

In-Pavement Symmetripole Loop Tester



This is a rugged field service instrument, purpose designed for in-pavement symmetripole loop analysis. Symmetripole loop configuration is achieved by connecting two quadripole loops in a manner to enable the fields to complement each other. This 'balanced' field operation, provides a measurable more consistent operation in varied environments than traditional type A square loops (Morris, Dean & Hulscher 1983).

The SLT-100 Symmetripole Loop Tester identifies correct electromagnetic field 'phasing' of in-pavement symmetripole loops. The transmitter unit has a standard automobile 'cigarette lighter' plug to facilitate 12 volt DC supply connection. The 'local' and 'remote' sensing units (interconnected with white spiral cable), require a single 9 volt DC battery installed in the unit without the LED display.

A bar graph representation utilising LEDS provides an excellent field indication of energy levels in individual loops and balanced field energy levels when verifying the phasing of the two loops.

Simple Operation Description

Step one

Locate the SLT-100 Loop Tester sensors according to Figure 1.0 (a) and (b) on the next page. This step verifies that the individual $\frac{1}{2}$ loops are wound to be 'in-phase'.

Instruction:

a) Connect the SLT transmitter signal clip leads to the 'start' and 'finish' respectively of $\frac{1}{2}$ loop (A)

b) Test Procedure - SLT sensor unit

Set phase/reverse switch to PHASE

Set switch (B) to 'L' and adjust switch (A) sensitivity until five LEDS are on

Set switch (B) to 'R' - 5 LEDS should display (any more or less - then a different number of turns exists in the related winding component)

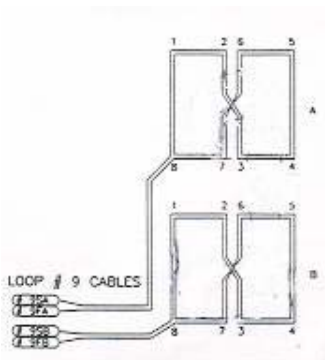
Set switch (B) to 'B' - both windings

Set phase/reverse switch to - PHASE greater than 5 LEDS should display

Set phase/reverse switch to REVERSE less than 5 LEDS should display

c) Repeat this process for the other $\frac{1}{2}$ of the loop (B) - refer to figure 1.0(b)

Errors: different number of turn variations in LED display 'L' to 'R' (that is, more or less LEDS on, according to switch position)



Step two

Locate the SLT-100 Loop Tester sensors according to Figure 2.0.

This step verifies the phasing configuration of the ½ loop 1 and 2 respectively.

Correct phase connection is required for optimum operational loop performance.

Instruction:

a) Connect the SLT transmitter unit to the loop configuration by connecting one SLT signal clip lead to Loop (a) + (b) ‘starts’ (both connected), and the other SLT signal clip lead to Loop (a) + (b) ‘finishes’ (both connected). This is effectively a parallel connection.

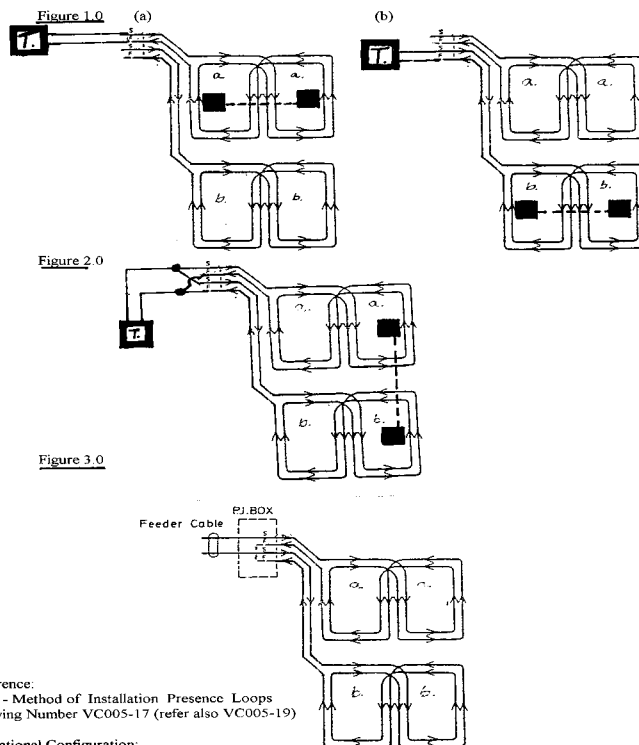
b) Repeat the TEST PROCEDURE outlined above (Do NOT adjust the sensitivity).

Errors: The signal level sensitivity should not vary.

Variations in the number of LEDS on, indicate that the phasing of the loops is incorrect. Reversing the Start and Finish of ½ loop, only will rectify the phasing.

Step three

Connect the two ‘Starts’ and two ‘Finishes’ of Loop 1 and Loop 2 for operational use similar to that displayed in Figure 3.



Reference:
RTA - Method of Installation Presence Loops
Drawing Number VC005-17 (refer also VC005-19)

Operational Configuration:
The objective of this configuration is to ensure that the phase signal in (a) opposes (b).