

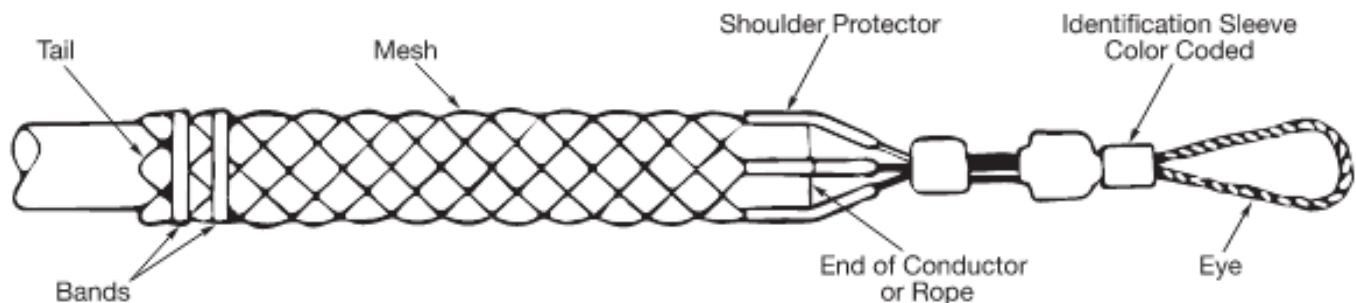
KELLEM GRIP INSTALLATION BASICS

PURPOSE:

Guidelines on properly installing a Kellem grip to prevent accidental releasing of grip.

PROCEDURE

1. Choose the correct size Kellem for wire size and tensions being pulled. If installing previous used grips, visually inspect Kellem. If significant damage is found remove from service.
 - National Grid requires new Kellem grips for PHA wire pulls
2. Tape end of conductor to prevent loose strands from unraveling.
 - Loose strands can get stuck in mesh of Kellem and prevent proper installation
3. Insert conductor all the way up to bend in shoulder protectors, work mesh towards the tail of Kellem to remove slack from Kellem grip.
4. Install two Punch-Lok bands starting 1"-2" from tail of Kellem and second 1"-2" from first one. A third band may be used to cover frayed end if necessary.
 - Two bands are mandatory for all grip installation
5. Tape head and tail of Kellem grip to allow smooth travel through blocks.





KELLEM GRIP INSTALLATION BASICS

ACSR

Code Word	Size (AWG or kcmil)	Strand- ing (Al/Stl)	Diameter (ins.)				Weight Per 1000 ft. (lbs.)			Content (%)		Rated Strength (lbs.)	Resistance OHMS/1000 ft.		Allowable Ampacity (Amps)
			Individual Wires		Steel Core	Complete Cable	Al	Stl	Total	Al	Stl		DC @ 20°C	AC @ 75°C	
			Al	Stl											
Turkey	6	6/1	.0661	.0661	.0661	.198	24	12	36	67.88	32.12	1190	.641	.806	105
Swan	4	6/1	.0834	.0834	.0834	.25	39	18	57	67.87	32.12	1860	.403	.515	140
Swanate	4	7/1	.0772	.103	.103	.257	39	28	67	58.1	41.9	2360	.399	.519	140
Sparrow	2	6/1	.1052	.1052	.1052	.316	62	29	91	67.9	32.1	2850	.254	.332	184
Sparate	2	7/1	.0974	.1298	.1298	.325	62	45	107	58.12	41.88	3460	.251	.338	184
Robin	1	6/1	.1181	.1181	.1181	.354	78	37	115	67.88	32.12	3550	.201	.268	212
Raven	1/0	6/1	.1327	.1327	.1327	.398	99	47	145	67.89	32.11	4380	.159	.217	242
Quail	2/0	6/1	.1489	.1489	.1489	.447	124	59	183	67.88	32.12	5310	.126	.176	276
Pigeon	3/0	6/1	.1672	.1672	.1672	.502	156	74	230	67.87	32.13	6620	.100	.144	315
Penguin	4/0	6/1	.1878	.1878	.1878	.563	197	93	291	67.88	32.12	8350	.0795	.119	357
Waxwing	266.8	18/1	.1217	.1217	.1217	.609	250	39	289	86.43	13.57	6880	.0643	.0787	449
Partridge	266.8	26/7	.1013	.0788	.2363	.642	251	115	367	68.51	31.49	11300	.0637	.0779	475
Ostrich	300	26/7	.1074	.0835	.2506	.68	283	130	412	68.51	31.49	12700	.0567	.0693	492
Merlin	336.4	18/1	.1367	.1367	.1367	.684	315	49	365	86.43	13.57	8680	.0510	.0625	519
Linnet	336.4	26/7	.1137	.0885	.2654	.72	317	146	462	68.51	31.49	14100	.0505	.0618	529
Oriole	336.4	30/7	.1059	.1059	.3177	.741	318	209	526	60.35	39.65	17300	.0502	.0613	535
Chickadee	397.5	18/1	.1486	.1486	.1486	.743	373	58	431	86.43	13.57	9940	.0432	.0529	576
Brant	397.5	24/7	.1287	.0858	.2574	.772	374	137	511	73.21	26.79	14600	.0430	.0526	584
Ibis	397.5	26/7	.1236	.0962	.2885	.783	374	172	546	68.51	31.49	16300	.0428	.0523	587
Lark	397.5	30/7	.1151	.1151	.3453	.806	375	247	622	60.35	39.65	20300	.0425	.0519	594
Pelican	477	18/1	.1628	.1628	.1628	.814	447	70	517	86.44	13.56	11800	.0360	.0442	646
Flicker	477	24/7	.141	.094	.2819	.846	449	164	614	73.21	26.79	17200	.0358	.0439	655
Hawk	477	26/7	.1354	.1053	.316	.858	449	207	656	68.51	31.49	19500	.0356	.0436	659
Hen	477	30/7	.1261	.1261	.3783	.883	450	296	746	60.35	39.65	23800	.0354	.0433	666
Osprey	556.5	18/1	.1758	.1758	.1758	.879	522	82	603	86.43	13.57	13700	.0308	.0379	711
Parakeet	556.5	24/7	.1523	.1015	.3045	.914	524	192	716	73.21	26.79	19800	.0307	.0376	721
Dove	556.5	26/7	.1463	.1138	.3413	.927	524	241	765	68.51	31.49	22600	.0306	.0375	726
Eagle	556.5	30/7	.1362	.1362	.4086	.953	525	345	871	60.35	39.65	27800	.0303	.0372	734
Peacock	605	24/7	.1588	.1059	.3177	.953	570	209	779	73.2	26.8	21600	.0282	.0346	760
Squab	605	26/7	.1525	.1186	.3559	.966	570	262	832	68.51	31.49	24300	.0281	.0345	765
Wood Duck	605.0	30/7	.142	.142	.426	.994	571	375	946	60.35	39.65	28900	.0279	.0342	774
Teal	605.0	30/19	.142	.0852	.426	.994	571	367	939	60.86	39.14	30000	.0279	.0342	773
Kingbird	636	18/1	.188	.188	.188	.94	596	94	690	86.43	13.57	15700	.0270	.0332	773
Swift	636.0	36/1	.1329	.1329	.1329	.93	596	47	643	92.72	7.28	13690	.0271	.0334	769
Rook	636	24/7	.1628	.1085	.3256	.977	599	219	818	73.22	26.78	22600	.0268	.0330	784
Grosbeak	636	26/7	.1564	.1216	.3649	.991	599	275	874	68.51	31.49	25200	.0267	.0328	789



KELLEM GRIP INSTALLATION BASICS

ACSR

Scoter	636.0	30/7	.1456	.1456	.4368	1.019	600	395	995	60.35	39.65	30400	.0256	.0325	798
Egret	636	30/19	.1456	.0874	.4368	1.019	600	386	987	60.85	39.15	31500	.0266	.0326	798
Flamingo	666.6	24/7	.1667	.1111	.3333	1	628	230	858	73.21	26.79	23700	.0256	.0315	807
Gannet	666.6	26/7	.1601	.1245	.3736	1.014	628	289	916	68.51	31.49	26400	.0255	.0313	812
Stilt	715.5	24/7	.1727	.1151	.3453	1.036	674	247	920	73.21	26.79	25500	.0239	.0294	844
Starling	715.5	26/7	.1659	.129	.3871	1.051	674	310	984	68.51	31.49	28400	.0238	.0292	849
Redwing	715.5	30/19	.1544	.0927	.4633	1.081	676	435	1110	60.85	39.15	34600	.0236	.0290	859
Coot	795	36/1	.1486	.1486	.1486	1.04	745	58	804	92.72	7.28	16710	.0217	.0268	884
Drake	795	26/7	.1749	.136	.408	1.107	749	344	1093	68.51	31.49	31500	.0214	.0263	907
Tern	795	45/7	.1329	.0886	.2658	1.063	749	146	895	83.67	16.33	22100	.0216	.0269	887
Condor	795	54/7	.1213	.1213	.364	1.092	749	274	1023	73.21	26.79	28200	.0215	.0272	889
Mallard	795	30/19	.1628	.0977	.4884	1.14	751	483	1234	60.86	39.14	38400	.0213	.0261	918
Ruddy	900	45/7	.1414	.0943	.2828	1.131	848	165	1013	83.67	16.33	24400	.0191	.0239	958
Canary	900	54/7	.1291	.1291	.3873	1.162	848	310	1158	73.22	26.78	31900	.0190	.0241	961
Rail	954	45/7	.1456	.0971	.2912	1.165	899	175	1074	83.67	16.33	25900	.0180	.0225	993
Cardinal	954	54/7	.1329	.1329	.3987	1.196	899	329	1227	73.21	26.79	33800	.0179	.0228	996
Ortolan	1033.5	45/7	.1515	.101	.3031	1.212	973	190	1163	83.67	16.33	27700	.0167	.0209	1043
Curlew	1033.5	54/7	.1383	.1383	.415	1.245	973	356	1330	73.21	26.79	36600	.0165	.0211	1047
Bluejay	1113	45/7	.1573	.1048	.3145	1.258	1048	205	1253	83.67	16.33	29800	.0155	.0194	1092
Finch	1113	54/19	.1436	.0861	.4307	1.292	1053	375	1429	73.72	26.28	39100	.0154	.0197	1093
Bunting	1192.5	45/7	.1628	.1085	.3256	1.302	1123	219	1343	83.67	16.33	32000	.0144	.0182	1139
Grackle	1192.5	54/19	.1486	.0892	.4458	1.337	1129	402	1531	73.72	26.28	41900	.0144	.0184	1140
Bittern	1272	45/7	.1681	.1121	.3362	1.345	1198	234	1432	83.67	16.33	34100	.0135	.0171	1184
Pheasant	1272	54/19	.1535	.0921	.4605	1.381	1204	429	1633	73.71	26.29	43600	.0135	.0173	1187
Dipper	1351.5	45/7	.1733	.1155	.3466	1.386	1273	248	1521	83.67	16.33	36200	.0127	.0162	1229
Martin	1351.5	54/19	.1582	.0949	.4746	1.424	1279	456	1735	73.72	26.28	46300	.0127	.0163	1232
Bobolink	1431	45/7	.1783	.1189	.3566	1.427	1348	263	1611	83.67	16.33	38300	.0120	.0153	1272
Lapwing	1590	45/7	.188	.1253	.3759	1.504	1498	292	1790	83.67	16.33	42200	.0108	.0139	1354
Falcon	1590	54/19	.1716	.103	.5148	1.544	1505	536	2041	73.72	26.28	54500	.0108	.0140	1359
Chukar	1780	84/19	.1456	.0874	.4368	1.602	1685	386	2072	81.35	18.65	51000	.0097	.0125	1453
Bluebird	2156	84/19	.1602	.0962	.4808	1.762	2040	468	2508	81.34	18.66	60300	.00801	.0105	1623
Kiwi	2167	72/7	.1735	.1157	.347	1.735	2051	249	2300	89.17	10.82	49800	.00801	.0106	1607

+Conductor temperature of 75°C, ambient temperature 25°C, emissivity 0.5, wind 2 ft./sec., in sun.

Code Word	Size (AWG or kcmil)	Stranding (Al/Stl)	Diameter (ins.)			Weight Per 1000 ft. (lbs.)			Content (%)		Rated Strength (lbs.)	Resistance OHMS/1000 ft.		Allowable Ampacity (Amps)	
			Individual Wires		Steel Core	Complete Cable	Al	Stl	Total	Al		Stl	DC @ 20°C		AC @ 75°C
			Al	Stl											
HIGH MECHANICAL STRENGTH															
Grouse	80	8/1	.1	.1667	.1667	.367	75	74	149	50.48	49.52	5200	.207	.294	204
Petrel	101.8	12/7	.0921	.0921	.2763	.461	96	158	254	37.79	62.21	10400	.158	.250	237
Minorca	110.8	12/7	.0961	.0962	.2885	.481	104	172	276	37.75	62.25	11300	.145	.235	248
Leghorn	134.6	12/7	.1059	.1059	.3177	.53	127	209	335	37.79	62.21	13600	.120	.204	273
Guinea	159.0	12/7	.1151	.1151	.3453	.576	150	247	396	37.79	62.21	16000	.101	.181	297
Dotterel	176.9	12/7	.1214	.1214	.3642	.607	167	274	441	37.79	62.21	17300	.0911	.169	312
Dorking	190.8	12/7	.1261	.1261	.3783	.63	180	296	476	37.78	62.22	18700	.0845	.160	324
Cochin	211.3	12/7	.1327	.1327	.398	.663	199	328	527	37.8	62.2	28400	.0763	.150	340

+Conductor temperature of 75°C, ambient temperature 25°C, emissivity 0.5, wind 2 ft./sec., in sun.



KELLEM GRIP INSTALLATION BASICS

Kellems® Wire Management Products Quick Reference Selection Guide for Grip Applications

Pulling Grips



Heavy-Duty Rotating Eye
For underground wiring and overhead heavy-duty pulling of service lines and new construction cable. See pages V-7 and V-8.



Heavy-Duty Flexible Eye
For overhead transmission and distribution line stringing. See pages V-6, V-7, and V-9.



Slack Grips
For removing underground cable and pulling slack in existing cable and new installations and when end of cable is not available. See pages V-10 and V-11.



Light-Duty Flexible Eye
For light industrial pulling of electrical cable and for underground and industrial plant wiring and re-wiring. See page V-12.

Support Grips



Single Eye
For single hook attachment of permanent indoor/outdoor cable. Available on heavy-duty, standard duty, and service drop grips. See pages V-28, V-32, and V-34.



Double Eye
For double hook attachment of permanent indoor/outdoor cable. Available on heavy-duty and standard duty grips. See pages V-29 and V-33.



Single Offset Eye
For offset hook attachment of permanent indoor/outdoor cable. Available on standard duty and light-duty support grips. See page V-30.



Universal Eye
Used to fasten around a structure or closed loop. Available on standard duty support and light or heavy duty service drop grips. See pages V-31 and V-35.

Support Grips



Wide Range Bus Drop
Used indoors for cable support where flexible cable connects electrical equipment to bus duct. Support air hose and water hose. See page V-36.

Strain Relief Grips



Dust-Tight Strain Relief
Indoor use only for wiring of electrical enclosures, machine tools, portable power tools, bus drop cable systems. See page V-63.



Deluxe Cord
Indoor or outdoor use where subject to moisture, splash, or washdown. Examples are enclosures, crane hoist and pendant drop stations, hand tools, pumps, and processing equipment. Available in straight, 90°, or 45° configurations. See pages V-58 to V-61.



Liquid-Tight, Flexible Metal Conduit
Wiring of machine tools, electrical enclosures, motors, and systems subjected to vibration, flexure, motion, or strain. Available in straight, 90°, or 45° configurations. See pages V-66 to V-68.

Other Specialty Grips

Splicing Grips

Used as temporary splice for cable and wire rope, or as reinforcement to protect cables and hoses. See pages V-13 and V-14.

Conduit Riser Grips

Ideal for supporting electrical wires inside rigid conduit via a supporting ring. See pages V-38 to V-40.

Hose Containment Grips

Used on flexible hose lines to prevent violent whipping of hose in the event of failure at the fitting. See page V-55.

Specifications are subject to change without notice.



KELLEM GRIP INSTALLATION BASICS

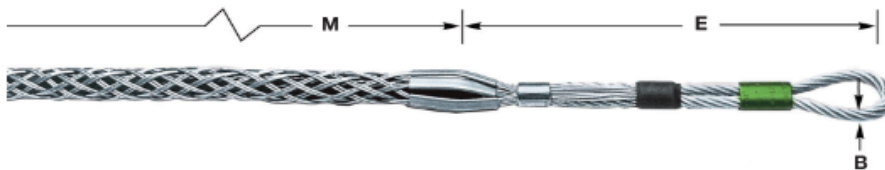
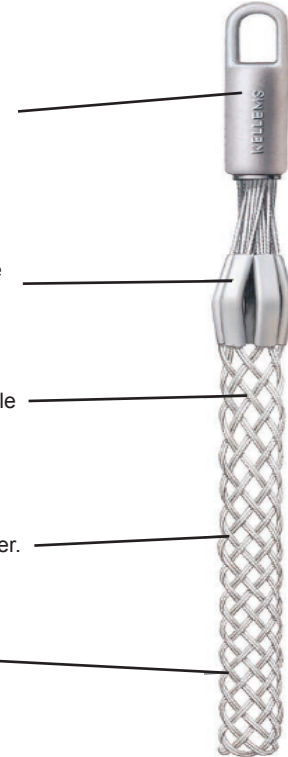
Flexible or rotating eyes will mate easily with line stringing swivels for attachment to pulling lines; they have great strength for trouble free pulling jobs.

Shoulder protectors contain the cable inside the grip and smooth the passage of the grip over line stringing blocks or conduit bends; they protect the leading edge of the grip from abrasion.

The galvanized steel mesh grip provides strength for secure pulling jobs and a slim profile with little build-up; it has flexibility to follow cable path.

The multiweave style available add strength for big pulling jobs and provide positive gripping power.

Endless weave allows easy installation onto cable. It has a snag-free low profile; designed to be reusable tool.



DUA-PULL® Grips

Diameter Range		Approx. Breaking Strength Lbs. (N)	E Inches (cm)	M Inches (cm)	Eye B Diameter Inches (cm)	Over Cable and Grip** Inches (cm)	Color Code	Catalog Number
Conductor Inches (cm)	Rope* Inches (cm)							
.19"- .37" (.48-.94)	.25"- .65" (.63-1.65)	6,500 (28,912)	10" (25.40)	24" (60.96)	.220" (.56)	.200" (.51)	Black	033271037
.38"- .62" (.97-1.57)	.50"- .90" (1.27-2.29)	14,000 (62,272)	12" (30.48)	36" (91.44)	.375" (.95)	.280" (.71)	Dk Green	033271038
.63"- .87" (1.60-2.21)	.75"-1.10" (1.90-2.79)	20,000 (88,960)	13" (33.02)	48" (121.92)	.437" (1.11)	.360" (.91)	Red	033271039
.88"-1.12" (2.24-2.84)	1.00"-1.50" (2.54-3.81)	30,600 (136,109)	15" (38.10)	60" (152.40)	.500" (1.27)	.500" (1.27)	Dk Blue	033271040
1.13"-1.37" (2.87-3.48)	1.25"-1.70" (3.17-4.32)	46,800 (208,166)	18" (45.72)	76" (193.04)	.625" (1.59)	.625" (1.59)	Yellow	033271041
1.38"-1.90" (3.51-4.38)	1.50"-2.10" (3.81-5.33)	66,500 (295,792)	24" (60.96)	89" (226.06)	.750" (1.90)	.750" (1.90)	Aluminum	033271042

Note: E = Eye length. M = Mesh length at nominal diameter.
*For rope, select smallest size grip which meets required work load.
**Add to cable or rope diameter.



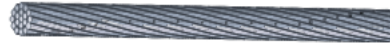
KELLEM GRIP INSTALLATION BASICS

Slingco Part No.	Color Code	Rope Diameter (ins)	Conductor Diameter (ins)	Overall Length (ins)	Lattice Length (ins)	Approx. Break Load (lbs)
ZCS1799	Black	0.25 - 0.65	0.19 - 0.40	38	28	7,000
ZCS3020	Purple	0.30 - 0.40	0.25 - 0.40	42	30	10,000
ZCS1800	Dark Green	0.50 - 0.90	0.38 - 0.63	51	37	14,000
ZCS3522	Grey	0.44 - 0.90	0.44 - 0.63	110	97	20,000
ZCS1801	Red	0.75 - 1.10	0.63 - 0.88	74	58	20,000
ZCS5543	Brown		0.75 - 1.10	81	62	30,700
ZCS1802	Blue	1.00 - 1.50	0.88 - 1.13	80	61	30,700
ZCS1803	Yellow	1.25 - 1.70	1.13 - 1.38	112	90	47,000
ZCS1804	Aluminum	1.50 - 2.10	1.38 - 1.90	119	92	67,000
ZCS6712	-		2.00 - 2.60	109.25	100	70,528
ZCS7852	-		2.50 - 3.00	109.25	100	70,528



KELLEM GRIP INSTALLATION BASICS

AAC - All Aluminum Conductor



APPLICATION:

AAC – All Aluminum Conductor is for stranded 1350 aluminum conductors and is primarily used for overhead transmission and distribution services, where strength of standard ACSR cables is not required. Class AA for bare conductors used in overhead lines. Class A for conductors to be covered with weather-resistant materials and for bare conductors where greater flexibility is required.

STANDARDS:

- ASTM B-230 Aluminum 1350-H19 for Electrical Purposes
- ASTM B-231 Concentric-Lay-Stranded Aluminum 1350 conductors
- Requirements of the National Electrical Code

CONDUCTORS:

- Concentric lay stranded conductor consisting of Aluminum Alloy 1350-H19 wires. AAC is available in both single layer and multi-layer constructions.

Code Word	Conductor Size AWG/kcmil	Stranding		Diameter		Cross Sectional Area Sq. In.	Weight lbs/kft	Rated Breaking Strength lbs	Resistance**		Ampacity*
		# of Wires	Class	Indiv. Wire	Comp. Cable				DC @ 20°C	AC @ 75°C	
				inches	inches				Ohms/kft	Ohms/kft	
Peachbell	6	7	A	0.0612	0.184	0.0206	24.6	563	0.658	0.8050	103
Rose	4	7	A	0.0772	0.232	0.0328	39.2	881	0.414	0.5060	138
Iris	2	7	AA,A	0.0974	0.292	0.0522	62.3	1,350	0.260	0.3180	185
Pansy	1	7	AA,A	0.1093	0.328	0.0657	78.5	1,640	0.207	0.2520	214
Poppy	1/0	7	AA,A	0.1228	0.368	0.0829	99.1	1,990	0.164	0.2000	247
Aster	2/0	7	AA,A	0.1379	0.414	0.1045	124.9	2,510	0.130	0.1590	286
Phlox	3/0	7	AA,A	0.1548	0.464	0.1318	157.5	3,040	0.103	0.1260	331
Oxlip	4/0	7	AA,A	0.1739	0.522	0.1663	198.6	3,830	0.082	0.0999	383
Sneezewart	250	7	AA	0.1890	0.567	0.1964	234.7	4,520	0.069	0.0846	425
Valerian	250	19	A	0.1147	0.574	0.1964	234.7	4,660	0.069	0.0846	425
Daisy	266.8	7	AA	0.1953	0.586	0.2095	250.5	4,830	0.065	0.0793	443
Laurel	266.8	19	A	0.1185	0.593	0.2095	250.5	4,970	0.065	0.0793	444
Peony	300	19	A	0.1257	0.629	0.2358	281.4	5,480	0.058	0.0706	478
Tulip	336.4	19	A	0.1331	0.666	0.2644	315.8	6,150	0.051	0.0630	513
Daffodil	350	19	A	0.1357	0.679	0.2749	328.6	6,390	0.049	0.0605	526
Canna	397.5	19	AA,A	0.1447	0.724	0.3122	373.2	7,110	0.044	0.0534	570
Goldentuft	450	19	AA	0.1539	0.769	0.3534	422.4	7,890	0.038	0.0472	616
Cosmos	477	19	AA	0.1584	0.793	0.3746	447.8	8,360	0.036	0.0445	639
Syringa	477	37	A	0.1135	0.795	0.3746	447.8	8,690	0.036	0.0445	639
Zinnia	500	19	AA	0.1622	0.811	0.3927	469.4	8,760	0.035	0.0425	658
Hyacinth	500	37	A	0.1162	0.813	0.3924	469.4	9,110	0.035	0.0425	658
Dahlia	556.5	19	AA	0.1711	0.856	0.4371	522.4	9,750	0.031	0.0382	703
Mistletoe	556.5	37	AA,A	0.1226	0.858	0.4371	522.4	9,940	0.031	0.0382	704

All values are nominal and subject to correction.

** Current ratings are based on 75°C conductor temperature, 25°C ambient, 2ft/s wind, in sun, .05 coefficients of emissivity and absorption.*

*** Resistance is calculated using ASTM standard increments of stranding and metal conductivity of 61.2% IACS, AC resistance at 60 Hz.*



KELLEM GRIP INSTALLATION BASICS

AAC - All Aluminum Conductor



Code Word	Conductor Size	Stranding		Diameter		Cross Sectional Area	Weight	Rated Breaking Strength	Resistance**		Ampacity*
		# of Wires	Class	Indiv. Wire	Comp. Cable				DC @ 20°C	AC @ 75°C	
	AWG/kcmil			inches	inches	Sq. In.	lbs/ft	lbs	Ohms/ft	Ohms/ft	amps
Meadowsweet	600	37	AA,A	0.1273	0.891	0.4712	563.2	10,700	0.029	0.0355	738
Orchid	636	37	AA,A	0.1311	0.918	0.4995	597.0	11,400	0.027	0.0335	765
Heuchera	650	37	AA	0.1326	0.928	0.5105	610.2	11,600	0.027	0.0328	775
Verbena	700	37	AA	0.1375	0.963	0.5498	657.1	12,500	0.025	0.0305	812
Flag	700	61	A	0.1071	0.964	0.5498	657.1	12,900	0.025	0.0305	812
Violet	715.5	37	AA	0.1391	0.974	0.5623	671.7	12,800	0.024	0.0299	823
Nasturtium	715.5	61	A	0.1083	0.975	0.5619	671.7	13,100	0.024	0.0299	823
Petunia	750	37	AA	0.1424	0.997	0.5893	704.5	13,100	0.023	0.0286	847
Cattail	750	61	A	0.1109	0.998	0.5892	704.0	13,500	0.023	0.0286	847
Arbutus	795	37	AA	0.1466	1.026	0.6245	746.3	13,900	0.022	0.0271	878
Lilac	795	61	A	0.1142	1.028	0.6248	746.3	14,300	0.022	0.0270	879
Cockscomb	900	37	AA	0.1560	1.092	0.7072	844.9	15,400	0.019	0.0239	948
Snapdragon	900	61	A	0.1215	1.094	0.7073	844.9	15,900	0.019	0.0239	948
Magnolia	954	37	AA	0.1606	1.124	0.7495	895.6	16,400	0.018	0.0226	982
Goldenrod	954	61	A	0.1251	1.126	0.7498	895.6	16,900	0.018	0.0226	983
Hawkweed	1000	37	AA	0.1644	1.151	0.7854	938.7	17,200	0.017	0.0216	1010
Camellia	1000	61	A	0.1280	1.152	0.7849	938.7	17,700	0.017	0.0216	1011
Bluebell	1033.5	37	AA	0.1671	1.170	0.8114	970.2	17,700	0.017	0.0210	1031
Larkspur	1033.5	61	A	0.1302	1.172	0.8122	970.2	18,300	0.017	0.0210	1032
Marigold	1113	61	AA,A	0.1351	1.216	0.8744	1045.0	19,700	0.016	0.0195	1079
Hawthorn	1192.5	61	AA,A	0.1398	1.258	0.9366	1119.0	21,100	0.015	0.0183	1124
Narcissus	1272	61	AA,A	0.1444	1.300	0.9990	1194.0	22,000	0.014	0.0173	1169
Columbine	1351.5	61	AA,A	0.1489	1.340	1.0610	1269.0	23,400	0.013	0.0163	1212
Carnation	1431	61	AA,A	0.1532	1.379	1.1244	1343.0	24,300	0.012	0.0155	1253
Gladiolus	1510.5	61	AA,A	0.1574	1.417	1.1869	1418.0	25,600	0.014	0.0147	1294
Coreopsis	1590	61	AA	0.1614	1.454	1.2490	1493.0	27,000	0.011	0.0141	1333
Jessamine	1750	61	AA	0.1694	1.525	1.3748	1643.0	29,700	0.010	0.0129	1408
Cowslip	2000	91	A	0.1482	1.630	1.5710	1877.0	34,200	0.009	0.0115	1518
Sagebrush	2250	91	A	0.1572	1.729	1.7670	2131.0	37,500	0.008	0.0105	1612
Lupine	2500	91	A	0.1657	1.823	1.9640	2370.0	41,900	0.007	0.0097	1706
Bitterroot	2750	91	A	0.1739	1.913	2.1600	2607.0	46,100	0.006	0.0090	1793
Trillium	3000	127	A	0.1537	1.998	2.3564	2844.0	50,300	0.006	0.0083	1874
Bluebonnet	3500	127	A	0.1660	2.158	2.7490	3350.0	58,700	0.005	0.0076	2024

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** Resistance is calculated using ASTM standard increments of stranding and metal conductivity of 61.2% IACS, AC resistance at 60 Hz.