PREFORMED LINE PRODUCTS
The connection you can count on.

THERMOLIGN® Products for 3M™ Aluminum Conductor Composite Reinforced (3M ACCR)

COMMUNICATIONS ENERGY SPECIAL INDUSTRIES SOLAR

THERMOLIGN®

July 2015

History of THERMOLIGN® Hardware at PLP

Preformed Line Products has been involved with the design, testing and production of hardware and accessories for High Temperature Low Sag Conductors (HTLS) since 1999.

PLP registered the brand name THERMOLIGN to represent products that are intended for use on new HTLS conductor technologies that have maximum continuous operating temperatures ranging from 180° C to 250° C.

THERMOLIGN products have been designed and thoroughly tested both in the laboratory and in the field to meet the unique requirements of high temperature operation while still providing a service life of 40 to 50 years.

Since 1947 PLP has been recognized as a leader in providing innovative solutions to protect overhead line conductors from wind and ice related forces and dynamic stresses. The unique nature of the materials used in the core of many of the HTLS conductors require the extra protection provided by the THERMOLIGN hardware designs.

Both in the U.S. World Headquarters and subsidiaries throughout the world, PLP has experienced engineering personnel and world class laboratory facilities to assure that the THERMOLIGN products meet industry specifications and the special requirements for high temperature operation.

THERMOLIGN® Products for 3M™ Aluminum Conductor Composite Reinforced

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kcmil	257	297	340	427	400	480	470	573	591	634
Code Word	Partridge	Ostrich	Linnet		Lark	Flicker	Hawk	Dove	Peacock	Goldfinch
Diameter (in)	0.630	0.677	0.724	0.800	0.809	0.849	0.852	0.941	0.941	0.962
Product										
THERMOLIGN® Suspension	TLS- 0094	TLS- 0095	TLS- 0096	TLS- 0099	TLS- 0099	TLS- 0100	TLS- 0100	TLS- 0103	TLS- 0103	TLS- 0104
THERMOLIGN® Suspension, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
THERMOLIGN® Susp, Double	TLS- 0294	TLS- 0295	TLS- 0296	TLS- 0299	TLS- 0299	TLS- 0300	TLS- 0300	TLS- 0303	TLS- 0303	TLS- 0304
THERMOLIGN® Susp, Double, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
THERMOLIGN® Support	TLS- 0194	TLS- 0195	TLS- 0196	TLS- 0199	TLS- 0199	TLS- 0200	TLS- 0200	TLS- 0203	TLS- 0203	TLS- 0204
THERMOLIGN® Dead-End	TLDE-0097	TLDE-0099	TLS- 0100	TLDE- 0103	TLDE- 0103	TLDE- 0104	TLDE- 0104	TLDE- 0107	TLDE- 0107	TLDE- 0108
THERMOLIGN® Dead-End, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
THERMOLIGN® Splice	TLSP- 0097	TLSP- 0099	TLSP- 0100	TLSP- 0103	TLSP- 0103	TLSP- 0104	TLSP- 0104	TLSP- 0107	TLSP- 0107	TLSP- 0108
THERMOLIGN® Splice, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VORTX™ Damper (on Susp.)	VSD- 2032B	VSD- 2032B	VSD- 2032B	VSD- 2540B	VSD- 2540B	VSD- 2540B	VSD- 2540B	VSD- 3540B	VSD- 3540B	VSD- 3540B
Protector Rods (PR)	PR- 0144	PR- 0146	PR- 0148	PR- 0148	PR- 0148	PR- 0150	PR- 0150	PR- 0151	PR- 0151	PR- 0152
Protector Rods (PR), EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VORTX™ Damper (on PR)	VSD- 2025B	VSD- 2025B	VSD- 2032B	VSD- 2532B	VSD- 2532B	VSD- 2532B	VSD- 2532B	VSD- 3540B	VSD- 3540B	VSD- 3540B
THERMOLIGN® Twin Spacer (18")	N/A	TLTS- 0101	TLTS- 0102	TLTS- 0104	TLTS- 0104	TLTS- 0105	TLTS- 0105	TLTS- 0107	TLTS- 0107	TLTS- 0108
THERMOLIGN® Twin Spacer (13")	N/A	TLTS- 0101-13	TLTS- 0102-13	TLTS- 0104-13	TLTS- 0104-13	TLTS- 0105-13	TLTS- 0105-13	TLTS- 0107-13	TLTS- 0107-13	TLTS- 0108-13
THERMOLIGN® Spacer Damper (Tri)	N/A	TLSDB- 34518	TLSDB- 34519	TLSDB- 34521	TLSDB- 34521	TLSDB- 34522	TLSDB- 34522	TLSDB- 34524	TLSDB- 34524	TLSDB- 34525
THERMOLIGN® Spacer Damper (Quad)	N/A	TLSDB- 44518	TLSDB- 44519	TLTSB- 44521	TLTSB- 44521	TLSDB- 44522	TLSDB- 44522	TLSDB- 44524	TLSDB- 44524	TLSDB- 44525
Repair Rods (Armor Rods)	AR- 0126	AR- 0128	AR- 0130	AR- 0132	AR- 0132	AR- 0134	AR- 0134	AR- 0136	AR- 0136	AR- 0136
Repair Rods (Armor Rods), EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Line Guards	MG- 0143	MG- 0145	MG- 0147	MG- 0149	MG- 0149	MG- 0150	MG- 0150	MG- 0151	MG- 0151	MG- 0152
Line Guards, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Conductor Splice	LS- 0137	LS- 0139	LS- 0140	LS- 0143	LS- 0143	LS- 0144	LS- 0144	LS- 0147	LS- 0147	LS- 0147
Conductor Splice, EHV	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Splice/Dead-end Shunt	SS- 0008	SS- 0009	SDES- 0001	SDES- 0004	SDES- 0004	SDES- 0005	SDES- 0006	SDES- 0008	SDES- 0008	SDES- 0008
Tensioning Grip	TG- 3006	TG- 3009	TG- 3011	TG- 3015	TG- 3015	TG- 3017	TG- 3017	TG- 3020	TG- 3020	TG- 3021

THERMOLIGN® Products for 3M™ Aluminum Conductor Composite Reinforced

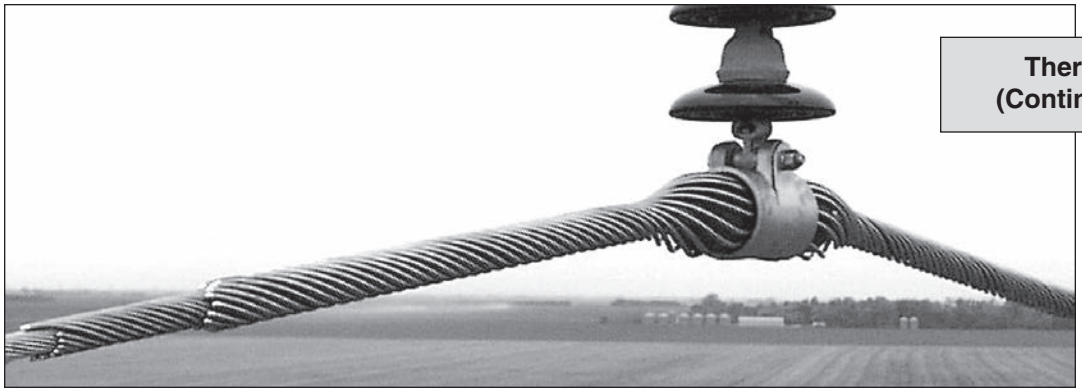
THERMOLIGN®

Designation	557-T23 30/19	763TW-T17 20/19	795TW-T13 20/19	636-T16 26/19	680-T19 28/19	715-T13 24/7	795-T10 22/7	795-T13 24/19	795-T16 26/19
kcmil	575	763	795	656	680	720	780	824	824
Code Word	Eagle	Wabash/TW	Condor/TW	Grosbeak		Stilt	Puffin	Condor	Drake
Diameter (in)	0.970	0.990	0.992	1.006	1.039	1.040	1.067	1.112	1.128
Product									
THERMOLIGN® Suspension	TLS-0104	TLS-0105	TLS-0105	TLS-0105	TLS-0106	TLS-0106	TLS-0107	TLS-0109	TLS-0109
THERMOLIGN® Suspension, EHV	N/A	TLS-0105EHV	TLS-0105EHV	TLS-0105EHV	TLS-0106EHV	TLS-0106EHV	TLS-0107EHV	TLS-0109EHV	TLS-0109EHV
THERMOLIGN® Susp, Double	TLS-0304	TLS-0305	TLS-0305	TLS-0305	TLS-0306	TLS-0306	TLS-0307	TLS-0309	TLS-0309
THERMOLIGN® Susp, Double, EHV	N/A	TLS-0305EHV	TLS-0305EHV	TLS-0305EHV	TLS-0306EHV	TLS-0306EHV	TLS-0307EHV	TLS-0309EHV	TLS-0309EHV
THERMOLIGN® Support	TLS-0204	TLS-0205	TLS-0205	TLS-0205	TLS-0206	TLS-0206	TLS-0207	TLS-0209	TLS-0209
THERMOLIGN® Dead-End	TLDE-0109	TLDE-0110	TLDE-0110	TLDE-0111	TLDE-0112	TLDE-0112	TLDE-0112	TLDE-0114	TLDE-0114
THERMOLIGN® Dead-End, EHV	N/A	TLDE-0110EHV	TLDE-0110EHV	TLDE-0111EHV	TLDE-0112EHV	TLDE-0112EHV	TLDE-0112EHV	TLDE-0114EHV	TLDE-0114EHV
THERMOLIGN® Splice	TLSP-0109	TLSP-0110	TLSP-0110	TLSP-0111	TLSP-0112	TLSP-0112	TLSP-0112	TLSP-0114	TLSP-0114
THERMOLIGN® Splice, EHV	N/A	TLSP-0110EHV	TLSP-0110EHV	TLSP-0111EHV	TLSP-0112EHV	TLSP-0112EHV	TLSP-0112EHV	TLSP-0114EHV	TLSP-0114EHV
VORTX™ Damper (on Susp.)	VSD-3540B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4050B	VSD-4050B
Protector Rods (PR)	PR-0152	PR-0152	PR-0152	PR-0152	PR-0154	PR-0154	PR-0155	PR-0156	PR-0156
Protector Rods (PR), EHV	N/A	PR-0152E	PR-0152E	PR-0152E	PR-0154E	PR-0154E	PR-0155E	PR-0156E	PR-0156E
VORTX™ Damper (on PR)	VSD-3540B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4040B	VSD-4050B
THERMOLIGN® Twin Spacer (18")	TLTS-0108	TLTS-0109	TLTS-0109	TLTS-0109	TLTS-0110	TLTS-0110	TLTS-0110	TLTS-0112	TLTS-0112
THERMOLIGN® Twin Spacer (13")	TLTS-0108-13	TLTS-0109-13	TLTS-0109-13	TLTS-0109-13	TLTS-0110-13	TLTS-0110-13	TLTS-0110-13	TLTS-0112-13	TLTS-0112-13
THERMOLIGN® Spacer Damper (Tri)	TLSDB-34525	TLSDB-34526	TLSDB-34526	TLSDB-34526	TLSDB-34527	TLSDB-34527	TLSDB-34527	TLSDB-34529	TLSDB-34529
THERMOLIGN® Spacer Damper (Quad)	TLSDB-44525	TLSDB-44526	TLSDB-44526	TLSDB-44526	TLSDB-44527	TLSDB-44527	TLSDB-44527	TLSDB-44529	TLSDB-44529
Repair Rods (Armor Rods)	AR-0136	AR-0137	AR-0137	AR-0137	AR-0139	AR-0139	AR-0140	AR-0141	AR-0141
Repair Rods (Armor Rods), EHV	N/A	AR-0500	AR-0500	AR-0500	AR-0502	AR-0502	AR-0503	AR-0504	AR-0504
Line Guards	MG-0152	MG-0153	MG-0153	MG-0153	MG-0154	MG-0154	MG-0155	MG-0156	MG-0156
Line Guards, EHV	N/A	MGMS13889	MGMS13889	MGMS13889	MGMS3517	MGMS3517	N/A	MGMS11556	MGMS11556
Conductor Splice	LS-0148	LS-0148	LS-0148	LS-0148	LS-0149	LS-0149	LS-0150	LS-0151	LS-0151
Conductor Splice, EHV	N/A	N/A	N/A	N/A	LSMS7953	LSMS7953	N/A	LSMS4854	LSMS4854
Splice/Dead-end Shunt	SDES-0009	SDES-0009	SDES-0009	SDES-0009	SDES-0010	SDES-0010	SDES-0011	SDES-0012	SDES-0012
Tensioning Grip	TG-3021	TG-3022	TG-3022	TG-3022	TG-3024	TG-3024	TG-3025	TG-3027	TG-3027

PLP Products for 3M™ Aluminum Conductor Composite Reinforced

Designation	1033TW-T13 20/19	558-T73 55/37	788-T26 32/19	1158TW-T13 24/19	967-T13 54/19	1033-T13 54/19	1272-T11 51/19	1622TW-T13 38/19	1590-T11 51/19
kcmil	1033	558	788	1158	967	1036	1238	1622	1594
Code Word	Curlew/TW			Hudson/TW	Cardinal	Curlew	Bittern	Pecos/TW	Lapwing
Diameter (in)	1.132	1.134	1.151	1.199	1.205	1.247	1.350	1.411	1.532
Product									
THERMOLIGN® Suspension	TLS-0109	TLS-0109	TLS-0109	TLS-0111	TLS-0111	TLS-0112	TLS-0115	TLS-0117	TLS-0120
THERMOLIGN® Suspension, EHV	TLS-0109EHV	TLS-0109EHV	TLS-0109EHV	TLS-0111EHV	TLS-0111EHV	TLS-0112EHV	TLS-0115EHV	TLS-0117EHV	TLS-0120EHV
THERMOLIGN® Susp, Double	TLS-0309	TLS-0309	TLS-0309	TLS-0311	TLS-0311	TLS-0312	TLS-0315	TLS-0317	TLS-0320
THERMOLIGN® Susp, Double, EHV	TLS-0309EHV	TLS-0309EHV	TLS-0309EHV	TLS-0311EHV	TLS-0311EHV	TLS-0312EHV	TLS-0315EHV	TLS-0317EHV	TLS-0320EHV
THERMOLIGN® Support	TLS-0209	TLS-0209	TLS-0209	TLS-0211	TLS-0211	TLS-0212	N/A	N/A	N/A
THERMOLIGN® Dead-End	TLDE-0114	N/A	TLDE-0114	TLDE-0116	TLDE-0116	TLDE-0117	TLDE-0119	TLDE-0120	TLDE-0124
THERMOLIGN® Dead-End, EHV	TLDE-0114EHV	N/A	TLDE-0114EHV	TLDE-0116EHV	TLDE-0116EHV	TLDE-0117EHV	TLDE-0119EHV	TLDE-0120EHV	TLDE-0124EHV
THERMOLIGN® Splice	TLSP-0114	N/A	300712291	N/A	TLSP-0116	TLSP-0117	TLSP-0119	N/A	TLSP-0124
THERMOLIGN® Splice, EHV	TLSP-0114EHV	N/A	N/A	N/A	TLSP-0116EHV	TLSP-0117EHV	TLSP-0119EHV	N/A	TLSP-0124EHV
VORTX™ Damper (on Susp.)	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-5061B	VSD-5061B
Protector Rods (PR)	PR-0156	PR-0156	PR-0156	PR-0158	PR-0158	PR-0158	PR-0160	PR-0160	PR-0162
Protector Rods (PR), EHV	PR-0156E	PR-0156E	PR-0156E	PR-0158E	PR-0158E	PR-0158E	PR-0160E	PR-0160E	PR-0162E
VORTX™ Damper (on PR)	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-4050B	VSD-5050B	VSD-5061B
THERMOLIGN® Twin Spacer (18")	TLTS-0112	TLTS-0112	TLTS-0113	TLTS-0114	TLTS-0114	TLTS-0115	TLTS-0117	TLTS-0119	TLTS-0122
THERMOLIGN® Twin Spacer (13")	TLTS-0112-13	TLTS-0112-13	TLTS-0113-13	TLTS-0114-13	TLTS-0114-13	TLTS-0115-13	TLTS-0117-13	TLTS-0119-13	TLTS-0122-13
THERMOLIGN® Spacer Damper (Tri)	TLSDB-34529	TLSDB-34529	TLSDB-34530	TLSDB-34531	TLSDB-34531	TLSDB-34532	TLSDB-34535	TLSDB-34536	TLSDB-34539
THERMOLIGN® Spacer Damper (Quad)	TLSDB-44529	TLSDB-44529	TLSDB-44530	TLSDB-44531	TLSDB-44531	TLSDB-44532	TLSDB-44535	TLSDB-44536	TLSDB-44539
Repair Rods (Armor Rods)	AR-0141	AR-0141	AR-0142	AR-0143	AR-0143	AR-0144	AR-0146	AR-0147	AR-0164
Repair Rods (Armor Rods), EHV	AR-0504	AR-0504	AR-0505	AR-0506	AR-0506	AR-0507	AR-0509	AR-0510	AR-0512
Line Guards	MG-0156	MG-0156	MG-0156	MG-0157	MG-0157	MG-0158	MG-0160	MG-0161	MG-0163
Line Guards, EHV	MGMS11556	MGMS11556	MGMS11556	MGMS6259	MGMS6259	MGMS11557	MGMS7184	MGMS2898	MGMS13406
Conductor Splice	LS-0151	LS-0151	LS-0152	LS-0153	LS-0153	LS-0154	LS-0155	LS-0156	LS-0159
Conductor Splice, EHV	LSMS4854	LSMS4854	LSMS6275	LSMS7955	LSMS7955	LSMS8338	LSMS7956	LSMS14606	LSMS14465
Splice/Dead-end Shunt	SDES-0012	SDES-0012	SDES-0013	SDES-0014	SDES-0014	SDES-0015	SDES-0016	SDES-0018	SDES-0020
Tensioning Grip	TG-3027	N/A	TG-3028	TG-3029	TG-3029	TG-3031	TG-3033	TG-3035	TG-3038

THERMOLIGN® Suspension



Thermal Rating (Continuous) 250°C

GENERAL RECOMMENDATIONS

The THERMOLIGN Suspension is specifically designed for applications on 3M™ ACCR conductors and features:

- Multi-layer design for maximum mechanical performance and maximum heat dissipation.
- Minimal heat transfered to mating hardware and insulators.
- Cushioned insert surrounding conductor for superior protection of sensitive conductor components against wind and ice induced dynamic loads.
- Available with PARROT-BILL® Rod ends for EHV (345 kV and above) applications.

GENERAL SPECIFICATIONS

Vertical Strength: 25,000# (111kN) unless otherwise noted.

Slip Load: Approximately 20% of the conductor RBS initially (expected to increase after time in service).

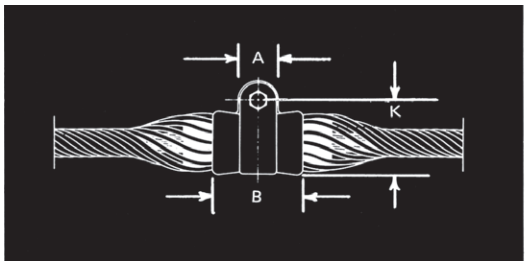
Line Angle: Maximum of 30° for single suspension up to 60° for double suspension with yoke plate.

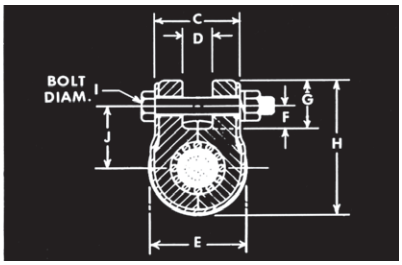
NOTE:
Add EHV to Catalog Number for PARROT-BILL® Rod Ends.
Example: TLS-0100-EHV
Add CE to Catalog Number to include a Clevis Eye
Add YC to Catalog Number to include a Y Clevis Eye
Add SE to Catalog Numbers to include a Socket Eye

Catalog Number		Conductor Diameter Range		Nominal	Length (overall)		Color Code	
Single	Double	Min in. (mm)	Max in. (mm)	Cond (kcmil)	Single in. (m)	Double in. (m)	Inner	Outer
TLS-0093	TLS-0293	0.574 (14.6)	0.590 (15.0)	207	98 (2.49)	120 (3.05)	Yellow	Green
TLS-0094	TLS-0294	0.619 (15.7)	0.636 (16.2)	257	98 (2.49)	120 (3.05)	Black	Black
TLS-0092	TLS-0292	0.637 (16.2)	0.673 (17.1)	267	100 (2.54)	120 (3.05)	Red	Brown
TLS-0095	TLS-0295	0.674 (17.1)	0.708 (18.0)	300	98 (2.49)	125 (3.18)	Orange	Orange
TLS-0096	TLS-0296	0.709 (18.0)	0.726 (18.4)	336.4	100 (2.54)	129 (3.28)	Green	Purple
TLS-0097	TLS-0297	0.727 (18.5)	0.759 (19.3)	336.4	100 (2.54)	129 (3.28)	Pink	Red
TLS-0098	TLS-0298	0.760 (19.3)	0.786 (20.0)	397.5	100 (2.54)	129 (3.28)	White	Blue
TLS-0099	TLS-0299	0.787 (20.0)	0.814 (20.7)	397.5, 477	100 (2.54)	129 (3.28)	Purple	Green
TLS-0100	TLS-0300	0.815 (20.7)	0.855 (21.7)	477	100 (2.54)	129 (3.28)	Red	Yellow
TLS-0101	TLS-0301	0.856 (21.7)	0.894 (22.7)	477, 556	100 (2.54)	132 (3.35)	Blue	Black
TLS-0102	TLS-0302	0.895 (22.7)	0.916 (23.3)	556	100 (2.54)	132 (3.35)	Black	White
TLS-0103	TLS-0303	0.917 (23.3)	0.942 (23.9)	556	100 (2.54)	132 (3.35)	Orange	Brown
TLS-0104	TLS-0304	0.943 (23.9)	0.977 (24.8)	605, 636	100 (2.54)	132 (3.35)	Green	Orange
TLS-0105	TLS-0305	0.978 (24.8)	1.016 (25.8)	636	100 (2.54)	132 (3.35)	Pink	Purple
TLS-0106	TLS-0306	1.017 (25.8)	1.057 (26.8)	636, 715	100 (2.54)	132 (3.35)	Purple	Red
TLS-0107	TLS-0307	1.058 (26.8)	1.079 (27.4)	715	112 (2.84)	149 (3.78)	White	Blue
TLS-0108	TLS-0308	1.080 (27.4)	1.112 (28.2)	795	112 (2.84)	149 (3.78)	White	Green
TLS-0109	TLS-0309	1.113 (28.2)	1.150 (29.2)	795, 954	112 (2.84)	149 (3.78)	Yellow	Yellow
TLS-0110	TLS-0310	1.151 (29.2)	1.188 (30.2)	954	112 (2.84)	149 (3.78)	Yellow	Black
TLS-0111	TLS-0311	1.189 (30.2)	1.208 (30.7)	954	112 (2.84)	149 (3.78)	Yellow	White
TLS-0112	TLS-0312	1.209 (30.7)	1.262 (32.1)	1033.5	125 (3.18)	154 (3.91)	Brown	Red
TLS-0113	TLS-0313	1.263 (32.1)	1.308 (33.2)	1113, 1192.5	125 (3.18)	154 (3.91)	Brown	Blue
TLS-0114	TLS-0314	1.309 (33.2)	1.338 (34.0)	1192.5	125 (3.18)	154 (3.91)	Red	Green
TLS-0115	TLS-0315	1.339 (34.0)	1.368 (34.7)	1272	125 (3.18)	154 (3.91)	Red	Yellow
TLS-0116	TLS-0316	1.369 (34.7)	1.409 (35.7)	1272, 1351.5	125 (3.18)	154 (3.91)	Blue	Black
TLS-0117	TLS-0317	1.410 (35.7)	1.449 (36.8)	1351.5, 1431	125 (3.18)	154 (3.91)	Black	White
TLS-0118	TLS-0318	1.450 (36.8)	1.490 (37.9)	1431, 1510.5	125 (3.18)	154 (3.91)	Orange	Brown
TLS-0119	TLS-0319	1.491 (37.9)	1.530 (38.9)	1510.5, 1590	125 (3.18)	154 (3.91)	Green	Orange
TLS-0120	TLS-0320	1.531 (38.9)	1.572 (39.9)	1590	125 (3.18)	154 (3.91)	Pink	Purple

THERMOLIGN® Suspension

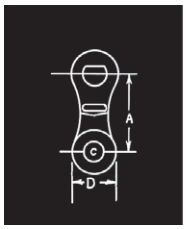
DIMENSIONAL TABLES

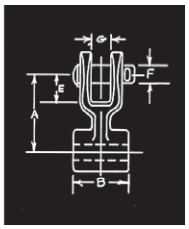




Catalog Number Range		Conductor Diameter Range in. (mm)		Dimension in. (mm)											Vertical Ultimate Strength lbs. (kN)
		Min.	Max.	A	B	C	D	E	F	G	H	I	J	K	
TLS-0092	TLS-0095	0.574 (14.6)	0.708 (18.0)	2-1/4 (57.2)	5-1/2 (139.7)	3-1/2 (88.9)	1-3/16 (30.2)	4-5/32 (105.6)	1 (25.4)	2-1/8 (54.0)	5-29/32 (150.0)	5/8 (15.9)	2-45/64 (68.7)	4-25/32 (121.4)	25,000 (111.2)
TLS-0096	TLS-0100	0.709 (18.0)	0.855 (21.7)	2-1/4 (57.2)	6 (152.4)	3-5/8 (92.1)	1-1/4 (31.8)	4-13/16 (122.2)	1-1/4 (31.8)	2-3/8 (60.3)	6-11/16 (169.9)	3/4 (19.1)	3-5/32 (80.2)	5-9/16 (141.3)	25,000 (111.2)
TLS-0101	TLS-0106	0.856 (21.7)	1.057 (26.8)	2-1/4 (57.2)	6-1/2 (165.1)	4-1/8 (104.8)	1-3/8 (34.9)	5-1/16 (128.6)	1-1/8 (28.6)	2-1/4 (57.2)	6-5/8 (168.3)	3/4 (19.1)	2-31/32 (75.4)	5-1/2 (139.7)	25,000 (111.2)
TLS-0107	TLS-0112	1.058 (26.8)	1.262 (32.1)	2-1/2 (63.5)	7 (177.8)	4-11/16 (119.1)	2-1/4 (57.2)	5-19/32 (142.1)	1-1/8 (28.6)	2-3/8 (60.3)	7-1/4 (184.2)	3/4 (19.1)	3-3/16 (81.0)	6 (152.4)	25,000 (111.2)
TLS-0113	TLS-0120	1.263 (32.1)	1.613 (41.0)	2-1/2 (63.5)	7-1/2 (190.5)	5-7/32 (132.6)	2-13/32 (61.1)	6-1/16 (154.0)	1-3/16 (30.2)	2-7/16 (61.9)	7-25/32 (197.6)	3/4 (19.1)	3-1/2 (88.9)	6-17/32 (165.9)	30,000 (133.4)

CLEVIS EYE

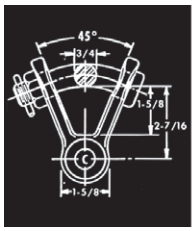




Catalog Number	Conductor Diameter Range in. (mm)	Dimensions in. (mm)						
		A	B	C	D	E	F	G
CE-5105	.574 - 1.057 (14.6 - 26.8)	3-1/8 (79.0)	1-1/16 (27.0)	13/16 (21.0)	1-1/2 (38.0)	1-1/2 (38.0)	5/8 (16.0)	13/16 (21.0)
CE-5106	1.058 - 1.572 (26.8 - 39.9)	3-1/8 (79.0)	2-1/8 (54.0)	13/16 (21.0)	1-1/2 (38.0)	1-1/2 (38.0)	5/8 (16.0)	13/16 (21.0)

Vertical Ultimate Strength - 25,000 lbs.

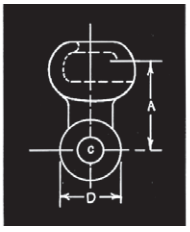
Y CLEVIS EYE

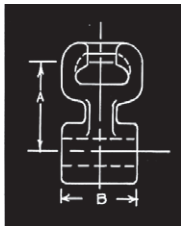


Catalog Number	Conductor Diameter Range in. (mm)	Dimensions in. (mm)	
		B	C
YC-5209	.574 - 1.057 (14.6 - 26.8)	1-1/16 (27.0)	13/16 (21.0)
YC-5211	1.058 - 1.572 (26.8 - 39.9)	2-1/8 (54.0)	13/16 (21.0)

Vertical Ultimate Strength - 25,000 lbs.

SOCKET EYE

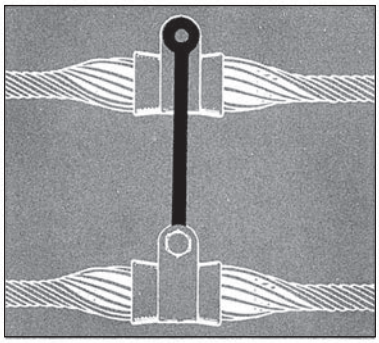


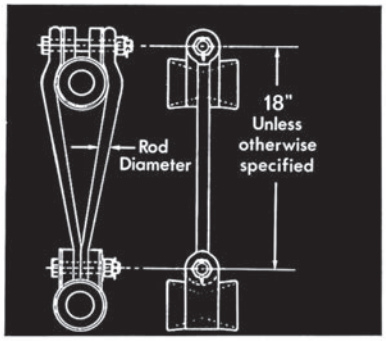


Catalog Number	Conductor Diameter Range in. (mm)	Dimensions in. (mm)				Vertical Ultimate Strength lbs. (Kg)
		A	B	C	D	
SE-5154	.574 - 1.057 (14.6 - 26.8)	2-5/16 (59.0)	1-1/6 (27.0)	13/16 (21.0)	1-1/2 (38.0)	25,000 (111.2)
SE-5155	1.058 - 1.572 (26.8 - 39.9)	2-5/16 (59.0)	2-1/8 (54.0)	13/16 (21.0)	1-1/2 (38.0)	30,000 (133.4)

THERMOLIGN® Suspension

Vertical Bundling Link Assembly



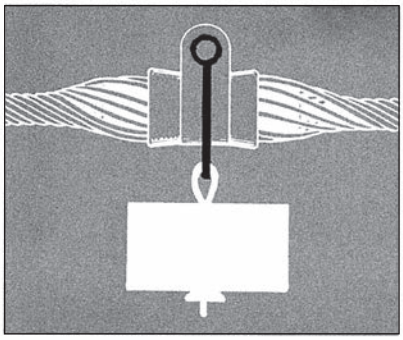


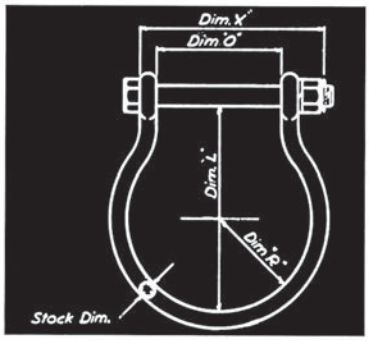
Ultimate Rated Strength 25,000

THERMOLIGN Suspension Conductor Diameter Range in. (mm)	Catalog Number*	Rod Diameter in. (mm)	Bolt Diameter in. (mm)	Center to Center of Eyes in. (mm)
0.709 - 0.855 (18.0 - 21.7)	VBL-07	3/4 (19.1)	3/4 (19.1)	18 (457.2)
0.856 - 1.057 (21.7 - 26.8)	VBL-08	3/4 (19.1)	3/4 (19.1)	18 (457.2)
1.058 - 1.262 (26.9 - 32.1)	VBL-09	3/4 (19.1)	3/4 (19.1)	18 (457.2)
1.263 - 1.613 (32.1 - 41.0)	VBL-10	3/4 (19.1)	3/4 (19.1)	18 (457.2)

* Each assembly consists of two links and one hex bolt for top suspension with lockwasher and lock nut.
Center to center of eyes indicates vertical distance between conductors and will be 18" unless otherwise specified.
Add a -12" to the catalog number for 12" spacing (example: VBL-08-12).

Hold Down Weight Shackles*



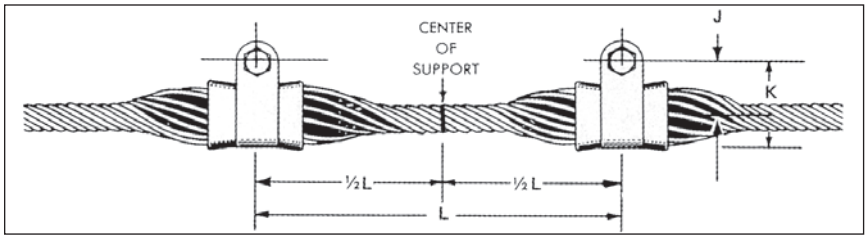


THERMOLIGN Suspension Conductor Diameter Range in. (mm)	Stock No. †	Bolt Diameter in. (mm)	Stock Dim. in. (mm)	Dim. "x" in. (mm)	Dim. "o" in. (mm)	Dim. "l" in. (mm)	Dim. "r" in. (mm)	Maximum Hold Down Wt lbs. (Kg)
0.709 - 0.855 (18.0 - 21.7)	1888.6	3/4 (19.1)	5/8 (15.9)	6 (152.4)	3-3/4 (95.3)	6-1/4 (158.8)	3 (76.2)	800 (362.8)
0.856 - 1.057 (21.7 - 26.8)	1888.7	3/4 (19.1)	5/8 (15.9)	6-1/2 (165.1)	4-1/4 (108.0)	6-1/2 (165.1)	3 (76.2)	800 (362.8)
1.058 - 1.262 (26.9 - 32.1)	1888.8	3/4 (19.1)	5/8 (15.9)	7-1/8 (181.0)	4-7/8 (123.8)	7-1/4 (184.2)	3-1/4 (82.6)	800 (362.8)

† Each assembly consists of a shackle body and hex-head bolt, lockwasher, nut, and Cotter Key.
* SPECIAL PRODUCT sold by Hughes Brothers, Inc., Seward, Nebraska.

THERMOLIGN® Suspension: Double

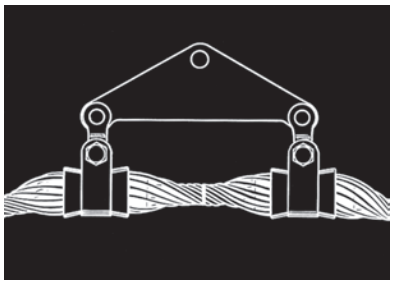
DIMENSIONAL TABLES

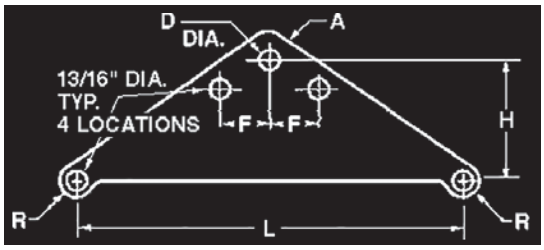


Catalog Number Range	Conductor Diameter Range		Dimensions in. (mm)			Vertical Ultimate Strength lbs. (kN)
	Min in. (mm)	Max in. (mm)	J	K	L	
TLS-0293 – TLS-0295	0.574 (14.6)	0.708 (18.0)	2-45/64 (68.7)	4-25/32 (121.4)	26 (660.4)	50,000 (222.4)
TLS-0296 – TLS-0300	0.709 (18.0)	0.855 (21.7)	3-5/32 (80.2)	5-9/16 (141.3)	29 (736.6)	50,000 (222.4)
TLS-0301 – TLS-0306	0.856 (21.7)	1.057 (26.8)	2-31/32 (75.4)	5-1/2 (139.7)	32 (812.8)	50,000 (222.4)
TLS-0307 – TLS 0312	1.058 (26.8)	1.262 (32.1)	3-3/16 (81.0)	6 (152.4)	37 (939.8)	50,000 (222.4)
TLS-0313 – TLS-0320	1.263 (32.1)	1.572 (39.9)	3-1/2 (88.9)	6-17/32 (165.9)	42 (1066.8)	60,000 (266.9)

EXPLANATORY NOTES:
(1) THERMOLIGN® Rod Length and diameter for individual sizes can be taken from catalog number table.
(2) Additional dimensional information of the THERMOLIGN Housing is tabulated on Dimensional Tables preceding the THERMOLIGN Suspension: Double section.

AGS Yoke Plate

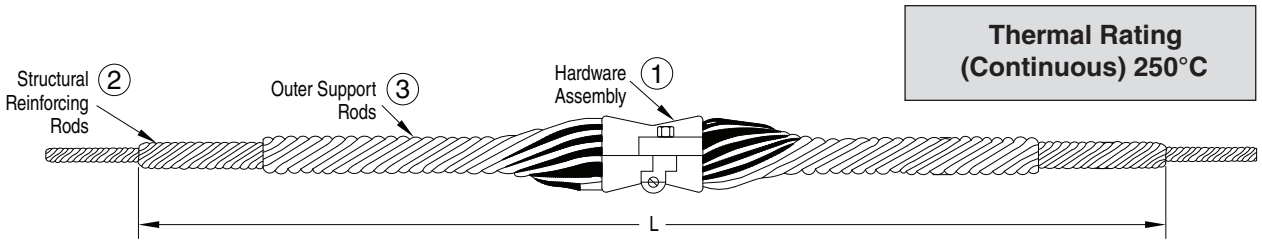




Catalog Number	Dimensions in. (mm)						Plate Thickness in. (mm)	Ultimate Strength lbs. (kN)
	L	H	D	R	A	F		
YP-5907	12 (304.8)	4 (101.6)	13/16 (20.6)	13/16 (20.6)	1 (25.4)	NONE	1/2 (12.7)	30,000 (133.4)
YP-5908	18 (457.2)	6-1/4 (158.8)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	3-1/2 (88.9)	5/8 (15.9)	40,000 (177.9)
YP-5909	22 (558.8)	7-1/4 (184.2)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	4-3/16 (106.4)	5/8 (15.9)	40,000 (177.9)
YP-5910	26 (660.4)	8-1/2 (215.9)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	4-15/16 (125.4)	3/4 (19.1)	50,000 (222.4)
YP-5911	29 (736.6)	9-1/2 (241.3)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	5-1/2 (139.7)	3/4 (19.1)	50,000 (222.4)
YP-5912	32 (812.8)	10-1/2 (266.7)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	6-1/8 (155.6)	3/4 (19.1)	50,000 (222.4)
YP-5913	37 (939.8)	11-3/4 (298.5)	1 (25.4)	15/16 (23.8)	1-1/4 (31.8)	7-1/16 (179.4)	3/4 (19.1)	50,000 (222.4)

Contact PLP or 3M for additional information concerning the correct Yoke Plate selection.

THERMOLIGN® Support



Thermal Rating (Continuous) 250°C

GENERAL RECOMMENDATIONS

The THERMOLIGN Support is specifically designed for trunnion applications on 3M™ ACCR conductors and features:

- Multi-layer design for maximum mechanical performance and maximum heat dissipation.
- Minimal heat transferred to mating hardware and insulators.
- Cushioned insert surrounding conductor for superior protection of sensitive conductor components against wind and ice induced dynamic loads.

GENERAL SPECIFICATIONS

Vertical Strength: 5,000# (22kN) in any direction.

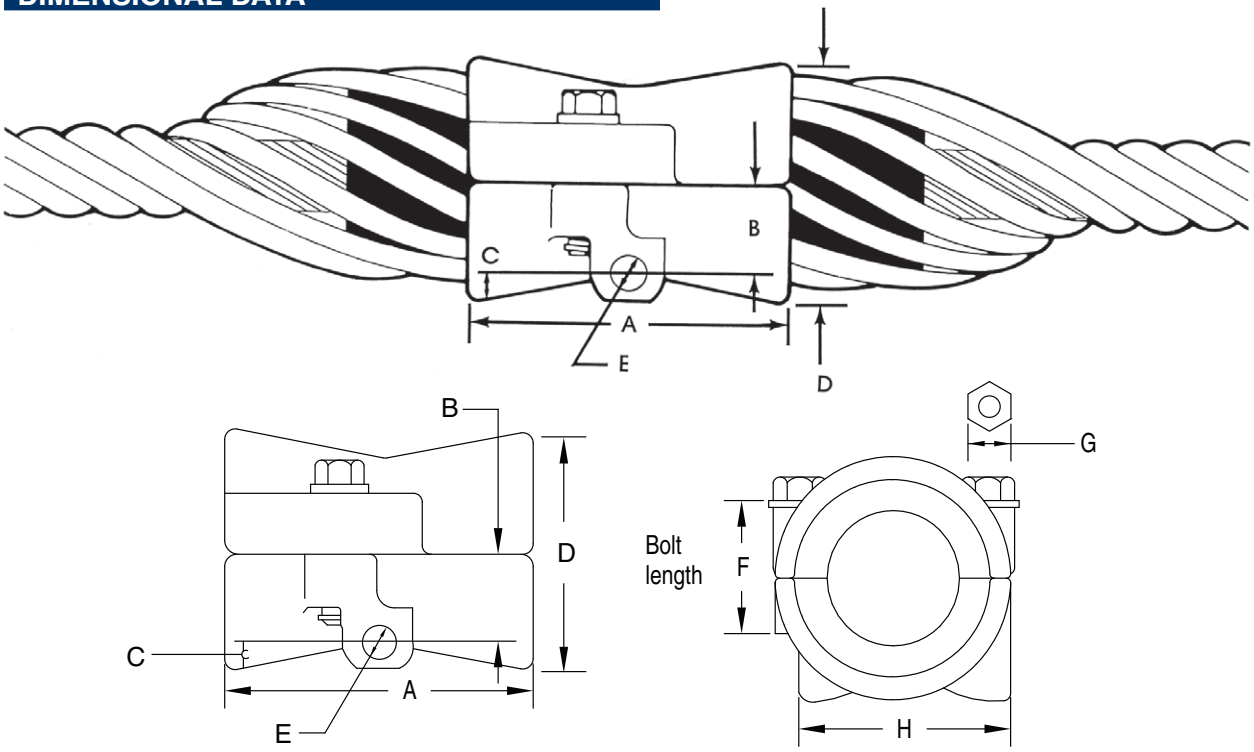
Slip Load: Approximately 20% of the conductor RBS.

Line Angle: Maximum of 30° for single support.

Catalog Number	Diameter Range		Length in. (m) (overall)	Color Code	
	Min in. (mm)	Max in. (mm)		Inner	Outer
TLS-0194	0.634 (16.2)	0.673 (17.1)	98 (2.5)	Black	Black
TLS-0195	0.674 (17.1)	0.708 (18.0)	98 (2.5)	Orange	Orange
TLS-0196	0.709 (18.0)	0.726 (18.4)	100 (2.5)	Green	Purple
TLS-0197	0.727 (18.5)	0.759 (19.3)	100 (2.5)	Pink	Red
TLS-0198	0.760 (19.3)	0.786 (20.0)	100 (2.5)	White	Blue
TLS-0199	0.787 (20.0)	0.814 (20.7)	100 (2.5)	Purple	Green
TLS-0200	0.815 (20.7)	0.855 (21.7)	100 (2.5)	Red	Yellow
TLS-0201	0.856 (21.7)	0.894 (22.7)	100 (2.5)	Blue	Black
TLS-0202	0.895 (22.7)	0.916 (23.3)	100 (2.5)	Black	White
TLS-0203	0.917 (23.3)	0.942 (23.9)	100 (2.5)	Orange	Brown
TLS-0204	0.943 (23.9)	0.977 (24.8)	100 (2.5)	Green	Orange
TLS-0205	0.978 (24.8)	1.016 (25.8)	100 (2.5)	Pink	Purple
TLS-0206	1.017 (25.8)	1.057 (26.8)	100 (2.5)	Purple	Red
TLS-0207	1.058 (26.8)	1.079 (27.4)	112 (2.8)	White	Blue
TLS-0208	1.080 (27.4)	1.112 (28.2)	112 (2.8)	White	Green
TLS-0209	1.113 (28.2)	1.150 (29.2)	112 (2.8)	Yellow	Yellow
TLS-0210	1.151 (29.2)	1.188 (30.2)	112 (2.8)	Yellow	Black
TLS-0211	1.189 (30.2)	1.208 (30.7)	112 (2.8)	Yellow	White
TLS-0212	1.209 (30.7)	1.262 (32.1)	125 (3.2)	Brown	Red

THERMOLIGN® Support

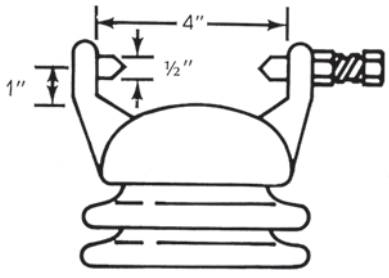
DIMENSIONAL DATA



Conductor Diameter Ranges in. (mm)	Dimensions in. (mm)							
	A	B	C	D	E	F	G	H
.637-.708 (16.2 - 18.0)	5-1/2 (139.7)	1-5/16 (33.3)	13/16 (20.6)	4-3/16 (106.4)	19/32 (15.1)	2-1/4 (57.2)	3/4 (19.1)	3-7/8 (98.4)
.709-.855 (18.0 - 21.7)	6 (152.4)	1-1/2 (38.1)	13/16 (20.6)	4-5/8 (117.5)	19/32 (15.1)	2-1/4 (57.2)	3/4 (19.1)	3-7/8 (98.4)
.856-1.057 (21.7 - 26.8)	6-1/2 (165.1)	1-5/8 (41.3)	29/32 (23.0)	5-7/64 (129.8)	19/32 (15.1)	2-1/4 (57.2)	3/4 (19.1)	3-7/8 (98.4)
1.058-1.208 (26.8 - 30.7)	7 (177.8)	1-15/16 (49.2)	49/64 (19.4)	5-13/32 (137.3)	19/32 (15.1)	2-1/4 (57.2)	3/4 (19.1)	3-7/8 (98.4)

CLAMP TOP TRUNNION

To insure proper fit and service life, it is recommended that only line post insulators with clamp top trunnion caps that conform to ANSI standards be used. See the illustration on the right for nominal cap dimensions that illustrate ANSI standards that have been established outlining the permissible dimensions and tolerances for trunnion caps. Consult the insulator manufacturer when in doubt about insulator standards.



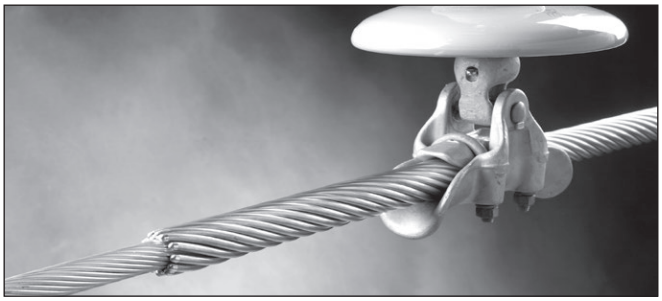
The above dimensions are approximates for design information. Consult ANSI specification C29.7-1977 for exact dimensions.

Line Guards

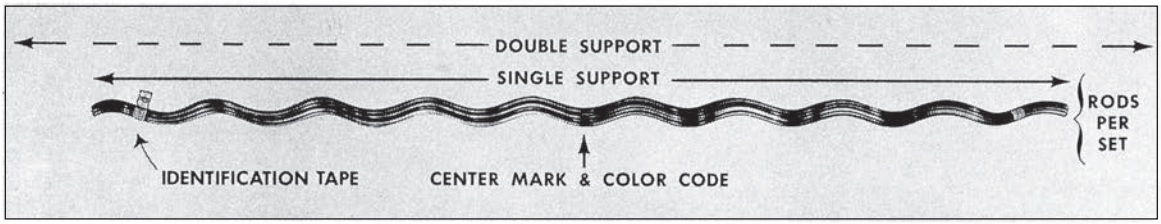
THERMOLIGN®

GENERAL RECOMMENDATIONS

Line Guards are used with high temperature bolted suspension clamps for jumper loop supports associated with dead-end structures. Line Guards with PARROT-BILL® rod ends are available for applications at 345kV and above.



NOMENCLATURE



Single Support and Double Support Length: Identified by "S" and "D" appearing in the length column on the catalog page. Should the maximum distance between tied supports exceed 12 inches, consult the Factory.

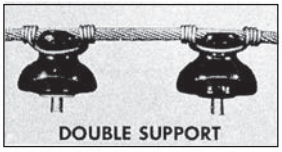
Rod Diameter: Added to conductor O.D., assists in arriving at applied overall diameter.

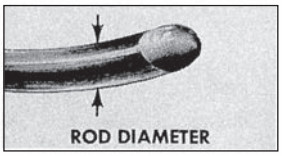
Rods Per Set: Indicates the proper number of rods for each application.

Center Mark: Establishes recommended alignment of rods during application.

Color Code and Length: Assists in identification of conductor size, corresponding to tabular information appearing on catalog page.

Identification Tape: Shows catalog number, nominal sizes.

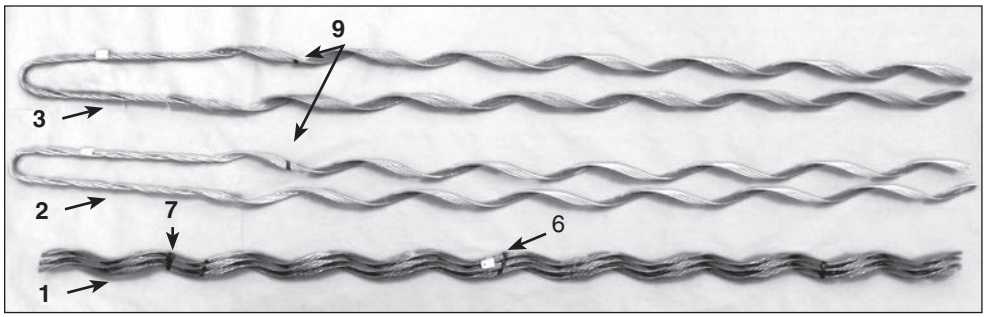


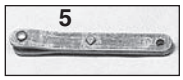


Catalog Number		Conductor Diameter Range		Length in. (m)	Rod Diameter in. (mm)	Rods Per Set	Color Code	Units	Wt. lbs. (Kg)
Standard	EHV (345kV & above)	Min in. (mm)	Max in. (mm)					Per Carton	
MG-0143	N/A	0.607 (15.4)	0.63 (16.0)	33 (0.83)	0.146 (3.7)	14	White	50	42 (19.0)
MG-0145	N/A	0.656 (16.7)	0.679 (17.2)	35 (0.89)	0.146 (3.7)	15	Brown	50	48 (21.8)
MG-0147	N/A	0.704 (17.9)	0.74 (18.8)	37 (0.93)	0.146 (3.7)	16	Green	50	54 (24.5)
MG-0149	N/A	0.793 (20.1)	0.84 (21.3)	41 (1.04)	0.146 (3.7)	18	Purple	50	64 (29.0)
MG-0150	N/A	0.841 (21.4)	0.898 (22.8)	43 (1.09)	0.146 (3.7)	19	Blue	25	36 (16.3)
MG-0151	N/A	0.899 (22.8)	0.954 (24.2)	45 (1.14)	0.167 (4.2)	18	Green	25	46 (20.9)
MG-0152	N/A	0.955 (24.3)	0.986 (25.0)	47 (1.19)	0.182 (4.6)	17	White	25	54 (24.5)
MG-0153	MGMS13889	0.987 (25.1)	1.016 (25.8)	49 (1.24)	0.182 (4.6)	18	Yellow	25	58 (26.3)
MG-0154	MGMS3517	1.017 (25.8)	1.064 (27.0)	49 (1.24)	0.182 (4.6)	18	Brown	25	60 (27.2)
MG-0155	N/A	1.065 (27.1)	1.098 (27.9)	51 (1.30)	0.204 (5.2)	17	Green	15	44 (20.0)
MG-0156	MGMS11556	1.099 (27.9)	1.153 (29.3)	53 (1.35)	0.25 (6.4)	15	Orange	15	58 (26.3)
MG-0157	MGMS6259	1.154 (29.3)	1.208 (30.7)	51 (1.30)	0.25 (6.4)	15	Purple	15	62 (28.1)
MG-0158	MGMS11557	1.209 (30.7)	1.268 (32.2)	53 (1.35)	0.25 (6.4)	16	Black	15	68 (30.8)
MG-0160	MGMS7184	1.328 (33.7)	1.39 (35.3)	55 (1.40)	0.25 (6.4)	17	Yellow	10	50 (22.7)
MG-0161	MGMS2898	1.391 (35.3)	1.44 (36.6)	57 (1.44)	0.31 (7.9)	15	Brown	5	36 (16.3)
MG-0163	MGMS13406	1.509 (38.3)	1.578 (40.1)	60 (1.52)	0.31 (7.9)	16	Green	5	41 (18.6)

THERMOLIGN® Dead-End

NOMENCLATURE





Patented

1. Structural reinforcing rods in multiple subsets (Aluminum Alloy)
2. Aluminum Alloy Dead-end
3. Aluminum-Clad Steel Dead-end
4. Thimble Clevis (Galvanized Steel)
5. 14" Extension Link (Galvanized Steel)
6. Center Mark
7. Crossover Mark
9. Color Code and Crossover Marks

GENERAL RECOMMENDATIONS

The THERMOLIGN Dead-end is specifically designed for applications on 3M™ ACCR conductors. The design allows for continuous conductor operating temperatures up to 250°C.

FEATURES AND BENEFITS

- No compression press and dies required – installation time is minimal.
- No electrical connections – conductor passes through Dead-end uncut eliminating compression and bolted electrical connections.

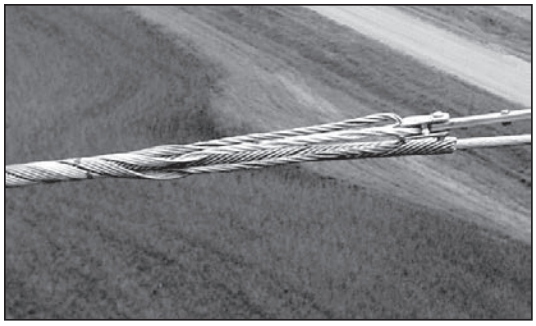
GENERAL SPECIFICATIONS

Holding strength: 95% or more of the conductor rated breaking strength (RBS).

Includes: Structural Reinforcing Rods, Dead-ends, Thimble Clevis and Extension Link.

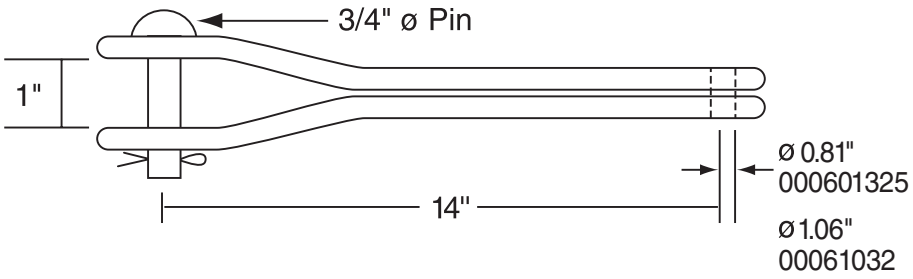
Thermal Rating (Continuous)
250°C

THERMOLIGN® Dead-End



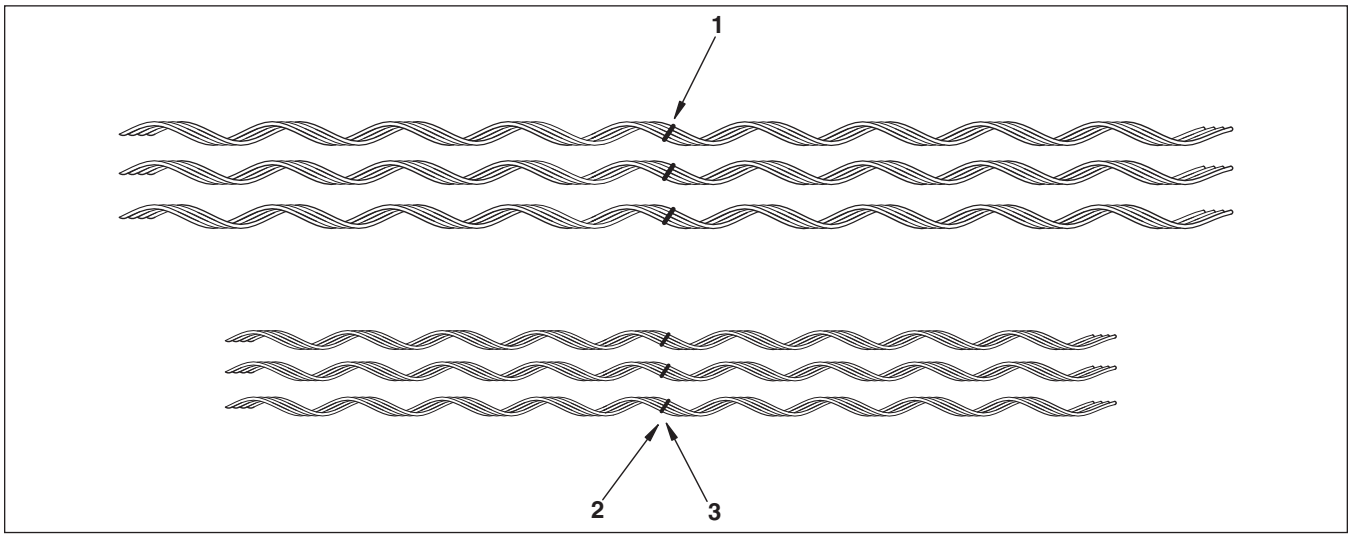
Catalog Number	Conductor Diameter Range		Length in. (m)		Color Codes	Extension Link Part Number	Thimble Clevis Part Number
	Min in. (mm)	Max in. (mm)	Structural Rods	Dead-ends			
TLDE-0100	0.720 (18.3)	0.720 (18.3)	128 (3.25)	89 (2.26)	Blue	000601325	00065486
TLDE-0101	0.741 (18.8)	0.752 (19.1)	131 (3.37)	91 (2.31)	Brown		
TLDE-0102	0.772 (19.6)	0.783 (19.3)	134 (3.40)	93 (2.36)	Pink		
TLDE-0103	0.806 (20.5)	0.823 (20.9)	138 (3.50)	95 (2.41)	Green		
TLDE-0104	0.846 (21.5)	0.860 (21.8)	141 (3.58)	97 (2.46)	Red		
TLDE-0105	0.883 (22.4)	0.900 (22.9)	144 (3.65)	99 (2.51)	Purple		
TLDE-0106	0.901 (22.9)	0.914 (23.2)	158 (4.01)	109 (2.76)	Yellow		
TLDE-0107	0.927 (23.5)	0.930 (23.6)	161 (4.08)	111 (2.81)	Orange		
TLDE-0108	0.953 (24.2)	0.962 (24.2)	162 (4.11)	111 (2.81)	Black		
TLDE-0109	0.963 (24.5)	0.977 (24.8)	163 (4.14)	112 (2.84)	Blue		
TLDE-0110	0.990 (25.1)	0.994 (25.2)	166 (4.21)	114 (2.89)	Brown		
TLDE-0111	1.000 (25.4)	1.019 (25.9)	168 (4.26)	115 (2.92)	Pink		
TLDE-0112	1.036 (26.3)	1.063 (27.0)	171 (4.34)	117 (2.97)	Green		
TLDE-0113	1.081 (27.4)	1.092 (27.7)	176 (4.47)	120 (3.04)	Red		
TLDE-0114	1.108 (28.1)	1.140 (29.0)	179 (4.54)	122 (3.09)	Black		
TLDE-0115	1.162 (29.5)	1.175 (29.8)	183 (4.64)	124 (3.15)	Purple	000610320	00065478
TLDE-0116	1.196 (30.4)	1.212 (30.8)	194 (4.92)	132 (3.35)	Yellow		
TLDE-0117	1.240 (31.5)	1.259 (32.0)	199 (5.05)	135 (3.42)	Orange		
TLDE-0118	1.290 (32.8)	1.302 (33.1)	203 (5.15)	138 (3.50)	Black		
TLDE-0119	1.338 (34.0)	1.345 (34.2)	207 (5.25)	140 (3.55)	Blue		
TLDE-0120	1.380 (35.1)	1.386 (35.2)	211 (5.35)	143 (3.63)	Red		
TLDE-0121	1.420 (36.1)	1.427 (36.2)	216 (5.48)	146 (3.70)	Purple		
TLDE-0122	1.465 (37.2)	1.466 (37.2)	221 (5.61)	149 (3.78)	Yellow		
TLDE-0123	1.492 (37.9)	1.505 (38.2)	223 (5.66)	150 (3.81)	Orange		
TLDE-0124	1.540 (39.1)	1.544 (39.2)	227 (5.76)	153 (3.88)	Green		

Extension Link Dimensions



THERMOLIGN® Splice

NOMENCLATURE



1. Inner Rods, Multiple Subsets (Aluminum Alloy)
2. Outer Rods, Multiple Subsets (Aluminum Alloy)
3. Center Mark & Color Code

GENERAL RECOMMENDATIONS

The THERMOLIGN Splice is intended for use on 3M™ ACCR conductors. The design allows for continuous conductor operating temperatures up to 250°C.

FEATURES AND BENEFITS

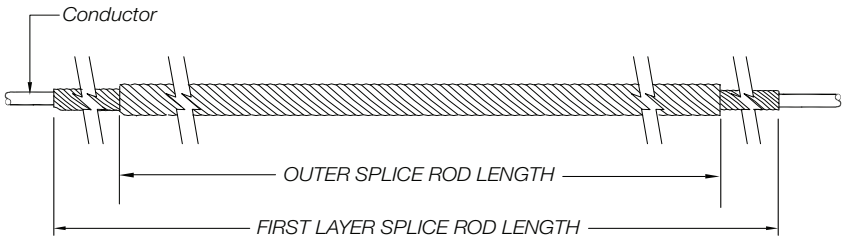
- No compression press and dies required – installation time is minimal
- Simple two layer design – no need to separately expose and splice core

GENERAL SPECIFICATIONS

Holding strength: 95% or more of the conductor rated breaking strength (RBS).

Thermal Rating (Continuous)
250°C

THERMOLIGN® Splice



Catalog Number	Conductor Diameter Range		Length in. (m)		Color Code
	Min in. (m)	Max in. (m)	Inner Rods	Outer Rods	
TLSP-0100	0.720 (18.3)	0.720 (18.3)	118 (2.97)	108 (2.74)	Blue
TLSP-0101	0.741 (18.8)	0.752 (19.1)	119 (3.02)	109 (2.76)	Brown
TLSP-0102	0.772 (19.6)	0.783 (19.3)	121 (3.07)	111 (2.81)	Pink
TLSP-0103	0.806 (20.5)	0.823 (20.9)	124 (3.15)	114 (2.89)	Green
TLSP-0104	0.846 (21.5)	0.860 (21.8)	131 (3.32)	121 (3.07)	Red
TLSP-0105	0.883 (22.4)	0.900 (22.9)	133 (3.37)	123 (3.12)	Purple
TLSP-0106	0.901 (22.9)	0.914 (23.2)	135 (3.42)	125 (3.17)	Yellow
TLSP-0107	0.927 (23.5)	0.930 (23.6)	136 (3.45)	126 (3.20)	Orange
TLSP-0108	0.953 (24.2)	0.962 (24.4)	146 (3.70)	136 (3.45)	Black
TLSP-0109	0.963 (24.5)	0.977 (24.8)	147 (3.73)	137 (3.48)	Blue
TLSP-0110	0.990 (25.1)	0.994 (25.2)	149 (3.78)	139 (3.53)	Brown
TLSP-0111	1.000 (25.4)	1.019 (25.9)	151 (3.83)	141 (3.58)	Pink
TLSP-0112	1.036 (26.3)	1.063 (27.0)	152 (3.86)	142 (3.60)	Green
TLSP-0113	1.081 (27.4)	1.092 (27.7)	154 (3.91)	144 (3.65)	Red
TLSP-0114	1.108 (28.1)	1.140 (29.0)	159 (4.03)	149 (3.78)	Black
TLSP-0115	1.162 (29.5)	1.175 (29.8)	162 (4.11)	152 (3.86)	Purple
TLSP-0116	1.196 (30.4)	1.212 (30.8)	163 (4.14)	153 (3.88)	Yellow
TLSP-0117	1.240 (31.5)	1.259 (32.0)	165 (4.19)	155 (3.93)	Orange
TLSP-0118	1.290 (32.8)	1.302 (33.1)	171 (4.34)	161 (4.08)	Black
TLSP-0119	1.338 (34.0)	1.345 (34.2)	174 (4.42)	164 (4.16)	Blue
TLSP-0120	1.380 (35.1)	1.386 (35.2)	177 (4.49)	167 (4.24)	Red
TLSP-0121	1.420 (36.1)	1.427 (36.2)	181 (4.59)	171 (4.34)	Purple
TLSP-0122	1.465 (37.2)	1.466 (37.2)	183 (4.64)	173 (4.39)	Yellow
TLSP-0123	1.492 (37.9)	1.505 (38.2)	185 (4.69)	175 (4.44)	Orange
TLSP-0124	1.540 (39.1)	1.544 (39.2)	188 (4.77)	178 (4.52)	Green

THERMOLIGN® Twin Spacer

GENERAL INFORMATION

The THERMOLIGN Twin Spacer is simple to install and is shipped with the rods (6 per side).

The break-away bolt provides a clear indication that the proper installation torque has been achieved (no special tools required).

Conductor Spacing is 18 inches (457 mm), but also available in 13 inch (330 mm) spacing.

Catalog Number	Conductor Diameter Range	
	Min in. (mm)	Max in. (mm)
TLTS-0101	0.673 (17.1)	0.713 (18.1)
TLTS-0102	0.714 (18.1)	0.752 (19.1)
TLTS-0103	0.753 (19.1)	0.791 (20.1)
TLTS-0104	0.792 (20.1)	0.831 (21.1)
TLTS-0105	0.832 (21.1)	0.87 (22.1)
TLTS-0106	0.871 (22.1)	0.909 (23.1)
TLTS-0107	0.91 (23.1)	0.949 (24.1)
TLTS-0108	0.95 (24.1)	0.988 (25.1)
TLTS-0109	0.989 (25.1)	1.028 (26.1)
TLTS-0110	1.029 (26.1)	1.067 (27.1)
TLTS-0111	1.068 (27.1)	1.106 (28.1)
TLTS-0112	1.107 (28.1)	1.146 (29.1)
TLTS-0113	1.147 (29.1)	1.185 (30.1)
TLTS-0114	1.186 (30.1)	1.224 (31.1)
TLTS-0115	1.225 (31.1)	1.264 (32.1)
TLTS-0116	1.265 (32.1)	1.303 (33.1)
TLTS-0117	1.304 (33.1)	1.345 (34.2)
TLTS-0118	1.346 (34.2)	1.382 (35.1)
TLTS-0119	1.383 (35.1)	1.421 (36.1)
TLTS-0120	1.422 (36.1)	1.461 (37.1)
TLTS-0121	1.462 (37.1)	1.5 (38.1)
TLTS-0122	1.501 (38.1)	1.539 (39.1)
TLTS-0123	1.54 (39.1)	1.579 (40.1)
TLTS-0124	1.58 (40.1)	1.618 (41.1)
TLTS-0125	1.619 (41.1)	1.657 (42.1)
TLTS-0126	1.658 (42.1)	1.697 (43.1)
TLTS-0127	1.698 (43.1)	1.736 (44.1)
TLTS-0128	1.737 (44.1)	1.776 (45.1)
TLTS-0129	1.777 (45.1)	1.821 (46.3)

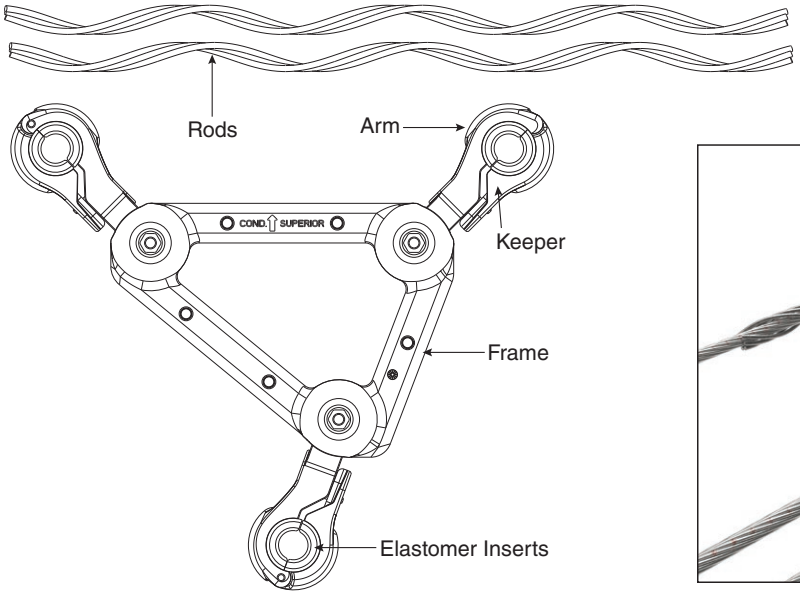
For 13 inch spacing add -13 to catalog number
(Example: TLTS - 0112 - 13)

Thermal Rating
Standard 250°C

THERMOLIGN® Spacer Damper

NOMENCLATURE

Thermal Rating
Standard: 250°C Continuous



GENERAL INFORMATION

The THERMOLIGN Spacer Dampers for Tri, Quad and Hex Bundles feature elastomer damping elements engineered to absorb maximum energy. This design provides the greatest possible resistance to conductor fatigue by eliminating the need for additional vibration dampers.

UNIQUE DESIGNS
The design was developed in cooperation with the Engineering Team at PLP-Brazil to meet the demanding requirements of IEC Specification 61854, while maintaining a light overall weight and exceptional performance.

PATENTED DAMPING ELEMENTS
The THERMOLIGN Spacer Dampers designs employ unique damping elements which are captured in a way which assures the elastomer is always in compression, providing maximum service life.

CLAMP FASTENER ASSURES PROPER INSTALLATION
A high strength 1/4 turn fastener is employed in the elastomer lined conductor clamp to insure proper installation. This design provides consistent compression of the elastomer liners without relying on specific bolt torque values or bolts with break-away heads.

PLACEMENT IS THE KEY TO PERFORMANCE
PLP's extensive experience and laboratory and field testing allow us to provide you with placement recommendations that will minimize the motion of conductor bundles and maximize the longevity of the Spacer Damper.

THERMOLIGN® Spacer Damper

ORDERING INFORMATION

For standard 18" (457mm) sub-conductor spacing the catalog numbers are:

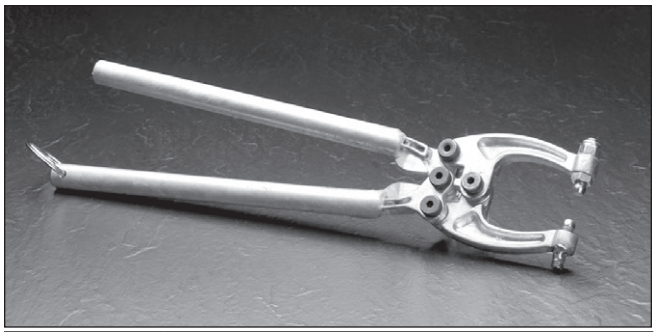
TLSDB-X45YZ
YZ is taken from the conductor range table below
X is 2 for Twin, 3 for Tri, 4 for Quad, 6 for Hex

Example:
TLSDB-34529 is a Spacer Damper for a Tri Bundle of conductors within a diameter range of 1.107" to 1.146".

YZ	Conductor Range in. (mm)
18	0.673-0.713 (17-18)
19	0.714-0.752 (18-19)
20	0.753-0.791 (19-20)
21	0.792-0.831 (20-21)
22	0.832-0.870 (21-22)
23	0.871-0.909 (22-23)
24	0.910-0.949 (23-24)
25	0.950-0.988 (24-25)
26	0.989-1.028 (25-26)
27	1.029-1.067 (26-27)
28	1.068-1.106 (27-28)
29	1.107-1.146 (28-29)
30	1.147-1.185 (29-30)
31	1.186-1.224 (30-31)

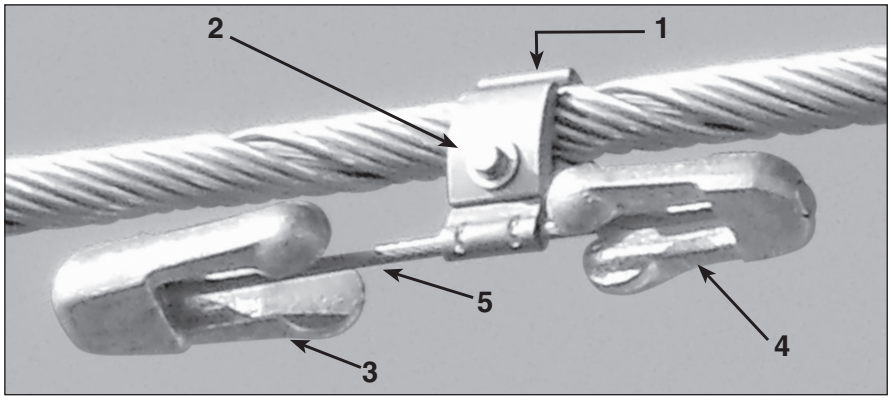
YZ	Conductor Range in. (mm)
32	1.225-1.264 (31-32)
33	1.265-1.303 (32-33)
34	1.304-1.345 (33-34)
35	1.346-1.382 (34-35)
36	1.383-1.421 (35-36)
37	1.422-1.461 (36-37)
38	1.462-1.500 (37-38)
39	1.501-1.539 (38-39)
40	1.540-1.579 (39-40)
41	1.580-1.618 (40-41)
42	1.619-1.657 (41-42)
43	1.658-1.697 (42-43)
44	1.698-1.736 (43-44)
45	1.737-1.776 (44-45)
46	1.777-1.821 (45-46)

Contact PLP for other sub-conductor spacings and configurations.



Catalog Number	Description
00071004	CUSHION-GRIP Spacer Damper installation tool

VORTX™ Vibration Damper



For use on ACCR Conductor

**250°C when applied over THERMOLIGN®
Suspension AGS Rods or Protector Rods**

NOMENCLATURE

1. **Clamp & Keeper:** The Clamp has an extruded hook shaped profile to hang onto the cable or conductor while tightening the keeper. Together, the aluminum keeper and clamp capture the conductor to hold the damper assembly firmly onto the conductor or cable. Product identification, installation torque, and lot number are permanently etched on the clamp.
2. **Break-Away Bolt, Washer, and Lock Washer:** The break-away bolt, washer, and lock washer are used to fasten the keeper to the clamp and secure the entire damper assembly to the cable or conductor. The materials used are galvanized steel.
3. **Large Damper Weight:** The VORTX damper design shown above has two weight sizes – this provides up to 4 resonant response frequencies (two for the large weight and two for the small weight) for more effective protection. The weight is a galvanized ductile iron casting.
4. **Small Damper Weight:** The small weight provides damping at higher frequencies. The weight is a galvanized ductile iron casting.
5. **Messenger:** The messenger is made of formed hard steel wires that are galvanized for corrosion resistance.

VORTX Dampers meet the requirements of IEC-61897

Damper	Configuration	Corona Rating kV
VSD20	Single	200
VSD25	Single	200
VSD35	Single	260
	Twin	345
VSD40	Single	230
	Twin	345
	Tri	400
	Tri	400
	Quad	400
VSD50	Single	330
	Twin	400
VSD55	Twin	550

VORTX™ Vibration Damper

THERMOLIGN®

GENERAL RECOMMENDATIONS

INTENDED USE: VORTX Dampers provide reduction of aeolian vibration amplitude and the associated dynamic stresses on the ACCR conductor at the supporting hardware.

APPLICATION: Since ACCR conductor can experience substantial thermal cycling, it is recommended that the VORTX Damper not be clamped directly on the conductor. For most applications, the VORTX Damper is placed on the THERMOLIGN Suspension Rods. In cases of Dead-end to Dead-end spans or for very long spans it may be necessary to position the damper on the conductor. For these situations it is recommended that Protector Rods be applied to the conductor before installing the damper.

VORTX DAMPER Catalog Number code:

VSD- 40 32 B

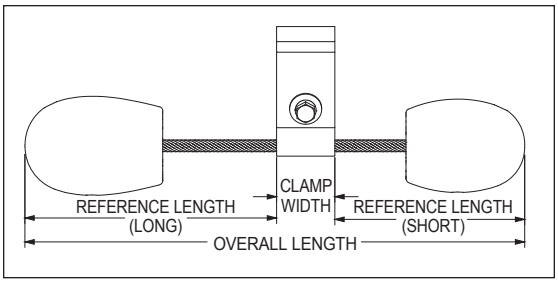
"VSD" – Vortx (Stockbridge) Damper

Weight Combination (20, 25, 35, 40, 50)
Weight selection is based on appropriate impedance for respective conductor or cable.

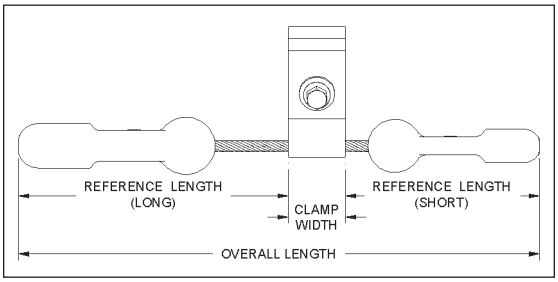
Clamp Code (16, 20, 25, 32, 40, 50, 61)
The clamp code represents the top end of the clamp range or maximum accepted cable diameter in millimeters.

Include only for optional design with break-away bolt.

Placement: The VORTX placement software uses the results of extensive laboratory testing and the standing wave loop geometry for critical wind velocities to "optimize" the quantity and placement of dampers for the specific line and terrain conditions. Use the link **WWW.PLPVORTX.COM** to get an input sheet to provide PLP with the data required to provide a complete placement recommendation.



VSD55 Series



VSD20 Through VSD50 Series

Weight Combination for Conductor and Shield Wire Sizes				
Weight Combination Code Number*	ACSR, AAC, AAAC and ACAR Range		Galvanized Steel and Alumoweld Range	
	Min in. (mm)	Max in. (mm)	Min in. (mm)	Max in. (mm)
20	0.473 (12.0)	0.720 (18.2)	.401 (10.2)	.486 (12.3)
25	0.721 (18.3)	0.857 (21.8)	.487 (12.4)	.650 (16.5)
35	0.859 (21.9)	0.983 (24.9)		
40	0.984 (25.0)	1.335 (33.9)		
50	1.261 (32.1)	1.762 (44.7)		
55	1.602 (40.7)	1.929 (49)		

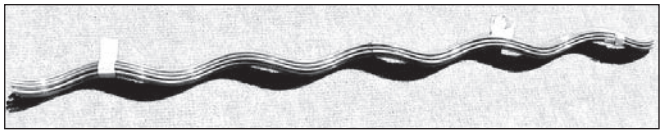
*Final selection for weight combination at merging ranges are determined from conductor type and tension.
VSD55 designed for twin bundle 500kV AC Applications and EHV DC. Contact PLP Technical support for final recommendation.

Bolt Size and Torque Information						
Clamp Code	Clamp Range		Bolt Thread Size	Wrench Size in. (mm)	Torque	
	Min in. (mm)	Max in. (mm)			N-m	Ft-Lb
16	.483 (12.3)	.612 (15.5)	M12	3/4 (19)	41	30
20	.612 (15.5)	.786 (20.0)	M12	3/4 (19)	41	30
25	.786 (20.0)	.983 (25.0)	M12	3/4 (19)	54	40
32	.983 (25.0)	1.261 (32.0)	M12	3/4 (19)	54	40
40	1.261 (32.0)	1.579 (40.1)	M12	3/4 (19)	54	40
50	1.579 (40.1)	1.970 (50.0)	M12	3/4 (19)	54	40
61	1.970 (50.0)	2.422 (61.5)	M12	3/4 (19)	54	40

VORTX™ Vibration Damper

VORTX Damper Details									
Catalog Number	Clamp Range Inches		Overall Length in. (mm)	Reference Length Long in. (mm)	Clamp Width in. (mm)	Bolt Size in. (mm)	Install Torque		Assembled Weight lbs. (kg)
	Min in. (mm)	Max in. (mm)					Ft-lb	N-m	
VSD-2032B	0.983 (25.0)	1.261 (32.0)	15.1 (384)	6.9 (175)	2.200 (55.9)	M12 x 70	40	54	4.4 (2.0)
VSD-2532B	0.983 (25.0)	1.261 (32.0)	12.9 (327)	6.4 (161)	2.200 (55.9)	M12 x 70	40	54	5.4 (2.5)
VSD-2540B	1.261 (32.0)	1.579 (40.1)	13.1 (332)	6.4 (161)	2.380 (60.5)	M12 x 70	40	54	5.7 (2.6)
VSD-3540B	1.261 (32.0)	1.579 (40.1)	15.1 (384)	7.0 (179)	2.380 (60.5)	M12 x 70	40	54	7.9 (3.6)
VSD-4040B	1.261 (32.0)	1.579 (40.1)	20.4 (519)	10.5 (267)	2.380 (60.5)	M12 x 70	40	54	11.1 (5.0)
VSD-4050B	1.579 (40.1)	1.970 (50.0)	20.6 (523)	10.5 (267)	2.500 (63.5)	M12 x 70	40	54	11.4 (5.2)
VSD-4061B	1.970 (50.0)	2.403 (61.0)	21.1 (535)	10.5 (267)	3.000 (76.2)	M12 x 75	40	54	12.1 (5.5)
VSD-5061B	1.970 (50.0)	2.403 (61.0)	24.5 (622)	12.1 (307)	3.000 (76.2)	M12 x 75	40	54	12.5 (5.7)
VSD-5543	1.500 (38.1)	1.700 (43.2)	21.6 (548)	11.2 (285)	2.61 (66.3)	M12 x 75	45	61	18.4 (8.3)
VSD-5549	1.700 (43.2)	1.950 (49.5)	21.8 (553)	11.3 (286)	2.75 (69.9)	M12 x 50	50	68	18.5 (8.4)

PROTECTOR RODS



Thermal Rating (Continuous) 250°C

PROTECTOR RODS FOR VORTX DAMPER

Protector Rods are required under the VORTX Damper for applications (Dead-end to Dead-end spans and longer spans) where the placement would be off of the THERMOLIGN® Suspension rods.

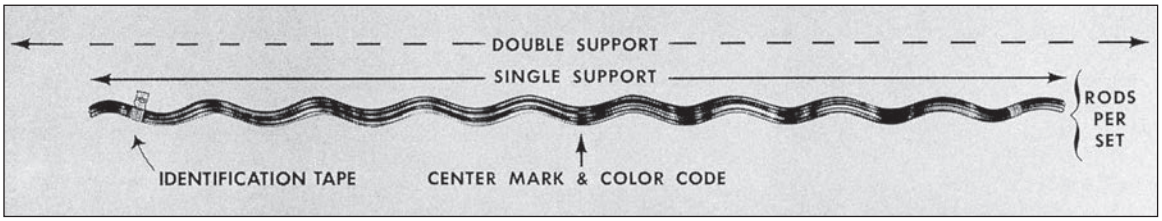
PLP Protector Rods								
Catalog Number	Conductor Diameter Range		Rod Length in. (m)	Rod Diameter in. (mm)	Rods Per Set	Color Code	Units Per Carton	Carton Weight lbs.(Kg)
	Min in. (mm)	Max in. (mm)						
PR-0135	0.378 (9.6)	0.423 (10.7)	12 (.30)	0.121 (3.1)	11	Yellow	50	10 (4.5)
PR-0137	0.424 (10.8)	0.475 (12.1)	12 (.40)	0.121 (3.1)	12	Brown	50	10 (4.5)
PR-0139	0.476 (12.1)	0.533 (13.5)	16 (.40)	0.121 (3.1)	13	Blue	50	14 (6.4)
PR-0141	0.534 (13.6)	0.585 (14.8)	16 (.40)	0.121 (3.1)	14	Green	50	14 (6.4)
PR-0142	0.586 (14.9)	0.618 (15.6)	16 (.40)	0.146 (3.7)	13	Orange	50	21 (9.5)
PR-0144	0.619 (15.7)	0.667 (16.9)	16 (.40)	0.146 (3.7)	14	Purple	50	21 (9.5)
PR-0146	0.668 (17.0)	0.722 (18.3)	20 (.50)	0.146 (3.7)	15	Red	50	29 (13.1)
PR-0148	0.723 (18.4)	0.816 (20.3)	20 (.50)	0.146 (3.7)	16	Black	50	29 (13.1)
PR-0150	0.817 (20.8)	0.898 (22.7)	20 (.50)	0.146 (3.7)	17	White	50	31 (14.1)
PR-0151	0.899 (22.8)	0.954 (24.2)	24 (.61)	0.167 (4.2)	17	Yellow	50	47 (21.3)
PR-0152	0.955 (24.3)	1.019 (25.8)	24 (.61)	0.182 (4.6)	16	Brown	25	29 (13.1)
PR-0154	1.020 (25.9)	1.064 (27.0)	24 (.61)	0.182 (4.6)	17	Blue	25	29 (16.1)
PR-0155	1.065 (27.1)	1.098 (27.8)	26 (.66)	0.204 (5.2)	16	Green	25	36 (16.3)
PR-0156	1.099 (27.9)	1.181 (29.9)	26 (.66)	0.250 (6.4)	14	Orange	25	48 (21.7)
PR-0158	1.182 (30.0)	1.298 (32.9)	26 (.66)	0.250 (6.4)	15	Purple	25	51 (23.1)
PR-0160	1.299 (33.0)	1.415 (35.9)	26 (.66)	0.250 (6.4)	16	Blue	20	44 (19.9)
PR-0162	1.416 (36.0)	1.543 (39.2)	26 (.66)	0.250 (6.4)	17	Yellow	20	48 (21.7)
PR-0163	1.544 (39.2)	1.685 (42.8)	26 (.66)	0.250 (6.4)	19	Brown	15	40 (18.1)
PR-0164	1.686 (42.8)	1.840 (46.7)	26 (.66)	0.250 (6.4)	20	Blue	15	42 (19.0)

Armor Rods

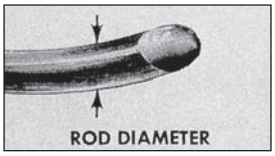
THERMOLIGN®

NOMENCLATURE

Thermal Rating (Continuous)
ACCR Repair 250°C



Rod Diameter: Added to conductor O.D., assists in arriving at applied overall diameter.



Rods Per Set: Indicate the proper number of rods for each application.

Center Mark: Establishes recommended alignment of rods during application.

Color Code and Length: Assist in identification of conductor size, corresponding to tabular information appearing on catalog page.

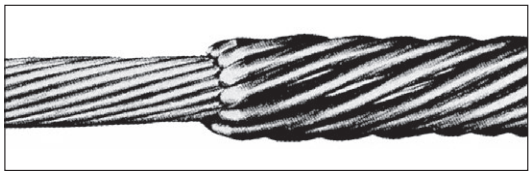
Identification Tape: Shows catalog number, nominal sizes.

GENERAL RECOMMENDATIONS

Armor Rods are used to fully restore electrical conductivity and mechanical strength to a partially damaged ACCR conductor. The damage must be limited to the aluminum strands and the number of broken or cracked strands must not exceed a number that is 50% of the number of strands in the outer layer (for either round or trapezoidal strands). The strands can be broken in any of the layers as long as the total number is less than 50% of the number of strands in the outer layer.

EHV versions with Parrot Bill rod ends are available for larger diameter conductors typically used for application at 345kV and above.

Armor Rods: PARROT-BILL® Ends

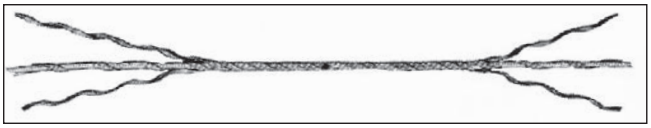


Armor Rods: Aluminum

Catalog Number	EHV Armor Rod Catalog Number	Conductor Diameter Range		Per Carton		Length in. (m)	Rod Diameter in. (mm)	Rods Per Set	Color Code
		Min in. (mm)	Max in. (mm)	Units	Wt. lbs. (Kg)				
AR-0124		0.552 (14.0)	0.5 85 (14.9)	25	46 (20.9)	60 (1.52)	0.182 (4.6)	11	Red
AR-0125		0.586 (14.9)	0.606 (15.4)	25	52 (23.6)	62 (1.57)	0.182 (4.6)	12	Black
AR-0126		0.607 (15.4)	0.63 (16.0)	25	54 (24.5)	64 (1.63)	0.182 (4.6)	12	Purple
AR-0127		0.631 (16.0)	0.655 (16.6)	25	54 (24.5)	64 (1.63)	0.182 (4.6)	12	Yellow
AR-0128		0.656 (16.7)	0.679 (17.2)	18	43 (19.5)	66 (1.68)	0.182 (4.6)	13	Brown
AR-0129		0.68 (17.3)	0.703 (17.9)	18	52 (23.6)	68 (1.73)	0.204 (5.2)	12	Blue
AR-0130		0.704 (17.9)	0.74 (18.8)	18	54 (24.5)	72 (1.83)	0.204 (5.2)	12	Green
AR-0131		0.741 (18.8)	0.782 (19.9)	18	59 (26.8)	72 (1.83)	0.204 (5.2)	13	Orange
AR-0132		0.783 (19.9)	0.814 (20.7)	15	66 (29.9)	76 (1.93)	0.25 (6.4)	11	Purple
AR-0133		0.815 (20.7)	0.845 (21.5)	15	66 (29.9)	76 (1.93)	0.25 (6.4)	11	Red
AR-0134		0.846 (21.5)	0.907 (23.0)	15	74 (33.6)	78 (1.98)	0.25 (6.4)	12	Blue
AR-0135		0.908 (23.1)	0.929 (23.6)	12	66 (29.9)	80 (2.03)	0.25 (6.4)	13	Green
AR-0136		0.93 (23.6)	0.976 (24.8)	12	72 (32.7)	88 (2.24)	0.25 (6.4)	13	White
AR-0137	AR-0500	0.977 (24.8)	1.016 (25.8)	9	50 (22.7)	92 (2.34)	0.31 (7.9)	11	Yellow
AR-0138	AR-0501	1.017 (25.8)	1.035 (26.3)	6	55 (24.9)	94 (2.39)	0.31 (7.9)	12	Brown
AR-0139	AR-0502	1.036 (26.3)	1.064 (27.0)	6	56 (25.4)	96 (2.44)	0.31 (7.9)	12	Blue
AR-0140	AR-0503	1.065 (27.1)	1.098 (27.9)	6	56 (25.4)	96 (2.44)	0.31 (7.9)	12	Green
AR-0141	AR-0504	1.099 (27.9)	1.139 (28.9)	6	62 (28.1)	100 (2.54)	0.31 (7.9)	12	Orange
AR-0142	AR-0505	1.14 (29.0)	1.161 (29.5)	6	63 (28.6)	101 (2.54)	0.31 (7.9)	13	Purple
AR-0143	AR-0506	1.162 (29.5)	1.208 (30.7)	6	69 (31.3)	102 (2.54)	0.31 (7.9)	13	Red
AR-0144	AR-0507	1.209 (30.7)	1.269 (32.2)	6	81 (36.7)	103 (2.54)	0.365 (9.3)	12	Black
AR-0145	AR-0508	1.27 (32.3)	1.327 (33.7)	6	81 (36.7)	104 (2.54)	0.365 (9.3)	12	White
AR-0146	AR-0509	1.328 (33.7)	1.39 (35.3)	3	45 (20.4)	105 (2.54)	0.365 (9.3)	13	Yellow
AR-0147	AR-0510	1.391 (35.3)	1.44 (36.6)	3	54 (24.5)	106 (2.54)	0.436 (11.1)	11	Brown
AR-0163	AR-0511	1.441 (36.6)	1.508 (38.3)	3	58 (26.3)	107 (2.54)	0.436 (11.1)	12	Blue
AR-0164	AR-0512	1.509 (38.3)	1.578 (40.1)	3	58 (26.3)	108 (2.54)	0.436 (11.1)	12	Green
AR-0165	AR-0513	1.579 (40.1)	1.651 (41.9)	3	60 (27.2)	109 (2.54)	0.436 (11.1)	13	Orange
AR-0166	AR-0514	1.652 (42.0)	1.728 (43.9)	3	60 (27.2)	110 (2.54)	0.436 (11.1)	13	Purple
AR-0167	AR-0516	1.729 (43.9)	1.809 (45.9)	3	64 (29.0)	111 (2.54)	0.436 (11.1)	14	Red
AR-0168	AR-0517	1.81 (46.0)	1.898 (48.2)	3	64 (29.0)	112 (2.54)	0.436 (11.1)	14	Black
AR-0169	AR-0518	1.899 (48.2)	1.991 (50.6)	3	68 (30.8)	113 (2.54)	0.436 (11.1)	15	White
AR-0170	AR-0519	1.992 (50.6)	2.09 (53.1)	3	68 (30.8)	114 (2.54)	0.436 (11.1)	15	Yellow
AR-0171	AR-0520	2.091 (53.1)	2.193 (55.7)	3	80 (36.3)	115 (2.54)	0.468 (11.9)	15	Brown

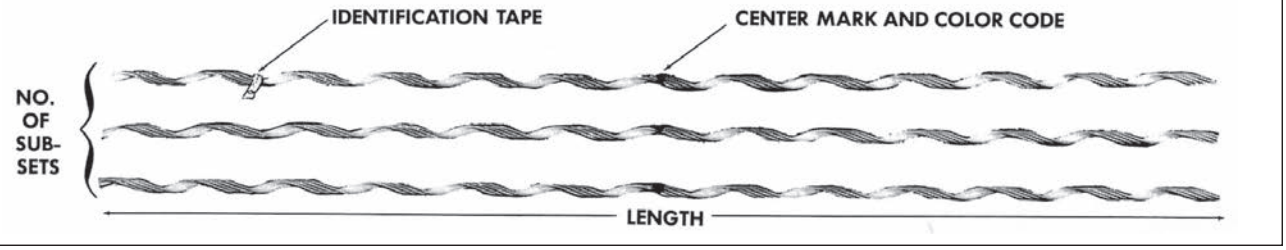
Conductor Splices

THERMOLIGN®



Catalog Number		Conductor Diameter Range		Length in. (m)	Rod Diameter in. (mm)	No. of Sub-sets	Color Code	Units	Wt. lbs.(Kg)
Standard	EHV (345kV and above)	Min in. (mm)	Max in. (mm)					Per Carton	
LS-0137	N/A	0.619 (15.7)	0.644 (16.4)	67 (1.70)	0.182 (4.6)	3	Yellow	25	58 (26.3)
LS-0139	N/A	0.672 (17.1)	0.7 (17.8)	70 (1.78)	0.204 (5.2)	3	Orange	25	68 (30.8)
LS-0140	N/A	0.701 (17.8)	0.729 (18.5)	77 (1.96)	0.25 (6.4)	3	Green	15	62 (28.1)
LS-0143	N/A	0.793 (20.1)	0.825 (21.0)	84 (2.13)	0.25 (6.4)	3	Red	3	18 (8.2)
LS-0144	N/A	0.826 (21.0)	0.85 (21.6)	86 (2.18)	0.25 (6.4)	3	Blue	3	19 (8.2)
LS-0147	N/A	0.93 (23.6)	0.968 (24.6)	108 (2.74)	0.31 (7.9)	4	Brown	3	37 (16.8)
LS-0148	N/A	0.969 (24.6)	1.008 (25.6)	111 (2.82)	0.31 (7.9)	4	Yellow	3	38 (16.8)
LS-0149	LSMS7953	1.009 (25.6)	1.05 (26.7)	121 (3.07)	0.31 (7.9)	4	Green	3	39 (17.7)
LS-0150	N/A	1.051 (26.7)	1.091 (27.7)	127 (3.23)	0.31 (7.9)	4	Black	3	45 (20.4)
LS-0151	LSMS4854	1.092 (27.7)	1.136 (28.9)	137 (3.48)	0.365 (9.3)	4	Purple	3	59 (26.8)
LS-0152	LSMS6275	1.137 (28.9)	1.183 (30.0)	141 (3.58)	0.365 (9.3)	4	Red	3	62 (28.1)
LS-0153	LSMS7955	1.184 (30.1)	1.232 (31.3)	143 (3.63)	0.365 (9.3)	4	Blue	3	63 (28.6)
LS-0154	LSMS8338	1.233 (31.3)	1.299 (33.0)	149 (3.78)	0.365 (9.3)	4	Green	3	65 (29.5)
LS-0155	LSMS7956	1.3 (33.0)	1.353 (34.4)	165 (4.19)	0.436 (11.1)	4	Yellow	3	101 (45.8)
LS-0156	LSMS14606	1.354 (34.4)	1.409 (35.8)	168 (4.27)	0.436 (11.1)	4	Brown	2	60 (27.2)
LS-0159	LSMS14465	1.529 (38.8)	1.591 (40.4)	184 (4.67)	0.436 (11.1)	4	Black	2	75 (34.0)

NOMENCLATURE



Sub-Sets: Individual rods assembled and gritted into groups (subsets), corresponding to tabular information appearing on catalog page.

Center Mark: Establishes recommended alignment of rods during application.

Color Code and Length: Assist in identification of conductor size, corresponding to tabular information appearing on catalog page.

Identification Tape: Shows catalog number, nominal sizes.

GENERAL RECOMMENDATIONS

Conductor Splices can be used on 3M™ ACCR conductor to repair damage to the Aluminum strands that exceeds the maximum number that can be repaired by Armor Rods.

Conductor Splices are capable of restoring the electrical conductivity of the conductor even if all of the aluminum strands have been broken or cracked. The composite core must be intact (undamaged).

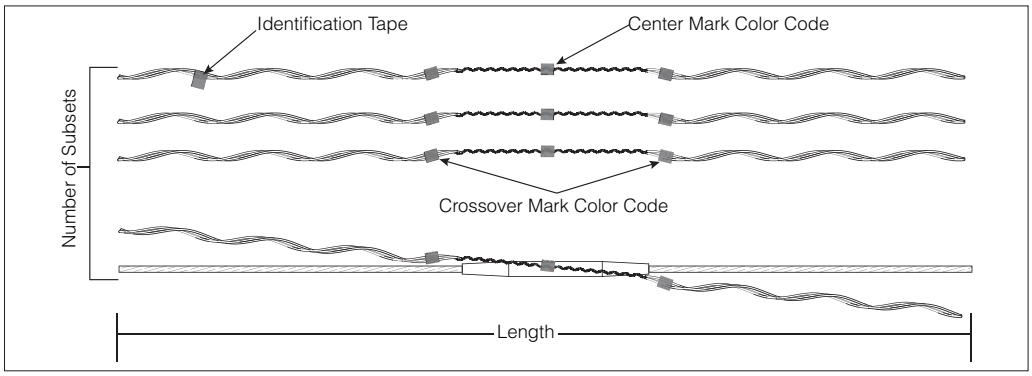
EHV (345kV and above) versions of the conductor splices with Parrot Bill rod ends are available for the larger conductors typically used for higher line voltages.

Thermal Rating
250°C Continuous

Splice/Dead-end Shunt

NOMENCLATURE

Thermal Rating (Continuous)
250°C



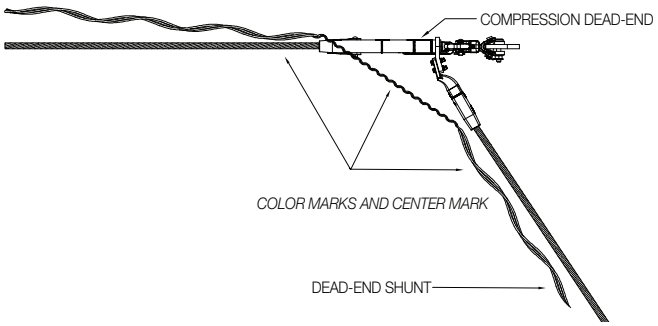
Subsets:
Individual rods assembled and gritted into groups (subsets), corresponding to tabular information appearing on catalog page.

Center Mark:
Establishes proper alignment of subsets centered on affected splice.

Color Code and Length:
Assists in identification of conductor size, corresponding to tabular information appearing on catalog page.

Identification Tape:
Shows catalog number, nominal sizes.

Application/Crossover Mark:
Indicates location where subsets wrap/apply on the conductor on either side of the splice.



GENERAL RECOMMENDATIONS

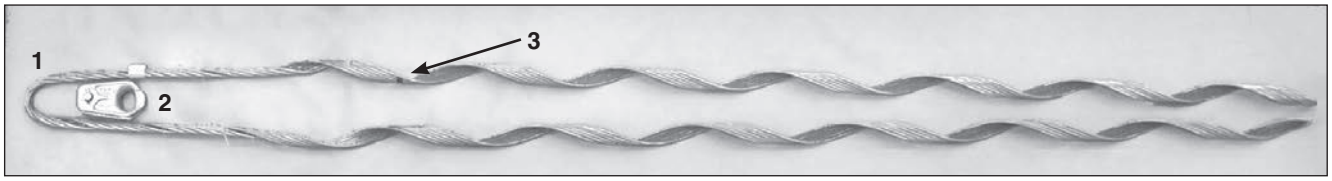
The Splice Shunt is designed to restore electrical conductivity and a portion of the mechanical strength to compression splices. The Dead-end Shunt restores electrical conductivity between the conductor in the span and the jumper loop.

In addition to using a Shunt for repair of faulty compression fittings, it can be used to reinforce and reduce the temperature of existing compression fittings for increasing the capacity (uprating) of a line.

Catalog Number	Conductor Diameter Range in. (mm)		Wire Size in. (mm)	Rods per Set (subsets)	Length in. (m)	Maximum Splice Length in. (m)	Color Code	EHV
SS-0008	0.619 (15.7)	0.644 (16.4)	0.218 (5.5)	10 (2-2-3-3)	102 (2.59)	24 (0.61)	Yellow	
SS-0009	0.666 (16.9)	0.7 (17.8)	0.235 (6.0)	10 (2-2-3-3)	103 (2.62)	25 (0.61)	Orange	
SDES-0001	0.701 (17.8)	0.729 (18.5)	0.25 (6.4)	10 (2-2-3-3)	108 (2.74)	20 (0.51)	Green	
SDES-0004	0.79 (20.1)	0.825 (21.0)	0.25 (6.4)	11 (2-3-3-3)	122 (3.10)	30 (0.76)	Red	
SDES-0005	0.826 (21.0)	0.85 (21.6)	0.25 (6.4)	11 (3-4-4)	138 (3.51)	31 (0.76)	Black	
SDES-0006	0.851 (21.6)	0.886 (22.5)	0.25 (6.4)	12 (3-3-3-3)	138 (3.51)	32 (0.81)	Black	
SDES-0008	0.918 (23.3)	0.968 (24.6)	0.31 (7.9)	11 (2-2-2-2-3)	148 (3.76)	33 (0.81)	White	
SDES-0009	0.969 (24.6)	1.008 (25.6)	0.31 (7.9)	11 (2-3-3-3)	151 (3.84)	34 (0.86)	Yellow	
SDES-0010	1.009 (25.6)	1.05 (26.7)	0.365 (9.3)	10 (2-2-3-3)	168 (4.27)	35 (0.86)	Green	
SDES-0011	1.051 (26.7)	1.091 (27.7)	0.365 (9.3)	10 (2-2-3-3)	187 (4.75)	36 (0.86)	Black	
SDES-0012	1.092 (27.7)	1.136 (28.9)	0.365 (9.3)	11 (2-2-2-2-3)	183 (4.65)	40 (1.02)	Green	Y
SDES-0013	1.137 (28.9)	1.183 (30.0)	0.365 (9.3)	11 (2-3-3-3)	187 (4.75)	41 (1.02)	Red	Y
SDES-0014	1.184 (30.1)	1.232 (31.3)	0.436 (11.1)	10 (2-2-3-3)	216 (5.49)	42 (1.07)	Blue	Y
SDES-0015	1.233 (31.3)	1.299 (33.0)	0.436 (11.1)	10 (2-2-2-2-2)	218 (5.54)	43 (1.07)	Green	Y
SDES-0016	1.3 (33.0)	1.353 (34.4)	0.436 (11.1)	11 (2-3-3-3)	220 (5.59)	45 (1.14)	Yellow	Y
SDES-0018	1.41 (35.8)	1.467 (37.3)	0.436 (11.1)	11 (2-3-3-3)	219 (5.56)	46 (1.14)	Yellow	Y
SDES-0020	1.505 (38.2)	1.545 (39.2)	0.365 (9.3)	14 (2-3-3-3-3)	226 (5.74)	47 (1.14)	White	Y

Tensioning Grip Dead-end

THERMOLIGN®



NOMENCLATURE

1. Tensioning Grip (1)
2. Thimble Clevis (1) - Sold Separately
3. Color Code and Crossover Marks (2)

GENERAL RECOMMENDATIONS

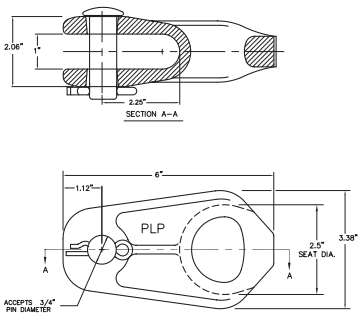
The Tensioning Grip Dead-end is designed for use on **3M™ ACCR Conductor only** for final sagging.

Re-application:
PREFORMED™ Tensioning Grips may be applied up to 3 times for the tensioning of the conductor during a new pulling or sagging operation. The re-application is acceptable for the purpose of re-positioning or adjusting the sag during that individual operation.

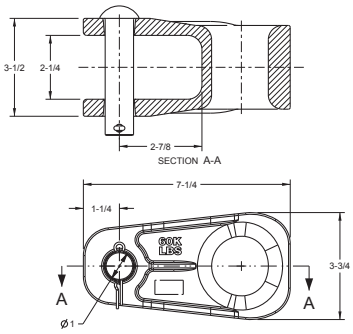
PREFORMED Tensioning Grips are not to be re-used after the final application of the individual operation.

The Tensioning Grip Dead-end has a rated holding strength of 40% of the conductor rated strength (RBS)

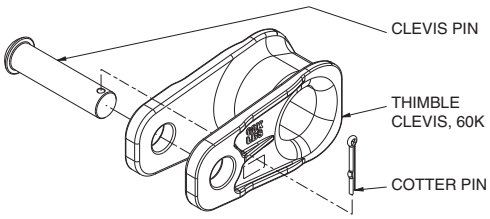
The Thimble Clevis (sold separately) designed for use with each Tensioning Grip Dead-end is listed in the table below.



TC-6F (42,400# Strength)



TC-7F (60,000# Strength)



Catalog Number	Conductor Range in. (mm)		Wire Size in. (mm)	Rods per Set	Length in. (m)	Color Code	Thimble Clevis
TG-3006	0.61 (15.5)	0.63 (16.0)	0.102 (2.6)	9	77 (1.96)	Purple	TC-6F
TG-3009	0.67 (17.0)	0.689 (17.5)	0.144 (3.7)	7	83 (2.11)	Orange	TC-6F
TG-3011	0.711 (18.1)	0.73 (18.5)	0.128 (3.3)	8	88 (2.24)	Brown	TC-6F
TG-3015	0.794 (20.2)	0.814 (20.7)	0.144 (3.7)	8	94 (2.39)	Purple	TC-6F
TG-3017	0.841 (21.4)	0.866 (22.0)	0.162 (4.1)	8	101 (2.57)	Black	TC-6F
TG-3020	0.919 (23.3)	0.944 (24.0)	0.162 (4.1)	8	109 (2.77)	Brown	TC-6F
TG-3021	0.945 (24.0)	0.971 (24.7)	0.183 (4.6)	8	114 (2.90)	Pink	TC-6F
TG-3022	0.972 (24.7)	0.997 (25.3)	0.183 (4.6)	8	116 (2.95)	Green	TC-6F
TG-3024	1.029 (26.1)	1.049 (26.6)	0.183 (4.6)	8	120 (3.05)	Purple	TC-6F
TG-3025	1.05 (26.7)	1.08 (27.4)	0.204 (5.2)	8	127 (3.23)	Yellow	TC-6F
TG-3027	1.111 (28.2)	1.141 (29.0)	0.204 (5.2)	8	132 (3.35)	Orange	TC-6F
TG-3028	1.142 (29.0)	1.172 (29.8)	0.229 (5.8)	8	138 (3.51)	Blue	TC-7F
TG-3029	1.173 (29.8)	1.206 (30.6)	0.229 (5.8)	8	141 (3.58)	Brown	TC-7F
TG-3031	1.241 (31.5)	1.28 (32.5)	0.229 (5.8)	8	153 (3.89)	Red	TC-7F
TG-3033	1.321 (33.6)	1.355 (34.4)	0.229 (5.8)	9	155 (3.94)	Purple	TC-7F
TG-3035	1.393 (35.4)	1.43 (36.3)	0.229 (5.8)	9	163 (4.14)	Black	TC-7F
TG-3038	1.501 (38.1)	1.539 (39.1)	0.229 (5.8)	10	175 (4.45)	Brown	TC-7F
TG-3039	1.54 (39.1)	1.58 (40.1)	0.229 (5.8)	10	177 (4.50)	Pink	TC-7F
TG-3040	1.581 (40.2)	1.62 (41.1)	0.229 (5.8)	10	181 (4.60)	Green	TC-7F
TG-3041	1.621 (41.2)	1.677 (42.6)	0.229 (5.8)	10	187 (4.75)	Red	TC-7F
TG-3042	1.678 (42.6)	1.71 (43.4)	0.244 (6.2)	10	190 (4.83)	Purple	TC-7F

NOTES

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