Cold Shrink Medium Voltage Cable Accessories

For extruded dielectric power cable from 15V through 35kV and up to 630mm^2

G&W Electric

Engineered to order. Built to last.

Pre-Molded (PM) Series Cold Shrink Accessories

As a cable accessories manufacturer with more than 100 years of history, G&W Electric offers a range of cable accessories to meet medium voltage, high voltage, ultra high voltage and extra high voltage requirements.

The G&W Electric Pre-Molded (PM) series of cold shrink medium voltage cable accessories are high-end products available for extruded dielectric power cables from 15kV through 35kV and up to 630mm^2. State-of-the-art software is employed to perform electric stress analysis and optimization which ensures the electric stress of these cable accessories is distributed in the most rational way. Liquid silicone rubber is used as the raw material, which greatly improves the mechanical and electrical properties of this product. This allows installation in various kinds of complicated environments, resulting in simple, reliable installation and excellent product performance.

Features and Benefits

- Liquid silicone rubber (LSR) is used for outstanding electrical insulation
- Employs design concepts used for high voltage stress control
- Hydrophobic and highly UV resistant for excellent performance in outdoor applications
- Superior flexibility ensures that the product holds the cable firmly, eliminating air gaps produced by thermal expansion and contraction during operation
- With 300% expansion allowance, a single product can be used with a variety of cable sizes
- Does not require special skills when installing
- Eliminates uneven heating that may occur when installing heat shrink accessories
- Single piece pre-molded design eliminates errors that could occur with multiple piece accessories

Applications and Standards

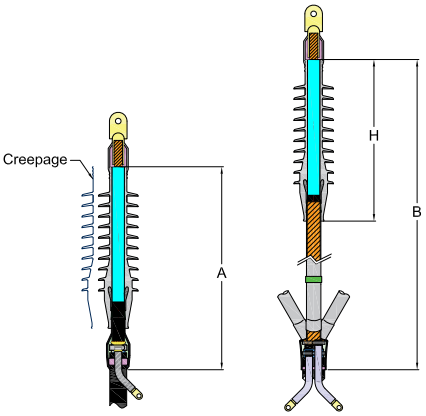
- Standard and non-standard cables with extruded solid insulation (XLPE and EPR)
- Copper and aluminum conductors
- Metal shielding (Copper Wire, Copper Tape, Aluminum Foil, etc.)
- Armored or non-armored jackets (Steel wire armor, etc.)
- GB/T 12706
- GB/T 18889
- IEC 60502

Three-core Power Cable with Extruded Insulation

Indoor/Outdoor Terminations

Dimensions

Type	H(mm)	Creepage(mm)	A(mm)	B(mm)
PMN15	190	300	320	760
PMT15	323	498	450	850
PMN20	330	437	460	860
PMT20	400	620	530	930
PMN35	380	760	510	950
PMT35	460	1085	590	1400
PMTL35 High-altitude applications	580	1600	710	1500



Single-core power cable

Three-core power cable

Main Parameters	8.7/15kV	12/20kV	26/35kV	26/35kV
Type	PMN15/PMT15	PMN20/PMT20	PMN35/PMT35	PMTL35
AC power frequency withstand voltage (5 min.)	39kV	54kV	117kV	159kV
Power frequency withstand voltage (1 min., wet, outdoor terminals only)	35kV	48kV	104kV	104kV
DC withstand voltage (15 min.)	35kV	48kV	104kV	104kV
Impulse voltage test (+/-10 times)	95kV	125kV	200kV	272kV
Partial discharge test	≤10 pC at 15kV	≤10 pC at 20kV	≤10 pC at 45kV	≤10 pC at 45kV
Combined cycling test with AC voltage, 60 cycles (In air)	23kV	30kV	65kV	65kV
Salt spray test (Outdoor)	11kV	15kV	33kV	33kV
Wet aging test (Indoor)	11kV	15kV	33kV	33kV

15kV Cold Shrink Termination Selection Guide

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)	
	Single-Core Kits	Three-Core Kits		6.35/11(12)kV	8.7/15(17.5)kV
Indoor Termination	PMN15-1.1	PMN15-3.1	17 - 21	70~95	25~50
	PMN15-1.2	PMN15-3.2	21 - 25	120~150	70~120
	PMN15-1.3	PMN15-3.3	25 - 30	185~300	150~240
	PMN15-1.4	PMN15-3.4	30 - 35	400	300~400
	PMN15-1.5	PMN15-3.5	35 - 41	500~630	500~630
Outdoor Termination	PMT15-1.1	PMT15-3.1	17~21	70~95	25~50
	PMT15-1.2	PMT15-3.2	21~25	120~150	70~120
	PMT15-1.3	PMT15-3.3	25~30	185~300	150~240
	PMT15-1.4	PMT15-3.4	30~35	400	300~400
	PMT15-1.5	PMT15-3.5	35~41	500~630	500~630

20kV Cold Shrink Termination Selection Guide

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)
	Single-Core Kits	Three-Core Kits		12/20(24)kV
Indoor Termination	PMN20-1.1	PMN20-3.1	23.5~29.5	70~185
	PMN20-1.2	PMN20-3.2	29.5~35	240~300
	PMN20-1.3	PMN20-3.3	35~42	400~500
Outdoor Termination	PMT20-1.1	PMT20-3.1	23.5~29.5	70~185
	PMT20-1.2	PMT20-3.2	29.5~35	240~300
	PMT20-1.3	PMT20-3.3	35~42	400~500

35kV Cold Shrink Termination

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm²)	
	Single-Core Kits	Three-Core Kits		19/33(36)kV	26/35(40.5)kV
Indoor Termination	PMN35-1.0	PMN35-3.0	26~31	50~95	25~35
	PMN35-1.1	PMN35-3.1	31~36	120~185	50~95
	PMN35-1.2	PMN35-3.2	36~41	240~300	120~185
	PMN35-1.3	PMN35-3.3	41~47	400~500	240~400
	PMN35-1.4	PMN35-3.4	47~53	630	500~630
Outdoor Termination	PMT35-1.0	PMT35-3.0	26~31	50~95	25~35
	PMT35-1.1	PMT35-3.1	31~36	120~185	50~95
	PMT35-1.2	PMT35-3.2	36~41	240~300	120~185
	PMT35-1.3	PMT35-3.3	41~47	400~500	240~400
	PMT35-1.4	PMT35-3.4	47~53	630	500~630
Outdoor Termination (Plateau Area Type)	PMTL35-1.1	PMTL35-3.1	31~36	120~185	50~95
	PMTL35-1.2	PMTL35-3.2	36~41	240~300	120~185
	PMTL35-1.3	PMTL35-3.3	41~47	400~500	240~400
	PMTL35-1.4	PMTL35-3.4	47~53	630	500~630

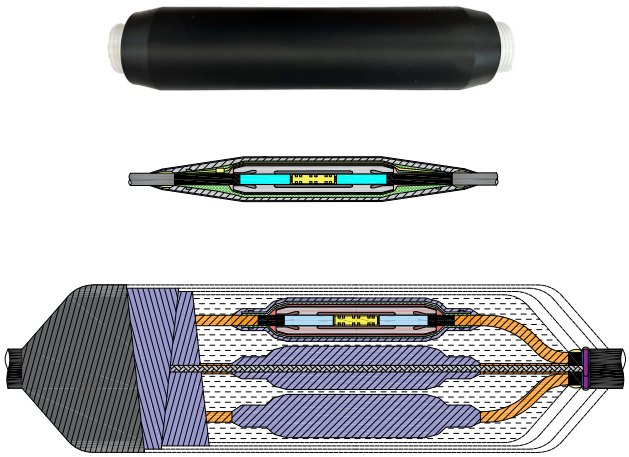
- Cable information is required to provide correct termination kit
- Optional cable preparation kit (including cable jacket seal kit and grounding kit) available
- Compression lugs and shear bolt lugs are available – must be ordered separately

Three-core Indoor and Outdoor kits

1. Cold Shrink Termination Body
2. Sand Paper
3. Constant Force Spring
4. Silicone Grease
5. Grounding Braid
6. Rubber Glove
7. Nylon Glove
8. Cleaning Cloth
9. Triangular Cone
10. Trident Tube
11. Cold Shrink Sealing Tube
12. PVC Tape
13. Semi-Con Tape
14. Insulation Tape
15. Long Cold Shrink Sheath Tube
16. Sealing Strip
17. Filling Strip
18. Lug (Options Available)
19. Installation Instruction
20. Scale Ruler

Cold Shrink Straight Joint

Main Parameters	8.7/15kV	12/20kV	26/35kV
Type	PMJ15	PMJ20	PMJ35
AC power frequency withstand voltage (5 min.)	39kV	54kV	117kV
DC withstand voltage (15 min.)	35kV	48kV	104kV
Impulse voltage test (+/-10 times)	95kV	125kV	200kV
Partial discharge test	≤10 pC at 15kV	≤10 pC at 20kV	≤10 pC at 45kV
Combined cycling test with AC voltage, 60 cycles (In air)	23kV	30kV	65kV



15kV Cold Shrink Straight Joint

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)	
	Single-Core Kits	Three-Core Kits		6.35/11(12)kV	8.7/15(17.5)kV
Straight Joint	PMJ15-1.1	PMJ15-3.1	17~21	70~95	25~50
	PMJ15-1.2	PMJ15-3.2	21~25	120~150	70~120
	PMJ15-1.3	PMJ15-3.3	25~30	185~300	150~240
	PMJ15-1.4	PMJ15-3.4	30~35	400	300~400
	PMJ15-1.5	PMJ15-3.5	35~41	500~630	500~630

20kV Cold Shrink Straight Joint

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)
	Single-Core Kits	Three-Core Kits		12/20(24)kV
Straight Joint	PMJ20-1.1	PMJ20-3.1	23.5~29.5	70~185
	PMJ20-1.2	PMJ20-3.2	29.5~35	240~300
	PMJ20-1.3	PMJ20-3.3	35~42	400~500

35kV Cold Shrink Straight Joint

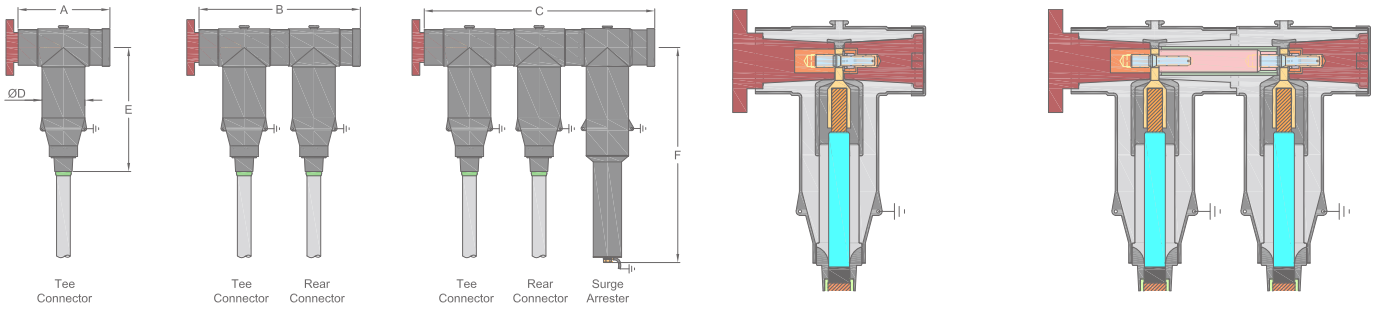
Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)	
	Single-Core Kits	Three-Core Kits		19/33(36)kV	26/35(40.5)kV
Straight Joint	PMJ35-1.1	PMJ35-3.1	31~36	120~185	50~95
	PMJ35-1.2	PMJ35-3.2	36~41	240~300	120~185
	PMJ35-1.3	PMJ35-3.3	41~47	400~500	240~400
	PMJ35-1.4	PMJ35-3.4	47~53	630	500~630

Straight Joint Kit

1. Cold Shrinkable Joint
2. Semi-Con Tape
3. Aqual-Seal Tape
4. Silicone Grease
5. Cleaning Cloth
6. Transparent PVC Tape
7. Rubber Glove
8. Nylon Glove
9. Sandpaper
10. PVC Tape
11. Tapeline
12. Grounding Braid
13. Copper Grounding Mesh
14. Constant force spring
15. Filling Strip
16. Armor Tape
17. Connector(Options Available)
18. Installation Instruction

Field application

Shielded Separable Connectors



Type	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)
PMTCS15 PMBCS15 PMBAS15(17/45)	171	269	367	71	243	228
PMTCS35 PMBCS35 PMBAS15(15/134)	214	377	538	100	290	502

- Cable information is required to provide the correct termination kit
- Optional cable preparation kit (including cable jacket seal kit and grounding kit) available

Shielded T and Shielded Rear Connectors Kits

Shielded Separable Connectors, Main Features

- High temperature vulcanized Ethylene Propylene Diene Monomer (EPDM)
- High weather resistance
- High aging resistance
- Flame retardant
- Pre-molded integrated design with separable stress cone
- Extruded outer shield with a considerable thickness
- Attractive and lightweight, easy to install
- Insulation plug with built-in voltage detector
- Scalable connections allowing combinations

Type	PMTCS15 PMBCS15	PMTCS35 PMBCS35
Voltage Class	8.7/15(17.5)kV	26/35(40.5)kV
Interface Type	C	C
Rated current (Ir)	630A	630A
AC power frequency withstand voltage (5min.)	39kV	117kV
DC withstand voltage (15 min.)	35kV	104kV
Impulse voltage test (+/- 10 times)	95kV	200kV
Partial discharge test	≤10 pC at 15kV	≤10 pC at 45kV
Power frequency withstand voltage (1 min., wet, outdoor, terminals only)	35kV	104kV
Combined cycling test with AC voltage (30 cycles in air and 30 cycles in water)	23kV	65kV
Shield resistance	≤ 5 k Ω	≤ 5 k Ω
Leakage current (at U_m)	≤0.5mA	0.5mA

Catalog Number Builder

Basic Pronduction Kit Type Code - Lug Code - Optional Kit Code (BKT/CPT)

Example

PMTCS15-1.4 - 185CU - BKT

15kV 630A Tee Connector, Single-Core Cable #4 Stress Cone, With 185mm^2 Copper Compression Lug, Just Basic Production Kit

Example

PMBCS35 3.2 - 95AL - CPT

35kV 630A Rear Connector, Three-Core Cable, 2# Stress Cone, With 95mm^2 Bimetallic Compression Lug, Within Cable Preparation Kit (Including Cable Jackert Seal Kit and Grounding Kit)

Shielded Separable Connectors Selection Guide

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)	
	Single-Core Kits	Three-Core Kits		6.35/11(12)kV	8.7/15(17.5)kV
T Connector	PMTCS15-1.1	PMTCS15-3.1	16~18.5	50	25~35
	PMTCS15-1.2	PMTCS15-3.2	18.5~21	70~95	50
	PMTCS15-1.3	PMTCS15-3.3	21~24	120~150	70~120
	PMTCS15-1.4	PMTCS15-3.4	24.5~27.5	185~240	150~185
	PMTCS15-1.5	PMTCS15-3.5	28.5~31.5	300	240
	PMTCS15-1.6	PMTCS15-3.6	31.5~34.5	400	300~400
Rear Connector	PMBCS15-1.1	PMBCS15-3.1	16~18.5	50	25~35
	PMBCS15-1.2	PMBCS15-3.2	18.5~21	70~95	50
	PMBCS15-1.3	PMBCS15-3.3	21~24	120~150	70~120
	PMBCS15-1.4	PMBCS15-3.4	24.5~27.5	185~240	150~185
	PMBCS15-1.5	PMBCS15-3.5	28.5~31.5	300	240
	PMBCS15-1.6	PMBCS15-3.6	31.5~34.5	400	300~400

35kV Selection Guide

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm^2)	
	Single-Core Kits	Three-Core Kits		19/33(36)kV	26/35(40.5)kV
T Connector	PMTCS35-1.1	PMTCS35-3.1	31~33	120~150	50~70
	PMTCS35-1.2	PMTCS35-3.2	34~36.5	185~240	95~120
	PMTCS35-1.3	PMTCS35-3.3	37~39.5	300	150~185
	PMTCS35-1.4	PMTCS35-3.4	40.5~44	400	240~300
	PMTCS35-1.5	PMTCS35-3.5	45~49.5	500~630	400~500
Rear Connector	PMBCS35-1.1	PMBCS35-3.1	31~33	120~150	50~70
	PMBCS35-1.2	PMBCS35-3.2	34~36.5	185~240	95~120
	PMBCS35-1.3	PMBCS35-3.3	37~39.5	300	150~185
	PMBCS35-1.4	PMBCS35-3.4	40.5~44	400	240~300
	PMBCS35-1.5	PMBCS35-3.5	45~49.5	500~630	400~500

Lug for Shielded Separable Connector Selection Guide

Conductor Cross Section(mm^2)	Copper Compression Lug	Bimetallic (Aluminum & Copper) Compression Lug
25	25CU	25AL
35	35CU	35AL
50	50CU	50AL
70	70CU	70AL
95	95CU	95AL
120	120CU	120AL
150	150CU	150AL
185	185CU	185AL
240	240CU	240AL
300	300CU	300AL
400	400CU	400AL
500	500CU	500AL
630	630CU	630AL

Item	Description	
1	T Body Connector	Rear Connector Body
2	Plug	Connecting Rod
3	Stress Cone	
4	Semi-Con Tape	
5	Lug	
6	Hardware	
7	PVC Tape	
8	Silicone Grease	
9	Sand Paper	
10	Installation Instruction	
11	Assembling Tool	
12	Rubber Glove	
13	Nylon Glove	
14	Cleaning Cloth	
14	Installation Instruction	
15	Scale Ruler	
16	Cold Shrink Trident Tube	
17	Cold Shrink Sheath Tube	
18	Sealing Strip	
19	Filling Strip	
20	Spring Roll	
21	Insulation Tape	
22	Copper Braid	
23	Triangular Cone	

Three-core T Body Connector Kits

Three-core Rear Connector Kits

- Cable information is required to provide the correct termination kit.
- Basic Product Kit (BKT): Item 1 to 15.
- Cable Preparation Kit (CPT): Item 16 to 23.

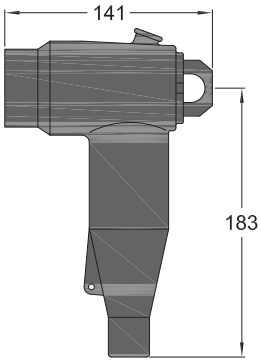
Shielded Surge Arrester

Name	Units	8.7/15kV	26/35kV
Product Model	-	**PMBAS15(17/45)**	**PMBAS35(51/134)**
System nominal voltage	kV	10	35
Surge protector rated voltage	kV	17	51
Continuous operating voltage	kV	13.6	40.8
Nominal discharge current, In	kA	5	5
Reference voltage, DC, 1 mA	kV	≥24	≥75
Leakage current, 0.75U, 1 mA	μ A	≤20	≤20
Steep current impulse residual voltage	kV	≤51.8	≤154
Lightning impulse residual voltage	kV	≤45	≤134
Switching impulse residual voltage	kV	≤35	≤114
Resistive current (Peak value)	μ A	≤200	≤200
Full current (Peak value)	μ A	≤600	≤1000
Partial discharge at 1.05Uc	pC	≤10	≤10
2ms square wave current impulse withstand	A	200	400
High current impulse withstand	kA	65	65

Item	Description
1	Surge Arrester Body
2	Connecting Rod
3	Hardware
4	Silicone Grease
5	Rubber Glove
6	Nylon Glove
7	Installation Instruction
8	Assembling Tool
9	Cleaning Cloth

250A Euro Style Shielded Load break Elbow Connector

Voltage Class, kV	Conductor Cross Section mm2	Cable Insulation range (mm)	Shielded Elbow Connector	
			Single-core Models	Three-Core Models
8.7/15kV	25 - 50	17 - 21	PMEC15250-1.1	PMEC15250-3.1
	70 - 95	21 - 23	PMEC15250-1.2	PMEC15250-3.2
	120	23 - 25	PMEC15250-1.3	PMEC15250-3.3



Type	PMEC15250
Voltage Class	8.7/15(17.5)kV
AC power frequency withstand voltage (5min.)	39kV
DC withstand voltage (15 min.)	35kV
Impulse voltage test (+/- 10 times)	95kV
Partial discharge test	≤10 pC at 15kV
Combined cycling test with AC voltage (30 cycles in air and 30 cycles in water)	23kV

Item	Description
1	Elbow Connector Body
2	Lug
3	Connecting Bar
4	Hexagon Wrench
5	Clamping Plate
6	Clamping Hook
7	Rubber Glove
8	Nylon Glove
9	PVC Tape
10	Semi-Con Tape
11	Silicone Grease
12	Sand Paper
13	Cleaning Cloth
14	Installation Instruction
15	Scale Ruler
16	Cold Shrink Trident Tube
17	Cold Shrink Sheath Tube
18	Sealing Strip
19	Filling Strip
20	Spring Roll
21	Insulation Tape
22	Copper Braid
23	Triangular Cone

Three-core Elbow Connector Kits

- Cable information is required to provide the correct termination kit.
- Optional cable preparation kit (including cable jacket seal kit and grounding kit) available
- Mechanical lugs are NOT available.
- Basic Production Kit (BKT): Item 1 to 15.
- Cable Preparation Kit (CPT): Item 16 to 23.

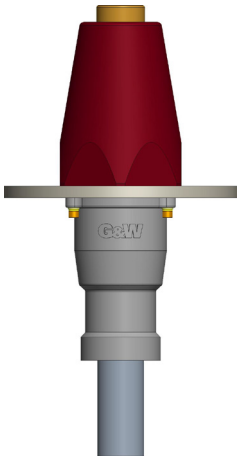
Field application

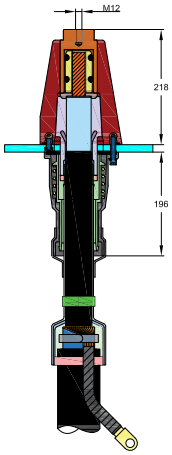


Inner Cone Plug-in

Separable Connectors

Main Parameters	26/35kV
Type	GIS35
Interface Type	#3
Rated current (Ir)	1250A
AC power frequency withstand voltage (5 min.)	117kV
DC withstand voltage (15 min.)	104kV
Impulse voltage test (+/-10 times)	200kV
Partial discharge test	≤10 pC at 45 kV
Combined cycling test at constant pressure, 63 cycles (33 in air + 30 in water)	65kV

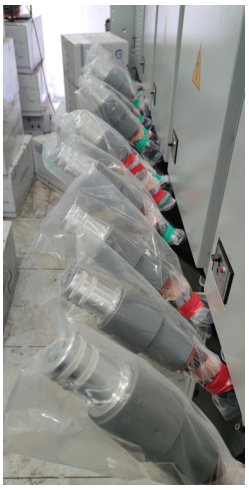




Inner Cone Plug-in Separable Connector Type Chart

Product	Type Chart		Insulation Diameter(mm)	Conductor Cross Section(mm²)	
	Single-Core Kits	Three-Core Kits		19/33(36)kV	26/35(40.5)kV
Inner Cone Plug-in Separable Connector	GIS35-1.1	GIS35-3.1	31.5~34	120~150	50~70
	GIS35-1.2	GIS35-3.2	34~37	185~240	95~120
	GIS35-1.3	GIS35-3.3	37~40	300	150~185
	GIS35-1.4	GIS35-3.4	41.5~44.5	400~500	240~300
	GIS35-1.5	GIS35-3.5	46.5~49.5	630	400~500
	GIS35-1.6	GIS35-3.6	50~53	-	630

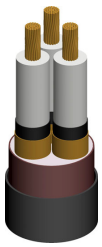
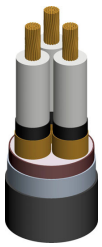
Item	Description
1	Lug
2	Stress Cone Stopper
3	Stress Cone
4	Cable Entrance Housing
5	Housing Sealing Tube
6	Hardware
7	Sand Paper
8	PVC Tape
9	Spring Roll
10	Cleaning Cloth
11	Semi-Con Tape
12	Insulation Tape
13	Rubber Glove
14	Nylon Glove
15	Triangular Cone
16	Silicone Grease
17	Copper Braid
18	Sheath Tube
19	Trident Tube
20	Installation Instruction
21	Tapeline
22	Sealing Strip
23	Filling Strip



Three-core Inner Cone Plug-in Separable Connector Kits

- Cable information is required to provide the correct termination kit.
- Insulator should be ordered separately.

Cable Type Quick Selection

Single-Core	 Conductor Insulation Insulation Screen Copper Tape Screen Outer Sheath(Jacket) **A**	 Conductor Insulation Insulation Screen Copper Tape Screen Inner Sheath Armor (Tape / Wire) Outer Sheath(Jacket) **B**
	 Conductor Insulation Insulation Screen Copper Wire Screen Outer Sheath(Jacket) **C**	 Conductor Insulation Insulation Screen Copper Wire Screen Inner Sheath Outer Sheath(Jacket) Laminated Aluminium Tape / Foil **D**
	 Conductor Insulation Insulation Screen Copper Wire Screen Inner Sheath Armor (Tape / Wire) Outer Sheath(Jacket) **E**	 Conductor Insulation Insulation Screen Copper Wire Screen Laminated Aluminium Tape / Foil Inner Sheath Inner Sheath Armor (Tape / Wire) Outer Sheath(Jacket) **F**
Three-Core	 Conductor Insulation Insulation Screen Copper Tape Screen Inner Sheath Outer Sheath(Jacket) **G**	 Conductor Insulation Insulation Screen Copper Tape Screen Inner Sheath Outer Sheath(Jacket) Armor (Tape / Wire) **H**

Cable Preparation Kit				
Grounding Kit	Copper Tape Screen	Copper Braid	Jacket Seal Kit	Insulation Tape
		Constant Force Spring		Sheath Tube
	Copper Wire Screen	Grounding Lug (Optional)		Sealing Strip
		PVC Tape (Optional)		Filling Strip
	Armor	Copper Braid		Trident Tube (Three-Core Cable Only)
		Constant Force Spring		Triangular Cone (Three-Core Cable Only)

- Different configurations will be applied to different cables, please provide cable information.
- If grounding lugs are needed, the cross section of cable copper wire screen should be informed.

Contact us today:

708.388.5010 or info@gwelec.com

G&W Electric

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Since 1905, G&W Electric has been a leading provider of innovative power grid solutions including the latest in load and fault interrupting switches; reclosers; sensors; system protection equipment; power grid automation; transmission and distribution cable terminations; and joints and other cable accessories. G&W Electric is headquartered in Bolingbrook, Illinois, U.S.A., with manufacturing facilities and sales support in more than 100 countries, including Canada, Italy, China, Mexico, Brazil, India and Singapore. We help our customers meet their challenges and gain a competitive edge through a suite of advanced products and technical services.

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