



SECTION 10

GROUNDING CONNECTORS

SUBSTATION CONNECTORS - 230KV AND BELOW



GROUNDING CONNECTORS

PLP **Substation Grounding Connectors** for 230kV and below are designed for various configurations of rigid bus tube, stranded conductor and solid rod/conductor to fulfill all grounding arrangement needs. All contact faces are manufactured to maximize contact surface area and provide a superior installed fit.

FEATURES AND BENEFITS

- Complete range of sizes for connecting most standard bus tube, solid rod and stranded/solid conductor
- Tin plating capabilities and specific hardware material options offered
- Custom design solutions available to secure your most challenging connections

TC

Bronze Bolted Grounding Connectors

Two Cable Cross

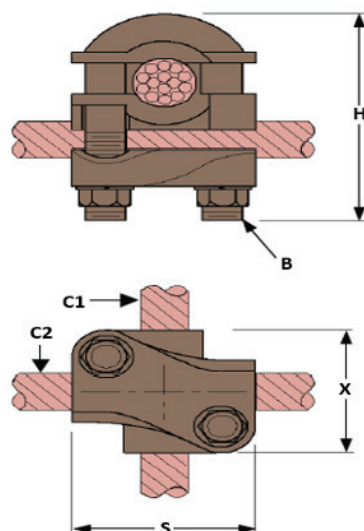
230kV and Below

Copper alloy connector for two perpendicular cables.
Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Cable AWG/MCM				Dimensions			
	AWG/MCM (C1)	AWG/MCM (C1) Diameter	AWG/MCM (C2)	AWG/MCM (C2) Diameter	in (mm)			
		in (mm)		in (mm)	H	S	B	X
TC1111	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	2.68 (68)	1.65 (42)	3/8 (10)	1.65 (42)
TC1411	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	4S - 2/0T*	0.365 - 0.575 (9.3 - 14.6)	2.68 (68)	1.81 (46)	3/8 (10)	1.81 (46)
TC1414	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	2.68 (68)	1.81 (46)	3/8 (10)	1.81 (46)
TC1919	300 - 500	0.630 - 0.814 (16.0 - 20.7)	300 - 500	0.630 - 0.814 (16.0 - 20.7)	3.62 (92)	2.52 (64)	1/2 (13)	2.52 (64)

*S denotes SOLID wire, and T denotes STRANDED wire.

TD

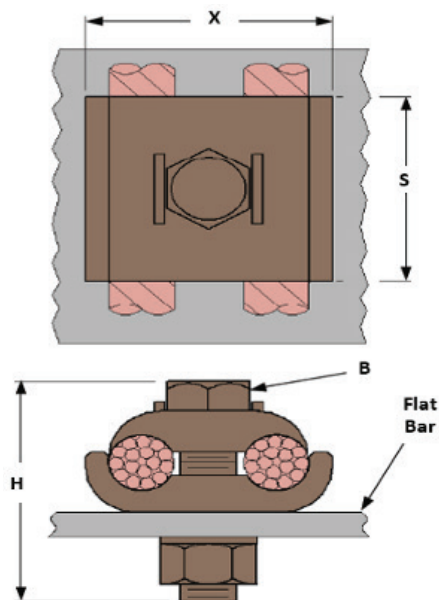
Bronze Bolted Grounding Connectors Two Cables to Flat, Double Body 230kV and Below

Copper alloy connector for clamping two cables to a flat surface. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Cable AWG/MCM		Flat Bar Thickness	Dimensions			
	AWG/MCM	AWG/MCM Diameter		in (mm)			
		in (mm)		H	X	B	S
TD1111	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.250 (6.4)	2.24 (57)	1.77 (45)	3/8 (10)	1.50 (38)
TD1414	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.250 (6.4)	2.32 (59)	2.17 (55)	1/2 (13)	1.50 (38)
TD1919	300 - 500	0.630 - 0.814 (16.0 - 20.7)	0.250 (6.4)	2.76 (70)	2.64 (67)	1/2 (13)	1.50 (38)

*S denotes SOLID wire, and T denotes STRANDED wire.

TDH

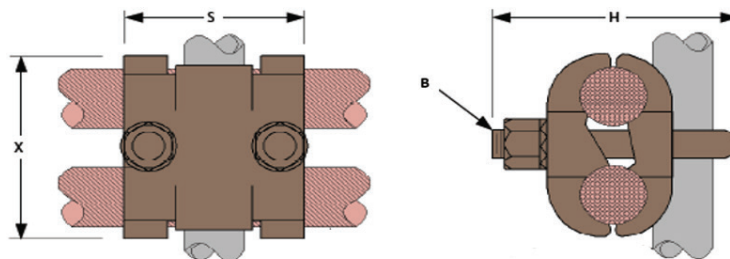
Bronze Bolted Grounding Connectors Two Cables to Tube, 90-Degrees 230kV and Below

Copper alloy connector for clamping two cables to a tube at 90-degrees. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Tube NPS Diameter	Cable AWG/MCM		Dimensions			
		AWG/MCM	AWG/MCM Diameter	in (mm)			
			in (mm)	H	S	B	X
TDH564T	3/8	8S - 4T*	0.129 - 0.232 (3.3 - 5.9)	2.76 (70)	1.69 (43)	3/8 (10)	1.97 (50)
TDH5611	3/8	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	2.76 (70)	1.69 (43)	3/8 (10)	1.97 (50)
TDH5614	3/8	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	2.76 (70)	1.69 (43)	3/8 (10)	1.97 (50)
TDH5619	3/8	300 - 500	0.630 - 0.814 (16.0 - 27.0)	3.27 (83)	2.80 (71)	1/2 (13)	3.31 (84)
TDH5625	3/8	600 - 800	0.893 - 1.031 (22.7 - 26.2)	3.27 (83)	2.80 (71)	1/2 (13)	3.31 (84)

*S denotes SOLID wire, and T denotes STRANDED wire.

TDV

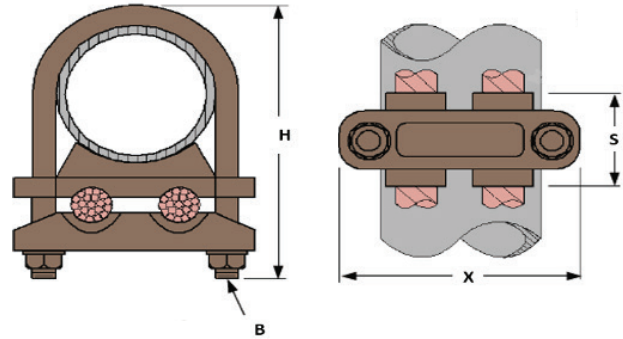
Bronze Bolted Grounding Connectors Two Cables to Tube, Parallel 230kV and Below

Copper alloy connector for clamping two cables to a tube in a parallel. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Tube NPS Diameter	Cable AWG/MCM		Dimensions			
		AWG/MCM	AWG/MCM Diameter	in (mm)			
				H	S	B	X
TDV3811	1	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	3.27 (83)	1.34 (34)	3/8 (10)	2.91 (74)
TDV3814	1	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.27 (83)	1.34 (34)	3/8 (10)	2.91 (74)
TDV4011	1-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	3.86 (98)	1.34 (34)	3/8 (10)	3.31 (84)
TDV4014	1-1/2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.86 (98)	1.34 (34)	3/8 (10)	3.31 (84)
TDV4111	2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	4.49 (114)	1.30 (33)	3/8 (10)	3.58 (91)
TDV4114	2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	4.49 (114)	1.30 (33)	3/8 (10)	3.58 (91)
TDV4211	2-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	5.04 (128)	1.46 (37)	3/8 (10)	4.09 (104)
TDV4214	2-1/2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	5.04 (128)	1.46 (37)	3/8 (10)	4.09 (104)
TDV4311	3	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	5.67 (144)	1.50 (38)	3/8 (10)	4.80 (122)
TDV4314	3	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	5.67 (144)	1.50 (38)	3/8 (10)	4.80 (122)
TDV4411	3-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	6.22 (158)	1.50 (38)	3/8 (10)	5.31 (135)
TDV4414	3-1/2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	6.22 (158)	1.50 (38)	3/8 (10)	5.31 (135)
TDV4511	4	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	7.40 (188)	1.61 (41)	3/8 (10)	5.98 (152)
TDV4514	4	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	7.40 (188)	1.61 (41)	3/8 (10)	5.98 (152)

*S denotes SOLID wire, and T denotes STRANDED wire.

TE

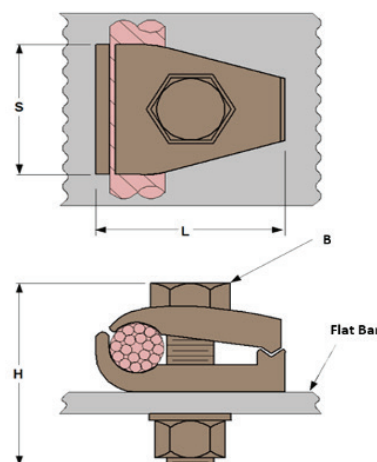
Bronze Bolted Grounding Connectors One Cable to Flat, Double Body 230kV and Below

Copper alloy connector for clamping one cable to a flat surface. Electrical filler compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Cable AWG/MCM		Flat Bar Thickness	Dimensions			
	AWG/MCM	AWG/MCM Diameter		in (mm)			
		in (mm)		H	L	B	S
TE4T	8S - 4T*	0.129 - 0.232 (3.3 - 5.9)	0.250 (6.4)	1.97 (50)	1.54 (39)	3/8 (10)	1.10 (28)
TE20	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.250 (6.4)	1.97 (50)	1.54 (39)	3/8 (10)	1.10 (28)
TE20-M1	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.906 (23)	2.76 (70)	1.54 (39)	3/8 (10)	1.10 (28)
TE250	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.250 (6.4)	2.28 (58)	1.97 (50)	1/2 (13)	1.50 (38)
TE250-M1	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.750 (19)	2.83 (72)	1.97 (50)	1/2 (13)	1.50 (38)
TE250-M2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.500 (12.7)	2.52 (64)	1.97 (50)	1/2 (13)	1.50 (38)
TE500	300 - 500	0.630 - 0.814 (16.0 - 20.7)	0.250 (6.4)	2.83 (72)	2.44 (62)	1/2 (13)	1.50 (38)
TE500-M1	300 - 500	0.630 - 0.814 (16.0 - 20.7)	0.906 (23)	3.31 (84)	2.44 (62)	1/2 (13)	1.50 (38)
TE750	550 - 750	0.630 - 0.814 (16.0 - 20.7)	0.250 (6.4)	3.43 (87)	2.87 (73)	5/8 (16)	1.89 (48)

*S denotes SOLID wire, and T denotes STRANDED wire.

TG

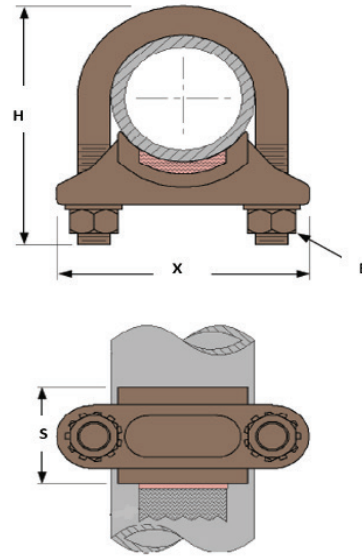
Bronze Bolted Grounding Connectors Braid to Tube 230kV and Below

Copper alloy connector for clamping a tin plated braid to a tube. Electrical joint compound is recommended for all tube/braid contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Tube NPS Diameter	Width of Braid	Dimensions			
			in (mm)			
			H	S	B	X
TG39-1	1-1/4	1 (25)	3.19 (81)	1.57 (40)	3/8 (10)	2.91 (74)
TG40-1	1-1/2	1 (25)	3.43 (87)	1.57 (40)	3/8 (10)	3.19 (81)
TG40-15	1-1/2	1-1/2 (38)	3.43 (87)	1.57 (40)	3/8 (10)	3.19 (81)
TG41-1	2	1 (25)	4.21 (107)	1.57 (40)	3/8 (10)	3.62 (92)
TG41-15	2	1-1/2 (38)	4.21 (107)	1.57 (40)	3/8 (10)	3.62 (92)
TG41-2	2	2 (51)	4.21 (107)	1.73 (44)	1/2 (13)	4.06 (103)
TG42-15	2-1/2	1-1/2 (38)	4.84 (123)	1.85 (47)	1/2 (13)	4.49 (114)
TG42-2	2-1/2	2 (51)	4.84 (123)	1.85 (47)	1/2 (13)	4.49 (114)
TG42-25	2-1/2	2-1/2 (64)	4.84 (123)	1.85 (47)	1/2 (13)	4.49 (114)
TG43-1	3	1 (25)	5.71 (145)	2.01 (51)	1/2 (13)	5.20 (132)
TG43-15	3	1-1/2 (38)	5.71 (145)	2.01 (51)	1/2 (13)	5.20 (132)
TG43-2	3	2 (51)	5.71 (145)	2.01 (51)	1/2 (13)	5.20 (132)
TG43-25	3	2-1/2 (64)	5.71 (145)	2.01 (51)	1/2 (13)	5.20 (132)

TR

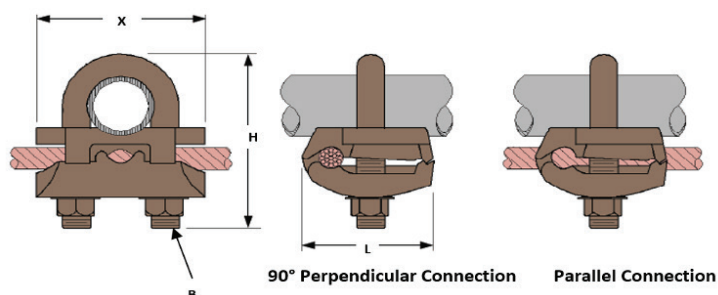
Bronze Bolted Grounding Connectors One Cable to Tube, 90-Degrees or Parallel 230kV and Below

Copper alloy connector for clamping one cable to a tube at 90-degrees or in parallel. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Tube NPS Diameter	Cable AWG/MCM		Dimensions			
		AWG/MCM	AWG/MCM Diameter	in (mm)			
	in		in (mm)	H	L	B	X
TR564T	3/8	8S - 4T*	0.129 - 0.232 (3.3 - 5.9)	2.56 (65)	1.57 (40)	3/8 (10)	2.05 (52)
TR5611	3/8	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	2.56 (65)	1.57 (40)	3/8 (10)	2.05 (52)
TR5614	3/8	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	2.83 (72)	1.81 (46)	3/8 (10)	2.13 (54)
TR3711	1/2 - 3/4	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	2.99 (76)	1.46 (37)	3/8 (10)	2.36 (60)
TR3714	1/2 - 3/4	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	2.99 (76)	1.77 (45)	3/8 (10)	2.36 (60)
TR3811	1	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	3.23 (82)	1.77 (45)	3/8 (10)	2.83 (72)
TR3814		2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.23 (82)	1.77 (45)	3/8 (10)	2.83 (72)
TR3911	1-1/4	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	3.50 (89)	1.57 (40)	3/8 (10)	3.03 (77)
TR3914	1-1/4	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.50 (89)	1.57 (40)	3/8 (10)	3.03 (77)
TR4011	1-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	4.06 (103)	1.77 (45)	3/8 (10)	3.27 (83)
TR4014	1-1/2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	4.06 (103)	1.77 (45)	3/8 (10)	3.27 (83)
TR4111	2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	4.41 (112)	1.69 (43)	3/8 (10)	3.74 (95)
TR4114	2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	4.41 (112)	1.69 (43)	3/8 (10)	3.74 (95)
TR4115	2	2/0S - 300*	0.365 - 0.575 (9.3 - 14.6)	4.41 (112)	1.69 (43)	3/8 (10)	3.74 (95)
TR4211	2-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	4.84 (123)	2.20 (56)	3/8 (10)	4.25 (108)
TR4214	2-1/2	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	4.84 (123)	2.20 (56)	3/8 (10)	4.25 (108)
TR4311	3	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	5.71 (145)	1.81 (46)	3/8 (10)	4.80 (122)
TR4314	3	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	5.71 (145)	1.81 (46)	3/8 (10)	4.80 (122)

*S denotes SOLID wire, and T denotes STRANDED wire.

TSE

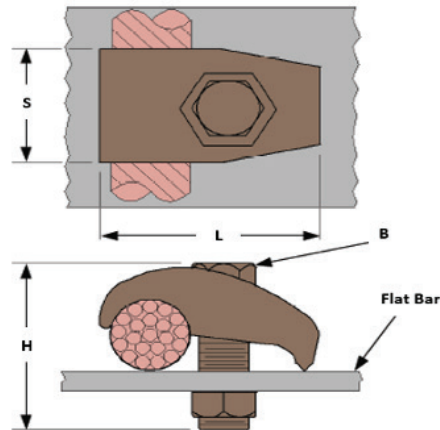
Bronze Bolted Grounding Connectors One Cable to Flat, Single Body 230kV and Below

Copper alloy connector for clamping one cable to a flat surface. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Cable AWG/MCM		Flat Bar Thickness	Dimensions			
	AWG/MCM	AWG/MCM Diameter		in (mm)			
		in (mm)		H	S	B	S
TSE20	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.250 (6.4)	1.46 (37)	1.54 (39)	3/8 (10)	1.10 (28)
TSE20-M1	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.500 (12.7)	1.69 (43)	1.54 (39)	3/8 (10)	1.10 (28)
TSE20-M2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	0.906 (23)	2.20 (56)	1.54 (39)	3/8 (10)	1.10 (28)
TSE250	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.250 (6.4)	1.77 (45)	1.97 (50)	1/2 (13)	1.50 (38)
TSE250-M1	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	0.500 (12.7)	2.28 (58)	1.97 (50)	1/2 (13)	1.50 (38)
TSE500	300 - 500	0.630 - 0.814 (16.0 - 20.7)	0.250 (6.4)	2.28 (58)	2.44 (62)	1/2 (13)	1.50 (38)

*S denotes SOLID wire, and T denotes STRANDED wire.

TT

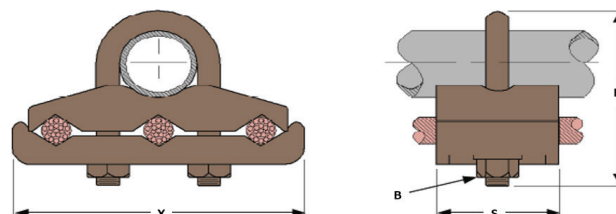
Bronze Bolted Grounding Connectors Three Cables to Tube, Parallel 230kV and Below

Copper alloy connector for clamping three cables to a tube in a parallel. Electrical joint compound is recommended for all cable contact surfaces.

CASTINGS: Copper Alloy

HARDWARE: Silicone Bronze

See page 172 for special order options such as tin plating, hardware materials and specific angles. Contact PLP for further details, unlisted option and/or special applications.



Part Number	Tube NPS Diameter	Cable AWG/MCM		Dimensions			
		AWG/MCM	AWG/MCM Diameter	in (mm)			
				H	S	B	X
TT5611	3/8	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	2.83 (72)	1.54 (39)	3/8 (10)	3.27 (83)
TT5614	3/8	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.35 (85)	1.61 (41)	1/2 (13)	3.70 (94)
TT5619	3/8	300 - 500	0.630 - 0.814 (16.0 - 20.7)	3.58 (91)	1.77 (45)	1/2 (13)	4.29 (109)
TT3714	1/2 - 3/4	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.58 (91)	1.73 (44)	1/2 (13)	4.17 (106)
TT3811	1	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	3.74 (95)	1.73 (44)	1/2 (13)	4.17 (106)
TT3814	1	2/0S - 250*	0.365 - 0.575 (9.3 - 14.6)	3.74 (95)	1.73 (44)	1/2 (13)	4.17 (106)
TT4211	2-1/2	4S - 2/0T*	0.204 - 0.419 (5.2 - 10.6)	5.24 (133)	1.73 (44)	1/2 (13)	6.10 (155)

*S denotes SOLID wire, and T denotes STRANDED wire.