

What is the Maximum Line Angle for Vise Top Line Post (VTLP) Insulators?

Bare Conductors

The maximum line angle is not a constant value for all overhead line installations conditions. It depends on multiple factors including the conductor size, span length, horizontal tension, cantilever load induced, Loading Zone, Safety Factors, and the insulator strength rating. In the following, multiple cases are considered:

Conductor Installed

1. Calculate cantilever load induced for the span, sag and conductor type used and weather loading conditions using NESC safety code.
2. Max line angle is determined when cantilever load equals de-rated VTLP value or **1400 lbs.**, the black nylon bolts breaking strength, whichever is lower.
3. The Sag & Tension Calculation was based on a Heavy Loading Zone.

Note: Vise Top Line Post meets and exceeds ANSI C29.18 2400 lb. cantilever requirement.

Details: Sag & Tension information calculated with **1/2" of ice and 0°F**

Bare Conductor	Code Name	O.D.	Bare Weight	150 ft Ruling Span		300 ft Ruling Span	
				Design Tension 4 psf Wind, 1/2" Ice 0°F	Max. Line Angle	Design Tension 4 psf Wind, 1/2" Ice 0°F	Max. Line Angle
				(lb)	(degrees)	(lb)	(degrees)
#2 ACSR 6/1	Sparrow	0.316	0.091	850	51	1200	24.5
#1/0 ACSR 6/1	Raven	0.398	0.145	1365	30	1947	18
#3/0 ACSR 6/1	Pigeon	0.502	0.231	1885	22	2628	10.5
#4/0 ACSR 6/1	Penguin	0.563	0.291	2400	14	3400	8
336 ACSR 26/7	Linnet	0.720	0.463	3500	9.5	4500	5.5
477 ACSR 26/7	Hawk	0.858	0.656	4100	10	5452	4.5
795 AAC 37 St	Arbutus	1.026	0.746	3827	9.5	5142	4.5

Details: Sag & Tension information calculated with **No ice and 60°F**

Bare Conductor	Code Name	O.D.	Bare Weight	150 ft Ruling Span		300 ft Ruling Span	
				Design Tension 4 psf Wind, 60°F	Max. Line Angle	Design Tension 4 psf Wind, 60°F	Max. Line Angle
				(lb)	(degrees)	(lb)	(degrees)
#2 ACSR 6/1	Sparrow	0.316	0.091	90	No limit	129	57
#1/0 ACSR 6/1	Raven	0.398	0.145	263	43	393	24
#3/0 ACSR 6/1	Pigeon	0.502	0.231	450	33.5	689	18
#4/0 ACSR 6/1	Penguin	0.563	0.291	690	24.5	1161	12
336 ACSR 26/7	Linnet	0.720	0.463	1195	17.5	1687	10
477 ACSR 26/7	Hawk	0.858	0.656	1300	19	2073	9.5
795 AAC 37 St	Arbutus	1.026	0.746	1003	24.5	1672	11