

TYPE N1 CARRIER TELEPHONE SYSTEM

CARRIER FAILURE INDICATOR

DESCRIPTION

1. GENERAL

1.01 This section describes and gives the method of operation of the N1 Carrier Failure Indicator, N. Y. Tel. Spec. L. I. 2593, which is a small portable device for locating an intermittent carrier failure on the type N1 carrier system. The indicator consists essentially of a sensitrol relay with an associated rectifier circuit mounted on a 20-terminal plug so that it can be plugged into the switching jacks of terminals and repeaters of a carrier system which has exhibited intermittent failures.

1.02 When the indicators are plugged into the terminals and repeaters of a system under investigation, an intermittent failure may be isolated to one repeater section and trouble locating efforts can be confined to the section indicated to be in trouble as discussed under Part 2 (B), Application.

2. DESCRIPTION AND APPLICATION

(A) Equipment and Circuit Description

2.01 The general assembly of the indicator is shown in Fig. 1 and the schematic circuit is shown in Fig. 2. The approximate size of the assembled unit is indicated in Fig. 1.

2.02 A small amount of energy is taken from the output of the terminal or repeater and rectified in the circuit consisting of C1, C2, R1, V1 and V2. The output of the rectifier circuit is connected to high impedance potentiometer, RELAY ADJ. A portion of the voltage across this potentiometer is used to actuate the Weston sensitrol relay which has a magnetic contact on its zero position. When the energy input to the indicator fails, the relay pointer locks in the zero position, designated by a red dot, and it is necessary to press the reset button to move the relay pointer away from the zero contact.

2.03 The circuit of the indicator may be connected to indicate the output by means of the DIRECTION SWITCH.

2.04 Since the indicator is a high impedance bridge, the effect on through transmission while the carrier system is in service is not an important factor. Modulation products are also unimportant.

2.05 The following list of apparatus is useful for replacement of defective parts. Refer to Fig. 2 for identification of circuit elements.

KS-14288 Plug (modified locally for meter mounting).

D.P. DT Slide Type Switch (Wirt Co. or equivalent).

R1-10,000 ohms 0.5 watt resistor (IRC or equivalent).

C1 and C2 - 0.01 mf 500 W.V.D.C. Condenser (Erie Disc Ceramicons Type 811).

V1 and V2 - Crystal Diode (Sylvania Electric Co. Type 1N34).

Relay Adj. - 500,000 ohms Potentiometer (Centralab Radiohm Model 1 Plain Type B16-118).

Weston Relay - Weston Instrument Co. Model 813 Sensitrol Relay, Single Magnet Contact, Manual Pushbutton Reset, Operate on Decreasing Current, 0-5 microampere.

(B) Application

2.06 This small portable device, the N1 Carrier Failure Indicator, is for use as an aid in isolating intermittent failures in type N1 carrier systems while they are in operation without introducing appreciable bridging losses or modulation products.

2.07 For best results, an indicator is placed at each terminal and at each repeater throughout the system in the direction of transmission exhibiting intermittent failures. If a smaller number of indicators are employed to sectionalize the trouble in steps, more

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failures may occur before a location is made. Additional maintenance time will also be required to check the indicators for operation and to move them to another location on the system after a failure.

2.08 When a failure occurs, all of the indicators are to be examined and the condition reported to the control office. The place at which the carrier failure occurred will be indicated by the first indicator with the pointer locked at the zero or red dot position. The indicator at the station preceding the failure will be in normal operated position, that is, with the pointer at the 5 mark on the meter. All indicators beyond the failure will also indicate a carrier failure, that is, their pointers will be locked at the red dot position.

2.09 When a system is equipped with indicators any switching of group units or repeaters should be made quickly to prevent the necessity of visiting the stations and resetting the indicators in the direction of transmission involved.

2.10 Procedure for placing indicator in operation.

(1) Plug the indicator in the following jacks.

At Repeaters	J2 or J3 switching jack
At Transmitting	
Terminal	J15 or J16 switching jack
At Receiving	
Terminal	J13 or J14 switching jack

(2) Operate the DIRECTION SWITCH as indicated below for the direction of transmission under investigation.

DIRECTION SWITCH Position	Indicator Connected To
E-W ONLY	E-W Output of Repeater
W-E & TERMINAL	W-E Output of Repeater
W-E & TERMINAL	*Transmitting Output of Terminal
W-E & TERMINAL	*Receiving Output of Terminal

*Regardless of W-E or E-W direction of transmission.

(3) Adjust the RELAY ADJ potentiometer so that the meter pointer rests on the 5 mark.

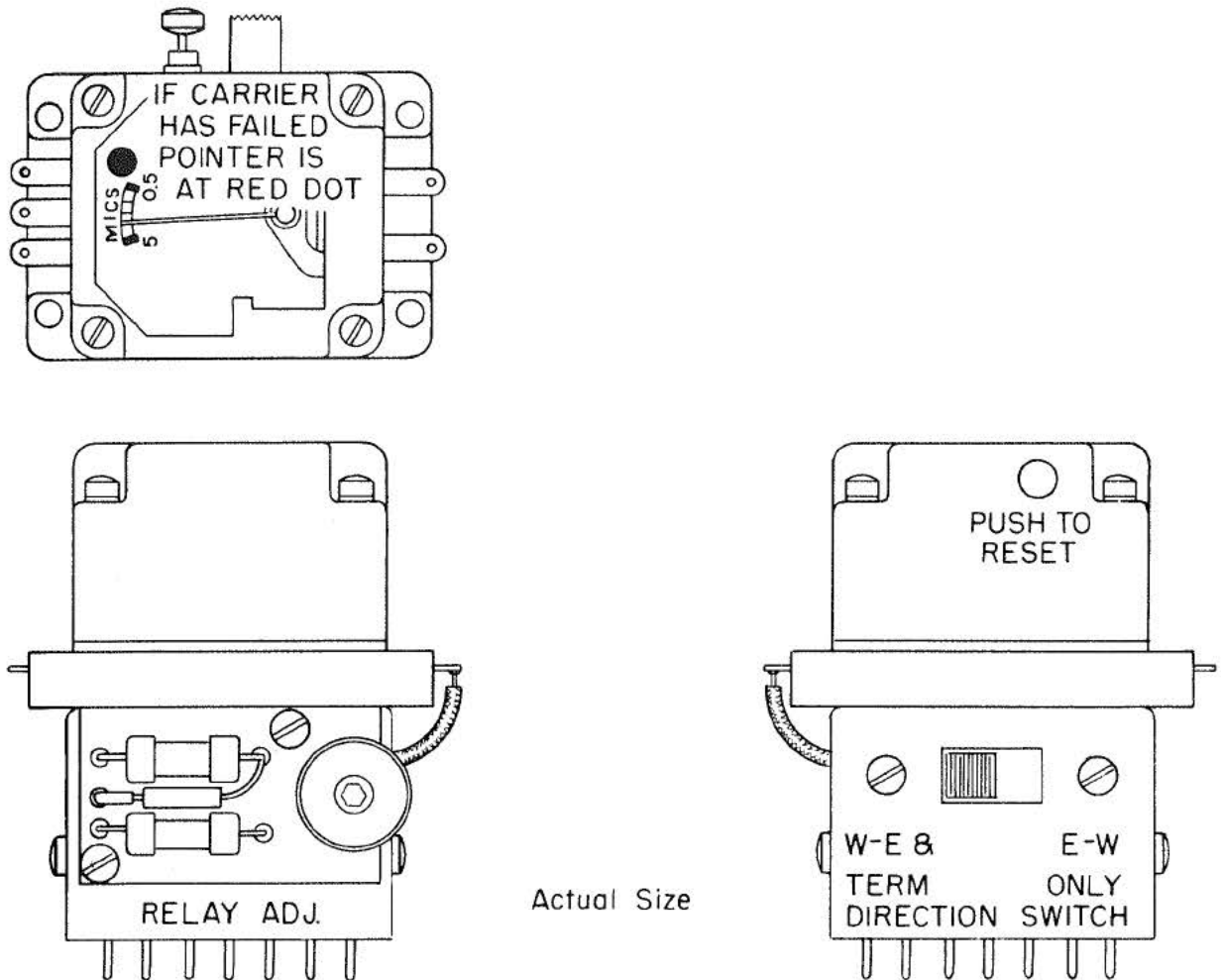


Fig. 1 General Assembly of Carrier Failure Indicator

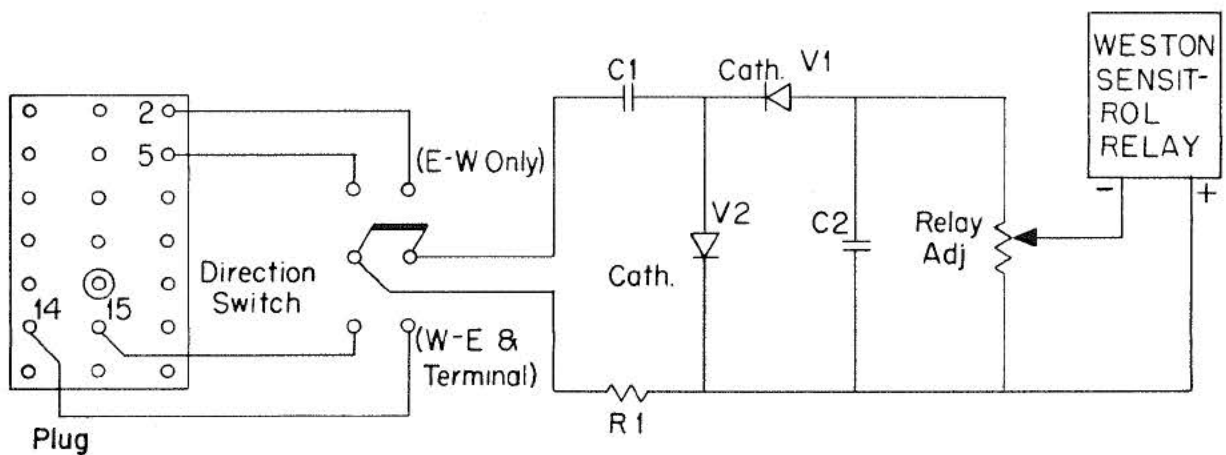


Fig. 2 Schematic Circuit of Carrier Failure Indicator

C

C

C

C

C

C

C

C