

NEON PLUG-TYPE HIT INDICATORS

DESCRIPTION

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1. GENERAL

1.01 This section describes the neon plug-type hit indicators designed for use at No. 5 and No. 9 type telegraph boards and prescribes the method of use of both the loop and line types. (They may also be used to indicate hits at facility positions of No. 2 or 9B service boards.)

1.02 The loop-type indicator may be used for detecting hits or transmission originating on a loop or repeater connected to a loop jack of a TLT circuit. This includes loops connected to a 43A1 terminal.

1.03 The line-type indicator may be used for detecting hits or transmission originating on repeaters connected to Drop 1 or Drop 2

jacks, or the equivalent, of TLT circuits. It will not indicate hits coming from the line on a 43A1 channel because of the "Mark-hold" feature of 43A1.

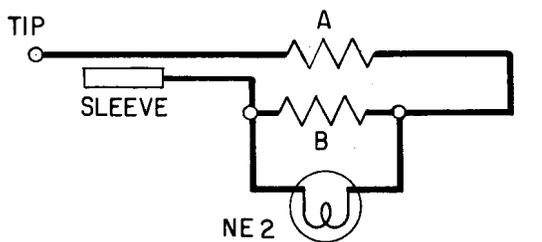
1.04 The use of both types connected to all line and loop legs of a circuit provides direct hit indication on all legs of the circuit being observed.

2. DESCRIPTION

(A) Loop Type

2.01 The loop-type indicator consists of a small neon lamp mounted in the end of a 347A plug, together with resistances used as a voltage divider. The tip of the 347A plug is modified so that it will make contact with the tip spring of the jack but will not exert sufficient pressure to disturb the normal spring contacts. When sufficient potential exists across the tip and sleeve of the plug, the lamp will light.

2.02 The resistance voltage divider is arranged so that the voltage drop across the tip and sleeve of a loop jack during a marking circuit condition is insufficient to light the lamp. In cases of very long loops, however, there may be sufficient voltage drop at this point to cause the lamp to glow dimly. This should be disregarded. A little experience in use of these plugs will familiarize the attendant with this effect.



LOOP TYPE
(ALL MOUNTED IN MODIFIED 347A PLUG)

VOLTAGES	A	B
±130	1.00 MEGOHM	.75 MEGOHM
130 TO GND	0.56 "	2.20 "
+130 TO -48	1.00 "	1.50 "
±48	1.00 "	NOT USED

Fig. 1

2.03 When a spacing signal is transmitted by the loop, the voltage shunting effect of the loop across the loop indicator is removed, at which time a potential of 260 volts is applied to the indicator plug. This voltage, which is being applied from the repeaters or batteries connected to Drop 1 and Drop 2 of the TLT circuit, is sufficient to light the lamp. When the loop closes, the voltage is again reduced across the plug and the lamp is extinguished.

2.04 Single line repeaters, split loop repeaters, regenerative repeaters, 12- and 16-type sets connected to loop jacks of TLT circuits, and 43A1 loops can be observed equally well with the loop-type indicator.

2.05 Line transmission or transmission from other loops will not cause this lamp to operate as the voltage across the loop jack will be insufficient. The exception to this is the case where a short loop is connected ahead of a very long loop. Here the lamp connected to the short loop may respond dimly to pulses from the line due to the high capacity effect of the long loop causing a momentary high current flow through the short loop when the line repeater relay goes

to mark after a space, thus causing a voltage drop across the short loop sufficient to light the lamp. Due to the wide manufacturing tolerances of the neon lamp, it is expected that different lamps will give slightly different results in this respect.

(B) Line Type

2.06 The line-type neon plug indicator consists of a neon lamp mounted in the end of a 327A plug also modified for so-called flexible tip connection to a jack circuit where the jack normal springs are not disturbed. In the line-type device, the sleeve of the plug is not used electrically. Instead, a cord with plug attached is used to connect to either a positive or negative battery tap, depending upon whether the repeater to be observed is arranged for negative or positive potential for mark. A voltage divider is enclosed in the plug to provide proper operating voltages.

2.07 As in the case of the loop type the lamp will light when a spacing signal is received from the leg to which the indicator is connected.

2.08 In some offices, the TLT circuits have been modified so that battery for operation of the lamp is obtained from the sleeve of the Drop 1 or Drop 2 jacks instead of through the cord. In these locations, the loop-type indicator is used for line indication as well as for loop indication. Where offices are so arranged, the sleeves of all Drop 1 jacks are multiplied and connected to one negative battery tap per bay, while the sleeves of Drop 2 jacks are multiplied to one positive tap per bay. Current requirements of the neon lamps are negligible thus permitting this economical use of battery taps.

3. METHOD OF USE

(A) Loop Type

3.01 Select a loop-type neon plug indicator for each loop and repeater connected to loop jacks of the circuit to be observed, and plug them into the associated loop jacks.

3.02 A regularly flashing lamp indicates that transmission is originating on the loop or repeater connected to that jack. Likewise, a steady lamp indicates an open or steady spacing

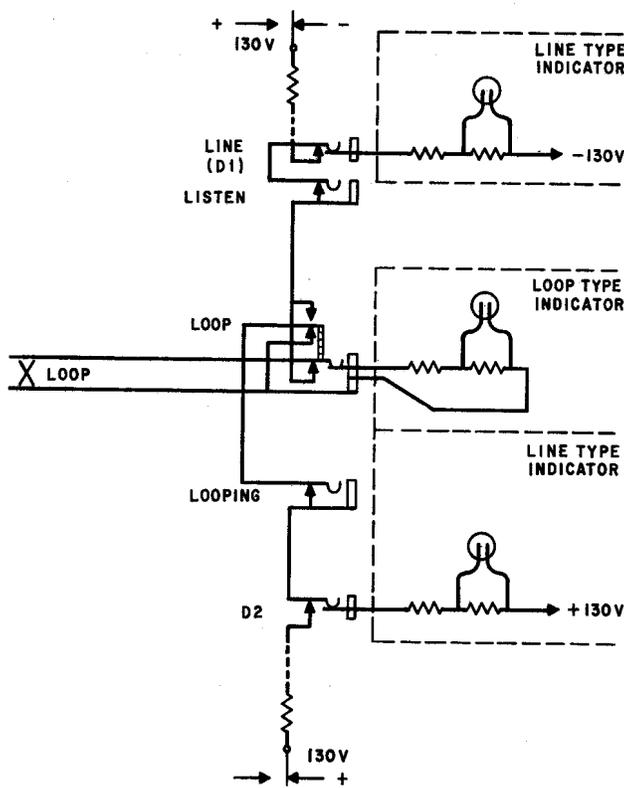
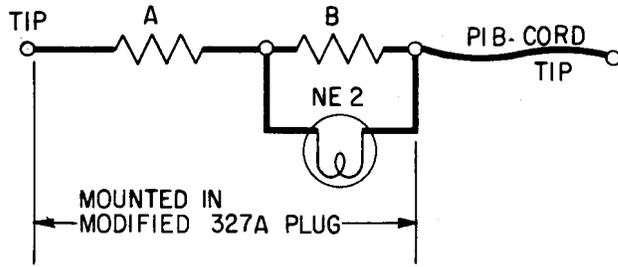


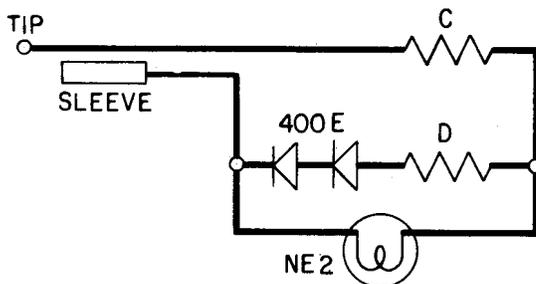
Fig. 2



LINE TYPE
(REQUIRES CORD CONNECTION TO OTHER BATTERY)

VOLTAGES	A	B
±130	1.00 MEGOHM	.75 MEGOHM
130 TO GND	0.56 "	2.20 "
+130 TO -48	1.00 "	1.50 "
±48	1.00- "	NOT USED

Fig. 3



ALTERNATE LINE TYPE, FOR USE WHERE GND IS PROVIDED ON SLEEVE OF D1 OR D2 JACK IN TLT. (ALL MOUNTED IN MODIFIED 327A PLUG—REQUIRES NO CORD.)

VOLTAGES	C	D	400E VARISTORS
MARK +130/GND SPACE -130/GND	0.38 MEGOHM	0.27 MEGOHM	POLARITY AS SHOWN
MARK -130/GND SPACE +130/GND	0.38 MEGOHM	0.27 MEGOHM	POLARITY REVERSED FROM THAT SHOWN.

Fig. 4

signal is being received from the loop or repeater connected to that jack. On a normal idle loop, the lamp will remain out. Flashes of the lamp indicate spacing hits that are originating in the loop.

3.03 If monitoring copy is being received and none of the loop indicators is flashing, it is an indication that transmission is being received from one of the lines, and will be indicated by a line-type indicator.

3.04 To observe for hits on loops which have been patched, it is necessary to patch the loop to the TLT through a special jack circuit.

This jack circuit, shown below, should be provided locally.

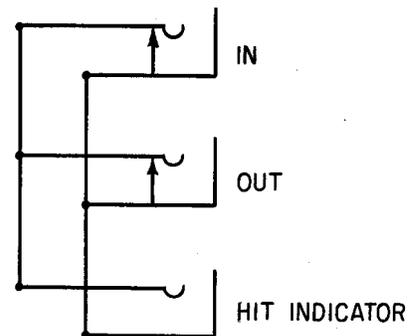


Fig. 5

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(B) Line Type

3.05 Select a line-type indicator for each repeater connected to Drop 1 or Drop 2 jacks of the circuit to be observed and plug them into these jacks. The cords connected to all indicators in Drop 1 jacks must be inserted in negative 130V battery jacks while the cords associated with all indicators in Drop 2 jacks must be inserted in positive 130V battery jacks.

3.06 A regularly flashing lamp indicates that transmission is originating on the repeater connected to that drop jack. A steady lamp indicates an open or steady spacing condition originating from that repeater. On a normal idle line, the lamp will remain out. Occasional flashes indicate spacing hits originating on the linear line repeater.

3.07 If monitoring copy is being received and no line indicators are flashing, it is an indication that transmission is originating on a loop or a repeater connected to a loop jack. The loop indicators will identify the particular loop in question.

3.08 Where a circuit is open and no line or loop indicators are lighted, it is an indication that the light has burned out, or that the cord or the TLT itself is open.

3.09 To observe for hits on repeaters which have been patched to a TLT, connect the line-type indicator to a listening or looping jack located electrically between Drop 1 and the loop jacks for Drop 1 patches, and to the looping jack between the loop jacks and Drop 2 for repeaters patched to Drop 2.

4. MAINTENANCE

4.01 The life of the neon bulbs under normal use is expected to be quite long. When one fails to operate properly, the neon lamp should be replaced. It is a General Electric Company NE2 lamp and can be obtained locally.

4.02 The tip of the neon lamp extends slightly beyond the end of the plug shell and is therefore subject to breakage. Reasonable care should be exercised in handling these devices in order to minimize breakage. It is suggested that the loop-type indicators be stored when not in use in various spare jacks throughout the boards. The line type, because of the additional cord, should be stored on the cord hook. It may be desirable to provide special cord hooks for this purpose.