

# Wiring and Cabling

From OP 2230, "Workmanship and Design Practices for Electronic Equipment", published by the direction of the chief of the Bureau of Naval Weapons, 1 December, 1962. pp. 7-9 --- 7-14.

## How To Lace Cable Harnesses

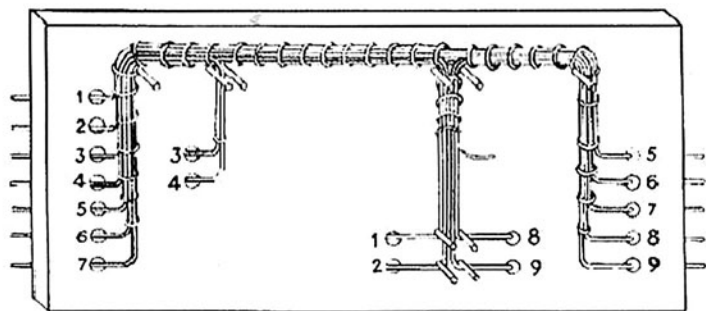
Harnesses should be located so that circuit tracing can be readily accomplished, and accessibility to parts or components which may require replacement is not limited.

Individual wires of a harness should be arranged to run parallel or at right angles to each other wherever possible. Sharp bends which may damage conductors or insulation are to be avoided.

Harnesses are usually fabricated on a *harness jig* or *forming board*. The board may be marked with numbers and symbols to indicate wire sizes, color coding, routing, terminations, and wiring sequence. Pegs or nails, placed in a pattern which follows a pictorial wiring diagram, serve to locate wire runs.

Conductor ends may be anchored to the board by wrapping them about nails or pegs, or may be fanned out for easier dressing if holes to accommodate wire ends are provided.

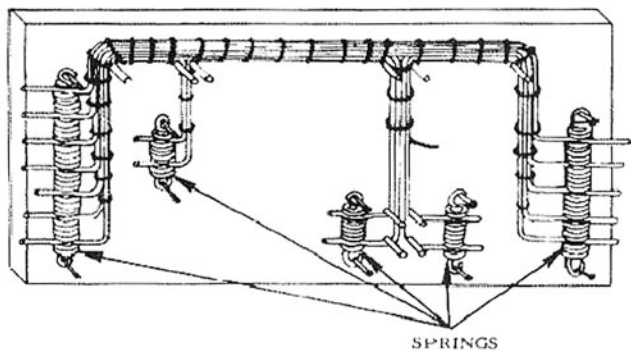
A typical application for a forming board is shown below.



Harness Forming Board

Another method of anchoring conductor ends on a harness jig is to attach springs on the board near the termination point of the wire. The pitch of the spring should be determined by the size of the wires to be held in place. The wire may be pushed into the spring, where it will be held firmly. This method is rapid and minimizes drilling of holes and

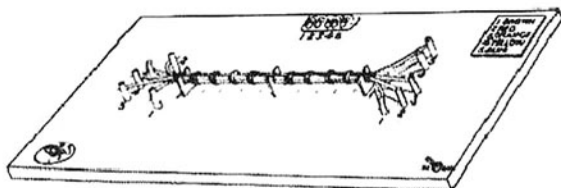
placing of pegs or nails in the board. Harness jigs may thus be reused many times. A typical application of a forming board utilizing springs is shown below.



Harness Forming Board with Springs

Harnesses may be laid out on a jig bottom-side-up for ease of lacing. When this is done and the harness is installed in a given unit, the lacing knots and splices will not be visible from above and the harness will have a neat, workmanlike appearance.

Forming boards are sometimes equipped with electrical checking devices to speed harness testing, as show below.



Harness Forming Board with Electrical Checking Devices

Ribbon-type lacing cord should be used in preference to round cord to reduce the possibility of cutting into wire insulation. One-eighth inch nylon or similar ribbon is best suited for this purpose.

If round cord is used, sizes should be as follows:

<u>Principal Cable Diameter</u>	<u>Cord Size</u>
Up to 3/8"	# 4
5/16" to 3/4"	# 6