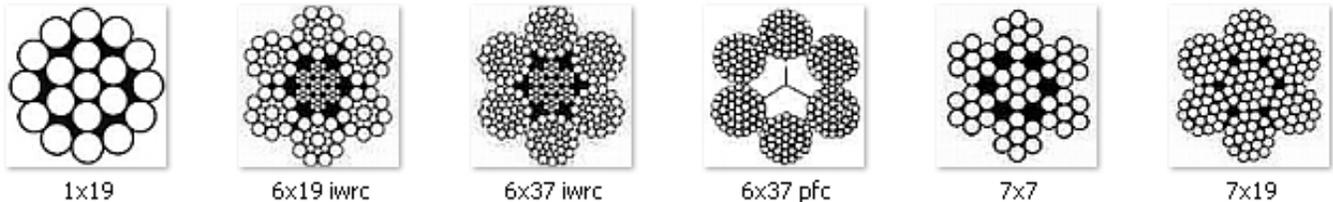


Selecting the Right Cable Type

There are many cable and wire-rope types, but radio Amateurs are generally interested in cables in the 1/8 to 1/4 inch size range. Availability at the local hardware store narrows this down to typically the 1x19 or the 7x7 construction. 7x7 is an aircraft ‘type’¹ cable and this is the preferred cable type.



There are several reasons why aircraft type cable is the best choice. It is less prone to stretching and it is much easier to work with.

Regarding size and strength, size is deceiving. The typical minimum breaking force is 4 to 5 times the rating. I am using 1/8 inch, 7x7 cable rated at 400-lb on my 100-ft tower. Note the minimum breaking force of 1700-lb below.

7x7 Cable

| Rope Dia. (in.) | Minimum Breaking Force (lbs) | |
|--------------------|------------------------------|-----------|
| | GALVANIZED | STAINLESS |
| 1/16 | 480 | 480 |
| 5/64 | 650 | -- |
| 3/32 | 920 | 920 |
| 1/8 | 1,700 | 1,700 |
| 5/32 | 2,600 | -- |
| 3/16 | 3,700 | 3,700 |
| 1/4 | 6,100 | -- |

Cable sagging resulting in the need for re-tensioning is common with 1x19 type cables. 1x19 is wound in a single helix whereas 7x7 comprises 8 helix windings. It should be intuitive as to which would have the greater tendency to stretch under tension.

Summer to Winter temperature differentials can change tension in cables up to 0.5% in the longest guy cables on a 100’ tower. This figure is not a concern with regard to the minimum breaking force number, but it does contribute to the need for re-tensioning over the years. Temperature cycling has less of a permanent effect on aircraft type cables.

Lastly, here is a tip on how to dress the ends of a cut cable. Clamp the cable into a vice with the end coming out about 8 inches. Chuck the end into an electric drill. Set the drill rotation to the same rotation as the helix. Heat the cable with a propane torch a few inches in front of the drill and when the cable turns yellow hot, spin the drill for a few moments until it separates. That end is welded and will never unravel.

¹ I am not suggesting the use of certified aircraft cable. Aircraft ‘type’ cable is readily available at most hardware stores.