

## What is the maximum line angle for Vise top insulators?

The 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 and most importantly the mounting pin strength rating. In the following, multiple cases are considered:

### 1. Conductor installed in the Vise Top Insulator top saddle

- 1.1. Calculate cantilever load induced for the span, sag and conductor type used and weather loading conditions using NESC safety code
- 1.2. Determine the de-rating factor applied to the mounting pin strength
- 1.3. Max line angle is determined when the cantilever load equals the de-rated pin strength value or 1250lbs, the black nylon bolts breaking strength, whichever is lower

### 2. Conductor installed around the Vise Top Insulator neck

- 2.1. Calculate cantilever load induced for the span, sag and conductor type used and weather loading conditions using NESC safety code
- 2.2. Determine the de-rating factor applied to the mounting pin strength
- 2.3. Max line angle is determined when the cantilever load equals the de-rated pin strength value
- 2.4. Vise top neck meets ANSI C29.5 3000lbs cantilever requirement

Informational examples **ONLY**:

<b>Maximum Line Angle Calculation</b>							
				150 ft Ruling Span		300 ft Ruling Span	
Conductor	Code name	O.D.	Bare Weight	Design Tension 4 psf Wind, 1/2" Ice	Max. Line Angle	Design Tension 4 psf Wind, 1/2" Ice	Max. Line Angle
		(in.)	(lb/ft)	(lb)	(degrees)	(lb)	(degrees)
<b>Assuming 700 lbs Mounting pin de-rating strength</b>							
#1/0 ACSR 6/1	Raven	0.398	0.145	1365	<b>14</b>	1947	<b>6</b>
#3/0 ACSR 6/1	Pigeon	0.502	0.230	1885	<b>10</b>	2628	<b>4</b>
477 ACSR 26/7	Hawk	0.858	0.656	4100	<b>4</b>	5500	<b>1.5</b>
795 AAC 37 St	Arbutus	1.026	0.745	4000	<b>4</b>	5400	<b>1</b>
<b>Assuming 1400 lbs Mounting pin de-rating strength</b>							
#1/0 ACSR 6/1	Raven	0.398	0.145	1365	<b>30</b>	1947	<b>18</b>
#3/0 ACSR 6/1	Pigeon	0.502	0.230	1885	<b>22</b>	2628	<b>12</b>
477 ACSR 26/7	Hawk	0.858	0.656	4100	<b>10</b>	5500	<b>5.5</b>
795 AAC 37 St	Arbutus	1.026	0.745	4000	<b>10</b>	5400	<b>5</b>