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13. ABSTRACT

Describes a method for evaluation of printing equipment operational and functional performance characteristics. Identifies supporting test, facilities, and equipment required. Provides procedures for assembly, installation, and functional performance tests. Not applicable to photographic or electrostatic printers or peripheral equipment such as lithographic copying cameras.

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|-----------------------|--------|----|--------|----|--------|----|
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| Printing Machine | | | | | | |
| Printing Press | | | | | | |
| Reproducing Equipment | | | | | | |
| Lithography | | | | | | |

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U.S. ARMY TEST AND EVALUATION COMMAND
SYSTEM SERVICE TEST OPERATIONS PROCEDURES

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*Test Operations Procedure 10-3-120

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PRINTING EQUIPMENT

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SECTION I
GENERAL

1. Purpose and Scope. This Test Operations Procedure (TOP) describes service tests for evaluating the operational, performance and maintenance characteristics of printing equipment to determine the degree to which such equipment meets the requirements of Materiel Needs (MN) and whether it is suitable for Army use. Testing is conducted using personnel representative of those who will operate and maintain the equipment in the field and under all climatic and environmental conditions representative of those areas where the equipment will be used. These procedures are not intended to service test photographic or electrostatic printers or peripheral equipment such as lithographic copying cameras.

2. Background. The most widely used method of recording and transferring information is by the use of printed documents. Basic types of printing equipment are:

a. Printing presses--Type and illustration images are transferred to paper stock by means of printing ink. The unprinted stock is positioned by the press for receiving the impression made by transferring the ink from the image carrier to the stock. The printed paper is then ejected from the press.

*This TOP supersedes MTPs 10-3-122 (11 Apr 68), 10-3-123 (25 Mar 68), and 10-3-136 (24 May 71), including all changes.

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b. **Printing and dry developing machines**--A rapid, portable, semi-automatic copying, printing, and processing machine for production of projectable transparencies by both phototransfer and diazo-reproduction. Such equipment can copy original material bound in book form and wall mounted original materials.

c. **Lithographic plate coating machines**--A device for applying a uniform, light sensitive coating to a metallic plate. This plate is exposed by contact with a negative, developed, and etched rendering the exposed areas of the plate receptive to ink for printing.

3. **Equipment and Facilities.** Equipment and facilities required are defined in the documents listed in Section II.

SECTION II TEST PROCEDURES

4. **Supporting Tests.** Common Service TOPs, the tests defined in Section III, and other published documents to be considered in formulating a service test plan are as follows:

| <u>TEST SUBJECT TITLE</u> | <u>PUBLICATION NO.</u> |
|--|------------------------|
| a. Operator Training and Familiarization | 10-3-501 |
| b. Photographic Coverage | 7-3-519 |
| c. Pre-operational Inspection and Physical Characteristics | 10-3-500 |
| d. Safety | 10-3-507 |
| e. Assembly and Installation (Refer to para 5) | |
| f. Performance Tests (Refer to para 6) | |
| g. Qualitative Electromagnetic Interference | 6-3-513 |
| h. Effects of Weather | 6-3-509 |
| i. Maintenance Evaluation | 10-3-504 |
| j. Reliability | 2-3-507 |
| k. Human Factors Evaluation | 10-3-505 |
| l. Transportability | 2-3-519 |

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TOP 10-3-120

TEST SUBJECT TITLE
m. Durability
n. Value Analysis

PUBLICATION NO.
10-3-502

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to AR 11-26

SECTION III
SUPPLEMENTARY INSTRUCTIONS

5. Assembly and Installation.

a. Objective. To determine the ease of assembly (if required) and installation of the test item.

b. Method. The test item is assembled (if required) and installed in its normal operating configuration using personnel, procedures, and tools described in the applicable technical manual or manufacturer's book of instructions. Electrical power, piping, ducting, etc., is connected as specified and all controls are manipulated to demonstrate absence of sticking or binding. Assembly and installation procedures are repeated as often as required. Installing interchangeable sub-assemblies or components in different positions and varying the number of assembly/installation personnel used to insure statistical confidence in the results.

c. Data Required.

- (1) Nomenclature of test item and interchangeable subassemblies or components.
- (2) Recorded times to assemble, install and/or replace sub-assemblies and components.
- (3) Tools, equipment and materials required for assembly and/or installation.
- (4) Difficulties encountered in assembly and installation.
- (5) Number and MOS of personnel used for each operation.
- (6) Interchangeability data (if appropriate).
- (7) General comments by test personnel to include:
 - (a) Adequacy of instructions.
 - (b) Suggested changes; instructions/procedures.

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d. Analytical Plan. The average times to assemble and install, for each configuration of equipment and the test team are computed. Comments of test personnel on difficulties encountered, adequacy of instructions, and suggested changes to instructions and procedures are summarized and analyzed. This information is compared with the requirements of the MN and specifications and then used to prepare recommendations relative to the suitability of the test item for Army use.

6. Performance Tests.

a. Objective. To evaluate the operational capabilities of the test item.

b. Method. The test item is operated by qualified personnel in its normal environment performing all required functional operations, e.g., copying, printing, processing, coating, etc. The test operators record comments on all aspects of operation.

c. Data Required.

- (1) Nomenclature and type of test item.
- (2) Comments (as applicable) on:
 - (a) Ease of control and adjustment operation and resultant effects on operational characteristics.
 - (b) Accuracy of control and scale indications.
 - (c) Effectiveness and uniformity of speed control (if present).
 - (d) Ease of applying ink; uniformity of distribution.
 - (e) Paper feed; problems encountered (if any).
 - (f) Condition of finished product; crispness, cleanliness, clarity.
 - (g) Uniformity of coating.

d. Analytical Plan. The recorded data and comments of the test operators are summarized and analyzed to evaluate the merits and shortcomings of the test item as compared with the requirements of the MN. These evaluations are then used to prepare recommendations relative to the suitability of the test item for Army use.

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