

channel the lower two pins. Pin 2, pointing straight downwards, is the earth or chassis connection for all inputs and outputs. A five-pin stereo connecting plug is, therefore, compatible with a mono socket. The use of a five-pin stereo plug in a three-pin mono socket connects the left-hand channel input, the left-hand channel output and the chassis or screen.

The Diode Connection

The term 'diode connection' refers to a method of connecting a tape recorder to a radio receiver which by-passes the output stage and loudspeaker of the receiver. The advantages of a diode connection are, of course, its independence from the volume and tone control settings of the radio and the absence of hum and distortion which could be introduced by the output stage as such, especially by the limitations of the output transformer.

A 'diode connection' gives a better recording quality and is independent of volume and tone control settings.

In cases of emergency it may be permissible to connect a tape recorder input to the extension loudspeaker output of a radio, but in the interest of a high recording quality this should be avoided wherever possible. There are still many tape recorder owners who

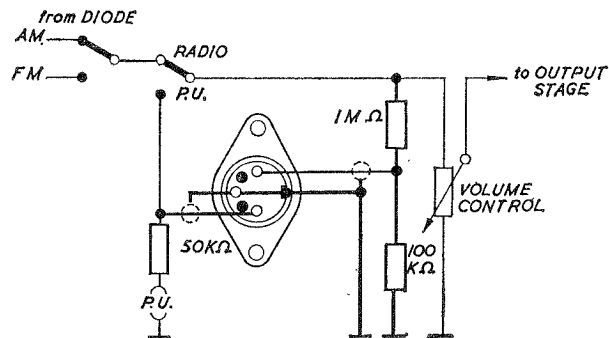


FIGURE 100

Wiring diagram of typical diode connection. Component values shown are typical.

record by holding their microphone close to the radio loudspeaker! They do this not because they prefer this method of operation or the quality (or lack of it) which it provides, but simply because they do not know any better and perhaps have not the technical means to provide a proper connection.

As its name implies, a diode connection is made by connecting the recording amplifier input to the rectifying diode of the radio. The level appearing at the diode naturally varies but it usually is in the order of several volts. The diode input sensitivity of a recording amplifier, on the other hand, is approximately 10–20 mV and a potential divider must, therefore, be provided. When diode connections first became popular—in the early 1950s—it was usual to provide this potential divider within the radio receiver, feeding a special diode

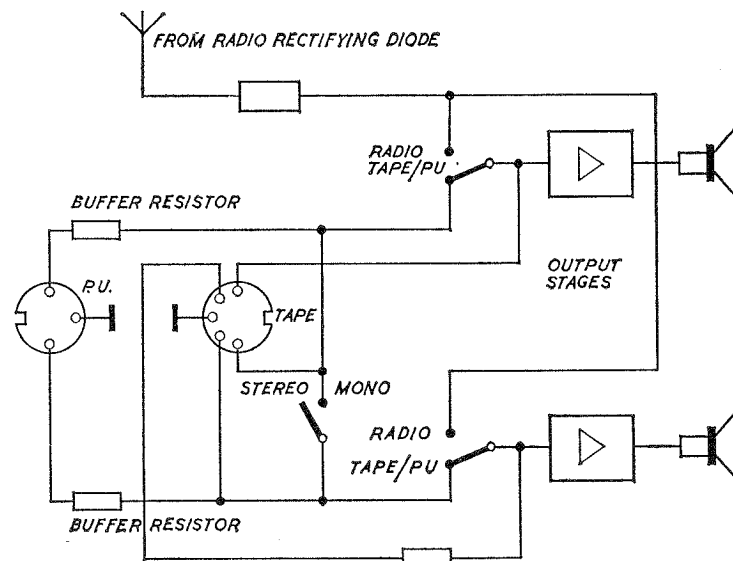


FIGURE 101

Typical wiring diagram of five-pin stereo socket in stereo radiogram.

output socket which was later re-named 'the tape recorder socket'. This socket must not be confused with means provided on some radios which, for reasons of simplicity, are connected into the loudspeaker circuits and which are dependent on volume and tone control settings.

The potential divider ratio was such that a signal of 20–50 mV was fed to the recorder. The exact ratio did, however, depend on the impedance of the diode input socket. Its impedance is, of course, in parallel with the lower leg of the radio potential divider and, therefore, affects its ratio. With the introduction of the DIN Standard 41524 the diode input impedance was also standardized at 47 kΩ.

This meant that instead of providing a potential divider within the radio receiver, simple series resistors are adequate. These now form the potential divider in conjunction with the diode input impedance.

Where a radio receiver or stereogram is fitted with separate inputs for a record pick-up cartridge and a tape recorder, then the pick-up output is often directly looped to pin 3 of the tape recorder socket (the tape recorder output) or to pins 3 and 5 (left-hand and right-hand channels) in the case of a stereo installation. Since record changers are often so arranged that the cartridge is short-circuited when the pick-up arm is at rest, it is necessary to have resistors in series with the pick-up. Without these the tape recorder output would be short-circuited when the cartridge is muted. These series resistors also have the additional advantage of increasing the pick-up bass response.

The connecting leads used for the interconnection of a pick-up, a diode connection or some other high impedance source with the recorder must be well screened. In addition interaction between input and output cables must be avoided. This is done by individually screening all conductors and by connecting the screen or braiding to the common earth point—pin 2 of the standard plug. Special stereo connecting leads which are only required to handle input or output connections often have a figure 8 cross-section and they are really small cross-section co-axial leads. The capacity of special multi-core screened connecting leads can be quite high and for this reason their length should be kept restricted.

Screened connecting leads should be kept as short as possible.

Extension Loudspeaker Connections

Extension loudspeakers are usually of low impedance. They do not require a screened lead. Perhaps because of this their method of con-

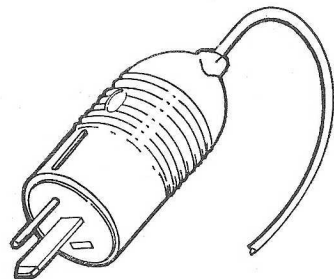


FIGURE 102
Non-screened extension loudspeaker
connecting plug.

nection and their plug and socket arrangement—if this is a correct description—often leave much to be desired. There has been an enormous number of different plugs and sockets, terminals, jack plugs, co-axial plugs, banana plugs and ‘works specials’ which all meant that one loudspeaker could only be connected to one tape recorder. To use the loudspeaker on another machine, its plug had first to be replaced.



PLATE 22

Extension loudspeaker plug and socket. Plug shown on the left and inserted into socket connects external and internal loudspeakers. Plug shown on the right inserted into socket disconnects internal loudspeaker through switch built into socket.

A new type of low impedance and non-screened connecting plug now gains more and more in its popularity. The plug is ideally suited for the connection of extension loudspeakers and is used for this purpose in a great number of installations. An additional advantage of the plug is its reversibility in its connecting socket. The socket in such cases is so arranged that a built-in switch disconnects the internal loudspeaker (where this is fitted) so that power is fed to the external loudspeaker only. This method permits using internal and external loudspeakers or the external loudspeaker only.