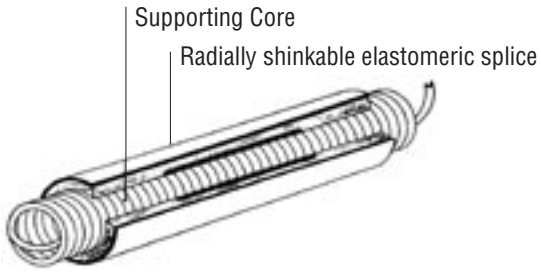
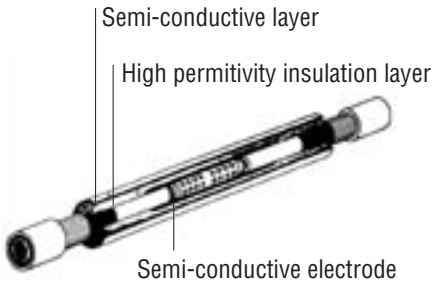
Medium Voltage Joints & Terminations

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, Armoured

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

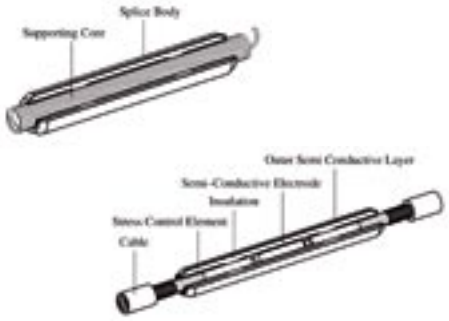
Note: These are single phase kits, one is required for each phase to be joined that falls below the minimum range of the joint.

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 – 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

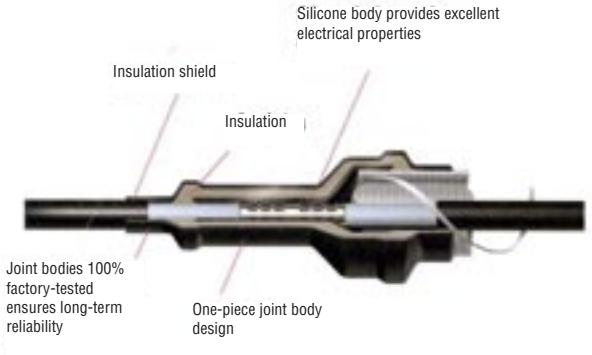
- Excellent performance and reliability developed from the QS2000 inline splice
- Constructed from high-performance LSR - silicone
- Excellent shrinkage at low temperatures
- Permanent radial pressure on the cable
- Outstanding dielectric properties
- Very high thermal stability and long-term elasticity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

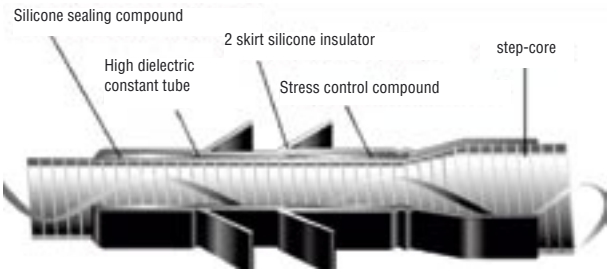
Kit Ref	Application Range CSA (mm2)	Diameter over Primary Insulation (mm)
95-AC643-1	120-630	33.5-53.8

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.

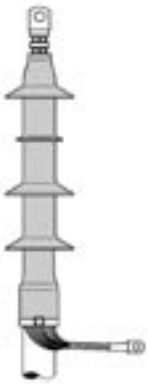
Advantages of 3M Silicone as an insulator are:

- 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

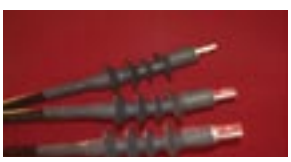
3M™ QTIII Outdoor Single Core Terminations - Polymeric / Copper Wire Screened / Non Armoured

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



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 715-6/240	240	33.4 - 37.6	CC 240
94-EE 715-6/300	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 - 185mm²	11kV	SBT1	3kA / 3 seconds
	11kV	SBT2	7kA / 3 seconds
	11kV	SBT3	13.1kA / 3 seconds
Paper Cable 240 - 400mm²	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

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 -155	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 12/20 (24) 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

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