

DEFINITIONS

PLUG: The half of a connector pair which is designed to attach to a wire or cable as opposed to the receptacle half which is typically mounted to a bulkhead, panel or box. Even though manufacturers usually picture plugs as having male contacts, they can in fact house any type of contact - male, female or even both. Thus it is the design and location of the connector which makes it a plug, not the gender of its contacts.

RECEPTACLE: The other half of the connector pair designed to be mounted to a bulkhead, panel or box. In-line receptacles are also available for cable to cable connections. As with the plug, it is the design and location of the receptacle in the system, not the gender of its contacts which makes it a receptacle.

REVERSE BAYONET COUPLING: A mating design utilising studs on the plug and ramps on the receptacle for quick-connect and disconnect coupling.

CONTACT: The conductive element in a connector. Contacts mate mechanically and electrically to transmit signals and/or power across a connector interface. Crimp style contacts are the most common type found in high reliability cylindrical connectors. Male contacts are sometimes referred to as leads, posts or pins. (From here on referred to as Male Contacts.) Female contacts are universally known as sockets. (From here on referred to as Female Contacts.)

INSERT: A moulded piece of dielectric material that fits inside the connector shell and supports the connector contacts. Inserts are tooled for each shell size, and contact arrangement. Inserts made from resilient materials also contribute to environmental properties.

FILLER BLANK: Made from a non-conductive material which is used to fill a cavity when not occupied by a male or female contact.

EXPLANATORY NOTES

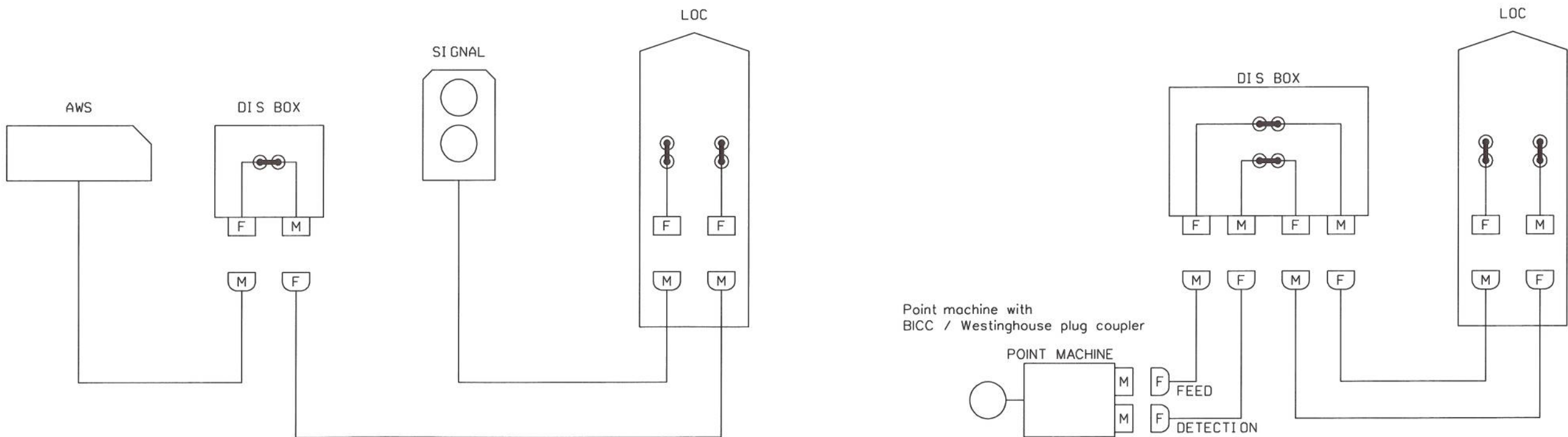
1. The requirement for plug coupler products is detailed in NR/L2/SIG/30027 - Product Specification - Plug Couplers for connection of cables to lineside signalling equipment. This standard includes construction details and performance requirements for plug couplers that are to be used with approved Network Rail trackside signalling equipment.
2. Tail cables will normally be fitted with a plug at both ends. A plug mates with a receptacle using a reverse bayonet coupling. Plugs and receptacles are fitted with inserts which hold the contacts.
3. Drawing T00035 shows details of the plug coupler shell size and contact arrangements to be used for each type of tail cable.

SAFETY REQUIREMENTS

An important safety feature of the plug coupled cables will be to prevent accidental electrical shock due to inadvertent touching of live Male Contacts inside the plug. This will be achieved by every cable having the plug at one end fitted with Male Contacts and the plug at the other end fitted with Female Contacts. Safety is achieved by always connecting cables such that the plug with Male Contacts is always connected to the feed end. If the feed end is connected first then the other end of the cable will be live, however staff will be protected because the live contacts are Female Contacts and therefore staff are not exposed to potential electric shock due to casual touch.

It is not possible to fully apply the safety feature described above to point machines fitted with the Westinghouse or BICC type of plug coupler. The problem is with the receptacle for connection to the four core cable that carries returning detection circuits. This receptacle has male contacts that could be live once the ten core cable is connected. The point machine arrangement is illustrated below. The cables between dis box and point machine have the Westinghouse / BICC style plug at the machine end and at the dis box end they have the Network Rail approved plug as detailed on drawing T00035.

EXAMPLE SHOWING CONTACT GENDER OF PLUGS AND RECEPTACLES



M DENOTES PLUG FITTED WITH MALE CONTACTS **M** DENOTES RECEPTACLE FITTED WITH MALE CONTACTS
F DENOTES PLUG FITTED WITH FEMALE CONTACTS **F** DENOTES RECEPTACLE FITTED WITH FEMALE CONTACTS

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| NEW SHEET | | | | | | | | | Network Rail SDG WESTERN | | LINESIDE & ON TRACK TYPICAL CIRCUITS PLUG COUPLER APPLICATIONS DEFINITIONS AND EXPLANATORY NOTES | | Drawing No T00030 | |
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