

Figure D.10 - Example of a one-piece modular plug

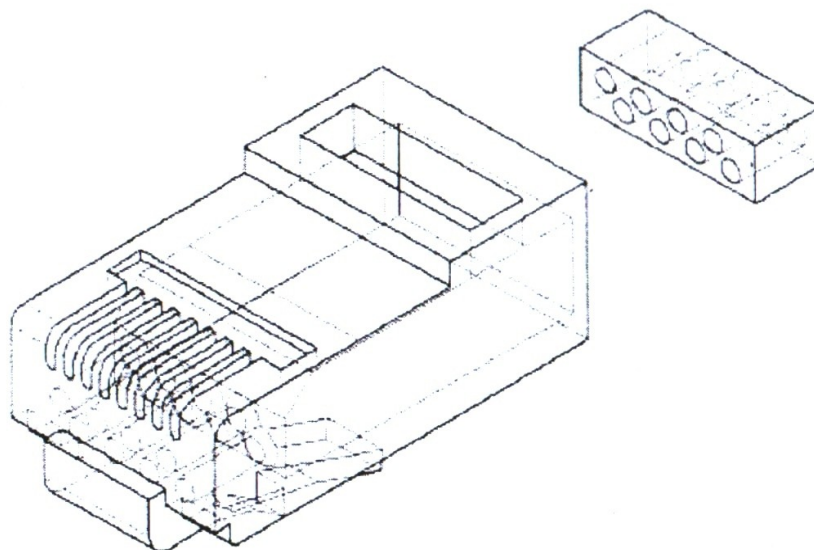


Figure D.11 - Example of a two-piece (insert) modular plug

D.6.1.1 Test plug construction

One plug can be constructed that will satisfy the worst case conditions of table D.4 for pin combinations 1&2 - 3&6, 4&5 - 3&6, and 3&6 - 7&8. Begin with a standard plug and cut the plug to 11 mm (0.45 in) in length as shown in figure D.12. Insert 75 mm (3.0 in) twisted-pair conductors into the plug so that the pairs are parallel within the plug body. As the conductors exit the plug body,

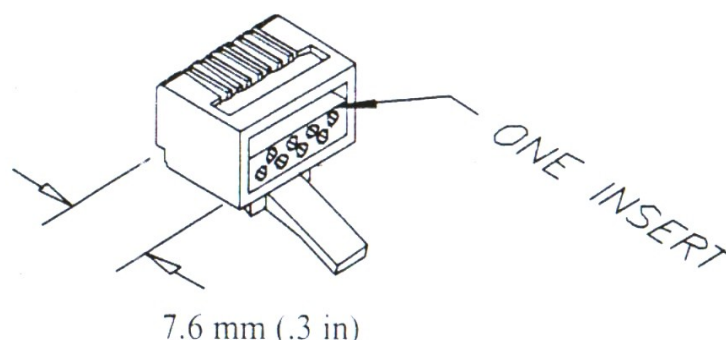
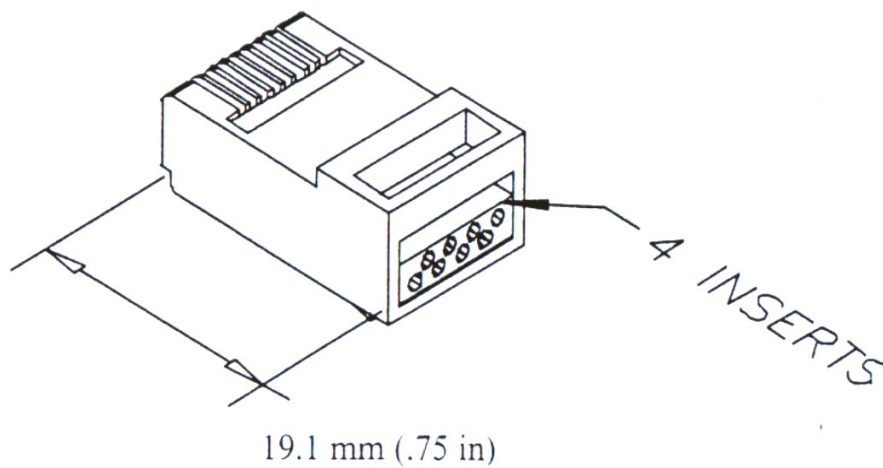


Figure D.13 - Plug dimension for best case 4&5 - 3&6 pin combination

A third plug may be constructed that will satisfy the worst case requirements for pin combinations 1&2 - 4&5 and 4&5 - 7&8. Begin with the two-piece (insert) modular plug and cut the plug to 19 mm (0.75 in) in length as shown in figure D-14. Position four wire guide inserts into the plug body and, if necessary, trim flush with the end of the plug body. Insert 75 mm (3.0 in) twisted-pair conductors into the plug through the wire guide inserts so that the pairs are parallel within the plug body. As the conductors exit the plug body, bend them so that they are orthogonal to each other. Crimp the plug contacts and trim the conductors to approximately 57 mm (2.25 in) for connection to the test equipment. Measure the de-embedded NEXT loss values of the plug and adjust the conductors as necessary where they exit the plug to achieve the desired values. When these values are obtained, carefully remove the plug from the test apparatus without disturbing the relationship of the conductors. Apply hot-melt glue around the conductors where they exit the plug body to fix them in place. Re-measure the plug. If the values are now outside of the desired ranges, the plug may be reheated using a hot-air source to soften the hot-melt glue enough to adjust the conductors.



Alternatively, another sample may be constructed.

Figure D.14 - Plug dimension for worst case 1&2 - 4&5 and 4&5 - 7&8 pin combinations

A best case test plug for the 1&2 - 3&6 and 3&6 - 7&8 pin combinations and a worst case test plug for the 1&2 - 7&8 pin combination are necessary to complete the range of test plug requirements. Both of these plugs can be constructed by starting with the two-piece (insert) modular plug. In these instances, the conductors must be twisted within the plug body so that the capacitive and inductive coupling between the conductors is altered. With some experimentation, an arrangement of

conductors within the plug can be created that will achieve the desired results. This arrangement can be documented and repeated to create subsequent test plugs. A more detailed description of these plugs would add too much complexity to this Standard and could not be ensured to deliver the desired results given the variation in plug designs available.

D.7.1 Test plug lead length

Trim the test plug leads so that the total length of the test plug body and leads is 76 mm (3.0 in), the same as the total length of the de-embedding reference plug and leads. This is important so that the de-embedded phase and magnitude will be correct.