	6.86	14.22	29.2 - 39.6	17.3
8443-6.5	10 - 35	6.86	14.22	119 - 140	17.3
8445-2.5	35 - 50	8.89	18.29	30.5 - 48	21.3
8445-7.5	35 - 50	8.89	18.29	132 - 152	21.3
8447-3.2	50 - 70	12.19	24.13	48.3 - 64	27.2
8447-8	50 - 70	12.19	24.13	147 - 175	27.2

3M™ Extension Foam – P84

P84 Cold Shrink diameter extension foam increases the diameter of cables or tubes making the use of standard Cold Shrink tubes possible when the shrink ratio cannot normally be met. This is accomplished by wrapping the foam around the cable or tube.

The foam is coated with double-sided 3M transfer tape to stick the foam to the cable or tube. It builds up a diameter to ensure the sealing when a cold shrink tube is applied.

Product No.	Use range (mm)
EC-1	11.6 - 20.9
EC-2	15.9 - 30.1
EC-3	26.0 - 49.2
EC-4	45.5 - 84.3

3M™ Cold Shrink End Caps

3M Cold Shrink End Caps environmentally seal and mechanically protect exposed cable ends using no tools, mastics or tapes. They are close-ended, tubular rubber sleeves that are factory expanded and loaded onto a removable core. When positioned over the end of a cable, or other cylindrical object, the core is removed to provide a reliable seal that protects your cable ends from environmental damage. (I.e. moisture, contamination, corrosion, ozone, ultra-violet and radiation)

They are easily installed and cleanly removable, there are four different end caps available to accommodate a wide range of sizes.

Features

- Simple & fast installation – no tools required
- Wide range of cable sizes accommodated
- Good abrasion resistance
- Seals tight – retains resiliency & pressure after prolonged ageing & exposure
- Water-resistant
- No heat required
- Resistant to acid, alkalis, fungus, ozone, UV
- Easily removed

Applications

- Cable protection from exposure to moisture, contamination, corrosion, ozone, UV radiation, and other environmental hazards

Earthing Kits

Earthing Kits

3M™ AC Series - Armour Continuity Kits

This Scotchcast™ Armour Continuity Kit is designed to provide complete electrical continuity across the joint position on 2, 3 or 4 core armoured power cables for inline, tee or branch configurations.

The AC kits contain two interlocking contact rings and two lengths of steel band with pre-assembled buckles. Used in conjunction with an ACC kit containing the required length of copper cord.

The J020 'Pok-It' Tool is used to assemble the components and ensure low contact resistance.

ACCEPTED CABLE DIAMETER		
KIT	**MAX**	**MIN**
AC-1	13	8
AC-2	19	13.1
AC-3	25	19.1
AC-4	32	25.1
AC-5	38	32.1
AC-6	44	38.1
AC- 7	48	44.1
AC-8	54	48.1
AC-9	60	54.1
AC-10	70	60.1

COPPER CORD LENGTH	
KIT	**MM**
ACC-21	180
ACC-22	230
ACC-23	350
ACC-24	950
ACC-25	1300
ACC-26	2300

Earthing Kits

Band it Pok it Tool

Pok-It II Tool J020 is a lightweight pocket sized tool for use with 3M AC Series Kit. Applies tension and includes built-in cutter. Weight 1.1lbs (.5kg)

3M™ Constant Force Springs

Scotchcast™ Constant Force Springs are a range of solderless connections for use on lead or aluminium sheaths and copper screened cables

The springs are easily applied by rolling onto the sheath connections, whereupon it continues to exert a constant pressure

PART NUMBER	INNER DIAMETER OF SPRING	SPRING WIDTH	SPRING TAPE LENGTH (MM)	MIN DIA	MAX DIA
P59	3.5	9	80	4	10
P60	7.5	10	175	9	15
P61	11	16	225	14	22
P62	14.5	16	295	18.5	29
P63	18.5	16	375	23.5	37
P64	25	16	505	31	50
P65	32	20	710	44	70
P66	44	20	935	58	94
P67	57	20	1250	70	110

3M™ Earth Bonding Kits SB 1 - SB4

Scotchcast™ Spring Bonding Kits may be used to bond the armour wires on armoured cables in 'Scotchcast' Cable jointing, including the 'resin pressure method' of jointing. The SB kits provide an electrical bond and should be used where earthing leakage protection is installed.

The SB Series contains two constant force springs; copper braid and insulating tape and can be applied without the aid of special tools.

KIT	ACCEPTED CABLE DIAMETER (MM)	LENGTH OF COPPER CORD	
	MAX	MIN	MIN
SB1	12	9	200
SB2	19	14	250
SB3	25	23.5	320
SB4	38	31	350

Earthing Kits

Size
25mm x 4.5m

Scotch® 24 Electrical Shielding Braid

Scotch® 24 Electrical Shielding Tape is an all metal, open-weave, shielding braid tape in a flat, cable like form. It is conformable due to the open-weave knit construction of two No.36 AWG tinned copper wires. Tape thickness is 0.406mm

Features

- Tinned copper conductors.
- Stable at elevated temperatures.
- Oil resistant.
- Compatible with power cable insulations.
- Fire resistant.
- Elongates easily to conform to inclined or uneven surfaces.
- Corrosion resistant.
- Compatible with all high-voltage splicing and terminating materials.
- Unaffected by solvents, UV, ozone, and moisture.
- Suitable for indoor and outdoor applications.

Applications

- To provide shielding for cable joints on shielded power cables.
- To make the conductive portion of the stress cone on power cable terminations.
- To smooth connector area in oil-filled cables.

Size
25mm x 4.5m

Scotch® 25 Electrical Grounding Braid

Scotch® 25 Electrical Grounding Braid is an all-metal woven grounding braid in a flat, cable-like form. It is conformable due to its woven construction of 240 strands of #30 AWG tinned copper wires. Tape thickness is 2.38mm. Cross sectional area 16mm²

Features

- High current-carrying capacity
- Tinned copper wires
- Stable at elevated temperatures
- Oil resistant
- Compatible with all power cable installations
- Fire resistant
- Easy conformity to irregular surfaces
- Corrosion resistant
- Compatible with high-voltage jointing and termination materials
- Unaffected by solvents, ultra-violet, ozone, and moisture
- Usable for indoor and outdoor applications
- Can be easily soldered to high-voltage cable shields

Applications

- To provide a fault current path across shielded cable joints
- For grounding high-voltage joints, terminations, cables or other cable accessories

Earthing Kits

3M™ Copper braid

3M supply a range of copper braid of cross sectional area of 4mm^2 to be used as an Earthing & grounding accessory for joints and terminations.

Available in a continuous roll of 3/8" flat copper braid, or in cut pieces of Tinned Copper Hose.

Applications

- To provide earth continuity and fault current path across shielded low voltage cable joints
- For grounding joints, terminations, cables, or other cable accessories

Range Available	
Flat Braid	3/8" x 100m
Tinned Cu Hose	16mm2 x 300mm
Tinned Cu Hose	25mm2 x 400mm
Tinned Cu Hose	50mm2 x 450mm
Tinned Cu Hose	95mm2 x 600mm

Resins

Resins

3M offer a high quality range of resins of low and medium voltage applications. They have excellent adhesion to cable jacket minerals, together with excellent mechanical, electrical and chemical resistance. They are suitable for all sizes and types of closures and have VDE 0291 Part 2 approval.

Pack Size			
A	90g	81cc	0.082 Litres
B	210g	189cc	0.191 Litres
C	420g	378cc	0.383 Litres
Mixpack MP23			
	1600g	1441cc	1.457 Litres

Scotchcast™ No. 1471
Two-component Polyetherurethane Resin

Scotchcast™ No. 1471 Resin is an unfilled solvent free two-component polyetherurethane resin for room Temperature curing. It is an extremely reliable power jointing resin incorporated in many of the 3M Scotchcast cable joints which provides good mechanical and electrical properties

Features

- Good adhesion on metals and different plastics
- Short cure time
- Available with Closed Mix and Pour Delivery System
- Scotchcast 1471 has a very high tear strength, resulting in the strength or the joint being at least equal to that of the cable when pulled

Application

- Ideal for general purpose void filling
- Supplied with 3M Scotchcast LA, LB Series Joint Kits
- Encapsulation of Cable Joints at both Low, and Medium Voltage

Resins

Pack Size			
A	90g	68cc	0.068 Litres
B	210g	159cc	0.159 Litres
C	420g	317cc	0.317 Litres
Mixpack			
	9060g	6845cc	6.845 Litres

Scotchcast™ No. 1400U
Two Component Polyetherurethane Resin

Scotchcast™ No. 1400U Resin is a flame retardant, solvent free two component Polyetherurethane resin with long term resistance against most hydrocarbons, suitable for areas where there is a danger of gas, oil, sewage or chemical spillage, and in Zones 1 & 2 Hazardous Areas

Features

- Flame retardant.
- Excellent resistance against fuels and most mineral oils.
- Short cure time.
- Low water absorption.
- Accepted by British Coal for underground use and by the Mines and Quarries Health and Safety

Applications

- Suitable for areas where there is a danger of gas, oil, sewage or chemical spillages
- Supplied with 3M Scotchcast Mines & Quarries, and 3M Scotchcast hazardous area jointing Kits
- Encapsulating Cable Joints at both Low, and Medium Voltage

Pack Size			
B	216g	200cc	0.179 Litres
C	616g	570cc	0.511 Litres

Scotchcast™ 2130
Two Component Polyurethane Electrical Insulating Resin

Scotchcast™ 2130 Electrical Insulating Resin is a special flame retardant, two-part, polyurethane resin that is designed to replace the cable jacket when jointing or repairing flexible cables.

Its unique formulation makes it particularly suited to withstand the rugged conditions under which mining and portable cables must operate.

Features

- Flame Retardant
- Bonds to all modern cable jackets
- Bonds to itself
- Tough yet flexible
- Primary insulating rating of 1000 volts
- Continuous operating temperature of 90˚C with an overload rating of 130˚C
- Excellent multi-purpose moisture sealing resin

Applications

- To replace or repair the jacket on both single and multi-core power cables, particularly where flexibility is required.
- To insulate between the conductors of multi-core joints operating at 1000 volts or less.
- To seal the crotch or sheath when terminating multicore cables.

Resins

Scotchcast™ No 4 Resin

Unfilled solvent free two-component epoxy resin for room temperature curing.

Scotchcast™ 4 Electrical Insulating Resin is a two-part epoxy insulating and encapsulating resin packed in three sizes. This resin, mixed in its unique container bag generates its own heat to cure. The nature of the viscosity, which first decreases to allow it to flow into crevices and awkward spots and then increase rapidly to cure, makes it ideal for small joints. It's compatibility with solid and synthetic cable insulations and jackets makes it an excellent insulator and sealer for cable splicing.

Pack Size			
A	90g	81cc	0.084 Litres
B	210g	188cc	0.195 Litres
C	420g	377cc	0.309 Litres

Features

- Highly resistant to mechanical shocks
- Good adhesion on metals and different plastics
- High moisture resistance
- Ideal for high humidity applications

Applications

Use Scotchcast™ 4 Resin to join solid dielectric and oil filled cables up to 8 kV and to encapsulate high voltage splice through 69kV. It is included in the 82 and 90-B1 series splice kits

Pack Size			
C	385ml	350g	0.385 Litres
6000	6593ml	6000g	6.593 Litres

8882 High Gel Re-enterable Resin

- Insulate joints for solid dielectric and oil filled cables up to 8kV
- Encapsulate high voltage spilces up to 69kV
- Included in 3M 82 and 90 - B1 series splice kits

Features

- Better penetration of splice bundles at low temperatures due to its lower viscosity and longer gel time.
- Stays firm at high temperatures due to its increased hydrolytic stability
- Contains no isocyanates, so the risk of a reaction is greatly reduced.
- High level of adhesion
- Resistant to moisture ingress

Applications

- Suitable for re-enterable buried splicing applications in the Telecommunications industry

Resins

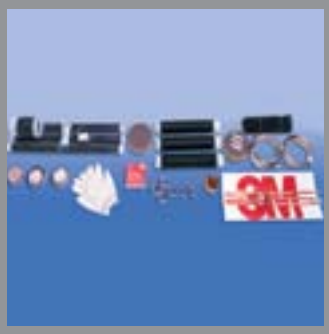
Pack Size
11.1 Litre pack

3M™ PBR Re-enterable two part, filled, flexible, isocyanate-free compound for room temperature curing.

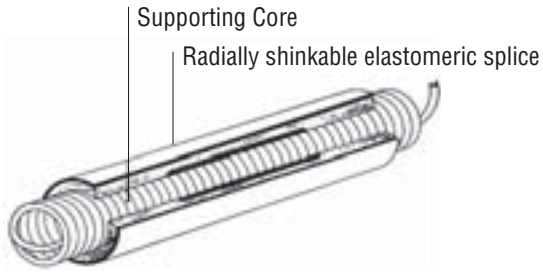
3M PBR Filler is suitable for the jointing of low voltage power cables. As it is a re-enterable material, it is ideal for the temporary protection of cable joints. The filler ensures a waterproof seal, electrical insulation and affords a reasonable amount of mechanical protection.

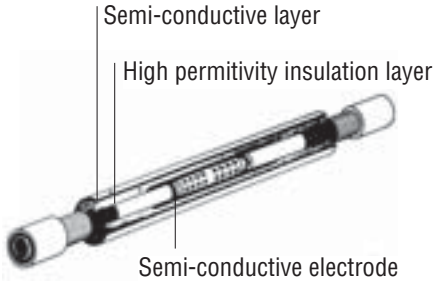
The Advanced Resin Delivery System Application Method

Medium Voltage Joints & Terminations



Medium Voltage - Cold Shrink Joints





6.6/11/(12) kV

3M QS1000 is a one-piece cold shrink joint body manufactured from a specially formulated silicone material, which provides flexibility, easy installation at low temperatures and superior electrical performance over a wide range of operating temperatures. The finished body is expanded and loaded onto a removable supporting core, which allows the joint to be installed without the need for tools or heat.

3M QS1000 is injection moulded and consists of three layers. A semi-conductive electrode, which forms a Faraday Cage around the connector, a high permittivity insulation layer, which both insulates and stress controls, and an outer semi-conductive layer which ensures all screens are at earth potential.

All finished bodies are tested after manufacture and undergo AC Withstand and Partial Discharge testing.

All joint types have been tested in accordance with VDE 0278, HD 629 and/or BS7888. Details of type tests are available upon request.

Features

- One part joint body
- 100% tested after manufacture
- No heat required
- Tool free installation
- Permanent radial pressure
- Suitable for paper and polymeric cables
- Compatible with compression and mechanical connectors
- Low temperature installation
- Provides consistent installation quality

Medium Voltage - Cold Shrink Joints

3M™ QS1000 Single Core Polymeric Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-AG 611-1	70-150	17.7 – 26.0
92-AG 621-1	185-240	22.3 – 33.2
92-AG 631-1	300-400	28.4 – 42.0

3M™ QS1000 TRIF/Transition 3 Core Belted PILC/ PICAS to Three Single Core Polymeric

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-FV 611-3	50-95	17.7 – 26.0
92-FV 621-3	120-240	22.3 – 33.2
92-FV 631-3	300-400	28.4 – 42.0

3M™ QS1000 Single Core Polymeric Copper Tape Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-AG 612-1	70-150	17.7 – 26.0
92-AG 622-1	185-240	22.3 – 33.2
92-AG 632-1	300-400	28.4 – 42.0

3M™ QS1000 Three Core Polymeric/Paper/Transition, Lead sheath and/or armoured

Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Supplementary Kit for Transition Joint	Supplementary Kit for Paper Joint
50-120	17.7 – 26.0	PILCL1	PILCL1 Qty 2
150-185	22.3 – 33.2	PILCL2	PILCL2 Qty 2
300-400	28.4 – 42.0	PILCL3	PILCL3 Qty 2

Medium Voltage - Cold Shrink Joints

Outer Protection Selection for 92-AV series 3 core joints. Choose Cold Shrink EPDM Kit for Polymeric Joints, or a mould and resin combination if required

Joint	Coldshrink Kit	Mould Volume	Resin Standard	#1471 Resin	#1400U Resin Hazardous Area
92-AV 610-3	CS 610-3	1451	14 Litres	10 x 1600g packs	2 x 9060g packs
92-AV 620-3	CS 620-3	1451	14 Litres	10 x 1600g packs	2 x 9060g packs
92-AV-630-3	CS 630-3	1451	21 Litres	14 x 1600g packs	3 x 9060g packs

3M™ Coldshrink Single Core Polymeric Cable Build Up Supplementary Kit

Select in conjunction with any QS1000 Joint kit for polymeric cable, when one or both cables to be joined fall below the minimum range of the joint.

Build Up Kit (Polymeric only)	Range CSA (mm2)	Insulation Diameter (mm)
92-PG610-1	25 - 50	13.7 - 20.4
92-PG620-1	70 - 150	17.7 - 24.2
92-PG630-1	150 - 240	22.3 - 31.0

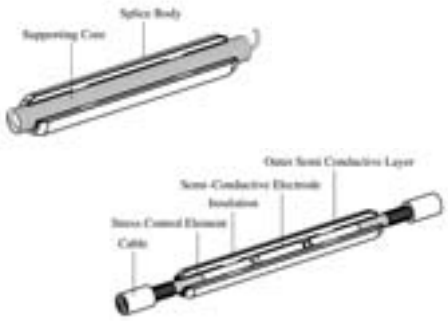
Note: These are single phase kits, one is required for each phase to be joined that falls below the minimum range of the joint.

12/20/(24) kV and 19/33/(36) kV

The 3M QS2000 is a one–piece Cold Shrink splice of a multi-layered Silicone rubber body provided in an expanded state. The finished body is loaded onto a removable supporting core, which allows the joint to be installed without the need for tools or heat.

The splice body provides the essential stress relief, re-insulation and semi–conductive screen of power distribution cable systems

- Two inner stress control elements provide the proper electric field distribution.
- The inner semi–conductive electrode electrically surrounds the high voltage connector eliminating the use of tape or additional moulded or metallic electrodes.
- The splice insulation effectively replaces and continues the performance characteristics of the cable insulation across the entire splice.
- The outer semi–conductive layer of the splice adapts to the geometry of the insulation and re–establishes the electromagnetic screen.
- Versatile design of prefabricated one–piece splice body allows installation on a wide range of cable sizes and types.
- Designed to fit all standard cable connectors.
- High contact pressure ensures absolute water tightness.
- Wide temperature range



- ”Solderless” earth continuity connection.
- Extreme compact size allows installation in narrow areas.
- 100% production tested.
- Cold Shrink technology ensures quick, easy and tool–free installation.

3M™ QS2000 Joint – 3 Core for Polymeric Copper Wire Screened Cable 19/33(36)kV

Kit Ref	Application Range CSA (mm^2)	Diameter over Primary Insulation (mm)
94-AP 230-3	120-300	28.4-42.0 (standard)

3M™ QS2000 Joint – Single Core for Polymeric Copper Wire Screened Cable 12/20(24)kV

Kit Ref	Application Range CSA (mm^2)	Diameter over Primary Insulation (mm)
93-AP 611-1	50-95	17.7-26.0
93-AP 621-1	95-300	22.3-33.2
93-AP 631-1	240-400	28.4-43.0

3M™ QS2000 Joint – Single Core for Polymeric Copper Wire Screened Cable 19/33(36)kV

Kit Ref	Application Range CSA (mm^2)	Diameter over Primary Insulation (mm)
94-AP 631-1	50-400	28.4-42.0 (standard)

Note: Can accommodate smaller cables, with primary insulation from 20.0 - 28.4mm with the use of supplementary build up kit, reference 94-PG620-1. This is a single core kit, 2 must be purchased if both cables to be joined are smaller than 28.4mm over primary insulation diameter.

Medium Voltage - Cold Shrink Joints

6.6/11/(12) kV and 12/20/(24) kV

3M QS2000B Branch Splice Body – developed from the QS2000 Inline Splice

- One-part splice body for a wide application range
- Tool-free installation
- Symmetrical cutback dimensions including the branch cable
- Supplied complete with mechanical branch connectors
- 100% tested at point of manufacture
- Compact design for installations in narrow areas

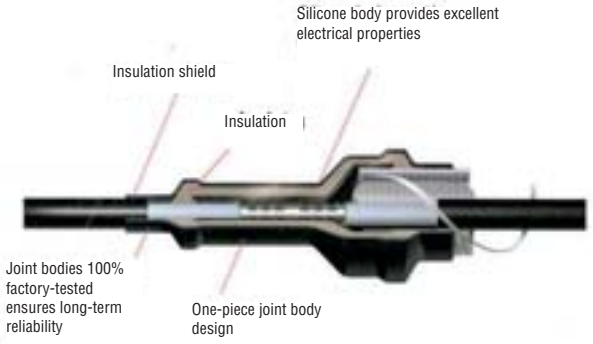
- Excellent performance and reliability developed from the QS2000 inline splice
- Constructed from high-performance LSR - silicone
- Excellent shrinkage at low temperatures
- Permanent radial pressure on the cable
- Outstanding dielectric properties
- Very high thermal stability and long-term elasticity
- Excellent mechanical properties

3M™ QS2000B Single Core Branch –XLPE/Copper Wire Screened, Connectors included For 6.6/11 (12)kV and 12/20(24)kV Applications

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
93-BP 620-1	95-240	22.3 – 33.2

19/33/(36)kV

The 3M QSIII Splice Body revolutionised power cable jointing. The QS-III silicone rubber joint meets the customer demands for easy, consistent installations by eliminating the pushing, pulling or heating required by traditional splices. The Cold Shrink QS-III joint features a silicone rubber body, which provides excellent electrical properties and superior low temperature handling. Plus the QS-III meets the requirements of most world-wide standards including IEEE 404 and European VDE 278.



- No heat, flames or special installation tools required.
- Minimal training required.
- Easy, fast installation.
- Symmetrical cable cutback dimensions.
- Allows transitioning of different size cables.
- Silicone body provides excellent electrical performance and superior low temperature handling.
- Joint bodies are 100% factory tested.
- One-piece joint body design.
- Field proven technology.
- Meets IEEE 404 and European VDE and CENELEC/IEC standards.
- Wide Cable range for individual joint bodies.

3M™ QSIII Joint – Single Core for Polymeric Copper Wire Screened Cable

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-AC640-1	300-630	36.4-53.3

3M™ QSIII Joint – Single Core for Polymeric Lead Sheath Armoured Cable

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-AC642-1	300-630	31.5-52.6

25/46(52)kV

3M™ QSIII Joint - Single Core for Polymeric Copper Wire Screened Cable

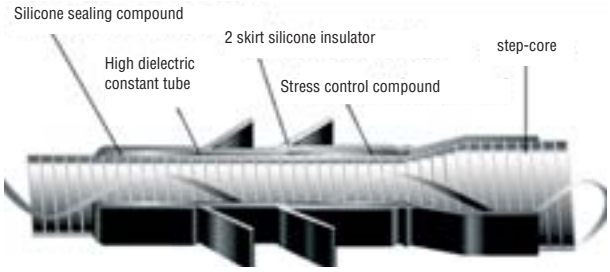
Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-AC643-1	120-630	33.5-53.8

Medium Voltage - Cold Shrink Terminations

QTIII terminations offer easy installation and reliable performance when terminating indoor and outdoor medium voltage cables. QTIII is a one-piece silicone rubber termination, which is expanded and loaded onto a removable supporting core, which allows the termination to be installed without the need for tools or heat. The core is stepped to allow a greater application range for armoured cables. QTIII consists of a tubular silicone insulator, with a built in refractive stress control tube and compound, and a built in top seal. Due to this unique design the QTIII termination is installed in one operation without the need for any additional components.

QTIII terminations are suitable for use on polymeric cables medium voltage up to 52kV.

Both indoor and outdoor terminations are available for single core and three core cables. QTIII terminations have been tested in accordance with IEEE Std 48-1990, VDE 0278 Part 4 and IEC/CENELEC. Details of type tests are available upon request.



Outdoor Termination

Indoor Termination

Medium Voltage - Cold Shrink Terminations

QTIII terminations are manufactured from silicone rubber, which has been specially formulated to enhance the properties required for MV terminations.

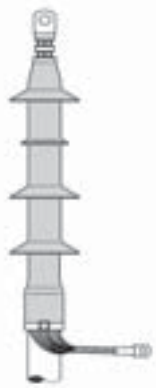
Advantages of 3M Silicone as an insulator are:

- Excellent insulating properties.
- Hydrophobic properties
- Hydrophobic recovery
- UV stable
- Non-flammable
- Fungus resistant
- Excellent high and low temperature properties
- Superior track and erosion resistance

QTIII Features

- One-piece termination
- Built in stress control compound
- Built in top seal
- Moulded rain sheds on outdoor terminations
- Optimum High-K stress control
- Compact design
- High reliability, over 20 years of proven field experience
- Continuous operating temperature of 90°C, overload rating 130°C

Indoor Termination



Outdoor Termination

33kV QTIII Termination

11kV Outdoor QTIII Termination

11kV Indoor QTIII Termination

6.6/11/(12) kV

3M™ QTIII Indoor Single Core Polymeric Copper Tape Screened, Lead Sheath and/or Aluminium wire Armoured.

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP623-1	50-95	16.3-27.4
92-EP633-1	120-150	20.5-38.9
92-EP643-1	185-400	20.5-38.9
92-EP653-1	500-630	26.7-45.7

3M™ QTIII Outdoor Single Core Polymeric Copper Tape Screened, Lead Sheath and/or Aluminium wire Armoured.

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP623-2	50-95	16.3-27.4
92-EP633-2	120-150	20.5-38.9
92-EP643-2	185-400	20.5-38.9
92-EP653-2	500-630	26.7-45.7

3M™ QTIII Three Core Polymeric Copper Tape Screened / Armoured

Indoor

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
7621-T95-3W	16-50	12.7-17.8
7623-T95-3W	70-120	17.8-23.4
7624-T95-3W	150-300	23.4-30.0

Outdoor

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
7691-S4-3W	16-50	12.7-17.8
7692-S4-3W	70-120	17.8-23.4
7693-S4-3W	150-300	23.4-30.0

Medium Voltage - Cold Shrink Terminations

6.6/11/(12) kV

3M™ QTIII Indoor 11kV Single Core Polymeric Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP621-1	50-95	16.3-27.4
92-EP631-1	120-400	20.5-38.9
92-EP641-1	500-630	26.7-45.7
92-EP656-1	630-1000	35.9-55.9

3M™ QTIII Outdoor 11kV Single Core Polymeric Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP621-2	50-95	16.3-27.4
92-EP631-2	120-400	20.5-38.9
92-EP641-2	500-630	26.7-45.7

3M™ 11kV Three Core Termination for Belted PILC / PICAS Cables (Paper Insulated Lead Covered/Paper Insulation Corrugated Aluminium Sheath)

- Inorganic cold shrink silicone insulation
- Coldshrink EPDM moisture sealing tubes
- Track resistant surface
- Moulded rain sheds for outdoor version
- No tools, easy install, ultra lightweight assembly
- Cold pour 2130 resin to fill and insulate crotch area

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
MT16	70-300	Indoor
MO16	70-300	Outdoor

12/20/(24) kV

3M™ QTIII Indoor Single Core Terminations - Polymeric / Copper Wire Screened / Non Armoured

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
93-EP610-1	25-120	16.3-27.4
93-EP620-1	95-240	21.1-38.9

3M™ QTIII Outdoor Single Core Terminations - Polymeric / Copper Wire Screened / Non Armoured

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP621-2	50-95	16.3-27.4
92-EP631-2	120-400	20.5-38.9
92-EP641-2	500-630	26.7-45.7

19/33/(36) kV

3M™ QTIII Indoor / Outdoor 33kV Single Core Polymeric / Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-EP610-2	35-120	18.3-32.8
94-EP620-2	50-150	21.1-38.9
94-EP630-2	120-300	26.7-45.7
94-EP640-2	240-630	38.9-58.9

3M™ QTIII Indoor / Outdoor 33kV Single Core Polymeric / Copper Tape Screened / Aluminium Wire Armoured

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-EP612-2	50-120	18.3-32.8
94-EP622-2	70-240	21.1-38.9
94-EP632-2	185-400	26.7-45.7
94-EP642-2	400-630	38.9-58.9

25/46/(52) kV

3M™ QTIII Indoor/Outdoor Single Core Polymeric/Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-EP 631-2	240-500	38.6-51.0

3M™ QTII Indoor/Outdoor Termination Single Core Polymeric Copper Wire Screened

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-EB 62-2	70-400	33-53
95-EB 63-2	400-1000	46-66

Separable Connectors

3M Produce a range of silicone rubber Separable elbow, straight and T connector kits.

Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Separable Connectors

Separable Elbow Connectors

Features:

- Material: Silicone rubber
- Provides a fully screened and submersible system
- Fast and easy installation
- All components included to make the installation
- Meets European standard specifications: Cenelec HD 629.1 S1 and IEC 60502-4

Benefits:

- Minimum skill required: no heat, torch or special tools are needed
- Provides total safety in case of accidental touch
- Close positioning between 3 phases and to earth
- Immediately energisable

Separable Straight Connectors

Features:

- Material: Silicone rubber
- Provides a fully screened and submersible system
- Fast and easy installation
- All components included to make the installation
- Meets European standard specifications: Cenelec HD 629.1 S1 and IEC 60502-4

Benefits:

- Minimum skill required: no heat, torch or special tools are needed
- Provides total safety in case of accidental touch
- Close positioning between 3 phases and to earth
- Immediately energisable

Separable T-Connectors

Features:

- Material: Silicone rubber
- One-piece design, including a built -in capacitive test point
- Provides a fully screened and submersible system
- Fast and easy installation
- All components included to make the installation
- Meets European standard specifications: Cenelec HD 629.1 S1 and IEC 60502-4

Benefits

- Minimum skill required: no heat, torch or special tools are needed
- Provides total safety in case of accidental touch
- Close positioning between 3 phases and to earth
- Immediately energisable

Separable Connectors - Rated 6/10 (12)kV

Elbow Connectors

The 93-EE 605-2 kits and the 93-EE 605-4 consist of an elbow type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables for 6/10kV (Um = 12kV) up to 12/20kV (Um = 24kV) – 400A / 630A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

Elbow Connector 250A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 605-2/-95	25 - 95	17.2 - 25.0	MC 25-95
92-EE 615-2/120	120		CC 120
92-EE 615-2/150	150		CC 150

Elbow Connector 400A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 605-4/-95	25 - 95	15.0 - 32.6	MC 25 - 95
93-EE 605-4/-240	95 - 240	15.0 - 32.6	MC 95 - 240

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

Straight Connectors

The 92-EE 600-2 kits consist of a straight type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Applications

The 92-EE 600-2 kits consist of a straight type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Straight Connector 250A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
92-EE 600-2/25	25	12.7 - 15.2	CC 25
92-EE 600-2/35	35	13.8 - 16.3	CC 35
92-EE 600-2/50	50	15.0 - 17.5	CC 50
92-EE 600-2/70	70	16.7 - 19.2	CC 70
92-EE 600-2/95	95	18.3 - 20.8	CC 95
92-EE 600-2/120	120	19.8 - 22.8	CC 120
92-EE 600-2/150	150	21.3 - 24.3	CC 150

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

T-Connectors

The 93-EE 7x5-6 kits consist of a T-type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Plug-In, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables for 6/10kV (Um = 12kV) up to 12/20kV (Um = 24kV) – 400A / 630A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

T Connector 630A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 705-6/-95	50 - 95	15.0 - 32.6	MC 25-95
93-EE 705-6/-240	95 - 240	15.0 - 32.6	MC 95-240
92-EE 715-6/300	300		CC 300
92-EE 715-6/400	400		CC 400

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

Separable Connectors - Rated 12/20 (24)kV

Elbow Connectors

The 93-EE 605-2 kits and the 93-EE 605-4 consist of an elbow type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables for 6/10kv (Um = 12kV) up to 12/20kV (Um = 24kV) - 400 Applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

Elbow Connector 250A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 605-2/-95	25 - 95	17.2 - 25.0	MC 25-95
93-EE 615-2/120	120	24.0 - 27.0	CC 120
93-EE 615-2/150	150	25.5 - 28.5	CC 150

Elbow Connector 400A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 605-4/-95	25 - 95	15.0 - 32.6	MC 25 - 95
93-EE 605-4/-240	95 - 240	15.0 - 32.6	MC 95 - 240

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

Straight Connectors

The 93-EE 600-2 kits consist of a straight type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables up to 6/10kV (Um = 12kV) up to 12/20kV (Um = 24kV) – 400A / 630A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

Straight Connector 250A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 600-2/25	25	17.0 - 19.5	CC 25
93-EE 600-2/35	35	18.0 - 20.5	CC 35
93-EE 600-2/50	50	19.2 - 21.7	CC 50
93-EE 600-2/70	70	20.9 - 23.4	CC 70
93-EE 600-2/95	95	22.5 - 25.0	CC 95
93-EE 600-2/120	120	24.0 - 27.0	CC 120
93-EE 600-2/150	150	25.5 - 28.5	CC 150

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

T-Connectors

The 93-EE 705-6/x2 kits consist of a T-type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Plug-In, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables up to 6/10kV (Um = 12kV) up to 12/20kV (Um = 24kV) – 400A / 630A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

T Connector 630A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
93-EE 705-6/-95	50 - 95	15.0 - 32.6	MC 25-95
93-EE 705-6/-240	95 - 240	15.0 - 32.6	MC 95-240
93-EE 715-6/300	300	30.2 - 34.6	CC 300
93-EE 715-6/400	400	33.5 - 37.8	CC 400

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

Separable Connectors - Rated 18/30 (36)kV

Elbow Connectors

The 94-EE 605-4 kits consist of an elbow type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Separable Connector, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables up to 18/30kV (Um = 36kV) - 400A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

Elbow Connector 250A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
94-EE 605-4/35	35	22.8 - 25.5	CC 35
94-EE 605-4/50	50	23.5 - 26.7	CC 50
94-EE 605-4/70	70	25.1 - 28.4	CC 70
94-EE 605-4/95	95	26.7 - 30.0	CC 95
94-EE 605-4/120	120	28.3 - 32.0	CC 120
94-EE 605-4/150	150	29.9 - 33.5	CC 150
94-EE 605-4/185	185	31.5 - 35.1	CC 185
94-EE 605-4/240	240	33.4 - 37.6	CC 240
94-EE 605-4/300	300	35.6 - 39.6	CC 300

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

T-Connectors

The 94-EE 705-6/x kits consist of a T-type Separable Connector. The assembly is fully screened and has an integrated stress control element. Each kit contains all the necessary components to install one Plug-In, including all connection devices.

Applications

These kits are designed to be installed on wire screened non-armoured polymeric insulated cables for 18/30 (Um = 36kV) 400A/ 630A applications. The Separable Connector establishes the connection between any polymeric insulated cable onto transformers, switchgears, motors or other equipment.

T Connector 630A

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)	Connector Type
94-EE 705-6/70	70	25.1 - 28.4	CC 70
94-EE 705-6/95	95	26.7 - 30.0	CC 95
94-EE 705-6/120	120	28.3 - 32.0	CC 120
94-EE 705-6/150	150	29.9 - 33.5	CC 150
94-EE 705-6/185	185	31.5 - 35.1	CC 185
94-EE 705-6/240	240	33.4 - 37.6	CC 240
94-EE 705-6/300	300	35.6 - 39.6	CC 300

Connectors Key

MC = Mechanical Connector
CC = Compression Connector

Medium Voltage - Termination Accessories

Part Number	Application
MB 61	Universal Tape
MB 63	Cold Shrink In-line

3M™ Barrier Boots

3M Cold Shrink Inline Barrier Boot MB63 has been designed for the installation of cable terminations to bushing connections in switchgear and transformer cable end boxes for inline applications.

Features

- Suitable for use on paper or polymeric cables
- 11kV rated voltage (75kV BIL)
- Can be applied on cables with conductors up to 630mm2
- Complete cold system. No heat required
- Quick, simple and easy installation
- Track resistant EPDM material

3M Cold Shrink, Pre-Stretch Tubing enables the installer to Cold insulate bushing connections using a collapsible core on which the EPDM rubber is pre-stretched, this ensures that a total all round shrink is achieved. Tape version is also available, see MB61.

Range available
92EE717-1 Universal push on

3M™ Barrier Boot System 92EE717-1

The 3M Barrier Boot System 92EE717-1 consists of a one piece EPDM rubber body suitable for operating wet indoors under conditions of ambient temperature and loading. The barrier boot is designed to accommodate bushings of cast resin or porcelain type with diameters between 40.0-70.0mm and is intended for Coldshrink terminations of power cables up to 15kV with extruded insulation from 50 up to 300mm2. Voltage rating maximum 8.7/15(17.5)kV. Suitable for both straight and right angled applications.

Build up kit 92-EE717-1-BSK is available for smaller bushings

3M™ Gland Kits & Seals

Application Range Diameter		Voltage Rating	Gland Part Number
Top hat gland kits	36-65mm	11kV	THG1
	53-94mm	11kV	THG2
Top hat gland seal only	To fit THG1	11kV	THGS1
	To fit THG2	11kV	THGS2

3M™ Cold Earth Bonding Kits

Application	Voltage Range	Part Number	Rating
Paper Cable 95 - 185mm^2	11kV	SBT1	3kA / 3 seconds
	11kV	SBT2	7kA / 3 seconds
	11kV	SBT3	13.1kA / 3 seconds
Paper Cable 240 - 400mm^2	11kV	SBT4	3kA / 3 seconds
	11kV	SBT5	7kA / 3 seconds
	11kV	SBT6	13.1kA / 3 seconds

Medium Voltage - Special Contract Kits

ScottishPower - Joints

QS1000 Single Core Aluminium Inline Joints XLPE Cable with Copper Wire Screen – with outer Coldshrink Tube – rated 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-AG613-1-SP	95 - 185	17.7 - 26.0
92-AG623-1-SP	95 - 300	22.3 - 33.2

QS1000 Single Core Copper Inline Joints XLPE Cable with Copper Wire Screen – with outer coldshrink Tube – for Compression Connectors only – rated 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-AG614-1-SP	70 - 185	17.7 - 26.0
92-AG624-1-SP	300	22.3 - 33.2
92-AG634-1-SP	500	28.4 - 42.0

QS1000 Three Core Inline Joints Aluminium XLPE Cable with Copper Wire Screen – with outer Coldshrink tube - rated 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-AG615-3-SP	95 - 185	17.7 - 26.0
92-AG625-3-SP	95 - 300	22.3 - 33.2

QS1000 Trifurcating Joint for Three Core Common Copper Wire Screened Cable, to Three Single Core Cable with Copper Wire Screen - rated 6/10 (12) kV and 8.7/15 (17) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-MC610-3-SP	95 - 185	17.7 - 26.0
92-MC620-3-SP	95 - 300	22.3 - 33.2

QS1000 Three Core PILC/PICAS Cable to Three Single Core Aluminium XLPE/CWS - Transition Trifurcating Joint – with outer Mould and Resin - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)		Diameter over Primary Insulation (mm)
	Paper	XLPE	
92-FV611-3-SP	<50 - 95	95 or 185	17.7 - 26.0
92-FV621-3-SP	<50 -185	95 - 300	22.3 - 33.2
92-FV631-3-SP	>185 - 300	185 or 300	28.4 - 42.0

Supplementary Kits available separately for use with this joint

QS1000 Three Core Inline Transition Joint – PILC/ PICAS to Aluminium XLPE/CWS Cable – with Outer Mould and Resin - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)		Diameter over Primary Insulation (mm)
	Paper	XLPE	
92-FV612-3-SP	<50 - 95	95 or 185	17.7 - 26.0
92-FV622-3-SP	<50 -185	95 - 300	22.3 - 33.2
92-FV632-3-SP	>185 - 300	185 or 300	28.4 - 42.0

Supplementary Kits available separately for use with this joint

QS1000 Pot End Kit for Single Core Aluminium XLPE Copper Wire Screened Cable – with Outer Coldshrink Tube - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-KV610-1-SP	95 - 185	17.7 - 26.0
92-KV620-1-SP	300	22.3 - 33.2

QS1000 Pot End Kit for Three Core Aluminium XLPE Copper Wire Screened Cable – with Outer Mould and Resin - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-KV610-3-SP	95 - 185	17.7 - 26.0
92-KV620-3-SP	300	22.3 - 33.2

Medium Voltage - Special Contract Kits

ScottishPower - Joints

QS1000 Pot End Kit for Three Core PILC/PICAS Belted and screened Cable - with Outer Mould and Resin - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-KV611-3-SP	up to 95	17.7 - 26.0
92-KV621-3-SP	>95 - 185	22.3 - 33.2
92-KV631-3-SP	>185 - 300	28.4 - 42.0

QS2000B Branch Joint for Single Core Aluminium XLPE Copper Wire Screened Cables – with Outer Coldshrink Tube - rated to 6/12 (12) kV and 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-BP622-1-SP	95 - 300	25.0 - 68.0

QS2000B Branch Joint for Three Core Aluminium XLPE Collective Copper Wire Screened Cables - with outer Coldshrink Tube - rated to 6/12 (12) kV and 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-BV620-3-SP	95 - 300	22.3 - 33.2

QS2000B Branch Joint for 3 Core Transition, PILC/PICAS to Aluminium XLPE collective copper wire screened cables - with outer mould and resin - rated to 6/12 (12) kV and 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-BV621-3-SP	XLPE 95-300 / Paper <50 - 95	22.3 - 33.2
92-BV622-3-SP	XLPE 95-300 / Paper >95 - 300	22.3 - 33.2

QS2000B Loop Joint for Three Core Aluminium XLPE Collective Copper Wire Screened cables - with outer mould and resin - rated to 6/12 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-LV620-3-SP	95 - 300	22.3 - 33.2

QS2000B Transition Loop Joint for Three core Aluminium XLPE Copper Wire Screened to PILC/PICAS - with outer mould and resin - rated to 6/12 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-LV621-3-SP	XLPE 95-300 / Paper <50-95	22.3 - 33.2
92-LV622-3-SP	XLPE 95-300 / Paper >95-300	22.3 - 33.2

QS2000B Trifurcating / Transition Branch - Aluminium Single Core Polymeric Copper Wire Screened to 3 Core PILC/PICAS - with outer mould and resin - rated to 6/12 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-BV 626-3-SP	XLPE 95-300 / Paper 95	22.3 - 33.2
92-BV 627-3-SP	XLPE 95-300 / Paper 185-300	22.3 - 33.2

QS2000B Straight Joint - 6 Core PILC/PICAS to either 3 core or three Single Core Aluminium XLPE Copper Wire Screened - with outer mould and resin - rated to 6/12 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-BV 628-3-SP (3 x single core XLPE)	XLPE 95-300 / Paper <50-95	22.3 - 33.2
92-BV 629-3-SP (3 core XLPE)	XLPE 95-300 / Paper >95-185	22.3 - 33.2

Medium Voltage - Special Contract Kits

ScottishPower - Joints

Coldshrink Build up & Supplementary Kits for use with PILC/PICAS Cables rated to 6/10 (12) kV

Kit Ref	Application & Range
92-PG 611-3-SP	50 – 95mm2 PILC/PICAS Cables Build up
PILCBL	PILC/PICAS Belted or Screened Branch & Loop Build up
PILCS0-SP	PILC/PICAS Belted or Screened 3 Core 16-50mm2 Inline Joints
SPM-SP	For Screened Paper Cables – Inline, Trifurcating, & Pot End Joints
92-PG612-3 (BL)	Polymeric build up kit for branch & loop joints
92-PG612-3 (95)	Polymeric build up kit for 95mm^2 cables
92-PG612-3 (185)	Polymeric build up kit for 185mm^2 cables
92-PG612-3 (300)	Polymeric build up kit for 300mm^2 cables

Mechanical Earthing Kits for use with Paper Cables - rated to 6/10 (12) kV

Kit Ref	Cable Size	Application
MEHV0-SP	Up to 35mm2	PILC Cables
MEHV2-SP	50 – 95mm2	PILC Cables
MEHV3-SP	120 – 300mm2	PILC Cables
MEHV4-SP	50 – 95mm2	PICAS Cables
MEHV5-SP	120 – 300mm2	PICAS Cables

QSIII Inline Joint for Single Core XLPE Cable – with outer Cold Shrink tube - rated to 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-AC641-1-SP (500)	500	31.5 - 52.6
94-AC641-1-SP (630)	630	31.5 - 52.6

QS2000 Inline Joint for Single core XLPE Cable – with outer Cold Shrink tube - rated to 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-AP632-1	150 - 185	28.4 - 42

QS2000 Single Core Copper Transition Joint – with outer Cold Shrink tube - rated to 6/10 (12) kV and 8.7/15 (17.5) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-FC630-1(300)	300	28.4 - 42
92-FC630-1(500)	500	28.4 - 42

QS2000 Inline Transition Joint – with outer Cold Shrink tube - rated to 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-FC630-1-SP	95 - 240	28.4 - 42

Supplementary kit for Transition joints to allow for paper cable to paper cable, Straight, Branch & Loop joints

Kit Ref	Application Range CSA (mm2)
PM1	<50 -95
PM2	>95 - 300

Scottishpower - Joints (due for release 2006)

QSIII Inline Transition Joint – with outer Cold Shrink tube - rated to 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-FC640-1-SP (500)	500	31.5 - 52.6
94-FC640-1-SP (630)	630	31.5 - 52.6

QS2000 Three Core HSL/H-Type Paper Cables Transition Joint to 3 Single Core Copper XLPE Cables - with outer Mould and Resin - rated 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-FV635-3-SP	XLPE 150 - 185	28.4 - 42.0
	Paper 185 - 300	

Medium Voltage - Special Contract Kits

ScottishPower - Terminations

QTIII Outdoor Termination for Three Core Aluminium XLPE Collective Copper wire screened cable - rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP622-3-SP	95	16.3 - 27.4
92-EP632-3-SP	185	21.1 - 38.9
92-EP642-3-SP	300	21.1 - 38.9

QTIII Outdoor Termination for Single Core Aluminium XLPE Copper Wire Screened Cable - rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP622-2-SP	95	16.3 - 27.4
92-EP632-2-SP	185	21.1 - 38.9
92-EP642-2-SP	300	21.1 - 38.9

QTIII Indoor Termination for Single Core XLPE Copper Wire Screened cable – rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Conductor	Diameter over Primary Insulation (mm)
92-EP621-1-SP	95	Alu	16.3 - 27.4
92-EP631-1-SP	185 - 300	Alu	20.5 - 38.9
92-EP641-1-SP	500 - 630	Cu	26.7 - 45.7

QTIII Outdoor Termination for single core XLPE Copper wire screened cable – rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Conductor	Diameter over Primary Insulation (mm)
92-EP641-2-SP	500 - 630	Cu	26.7 - 45.7

QTIII Indoor / Outdoor Termination for single core Copper XLPE Copper wire screened cable – rated to 18/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-EP630-2-SP	150	26.7 - 45.7
94-EP640-2-SP	500 - 630	38.9 - 58.9

Cold applied Barrier Boots, Flexible - rated 8.7/15 kV

Kit Ref	Application Range CSA (mm2)
92-EE717-1-SP	50 - 300

Bushing Supplementary kit for use with Cold Applied Barrier Boots

Kit Ref
92-EE717-1-BSK-SP

Medium Voltage - Special Contract Kits

CE - Electric - Terminations

QTIII Single Core Indoor Polymeric Termination - Copper Wire Screened Cable – rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP621-1-NY43	95	16.3 - 27.4
92-EP621-1-NY44	185 - 300	21.1 - 38.9
92-EP621-1-NY45	400	26.7 - 45.7
92-EP621-1-NY52	630	26.7 - 45.7

QTIII Single Core Outdoor Polymeric Termination - Copper Wire Screened Cable – rated to 6/10 (12) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP621-2-NY46	95	16.3 - 27.4
92-EP631-2-NY47	185 - 300	21.1 - 38.9

QTIII Single Core Indoor Polymeric Termination - Copper Wire Screened Cable – rated to 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
93-EP620-1-NY74	95 - 185	21.1 - 38.9
93-EP620-1-NY75	300	26.7 - 45.7

QTIII Single Core Outdoor Polymeric Termination - Copper Wire Screened Cable- rated to 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
92-EP620-2-NY83	95	16.3-27.4
92-EP620-2-NY84	185 - 300	21.1 - 38.9

QTIII Single Core Indoor Polymeric Termination - Copper Wire Screened Cable – rated to 19/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-EP620-2-NY59	95 - 185	21.1 - 38.9
94-EP630-2-NY60	300 - 400	26.7 - 45.7
94-EP640-2-NY61	630	38.9 - 58.9

QTIII Single Core Outdoor Polymeric Termination - Copper Wire Screened Cable – rated to 19/33 (36) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
94-EP620-2-NY80	95 - 185	21.1 - 38.9
94-EP630-2-NY81	300 - 400	26.7 - 45.7
94-EP640-2-NY82	630	38.9 - 58.9

Medium Voltage - Special Contract Kits

ESB Joints

QS2000 Single Core Inline Joint, Polymeric Copper Wire Screened Cable - rated to 12/20 (24) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
93-AP621-1	185	22.3 - 33.2
93-AP631-1	400	28.4 - 43.0

QSIII Single Core Inline Joint, Polymeric Copper Wire Screened Cable - rated to 25/46 (52) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-AC642-1	630	33.3 - 53.8

ESB - Terminations

QTII Single Core Outdoor Termination, Polymeric Copper Wire Screened Cable - rated to 25/46 (52) kV

Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-EB63-2	400 - 1000	46 - 66

Hazard Area Joints & Termination Kits

Hazard Area Joint & Termination Kits

There is no room for compromise in the matter of safety where electricity and electrical installations are concerned. At 3M we make every effort to maximise your safety and installation reliability. You are working within a hazardous environment, so our aim is to reduce unnecessary complications during installation.

Our manufacturing and laboratory site is ISO 9001 certified and all products are rigourously tested to ensure compliance with European standards. We have a comprehensive traceability procedure for all our cable accessories. All kits include safety instructions which exceed European requirements, because you safety is important to 3M.

Hazard Area Joint & Termination Kits

3M™ Inline Joints for Hazardous Area Armoured Power Cables – Scotchcast™ LR Series Joints

In-line joints for Armoured PVC & XLPE Power cables - 0.6/1kV and up to 3.3kV - Hydro-Carbon Resistant/Flame Retardant Resin Encapsulated - For use in Petrochem Zones 1 & 2

Also suitable for Lead sheathed cables, and Transition Joints.

Includes Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

NOMINAL CONDUCTOR AREA (mm^2)	SINGLE CORE 0.6/1KV	2 CORE 0.6/1KV	3 CORE 0.6/1KV	4 CORE 0.6/1KV	SINGLE CORE 1.9/3.3KV	3 CORE 1.9/3.3KV
1.5	N/A	LR20	LR20	LR20	N/A	N/A
2.5	N/A	LR20	LR20	LR20	N/A	N/A
4	N/A	LR20	LR20	LR21	N/A	N/A
6	N/A	LR21	LR21	LR21	N/A	N/A
10	N/A	LR31	LR31	LR31	N/A	N/A
16	N/A	LR31	LR31	LR32	N/A	LR42
25	N/A	LR32	LR40	LR40	N/A	LR42
35	N/A	LR40	LR41	LR42	N/A	LR43
50	LR21	LR41	LR41	LR50	LR32	LR51
70	LR30	LR50	LR50	LR51	LR32	LR52
95	LR30	LR50	LR51	LR60	LR32	LR61
120	LR40	LR51	LR61	LR61	LR42	LR61
150	LR41	LR60	LR70	LR70	LR42	LR61
185	LR41	LR61	LR70	LR71	LR42	LR71
240	LR50	LR70	LR71	LR80	LR50	LR72
300	LR50	LR71	LR71	LR80	LR52	LR80
400	LR51	LR72	LR80	LR81	LR52	LR80
500	LR51	N/A	N/A	N/A	LR53	N/A
630	LR61	N/A	N/A	N/A	LR61	N/A
800	LR62	N/A	N/A	N/A	LR62	N/A
1000	LR72	N/A	N/A	N/A	LR72	N/A

Kit Ref	TO SUIT CABLE DIAMETER		TO SUIT DIAMETER OVER LEAD SHEATH		TO SUIT DIAMETER OVER ARMOUR	
	MIN (mm)	MAX (mm)	MIN(mm)	MAX (mm)	MIN (mm)	MAX (mm)
LR20	14	32	9	15	9	15
LR21	14	32	9	15	14	22
LR30	23	37	9	15	14	22
LR31	23	37	14	22	14	22
LR32	23	37	14	22	18.5	29
LR40	28	51	14	22	18.5	29
LR41	28	51	18.5	29	18.5	29
LR42	28	51	18.5	29	23.5	37
LR43	28	51	23.5	37	23.5	37
LR50	33	60	18.5	29	23.5	37
LR51	33	60	23.5	37	23.5	37
LR52	33	60	23.5	37	31	50
LR53	33	60	31	50	31	50
LR60	48	80	23.5	37	31	50
LR61	48	80	31	50	31	50
LR62	48	80	31	50	44	70
LR70	45	90	31	50	31	50
LR71	45	90	31	50	44	70
LR72	45	90	44	70	44	70
LR80	45	100	44	70	44	70
LR81	45	100	44	70	58	94

Note: If this kit is to be used for a transition joint, Water-blocked connectors must be used

Hazard Area Joint & Termination Kits

3M™ In-Line Joints for Hazardous Area Un-armoured Power Cables - Scotchcast™ 92-U Series Joints

In-Line Joint for Un-Armoured PVC & XLPE Insulated Cables - 0.6/1kv Hydro-carbon resistant / Flame retardant Resin Encapsulated - for use in Petrochem Zones 1 & 2

Includes Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

NOMINAL CONDUCTOR AREA (mm²)	NBR OF CORES	KIT REF	CABLE DIAMETER Min (mm)	Max (mm)
1.5	2	92-A1U	8	26
	3	92-A1U		
	4	92-A1U		
2.5	2	92-A1U	8	26
	3	92-A1U		
	4	92-A1U		
4	2	92-A1U	8	26
	3	92-A1U		
	4	92-A2U	14	32
6	2	92-A2U	14	32
	3	92-A2U		
	4	92-A2U		
10	2	92-A2U	14	32
	3	92-A2U		
	4	92-A2U		
16	1	92-A2U	14	32
	2	92-A2U		
	3	92-A3U	23	37
	4	92-A3U		
25	1	92-A2U	14	32
	2	92-A2U		
	3	92-A3U	23	37
	4	92-A4U	28	51
35	1	92-A2U	23	37
	2	92-A3U		
	3	92-A4U	28	51
	4	92-A4U		
50	1	92-A2U	14	32
	2	92-A3U	23	37
	3	92-A4U	28	51
	4	92-A4U		

NOMINAL CONDUCTOR AREA (mm²)	NBR OF CORES	KIT REF	CABLE DIAMETER Min (mm)	Max (mm)
70	1	92-A2U	14	32
	2	92-A4U	28	51
	3	92-A5U	33	60
	4	92-A5U		
95	1	92-A2U	14	32
	2	92-A4U	28	51
	3	92-A5U	33	60
	4	92-A5U		
120	1	92-A3U	23	37
	2	92-A5U	33	60
	3	92-A5U		
	4	92-A5U		
150	1	92-A3U	23	37
	2	92-A5U	33	60
	3	92-A6U	48	80
	4	92-A6U		
185	1	92-A3U	23	37
	2	92-A5U	33	60
	3	92-A6U	48	80
	4	92-A6U		
240	1	92-A4U	28	51
	2	92-A6U	48	80
	3	92-A6U		
	4	92-A7U	45	90
300	1	92-A4U	28	51
	2	92-A6U	48	80
	3	92-A7U	45	90
	4	92-A7U		
400	1	92-A4U	28	51
	2	92-A7U	45	90
	3	92-A7U		
500	1	92-A5U	33	60
630	1	92-A5U	33	60
800	1	92-A6U	48	80
1000	1	92-A6U	48	80

Note: These kits do not include armour continuity

No. of Cores	KIT REF	CABLE SIZE min	max
2 to 6	CR2	14	32
7 to 12	CR3	23	37
14 to 21	CR4	28	51
24 to 37	CR5	33	60

3M™ LV Inline Joints for Hazardous Area Control Cables - Scotchcast™ CR Series

In-line joints for 0.6/1kV XLPE & PVC Insulated, Lead sheathed Control cables - Hydro-Carbon Resistant/Flame Retardant Resin Encapsulated - For use in Petrochem Zones 1 & 2

For Conductor Sizes: 1.5mm2 and 2.5mm2

Includes Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

Hazard Area Joint & Termination Kits

No. of Cores	KIT REF	CABLE SIZE min	max
1	IR20	14	32
2	IR21	14	32
5	IR30	23	37
10	IR40	28	51
15	IR50	33	60
20	IR51	33	60
30	IR60	48	80
50	IR61	48	80

3M™ LV Inline Joints for Hazardous Area Instrumentation Cables – Scotchcast™ IR Series

In-line joints for 0.6/1kV Polyethylene Insulated, Lead sheathed, Armoured Instrumentation cables - Hydro-Carbon Resistant/Flame Retardant Resin Encapsulated -For use in Petrochem Zones 1 & 2.

For Conductor Sizes: 0.5mm2 solid, 0.5mm2 Flexible, 1.0mm2 solid, or 1.5mm2 stranded conductors

Suitable for cables with either unscreened pairs, individually screened pairs, collectively screened pairs, or individually and collectively screened pairs.

Includes Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

3M™ In-Line Joints for Mines & Quarries - Power, and Signal & Telephone Cables

In Line Joints for Power unscreened cables rated up to & including 3.3kV, and Signal & Telephone Cables

Includes Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

Simple combined earth screen and armour continuity system, Fire resistant, Moisture proof, Approved by UK Coal.

Nominal Conductor Area mm²			1.5	2.5	4	6	10	16	25	35	50	70	95	120	150	185
0.6/1KV Unscreened NCB SPEC. 295	2 CORE	SWA	L1	L1	L1	L2	L2	L2								
	3	SWA	L1	L1	L2	L2	L2	L3	L3	L4	L4	L5	L5	L6	L6	
	3 CORE	DWA	L2	L2	L3	L3	L4									
	4	SWA	L1	L1	L2	L2	L2	L3	L4	L4	L5	L5	L5	L6	L6	
	CORE	DWA	L2	L3	L3	L4	L4									
3.3KV Unscreened NCB SPEC. 295	3	SWA									L5	L5	L5	L6	L6	L6
	CORE	DWA									L5	L5	L5	L6	L6	L6

Number of pairs		1	2	4	7	10	12	19	27	30	37	46	61	91
Telephone Cables	SWA	T1	T1	T2	T2	T3	T3	T4	T5	T5	T5	T5	T5	T6
NCB SPEC. 492	DWA	T2	T2	T2	T3	T3	T3	T4	T5	T5	T5	T5	T5	T6

Number of pairs		2	4	7	10	12	19	37	46	61	91
Signalling Cables	SWA	T1	T1	T2	T2	T2	T2	T3	T4	T5	T5
NCB SPEC. 493	DWA	T2	T2	T2	T2	T2	T3	T3	T4	T5	T5

Part Number	Application Range CSA
92-AV612-3	70 – 185 mm²
92-AV622-3	150 – 240mm²
92-AV642-3	300 – 400 mm²

3M™ QS1000 Inline Joints for Mines & Quarries – 3 Core Screened Power Cables rated 6.6/11kV

Cold Shrink One piece silicone splice body, encapsulated using Scotchcast™ 1400U Resin that makes it suitable for areas where there is danger of gas, oil, sewage or chemical spillage.

Fire resistant, Moisture proof, Approved by UK Coal

Cable & Wire Management

Cable & Wire Management

3M offer a range of wire management solutions ranging from wire identification systems, offering numerous ways to mark your product, to lubricants and cable cleaning and preparation products designed for specific applications.

Scotchcode™ Wire Identification

ScotchCode™ identification systems give you many ways to mark your product. The 3M lines include dispensers, preprinted alphanumeric and coloured tape, and write-on books and tags. Use these products for marking wire and cable of all diameters, distribution panels, repair and replacement parts, wires and hoses in motorized vehicles, terminal strips, motor leads, submotor leads, sub-assembly leads, control panels and much more.

Scotchcode™ Wire Marking Dispensers

ScotchCode™ STD Tape Dispenser

The ScotchCode™ STD Tape Dispenser is a compact, carry-along dispenser with ten refillable compartments, which hold eight-foot rolls of non-smear polyester tape. Used for marking binder groups, wire or cable, the tape's high tack, acrylic adhesive resists solvents, oil and water and adheres firmly to insulation surfaces. An end loop hooks the dispenser easily to a tool pouch or belt. Dispensers can be ordered empty or filled with 10 rolls of either pre-printed numbers 0-9 or NEMA colours.

STD filled 0-9 Blister Pack	Dispenser filled with 10 rolls of numbered tape (one each of 0–9)
STD Coloured Dispenser	Dispenser filled with 10 rolls of coloured tape (one each of black, blue, brown, green, gray, orange, red, violet, white and yellow)
STD Dispenser empty	Dispenser empty

ScotchCode™ Write-On Dispensers

These three self-laminating write-on marker dispensers are handy for identifying wire and cable as well as household, automotive, plumbing and sporting equipment. They are easy to use, refillable and come with an SMP permanent marking pen. The dispenser design provides convenience and protects the die-cut adhesive markers.

Product ID	Description	Labels per Roll	Write-On Area	Marker Size
SWD	Dispenser with tape and SMP pen	50	19 mm x 8 mm	19mm x 35 mm
SWD R	Refill roll for SWD	250	19mm x 8mm	19mm x 35mm
SLS	Dispenser with tape and SMP pen	170	25 mm x 13 mm	25mm x 58 mm
SLS-R	Refill roll for SLS	170	25mm x 13mm	25mm x 58mm
SLW	Dispenser with tape and SMP pen	70	25 mm x 19 mm	25mm x 127 mm
SLW - R	Refill roll for SLW	70	25m x 19m	25mm x 127mm
SMP	Marker Pen Black	-	-	-

Scotchcode™ Wire Marking Dispensers

ScotchCode™ SMP Marker Pens

3M ScotchCode™ SMP Permanent Marking Pens are recommended for use with ScotchCode™ write-on products. The pen performs well on nonporous surfaces, has an extra-fine point with permanent, quick-drying ink and is available in black. It has superior UV and water resistance.

ScotchCode™ SWB Write-On Wire Marker Book

The 3M ScotchCode™ SWB Write-On Wire Marker Book contains self-laminating, write-on markers designed for small volume applications involving special or complex legends that must be hand written at the job site.

Product ID	Labels per Roll	Write-On Area	Marker Size
SWB1	180	13 mm x 13 mm	28 mm x 13mm
SWB 2	120	19 mm x 19 mm	44 mm x 19mm
SWB 3	60	25 mm x 25 mm	72 mm x 25mm
SWB 4	30	25 mm x 25 mm	127 mm x 25mm

Scotchcode™ - SDR Alphabetical Refills (A-Z)			
SDR-A	SDR-G	SDR-M	SDR-T
SDR-B	SDR-H	SDR-N	SDR-U
SDR-C	SDR-I	SDR-O	SDR-V
SRD-D	SRDR-J	SDR-P	SDR-W
SDR-E	SDR-K	SDR-Q	SDR-X
SDR-F	SDR-L	SDR-R	SDR-Y
		SDR-S	SDR-Z

ScotchCode™ SDR Dispenser Refill Rolls

This aggressive adhesive system, combined with the flexible polyester film backing, provides a thin, conformable tape that is durable and will hold up in most industrial electrical applications.

The smooth surface of this tape allows dirt and grime to be easily wiped off, providing text legibility even after extended exposure to a build-up of contamination.

ScotchCode™ SDR Wire Marking Tape is available in ten NEMA colours, individual numbers and consecutive numbers, letters and symbols.

Scotchcode™ SDR Colour Refills	
SDR-BK	Black
SDR-YW	Yellow
SDR-RD	Red
SDR-BN	Brown
SDR-BE	Blue
SDR-GN	Green
SDR-WE	White

Applications

The SDR tape can be used for the following applications involving operating temperatures between -40°C to 121°C (-40°F - 250°F)

- Marking all types of wire and cable including power, control, fiber optic, electronic, telecommunications, and instrumentation
- Phase identification on large or small gauge wire or cable
- Identification of terminal blocks, terminal strips, and wire in panel boards or a piece of switchgear
- Automotive applications on tubing, hoses and replacement parts

Scotchcode™ SDR Character Refills
SDR-L1
SDR-L2
SDR-L3
SDR+ (plus)
SDR- (minus)

Scotchcode™ SDR Numerical Refills		
Supplied 2 rolls to a blister pack for point of sale display		
SDR-0	SDR-1	SDR-2
SDR-3	SDR-4	SDR-5
SDR-6	SDR-7	SDR-8
SDR-9		

Cable cleaning and preparation

Sizes	
12 Litre Pail	Contains 500 wipes
3 Litre Pail	Contains 250 wipes
1 Litre Pail	Contains 75 wipes

3M™ Cable Cleaning / Degreasing Wipes

Cable Cleaning/Degreasing Wipes are designed specifically to remove contaminants such as grease, oil, sealants and cable jelly from switchgear and cables. The product will remove even heavy or old deposits without hazard to user, environment, substrate or insulation materials.

Features

- Safe to use on all electrical equipment and cables
- Non-toxic – non-flammable
- Effective on both general grease/oil and protective coatings
- High dielectric strength
- Non-toxic – non-flammable

Application

- Cable cleaning prior to jointing
- Removal of protective greases and jelly from switchgear
- Sub-station cleaning and maintenance
- PCB cleaning
- Degreasing overhead power lines

Types	
CC3 CLEANING PADS	3 Saturated Pads per Kit
CC4 CLEANING SOLVENT	0.95 Litre Container

3M™ Cable Cleaning Products

3M CC Series Cable Cleaning Solvent is a full strength non-ozone depleting cleaner, degreaser for use as an effective replacement for 1,1,1-Trichloroethane and other hazardous solvents. Formulated to exhibit excellent cleaning and degreasing properties. Supplied as a liquid solvent, or in a saturated pad.

Features

- The solvent is a colourless non-conducting liquid that emanates a light orange peel scent. It is compatible with all solid dielectric cable insulations, will not cause cracking on insulation surfaces and it evaporates completely

Application

- The solvent is compatible with all solid dielectric cable insulations: i.e. Polyethylene (high and low density), cross-linked polyethylene (XLP) and ethylene propylene rubber (EPR) and is suitable for use on transformers, generators, motors, vehicles and metal parts to remove surface oils, tars and heavy greases.

Lubricants

Sizes available
0.21 Litre
0.95 Litre
3.78 Litre
18.92 Litre

3M™ Wire Pulling Lubricant LUB-I - STANDARD

Wire Pulling Lubricant is a translucent white polymer gel, which produces a low coefficient of friction for smooth low-tension wire and cable pulling. A low coefficient of friction makes cable pulling easier and safer with less chance for cable jacket damage from high pulling forces. The lubricant is easy to handle and apply. The material is colourless and non-staining and affords quick and easy cleanup. The low solids content means less conduit blocking if additional pulls are required.

Features

- Solids Content <3.5%
- Temperature Stable (-5°C to +45°C)
- Colourless and non-staining
- Water Soluble
- Compatible with semi-conducting material

Application

- 3M Wire Lubricant is suitable for pulling a wide variety of cable types, such as power, control, instrumentation and communication cables. This includes coaxial and fibre optic cables. This lubricant is compatible with common types of cable jacket materials.

Sizes available
3.78 Litre
18.92 Litre
207.9 Litre

3M™ Wire Pulling Lubricant LUB-P - HEAVY DUTY

3M Lub–P makes your cable pulling jobs smoother and easier. It is a slow drying, friction reducing lubricant that lessens the chance of cable damage from high pulling forces.

Features

- Solids Content <5.5%
- Temperature Stable (-7°C to +44°C)
- Stringy gel with excellent cable cling

Application

- Recommended for long and heavy pulls with multiple bends/pulls in hot environments.

Aerosols, Sprays and Coatings

The Scotch® Spray product range consists of a number of different insulating, cleaning, protective and preventative maintenance sprays. These products should form a major part of any maintenance programme, from preventative action to repairing damage in all electrical and electronic environments. By safeguarding the quality and function of technical equipment and accessories, service life can be considerably increased.

The Scotch® Sprays comply with all European legal requirements, and include safety instructions printed on all spray cans. Alternatively the material and safety data sheets can be obtained from your local distributor or directly from 3M.

Protective sprays

Scotch® 1600 (400ml)

Scotch® 1600 provides highly effective anti-corrosion protection. Its rubber-asphalt base forms a dense, abrasion resistant covering that protects against moisture, spray salt water, all corrosive media and is resistant to the effects of physical impacts.

Scotch® 1617 Zinc spray (400 ml)

Scotch® 1617 is an ideal cold galvanizer, that provides permanent protection against rust and corrosion by electrochemically bonding with the metal surface it is sprayed onto. Scotch® 1617 has excellent adhesion to iron and steel, is resistant to weathering, UV radiation, moisture, heat up to 500°C, alkaline solutions and mineral oils. It is an ideal primer for metal constructions, and complies with DIN 50976 (zinc content) and DIN 53167 (corrosion protection).

Insulating sprays

Scotch® 1601 Clear insulation spray (400 ml)

Scotch® 1601 is a clear insulating and covering paint based on alkyd resin. It “hardens” into a flexible and resistant film, with excellent adhesion to most common surfaces such as metal, glass, plastic, wood, etc. Scotch® 1601 is resistant to UV-rays, acids, oil and alkalis, it is moisture and weatherproof and is especially characterized by its high dielectric strength.

Scotch® 1602 Coloured insulation spray – Red (400 ml)

As Scotch® 1601 but with the addition of colouring pigments for coloured protection, insulation or marking.

Preventative maintenance sprays

Scotch® 1605 Dehumidifier (400ml)

Scotch® 1605 penetrates and displaces moisture. It also defrosts frozen sections. Scotch® 1605 then forms a thin protective film and thus prevents the renewed ingress of moisture. It is completely neutral toward paints, plastics, rubber and fabrics. It is effective over a wide temperature range from -74°C to + 175°C.

Scotch® 1609 Silicone spray (400ml)

Scotch® l609 is a general use product for preventative maintenance, protection and lubrication. It lubricates moving parts, without becoming resinous and can be used over a wide temperature range (- 32 °C to + 177 °C) thereby, providing long lasting protection against moisture and corrosion.

Scotch® 1609 is neutral towards paints, plastic, rubber, foamed materials, wood and fabrics

Cleaning sprays

Scotch® 1625 Special contact cleaner (400ml)

Scotch® 1625 loosens dirt, light oxide layers and impurities of every kind in an effective gentle manner. Scotch® 1625 is electrically neutral and totally residue-free, making it ideal for use in almost any environment as a spray cleaner.

Scotch® 1626 Cleaning spray (400ml)

Scotch® 1626 is an ideal dissolving cleaner for greases, oils, lubricants, resins and tar. It is residue free, non-corroding and washes away asbestos. Scotch® 1626 may corrode plastics.

Scotch® 1633 Rust remover (400ml)

Scotch® 1633 is a multi-purpose spray. It loosens rust, protects against moisture and renewed oxidation, can be used ideally as a lubricant, easily releases tightly sealed bolts, and has a high penetration capacity.

Lugs & Connectors

Lugs & Connectors

3M has been designing lugs and connectors with the reliability and ease of installation that Electricians demand. From the very first Scotchlok™ Insulation Displacement Connector (IDC) to today's improved models and lugs, 3M has always provided connection technology that saves time and money.

Regardless of the cable or wire type, 3M manufacture a wide range of quality connectors and lugs suitable for a variety of applications including power, telecom, automotive and data transmission.

Scotchlok™ Wire Connectors

Scotchlok™ Wire Connectors

Quick, reliable splices are a snap and a squeeze:

3M Scotchlok™ insulation displacement connectors (IDC's) are easy to use and save time to install, just squeeze - no stripping or twisting. Our unique "U" contact provides a dependable electrical connection.

- A "live-spring" joint is made by driving the "U"contact down into connector.
- As the "U" contact is pressed into connector, it grasps conductors as it displaces insulation.
- Contact grips conductor and holds with a firm, resilient pressure.

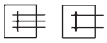
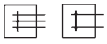
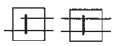
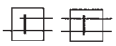
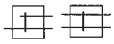
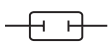
3M™ Communication Connectors

CONNECTOR	TYPE CONNECTOR	SPECIAL FEATURES	MAXIMUM INSULATION	AWG (mm^2) WIRE RANGE	OPERATING TEMPERATURE
UR**		Moisture Resistant Seal	0.066" (1,67 mm)	19-26 (0,9-0,4) Solid Wire	-40 to 285°F (-40 to 140°C)
UR2**		RUS Listed Full Featured	0.082" (2,08 mm)	19-26 (0,9-0,4) Solid Wire	-40 to 285°F (-40 to 140°C)
UG**		Moisture Resistant Seal	0.066" (1,67 mm)	19-26 (0,9-0,4) Solid Wire	-40 to 285 (-40 to 140 °C)
UY**		Moisture Resistant Seal	0.060" (1,52 mm)	22-26 (0,7-0,4) Solid Wire	-40 to 285 F (-40 to 140 °C)
UY2**		RUS Listed Full Featured	0.082" (2,08 mm)	19-26 (0,9-0,4) Solid Wire	-40 to 285 F (-40 to 140 °C)
UB2A**		RUS Listed Full Featured	0.082" (2,08 mm)	19-26 (0,9-0,4) Solid Wire	-40 to 285 (-40 to 140°C)
U1B**		Full Pair	0.125" (3,18 mm)	16-19 (1,3-0,9) Solid Wire	-40 to 285°F (-40 to 140°C)
U1R**		Full Pair	0.125" (3,18 mm)	19-24 (0,9-0,5) Solid Wire	-40 to 285°F (-40 to 140°C)
UAL**		For Aluminum Copper	0.082" (2,08 mm) Outside port 0.076" (1,93 mm) Center port	17-20 (1,15-0,5) Solid Wire 19-24 (0,9-0,5) Copper	-40 to 285°F (-40 to 140°C)

**Solid wire only.

Scotchlok™ Wire Connectors

3M™ Self Stripping Power Connectors

CONNECTOR		TYPE CONNECTOR	SPECIAL FEATURES	MAXIMUM INSULATION	AWG (mm^2) WIRE RANGE	OPERATING TEMPERATURE	UL, CSA or CE CERTIFIED
314			Moisture Resistant Seal	0.155" (3,94 mm)	22-14 (0,5-1,5)	105°C (221°F)	UL, CSA
316IR			Moisture Resistant Applications	0.155" (3,94 mm)	22-16 (0,5-1,5)	105°C (221°F)	—
557			Dual Element Connection	0.120" (3,05 mm)	22-16 (0,5-1,5)	105°C (221°F)	UL, CSA, CE
558			Flame Retardant	0.120" (3,05 mm)	22-16 (0,5-1,5)	105°C (221°F)	UL, CSA, CE
560B			Run & Tap Splicing	0.145" (3,68 mm)	18-16 (0,75-1,5) Solid/Stranded 14 Stranded	90°C (194°F)	UL
560N			Flame Retardant	0.145" (3,68 mm)	18-16 (0,75-1,5) Solid/Stranded 14 Stranded	105°C (221°F)	UL, CSA
560			Flame Retardant	0.145" (3,68 mm)	18-16 (0,75-1,5) Solid/Stranded 14 Stranded	105°C (221°F)	UL, CSA, CE
562			Run & Tap Splicing	0.190" (4,82 mm)	12-10 (3,0-4,0) Solid/Stranded 10 Stranded	90°C (194°F)	
567			Dual Element Connection	0.145" (3,68 mm) Tap 0.190" (4,82 mm) Run	18-14 (0,75-1,5) Tap 12-10 (3,0-4,0) Run	105°C (221°F)	UL, CSA, CE
804			Moisture Resistant Applications	0.145" (3,68 mm)	18-16 (0,75-1,5) Solid/Stranded 14 Stranded	75°C (167°F)	UL
905			Low Voltage (Automotive) Applications	0.110" (2,79 mm) Tap 0.145" (3,68 mm) Run	22-18 (0,5-1,0) Tap 18-14 (0,75-1,5) Run	90°C (194°F)	CE
951			T-Tap Disconnect	0.150" (3,81 mm)	22-18 (0,5-1,0)	105°C (221°F)	UL, CSA
952			T-Tap Disconnect	0.150" (3,81 mm)	18-14 (0,75-1,5)	105°C (221°)	UL, CSA
953			T-Tap Disconnect	0.150" (3,81 mm)	12 (3,0)	105°C (221°)	UL, CSA
972			Fuse Holder	0.150" (3,81 mm)	18-14 (0,75-1,5)	90°C (194°F)	—

Scotchlok™ Wire Connectors

Connector	Conductor Combinations*	
	Cross section sol/str (mm^2)	Quantity
Y	1	5-6
	1.5	4-5
	2.5	2-5
	4	2-4
G	2.5	4-6
	4	2-6
	6	2-4
R	1	5-6
	1.5	4-6
	2.5	2-5
	4	2-4
	6	2
B	4	3-6
	6	3-4
	10	2-3
	16	2

* Copper conductors only

3M™ Spring Power Connectors

Scotchlok™ Y, R, G and B Electrical Spring Connectors are the original colour-coded wire connectors. They are flexible yet durable with an outer insulator that gives you a compact, fully insulated connection that won't cut or abrade wires.

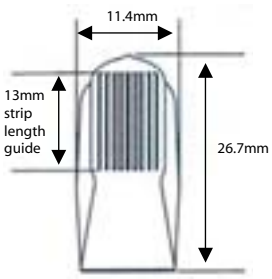
Features

- These four spring connectors have a corrosion-resistant steel inner shell to strengthen them while permitting spring expansion and contraction due to temperature changes.
- A deep, flared skirt makes wire insertion easier and protects against faults.
- The design and a flexible base let Scotchlok connectors bend with the wires you're slicing to fit easily into tight places.

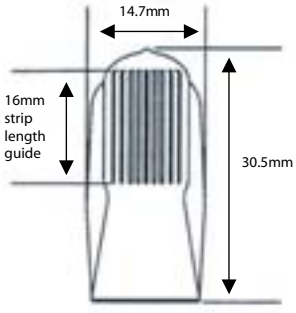
Application

- The live action spring delivers reliable, vibration-resistant connections over a wide range of wire

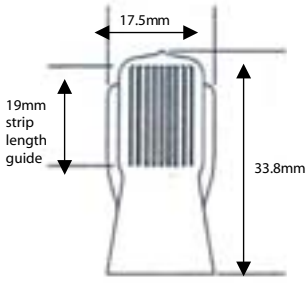
Scotchlok™ Y Connector



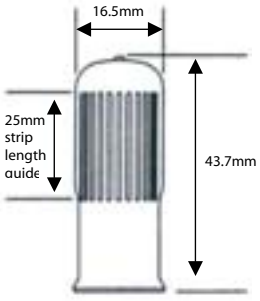
Scotchlok™ R Connector



Scotchlok™ G Connector



Scotchlok™ B Connector



Scotchlok™ Wire Connectors

3M™ DBY/DBR - Direct Bury Splice Kits

3M DBY, DBY Kits provide quick, reliable underground splicing for irrigation and sprinkler systems, landscape lighting and other projects. Specially designed plastic insulator tube comes pre-packaged containing insulating gel.

Locking fingers in the tube ensure that the Scotchlok Spring Connector stays in position, the closed tube cover provides strain relief, and the design protects against corrosion failure.

Application temperature range is 0°C - 49°C

With 3M Direct Bury Splice Kits, there's no mixing, no mess, Just slide your connection (Scotchlok Y or R Connectors only) into the insulator tube, close and bury.

DBR Kit contains the R Type Scotchlok Spring Power Connector

DBY Kit contains the Y Type Scotchlok Spring Power Connector

(see selection tables on page 97 for details)

Selection Example

Size (mm²) — 11kV — Die No.

L 25 A 11 W.12

Lug — Aluminium — Waterblocked

Connector — Copper

C 185 C.25

Size (mm²) — Die No.

Use the selection example to identify the correct lug or connector you require

3M™ Scotch Cable Lugs and Connectors

Features

- Comprehensive range available, from 6mm2 up to 1000mm2
- Voltage range from 0.6kV up to 36kV
- Available in Copper or Aluminium
- Waterblocked versions available
- For use with DIN standard circumferential hexagonal compression tooling
- Connectors available to join differing conductor sizes
- Bi-metallic Connectors and Lugs available
- The complete voltage range available from 0.6kV to 33kV

Description	Conductor Size	Colour
B-42-1101	0.5-1.5	Red
C-42-1101	1.0-2.5	Blue
D-42-1101	2.5-6.0	Yellow

3M™ Crimp Connectors

Pre-insulated Vinyl covered butt connectors, for smaller sized conductors

Connector & Lug Tools & Die sets

3M™ Tools & Accessories

EP1 – Compression Tool with or without steel handle

- Copper lug and connectors 6-240sq.mm
- Aluminium lugs and connectors 16-300sq.mm
- Telescopic handle offers increased leverage on larger Sized connectors.
- Hexagonal crimp
- Re-shaping dies available for sector shaped solid aluminium Conductors

EP2 – Crimp Tool (Copper Conductors only)

- For non-insulated cable lugs and connectors from 6-50sq.mm
- Hexagonal crimp with revolving dies

EP3 – Crimp Tool

- Universal compression crimp, for lugs and connectors from 0.5-16sq.mm

E9BM – Crimping Tool

- For use with most Scotchlok connectors.
- Parallel closing action with adjustable jaws.
- High mechanical advantage.

E9Y – Crimping Tool

- Stepped jaws and long nose provide parallel crimping action.
- Features include a side wire cutter, insulated handles and a return spring.

E9E – Crimping Tool

- Parallel closing action tool for use with Scotchlok butt and tap connectors.

Also available for Hire:
Complete with Die sets, for use with larger Connectors and Lugs to DIN Standard
Hydraulic Hand Crimp Tool
Hydraulic Foot Pump

3M Dies for Aluminium Lugs & Connectors

ALUMINIUM LUGS & CONNECTORS										
Conductor Area Sq. mm	10	16-25	35	50	70	95-120	150	185	240	300
3M Part Number	A10/10	A16/25-12	A35-14	A50-16	A70-18	A95/120-22	A150-25	A185-28	A240-32	A300-34
Die Code Number	10	12	14	16	18	22	25	28	32	34

3M Dies for Copper Lugs & Connectors

COPPER LUGS & CONNECTORS												
Conductor Area Sq. mm	6	10	16	25	35	50	70	95	120	150	185	240
3M Part Number	C6-5	C10-6	C16-8	C25-10	C35-12	C50-14	C70-16	C95-18	C120-20	C150-22	C185-25	C240-28
Die Code Number	5	6	8	10	12	14	16	18	20	22	25	28

3M™ Infrared Thermometer

3M™ IR 500 Infrared Thermometer

This Laser Sighted, lightweight and durable instrument allows accurate, non-contact surface temperature measurements from -18° to 260°C (0° to 500°F) at a safe distance.

The single-point laser sighting accurately 'spots' trouble up to 4 feet away

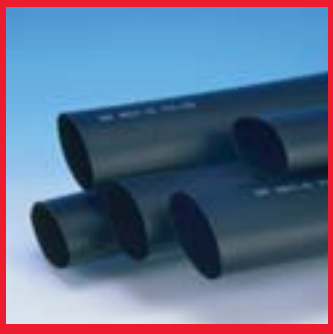
Features

- Non-contact temperature measurement
- Laser sighting
- Easy to use - one button operation
- Back-lit LCD display
- Wide -18° to 260°C temperature range
- Celsius to Fahrenheit switchable
- Powered by 9V battery (included)
- Pocket sized

Applications

- Monitor electric motors
- Locate loose wire connections
- Diagnose nuisance tripping of circuit breakers
- Check lighting ballasts and transformers

Heat Shrink



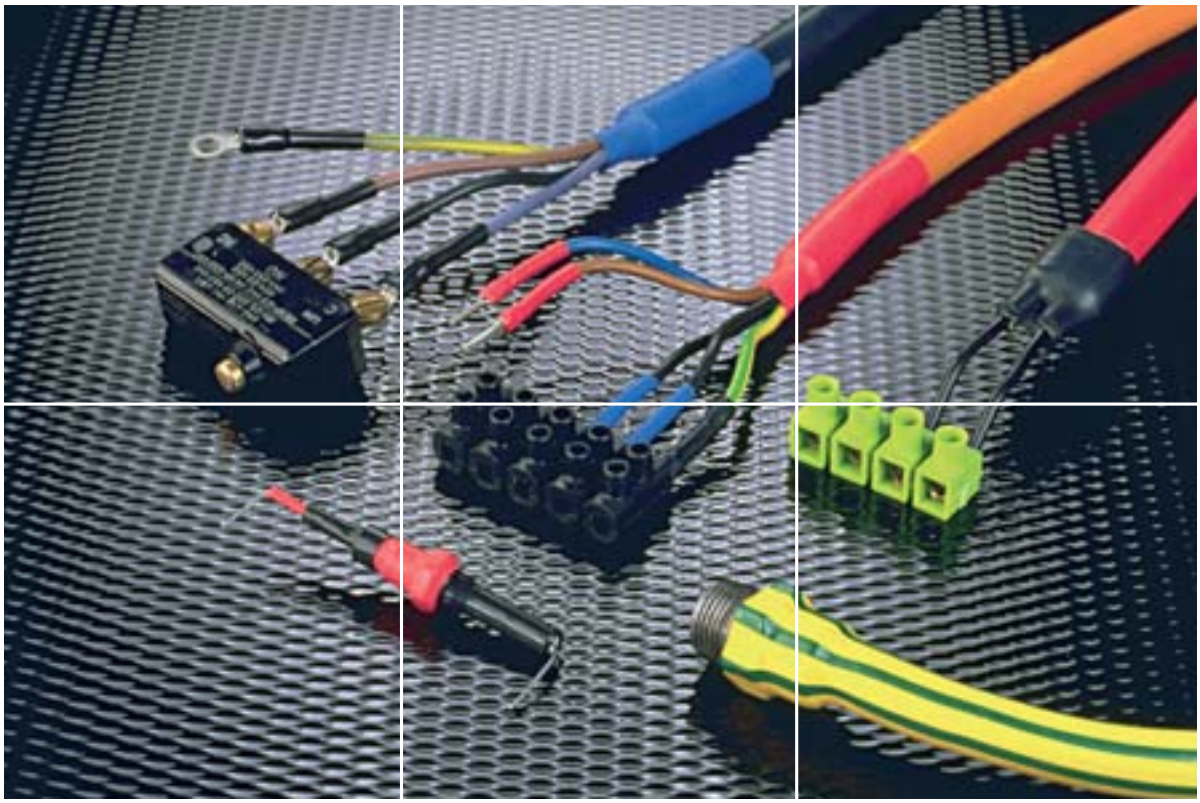
Heat Shrink

3M Heat Shrink products provide long-term reliable performance and excellent mechanical and environment protection.

Easy to install, 3M Heat Shrink tubing comes ready to use and with the application of moderate heat automatically moulds to a skin tight fit – even over irregularly shaped objects.

The comprehensive 3M range includes, thin-walled, medium and thick walled tubing, adhesive lined tubing, and a range of moulded parts, featuring:

- High temperature resistance
- High strength and good mechanical properties
- Excellent solvent and chemical resistance
- Superior thermal and form stability
- Shape memory
- Precise shrink ratio and recovery
- Superior split and crack resistance



Bore Supplied min/ Bore Recovery Max	
1.2mm / 0.6mm	12.7mm /6.4mm
1.6mm / 0.8mm	19mm /9.5mm
2.4mm / 1.2mm	25.4mm /12.7mm
3.2mm / 1.6mm	51.0mm / 25.4mm
4.8mm / 2.4mm	76.0 / 38.0mm
9.5mm /4.8mm	102mm /51mm

3M™ CTW - 602 Commercial Grade Polyolefin

CTW-602 is ideal for providing insulation of electrical connections, terminals, components and wiring systems. It requires a minimum shrink temperature of 120°C and is well suited to manual as well as automatic methods of application. CTW- 602 is very suitable for use as a continuous insulation sleeve in a variety of industrial applications. Continuous operating temperature range: -55°C to +135°C.

Shrink ratio: 2:1. Supplied in continuous reels.

Available in black only.

Heat Shrink

Bore Supplied min/ Bore Recovery Max	
1.2mm /0.6mm	12.7mm /6mm
1.6mm /0.8mm	19mm /9.5mm
2.4mm /1.2mm	25.4mm / 12.7mm
3.2mm /1.6mm	38mm / /19mm
4.8mm /2.4mm	51mm /25.4mm
6.4mm /3.2mm	76.2mm /38mm
9.5mm /4.8mm	

3M™ SFTW - 202 High Grade Polyolefin

SFTW-202 is a highly flexible, fast shrinking tubing, offering superior properties. With excellent chemical and thermal resistance it is capable of meeting the toughest demands of the aerospace, military, offshore and railway industries.

It meets the stringent requirements of VG 95343, UL 224, Def Stan and other international specifications with a Continuous operating temperature range: -55°C to +135°C.
Shrink ratio: 2:1.
Supplied in either continuous reels or 1 metre pieces.

Available in the following colour combinations;

Black	Clear
White	Red
Blue	Yellow
Brown	Green

Bore Supplied min/ Bore Recovery Max	
3.2mm /1.6mm	12.7mm/6mm
4.8mm/2.4mm	19mm /9.5mm
6.4mm /3.2mm	25.4mm/12.7mm
9.5mm/4.8mm	38mm / /19mm

3M™ SFTW - 202 GYS High Grade Polyolefin

SFTW-202-GYS is a very flexible, fast shrinking tubing specially designed for electrical equipment ground lead applications.

This tubing is manufactured using a special co-extrusion process ensuring that the green and yellow coding is fully integrated into the tubing wall.
Shrink ratio: 2:1

- It offers excellent chemical and thermal resistance
- Operating temperature -55°C to 135°C
- Available in Green/Yellow Striped
- Supplied in either continuous reels or 1 metre pieces.

Bore Supplied min/ Bore Recovery Max	
1.5mm /0.5mm	12mm /4mm
3mm /1mm	24mm / 8mm
6mm /2mm	39mm /12.7mm
9mm /3mm	

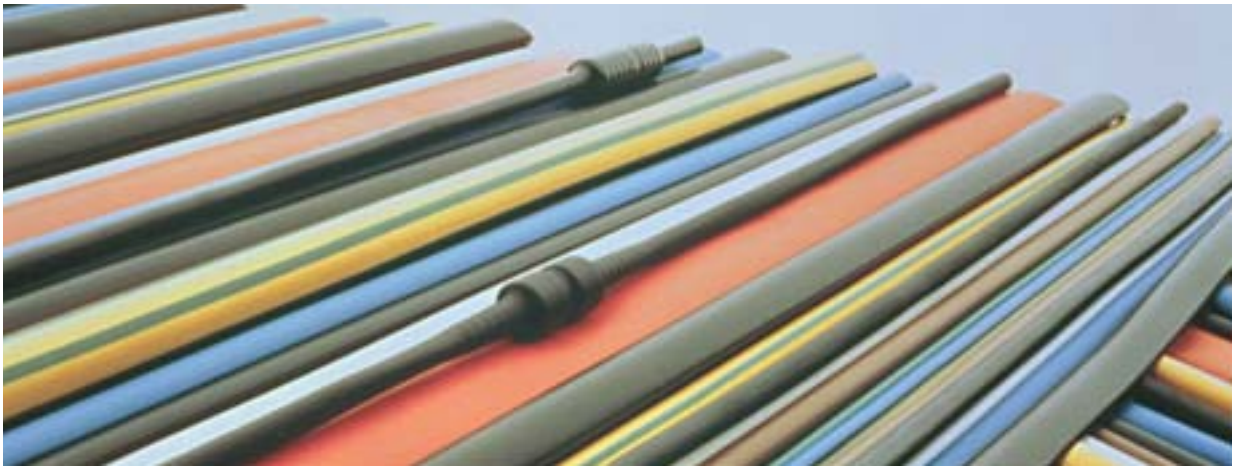
3M™ SFTW - 203 High Grade Polyolefin

SFTW-203 is a highly flexible, fast shrinking tubing offering superior properties. With excellent chemical and thermal resistance, it is capable of meeting the toughest demands of the aerospace, military and railways industries.

With a continuous operating temperature range of -55°C to +135°C, SFTW-203 has a 3:1 shrink ratio, and therefore can easily cope with components of varying diameter, with no tendency to split.

Available in black or clear.

Supplied in continuous reels.



Heat Shrink

Bore Supplied min/ Bore Recovery Max	
ETW-803	ETW-804
3mm /1mm	12mm / 3mm
6mm /2mm	16mm / 4mm
9mm/3mm	24mm / 6mm
12mm / 4mm	32mm / 8mm
19mm/6mm	
24mm / 8mm	
40mm / 13mm	

3M™ ETW-803 / ETW-804 - Dual Wall Polyolefin

ETW-803 / ETW-804 is a flexible heat shrinkable tubing with a co-extruded hot melt adhesive inner wall. The excellent flow properties of the adhesive ensure good environmental sealing of complex parts. As this tubing shrinks, molten adhesive flows and is forced into gaps and crevices. When the adhesive cools it forms a seal against moisture and other fluids whilst the outer wall provides mechanical protection with a continuous operating temperature range: -55°C to 110°C.

ETW-803 is well suited for environmental sealing of a variety of electronic, electrical and mechanical applications such as connections, joints etc. Shrink ratio: 3: 1

ETW-804 has a shrink ratio of 4:1, which accommodates wide variances in diameter.

Available in black.

Supplied in 1 metre pieces.

Bore Supplied min/ Bore Recovery Max	
3.2mm / 1.6mm	25.4mm / 12.7mm
4.8mm / 2.4mm	76mm / 38mm
6.4mm / 3.2mm	102mm / 51mm
12.7m / 6.4mmm	

3M™ NTW - H High Performance Elastomeric

NTW-H is a superior flexible high performance elastomeric tubing. Meeting the most stringent requirements of international specifications, NTW-H is used in aerospace, railways and defence applications.

It is supplied, printed with the VG-95343/5D print and provides protection against many chemicals (including diesel and petrol) and against abrasion, thus ensuring excellent performance of aerospace cable harnesses – even after many years of use in severe environmental conditions.

Shrink ratio: 2: 1 with a continuous operating temperature range: -75°C to 150°C.

Available in black.

Bore Supplied min/ Bore Recovery Max	
3.2mm / 1.6mm	25.4mm / 12.7mm
4.8mm / 2.4mm	38.0mm / 19.mm
6.4mm / 3.2mm	51.0mm / 25.4mm
9.5mm / 4.8mm	
12.7mm / 6.4mm	
19.0mm / 9.5mm	

3M™ Viton™ - E Fluorelastomer

3M Viton™-E is fluorelastomeric tubing. It possesses extremely high resistance to chemicals and will maintain its excellent mechanical and flexibility even after long term exposure to high temperatures. It is suitable for protection of cables against contamination by almost all commercial hydraulic fluids, minerals and synthetic oils.

It is widely used in hydraulic equipment, aircraft manufacture and ship building applications. Due to its very high operating temperature (-55°C to +220°C). VITON-E is well suited for the protection of sensitive devices and aerospace harnesses against heat. Shrink ratio: 2: 1

3M Viton™-E is approved to VG 95343/5E and is therefore suitable to be used in military and aerospace applications. VITON-E is supplied printed to the requirements of VG.

Available in black.

Supplied in continuous reels.

Heat Shrink

Bore Supplied min/ Bore Recovery Max	
12mm /3mm	38mm /12mm
19mm /6mm	50mm /18mm
27mm / 8mm	70mm /26mm
32mm / 7.5mm	90mm /36mm
	120mm /40mm

3M™ MDT - A - Adhesive Lined Medium Duty Polyolefin

MDT-A is specially designed medium wall tubing, which provides tough and flexible insulation and is ideal for the protection of cable joints and terminations. MDT-A is lined with a specially designed adhesive, which is applied during the tubing's extrusion process. This achieves a very smooth adhesive layer, which ensures excellent sealing properties. MDT-A meets the requirements of VDE 0278 part 3.

A Non adhesive version is available (MDT), please contact customer service for details

The adhesive lining makes it especially suitable for underground cable joint applications. For Offshore and Naval applications, a modified MDT-A approved by Det Norske Veritas is available (MDT-A-F471).

Supplied in 1 metre pieces.
Continuous operating temperature range: -35°C to 130°C, outdoor wall only.
Available in black - Shrink ratio is up to 4.5: 1

Bore Supplied min/ Bore Recovery Max	
12mm /3mm	48mm /15mm
19mm /6mm	85mm /26mm
30mm /8mm	115mm /38mm
38mm /12mm	

3M™ HDT - A - Adhesive Lined Heavy Duty Polyolefin

HDT-A is thick wall polyolefin tubing. The toughness and weather ability of the tubing make it well suited for exposed applications. HDT-A is supplied with a specially designed hot melt adhesive layer. The adhesive is applied during extrusion of the tubing thus achieving a very smooth, constant adhesive layer, which ensures excellent sealing properties. Shrink ratio: Up to 4 : 1

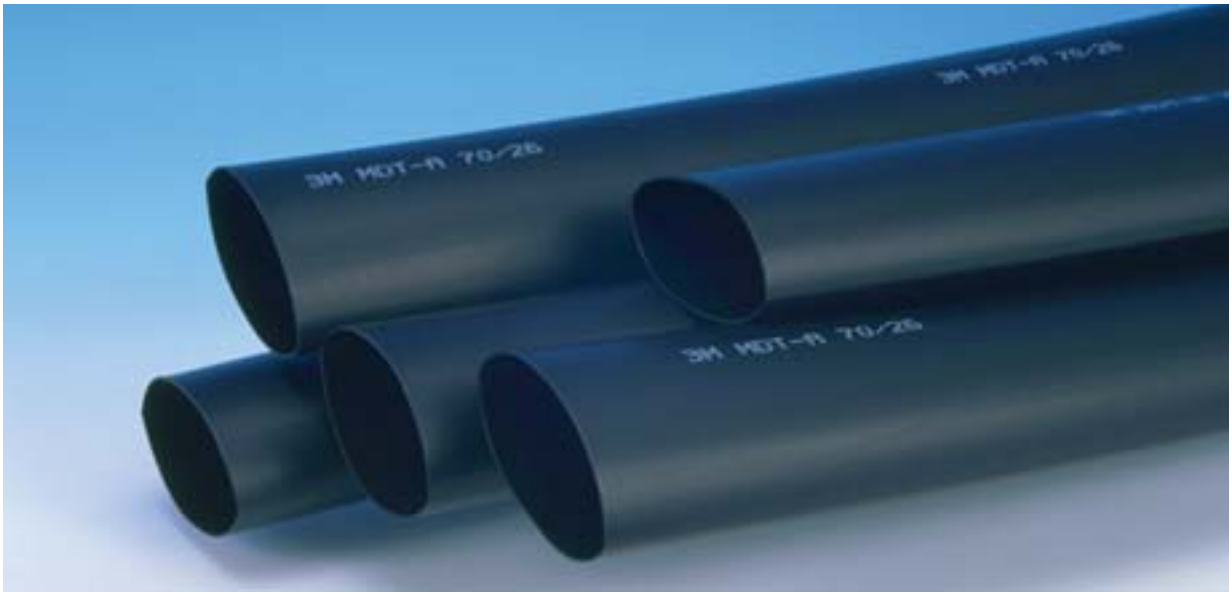
HDT-A meets the longitudinal sealing requirements of VDE 0278 part 3 and is, therefore, ideal for sealing underground or exposed inline joints and terminations.

Supplied in 1 metre pieces.
Continuous operating temperature range: -55°C to 130°C, outer wall only.
Available in black.

Bore Supplied min/ Bore Recovery Max	
1.2 /0.6mm	9.5 /4.8mm
1.6 /0.8mm	12.7 /6.4mm
2.4 /1.2mm	19.0 /9.5mm
3.2 /1.6mm	25.4 /12.7mm
4.8 /2.4mm	38.0 /19.0mm

3M™ Kynar® Fluoropolymer Tubing

3M Kynar® is a semi-rigid highly transparent material, which maintains excellent mechanical strength even at high temperatures. It has high chemical and puncture resistance. It provides protection against aggressive fluids and excellent mechanical protection. Suitable for military, aerospace and industrial applications, 3M Kynar® is approved to specifications such as VG 95343/5F. Shrink ratio: 2 : 1. Continuous operating temperature range: -55°C to 175°C. Available in clear, supplied in 1.2 metre pieces.



Heat Shrink

Bore Supplied min/ Bore Recovery Max	
1.5mm/0.5mm	18.0mm/6.0mm
3.0mm/1.0mm	39.0mm/12.7mm
9.0mm/3.0mm	

Bore Supplied min/ Bore Recovery Max
51mm/25.4mm
76mm/38mm
102mm/51mm

3M™ GTI 3000 - General Purpose Thin Wall Insulation Polyolefin

GTI 3000 is flexible, thin walled heat shrink tubing, made of cross-linked, halogen free polyolefin. The tubing meets the latest requirements regarding shrinking time, flexibility, and material characteristics.

GTI 3000 is designed to provide excellent insulation and protection in various industrial applications. The large diameter range, and 3:1 shrink ratio offers many solutions within a small range of products. GTI 3000 is available in a wide range of colours, with a shiny, smooth, particle free surface. Suitable for cable marking and identification applications. Continuous operating temperature -55°C to 135°C. Supplied in 1 metre pieces.

GTI 3000 fulfills the strict requirements of many standards, including RoHS.

Available in the following colours:

Black White Blue Brown Red Clear

Yellow Green/Yellow*

* Size 1.5 / 0.5 not available in Green / Yellow

3M™ GTI - General Purpose Thin Wall Insulation Polyolefin

3M GTI is flexible thin walled polyolefin tubing, with fast shrink time and excellent electrical and mechanical properties.

GTI is designed to provide excellent insulation and protection in various industrial applications.

Continuous operating temperature -55°C to 135°C with a 2:1 Shrink Ratio.
Supplied in 1 metre pieces.

Available in the following colour & size combinations to complement the GTI-3000 Range;

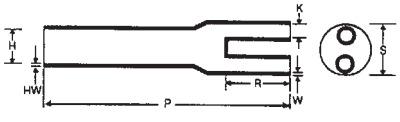
Black White Blue Brown Red Clear Yellow

Heat Shrink - Moulded Parts

3M Heat Shrink Moulded Parts offer excellent electrical and mechanical protection and are resistant to a range of corrosive fuels, fluids and chemicals. By ordering a combination of tubing and breakouts you can customize your termination on site to suit all cable diameters, conductor tail lengths etc.

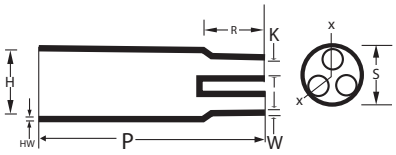
3M™ Break Outs

3M SKE 2F / 2 Way Outlet Sleeve Breakout



	Expanded Diameter (as supplied)		Recovered Diameter		Recovered Dimensions (fully shrunk)					Conductor Size Range
	H	K	H	K	S	P±	R±	HW±	W±	
Part No.	(Min) mm	(Min) mm	(Max) mm	(Max) mm	(Nom) mm	10% mm	10% mm	20% mm	20% mm	(MM^2)
SKE - 2F/1	30.0	15.0	9.4	4.1	20.0	94.0	30.0	1.5	1.2	4.35

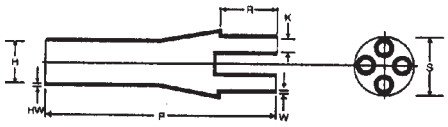
Heat Shrink - Moulded Parts



3M™ Break Outs

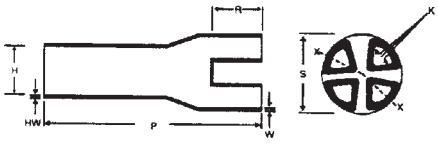
3M™ SKE 3F / 3 Way Outlet Sleeve Breakouts

	Expanded Diameter (as supplied)		Recovered Diameter		Recovered Dimensions (fully shrunk)					Conductor Size Range
	H	K	H	K	S	P±	R±	HW±	W±	
Part No.	(Min) mm	(Min) mm	(Max) mm	(Max) mm	(Nom) mm	10% mm	10% mm	20% mm	20% mm	(MM^2)
SKE-3F/1=1.5	25.0	9.0	9.0	3.0	16.0	68.0	18.0	2.5	2.0	4.16
SKE-3F/2	31.0	15.0	18.0	5.0	23.0	89.0	24.0	2.5	2.3	16-34
SKE-3F/4	55.8	30.4	22.5	9.0	37.0	180.0	44.0	3.0	2.0	50-150
SKE-3F/5	72.0	37.0	35.0	17.5	55.0	178.0	38.0	4.0	3.0	185-300



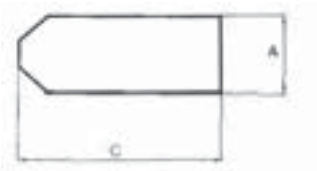
3M™ SKE 4F / 4 Way Outlet Sleeve Breakouts

	Expanded Diameter (as supplied)		Recovered Diameter		Recovered Dimensions (fully shrunk)					Conductor Size Range
	H	K	H	K	S	P±	R±	HW±	W±	
Part No.	(Min) mm	(Min) mm	(Max) mm	(Max) mm	(Nom) mm	10% mm	10% mm	20% mm	20% mm	(MM^2)
SKE-4F/1+2	35.0	15.0	12.0	3.0	122.0	95.0	24.0	2.5	2.0	4.35
SKE-4F/3+4	47.4	21.5	22.9	6.4	38.1	202.0	38.1	4.1	3.3	35.95



3M™ SKE 4F/5

	Expanded Diameter (as supplied)			Recovered Dimensions (fully shrunk)							Conductor Size Range
	H	K	S	H	K	S	P±	R±	HW±	W±	
Part No.	(Min) mm	(Min) mm	(Nom) mm	(Max) mm	(Area Max) mm^2	(Max) mm	10% mm	10% mm	20% mm	20% mm	(MM^2)
SKE - 4F/5	78.7	38.1	76.2	35.6	129.0	50.8	205.0	38.1	3.8	3.3	120-300



3M™ End Caps

3M Polyolefin End Caps provide a reliable and easy method of sealing cables for both indoor and outdoor application whilst offering excellent electrical and mechanical protection.

	Cable Diameter (mm)	Diameter before shrinkage (mm)	Full recovered dimensions (mm) A	C
SKE 4/10	4 - 8	10	4	33.5
SKE 8/20	8 - 16	20	8	55.3
SKE 15/40	15 - 32	40	15	90.0
SKE 25/63	25 - 51	63	25	143.3
SKE 30/76	30 - 61	76	30	158.0
SKE 45/100	45 - 80	100	45	162.5
SKE 61/158	61 - 126	158	61	182.0

Cable & Fault Locators & Electronic Marker Systems

3M Cable & Fault Locators

A complete system for damage prevention, locating, marking and mapping vital underground assets.

3M Cable & Fault Locators

2210 E3T3	Cable Locator
2250M EC5W/RT	Cable Locator
2273MEC5W/RT	Cable & Fault Locator
2250M RT I/d	Cable & EMS I/d EC5W/ Locator
2273M EC5W/RT I/d	Cable & Fault & EMS I/d Locator
Locator Carry Bag	
3229	Active Ducts Probe

Equipment for Location of Cables & Faults

The full line of 3M locators and markers helps you quickly and accurately identify underground assets. From finding the exact path and estimated depth of underground utilities, to locating buried passive markers, to reading and writing information directly to the new markers, 3M offers the precision tools needed to manage your assets. And now, certain 3MTM DynatelTM Locators interface with select GPS/GIS field mapping instruments.

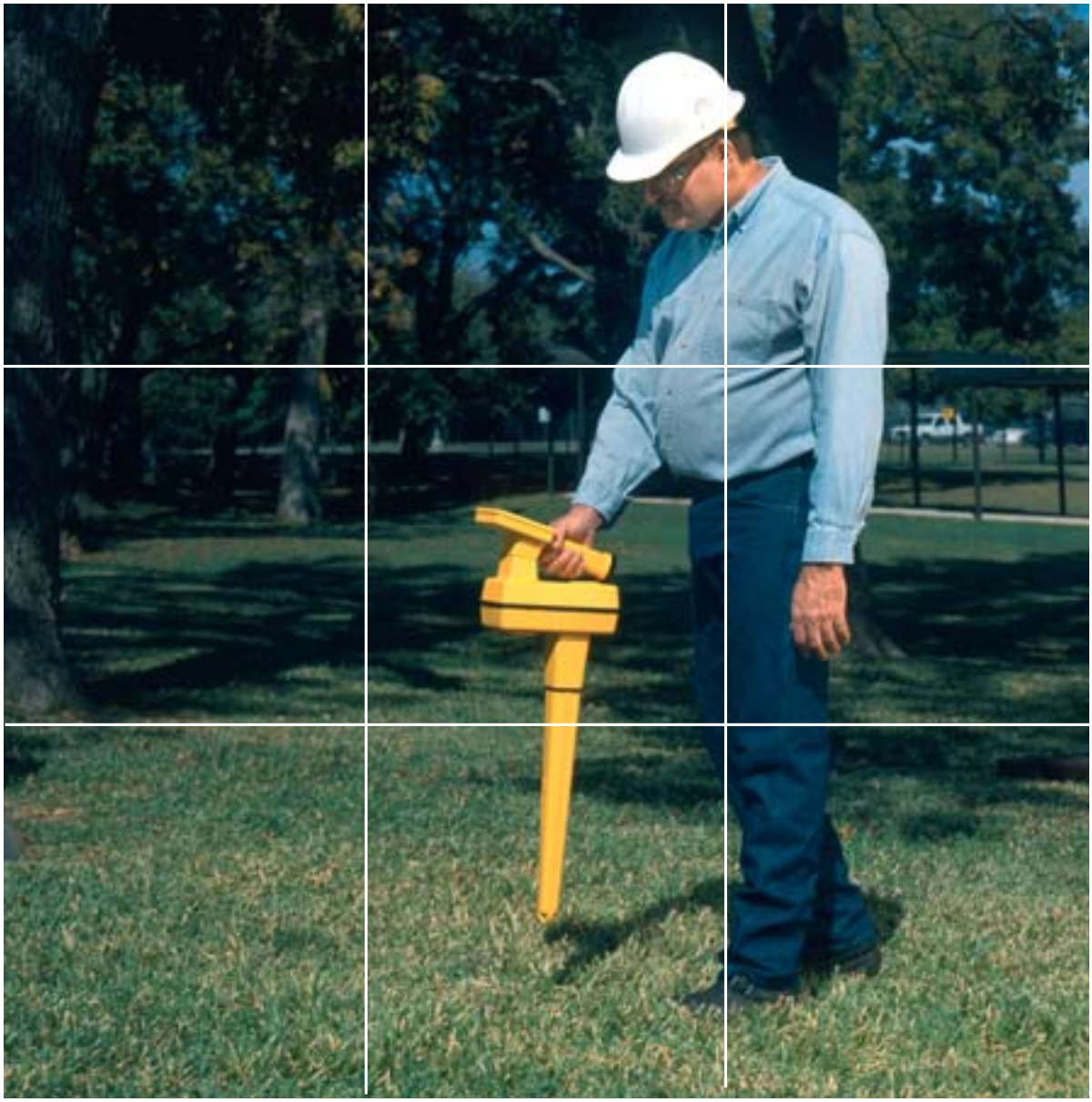
Together, these tools provide a complete locating and marking solution with the performance and reliability you trust from 3M.

2876	Large Clip Direct Connect Cable
2892	Small Clip Direct connect cable
9012	Telco Clips Direct Connect Cable 5’
9011	Dyna Coupler Cable Assembly
3005	1” Dynacoupler
3001	3” Dynacoupler
3019	3” Dynacoupler Kit (includes cable/ pouch)
1196	6” Dynacoupler and Pouch
3014	3014 Earth Contact Frame
9026	Earth Contact Frame cable
8006	Ground Rod
9043	Ground Ext. Cable

Spare Parts

A range of accessories is available for the 2200 series locators depending of your locating requirements.

Electronic Marker Systems



1420E	EMS Marker Locator with I/D read/write

3M™ EMS Equipment

3M™ Dynatel™ 1420E-iD Electronic Marker System (EMS) Marker Locators are microprocessor-based systems that incorporate advanced digital signal processing techniques to quickly and efficiently locate underground facilities – even years after construction or maintenance.

Designed to be more accurate, faster and more integrated than ever before, the 3M Dynatel EMS iD Marker Locators allow you to accurately and easily

- Locate, read and write to ID markers
- Pinpoint the exact depth and location of all existing models of properly installed underground passive EMS markers
- Direct depth reading of ID markers
- Locate two different marker frequencies simultaneously

Electronic Marker Systems

1432	Telephone
1433	Power
1434	Water
1435	Waste Water
1436	Gas

3M™ Near Surface Markers

Ideal for marking underground and street-access facilities up to 610mm in depth. Its 89mm long cylindrical size and shape allows for easy installation in asphalt, concrete or rock without extensive digging or drilling

1255	Telephone
1256	Power
1257	Water
1258	Waste Water
1259	Gas

3M™ Mini Markers

Designed for marking applications at depths up to 1.83m. Spokes in the 210mm diameter mini-marker help stabilize it in the correct position after placement.

1401-XR	Telephone
1402-XR	Power
1403-XR	Water
1404-XR	Waste Water
1405-XR	Gas
1407-XR	CATV
1408-XR	Gen. Purpose

3M™ Ball Markers

Engineered for narrow trench applications up to 1.5m in depth, the 102mm diameter ball marker has a unique, patented self-levelling feature that ensures an accurate, horizontal position regardless of how it is placed in the ground.

1250	Telephone
1251	Power
1252	Water
1253	Waste Water
1254	Gas

Full Range

The full-range marker is suited for deep applications up to 2.44m. Its 38cm diameter makes it ideal for use as a digging shield over sensitive underground facilities.

Electronic Marker Systems

3M™ I.D. Marker Ball

Ball markers make the job of precisely locating underground facilities faster and easier. 3M EMS 1400 Series iD Ball Markers are the first of a new series of markers that perfectly complement the existing line of EMS passive markers by providing more information than ever. These ID markers come pre-programmed with a unique identification number and can also be programmed to include customer specific information such as facility data, hazard levels, type of application, placement date and other important details.

1421-XR/iD	Telephone
1422-XR/iD	Power
1423-XR/iD	Water
1424-XR/iD	Waste Water
1425-XR/iD	Gas
1427-XR/iD	CATV
1428-XR/iD	Gen. Purpose

3M™ Disc Marker

Used to mark flush mounted facilities which become covered by backfill. The disc markers can be easily attached to the underside of any non metallic lid of a facility which is buried up to a depth of 1.2 metres (4ft).

1411-XR/iD	Telephone
1412-XR/iD	Power
1413-XR/iD	Water
1414-XR/iD	Waste Water
1415-XR/iD	Gas
CATV	
Gen. Purpose	

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FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, CUT-OUTS

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