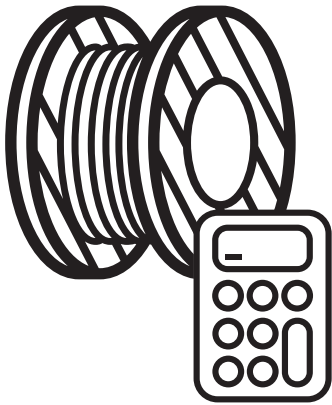


MAXIMUM PULLING TENSION FOR ELECTRICAL CONDUCTORS



ALLOWABLE TENSION ON PULLING DEVICE

Do not exceed the allowable tension stated by the manufacturer of the pulling eye or 10,000 pounds, whichever is less. Traditional conservative practices limit the allowable tension of a basket grip to 1,000 pounds.



MAXIMUM TENSION ON CABLE CONDUCTORS

The conductors of the cable are generally the only members that can bear the pulling forces without damage. Do not use metallic shielding wires, tapes, braids, or armor not designed for the purpose in pulling tension calculations.

Equations for Pulling Tension

- $T = S \times \text{cmil} \times n$, (if $n \leq 3$)
- $T = S \times \text{cmil} \times n \times 0.8$, (if $n > 3$)

Where:

- T = Maximum tension in the conductors (lbs)
- S = Maximum allowable conductor stress
(for copper 0.008 lb/cmil and for aluminum 3/4 hard and AA-8000 use 0.006 lb/cmil)
- n = Number of conductors



When pulling phase and neutral conductors along with a much smaller equipment grounding conductor (EGC), the EGC is normally ignored in the calculation. The values in the tables apply for cables rated 46kV and below.

WARNING:

The maximum sidewall pressure (SWP) of large single conductors is usually exceeded before the maximum pulling tension. The maximum SWP is 1,000 lbs for sizes 8 AWG and larger, and 500 lbs for sizes 14, 12, and 10 AWG.



*Southwire offers the SIMpull® Cable Pull Calculator at www.southwire.com/calculator-simpull. This tool will calculate cable pulling tensions, cable sidewall pressure, and more.

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MAXIMUM PULLING TENSION FOR ELECTRICAL CONDUCTORS



MAXIMUM ALLOWABLE PULLING TENSION ON CABLE WITH COPPER CONDUCTORS (LBS)

AWG/ KCMIL	NUMBER OF CONDUCTORS								
	1	2	3	4	5	6	7	8	9
18	13	26	39	41	52	62	73	83	93
16	21	41	62	66	83	99	116	132	149
14	33	66	99	105	132	158	184	210	237
12	52	104	157	167	209	251	293	334	376
10	83	166	249	266	332	399	465	531	598
9	105	209	314	335	419	503	586	670	754
8	132	264	396	423	528	634	740	845	951
6	210	420	630	672	840	1008	1176	1343	1511
5	265	529	794	847	1059	1271	1482	1694	1906
4	334	668	1002	1069	1336	1603	1870	2137	2404
3	421	842	1263	1347	1684	2021	2357	2694	3031
2	531	1062	1593	1699	2124	2548	2973	3398	3822
1	670	1339	2009	2142	2678	3214	3749	4285	4821
1/0	845	1690	2534	2703	3379	4055	4731	5407	6083
2/0	1065	2130	3194	3407	4259	5111	5963	6815	7667
3/0	1342	2685	4027	4296	5370	6444	7517	8591	9665
4/0	1693	3386	5078	5417	6771	8125	9480	10000	10000
250	2000	4000	6000	6400	8000	9600	10000	10000	10000
300	2400	4800	7200	7680	9600	10000	10000	10000	10000
350	2800	5600	8400	8960	10000	10000	10000	10000	10000
400	3200	6400	9600	10000	10000	10000	10000	10000	10000
450	3600	7200	10000	10000	10000	10000	10000	10000	10000
500	4000	8000	10000	10000	10000	10000	10000	10000	10000
550	4400	8800	10000	10000	10000	10000	10000	10000	10000
600	4800	9600	10000	10000	10000	10000	10000	10000	10000
650	5200	10000	10000	10000	10000	10000	10000	10000	10000
700	5600	10000	10000	10000	10000	10000	10000	10000	10000
750	6000	10000	10000	10000	10000	10000	10000	10000	10000
800	6400	10000	10000	10000	10000	10000	10000	10000	10000
900	7200	10000	10000	10000	10000	10000	10000	10000	10000
1000	8000	10000	10000	10000	10000	10000	10000	10000	10000
1250	10000	10000	10000	10000	10000	10000	10000	10000	10000
1500	10000	10000	10000	10000	10000	10000	10000	10000	10000
1750	10000	10000	10000	10000	10000	10000	10000	10000	10000
2000	10000	10000	10000	10000	10000	10000	10000	10000	10000

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MAXIMUM ALLOWABLE PULLING TENSION ON CABLE WITH ALUMINUM (ALUMAFLEX™) CONDUCTORS (LBS)

AWG/ KCMIL	NUMBER OF CONDUCTORS								
	1	2	3	4	5	6	7	8	9
8	99	198	297	317	396	475	555	634	713
6	157	315	472	504	630	756	882	1008	1134
4	250	501	751	801	1002	1202	1402	1603	1803
3	316	631	947	1010	1263	1515	1768	2021	2273
2	398	796	1194	1274	1593	1911	2230	2548	2867
1	502	1004	1506	1607	2009	2410	2812	3214	3615
1/0	634	1267	1901	2028	2534	3041	3548	4055	4562
2/0	799	1597	2396	2556	3194	3833	4472	5111	5750
3/0	1007	2014	3020	3222	4027	4833	5638	6444	7249
4/0	1270	2539	3809	4063	5078	6094	7110	8125	9141
250	1500	3000	4500	4800	6000	7200	8400	9600	10000
300	1800	3600	5400	5760	7200	8640	10000	10000	10000
350	2100	4200	6300	6720	8400	10000	10000	10000	10000
400	2400	4800	7200	7680	9600	10000	10000	10000	10000
450	2700	5400	8100	8640	10000	10000	10000	10000	10000
500	3000	6000	9000	9600	10000	10000	10000	10000	10000
550	3300	6600	9900	10000	10000	10000	10000	10000	10000
600	3600	7200	10000	10000	10000	10000	10000	10000	10000
650	3900	7800	10000	10000	10000	10000	10000	10000	10000
700	4200	8400	10000	10000	10000	10000	10000	10000	10000
750	4500	9000	10000	10000	10000	10000	10000	10000	10000
800	4800	9600	10000	10000	10000	10000	10000	10000	10000
900	5400	10000	10000	10000	10000	10000	10000	10000	10000
1000	6000	10000	10000	10000	10000	10000	10000	10000	10000
1250	7500	10000	10000	10000	10000	10000	10000	10000	10000
1500	9000	10000	10000	10000	10000	10000	10000	10000	10000
1750	10000	10000	10000	10000	10000	10000	10000	10000	10000
2000	10000	10000	10000	10000	10000	10000	10000	10000	10000

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