

Cable Lacing

By Brian Smith – TESSCO

Cable lacing has been a mystery to people not in the telecom business. It is an art form that was almost lost for a period, extinct as those adept at it held its' secrets to themselves. Traditionally, cable lacing was taught through on-the-job training and almost no manuals exist since the trade was simply handed down from generation to generation of craftsmen.

Until very recently, cable lacing was only seen in older central offices and larger PBX environments. With the advent of nylon tie wraps, adhesive-back supports, cable staple-guns and other productivity-oriented tools, cable lacing fell out of use almost entirely. The demise was accelerated when, in the late 60's, management began pushing for more production and less regard was given to proper methods of placing and supporting cables or bundles. So, is the art of cable lacing really history?



Flat Lacing Stitch

Let's begin to answer that question by examining what cable lacing was used for in the past.



Clove Hitch

Cable lacing was widely adopted in equipment installation in Central Office Environments (COE) and PBX equipment banks. Central Office (CO) and PBX Cables were laced into progressively smaller bundles referred to by euphemistic names related to the appearance of the final product, either branching upwards resembling a "tree" or downwards resembling a cascading "waterfall". This was not done as a method of structural support but primarily for the positioning, forming and shaping of cables/bundles, maintaining a tight, neat and permanent appearance, and unlike zip-ties easier to remove and replace cables without a lot of cutting.

As mentioned above, the technological boom of the late 60's precipitated the decline in the use of cable lacing. Too much time was spent on the install, leaving no time for the aesthetic pleasure of creating these shapely yet time intensive organized bundles. Cable ties became the easy way to bundle and caught on as the most time practical approach during installation.

However, as craftsmanship of the late century is starting to make a comeback in today's marketplace, so is cable lacing. The renewed appeal of cable lacing is as a differentiator for companies in a highly competitive market. Larger companies are even starting to take a sudden interest in how laced cables can reduce the incidence of diver cables and choked cables common when using cable ties. This, combined with careful attention to cabling bend radiuses, can improve the performance of the cable, resulting in fewer faults and more satisfied customers.

How do you perform cable lacing?

Since this is a craft, one must practice and experiment with different types and styles of knots and twines until they produce the desired end result. The more skilled you become, the faster and easier this procedure becomes.

First, you must have the proper tools for the job. You will need waxed polyester twine which comes in several sizes and is referred to by many different names. Tescos stocks a 9-ply waxed polyester twine that is suitable for the majority of applications. All twine is not identical in composition or quality so experimenting with different types will help you find the waxed twine that works best for you.



9-Ply Waxed Polyester Twine



Curved Lacing Needle

You will also need a selection of cable lacing needles. These tools come in many different varieties (curved hooks, straight hooks, flat metal needles, lacing loops, insulated, non-insulated, etc.). The styles you choose may depend on a particular situation, or personal preference. If you are doing a lot of lacing you may also want fingerless lacing gloves which maintain dexterity while still offering hand protection.

Next, determine the pathway you want your cables to follow and start bundling as you go. The key to cable lacing is to understand the prime directives which are safety, performance, quality, aesthetics, and, of course, productivity.



Fingerless Lacing Gloves



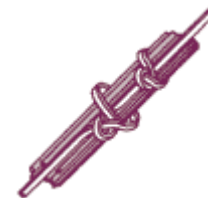
Insulated Lacing Needle

Once you have chosen the pathway, the next step is to permanently fasten or attach the cable or bundles to approved support structures or hardware. Remember, waxed twine lacing should be used in telecommunications spaces and equipment racks, frames, cabinets or bays, and not above the ceiling or in spaces classified as plenums or locations that may present fire hazards.

The actual art of cable lacing comes with the lacing of the bundles and the permanent knots chosen to tie the bundles together. You might want to refer to a nautical book to learn about the different knots that will work best for you. Some of the common knots used in cable lacing include the half hitch, clove hitch and the running lockstitch.

Primary Lacing Methods

As for the lacing technique itself, there are a few primary running lacing methods worth learning - the Running Lockstitch, Marlin-Hitching and Half-Hitching. You will also need to become familiar with various methods of securely starting and tying off each end of a lacing run.



Running Lockstitch

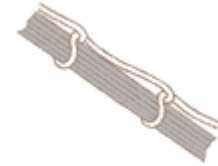


When using long lengths of twine, the bundle is first worked loosely from the secured end (usually the entrance point) toward the opposite, unfastened end (usually the equipment) to be terminated. A long length of twine is sometimes awkward to work with. One simple method of adding length as needed is by tying together two lengths of twine. This is referred to as a Fisherman's Knot.

Marlin-Hitching

As you proceed, each twine hitch is spaced into set intervals and each drawn tight in sequential order from the secured end toward the equipment end.

Originally, the philosophy was "the tighter the better". But in today's high performance fiber optic, telecom and Cat 5 cabling, care must be taken to place the stress of tightening on the support and not on the cable jacket.



Half-Hitching

Why use cable lacing?

By using waxed twine lacing to bundle your cables, you are creating a neat structure that leads to increased trackability and traceability of each individual cable. Also, you avoid choking the cables, which can easily happen with zip ties. Thus, you ensure the highest performance possible from your cables, confident that there are no potential bottlenecks being created.

Having your company put this finishing touch on all your installations will also show your clients just how dedicated you are to performance, quality connections, and superior workmanship!

What do my customers need to get started?

For Quick Reference here are the TESSCO cable lacing SKU's:

Cable Lacing Twine: 468157
JIC 287: Cable Sewing Needle: 430349
JIC 2257M: Wire Loop Puller: 474388
RB-287/6: 6 Replacement Needles: 433104
JIC 284: Straight Metal Needle: 458170
JIC 2060: Cable Ring Tool: 446325
RB-2060/6: 6 Replacement Blades: 497760
JIC 2878: Cable Sheath Stripper: 450330
RB-2878/6: 6 Replacement Blades: 499780
JIC 4366: Cable Stripper/Ring Tool: 474371
Cable Lacing Gloves: 452545, 456598
Telecom Snips: 53181, 18265