

## POLYTHENE CABLES

Conductor Jointing using Connectors, Wire, Insulated  
and Crimpers, Connector, Wire, Insulated No. 1 (Walter Rose type)

1. **General.** This Instruction describes the method of conductor jointing using Connectors, Wire, Insulated (C.W.I.) and Crimpers, Connector, Wire, Insulated No. 1. This method of conductor jointing is only to be used when jointing polythene insulated conductors and is suitable for:-

- (a) copper to copper wire joints
- (b) aluminium to aluminium wire joints
- (c) aluminium to copper wire joints.

2. **Description of Connectors, Wire, Insulated** (see Fig. 1). The connectors consist of an inner serrated tinned phosphor bronze sleeve inserted into an outer brass sleeve, this outer sleeve is in turn insulated with a plastic sleeve. The connectors are closed at one end, the conductors to be jointed being inserted at the other. The connectors are approximately 1 in. in length (see Fig. 2).

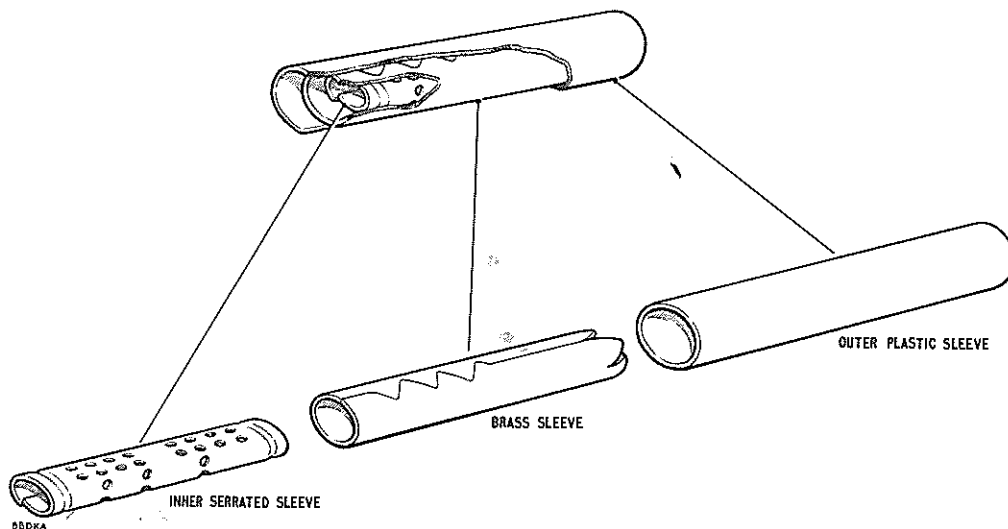


FIG. 1.

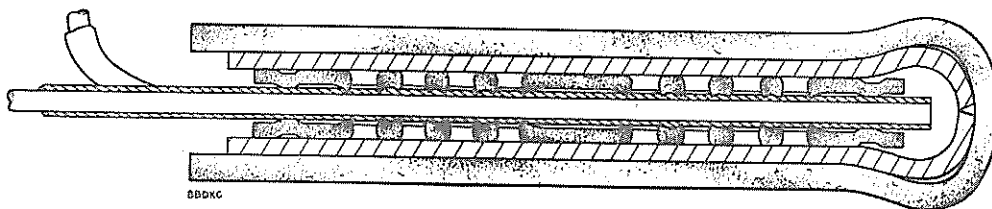


FIG. 2.

3. **Sizes of connector.** To cater for the various gauges of conductor there are two sizes of connector, Wire, Insulated:-

- (a) Connector, Wire, Insulated, No. 1 and No. 1A
- (b) Connector, Wire, Insulated, No. 2

C.W.I. No. 1A is filled with a protective grease, but C.W.I. No. 1 and No. 2 are not.

Tables 1 and 2 show the sizes required for straight and teed connexions, respectively.

TABLE 1. CONNECTORS REQUIRED FOR STRAIGHT CONNEXIONS

Conductor sizes	0.8mm	0.6mm	20 lb.	10 lb.	6½ lb.	4 lb.
4 lb.	1 or 1A	1 or 1A	1 or 1A	1 or 1A	1 or 1A	1 or 1A
6½ lb.	"	"	"	"	"	"
10 lb.	"	"	2	"	"	"
20 lb.	2	"	"	2	"	"
0.6mm	1 or 1A	"	1 or 1A	1 or 1A	"	"
0.8mm	"	"	2	"	"	"

TABLE 2. CONNECTORS REQUIRED FOR TEED CONNEXIONS

First Wire	Second Wire	Third Wire					
		4 lb.	6½ lb.	10 lb.	20 lb.	0.6mm	0.8mm
4 lb.	4 lb.	1 or 1A	1 or 1A	1 or 1A	1 or 1A	1 or 1A	1 or 1A
"	6½ lb.	"	"	"	2	"	"
"	10 lb.	"	"	2	"	"	2
"	20 lb.	"	2	"	"	2	2
"	0.6mm	"	1 or 1A	1 or 1A	"	1 or 1A	1 or 1A
"	0.8mm	"	"	2	"	"	2
6½ lb.	4 lb.	"	"	1 or 1A	"	"	1 or 1A
"	6½ lb.	"	"	2	"	2	2
"	10 lb.	"	2	"	"	"	"
"	20 lb.	2	"	"	"	"	"
"	0.6mm	1 or 1A	"	"	2	1 or 1A	"
"	0.8mm	"	"	"	"	2	"
10 lb.	4 lb.	"	1 or 1A	"	"	1 or 1A	"
"	6½ lb.	"	2	"	"	2	"
"	10 lb.	2	"	"	"	"	"
"	20 lb.	"	"	"	"	"	"
"	0.6mm	1 or 1A	"	"	2	"	"
"	0.8mm	2	"	"	"	"	"

TABLE 2. CONNECTORS REQUIRED FOR TEED CONNEXIONS (CONTD.)

First Wire	Second Wire	Third Wire					
		4 lb.	6½ lb.	10 lb.	20 lb.	0.6mm	0.8mm
20 lb.	4 lb.	1 or 1A	2	2	2	2	2
"	6½ lb.	2	"	"	"	"	"
"	10 lb.	"	"	"	"	"	"
"	20 lb.	"	"	"	"	"	"
"	0.6mm	"	2	2	2	"	2
"	0.8mm	"	"	"	"	"	"
0.6mm	4 lb.	1 or 1A	1 or 1A	1 or 1A	2	1 or 1A	1 or 1A
"	6½ lb.	"	2	2	"	"	2
"	10 lb.	"	"	"	"	2	"
"	20 lb.	2	"	"	"	"	"
"	0.6mm	1 or 1A	1 or 1A	"	"	"	"
"	0.8mm	"	2	"	"	"	"
0.8mm	4 lb.	"	1 or 1A	"	"	1 or 1A	"
"	6½ lb.	"	2	"	"	"	"
"	10 lb.	2	"	"	"	"	"
"	20 lb.	"	"	"	"	"	"
"	0.6mm	1 or 1A	"	"	2	"	"
"	0.8mm	2	"	"	"	"	"

NOTE:- With the present connectors it is *not* possible to make the following teed connexions; 20 lb. to 20 lb. to 20 lb.; 20 lb. to 20 lb. to 10 lb.; 20 lb. to 20 lb. to 6½ lb.; 20 lb. to 20 lb. to 0.8mm; 20 lb. to 0.8mm to 0.8mm.

4. Description of Crimpers, Connector, Wire, Insulated No. 1. (Walter Rose type see Fig. 3). The conductors to be jointed are inserted in the connector, which is crimped in a specially designed tool so that the serrations on the inner sleeve pierce the insulant and make contact with the conductors (see Fig. 2). The tool is a hand operated plier type but one handle is fixed. The jaws are in the form of an aperture in the head of the tool into which the connector is inserted. The mechanical action incorporates a toggle that ensures that when the handles are operated they will not release until they have been compressed to the full extent of their travel. This is to ensure that a correct and uniform pressure is applied to the connectors.

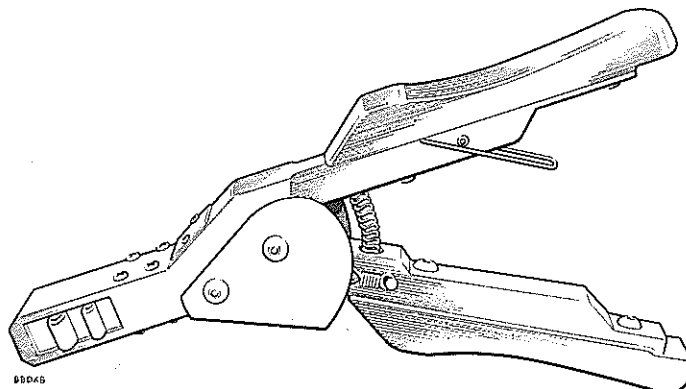


FIG. 3

The crimping tool aperture incorporates a shim in the fixed jaw that can be removed by slackening the two retaining screws. The shim should be in position when using Connectors, Wire, Insulated, No. 1 or 1A and removed when using Connectors, Wire, Insulated, No. 2.

At the base of the jaws is a stop that limits the depth to which the connectors can be inserted. On the earlier tools manufactured by Walter Rose the stop was in the form of a flat plate but this was found to be unsuitable and was changed to a stepped plate with the step protruding into the jaw aperture. If any tool is found to have a flat plate it should not be used until it has been modified. Stepped back plates can be obtained from the Telecomms. H.Q. (TD 8.2.3) 01-739 3464 Extn. 418, and fitted so that the step further restricts the depth of the jaw aperture.

The tool is supplied with a check gauge.

**5. Description and use of Gauges Check 1.9mm.** The check gauge consists of approximately  $3\frac{1}{2}$  in. of  $\frac{3}{16}$  in. gauge plates  $\frac{5}{16}$  in. wide. One end is ground down to 1.9mm for a distance of about  $1\frac{1}{8}$  in. *The tool should always be checked with the tongued shim in position behind the fixed jaw.*

With the handles in the fully closed position it should *not* be possible to insert the 1.9mm end of the check gauge fully into the jaws of the tool. If the tool meets this condition it is correctly adjusted for use with Connectors, Wire, Insulated, No. 1 or 1A.

Each tool should be checked before jointing commences. Should the tool accept the 1.9mm gauge, the tool must be exchanged. Do *not* attempt to adjust the tool to prevent the gauge entering the jaws. By removing the tongued shim the tool is adjusted for use with Connectors, Wire, Insulated No. 2.

**6. Jointing the conductors.** Use Connectors, Wire, Insulated, Nos. 1 and 2 for joints employing standard sheath closure techniques on underground or aerial cables. Connectors, Wire, Insulated, No. 1A should, at present, be used for jointing in cabinet shells and jointing posts.

The jointing sequence will normally follow the cable colour scheme. Taking the appropriate pair from each side of the joint, twist the four wires together for two complete turns, at a distance of approximately  $1\frac{1}{4}$  in. from one end of the jointing gap. Repeat this operation with a few (e.g. 5 or 6) subsequent pairs at intervals of approximately  $1\frac{1}{4}$  in. across the jointing gap. Cut all the twisted conductors to approximately 1 in. in length beyond the twisted portion. *Do not remove the insulant.*

Separate each group of four wires into 'A' wires and 'B' wires and place a Connector, Wire, Insulated of the correct size over each pair of 'A' wires and each pair of 'B' wires, making sure the wires are parallel. Push the connector down until the ends of the wires butt against the end of the inner sleeve of the connector. All pairs across the jointing gap should be fitted with connectors.

Each connector in turn should then be inserted into the crimping tool and the handles operated until they are released by the toggle action, when the connector should be removed from the crimping tool. The crimped connexion is now complete. The connectors should be laid flat in line with the joint, checking that each one has been crimped. Repeat the sequence of operations until all the pairs have been jointed.

When all the conductor joints have been made, four Desiccant Packs No. 1 should be inserted in the joint and the joint tied and closed in the normal manner.

7. Requisitions. Table 3 shows the Rate Book description and code number of the crimper and connectors available at present. All requisitions must circulate via the Telecomms. H.Q. (TDS.2.3).

TABLE 3

Rate Book Code No.	Description
07 1618	Connectors, Wire, Insulated, No. 1.
07 1678	Connectors, Wire, Insulated, No. 1A.
07 1619	Connectors, Wire, Insulated, No. 2.
12 6264	Crimpers, Connector, Wire, Insulated No. 1.

NOTE:-

1. Connectors, Wire, Insulated, No. 2 are not available with a protection grease filling.
2. The unit of issue of the above items is 'each'.

This instruction supersedes the temporary instruction dated Feb. 1967.

Reference:- None  
(TD 8.2.3)

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