

3M Electrical Markets  
2009 Catalog



# Cable Solutions

Reliable Quick Splice & Termination

**3M**

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## 3M Electrical Tape Chart

World - Class Reliability and Performance are the indices of secured electrical installations. Here are the electrical tapes that meet such precept:

PRODUCT NAME		PRODUCT DESCRIPTION	TAPE THICKNESS	SIZES AVAILABLE	TEMPERATURE RATING	TYPICAL APPLICATIONS
<b>Vinyl Insulation Tapes</b>						
Scotch™ Super 33+ Premium Vinyl Electrical Tape		Highly conformable in all weather applications; resists UV rays, abrasion, corrosion, alkalis & acids. Flame retardant UL listed. CSA certified.	7 mil	3/4" x 66' 3/4" x 44' 3/4" x 20'	105°C 220°F	Primary insulation for splices up to 600V. Protective jacketing.
Scotch™ 35 Color Coding Tape		9 fade resistant colors, excellent insulating properties. Resist UV rays, abrasion, corrosion, alkalis & acid.	7 mil	3/4" x 66' 1/2" x 20'	105°C 220°F	Phase identification & marking. Harnessing
Scotch™ Super 88 Premium Vinyl Electrical Tape		All weather; heavy duty, abrasion resistant, fast build up; UL listed. CSA certified.	8.5 mil	3/4"x 66' 3/4"x 44' 1 1/2" x 44"	105°C 220°F	Primary insulation for splices up to 600V. Protective jacketing.
Scotch™ 22 Heavy Duty Vinyl Electrical Tape		Thicker for increased mechanical strength, abrasion resistant. UL listed. CSA certified. Electrical insulating.	10 mil	3/4" x 36 yards 1" x 36 yards 2" x 36 yards	80°C 176°F	Bus bar insulation. Cable jacket repair
Temflex 1701 Commercial-Grade Vinyl Electrical Tape		Commercial-grade electrical tape UL Listed, CSA Certified	7 mil	3/4" x 19.7' 3/4" x 52'	80°C 176°F	Protective jacketing. Harnessing

### Corrosion Protection Tapes

Scotchrap™ 50 and 51 All Weather Corrosion Protection Tapes  
\*Must be used w/ Scotchrap Pipe Primer



All weather performance and corrosion resistance. Resistant to impact & abrasions.

50 is 10 mil  
51 is 20 mil

1" x 100'  
2" x 100'  
4" x 100'  
6" x 100'

80°C  
176°F

Corrosion protection on pipes, conduits & fittings, etc.

Scotchrap™ Pipe Primer



Quick dry, non-sag rubber base primer that prepares metal surfaces for tape application.

1 gallon can

80°C  
176°F

For use with Scotchrap 50 & 51 tapes & Temflex 1100 Tape.

## 3M Electrical Tape Chart

PRODUCT NAME	PRODUCT DESCRIPTION	TAPE THICKNESS	SIZES AVAILABLE	TEMPERATURE RATING	TYPICAL APPLICATIONS
<b>Splicing &amp; Terminating Tapes</b> Scotch™ 13 Semiconducting Tape	 Rubber tape, Semi conductive Compatible with cable semi-conducting jackets.	30 mil	3/4" x 15'	continuous: 90°C / 194°F short term: 130°C / 266°F	Electrically round high voltage connections. Provide cable shield continuation.
Scotch™ 23 Rubber Tape	 High & low voltage insulating, self-fusing rubber tape.	30 mil	3/4" x 30' 1" x 30' 1 1/2" x 30' 2" x 30'	continuous: 90°C / 194°F short term: 130°C / 266°F	Primary electrical insulation for splicing all solid dielectric cables through 69kV.
Scotch™ 24 Shielding Tape	 All metal open weave shielding braid, conformable, temperature stable.		1" x 15' 1" x 100'		Continue electrostatic shielding across splice.
Scotch™ 25 Grounding Braid	 All metal woven braid; high current carrying capacity of 6 AWG wire; solderable.		1/2" x 15'		Conformable ground braid for splices & terminations
Scotch™ 27 and 69 Glass Cloth Tapes	 Woven insulating glass cloth; high temperature resistance; high mechanical strength. UL Recognized.	27 is 7 mil 69 is 7.5 mil	1/2" x 66' 3/4" x 66'	27 is Class B. temp (130°C / 266°F) 69 is class H temp (180°C / 356°F)	Heat-stable insulation for furnace & oven controls, motor leads, & switches.
Scotch™ 70 Self-Fusing Silicone Rubber Tape	 Arc & track resistant; self fusing; long lasting silicone rubber.	12 mil	1 1/2" x 20' 3" x 20'		Protective overwrap for terminating high voltage cables.
Scotch™ 130C Linerless Rubber Splicing Tape	 High voltage insulating; thermally conductive; self-bonding.	30 mil	3/4" x 30'	continuous: 90°C/194°F short term: 130°C / 266°F	Primary electrical insulation for splicing all solid dielectric cables through 69kV.
Scotchfil™ Electrical Insulation Putty	 General purpose rubber insulating tape.	30 mil	3/4" x 15' 1 1/2 x 15'	continuous: 90°C / 194°F short term: 130°C / 266°F	All-voltage splicing, jacketing, & general insulating.
Scotch™ 2510 and 2520 Varnished Cambric Tapes	 Yellow, varnish coated cotton cloth 2510: no adhesive; 2520: adhesive.	2510 is 7 mil 2520 is 9 mil	3/4" x 60' 3/4" x 36 yds. 1" x 36 yds.	105°C 220°F	Insulate bus bars, motor leads (for re-entry), service drop connections.
Scotch™ 31 Heavy Duty Mining Tape	 Tough, abrasion-resistant backing for jacket repair on mining cables	.06 in	2" x 6' 2" x 8.5' 2" x 10'		On-site, quick repair of mining cables
Scotch™ 220 and 2210 Vinyl Mastic/ Scotch 06147 and 06149 Moisture Sealant	 Excellent moisture sealant; tough vinyl backing; electrical insulating.	2200 is 125 mil 2210 is 90 mil 6147 is 45 mil 6149 is 45 mil	6 1/2" x 4 1/2" 3 1/4 x 4 1/2" 4" x 10' 2 1/2" x 2 1/2"	80°C 176°F	Insulate moisture-seal & pad connections up to 600 V.
Scotch™ 2228 Rubber Mastic Tape	 Self-fusing rubber based compound bonded to a moisture sealing mastic; all weather,	65 mil	2" x 10'	90°C / 194°F emergency overload of 130°C / 266°F	Insulate, pad & seal bus bar & splice connections.
Scotch-Seal™ 2229 Mastic Tape Compound	 Conformable and durable mastic, Excellent moisture & environmental seal.	125 mil	3 3/4"x10', 1"x10' 2 1/2" x 3 3/4' 3 3/4" x 3 3/4' 6 1/2" x 3 3/4'	80°C 176°F	Sealing high voltage cables & accessories

## 3M Cold Shrink Termination Kits

### 3M QT-II Outdoor Silicone Rubber Termination Kits

#### 5630K Series

**Voltage Rating:**

**5-35 kV,**

**IEEE 48, Class I**

The 5630K series kits are Class 1 terminations and will accommodate shielded cables, tape, wire and UniShield™ from 5 kV to 15 kV. With an additional insulator (sold separately), the 5630K will handle 25 kV and 35 kV. Just four kits cover the complete application range from 2 AWG through 1500 kcmil. Each kit contains enough material to make three terminations.

The 5630K series combines silicone rubber superiority and Hi-K stress control with Cold Shrink convenience to make terminating shielded cables in both indoor and outdoor applications fast, easy and reliable without heat or flame.

The silicone rubber insulator provides superior protection against moisture and industrial airborne contamination. The Hi-K stress over the entire surface of the insulator. The need or bulky stress cones and unnecessary length is eliminated, requiring less space in tight termination locations.

The exclusive Cold Shrink core design flares the base of the termination for easy positioning over the shielded cable and jacket, eliminating the need for special adaptors.



**Affordable Industry-Standard ColdShrink Termination**

### Selection Guide

Kit No.	Conductor Sizes (AWG and kcmil)					Primary Insulation O.D. Range (in.)	Cable Jacket O.D. Range (in.)
	5 kV	8 kV 100%	8 kV 133%	15 kV 100%	15 kV 133%		
5633 K	3/0-300	2/0-250	1/0-4/0	#2-3/0	#2-1/0	.64-.90	.80-1.20
5635K	350-750	300-750	250-600	3/0-500	2/0-350	.84-1.33	1.00-1.60
5636K	750-1500	750-1250	600-1000	500-1000	350-750	1.10-1.65	1.30-1.90
5637K	1000-2000	1000-2000	800-1750	750-1750	600-1500	1.30-1.95	1.50-2.40

*Note:* Because of the various factors effecting cable sizes, final kit selection is determined by cable insulation O.D.

*Note:* Additional insulator needed. Order separately. Lugs not included.

\*Each kit contains enough material to make three terminations (except lugs) through 15 kV. Additional insulators needed for 25 kV and 35 kV.

### Additional Insulator Guide

(for 25 kV and 35 kV Terminations, three insulators needed per kit)

Kit No.	Additional Insulator O.D. Range	Conduct Size (AWG-kcmil)		Product	UPC	Conductor Size	Conductor Insulation O.D. Range	Cable Jacket O.D. Range	Case Qty.
		25 kV	35 kV						
5633K plus 3 pcs of 30J04S	.64-.90 in. 16.3-22.9 mm	Insulators/Kit: 3 2 -		5841	12291	2-4/0 AWG 35-100 mm <sup>2</sup>	0.30-1.18" (8-30 mm)	1.20-1.90" (30-48mm)	1
5635K plus 3 pcs of 30K04S	.84-1.25 in.	1-250 21.3-31.8 mm	2-3/0	5842	12292	4/0 AWG-500 kcmil (120-250 mm <sup>2</sup> )	0.77-1.88" 20-48 mm)	1.80-3.10" (46-79 mm)	1
5636K plus 3 pcs of 30L04S	1.05-1.50 in. 26.7-38.1 mm	4/0-500	3/0-350	<i>Note:</i> The final determining factor is the conductor insulation O.D. and the cable jacket O.D.					
5637K plus 3 pcs of 30M04S	1.36-1.95 in.	500-1250 34.5-49.5 mm	350-1000						

## 3M Cold Shrink Termination Kits

### 3M QT-II Indoor Silicone Rubber Termination Kits

#### 5620K Series

**Voltage Rating: 5-15 kV**

**Meets IEEE 48, Class 1**

The 5620K series terminations are one piece, non-skirted Cold Shrink rubber designed specifically for shielded cables, tape, wire and UniShield™ from 5kV to 15 kV indoor applications. Just five kits cover the complete application range from 8 AWG to 1500 kcmil.

The Cold Shrink delivery system of the 5620K series requires no torches or heat. You simply unwind the core and the termination shrinks tight. The series also features a mechanical groundstrap. There's no soldering and no worries about heat related cable damage.

The Hi-K stress control tube eliminates bulky stress cones, making the termination almost the same diameter as the cable. And, because they require cable cutback of only 6-1/2 to 9 inches (depending on cable and kit size), the compact design of the 5620K can be a real space saver in either an upright or inverted application. The 5620K series is an integrated, one-piece termination - no extra parts or adapters are needed. All the materials needed to make three Class 1 terminations are included in one box.



#### Selection Guide

Product	Conduct Size Range (AWG & kcmil)					Cable Insulation O.D. Range (in.)
	5 kV 100% (0.90" Insul.)	5 kV 133% 8 kV 100% (0.115" Insul.)	8 kV 133% (0.140" Insul.)	15 kV 100% (0.175" Insul.)	15 kV 133% (0.220" Insul.)	
5621K	8-4	8-6	8	-	-	0.32-0.46
5622K	2-2/0	4-1/0	6-1	-	-	0.44-0.65
5623K	2/0-250	1/0-4/0	1-3/0	4-2/0	4-1	0.56-0.87
5624K	300-750	250-750	4/0-600	2/0-500	1-350	0.78-1.30
5625K	600-1500	600-1500	500-1250	500-1250	350-1000	1.09-1.80

*Note: Because of the various factors effecting cable sizes, final kit selection is determined by cable insulation O.D.*



3M Cold Shrink sheath seal kits 5841 and 5842 are designed to seal the sheath area for three conductor cables without ground wires. They will handle copper or aluminum cable from #2 AWG through 500 kcmil (35-250 mm<sup>2</sup>). No heat is required when using these kits.

Each kit contains:

1) Molded sheath seal body 2) Instructions

Each kit makes one seal.

### Cold Shrink™ 5841 and 5842 Sheath Seal Kits

FEATURES	ADVANTAGES	BENEFITS
One piece termination Cold Shrink Technology	Installs Quickly Proven on Global Basis Maintains reliable interface	Saves Money Recognition, Reliable Saves Money
Expanded Silicone Insulator on Core	Accommodates Wide Range of Cable Sizes	Saves Money
Silicone Insulator	Track Resistant. Minimizes Leakage Currents in Wet Conditions	Saves Time & Money Reliable
Light Weight Uneven Skirt Diameter	Can be free hung-no brackets Optimize Performance Under Heavy Rain Conditions	Saves Money Saves Time & Money
High-k Stress Relief	Gives Lower Surface Stress and provides a More Compact Unit	Saves Money
Compact Design	Less Space Required Maybe used in Crowded places/ Manholes	Saves Money
Extended Base	Provides Seal at Termination Base	Saves Money
Complete Kits	Everything Needed in a Box	Saves time and Makes the Job Easier

## Termination Kits

### 3/C Cable Breakout Boots 3/C Phase Rejacketing System

3M™ Cold Shrink Silicone Rubber 8560 Series 3/C Cable Breakout Boots and 3M™ Silicone Rubber RJS Series 3/C phase Rejacketing Systems are designed to be used in conjunction with 3M terminations, to seal the breakout area and re-jacket the phases on three conductor cable.

#### 3M Cold Shrink Silicone Rubber 8560 Series 3/C Cable Breakout Boots

3M 8561 through 8565 Silicone Cold Shrink Cable Breakout Boots are a series of open-ended molded rubber sealing assemblies that are factory expanded and mounted on removable inner-supporting plastic ores. They are supplied for field installation in a pre-stretched condition.

8560 Series Breakout Boots are designed to protect the phase leg breakout of 3/C medium voltage power cable from exposure to moisture, contamination, corrosion, ozone, ultraviolet radiation, physical contact and other hazards associated with 3/C termination operating environments.

#### Features and Benefits:

- Versatile; installs quickly and accommodates a wide range of cable sizes.
- Simple hand application; no need for special installation tools.
- No torches or heat required.



- No specific user skills or craftsmanship required.
- Excellent resistance to ozone and ultra-violet radiation.
- High dry and wet insulation resistance.
- Highly flexible; accommodates all power cable supplier bend radius recommendations.
- Seals tight; retains resiliency and pressure even after prolonged years of aging and exposure.
- Compatible with all 3M Cold Shrink Termination

#### 3M™ 3/C Phase Rejacketing System

RJS Rejacketing Assemblies are a series of silicone rubber insulators incorporating an inner-expandable polyester braid designed to reduce sliding friction and deliver the insulator onto the cable. Rejacketing sleeves are designed to protect the phase legs (core) of 3/C shielded power cable from exposure to moisture, corrosion, ozone, ultra-violet radiation, physical contact and other hazards that are associated with termination operating environments. Rejacketing sleeves are designed to be used in conjunction with 3M Cold Shrink Breakout Boots and Silicone Rubber Terminations.

#### 3M™ Cold Shrink Silicone Rubber 3/C Cable Breakout Boots 8560 Series

Product Number	UPC (051138-)	Cable Phase Shield Diameter Range mm (in)	Cable Outer Jacket Diameter Range mm (in)	Inner Unit Pack	Case Qty.
8561	43143	12.2-18.3 (0.48-0.72)	29.7-49.3 (1.17-1.94)	-	1/box
8562	43144	15.5-24.2 (0.61-0.95)	37.1-67.8 (1.46 - 2.67)	-	1/box
8563	43145	20.8-30.0 (0.82-1.18)	48.8-78.7 (1.92-3.10)	-	1/box
8564	43146	26.0-41.1 (1.02-1.63)	64.0-109.8 (2.52-4.32)	-	1/box
8565	43147	27.7-49.3 (1.09-1.94)	66.1-119.4 (2.60-4.70)	-	1/box

#### 3M™ 3/C Phase Rejacketing Sleeve Selection Guide-Based on Diameter Range and Cable Conductor Size

Product Number	UPC (054007-)	Size Feet	Metallic Shield Diameter Range mm (in.)	3.3 kV (mm) IEC	3.3 kV (mm) JIS	5.0 kV (AWG) AEIC	6.6 kV (mm) IEC	6.6 kV (mm) JIS	8.0 kV (AWG) AEIC	Inner Unit Pack	Case Qty.
RJS-1-4FT	43098	4	10.9-15.2 (0.43-0.60)	16-35	8-22	8-2	16-25	8-10	6-4	-	10
RJS-1-1FT	43099	10	10.9-15.2 (0.43-0.60)	16-35	8-22	8-2	16-25	8-10	6-4	-	1
RJS-2-4FT	43100	4	15.2-20.3 (0.60-0.80)	50-95	38-60	1-3/0	35-70	14-38	2.2/0	-	10
RJS-2-10FT	43101	10	15.2-20.3 (0.60-0.80)	50-95	38-60	1-3/0	35-70	14-38	2.2/0	-	1
RJS-3-4FT	43102	4	20.3-26.0 (0.80-1.02)	120-185	100-150	4/0-400	95-150	60-100	3/0-350	-	10
RJS-3-10FT	43103	10	20.3-26.0 (0.80-1.02)	120-185	100-150	4/0-400	95-150	60-100	3/0-350	-	1
RJS-4-4FT	43104	4	25.9-32.4 (1.02-1.28)	240-300	200-250	500-750	185-300	150-250	400-600	-	10
RJS-4-10FT	43105	10	25.9-32.4 (1.02-1.28)	240-300	200-250	500-750	185-300	150-250	400-600	-	1
RJS-5-4FT	43106	4	32.5-41.1 (1.28-1.62)	-	300-325	800-1000	-	300-325	750-1000	-	10
RJS-5-10FT	43107	10	32.5-41.1 (1.28-1.62)	-	300-325	800-1000	-	300-325	750-1000	-	1

#### 3M™ 3/C Phase Rejacketing Sleeve Selection Guide-Based on Diameter Range and Cable Conductor Size

Product Number	UPC (054007-)	Size Feet	Metallic Shield Diameter Range mm (in.)	10 kV (mm) IEC	15 kV (AWG) AEIC	20 kV (mm) IEC	25 kV (AWG) AEIC	30 kV (mm) IEC	35 kV (AWG) AEIC	Inner Unit Pack	Case Qty.
RJS-1-4FT	43098	4	10.9-15.2 (0.43-0.60)	-	-	-	-	-	-	-	10
RJS-1-1FT	43099	10	10.9-15.2 (0.43-0.60)	-	-	-	-	-	-	-	1
RJS-2-4FT	43100	4	15.2-20.3 (0.60-0.80)	10-50	2-1	-	-	-	-	-	10
RJS-2-10FT	43101	10	15.2-20.3 (0.60-0.80)	10-50	2-1	-	-	-	-	-	1
RJS-3-4FT	43102	4	20.3-26.0 (0.80-1.02)	70-150	1/0-4/0	25-70	2-1/0	-	-	-	10
RJS-3-10FT	43103	10	20.3-26.0 (0.80-1.02)	70-150	1/0-4/0	25-70	2-1/0	-	-	-	1
RJS-4-4FT	43104	4	25.9-32.4 (1.02-1.28)	185-300	250-450	95-185	2/0-250	35-70	1/0-3/0	-	10
RJS-4-10FT	43105	10	25.9-32.4 (1.02-1.28)	185-300	250-450	95-185	2/0-250	35-70	1/0-3/0	-	1
RJS-5-4FT	43106	4	32.5-41.1 (1.28-1.62)	-	500-750	240-300	300-500	95-240	4/0-500	-	10
RJS-5-10FT	43107	10	32.5-41.1 (1.28-1.62)	-	500-750	240-300	300-500	95-240	4/0-500	-	1

# 3M Cold Shrink Splicing Kits

## 3M™ QS-III 5467 Series

**Voltage Rating: 15kV**  
**Meets IEEE 404**

The QS-III 5515 and 5516 Cold Shrink series splicing kits are molded silicone rubber inline splices for joining 15 kV Tape, Wire, LC and UniShield® power cables. It is a cold shrink design. Kits can be ordered with connectors packed in the kit or the kit and connector can be ordered as separate items. See page 12 to order 3M connectors. Each kit makes one splice.



Tape Shielded Cable



UniShield® Cable



Wire Shielded Cable



Longitudinally Corrugated (LC) Shielded Cable

### 3M QS-III 5515 and 5516 Cold Shrink Series Selection Guide

Product Series	UPC (054007-)	Primary Insulation O.D. Range	Conductor Size	Connector	Case Qty.
Tape Shielded Cable, Wire Shielded Cable, UniShield® Cable, Longitudinally Corrugated (LC) Shielded Cable See above for cable type illustrations.					
5515	42134	1.02 - 1.55"	350 - 750 kcmil (25,9 - 39,4 mm)	None (185 - 325 mm²)	1
5515-350-AL	42135	1.02 - 1.55"	350 kcmil (25,9 - 39,4 mm)	20011	1
5515-350-CU	42898	1.02 - 1.55"	350 kcmil (25,9 - 39,4 mm)	10011	1
5515-500-AL	42899	1.02 - 1.55"	500 kcmil (25,9 - 39,4 mm)	20014	1
5515-500-CU	42136	1.02 - 1.55"	500 kcmil (25,9 - 39,4 mm)	10014	1
5515-750-AL	42900	1.02 - 1.55"	750 kcmil (25,9 - 39,4 mm)	20019	1
5515-750-CU	42137	1.02 - 1.55"	750 kcmil (25,9 - 39,4 mm)	10019	1
5516	42139	1.29 - 2.00"	750 - 1500 kcmil (32,8 - 50,8 mm)	None (400 - 725 mm²)	1
5516-750-AL	42354	1.29 - 2.00"	750 kcmil (32,8 - 50,8 mm)	20019	1
5516-750-CU	43255	1.29 - 2.00"	750 kcmil (32,8 - 50,8 mm)	10019	1
5516-1000-AL	42901	1.29 - 2.00"	1000 kcmil (32,8 - 50,8 mm)	20024	1
5516-1000-CU	42106	1.29 - 2.00"	1000 kcmil (32,8 - 50,8 mm)	10024	1

### Features / Benefits

#### 3M QS-III Cold Shrink Cable Splices

Silicone body provides excellent electrical performances and superior low temperature handling

One piece splice body design

Built-in semiconductive electrodes

Wide cable range

Field proven technology

Splice bodies are 100% factory tested

No heat, flames or special installation tools required.

Fast recovery in cold temperatures

Minimal training required

Faster installation

No need for semiconducting tape

Allow transitioning of different size cables

Easy, straightforward installation

Field reliability

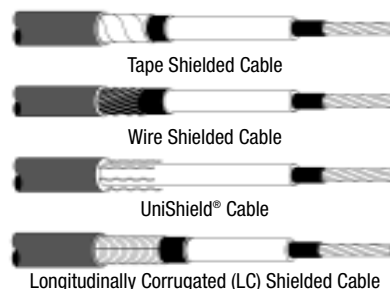


## Splicing Kits

### 3M™ QS-III 5535A and 5536A Series

**Voltage Rating: 35kV**  
**Meets IEEE 404**

3M QS-III 5535, 5536 Cold Shrink series splicing kits are inline splices for joining 35 kV Tape, Wire, LC, and UniShield® power cables. The cold shrink splice body is a one-piece molded design made of specially formulated silicone rubbers, while the jacketing is made of rubber for its special physical properties. Each splice is high-voltage production tested to ensure reliability. Kits can be ordered with connectors packed in the kit or the kit and connector can be ordered as separate items. See page 14 to order 3M connectors. Each kit makes one splice.



### 3M QS-III 5535 and 5536 Cold Shrink Series Selection Guide

Product Series	UPC (054007-)	Primary Insulation O.D. Range	Conductor Size	Connector	Case Qty.
Tape Shielded Cable, Wire Shielded Cable, UniShield® Cable, Longitudinally Corrugated (LC) Shielded Cable See above for cable type illustrations.					
5535	43071	1.05 - 1.68"	1/0 AWG - 350 kcmil (26,7 - 42,7 mm)	None (60 - 150 mm <sup>2</sup> )	1
5535-1/0-AL	43072	1.05 - 1.68"	1/0 AWG	20005 (26,7 - 42,7 mm)	1
5535-1/0-CU	43077	1.05 - 1.68"	1/0 AWG	10005 (26,7 - 42,7 mm)	1
5535-2/0-AL	43073	1.05 - 1.68"	2/0 AWG	20006 (26,7 - 42,7 mm)	1
5535-2/0-CU	43078	1.05 - 1.68"	2/0 AWG	10006 (26,7 - 42,7 mm)	1
5535-3/0-AL	43074	1.05 - 1.68"	3/0 AWG	20007 (26,7 - 42,7 mm)	1
5535-3/0-CU	43079	1.05 - 1.68"	3/0 AWG	10007 (26,7 - 42,7 mm)	1
5535-4/0-AL	43075	1.05 - 1.68"	4/0 AWG	20008 (26,7 - 42,7 mm)	1
5535-4/0-CU	43080	1.05 - 1.68"	4/0 AWG	10008 (26,7 - 42,7 mm)	1
5535-250-AL	43076	1.05 - 1.68"	250 kcmil	20009 (26,7 - 42,7 mm)	1
5535-250-CU	43081	1.05 - 1.68"	250 kcmil	10009 (26,7 - 42,7 mm)	1
5535-350-AL	04591	1.05 - 1.68"	350 kcmil	20011 (26,7 - 42,7 mm)	1
5535-350-CU	04592	1.05 - 1.68"	350 kcmil	10011 (26,7 - 42,7 mm)	1
5536	43082	1.31 - 2.12"	350 - 1000 k (33,3 - 53,8 mm)	None (185 - 500 mm <sup>2</sup> )	1
5536-350-AL	43083	1.31 - 2.12"	350 kcmil (33,3 - 53,8 mm)	20011	1
5536-350-CU	43087	1.31 - 2.12"	350 kcmil (33,3 - 53,8 mm)	10011	1
5536-500-AL	43084	1.31 - 2.12"	500 kcmil (33,3 - 53,8 mm)	20014	1
5536-500-CU	43088	1.31 - 2.12"	500 kcmil (33,3 - 53,8 mm)	10014	1
5536-750-AL	43085	1.31 - 2.12"	750 kcmil (33,3 - 53,8 mm)	20019	1
5536-750-CU	43089	1.31 - 2.12"	750 kcmil (33,3 - 53,8 mm)	10019	1
5536-1000-AL	43086	1.31 - 2.12"	1000 kcmil (33,3 - 53,8 mm)	20024	1
5536-1000-CU	43090	1.31 - 2.12"	1000 kcmil (33,3 - 53,8 mm)	10024	1

## Splicing Kits

### QS 2000 E Medium-Voltage Power Cables

#### Voltage Rating: 6/10(12) kV and 12/20(24) kV

The 3M QS2000 E is a cold shrink, one-piece multilayer silicone rubber splice body with integrated stress control device, insulation and outer semi-conductive layer. The 3M QS2000 E silicone splice body is delivered on a removeable plastic supporting core. During the installation the ribbon core is unwound counter clockwise, allowing the splice body to shrink onto the cable joint. The applied permanent radial pressure guarantees a reliable function over the entire lifetime.



#### PRODUCT APPLICATIONS

##### Straight joints

1. Polymeric insulated single core cables according to HD 620
2. Polymeric insulated three core cables according to HD 620
3. Paper insulated three core cables according to HD 621

##### Transition joints

1. Paper insulated single core and three core cables according to HD 621
2. Three core polymeric cable to three single core polymeric cables according to HD 620

#### PHYSICAL AND ELECTRICAL PROPERTIES

The specially formulated silicone material provided high elasticity, easy installation at low temperatures and superior electrical performance over a wide range of operating temperatures.

QS 2000 E Selection Table

QS 2000 E Kit No.	Cable Dimensions				Connector Dimensions	
	Diameter over Cable Jacket max. (mm)	Diameter over Insulation (mm)	Cross Section Range (mm <sup>2</sup> )		Diameter over Connector (mm)	Connector length max. (mm)
			6/10(12) kV U <sub>max</sub>	12/20(24) kV U <sub>max</sub>		
92-AS 610-1	36.0	14.6 - 25.2	50-150	-	28.0	150
92-AS 620-1	46.0	19.1 - 36.8	120-400	-	42.0	230
92-AS 630-1	74.0	33.4 - 67.6	500-1000	-	60.0	300
93-AS 620-1	46.0	19.1 - 36.8	-	50-300	38.0	170
93-AS 630-1	74.0	33.4 - 67.6	-	400-1000	60.0	270

## 3M Tape & TapeCast Splicing Kits



### TAPE SPLICING KITS (5-35 KV)

	INLINE			TEE		
	5 & 8 kV	15 kV	35 kV	5 & 8 kV	15 kV	35 kV
5717	#4 - 250 MCM	#4 - #2		-	-	
5718	300 - 500 MCM	#1 - 4/0 AWG		#4 - 2/0 AWG	-	
5719	550 - 1000 MCM	250 - 500 MCM		3/0 - 350 MCM	#4 - #1 AWG	
5720		550 - 1000 MCM	#1 - 4/0	400 - 750 MCM	1/0 - 350 MCM	
5721			250 - 500 MCM	750 - 100 MCM	400 - 1000 MCM	#1 - 4 0 AWG
5722			550 - 1000 mcm	800 - 1000		250 - 500 mcm
5723						600 - 1000 MCM

*Note: \*1 splice per kit \*Connectors not included (please refer to p. 14).*



### TAPECAST SPLICING KITS (5-35 KV)

	INLINE			TEE		
	5 & 8 kV	15 kV	35 kV	5 & 8 kV	15 kV	35 kV
5731	#6 - 3/0 mcm			#8		
5732	4/0 - 300 mcm	#6 - 1/0		#6 - #2		
5733	400 - 600 mcm	2/0 - 400 mcm		#1 - 300 mcm	#2 - 3/0	
5734	700 - 1500 mcm	500 - 1000 mcm	#1 - 3/0	400 - 600 mcm	4/0 - 500 mcm	
5735			4/0 - 500 mcm	750 - 100 mcm	600 - 1000 mcm	
5736			550 - 1000 mcm			#1 - 4/0
5737						250 - 500 mcm
5738						600 - 1000 mcm

*Note: \*1 splice per kit \*Connectors not included (please refer to p. 14).*

### SOLID INSULATION, METALLIC SHIELD, ARMORED, SOLID JACKET

	5 kV	8 kV	15 kV	25 kV	35 kV
5741P	2/0 - 350 mcm	2/0 - 4/0 AWG			
5742P	500 - 750 mcm	350 - 500 mcm	2/0 - 350 mcm		
5743P		750 mcm	500 mcm		
5744P			750 mcm	2/0 - 4/0 AWG	
5745P				350 - 500 mcm	2/0 AWG
5746P				750 mcm	4/0 - 350 mcm
5747P					500 - 750 mcm

*Note: \*Connectors not included (please refer to p. 14).*

## Splicing Kits

### Scotchcast™ Inline Resin Splicing Kits

#### I. 82-A Series

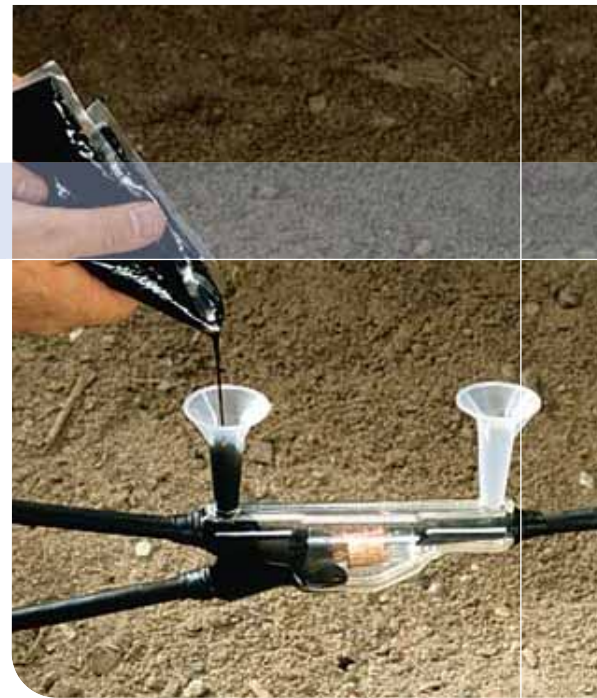
Voltage Rating: Up to 5 kV non-shielded  
UL 486D listed, File # E102356

Use the 82-A series kits to insulate and moisture-seal single conductor, non-shielded cables through 5 kV and multi-conductor cables through 1000V.

Each kit contains a snap-together mold body which fits around the splice, two funnels, tape for sealing mold ends and Scotchcast 4 epoxy electrical insulating resin in a Unipak™ container for clean and easy handling. These kits may be used for above ground, direct buried or submerged applications.

#### Ordering Information

Product UPC	Voltage Rating (max.)	*Cond. Size	Max. Cable O.D.	Max. Conn. O.D. Sleeve Type
82-A1 25024	5 kV	Up to 2 AWG (30 mm <sup>2</sup> )	.625" (16 mm)	406" (10 mm)
82-A2 25032	5 kV	2-3/0 AWG (35-80 mm <sup>2</sup> )	1.0" (25 mm)	.625" (16 mm)
82-A3 25040	5 kV	3/0-400 kcmil† (90-200 mm <sup>2</sup> )	1.438" (40 mm)	1.0" (25 mm)



† 500 kcmil when using Scotchlok brand 10014 Copper Compression Connector.

\* **Note:** Use insulation jacket or connector O.D. for final ordering criteria. CONNECTORS MUST BE ORDERED SEPARATELY. Kits are sized to 5 kV cable. 600V cable range may be slightly different.

#### II. 91-AB Low Voltage Branch Splice Resin Kits

Kit Number	Cable Type	Main Cable Size (mm <sup>2</sup> )	Branch Cable Size (mm <sup>2</sup> )	Max. Cable O.D. (mm)	
				Main	Branch
91-AB111	Shield / Non-shielded Armored	4 x 1.5 - 4 x 6 -----	4 x 1.5 - 4 x 4 -----	15	15
91-AB112	Shielded / Non-shielded Armored	4 x 6 - 4 x 10 4 x 4 - 4 x 10	4 x 4 - 4 x 10 4 x 2.5 - 4 x 6	22	21
91-AB113	Shielded / Non shielded Armored	4 x 16 - 4 x 25 4 x 10 - 4 x 16	4 x 6 - 4 x 16 4 x 4 - 4 x 10	29	22
91-AB114	Shielded / Non shielded Armored	4 x 35 - 4 x 70 4 x 35 - 4 x 50	4 x 16 - 4 x 25 4 x 6 - 4 x 16	35	25
91-AB115	Shielded / Non shielded Armored	4 x 95 - 4 x 150 4 x 70 - 4 x 120	4 x 25 - 4 x 50 4 x 10 - 4 x 35	50	30
91-AB116	Shielded / Non-shielded Armored	4 x 120 - 4 x 185 4 x 95 - 4 x 150	4 x 35 - 4 x 70 4 x 25 - 4 x 50	58	35
91-AB117	Shielded / Non-shielded Armored	4 x 150 - 4 x 240 4 x 150 - 4 x 240	4 x 70 - 4 x 150 4 x 50 - 4 x 120	65	45

#### III. 90-A Series Low Voltage Inline Splice Kits

Kit Number	Cable Conductor Size (AWG)	Cable Outside Diameter (mm)
90-A1	# 4 - 2/0	8 - 24
90-A2	2/0 - 400 MCM	14 - 30
90-A3	450 - 600 MCM	23 - 35
90-A4	750 - 1000 MCM	28 - 47

## ACCR

### Aluminum Conductor Composite Reinforced (ACCR)

#### The strong, lightweight, high capacity conductor

3M™ Aluminum Conductor Composite Reinforced (ACCR) is an all-aluminum-based conductor designed to improve transmission capacity, even in challenging situations and environments.

The tremendous advantages of 3M ACCR are due to innovations in the materials used. Compared to conventional steel core conductors, the 3M ACCR core has:

- Equivalent strength and durability
- Less weight
- Better corrosion resistance
- Equivalent modulus
- Higher electrical conductivity
- Lower thermal expansion

This permits the use of higher operating temperatures, which in turn leads to higher ampacities. Both the core and the outer aluminum-zirconium strands contribute to the overall conductor strength and conductivity

#### Physical Characteristics

##### Aluminum Strands

The aluminum strands are composed of an aluminum-zirconium alloy and are round in shape, although trapezoidal is also available. The minimum conductivity of any individual aluminum strand is not less than 60 percent of the International Annealed Copper Standard (IACS).

The aluminum-zirconium strands are a hard drawn aluminum with mechanical properties very similar to 1350-H19 aluminum (23-25 ksi, 158-172 MPa) ultimate tensile strength. This is NOT a soft annealed aluminum. The addition of a small amount of zirconium to the aluminum confers the property of heat resistance. That is, the aluminum-zirconium may be heated to high temperatures, without softening (annealing) and losing its strength like 1350-H19 aluminum would. Thus when the aluminum-zirconium cools to ambient temperatures, it retains its strength.

##### Core Strands

The core strands contain aluminum oxide fibers embedded in high-purity aluminum forming a wire. This type of material is called a fiber reinforced metal matrix. It contains NO polymers or plastic: the base material is metallic aluminum. This material confers the properties that make 3M ACCR conductor lightweight, while performing with high strength and low sag at high temperatures. This is because the fiber reinforced metal matrix composite has strength equivalent to steel, with weight (density) similar to aluminum, but with less thermal expansion than steel and strength retention at high temperatures. Additionally, some of the secondary properties are also favorable. These include low creep, high electrical conductivity (from the aluminum constituent), and corrosion resistance (similar to aluminum).



##### Conductor Stranding

3M ACCR uses constructions that are very similar to ACSR. It uses most of the same dimensions for wire sizes and conductor sizes. Aluminum-zirconium layers are helically stranded using the same lay lengths and lay directions as ACSR. The core wires are also helically stranded but use longer lay lengths than the steel cores found in ACSR.

##### 3M™ Aluminum Fiber Core

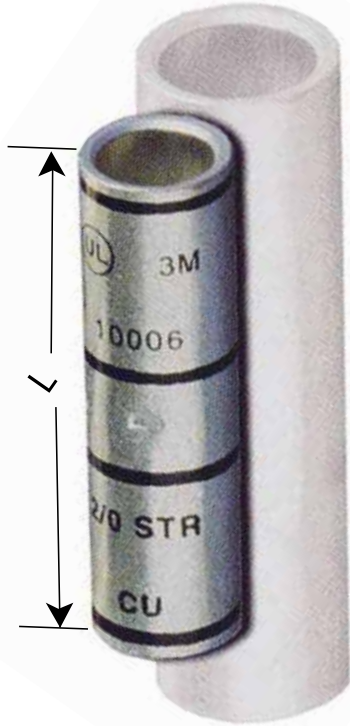
Each strand of 3M ACCR core wire is reinforced with tens of thousands of ultra-high-strength aluminum oxide fibers. The result is a solution specifically designed for high-temperature operation – providing dramatic ampacity gains with significantly less sag than standard options. 3M™ Aluminum Fiber Core



Closeup of 3M ACCR core material, consisting of aluminum oxide fibers embedded in high-purity aluminum.



## Terminal Lugs and Connectors

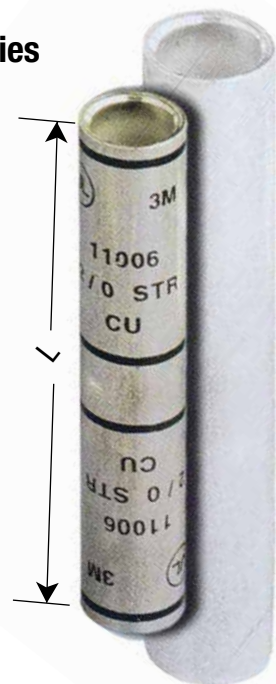


**10000 Series**  
Standard Barrel

Wire Size AWG or MCM	Dimension in Inches and (Millimeters)				Color Code	Packaging Carton
	Part Number	Interior Diameter Inch (mm)	Exterior Diameter Inch (mm)	L Inch (mm)		
6	10001	0.20 (5.0)	0.29 (7.4)	1.75 (44.5)	Blue	50
4	10002	0.25 (6.3)	0.34 (8.6)	1.75 (44.5)	Gray	50
2	10003	0.31 (7.8)	0.42 (10.6)	1.88 (47.7)	Brown	25
1	10004	0.36 (9.1)	0.46 (11.7)	1.88 (47.7)	Green	25
1/0	10005	0.39 (10.0)	0.51 (13.0)	1.88 (47.7)	Pink	25
2/0	10006	0.44 (11.2)	0.56 (14.2)	2.0 (50.8)	Black	10
3/0	10007	0.49 (12.4)	0.62 (15.7)	2.1 (54.0)	Tan	10
4/0	10008	0.55 (13.9)	0.69 (17.4)	2.1 (54.0)	Violet	10
250	10009	0.60 (15.1)	0.75 (19.1)	2.3 (57.2)	Yellow	3
300	10010	0.65 (16.5)	0.81 (20.7)	2.3 (57.2)	White	3
350	10011	0.7 (17.8)	0.88 (22.2)	2.4 (60.4)	Red	3
500	10014	0.84 (21.2)	1.06 (26.9)	2.9 (73.1)	Brown	3
750	10019	1.03 (26.2)	1.3 (33.0)	3.38 (85.8)	Black	3
1000	10024	1.73 (29.8)	1.5 (38.0)	3.8 (98.5)	White	3

Wire Size AWG or MCM	Dimension in Inches and (Millimeters)				Color Code	Packaging Carton
	Part Number	Interior Diameter Inch (mm)	Exterior Diameter Inch (mm)	L Inch (mm)		
2/0	11006	0.44 (11.2)	0.56 (14.2)	3.13 (79.4)	Black	10
3/0	11007	0.49 (12.4)	0.62 (15.7)	3.13 (79.4)	Tan	
4/0	11008	0.55 (13.9)	0.69 (17.4)	3.38 (85.8)	Violet	
250	11009	0.60 (15.1)	0.75 (19.1)	3.38 (85.8)	Yellow	3
300	11010	0.65 (16.5)	0.81 (20.6)	4.13 (104.8)	White	
350	11011	0.7 (17.8)	0.88 (22.2)	4.13 (104.8)	Red	
500	11014	0.84 (21.2)	1.06 (26.9)	4.63 (117.5)	Brown	3
750	11019	1.03 (26.2)	1.3 (33.0)	5.88 (149.3)	Black	
1000	10024	1.17 (29.8)	1.5 (38.1)	6.13 (155.6)	White	

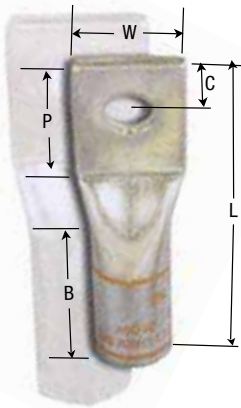
**11000 Series**  
Long-Barrel



# Terminal Lugs and Connectors

## 30000 Series

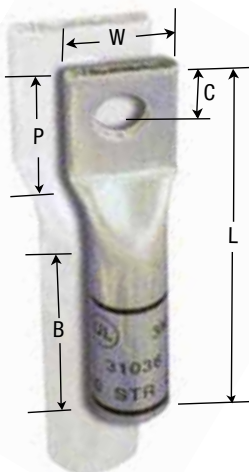
One-Hole  
Standard Barrel



Wire Size AWG or MCM	Stud Size	Part Number	Dimension in Inches and (Millimeters)							Color Code	Packaging Carton
			Interior Diameter Inch (mm)	Exterior Diameter Inch (mm)	L Inch (mm)	B Inch (mm)	W Inch (mm)	P Inch (mm)	C Inch (mm)		
6	#10	30014	0.20 (5.0)	0.29 (7.4)	1.780 (45.2)	0.86 (21.8)	0.43 (11.0)	0.75 (19.1)	0.38 (9.5)	Blue	50
	1/4	30015					0.5 (12.7)				
	5/16	30016									
4	#10	30018	0.25 (6.3)	0.34 (8.64)	1.94 (49.3)	0.75 (19.1)	0.49 (12.3)	0.89 (22.6)	0.38 (9.5)	Gray	50
	1/4	30019					0.59 (15.1)				
	3/8	30021									
2	1/4	30022	0.31 (7.8)	0.42 (10.6)	1.97 (50.0)	0.81 (20.57)	0.63 (15.9)	0.89 (22.6)	0.38 (9.5)	Brown	25
	5/16	30023									
	3/8	30024									
1	5/16	30027	0.36 (9.1)	0.46 (11.7)	1.97 (50.0)	0.81 (20.57)	0.69 (17.5)	0.75 (19.1)	0.38 (9.5)	Green	10
	3/8	30028									
1/0	5/16	30031	0.40 (10.0)	0.51 (13.0)	2.16 (54.9)	0.81 (20.7)	0.69 (17.5)	0.89 (22.6)	0.38 (9.5)	Pink	10
	3/8	30032									
2/0	3/8	30036	0.44 (11.2)	0.56 (14.2)	2.37 (60.2)	0.87 (22.2)	0.81 (20.9)	1.11 (28.2)	0.38 (9.5)	Black	10
3/0	1/2	30041	0.44 (12.3)	0.56 (15.5)	2.63 (66.8)	0.94 (23.8)	0.91 (23.1)	1.11 (28.2)	0.53 (13.5)	Tan	10
			0.49 (12.4)	0.62 (15.7)	2.63 (66.8)	0.94 (23.8)	0.91 (23.1)	1.11 (28.2)	0.53 (13.5)		
4/0	1/2	30045	0.49 (12.4)	0.62 (15.7)	2.63 (66.8)	0.94 (23.8)	0.91 (23.1)	1.11 (28.2)	0.53 (13.5)	Violet	10

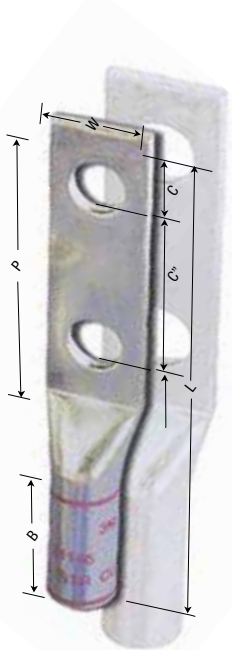
## 31000 Series

One-Hole  
Long Barrel



Wire Size AWG or MCM	Stud Size	Part Number	Dimension in Inches and (Millimeters)							Color Code	Packaging Carton
			Interior Diameter Inch (mm)	Exterior Diameter Inch (mm)	L Inch (mm)	B Inch (mm)	W Inch (mm)	P Inch (mm)	C Inch (mm)		
2/0	3/8	31036	0.44 (11.2)	0.56 (14.2)	2.84 (72.2)	1.44 (36.5)	0.81 (20.7)	0.89 (22.6)	0.38 (9.53)	Black	10
3/0	1/2	31041	0.49 (12.4)	0.62 (15.7)	3.13 (79.5)	1.44 (36.5)	0.90 (23.0)	1.11 (28.2)	0.53 (13.5)	Tan	10
4/0	1/2	31045	0.55 (13.9)	0.69 (17.4)	3.32 (84.3)	1.56 (39.6)	1.0 (25.4)	1.11 (28.2)	0.53 (13.5)	Violet	10
250	1/2	31049	0.60 (15.1)	0.75 (19.1)	3.38 (85.9)	1.5 (38.8)	1.11 (28.2)	1.11 (28.2)	0.53 (13.5)	Yellow	10
300	1/2	31053	0.65 (16.5)	0.81 (20.6)	3.78 (96.0)	1.94 (49.2)	1.22 (31.0)	1.11 (28.2)	0.53 (13.5)	White	10
350	1/2	31056	0.7 (17.8)	0.88 (22.2)	3.84 (97.5)	1.94 (49.2)	1.27 (32.3)	1.11 (28.2)	0.53 (13.5)	Red	10
400	1/2	31060	0.76 (19.3)	0.95 (24.1)	4.16 (105.7)	2.0 (50.8)	1.41 (35.8)	1.34 (34.2)	0.66 (16.68)	Blue	10
500	1/2	31066	0.84 (21.3)	1.06 (26.9)	4.5 (114.3)	2.19 (55.6)	1.53 (38.9)	1.34 (34.2)	0.66 (16.8)	Brown	10
	1/2	31067	0.92 (23.4)	1.19 (30.2)	5.12 (130.0)	2.6 (66.2)	1.69 (42.9)	1.75 (44.4)	0.88 (22.4)		
600	1/2	31068	0.92 (23.4)	1.19 (30.2)	5.12 (130.0)	2.6 (66.2)	1.69 (42.9)	1.75 (44.4)	0.88 (22.4)	Green	6

# Terminal Lugs and Connectors

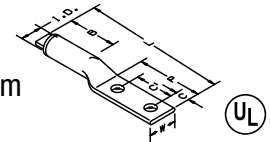


**31100 Series**  
Two-Hole  
Long Barrel

Wire Size AWG or MCM	Stud Size	Part Number	Dimension in Inches and (Millimeters)							Color Code	Packaging Carton	
			Interior Diameter Inch (mm)	Exterior Diameter Inch (mm)	L Inch (mm)	B Inch (mm)	W Inch (mm)	P Inch (mm)	C Inch (mm)			C' Inch (mm)
2	1/2	31125	0.31 (7.8)	0.42 (10.03)	4.85 (123.2)	1.25 (31.8)	0.63 (16.0)	3.0 (76.2)	0.63 (15.5)	1.75 (44.5)	Brown	25
1	5/16	31129	0.36 (9.1)	0.46 (9.1)	4.85 (123.2)	1.25 (31.8)	0.69 (17.5)	3.0 (76.2)	0.63 (15.9)	1.75 (44.5)	Green	10
1/0	1/2	31130	0.39 (9.9)	0.51 (13.0)	4.98 (126.5)	1.38 (31.5)	0.75 (19.0)	3.0 (76.2)	0.63 (15.9)	1.75 (44.5)	Pink	10
2/0	1/2	31137	0.44 (11.2)	0.56 (14.2)	5.03 (127.8)	1.50 (38.1)	0.81 (20.7)	3.0 (76.2)	0.59 (14.95)	1.75 (44.5)	Black	10
3/0	1/2	31141	0.49 (12.4)	0.62 (15.7)	5.13 (130.0)	1.44 (36.5)	0.91 (23.0)	3.0 (76.2)	0.63 (15.9)	1.75 (44.5)	Tan	10
4/0	1/2	31145	0.55 (13.9)	0.69 (17.4)	5.16 (131.0)	1.56 (39.7)	1.0 (25.4)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Violet	10
250	1/2	31149	0.59 (15.1)	0.75 (19.1)	5.31 (134.9)	1.56 (39.7)	1.03 (28.6)	3.0 (72.0)	0.63 (15.9)	1.75 (44.5)	Yellow	10
300	1/2	31153	0.65 (16.5)	0.18 (20.6)	5.75 (146.1)	1.94 (49.2)	1.22 (31.0)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	White	10
350	1/2	31156	0.7 (17.8)	0.88 (22.2)	5.75 (146.1)	1.94 (49.2)	1.31 (33.4)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Red	10
400	1/2	31160	0.76 (19.4)	0.95 (24.1)	6.0 (152.4)	2.12 (53.8)	1.41 (35.8)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Blue	10
500	1/2	31166	0.84 (21.3)	1.06 (26.9)	6.16 (156.5)	2.19 (55.6)	1.53 (38.9)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Brown	10
600	1/2	31168	0.92 (23.4)	1.88 (30.2)	6.72 (170.6)	2.62 (66.5)	1.69 (42.9)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Green	10
750	1/2	31172	1.03 (26.2)	1.3 (33.0)	7.0 (177.8)	2.81 (71.5)	1.72 (43.7)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	Black	10
1000	1/2	31178	1.75 (29.3)	1.5 (38.1)	7.28 (184.9)	2.94 (74.6)	1.72 (43.7)	3.0 (72.2)	0.63 (15.9)	1.75 (44.5)	White	6

## 40000 Series

Specifications and Ordering Information for Scotchlok™ 40000 Series Copper/Aluminum Lugs-Two Hole (AL9CU) up to 35 kV



Product Number	UPC (054007-)	Color Code	Wire Size	Stud Size	Dimensions							Minimum Order Case Qty.
					I.D.	L	B	W	P	C	C'	
40132	13608	Tan	1/0 AWG	3/8" (10 mm)	0.414" (10.5 mm)	5.28" (134.1 mm)	1.500" (38.1 mm)	0.880" (22.4 mm)	3.250" (82.6 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40137	13616	Olive	2/0 AWG	1/2" (12 mm)	0.439" (11.2 mm)	5.500" (139.7 mm)	1.500" (38.1 mm)	0.940" (23.9 mm)	3.250" (82.6 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40141	13624	Ruby	3/0 AWG	1/2" (12 mm)	0.484" (12.3 mm)	5.500" (139.7 mm)	1.500" (38.1 mm)	1.060" (26.9 mm)	3.250" (82.6 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40145	13632	White	4/0 AWG	1/2" (12 mm)	0.562" (14.3 mm)	5.940" (150.9 mm)	1.750" (44.5 mm)	1.190" (30.2 mm)	3.380" (85.9 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40149	13640	Red	250 kcmil	1/2" (12 mm)	0.594" (15.1 mm)	6.000" (152.4 mm)	1.750" (44.5 mm)	1.250" (31.8 mm)	3.380" (85.9 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40153	13657	Dark Blue	300 kcmil (150 mm <sup>2</sup> )	1/2" (12 mm)	0.650" (16.5 mm)	6.560" (166.6 mm)	2.250" (57.2 mm)	1.310" (33.3 mm)	3.560" (90.4 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40156	13665	Brown	350 kcmil	1/2" (12 mm)	0.720" (18.3 mm)	6.560" (166.6 mm)	2.250" (57.2 mm)	1.500" (38.1 mm)	3.560" (90.4 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40160	13673	Green	400 kcmil	1/2" (12 mm)	0.760" (19.3 mm)	6.880" (174.8 mm)	2.500" (63.5 mm)	1.620" (41.1 mm)	3.560" (90.4 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40166	13681	Pink	500 kcmil	1/2" (12 mm)	0.843" (21.4 mm)	7.310" (185.7 mm)	3.000" (76.2 mm)	1.750" (44.5 mm)	3.560" (90.4 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	10 each
40170	13699	Black	600 kcmil	1/2" (12 mm)	0.923" (23.4 mm)	7.500" (190.5 mm)	3.000" (76.2 mm)	1.750" (44.5 mm)	3.620" (91.9 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	6 each
40172	13707	Yellow	750 kcmil	1/2" (12 mm)	1.031" (26.2 mm)	8.250" (209.6 mm)	3.380" (85.9 mm)	1.750" (44.5 mm)	3.620" (91.9 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	6 each
40178	13715	Brown	1000 kcmil (500 mm <sup>2</sup> )	1/2" (12 mm)	1.193" (30.3 mm)	9.620" (244.3 mm)	4.620" (117.4 mm)	2.560" (65.0 mm)	3.620" (91.9 mm)	0.620" (15.7 mm)	1.750" (44.4 mm)	6 each



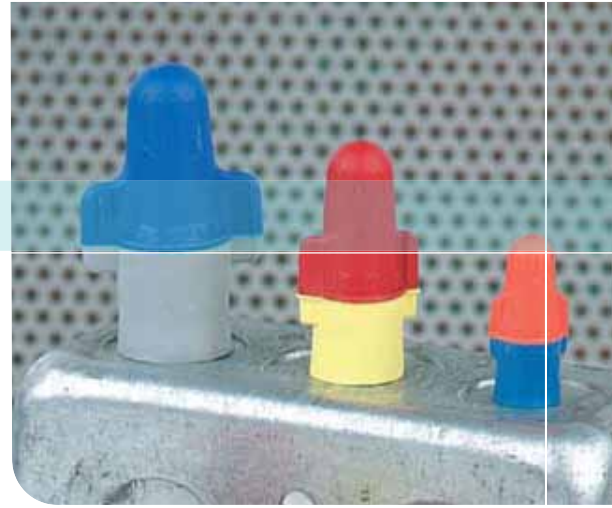
# Electrical Construction & Maintenance

## Spring Connectors

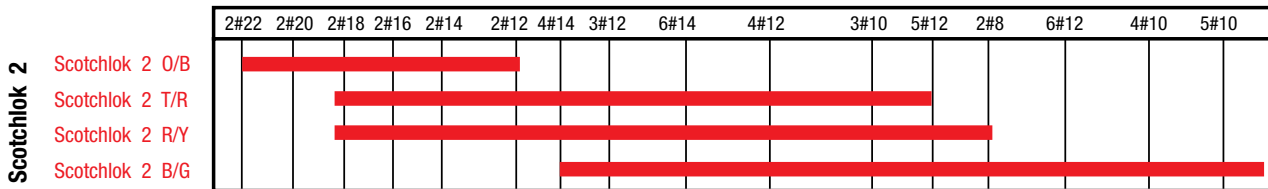
### 3M™ Scotchlok 2 Performance + Wire Connectors

#### Wire Connectors

Because of their increased wire range, just three “Performance +” Wire Connectors handle the work of seven standard connectors. O/B + replaces the orange, blue and gray wire nut style connectors, as well as 70% of the yellow wire nut and wing style connectors. R/Y + replaces both red and yellow wing style connectors. B/G + covers both the large blue and gray connectors. This simplifies selection of the right connector for a wide range of wiring jobs. There’s also less inventory to manage, and a better chance you’ll have the connector you need to do every job.



### Wire Range for Scotchlok 2 Connectors



## Features / Advantages / Benefits

### Spring Connectors

#### 3M “Performance +” Connectors (T/R+, O/B+, R/Y+, B/G+)

Wires feed deeper	Increases level of pull out	Security
Wide wire ranges	Three connectors replace seven	Saves money and time
Flexible skirt	Covers overstripped wires	Safety
New internal design	Smoother and faster installation	Improves quality and saves time

## Selection Information for 3M™ Scotchlok 3

Product Number	Color	Wire Range (AWG)	Quantity Bag/Case
B-222316	Blue	2#22 to 3#16	1000 pcs/ bag, 10 bags/case
G-222114	Grey	2#22 to 1#4	1000 pcs/ bag, 20 bag/case
O-120416	Orange	1#20 to 4#16	500 pcs/ bag, 10 bags/case
R-318810	Red	3#18 to 3#10	500 pcs/ bag, 10 bags/case
Y-320110	Yellow	3#20 to 1#10	500 pcs/ bag, 10 bags/case
HO-118416	Econo Orange	1#18 to 4#16	500 pcs/ bag, 20 bags/case
HR-318310	Econo Red	3#18 to 3#10	500 pcs/ bag, 10 bags/case
HY-118416	Econo Yellow	1#18 to 4#16	500 pcs/ bag, 10 bags/case
WB-21018	Winged Blue	2#10 to 1#18	100 pcs/ bag, 15 bags/case
WG-314310	Winged Grey	3#14 to 3#10	250 pcs/ bag, 10 bags/ case
WG-316512	Winged Red	3#16 to 5#12	500 pcs/ bag, 5 bags/case
WR-322310	Winged Tan	3#22 to 3#10	500 pcs/ bag, 10 bags/case
WY-218312	Winged Yellow	2#28 to 3#12	500 pcs/ bag, 10 bags/case

## Electrical Construction & Maintenance

### HTC Connectors

#### 3M H Tap (HTC) Connectors

**General:**

3M HTC, H Tap Connectors is an overhead line product used to connect conductors. The 3M HTC is composed of H-shaped body along with run and tap grooves which suits various size and types of conductor.

3M HTC Models are labeled basing from the run and tap conductor sizes for easy identification.



Model No.	Run		Tap	
	Wire Range (mm)	ACSR (AWG/MCM)	Wire Range (mm)	ACSR (AWG/MCM)
HTC-100	4.11 - 8.43	#6 - #2	4.11 - 8.43	#6 - #2
HTC-150	6.60 - 10.64	#3 - 1/0	4.11 - 8.43	#6 - #2
HTC-200	10.11 - 11.94	1/0 - 2/0	4.11 - 8.43	#6 - #2
HTC-250	12.61 - 14.30	3/0 - 4/0	4.11 - 8.43	#6 - #2
HTC-300	8.53 - 11.94	#1 - 2/0	4.11 - 11.35	#1 - 2/0
HTC-350	11.71 - 14.30	3/0 - 4/0	8.59 - 11.35	#1 - 2/0

Model No.	Run		Tap	
	Solid (AWG/MCM)	Stranded (AWG/MCM)	Solid (AWG/MCM)	Stranded (AWG/MCM)
HTC-100	#6 - #1	#6 - #1	#6 - #1	#6 - #1
HTC-150	#1 - 2/0	#3 - 2/0	#6 - 1/0	#6 - #1
HTC-200	3/0 - 4/0	2/0 - 3/0	#6 - 1/0	#6 - #1
HTC-250	250 - 300	4/0	#6 - 1/0	#6 - #1
HTC-300	2/0 - 4/0	#1 - 3/0	2/0 - 3/0	#1 - 2/0
HTC-350	250 - 300	3/0 - 4/0	2/0 - 3/0	#1 - 2/0

**PRIMARY APPLICATION**

The 3M H Tap connector is primarily used to tap a conductor from a continuous run conductor usually on secondary lines. It is capable of making connections between various combinations of aluminum based conductors.

### Features / Advantages / Benefits

**3M H Tap (HTC) Connectors**

Conformance to universal die code (U and D, HT dies)	Sufficient gripping force Ease of installation on the conductor	Sure connection
Third tap groove	For additional small conductor tapping	Savings
Applied inhibitor grease connection	Protection against corrosion	Excellent



## DBR and DBY Series

### 3M™ Direct Bury Products

These 3M underground electrical wire connectors splice and effectively moisture-seal two or more conductors for remote-control circuits in irrigation and landscape lighting systems.

**DBY-6 and DBR-6 are UL Listed and CSA Certified for 600V direct bury and submersion applications. UL File No. E102356 and CSA File No. LR91920.**

Each kit makes two splices.

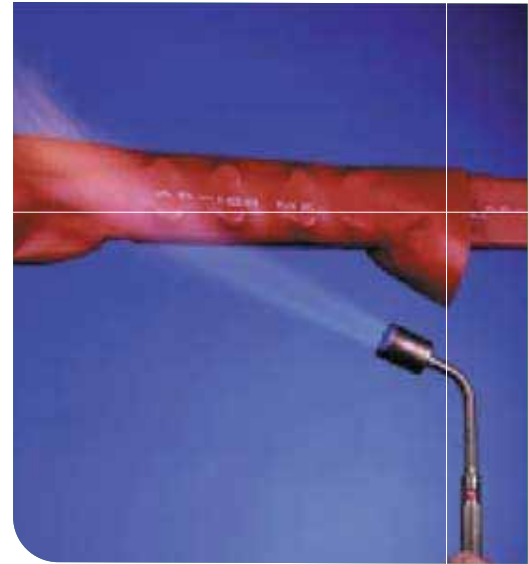
### Specification Information for 3M Direct Bury Products

Product Number	Description and Kit Contents	Wire Range (AWG)	Volts	Temperature Range	UL File No. E102356 and CSA File No. LR91920
DBR-6	(2) Tubes (2) Scotchlok R Connectors	5#16-3#10 2#12 (5,0-16,0 mm <sup>2</sup> )	600	32°-120°F (00-49°C)	CE UL SR
DBY-6	(2) Tubes (2) Scotchlok Y Connectors	2-5#18 thru 2#12 (2,0-7,5 mm <sup>2</sup> )	600	32°-120°F (0°-49°C)	CE UL SR
3570	Connector sealing pack containing 3M Scotchcast 400 epoxy resin	Accommodates Scotchlok 2 O/B, R/Y, Scotchlok Y, R, G, B and 3M 212, 312, 512	n/a	n/a	n/a





## Heat Shrinkable Tubes

### 3M™ BBI-A Series Bus Bar Tubing

3M BBI-A tubing is made of specially formulated, cross-linked, flame-retardant, track-resistant polyolefin that will shrink to fit rectangular, square or round bus bars. BBI-A will handle voltage ranges from 600 V to 35 kV, reducing your inventory requirements and saving you time and money. BBI-A material has a high resistance to splitting, while providing the flexibility to conform to bends in certain applications. Superior split resistance can prevent insulation failures and resulting downtimes. BBI-A is unaffected by normal cleaning fluids and is resistant to physical damage. Good thermal endurance (up to 110°C/ 230°F) contributes to longer life and more stable performance. Excellent dielectric strength allows the required space between bus bars and metal enclosures to be substantially reduced. Closer spacing reduces both the overall size of the assembly, and the overall cost. Note: Bus bar is packaged one roll per case, 20 or 50 feet long.



### Specification and Ordering Information for 3M™ Bus Bar Tubing

Product Number	UPC (051135-)	Outside Dimension (Bar Circumference A)	Rectangular	Square	Round (Diameter)	Case Qty.
						
<b>5, 8 &amp; 15 kV Bus Bar Size Ranges</b>						
BBI-3A	35726	3.28–5.57”	1 1/2 x 1/4–2 1/2 x 1/2”	1 x 1–1 1/2 x 1 1/2”	1 1/8–1 3/4”	20
	35727	(83–141 mm)	(38 x 6–64 x 13 mm)	(25 x 25–38 x 38 mm)	(29–44 mm)	50
BBI-4A	35728	5.43–8.86”	2 1/2 x 3/8–4 x 3/4”	2 x 2”	1 3/4–2 3/4”	20
	35729	(138–225 mm)	(64 x 10–102 x 19 mm)	(51 x 51 mm)	(44–70 mm)	50
BBI-5A	35730	6.67–10.86”	3 x 5/8–5 x 3/4”	2 x 2–2 x 1/2 x 2 1/2”	2 1/8–3 3/8”	20
	35731	(169–276 mm)	(76 x 16–127 x 19 mm)	(51 x 51–64 x 64 mm)	(54–86 mm)	50
BBI-6A	35732	7.57–12.86”	3 1/2 x 1/2–6 x 3/4”	2 1/2 x 2 1/2–3 x 3”	2 1/2–4”	20
	35733	(192–327 mm)	(89 x 13–152 x 19 mm)	(64 x 64–76 x 76 mm)	(64–102 mm)	50
BBI-7A	35734	8.28–13.00”	4 x 1/4–6 x 3/4”	2 1/2 x 2 1/2–3 x 3” 2	3/4–4 1/8”	20
	35735	(210–330 mm)	(102 x 6–152 x 19 mm)	(64 x 64–76 x 76 mm)	(70–105 mm)	50
BBI-8A	35736	10.29–16.43”	5 x 1/4–8 x 3/8”	3 x 3–4 x 4” 3	3/8–5 1/8”	20
	35737	(261–417 mm)	(127 x 6–203 x 10 mm)	(76 x 76–102 x 102 mm)	(86–130 mm)	50
BBI-9A	35876	12.29–19.23”	6 x 1/4–9 x 3/4”	3 1/2 x 3 1/2–5 x 5”	4–6 1/8”	20
	35877	(312–488 mm)	(152 x 6–229 x 19 mm)	(89 x 89–127 x 127 mm)	(102–156 mm)	50
BBI-10A	35878	15.43–24.14”	8 x 1/4–10 x 3/4”	5 x 5–6 x 6”	5–7 5/8”	20
	35879	(392–612 mm)	(203 x 6–254 x 19 mm)	(127 x 127–152 x 152 mm)	(127–194 mm)	50
<b>25 kV Bus Bar Size Ranges</b>						
BBI-3A	35726	3.28–3.56”	1 1/2 x 1/4–1 1/2 x 3/8”	Measure circumference	1 1/8”	20
	35727	(83–90 mm)	(38 x 6–38 x 10 mm)		(29 mm)	50
BBI-4A	35728	5.43–5.80”	2 1/2 x 3/8–2 1/2 x 5/8”	Measure circumference	1 3/4”	20
	35729	(138–147 mm)	(64 x 10–64 x 16 mm)		(44 mm)	50
BBI-5A	35730	6.67–7.18”	3 x 5/8–3 x 3/4”	Measure circumference	2 1/8–2 1/4”	20
	35731	(169–182 mm)	(76 x 16–76 x 19 mm)		(54–57 mm)	50
BBI-6A	35732	7.57–8.43”	3 1/2 x 1/2–4 x 1/4”	Measure circumference	2 1/2–2 5/8”	20
	35733	(192–214 mm)	(89 x 13–102 x 6 mm)		(64–67 mm)	50
BBI-7A	35734	8.28–10.44”	4 x 1/4–5 x 3/8”	2 1/2 x 2 1/2”	2 3/4–3 1/4”	20
	35735	(210–265 mm)	(102 x 6–127 x 10 mm)	(64 x 64 mm)	(70–83 mm)	50
BBI-8A	35736	10.29–12.88”	5 x 1/4–6 x 3/4”	3 x 3”	3 3/8–4”	20
	35737	(261–327 mm)	(127 x 6–152 x 19 mm)	(76 x 76 mm)	(86–102 mm)	50
BBI-9A	35876	12.29–15.31”	6 x 1/4–7 x 3/4”	3 1/2 x 3 1/2–4 x 4”	4–4 7/8”	20
	35877	(312–389 mm)	(152 x 6–178 x 19 mm)	(89 x 89–102 x 102 mm)	(102–124 mm)	50
BBI-10A	35878	15.43–19.79”	8 x 1/4–9 x 3/4”	5 x 5”	5–6 1/4”	20
	35879	(392–503 mm)	(203 x 6–229 x 19 mm)	(127 x 127 mm)	(127–158 mm)	50
<b>35 kV Bus Bar Size Ranges</b>						
BBI-7A	35734	8.28–8.86”	4 x 1/4–4 x 3/4”	Measure circumference	2 3/4”	20
	35735	(210–225 mm)	(102 x 6–102 x 19 mm)		(70 mm)	50
BBI-8A	35736	10.29–10.94”	5 x 1/4–5 x 3/4”	Measure circumference	3 3/8”	20
	35737	(261–278 mm)	(127 x 6–127 x 19 mm)		(86 mm)	50
BBI-9A 3	5876	12.29–13.00”	6 x 1/4–6 x 3/4”	Measure circumference	4–4 1/8”	20
	35877	(312–330 mm)	(152 x 6–152 x 19 mm)		(102–105 mm)	50
BBI-10	A 35878	15.43–16.86”	8 x 1/4–8 x 3/4”	Measure circumference	5–5 1/4”	20
	35879	(392–428 mm)	(203 x 6–203 x 19 mm)		(127–133 mm)	50

Note: Rectangular and square bar sizes are based on bars having radiused edges and corners.

## Heat Shrinkable Tubes

### 3M™ HDCW Wraparound Heat Shrink Cable Repair

3M HDCW Heat Shrink Wraparound Cable Repair Sleeves are designed to quickly repair damaged cable jacketing. They may also be used to re-jacket in-line splices. HDCW wrap sleeves can be used as insulation material on cable and splices up to 1000 volts and as jacket repair material on cable up to 35 kV. The design of the wrap sleeve allows it to be installed in tight spaces with ordinary heating equipment such as a torch.



The HDCW is made from modified cross-linked polyolefin, with hot-melt adhesive liner on the inner side of the sleeve. Upon heating, the sleeve shrinks and the adhesive melts, creating a water-tight bond between the sleeve and the cable. HDCW Wraparound Cable Repair Sleeves meet ANSI C119.1 requirements. A corrosion proof metal channel is used to close the sleeve during installation. 3M HDCW wrap sleeves are stock in four lengths and five diameters. Other cut lengths are available upon request.

### Application Guide and Ordering Information

Part Number	UPC (051138-)	Length in. (mm)	600/1000V Conductor Size (AWG or MCM)	Jacket Repair Use Range Max./Min. in. (mm)	Sleeve Dimensions	
					Expanded Diameter in. (mm)	Recovered Diameter in. (mm)
HDCW 35/10-250	48416	9.8 (250)	#8 - 2/0	1.38 - 0.39 (35 - 10)	1.69 (43)	0.32 (8)
HDCW 35/10-1200	48436	47.2 (1200)	#8 - 2/0	1.38 - 0.39 (35 - 10)	1.69 (43)	0.32 (8)
HDCW 55/15-500	48421	19.7 (500)	3/0 - 400	2.17 - 0.59 (55 - 15)	2.68 (58)	0.59 (15)
HDCW 55/15-1200	48437	47.2 (1200)	3/0 - 400	2.17 - 0.59 (55 - 15)	2.68 (58)	0.59 (15)
HDCW 80/25-750	48426	29.5 (750)	500 - 1000	3.15 - 0.98 (80 - 25)	3.66 (93)	0.98 (25)
HDCW 80/25-1200	48438	47.2 (1200)	500 - 1000	3.15 - 0.98 (80 - 25)	3.66 (93)	0.98 (25)
HDCW 110/30-1000	48431	39.4 (1000)	1000 - 2000	4.33 - 1.18 (110 - 30)	4.72 (120)	1.10 (28)
HDCW 100-30-1200	48439	47.2 (1200)	1000 - 2000	4.33 - 1.18 (110 - 30)	4.72 (120)	1.10 (28)
HDCW 140/40-1000	48435	39.4 (1000)		5.39 - 1.38 (137 - 35)	5.75 (146)	1.34 (34)
HDCW 140/40-1200	48440	47.2 (1200)		5.39 - 1.38 (137 - 35)	5.75 (146)	1.34 (34)

### 3M™ HDT Heavy-Wall Flame-Retardant Cable Sleeves for 1 kV

#### Shrink Ratio 3:1

3M HDT heat shrinkable cable sleeves provide reliable performance for electrical splices, connections and terminations, as well as mechanical and environmental protection. HDT heavy-wall cable sleeves are cross-linked polyolefin. They are flame-retardant, highly split resistant and fast shrinking to provide rapid installation. The 48 in. (121,9 cm) sleeves come standard with a factory applied adhesive/sealant. Order any of several packaging choices or look for the counter merchandiser assortment at a 3M authorized distributor and are not printed. MIL-DTL-23053/15, Class 1.

Order in the size equivalent to expanded inside diameter required.

### Specification and Ordering Information for 3M HDT 4-Foot Lengths (Black Only) Reeled

Product Number	UPC 054007-)	Cable Range	Expanded/Recovered I.D.	4' Lengths Per Case
HDT-0400-48A	40649	#12 – #6 AWG	0.40/0.15" (10,2/3,8 mm)	20
HDT-0800-48A	40650	#8 – 1/0 AWG	0.80/0.20" (20,3/5,1 mm)	20
HDT-1100-48A	40651	#2 – 4/0 AWG	1.10/0.37" (27,9/9,4 mm)	20
HDT-1500-48A	40652	3/0 – 400 MCM	1.50/0.50" (38,1/12,7 mm)	20
HDT-2000-48A	40654	250 – 750 MCM	2.00/0.65" (50,8/16,5 mm)	10
HDT-3000-48A	40655	600 – 1250 MCM	3.00/1.00" (76,2/25,4 mm)	10
HDT-4500-48A	40656	1000 – 2500 MCM	4.50/1.50" (114,3/38,1 mm)	5
HDT-6000-48A	59022	2.1" – 4.8" O.D.	6.00/1.80" (152,4/45,7 mm)	5
HDT-7000-48A	37774	2.5" – 5.6" O.D.	7.00/2.00" (177,8/50,8 mm)	5

## Heat Shrinkable Tubes

### 3M™ FP-301 Thin-Wall Tubing

Shrink Ratio 2:1



3M FP-301 is a heat shrinkable flexible polyolefin tubing that offers an outstanding balance of electrical, physical and chemical properties for a wide variety of industrial and military applications. Rated for 275°F(135°C) continuous operation. FP-301 tubing is typically use as shrink-fit electrical insulation over cable splices and terminations. It is also used for lightweight wire harness covering, wire marking, wire bundling, component packaging and fire resistant covering.

FP-301 clear tubing provides excellent visibility for component packing. All FP-301 tubing is split resistant, mechanically tough, easily marked and resist cold flow.

FP-301 is available in black, white, red, blue, yellow and clear in the standard lengths of 6-inch (15,2 cm) cut pieces, 48-inch (1,21 m) and small (8.5-inch core diameter) spools of 50 (15,24 m) and 100 (30,48 m) feet. Four-foot lengths of green tubing are available in sizes 1/16 inch to 1/2 inch. The assorted color kit has a total of 133 pieces and contains seven colors: black, red, white, yellow, blue, green and clear (see chart below.) The black kit contains 102 pieces, all 6" (512,4 mm) lengths (see chart below).

Application Specifications: UL Recognized and CSA Certified at 600 volts at 257°F(125°C); UL File No. E-39100 and CSA No. 38227. MIL-I-23053/5, Class 1,2. AMS 3636 (Type I) and AMS 3637 (Type II).

To Order: Reference specific product size, color and description on the following pages. Example FP-301-1/4, white 6" (15,2 cm) pieces.

To Order: Reference specific product size, color and description on the following pages. Example FP-301-1/4, white 6" (15,2 cm) pieces.

#### Specification and Ordering Information for 3M FP-301 Assortment Kits

Description	UPC (051135)	Case Quantity
Assorted Colors Kit	37677	5 Kits
Kit Contents	Kit Quantity	
3/32 (2,35 mm)	35	
1/8 (3,18 mm)	28	
3/16 (4,75 mm)	21	
1/4 (6,35 mm)	21	
3/8 (9,53 mm)	14	
1/2 (12,70 mm)	14	
Assorted Black Kit	38139	5 Kits
Kit Contents	Kit Quantity	
3/16 (4,8 mm)	30	
1/4 (6,5 mm)	28	
3/8 (9,6 mm)	20	
1/2 (12,7 mm)	14	
3/4 (19,1 mm)	6	
1 (25,4 mm)	4	

### Thin- Wall Tubing

#### Specification and Ordering Information for 3M FP-301 Six-Inch Pieces-Tamper Evident bags (Refills for Kits)

Product Number	Size	Color	UPC (051135)	Description	Expanded/Recovered I.D.	Case Qty.
FP-301	3/64" (1,19 mm)	Black Clear	36484 36485	40 pcs/bag	0.046/0.023" (1,17/0,58 mm)	10
FP-301	1/16" (1,59 mm)	Black Clear	36486 36487	38 pcs/bag	0.063/0.031" (1,6/0,79 mm)	10
FP-301	3/32" (2,4 mm)	Black Clear	36488 36489	36 pcs/bag	0.093/0.046" (2,36/1,17 mm)	10
FP-301	1/8" (3,18 mm)	Black Clear	36490 36491	34 pcs/bag	0.125/0.062" (3,18/1,57 mm)	10
FP-301	3/16" (4,77 mm)	Black Clear	36492 36493	30 pcs/bag	0.187/0.093" (4,75/2,36 mm)	10
FP-301	1/4" (6,4 mm)	Black Clear	36494 36495	26 pcs/bag	0.250/0.125" (6,35/3,18 mm)	10
FP-301	3/8" (9,55mm)	Black Clear	36496 36497	24 pcs/bag	0.375/0.187" (9,53/4,74 mm)	10
FP-301	1/2" (12,7 mm)	Black Clear	36498 36499	20 pcs/bag	0.500/0.250" (12,7/6,35 mm)	10
FP-301	3/4" (19,0 mm)	Black Clear	36500 36501	14 pcs/bag	0.750/0.375" (19,05/9,52 mm)	10
FP-301	1" (24,4 mm)	Black Clear	36502 36503	10 pcs/bag	1.000/0.500" (25,4/12,7 mm)	10
FP-301	1-1/2" (38,1 mm)	Black Clear	36504 36505	6 pcs/bag	1.500/0.750" (38,1/19,05 mm)	10
FP-301	2" (50,8 mm)	Black Clear	36506 36507	4 pcs/bag	2.000/1.000" (50,8/25,4 mm)	10
FP-301	3" (576,0 mm)	Black Clear	36508 36509	3 pcs/bag	3.000/1.500" (76,2/38,1 mm)	10
FP-301	4" (102,0 mm)	Black Clear	36510 36511	2 pcs/bag	4.000/2.000" (101,6/50,8 mm)	10

#### Specification and Ordering Information for 3M FP-301 Six-Inch Pieces-Tamper Evident bags (Refills for Kits)

Product	Size	Color	UPC (051135)	Description	Case Qty.
FP-301	3/64-3/16" (1,19-4,77 mm)	Black	36612	6 each of 5 sizes	10
FP-301	1/4-3/4" (6,4-19,0 mm)	Black	36613	4 each of 4 sizes	10
FP-301	1-4" (25,4-102 mm)	Black	36614	2 each of 5 sizes	10
FP-301	3-32" (2,4 mm)	Assort.	36618	5 each of 7 colors	10
FP-301	1/8" (3,18 mm)	Assort.	36619	4 each of 7 colors	10
FP-301	3/16" (4,77 mm)	Assort.	36620	3 each of 7 colors	10
FP-301	1/4" (6,4 mm)	Assort.	36621	3 each of 7 colors	10
FP-301	3/8" (9,55 mm)	Assort.	36622	2 each of 7 colors	10
FP-301	1/2" (12,7 mm)	Assort.	36623	2 each of 7 colors	10

## Heat Shrinkable Tubes

### Specification and Ordering Information for 3M™ FP-301 Four-Foot Sticks (small box)

continuation

Product Number	Size	Color	UPC (051135-)	Description	Expanded/Recovered I.D.	Case Qty.
FP-301	3/64" (1,17 mm)	Black Clear White Red Blue Yellow	36644 36645 36646 36647 36649 36648	48" Sticks (1,22 m)	0.046/0.023" (1,17/0,58 mm)	25
FP-301	1/16" (1,58 mm)	Black Clear White Red Blue Yellow Green	36650 36651 36652 36653 36655 36654 36672	48" Sticks (1,22 m)	0.063/0.031" (1,6/0,79 mm)	25
FP-301	3/32" (2,38 mm)	Black Clear White Red Blue Yellow Green	36673 36674 36675 36676 36678 36677 36679	48" Sticks (1,22 m)	0.093/0.046" (2,36/1,17 mm)	25
FP-301	1/8" (3,2 mm)	Black Clear White Red Blue Yellow Green	36680 36681 36682 36683 36685 36684 36686	48" Sticks (1,22 m)	0.125/0.062" (3,18/1,57 mm)	25
FP-301	3/16" (4,77 mm)	Black Clear White Red Blue Yellow Green	36687 36688 36689 36690 36692 36691 36693	48" Sticks (1,22 m)	0.187/0.093" (4,75/2,36 mm)	25
FP-301	1/4" (6,4 mm)	Black Clear White Red Blue Yellow Green	36694 36695 36696 36697 36699 36698 36700	48" Sticks (1,22 m)	0.250/0.125" (6,35/3,18 mm)	12
FP-301	3/8" (9,6 mm)	Black Clear White Red Blue Yellow Green	36701 36702 36703 36704 36706 36705 36707	48" Sticks (1,22 m)	0.375/0.187" (9,53/4,75 mm)	12
FP-301	1/2" (12,7 mm)	Black Clear White Red Blue Yellow Green	36709 36710 36711 36712 36714 36713 36715	48" Sticks (1,22 m)	0.500/0.250" (12,7/6,35 mm)	12
FP-301	3/4" (19,1 mm)	Black Clear White Red Blue Yellow Green	36716 36720 36721 36722 36724 36723 36764	48" Sticks (1,22 m)	0.750/0.375" (19,05/9,52 mm)	12

Product Number	Size	Color	UPC (051135-)	Description	Expanded/Recovered I.D.	Case Qty.
FP-301	1" (25,4 mm)	Black Clear White Red Blue Yellow Green	36725 36726 36727 36728 36730 36729 36767	48" Sticks (1,22 m)	1.000/0.500" (25,4/12,7 mm)	5
FP-301	1-1/2" (38,1 mm)	Black Clear White Red Blue Yellow	36731 36732 36733 36734 36736 36735	48" Sticks (1,22 m)	1.500/0.750" (38,1/19,05 mm)	5
FP-301	2" (50,8 mm)	Black Clear White Red Blue Yellow	36737 36738 36739 36740 36742 36741	48" Sticks (1,22 m)	2.000/1.000" (50,8/25,4 mm)	5
FP-301	3" (76,2 mm)	Black Clear	36737 36738	48" Sticks (1,22 m)	3.000/1.500" (76,2/38 mm)	2
FP-301	4" (101,6 mm)	Black Clear	36737 36738	48" Sticks (1,22 m)	3.000/1.500" (101,6/50 mm)	2



Continued on next column

## Adhesive-Lined Tubing

### 3M™ EPS-300 Thin-Wall, Flexible Polyolefin



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### Adhesive-Lined Tubing Shrink Ratio 3:1

3M EPS 300 tubing is a thin-wall tubing offering the advantages of integral, dual wall construction. The tubing is made from flame-retardant, flexible polyolefin-lined with an internal layer of special thermolastic adhesive. The heat shrinkable outer wall is selectively radiation crossed-linked, while the adhesive maintains high flow and excellent adhesion characteristics. 3M EPS-300 is an environmental protection sleeve and insulation. It Offers superb environmental protection for electronic components twisted pigtail and inline wire splices, crimp splices, wire bundles and wire harness breakouts in automotive, truck fleet, marine and industrial application.

Standard Color: Black and standard packaging is four-foot (1,219 m) lengths and six-inch (15,2 cm) cut pieces. Also available in a kit containing 42 pieces of 6-inch lengths in assorted sizes (see chart below.) Additional sizes, colors and put-ups are available ----- please contact your 3M Electrical Products Sales Representative.

Application Specifications: MIL-I-23053/4, Class 3. To Order: Reference Specific product size, color and description. Example: EPS-300-1/4, 48" (1,21 m) sticks, black

### Specification and Ordering Information for 3M™ FP-300 Tubing Kit

UPC 05135-84442, Case quantity 5 kits

Description	# of 6" Size	Pieces
EPS-300 Red	1/2" (12,70 mm)	12
EPS-300 Black	1/2" (12,70 mm)	12
EPS-300 Red	3/4" (19,05 mm)	6
EPS-300 Black	3/4" (19,05 mm)	6
EPS-300 Red	1" (25,40 mm)	3
EPS-300 Black	1" (25,40 mm)	3

### Specification and Ordering Information for 3M™ FP-301 Small Spools (continued)

Product Number	Size	UPC (051135-)	Expanded/ Recovered I.D.	Description	Case Qty.
EPS-300 Black	1/8" (3,2 mm)	37483	0.125/0.040" (3,18/1,02 mm)	48" Sticks (1,21 m)	25
EPS-300 Black	3/16" (4,76 mm)	36875	0.187/0.063" (4,75/1,57mm)	48" Sticks (1,21 m)	12
EPS-300 Black	3/16" (4,76 mm)	36592	0.187/0.063" (4,75/1,57mm)	6" Pieces, 24/Bag (15,2 m)	10
EPS-300 Black	1/4" (6,35 mm)	36876	0.250/0.080" (6,35/2,03 mm)	48" Sticks (1,21 m)	12
EPS-300 Black	1/4" (6,35 mm)	36593	0.250/0.023" (6,35/2,03 mm)	6" Pieces, 20/Bag (15,2 m)	10
EPS-300 Black	3/8" (9,53 mm)	36877	0.375/0.120" (9,53/3,05 mm)	48" Sticks (1,21 m)	12
EPS-300 Black	3/8" (9,53 mm)	36594	0.375/0.120" (9,53/3,05 mm)	6" Pieces, 16/Bag (15,2 m)	10
EPS-300 Black	1/2" (12,7 mm)	36878	0.500/0.160" (12,7/4,06 mm)	48" Sticks (1,21 m)	12
EPS-300 Black	1/2" (12,7 mm)	36595	0.500/0.160" (12,7/4,06 mm)	6" Pieces, 14/Bag (15,2 m)	10
EPS-300 Black	1/2" (12,7 mm)	38441	0.500/0.160" (12,7/4,06 mm)	6" Pieces, 14/Bag (15,2 m)	10
EPS-300 Black	3/4" (19,05 mm)	36879	0.750/0.250" (19,05/6,35 mm)	48" Sticks (1,21 m)	5
EPS-300 Black	3/4" (19,05 mm)	36596	0.750/0.250" (19,05/6,35 mm)	6" Pieces, 12/Bag (15,2 m)	10
EPS-300 Red	3/4" (19,05 mm)	38442	0.750/0.250" (19,05/6,35 mm)	6" Pieces, 12/Bag (15,2 m)	10
EPS-300 Black	1" (25,4 mm)	36880	1.000/0.320" (25,4/8,13 mm)	48" Sticks (1,21m)	5
EPS-300 Black	1" (25,4 mm)	36597	1.000/0.320" (25,4/8,13 mm)	6" Pieces, 8/Bag (15,2 m)	10
EPS-300 Black	1" (25,4 mm)	38443	1.000/0.320" (25,4/8,13 mm)	6" Pieces, 8/Bag (15,2 m)	10
EPS-300 Black	1-1/2" (38,1 mm)	36881	1.500/0.500" (38,1/12,95 mm)	48" Sticks (1,21 m)	5
EPS-300 Black	1-1/2" (25,4 mm)	36598	1.500/0.500" (38,1/12,95 mm)	48" Sticks (1,22 m)	25



## Adhesive-Lined Tubing



### 3M MW Tubing Multiple-Wall, Semi-Rigid Polyolefin

Shrink Ratio: 2.5:1

3M MW tubing is a Semi-Rigid, heat shrinkable polyolefin tubing that is co-extruded and selectively cross-linked to provide an integral, meltable inner wall. When heated in excess of 275°F (135°C), the inner meltable wall of the tubing is simultaneously softened and forced by the shrink action into intimate contact with all underlying surfaces, interstices and small voids. Upon cooling, the MW Tubing provides a tough protective and insulating barrier, highly resistant to penetration by moisture and the attack of chemicals and solvents. Uses include strain relief for delicate wire terminations, connections, solder joints and harness breakouts — where semi-rigid environmental protective sleeving and insulation is needed.

Standard Color: Black and standard packaging is four-foot (1,219 m) lengths and six-inch (15,2 cm) cut pieces. Additional sizes, colors and put-ups are available ----- please contact your 3M Electrical Products Sales Representative.

Application Specifications: MIL-I\_23053/4, Class 1; AMS-3634.  
To Order: Reference specific Product size, color and description.  
Example: MW, 1/4, 6" pices, black.

### Specification and Ordering Information for 3M™ EPS-300 Tubing with Header Cards

Product Number	Size	UPC (051135-)	Expanded/Recovered I.D.	Description	Case Qty.
EPS-300H Black	1/8" (3,2 mm)	38749	0.125/0.040" (3,18/1,02 mm)	48" Sticks (1,21 m)	25
EPS-300H Black	3/16" (4,76 mm)	38750	0.187/0.063" (4,75/1,57mm)	48" Sticks (1,21 m)	12
EPS-300H Black	1/4" (6,35 mm)	38751	0.250/0.080" (6,35/2,03mm)	48" Sticks (1,21 m)	12
EPS-300H Black	3/8" (9,53 mm)	38752	0.375/0.120" (9,53/3,05 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	1/2" (12,7 mm)	38753	0.500/0.160" (12,7/4,06 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	1/2" (12,7 mm)	38754	0.500/0.160" (12,7/4,06 mm)	48" Sticks (1,21 m)	12
EPS-300H Black	3/4" (19,05 mm)	38755	0.375/0.120" (9,53/3,05 mm)	48" Sticks (1,21 m)	5
EPS-300H Black	3/4" (19,05 mm)	38756	0.750/0.250" (19,05/6,35 mm)	48" Sticks (1,21 m)	5
EPS-300H Black	1" (25,4 mm)	38757	1.000/0.320" (25,4/8,13 mm)	48" Sticks (1,21 m)	5
EPS-300H Black	1" (25,4 mm)	38758	1.000/0.320" (25,4/8,13 mm)	48" Sticks (1,21 m)	5

### Specification and Ordering Information for 3M MW Tubing Multiple Wall, Semi-Rigid Polyolefin

Product Number	Size	UPC (051135-)	Expanded/Recovered I.D.	Description	Case Qty.
MW	1/8" (3,18 mm)	36859	0.125/0.023" (3,18/0,58 mm)	48" Sticks (1,21 m)	25
MW	1/8" (3,18 mm)	36563	0.125/0.023" (3,18/0,58 mm)	6" Pieces, 28/Bag (15,2 cm)	12
MW	3/16" (4,76 mm)	36860	0.187/0.060" (4,75/1,52mm)	48" Sticks (1,21 m)	10
MW	3/16" (4,76 mm)	36564	0.187/0.060" (4,75/1,52mm)	6" Pieces, 24/Bag (15,2 cm)	12
MW	1/4" (6,35 mm)	36861	0.250/0.080" (6,35/2,03 mm)	48" Sticks (1,21 m)	10
MW	1/4" (6,35 mm)	36565	0.250/0.080" (6,35/2,03 mm)	6" Pieces, 20/Bag (15,2 cm)	12
MW	3/8" (9,53 mm)	36862	0.375/0.135" (9,53/3,43 mm)	48" Sticks (1,21 m)	10
MW	3/8" (9,53 mm)	36566	0.375/0.135" (9,53/3,43 mm)	6" Pieces, 16/Bag (15,2 cm)	12
MW	1/2" (12,7 mm)	36863	0.500/0.195" (12,7/4,95 mm)	48" Sticks (1,21 m)	10
MW	1/2" (12,7 mm)	36567	0.500/0.195" (12,7/4,95 mm)	6" Pieces, 14/Bag (15,2 m)	10
MW	3/4" (19,05 mm)	36864	0.750/0.313" (19,05/7,95 mm)	48" Sticks (1,21 m)	5
MW	3/4" (19,05 mm)	36568	0.750/0.313" (19,05/7,95 mm)	6" Pieces, 12/Bag (15,2 m)	10
MW	1" (25,4 mm)	36865	1.000/0.400" (25,4/10,16 mm)	48" Sticks (1,21 m)	10
MW	1" (25,4 mm)	36569	1.000/0.400" (25,4/10,16 mm)	6" Pieces, 8/Bag (15,2 m)	5

Note: Bulk 48' sticks and special cut lengths are available subject to quotation.

## Heat Shrinkable Tubes

### 3M™ Kynar® Heat Shrink, Crossed-linked Thin-walled, Modified Polyvinylidene Fluoride Tubing

3M Kynar tubing is a cross-linked, thin-walled, heat-shrinkable tubing offering a high degree of mechanical strength and high-temperature resistance. Fabricated from polyvinylidene fluoride, the tubing has outstanding abrasion resistance and cut-through properties in combination with high dielectric strength. It is inherently flame retardant, semi-rigid and highly resistant to most industrial fuels, chemicals and solvents. When heated in excess of 347°F (175°C), Kynar tubing rapidly shrink to a skintight fit. Kynar tubing is rated for continuous peration from -67°F (-55°C) to 347°F (175°C).

Kynar tubing is recommended for a shrink-fit protection and strain relief of wires, soldier joints, terminals and connections. Kynar tubing has a 2:1 shrink ratio. Standard color is clear. Standard packaging is a 4-foot lengths. Order Kynar tubing by products name, size equivalent to the expanded inside diameter, package type and color. Applicable Specifications: MIL-DTL-23053/8, MIL-DTL-23053/18, Class 1; AMS-3632; UL File E-39100, VW-1; CSA LR 38227, OFT.

Kynar® is a registerd trademark of Elf Atochem North America, Inc.



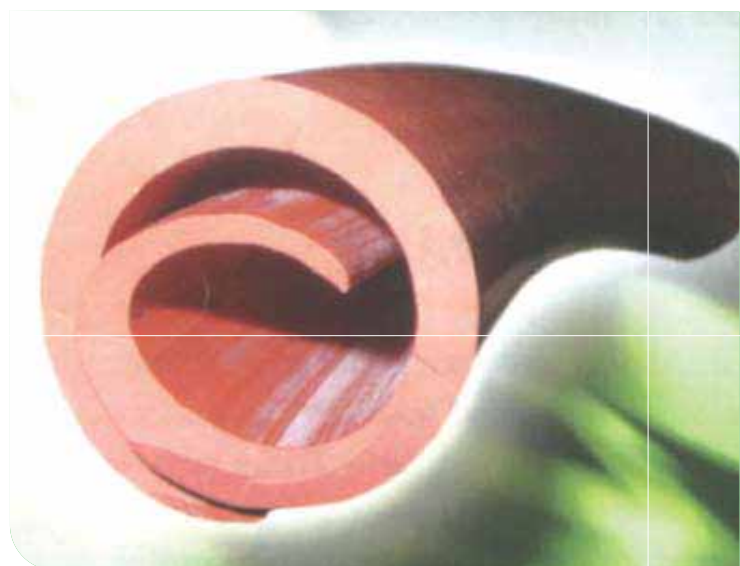
### Specification and Ordering Information for 3M Kynar® Tubing with Header Cards

Product Number	Size	UPC (051135-)	Description	Expanded/Recovered I.D.	Broken Case Qty.	Case Qty.
Kynar-H	1/16	38759	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.063/0.031" (1,60/00,79)	—	25
Kynar-H	3/32"	38760	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.093/0.046" (2,36/1,17 mm)	-----	25
Kynar-H	1/8"	38761	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.125/0.062" (3,18/1,57 mm)	-----	25
Kynar-H	3/16"	38762	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.187/0.093 (4,75/2,36 mm)	-----	12
Kynar-H	1/4"	38763	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.250/0.125" (6,35/3,18 mm)	-----	12
Kynar-H	3/8"	38764	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.375/0.187" (9,53/4,75 mm)	-----	12
Kynar-H	1/2"	38765	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.500/0.250" (12,70/6,35 mm)	-----	5
Kynar-H	3/4"	38766	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	0.750/0.375" (19,05/9,53 mm)	-----	5
Kynar-H	1"	38767	Modified Polyvinylidene Flouride 48" Sticks w/Header Small Box	1,000/0.500" (25,40/12,70 mm)	-----	5

\*See your 3M sales representative for bulk 4' stick packages

## CCI Series Conductor Cover Insulation

The 3M™ CCI Series Animal Protection Products are extruded silicone rubber products that are designed for field installation over bare conductors and metal mounting brackets. These covers provide a layer of electrical insulation for phase-to-phase and phase-to-ground protection from bird contact. They are cut to length in the field for a proper fit. The silicone rubber material provides for electrical insulation, UV resistance and tracking resistance. These products are designed to provide protection for both equipment and birds.

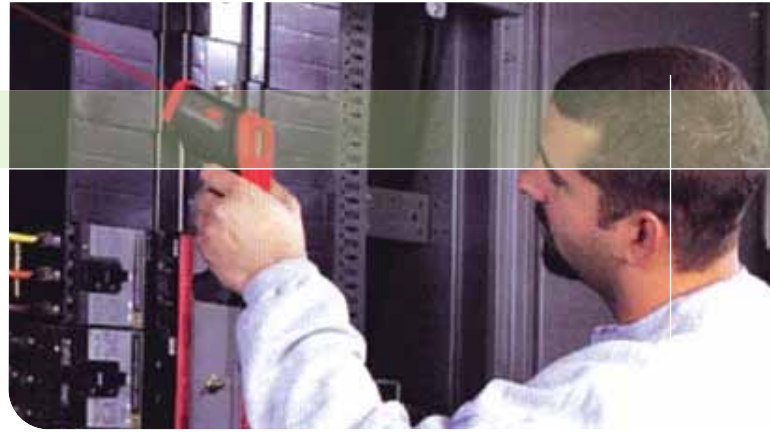


The CCI series Conductor Covers are designed to insulate bare aerial conductors from adjacent phases and grounded equipment. The covers are made with a full-length longitudinal bias cut to provide an increased creepage distance between the conductor and the outer surface of the cover, and to allow for easy slip-on installation. The covers are offered in two thickness sizes for covering both 15 kV and 25 kV rated conductors. The products are available in ACSR conductor sizes from 2 AWG to 266 kcmil.

Product Description	Conductor Range	Diameter of Cable	Minimum Order
CCI - 0.250 Cable Cover Insulation, ORANGE	#6 - #4 AWG	0.250 IN.	2,500 FEET
CCI - 0.500 Cable Cover Insulation, ORANGE	#2 - 3/0 AWG	0.500 IN.	2,500 FEET
CCI - 0.625 Cable Cover Insulation, ORANGE	4/0 AWG - 266.8 kcmil	0.625 IN.	2,500 FEET
CCI - 0.750 Cable Cover Insulation, ORANGE	266.8 - 397.5 kcmil	0.750 IN.	500 FEET
CCI - 1.000 Cable Cover Insulation, ORANGE	397.5 - 636 kcmil	1.000 IN.	500 FEET
CCI - 1.250 Cable Cover Insulation, ORANGE	636 - 1033.5 kcmil	1.250 IN.	250 FEET
CCI - 1.750 Cable Cover Insulation, ORANGE	1113 - 2057 kcmil	1.750 IN.	250 FEET

## Infrared Thermometers

3M™ Infrared Thermometer is a rugged, highly accurate and easy-to-use, portable non-contact (infrared) thermometer. It is an invaluable tool for monitoring operating temperatures of mechanical and electrical, plant and production equipment without removing the equipment, from service. The infrared thermometer allows the electrician and/or technician to locate and identify overheating conditions in electrical wiring connections, panels, switchgear, motors and mechanical equipment, and to perform preventive maintenance before catastrophic failure occurs.



IR-999



IR-1100 / 1400



IR-60L2 / 60CFO



IR-60EXPL2 / 60EXCFO

### 3M™ Infrared Thermometers Specifications Models

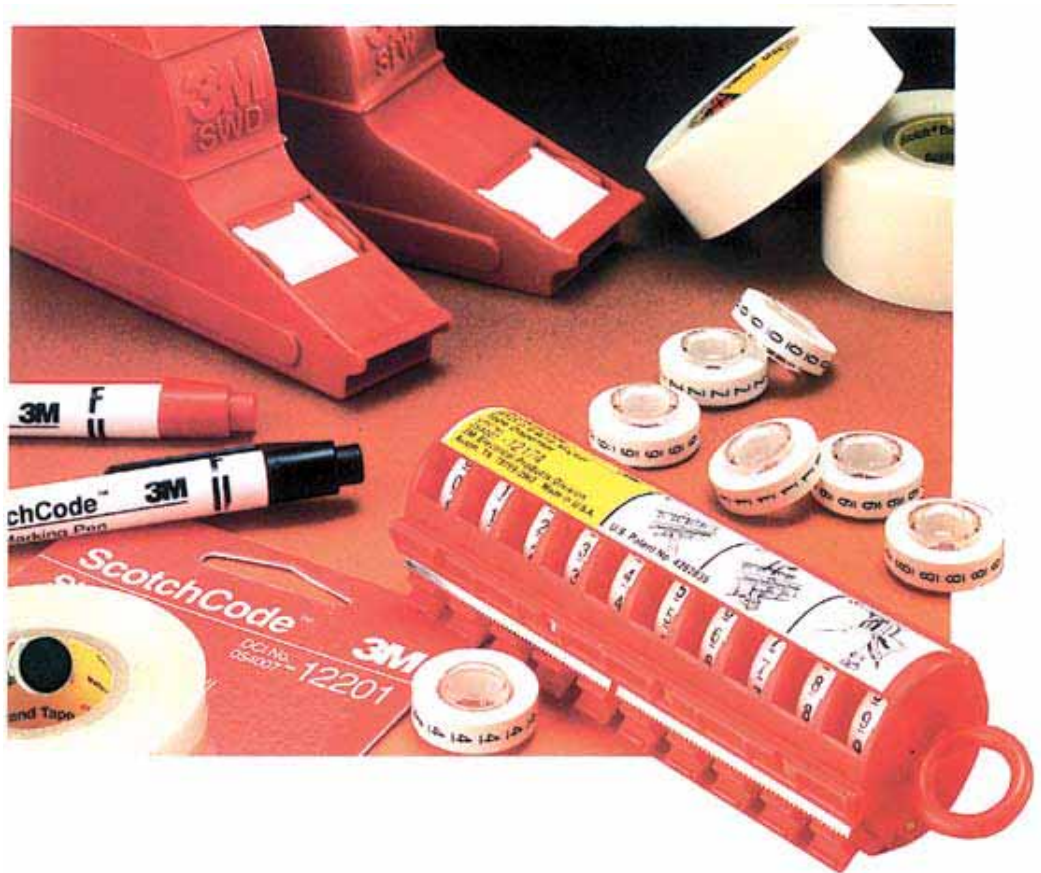
	IR-999	IR-1100	IR-1400	IR-60L2	IR-60EXPL2
Temperature Range	-25 to 999°F (-32 to 537°C)	-25 to 1100°F (-32 to 600°C)	-25 to 1400°F (-32 to 760°C)	-25 to 1600°F (-32 to 870°C)	-25 to 1600°F (-32 to 870°C)
Accuracy of Reading	±1%	±1%	±1%	±1%	±1%
Repeatability of Reading	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
95% Response Time	500 msec	500 msec	500 msec	250 msec	250 msec
Spectral Response	8-14 microns	8-14 microns	8-14 microns	8-14 microns	8-14 microns
Optical System	12:1	30:1	50:1	60:1	60:1
MAX Temperature	X	X	X	X	X
MIN, DIF, AVG Temp	-	X	X	-	X
Recall Last Reading	-	X	X	X	X
Display Hold	X	X	X	X	X
HI Alarm	-	X	X	X	X
LO Alarm	-	X	X	-	X
Low Battery Indicator	X	X	X	X	X
LCD Backlight	X	X	X	X	X
Laser (Class 2)	8 Point Circle	8 Point Circle	8 Point Circle	17 Point Circle	17 Point Circle
Emissivity	Pre-set 0.95	Adjustable from 0.10 to 1.0	Adjustable from 0.10 to 1.0	Adjustable from 0.10 to 1.0	Adjustable from 0.10 to 1.0
Temperature Display	°C of °F selectable 3.5 digit LCD	°C of °F selectable 3.5 digit LCD	°C of °F selectable 3.5 digit LCD	°C of °F selectable 3.5 digit LCD	°C of °F selectable 3.5 digit LCD
Display Resolution	0.5°F (0.2°C)	0.1°F (0.1°C)	0.1°F (0.1°C)	Tenth degree reading up to 199.9 (F or C)	Tenth degree reading up to 199.9 (F or C)
Ambient Operating Range	32 to 120°F	32 to 120°F	32 to 120°F	32 to 120°F (0 to 50°C)	32 to 120°F (0 to 50°C)
Relative Humidity, ambient	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)	10-95% RH noncondensing, @ > 86°F (30°C)
Storage Temperature	-13 to 158°F (-20° to 60°C) w/out battery	-13 to 158°F (-20° to 60°C) w/out battery	-13 to 158°F (-20° to 60°C) w/out battery	-25 to 122°F (-30° to 50°C) w/out battery	-25 to 122°F (-30° to 50°C) w/out battery
Power	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery	9V Alkaline or NiCd battery	2 x 1.5V alkaline Type AA	2 x 1.5V alkaline Type AA
Battery Life (Alkaline)	20 hours with laser and backlight on 50% 40 hours with laser and backlight off			25 hours measurement mode, 11 hours with laser on, 6 hours with backlight and laser on (50 % backlight used)	
Dimensions (184 x 45 x 38 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	8 x 6 x 2 in (200 x 160 x 55 mm)	6.7 x 2 x 7.9 in (170 x 50 x 200 mm)	6.7 x 2 x 7.9 in (170 x 50 x 200 mm)
Weight	11 oz. (320g)	11 oz. (320g)	11 oz. (320g)	1 lb - 6 oz	1 lb - 6 oz
Locking Trigger	-	X	X	X	X
Tripod Mount	1/4" - 20 UNC Threading	1/4" - 20 UNC Threading	1/4" - 20 UNC Threading	1/4" - 20 UNC Threading	1/4" - 20 UNC Threading
Accessories Standard With Each Unit	Hard plastic case Wrist strap	Hard plastic case Wrist strap Contact Probe	Hard plastic case Wrist strap Contact Probe	Hard plastic case Wrist strap Contact Probe	Software, RS232 cable, 7.5 V power supply, contact probe Hard plastic case, wrist strap
Data Logger Points	-	12 data points in memory	12 data points in memory	-	100 points in memory

\* NIST and DKD certification is optional on all models except the IR-500.

\*\* The IR-60CFO has the same specifications as the IR-60L23 and IR-60EXCFO have the same specifications as the IR-EXPL2.

## Wire Markers

The Scotch Code 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 tapes' 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 colors.



## Motor Lead Connections

3M provides a convenient kit with everything needed to quickly make lugged motor lead connections to feeder cables. Each kit makes three splices and is designed exclusively for the abrasion, moisture, grime and temperature extremes of the industrial environment.

3M™ motor lead connectors meet requirements for CSA certification and NRTL certification.

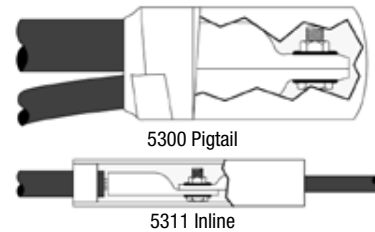


Single Conductor Cable



### 3M Nonshielded Cable Motor Lead Connections Pigtail and Inline for 1 kV

3M motor lead pigtail connections (5300 through 5304, copper 1 hole lugs only) and inline splices (5311 through 5314) are designed to splice 1000V or less, nonshielded feeder and motor lead cable. The splices are made with a slip-on lug cover made of EPDM rubber. Each kit makes three splices.



#### Specifications and Ordering Information for 1 kV 3M Motor Lead Connections

Product Number	5300	5301	5302	5303	5304	5311	5312	5313	5314
<b>Cable Type</b>	<b>Single Conductor Cable</b> See above for cable type illustration.								
	<b>Each kit makes three splices</b>								
	<b>Pigtail</b>					<b>Inline</b>			
<b>Kit contents:</b>									
Pigtail-Lug Covers	•	•	•	•	•	—	—	—	—
Inline-Splice Covers	—	—	—	—	—	•	•	•	•
Locking Pins	—	—	•	•	•	—	—	—	—
Mastic Sealing Strips	•	•	•	•	•	—	—	—	—
Silicone Grease Lubricant	•	•	•	•	•	•	•	•	•
Adapter Sleeves	—	—	—	—	—	•	•	•	•
Instructions	•	•	•	•	•	•	•	•	•
<b>Specifications:</b>									
Suggested Lug	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole	Copper 1-hole
Feeder	14-10 AWG (2,5-4 mm <sup>2</sup> ) (60-120 mm <sup>2</sup> )	10-4AWG (6-16 mm <sup>2</sup> ) (60-120 mm <sup>2</sup> )	2-1/0 AWG (35-50 mm <sup>2</sup> )	1/0 AWG- 250 kcmil	250-500 kcmil (150-240 mm <sup>2</sup> )	10-4 AWG (6-16 mm <sup>2</sup> )	2-1/0 AWG (35-50 mm <sup>2</sup> )	1/0 AWG- 250 kcmil	250-500 kcmil (150-240 mm <sup>2</sup> )
Motor Lead	16-12 AWG (1,5-2,5 mm <sup>2</sup> ) (35-120 mm <sup>2</sup> )	12-4 AWG (4-16 mm <sup>2</sup> ) (120-240 mm <sup>2</sup> )	4-1/0 AWG (25-50 mm <sup>2</sup> ) (35-120 mm <sup>2</sup> )	2 AWG- 250 kcmil (120-240 mm <sup>2</sup> )	4/0 AWG- 500 kcmil	12-4 AW (4-16 mm <sup>2</sup> )	4-1/0 AWG (25-50 mm <sup>2</sup> )	2 AWG- 250 kcmil	4/0 AWG- 500 kcmil
CSA File #LR 77372-2	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ	Ⓢ
<b>Ordering Information</b>	5300	5301	5302	5303	5304	5311	5312	5313	5314
UPC (054007-)	08317	12263	12264	12265	12266	12267	12268	12269	12270
Case Qty. (3 splices/kit)	1 kit	1 kit	1 kit	1 kit	1 kit	1 kit	1 kit	1 kit	1 kit

**Note:** Lugs not included in kits

## Overhead Line Products

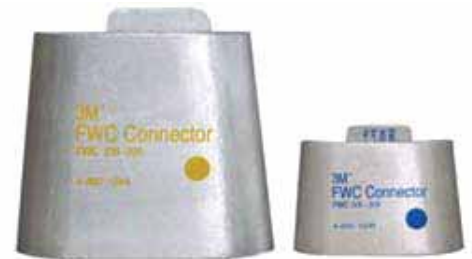
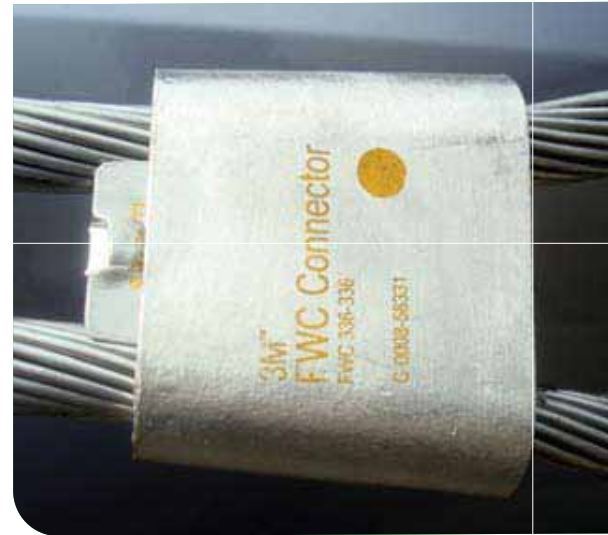
### Wedge Connector

#### FWC Fired Wedge Connector

**General:** The 3M Wedge Connectors are used to connect various sizes of bare conductors in distribution systems. The connector is composed of a wedge and a C-shaped body. The wedge component locks the cables in place in the C-shaped body. The C-shaped body holds both conductors during its service life. The 3M Fired Wedge Connectors are marked with its description for proper identification. The C-shaped bodies are color-coded which adapts the universal color-coding for wedge connectors.

- Red : Run 8 - 1/0; Tap 8 - 2
- Blue : Run 2 - 300; Tap 6 - 300
- Yellow : Run 266.8 - 1590; Tap 6 - 1590

The run and tap conductor sizes and its corresponding diameters are labeled to the C-shaped bodies and to the wedges. The 3M Wedge Connectors meets the industry standards in testing connectors for use between aluminum to aluminum bare overhead conductors.



#### 3M Fired Wedge Connector Selection Chart

By conductor sizes, ACSR (Run) - ACSR ( Tap)

#1/0	#3/0	#4/0	336.4	795.0	RUN/TAP
FWC 1/0-2	FWC 3/0-2	FWC 4/0-2	FWC 336-2	FWC 795-2	# 2
FWC 1/0-1/0	FWC 3/0-1/0	FWC 4/0-1/0	FWC 336-1/0	FWC 795-1/0	# 1/0
	FWC 3/0-3/0	FWC 4/0-3/0	FWC 336-3/0	FWC 795-3/0	# 3/0
			FWC 336-4/0	FWC 795-4/0	# 4/0
			FWC 336-336	FWC 795-336	336.4
				FWC 795-795	795.0

**Note:** For conductors other than ACSR, Please refer to your 3M Sales Representative. For conductor sizes not mentioned above, please contact your 3M Sales Representative.

#### 3M Fired Wedge Connector Selection Chart

By Diameter in millimeters; Non-ACSR Conductor

Model Number	Sum of Diameters		Run Diameter		Tap Diameter	
	Max	Min	Max	Min	Max	Min
1/0-2	19.26	18.03	11.00	10.00	8.26	8.03
1/0-1/0	22.00	20.00	11.00	10.00	11.00	10.00
3/0-2	21.26	20.03	13.00	12.00	8.26	8.03
3/0-1/0	24.00	22.00	13.00	12.00	11.00	10.00
3/0-3/0	26.00	24.00	13.00	12.00	13.00	12.00
4/0-2	23.26	22.03	15.00	14.00	8.26	8.03
4/0-1/0	26.00	24.00	15.00	14.00	11.00	10.00
4/0-3/0	28.00	26.00	15.00	14.00	13.00	12.00
336-2	27.08	25.40	18.82	17.37	8.26	8.03
336-1/0	29.82	27.37	18.82	17.37	11.00	10.00
336-3/0	31.82	29.37	18.82	17.37	13.00	12.00
336-4/0	33.82	31.37	18.82	17.37	15.00	14.00
336-336	37.65	34.75	18.82	17.37	18.82	17.37
795-2	36.40	35.79	18.82	27.76	8.26	8.03
795-1/0	39.14	37.76	28.14	27.76	11.00	10.00
795-3/0	41.14	39.76	28.14	27.76	13.00	12.00
795-4/0	43.14	41.76	28.14	27.76	15.00	14.00
795-336	46.97	45.14	28.14	27.76	18.82	17.37
795-795	56.29	55.52	28.14	27.76	28.14	27.76

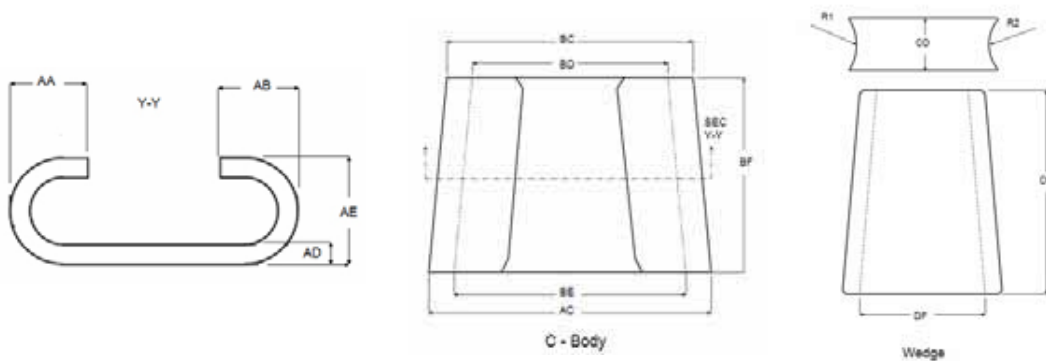
# Overhead Line Products

## 3M Wedge Connector Dimensions

Model	AA	AB	AC	AD	AE	BC	DB	BE
1/0-2	20	20	66.1	7	28.4	58	58	52.1
1/0-1/0	20	20	66.1	7	28.4	58	58	52.1
3/0-2	20	20	66.1	7	28.4	58	58	52.1
3/0-1/0	20	20	66.1	7	28.4	58	58	52.1
3/0-3/0	20	20	66.1	7	28.4	58	58	52.1
4/0-2	21	21	71	7	30	61.4	61.4	57
4/0-1/0	21	21	71	7	30	61.4	61.4	57
4/0-3/0	21	21	71	7	30	61.4	61.4	57
336-2	24	24	92	8	36	77.4	77.4	76
336-1/0	24	24	92	8	36	77.4	77.4	76
336-3/0	24	24	92	8	36	77.4	77.4	76
336-4/0	24	24	92	8	36	77.4	77.4	76
336-336	24	24	92	8	36	77.4	77.4	76
795-2	35	35	130	9	48	112.7	112.7	112
795-1/0	35	35	130	9	48	112.7	112.7	112
795-3/0	35	35	130	9	48	112.7	112.7	112
795-4/0	35	35	130	9	48	112.7	112.7	112
795-336	35	35	130	9	48	112.7	112.7	112
795-795	35	35	130	9	48	112.7	112.7	112

## 3M Wedge Connector Dimensions

Model	AA	AB	AC	AD	AE	BC	DB	BE
1/0-2	42	13.5	5.5	4.5	50	37	0.15	R
1/0-1/0	42	13.5	5.5	5.5	50	35	0.15	B
3/0-2	42	13.5	6.5	4.5	50	34.5	0.15	B
3/0-1/0	42	13.5	6.5	5.5	50	32.5	0.15	B
3/0-3/0	42	13.5	6.5	6.5	50	29.5	0.14	B
4/0-2	50	14.5	7.5	4.5	60	38	0.19	B
4/0-1/0	50	14.5	7.5	5.5	60	36	0.19	B
4/0-3/0	50	14.5	7.5	6.5	60	33.5	0.19	B
336-2	76	18	9.5	4.5	86	55	0.44	Y
336-1/0	76	18	9.5	5.5	86	53	0.43	Y
336-3/0	76	18	9.5	6.5	86	50	0.43	Y
336-4/0	76	18	9.5	7.5	86	49	0.42	Y
336-336	76	18	9.5	9.5	86	45	0.41	Y
795-2	90	27	14.25	4.5	100	82	1.00	Y
795-1/0	90	27	14.25	5.5	100	79	0.99	Y
795-3/0	90	27	14.25	6.5	100	77	0.99	Y
795-4/0	90	27	14.25	7.5	100	75	0.98	Y
795-336	90	27	14.25	9.5	100	72	0.97	Y
795-795	90	14.25	14.25	14.25	100	62	0.9	Y





## Overhead Line Products

### Strain Clamp

#### SCT Series

**General:**

The 3M SCT Strain Clamps Bolt Type are used to fix conductor and ground wire to through insulators or link fitting to tower arms or substation structures. The clamp body and keepers are aluminum alloy, cotter pin is stainless steel, other parts are hot dip galvanized steel. SCT series is suitable for aerial line up to 35kV.



Characteristics and Dimensions:

Catalog No.	Conductor Size (mm)	Dimensions (mm)				U-Bolt No.	Failure Load (kg)	Suitable Conductor ACSR (AWG/MCM)
		L	N	M	C			
SCT-1	5 - 10	108	16	126	18	2	4,079	#6 - #1
SCT-2	10 - 14	187	16	176	18	2	4,079	1/0 - 4/0
SCT-3	14 - 18	203	18	190	18	3	7,138	4/0 - 336.4
SCT-4	18 - 23	284	18	298	18	3	9,177	336.4 - 500
SCT-5	23 - 29	343	18	475	36	5	10,198	556.5 - 795

**Note:** Final determining factor is the diameter of connector

### Suspension Clamp

#### SCP Series

**General:**

The 3M Suspension Clamps Envelope Type are used to hang conductors or ground wire through insulators or link fitting to towers arms or substation structures. The clamps are made of malleable iron or aluminum alloy. The clamp body and keepers are aluminum alloy, cotter pin is stainless steel, other parts are hot dip galvanized steel.



Characteristics and Dimensions:

Catalog No.	Applicable Conductor Size (mm)	Dimensions (mm)					Rated Failure Load (kg)	Weight (kg)	Suitable Conductor ACSR (AWG/MCM)
		L	C	M	R	L			
SCP-3	12.4 - 17.0	53	20	16	10	180	4,079	1.5	up to 266.8
SCP-4	19.0 - 23.5	74	28	16	12	226	4,079	2.3	336.4 - 556.5
SCP-5	24.2 - 28.0	87	35	16	15	262	6,118	4.4	605 - 795

**Note:** Final determining factor is the diameter of connector

## Overhead Line Products

### Formed Wires

#### Guy Grip, Conductor Grip and Armor Rods

3M Formed Wires Series are sets of conductor accessories used in overhead distribution systems. Each product description discussed below:

#### Guy Grip Formed Wires (FGG)

Preformed wires composed of strands group together to form a number of pitches which will be wrapped around with the applicable wire. The pitch inside diameter conforms with the outside diameter of applied wires. The 3M FGG is made of material similar to the guy wires and available in left and right hand lay direction.



Model	Material	Applicable Guy Wire Size
FGG-38	Galvanized Steel	3/8"
FGG-716	Galvanized Steel	7/16"

#### Conductor Grip Formed Wires (FCG)

Preformed wires composed of strands group together to form a desired number of pitches which will be wrapped around with aluminum based conductor. The pitch inside diameter conforms with the conductor's outside diameter. The 3M FCG is made of aluminum clad steel to provide maximum gripping strength and conformity with aluminum conductor. The 3M FCG is also available in left and right hand lay direction.

Model	Material	Applicable ACSR Wire Size
FCG-2	Aluminum Clad Steel	#2 AWG
FCG-2/0	Aluminum Clad Steel	2/0 AWG
FCG-4/0	Aluminum Clad Steel	4/0 AWG
FCG-336	Aluminum Clad Steel	336.4 MCM

#### Armor Rods Formed Wires (FAR)

Preformed wires are made up of aluminum strands which is used to wrap around aluminum based bare conductors. Each strand pitch corresponds to the outside diameter of applicable conductor.

Model	Material	Applicable Guy Wire Size
FAR-336	Aluminum	336.4 MCM

## Features / Advantages / Benefits

### Guy Grip Formed Wires/Conductor Grip Formed Wires

Zinc coated steel strands*	Corrosion resistant	Long term use
Aluminum coated steel strands <sup>+</sup>	Conformity to aluminum conductor <sup>+</sup>	
Robust pitch design	Superior gripping strength	Reliable installation
Long and short leg designation	Easy identification of last applied strands	Faster unwinding procedure

### Armor Rods Formed Wires

Center markings	Guide to uniformly application of strands along the conductor	Ease of installation
Increased strand length	More protected conductor area	Optimum conductor protection

\* For Guy Grip Formed Wires only + For Conductor Grip Formed Wires only

**Cross Arm**

**Animal Gacned**

# Scotch® Mining Tape Splice Kits

## 3100 Series

Scotch® Heavy Duty Mining Tape 31 has a tough, abrasion-resistant backing for jacket repair on mining cables. Due to the extreme mining environment, the original jacket on mining cable gets damaged and needs repair. MSHA-approved Scotch® Heavy Duty Mining Tape 31 offers an innovative solution for cable repair. With its Hypalon® backing, abrasion-resistant properties and flame retardant mastic, Scotch® Heavy Duty Mining Tape 31 applies easily and remains flexible while maintaining a strong moisture seal.

Scotch® Heavy Duty Mining Tape 31 is approved by P-07-KA080005-MSHA (Mining Safety & Health Administration) as the outer jacketing of the 3M™ Mining Tape Splicing Kits 3100 Series. The tape is printed with the MSHA logo/approval number.

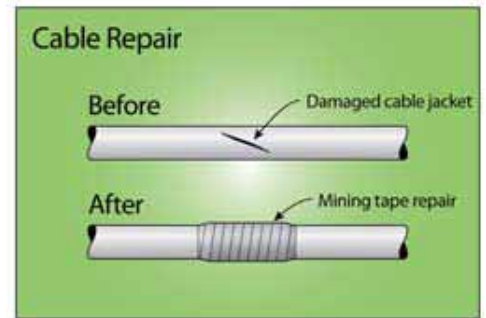
Scotch® Heavy Duty Mining Tape 31 allows for on-site, quick repair of mining cables. Scotch® Heavy Duty Mining Tape 31 is proudly made in the U.S.A.

### Benefits:

- Durable, flexible
- On-site, quick, universal cable repair
- Abrasion, water, UV, chemical and oil-resistant, heavy duty backing
- No heat required
- Moisture-resistant, self-healing, flame retardant mastic
- Will not corrode copper or aluminum
- P-07-KA080005-MSHA Approved

### 3M™ Splice Kit Contents

Mining Cable Splice Kit 3100			
		Size	Voltage Cable Range
1	Scotch® Heavy Duty Mining Tape 31	2" x 8.5'	600V - 2kV #6-500 kcmil
1	Scotch® Linerless Rubber Splicing Tape 130C	1-1/2" x 30'	600V - 2kV #6-500 kcmil
1	3M™ Temflex™ Vinyl Electrical Tape 1700P	1-1/2" x 44'	600V - 2kV #6-500 kcmil
1	3M™ Cable Cleaning Preparation Kit CC-2-Dry		600V - 2kV #6-500 kcmil
Mining Cable Splice Kit 3103			
2	Scotch® Heavy Duty Mining Tape 31	2" x 8.5'	5 - 15kV #6-500 kcmil
1	3M™ Temflex™ Vinyl Electrical Tape 1700P	1-1/2" x 44'	5 - 15kV #6-500 kcmil
3	Scotch® Electrical Shielding Tape 24	2" x 10'	5 - 15kV #6-500 kcmil
2	Scotch® Rubber Mastic Tape 2228	1" x 10'	5 - 15kV #6-500 kcmil
2	3M™ Cable Cleaning Preparation Kit CC-2-Dry		5 - 15kV #6-500 kcmil
3	Scotch® Electrical Semi-conductive Tape 13	3/4" x 15'	5 - 15kV #6-500 kcmil
3	Scotch® Linerless Rubber Splicing Tape 130C	1-1/2" x 30'	5 - 15kV #6-500 kcmil
3	Scotch® Linerless Rubber Splicing Tape 130C	3/4" x 30'	5 - 15kV #6-500 kcmil
Mining Cable Splice Kit 3104			
1	Scotch® Heavy Duty Mining Tape 31	2" x 8.5'	2kV #6-500 kcmil
1	3M™ Temflex™ Vinyl Electrical Tape 1700P	1-1/2" x 44'	2kV #6-500 kcmil
2	Scotch® Electrical Shielding Tape 24	2" x 10'	2kV #6-500 kcmil
1	3M™ Cable Cleaning Preparation Kit CC-2-Dry		2kV #6-500 kcmil
2	Scotch® Linerless Rubber Splicing Tape 130C	1-1/2" x 30'	2kV #6-500 kcmil



3M™ Mining Cable Splice Kit 3100



3M™ Mining Cable Splice Kit 3103



3M™ Mining Cable Splice Kit 3104



## Tartan Aerosols

### Tartan™ 16-007 Multi-Purpose Cleaner

Tartan 16-007 Multi-Purpose Cleaner is designed to penetrate and lubricate protect electrical apparatus. It removes rust from metal parts such as bike chains, tools, engines, bolts and nuts of electrical appliances. It drives moisture from electrical components on personal watercraft.

#### Superior Features:

- Provides better rust protection
- Provides more lubrication, reduces friction and wear
- Pressure in can remains constant to maintain spray power up to the last ounce of content
- More environmental-friendly
- It has fragrance, so with better sensory benefit

#### Applications:

- Rust removal from metal parts such as bike chains, tools, engines, bolts and nuts of electronic appliances.
- Help penetrate stuck metal cleats when replacement becomes necessary
- Lubricate moving parts of breakaway rims
- Drive moisture from electrical components on personal watercraft
- Shine brass and silver fittings and features on ski and sailboats
- Remove adhesive and sticker from helmets and other new equipment
- Help remove grass stains from balls, uniforms and hands
- Electrical panels and outlets (make sure power is disconnected)
- Moving parts of outdoor patio furniture
- Bicycle chains after wash
- Hinges of pruning shears
- Distributor caps
- Lubricate fan spindles and bearing (make sure fan is unplugged)
- Penetrate stuck bolts on air conditioning units when doing repairs
- Prevent rust from forming on wamp coolers
- Stop squeaks on and lubricate window cranks and locks
- Un-stick buttons on air conditioner control units
- Lubricate pop-up sprinkles
- Help remove mildew stains from shower doors, faucets and other areas
- Stop squeaks on toilet handles
- Remove stubborn scuff marks from tile, linoleum and other flooring (be sure to wipe away Tartan 16-007 spray to avoid slipping on the floor)



## Tartan 1635 Color Marking Tape

Tape is a 6-mil thick polyvinyl chloride (PVC) based tape with pressure sensitive rubber based adhesive. Tartan 1635 is designed for use in phase identification, color coding of motor lead and piping systems, and for marking safety areas. This abrasion and weather resistant tape has excellent physical and mechanical properties that wraps smoothly, conforms well and holds over up to 80 degrees Celsius temperature.

- Polyvinyl Chloride (PVC) backing
- Pressure-sensitive rubber based adhesive
- Color coded for job identification and safety
- Flexible and stable over wide temperature range
- Excellent physical and mechanical properties
- Available in various colors

### Installation Techniques

The tape shall be applied in half-lapped layers with sufficient tension to conform and produce a uniform covering. In most applications, this tension will reduce the tape's width to approximately 5/8 of its original width. Apply the tape with no tension on the last wrap to prevent flagging. Shelf Life

Tartan 1635 Color Marking Tape has a two year shelf life when stored under the following recommended storage conditions. Store behind present stock in clean, dry place at a temperature of 21oC (70oF) and 40-50% relative humidity. Good stock rotation is recommended.

### Availability

Tape is available from your local 3M authorized distributor in the following standard roll sizes: 19mm (W) X 6M (L)

Other lengths and widths are available upon special request.

## Barricade Tape BT 100 Series

The 3M Barricade Tape 100 Series is a 3-mil tape without adhesive specifically designed for displaying warning information. The 3M Barricade Tape 100 is constructed of durable low density polyethylene (LDPE) plastic that prevents accidental tearing. The 3M Barricade Tape 100 contains bold two inch black "CAUTION" character printed on a yellow opaque tape backing. The 3M Barricade

Tape 100 is available on the following dimensions:

- 3 inches width X 305 Meters length

### Typical Data / Physical Properties:

Color - Backing	Yellow
Color - Text	Black
Width	3 inches
Length	305 Meters
Thickness	0.003 inch (3 mils)
Adhesive	None
*Tensile Strength at Break	2,000 psi
*Elongation (% at break)	200%

\*Typical values, should not be used for specification



### Typical Data / Physical Properties:

Temperature Rating	80 deg. C
Thickness	PSTC-133 (6 mils)
Adhesion to steel	ASTM D-1000 (16 oz/in)
Adhesion to backing	ASTM D-1000 (16 oz/in)
Elongation at break	PSTC-131 (200 %)
Tensile Strength	ASTM D-1000 (14 lbs/in)

Note: These are typical values and should not be used for specification purposes.



## Tartan 1710 General Use Vinyl Electrical Tape

- Flame Retardant
- Flexible PVC
- Aggressive Rubber Adhesive
- UL Listed
- PNS Certified

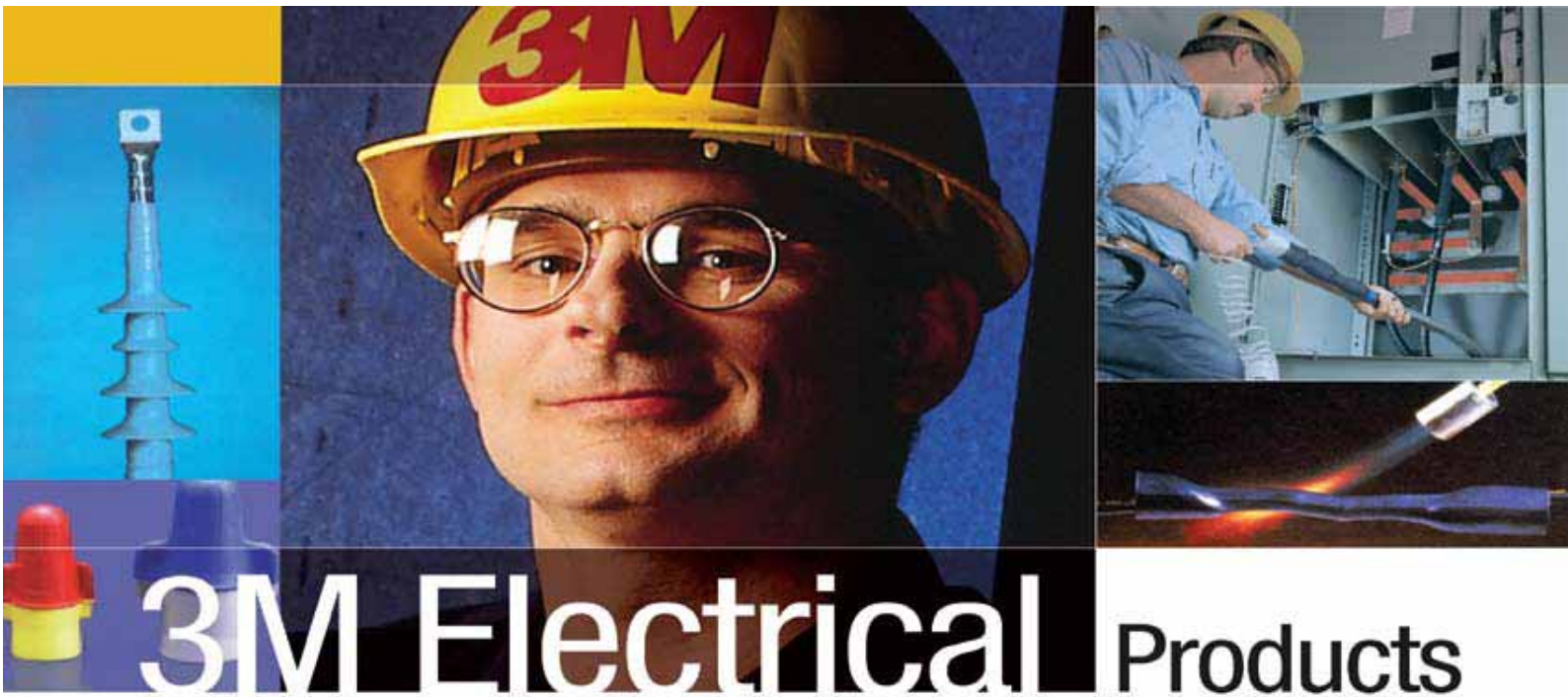


## Tartan 2323 Rubber Tape

- General Use Rubber Tape
- Self-fusing, insulating tape based on EPR







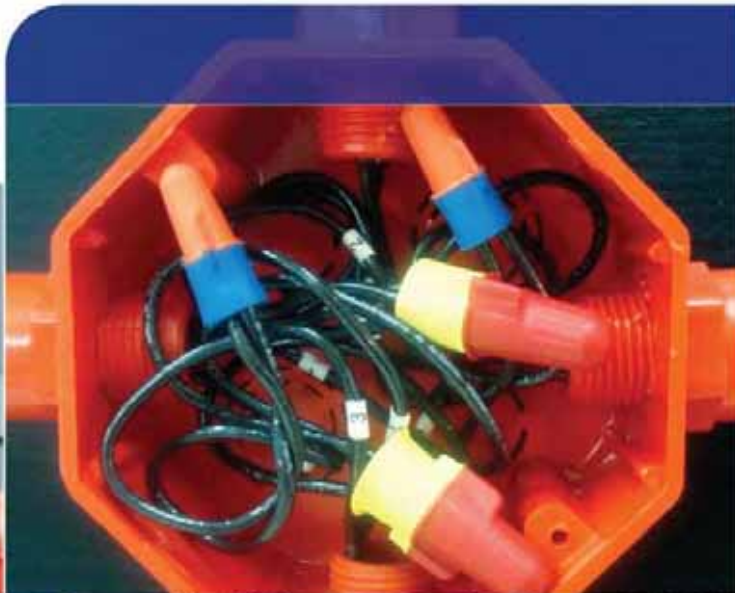
# 3M Electrical Products

You're in a demanding industry. To be successful, you need a wide range of reliable products designed to effectively manage your daily processes. You need a supplier with a solid understanding of your industry and the technology that drives it. Quite simply, you need 3M. Our Electrical Products Division designs and manufactures a comprehensive line of products that can address your diverse applications. Widely recognized strength, 3M has the products and services you need and the name you can trust.

In your business, power, technology and reliability are essential. 3M delivers that and more. We have the power of a diversified, global manufacturer with more than 60,000 products in our line; a reputation for technical excellence and innovation; and employees committed to delivering quality products and service to you, our valued customer.

This total quality management philosophy is evident in all our manufacturing facilities located in countries throughout the world. We are committed to achieving registration of these 3M manufacturing locations under the ISO 9002 quality systems standard; one more reason 3M products will continue to provide in-place, reliable performance over time.

Our commitment and capability doesn't stop with electrical products, it starts there. To explore the many ways we can serve you, contact your 3M representative today.



**Electronics and Communications Business**

9F Three World Square Building  
22 Upper McKinley Road, McKinley Hill  
Fort Bonifacio, Taguig City 1634  
632 878 3674 Tel  
632 878 3691 to 95 Fax  
[www.3M.com/ph](http://www.3M.com/ph)

3M Cebu  
Unit 203 Cebu Holdings Center  
Cebu Business Park, Cebu City 6000  
6332 233 6814  
6332 233 6816  
6332 233 6993 Fax

3M Davao  
Door 205 LMGG Bldg., Mabini cor.  
Avanceña St., Davao City 8000  
6382 222 5556  
6382 221 1466  
6382 221 2386  
6382 221 1710 Fax