

QUALITY CONTROL PROCEDURE
CRIMPING AND INSPECTION OF WIRE LUGS

This Title Page is a record of all revisions to this procedure. Any time this procedure is revised only the revised page will be listed.

<u>REV. NO.</u>	<u>DATE</u>	<u>REVISED PAGES</u>
0	12/02/85	NONE

THIS PROCEDURE APPROVED AND AUTHORIZED

DATE: November 22, 1985

BY: K. A. Taylor

TITLE: QUALITY CONTROL MANAGER

8512090071 851202
PDR GA999 EMK HATCH
99901022 PDR

QUALITY CONTROL PROCEDURES

CRIMPING AND INSPECTION OF WIRE LUGS

- I. PURPOSE: To identify and assign responsibility to those individuals responsible for Control of Special Processes.
- II. APPLICABILITY: This procedure applies to those individuals responsible for Supervision of wiremen, Quality Control Department and any other organization within Hatch Inc. that participate in activities affecting quality.
- III. DEFINITIONS:
 - QUALITY CONTROL: Those quality assurance actions which provide means to control and measure characteristics of an item to established requirements.
 - SHALL: The use of the word "shall" indicates a mandatory requirement.
 - ITEM: Any level of unit assembly, component, part or material.
- IV. PROCEDURES:
 - A. Compression-type connectors are connected to conductors by using a crimp tool that tightly compresses the connector and conductor to form a mechanical connection called a crimped joint. A terminal has two parts; one that receives the wire and is crimped onto the wire, and the other part which connects to the termination point.
 - B. It is necessary to have a calibrated wire/lug crimping tool which properly crimps the lug onto the wire and insulation. The Quality Control Department is responsible for controlling the calibration of the ratcheting crimping tool, to include documentation therefore.
 - C. Prior to the crimping operation, stripped wire should be checked to insure that no nicking, cutting or scraping of the wire exists. The insulation should be cleanly cut, with no frayed pieces or threads extending past the cut-off point are present.
 - D. The wire strands should not be twisted or spayed from the normal pitch in the cable. The wire should be stripped

to the length required for the terminals being used. Figure 1 shows the correct positioning of wire in the crimp barrel.

- E. The following items are to be checked during the crimping operation:
- (1.) Insure that the size and type of wire to be terminated is correct for the lug size.
 - (2.) Insure that the correct terminals are used on the wire being terminated.
 - (3.) Verify that the crimping tool is operating correctly.
 - (4.) Verify that the lug-opening matches the mounting screw/stud size.
 - (5.) Insure that the stripped wire is inserted into the barrel until the insulation is firmly in place.
 - (6.) Insure the crimp is correctly done and the two (2) inspection dots are clearly shown.
 - (7.) Insure no loose strands are showing; if so, termination shall be rejected.
 - (8.) Wire strands shall extend beyond the crimp barrel no more than 1/16 of an inch and be no shorter than flush with the end of the barrel.
- F. Termination inspection will be done on each lug and it should insure that the termination is mechanically and electrically correct. Noninsulated terminals shall be inspected for correct positioning, centering and proper indentation. The indent should be centered on the top of the barrel so as to be readily visible after termination; see Figure 2. Insulated terminals shall be inspected in the same manner as noninsulated lugs. Also, the terminal insulation should be inspected for breaks, cracks, or any type of damage. In addition, the two (2) dots impressed by the crimper must be visible; see Figure 3.
- G. Multi-conductor shielded cable will be terminated and inspected as described elsewhere and will have in addition a piece of heat shrink tubing placed over the end of the wires insulation where the multi-cables come out. The tubing will be shrunk tight enough to present a neat transition from insulation to multi-conductors.
- H. No more than two conductors may be terminated on one point unless specifically authorized by the Project

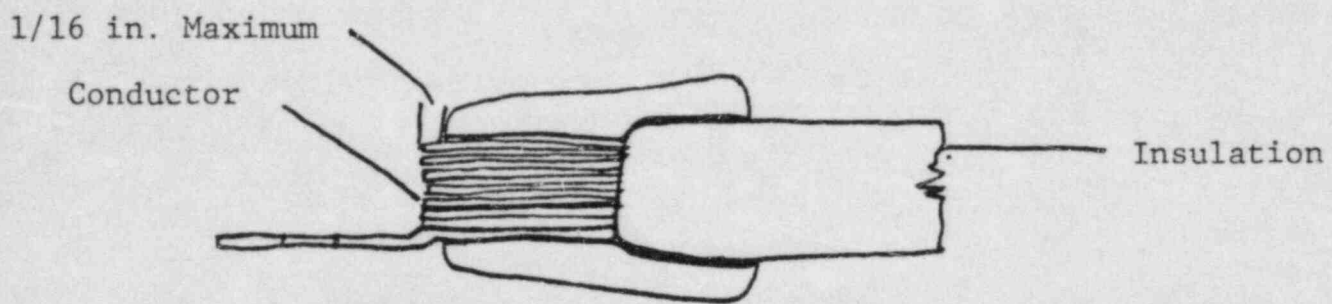
Engineer. The bottom terminal shall be installed upside down.

- I. (1.) During routing, the wire may not be bent more than three times the outside diameter of the wire/cable.
- (2.) Verify that necessary clearance is between the conductors and any heat source and that adequate protection against abrasion is taken.
- (3.) Grommets, chase nipples or other types of protection must be taken when wires are routed through metal.
- (4.) Bare jumper wires are not permitted.
- (5.) Terminals may not be bent more than 30 degrees above or below termination point.

V. REFERENCES:

- A. 10CFR50
- B. ANSI N45.2
- C. ANSI N45.2.9
- D. Hatch Quality Control Manual

- VI. RECORDS: All records/documents initialed as a result of these procedures shall be filed as required by ANSI N45.2.9 unless otherwise specified in customer specifications. These records shall be filed by the Quality Control Manager. None of the documentation may be destroyed without first being offered to the customer.



The insulation must be flush inside the terminal

Figure 1. PROPER STRIPPING LENGTH

ACCEPTABLE



Figure 2. PROPER CRIMP POSITIONING OF NONINSULATED TERMINALS

ACCEPTABLE



Figure 3. INSULATION INSPECTION