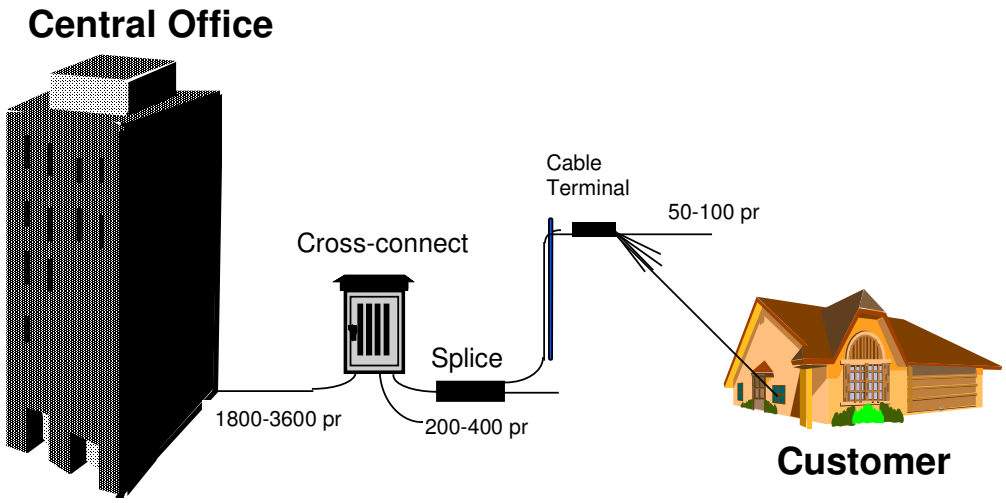
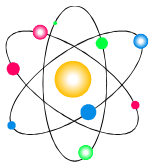
Siecor Highway



Half-Ringer for Network Interface Devices & Protectors



Basic Telephony

Normal Battery Voltage - Resistance - Current

Source Voltage		Subscriber Loop Resistance	Current
Nominal	Range		
-48 **Vdc**	-42.75 to -52.5 **Vdc**	330 to 1930 Ω	18 to 80 **mA**

Ringing Signal Individual Line

AC Voltage	Frequency
65 to 88 **Vrms**	20± 3 **Hz**

Party Line Ringing Signal

Ac Voltage	Frequency
65 to 88 **Vrms**	20, 30, 40, 50 & 60 **(Hz)**

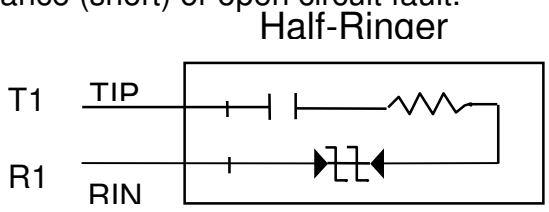
Normal Telephone Operation

On Hook	***On Hook Ringing***	***Off Hook***
• -48 **Vdc** floating • 0 **mA**	• -49 **Vdc** • 0 **mA dc** • 86 **Vrms** ringing voltage	• 7-9 **Vdc** • 30 **mA** • analog voice

Half-Ringer

General Information

A half-ringer unit is a device that is placed by the Telco on customer premises at the demarcation point (network interface or station protector) between the network and customer wiring to the terminal equipment. With this known termination, also called a signature, automatic or manual testing can be performed at the central office to determine the quality of the subscriber loop and determine the location - “Network” or “Customer” - of a resistance (short) or open circuit fault.



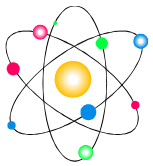
The half-ringer unit is essentially a two connection device with terminals T1 and R1 connected in parallel with customer terminal wiring. The half-ringer is transparent to normal voice conversations and is not affected by the central office battery voltage. Once the half-ringer is activated, it will function as termination by permitting current to flow through it, but only when an alternating voltage of nominal 5.4 volts is present at the termination. This voltage is much greater than that produced by voice signals, but less than ringing voltages. Thus testing can be done without interrupting service, disturbing on-going conversations, or phones not in use. Dial pulse distortion will also be minimized.

Fault Isolation Test Modes

Fault 1 Premises wiring is open, telco loop is O.K.

In this condition, the half-ringer will be the only termination seen from the central office and, predictable results (a.c. current drain, impedance, etc.) will be obtained. This test is similar to the type of test used to determine number of telephones the customer has connected to the line. This condition produces the same results regardless of where the customer fault is: customer has disconnected the network interface device (NID), the house has not been wired, all phones are unplugged, house wiring has an open wire on tip or ring, etc.

Fault 2 Subscriber loop is open on the telco side.



Test results which indicate an open circuit show the problem to be located on the central office side of the demarcation point since a known termination is located at the demarcation. An open circuit on the customer side cannot produce this indication unless *both* the customer wiring has an open fault *and* the half-ringer is faulty (open). In this rare case, the telco still has a fault and when corrected will indicate **Fault 1**.

Fault 3 **There is a short between tip and ring or between ground and/or tip and ring at any location.**

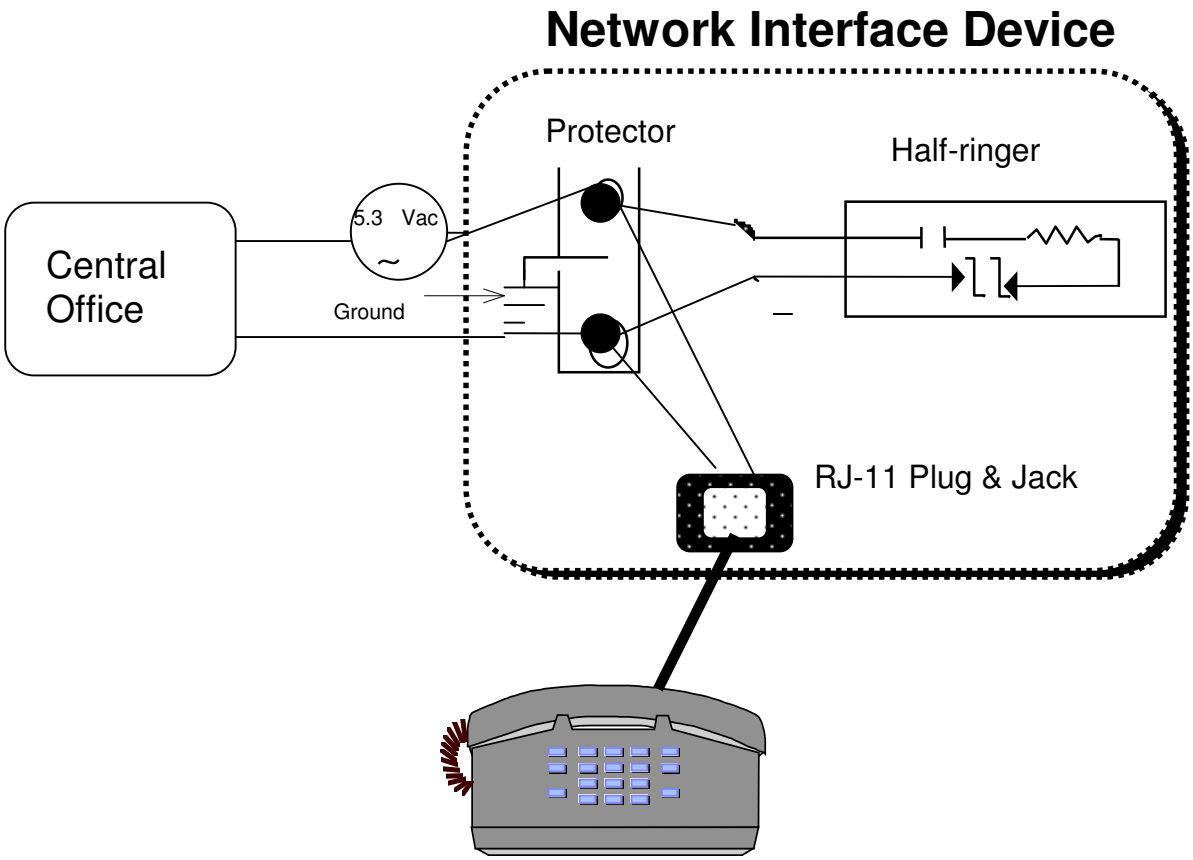
It will be impossible in this condition to determine where the fault is, but the fault will definitely show up as some type of shorted condition. Although the half-ringer termination is no help in locating a shorted condition (customer or telco side of the demarcation), an open condition can definitely be properly identified as to which side of the demarcation point or station protector it exists.

Note: Although the half-ringer testing technique can not exactly determine where a problem exists, or what this problem may be, it can at least sectionalize the problem - Customer or Telco loop - and allow corrective action to begin.

Environmental Coating

Half-ringers utilize a conformal coating for exterior applications only. This is a clear, polyurethane coating that environmentally seals and protects the circuit.

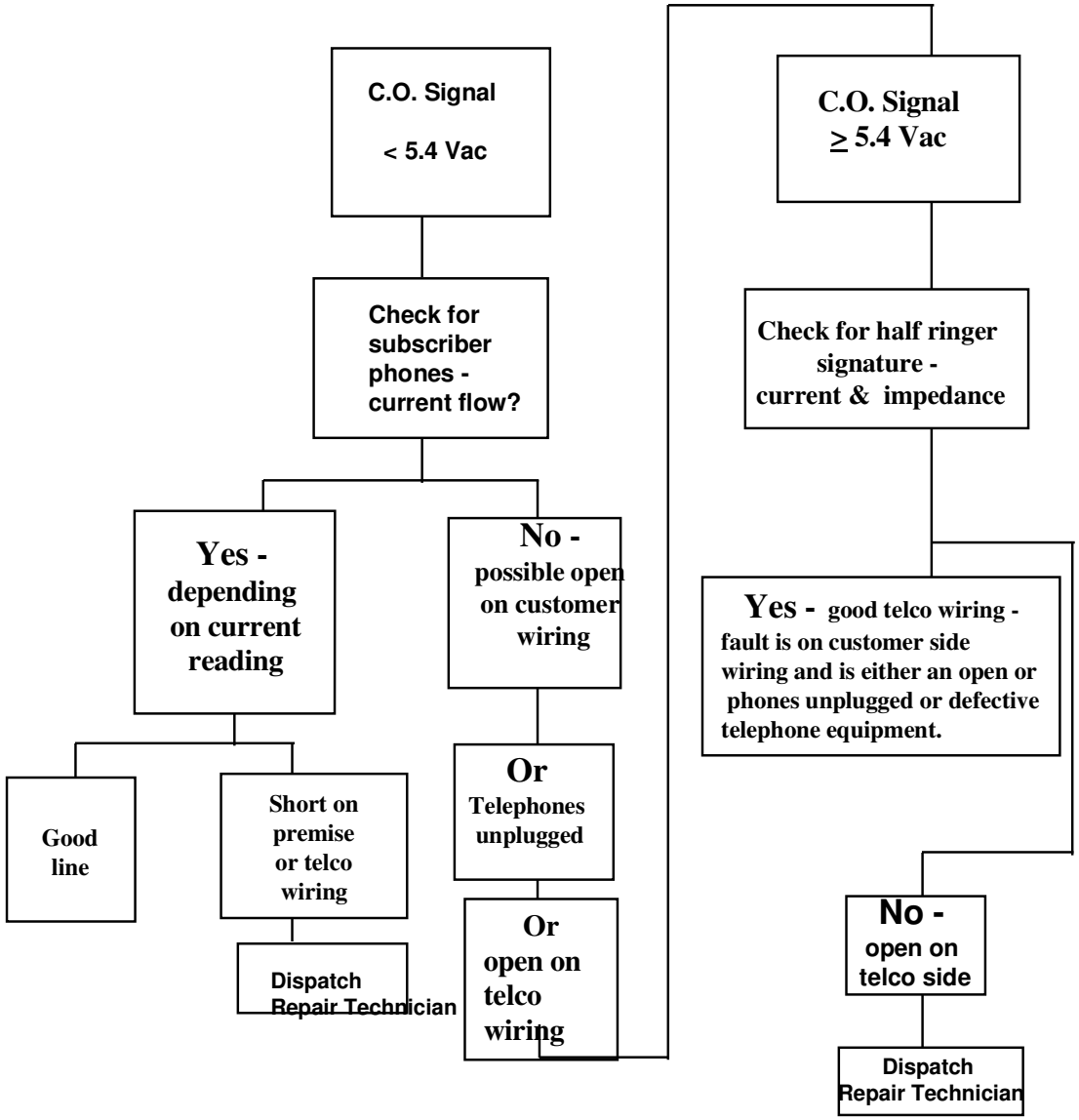
Wiring Schematic

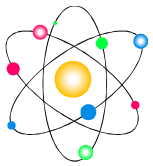


Product Descriptions

3A - uncoated; 4.5 in. leads; used in NI 630/631, 1-line indoor Nid
3B - coated; 4.5 in. leads; used in all outdoor products
3C - uncoated; 2.04 in. leads; used in INI-200's, 2-line indoor Nid
3E - coated; 6.48 in. leads; used in Contel 3160's (lines 3&4)

HALF- RINGER TEST ALGORYTHM





Half-Ringer Summary

Function: sectionalizes faults

Test for local loop integrity by determining the ***presence*** and ***location*** (telco or customer side - not exact) of an open circuit fault or the ***presence*** of a short circuit condition (not its location).

Software Requirements: **None required**

Switch Compatibility: **Compatible with all switches**

Electronic Packaging: **Consists of a diode, capacitor, and resistor**

Environmental Reliability: **Utilizes conformal coating, which is a urethane coating that thoroughly seals and protects circuit**

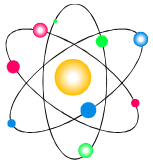
Manufacturing Location: **Siecor Puerto Rico, Rio Grande**

Siecor Experience

Currently supplying 1-2 line and 1-6 line Network Interface Devices to GTE, all installed with half-ringers:

- GTE access lines is equal to approximately 17 million.
- Siecor has been providing half-ringers for five (5) years (as of 1998).
- Siecor is the sole supplier to GTE for NIDs and station protectors.
- GTE currently uses half ringers at all new installations and retrofits old installations when visited by a craftsman.

Half-ringers are also used by numerous other Siecor customers such as various of the Regional Bell Operating companies.



August 1998