Wire Wrapping Bits Testing

Contents

1 General

1.1 Purpose

This practice presents information on the proper testing of bits used in standard wire-wrapping tools.

1.2 Filing Instructions

This practice supersedes Issue 5, April 1991. Remove and discard Issue 5 and replace with this Issue 6 in your practices set.

1.3 Reason for Reissuing

This practice has been reissued to update information in 2.3, Definitions; 2.4, Tools and Materials; and 2.5, Ordering Information. It also corrects a typographical error in **3.2,** Guidelines.

1.4 Copyright and Responsibility

This practice has been published by the GTE Telephone Operations Administrative Services Department. For more information about this practice contact the Headquarters COE Construction Department.

1.5 Disclaimer

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2. Overview

2.1 Introduction

Many factors determine the quality of wire-wrapped connections, including the:

- Training and experience of the work force.
- Type and gauge of the wire used.
- Terminal conditions.
- Care given to wire-wrapping bits.

Local personnel must perform bit qualification testing as described in this practice. A conscientious bit testing program is an essential part of wire wrapping work.

2.2 Reference

A complete review of GTE Telephone Operations Practice 256-050-211 (Cabling Methods – Connecting Wires – Solderless Wrap Methods) is required.

2.3 Definitions

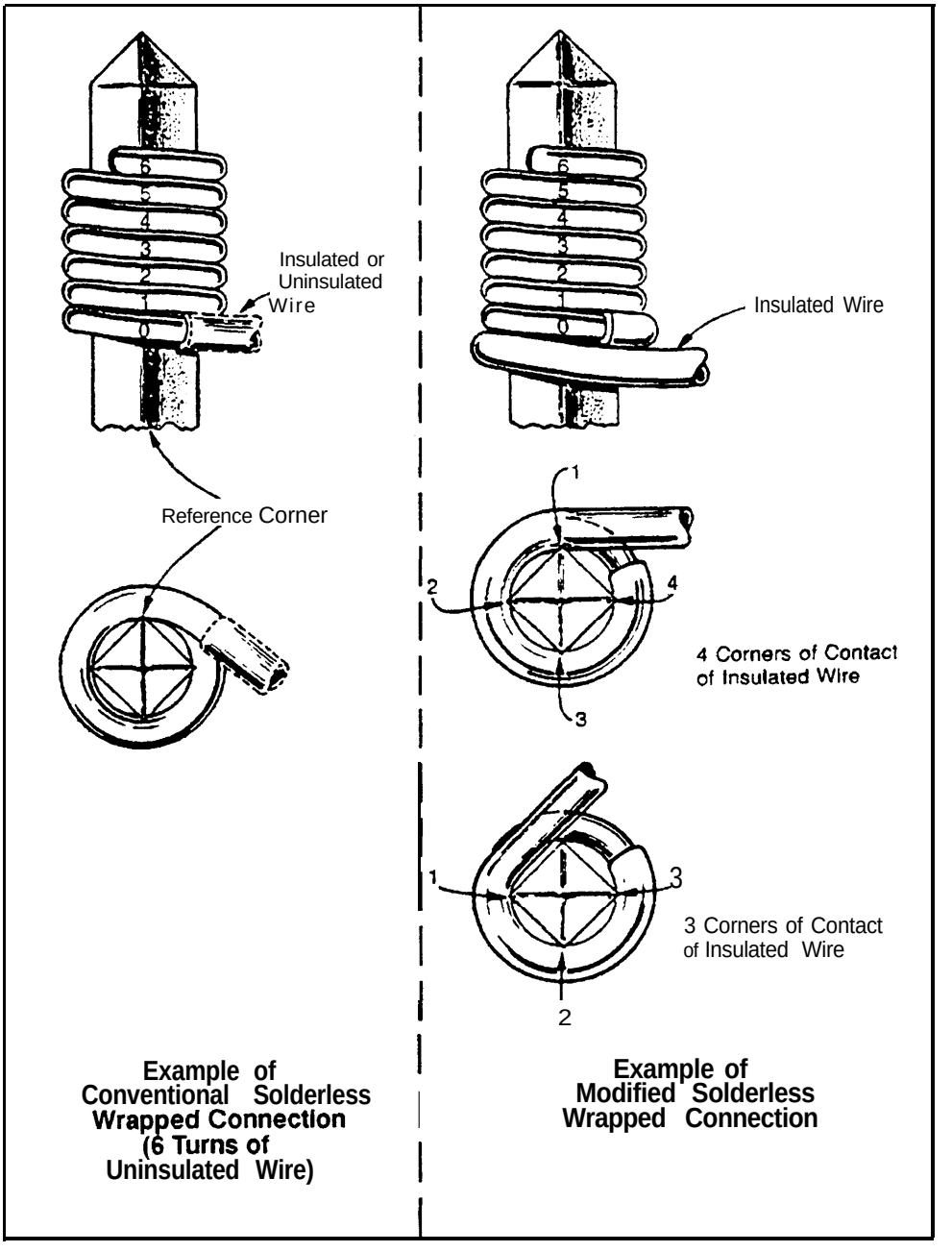
Terms used in the practice are defined in the following chart.

ACRONYM OR TERM	DEFINITION
Wire-Wrapping Bit	A machined metal rod used with a sleeve to make solderless wire-wrapped connections. NOTE: Bits **are made in various configurations to match one or more wire gauge sizes.**
Wire-Wrapping Sleeve	A metal tube that mates with a bit for making solderless connections.

(continued)

2.3 Definitions, continued

ACRONYM OR TERM	DEFINITION
Turn of Connection	The tight physical contact of bare wire to four consecutive corners of the terminal. The following illustration depicts a solderless wire-wrapped connection showing corners of contact insulated wire with six turns of uninsulated wire.

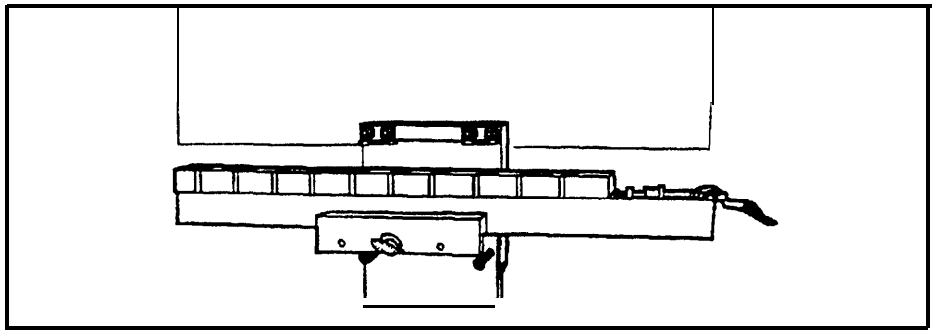


2.4 Tools and Materials

IMPORTANT: It Is Imperatlve that supervisors have the tools and materlals listed in this practice available for annual testlng.

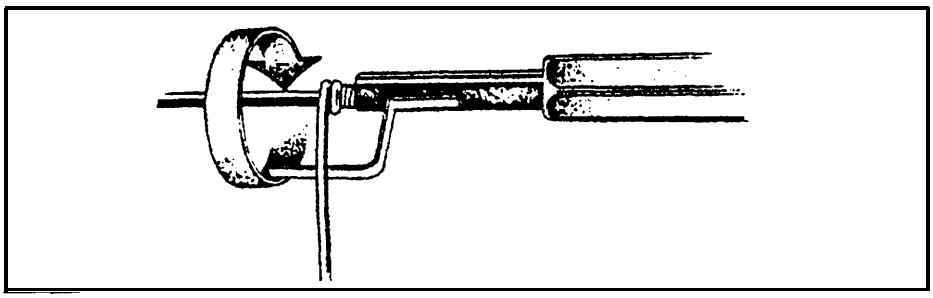
The following tools and materials are required to perform the wire wrap bit test.

- Standard wire-wrapping tools listed in GTE Telephone Operations Practice 075-630-101.
- Wire-wrapping qualification test fixture (MC 312657). In this illustration, the test fixture is shown with a universal frame mount.



- Qualification unwrapping bit (MC 588740). The unwrapping procedure is illustrated below.

  NOTE: Use of **this tool is optional.**

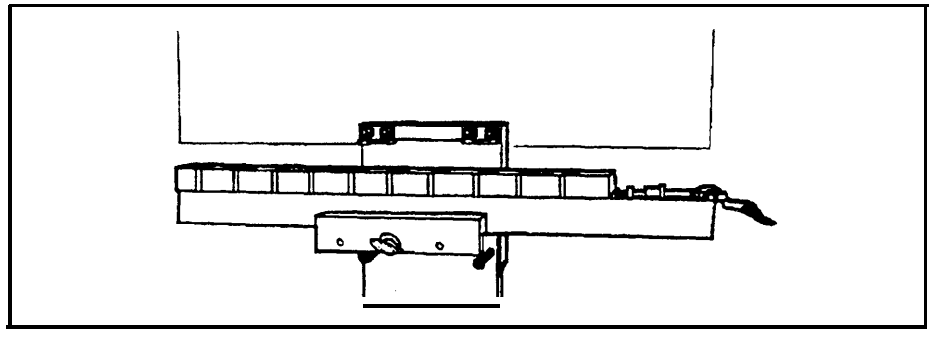


- Wire-wrapping sleeves and bits.
- Wire wrapping test terminal, .030 by .062 (22-26 GA bits) (MC 885556).
- 22-, 24-, 26-, or 28-gauge wire straps or wire.

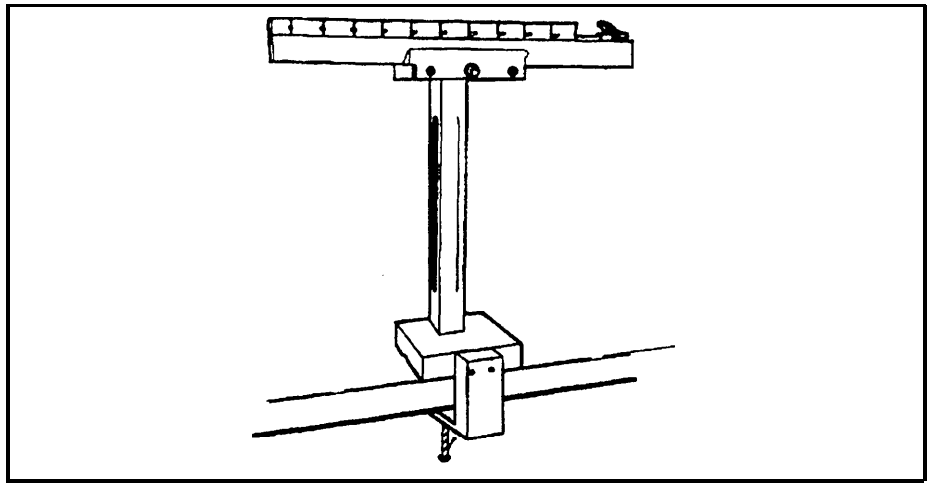
2.4 Tools and Materials, continued

It is recommended that:

- Each base unit be equipped with one frame mount test fixture (MC 312658).



- Each COEI supervisor have one desk mount test fixture (MC 312659).



2.5 Ordering Information

Ordering information for equipment referenced above is as follows.

Material Code	Part Number	Description
312657	TFI 12189	Fixture, Test Wire Wrap (see illustration on page 4)
312658	FC1121	Mount, Frame Wire Wrap Test (see illustration above)
312659	BN1121	Mount, Bench Wire Wrap Test (see illustration above)
885556	5ITMA500	Terminals, Wire Wrap Test
588740	R4008	Qualification Unwrapping Bit

3. Inspecting Bits

3.1 Inspection Periods

Each new wire-wrapping bit must be:

- **Inspected prior** to being placed in service.

  AND

- Inspected annually while in service.

In addition to these regular inspections, the workers must be alert to indications of improper operation. Follow requirements in GTE Telephone Operations Practice 256-050-211 to determine standards of acceptable wire wrap connections.

The life expectancy of wrapping bits is subject to many factors, but with proper use and care, is in excess of 100,000 connections.

3.2 Guidelines

To inspect bits, wrap ten test pins/terminals, and visually inspect the connections to ensure the following conditions are met.

NOTE: Start your wire wrap approximately 1 /16 inch from the base of the pin.

- Standards of acceptable wraps set forth in GTE Telephone Operations Practice 256-050-211 must be met.
- The correct number of turns is a minimum of:
  - Five turns for 22-gauge wire.
  - Six turns for 24-gauge wire.
  - Seven turns for 26- and 28-gauge wire.

  NOTE: Do not overlap turns.

- The space between insulation and the first turn is a maximum of 1/8 inch for 22- or 24-gauge wire.

  NOTE: The 26- and 28-gauge wire wrap bits make modified wraps; therefore, a portion of the insulated lead wire must be wrapped around at least three corners of the termlnal.

- The last turn must be completely wrapped.
- The last spiral must not project more than 1/64 inch from the terminal, and have a minimum clearance of .005 inch between the wire end and adjacent components.

3. Inspecting Bits, continued

3.3 Instructions

Unwrap the test wraps (ten pins/terminals) to determine if any of the wires are damaged. During the unwrapping operation, observe the condition of the wire, the terminals, the technique, and whether or not the wrappings are too tight. Abnormalities in these conditions can indicate causes of wire breakage or fractures.

The chart below lists the test procedures for the .030 by .062 and .025 by .030 test pins.

Step	**Testing** .030 x .062 **and .025 x .030 Test** Pins
1	Release the push lever on the right side of test fixture.
2	Place ten test pins resting against the stop or centered so that the shoulders of the test pins are flush with the side of the qualification test fixture.
3	Secure the test pins by pushing the lever to the lock position.
'4	Terminate ten wire ends on the test pins on one side of the test fixture, using the wire-wrapping tool and proper wire size for the bit under test.
5	Using the tubular unwrapping tool (illustrated on page 4) or your fingers, unwrap the connections without putting any additional stress (such as twisting) on the wire. Starting at the back of the pin, unwrap the wire in a clockwise direction. If a break occurs in the bare portion of the wire before the connection frees itself from terminal, the test is a failure, and the bit must be removed from service. **NOTE: Remove defective bits from service and dispose of locally. Repairing wire wrap bits is not cost effective.**

NOTE: In addition to the test performed above, check wire wrapping bits for evidence of wear at each scheduled inspection If wear is detected, remove the bit from service.