

**SPECIFICATION
FOR
INSPECTING MACHINES, MOTION PICTURE FILM**

(This specification is released for procurement purposes until revised or rescinded).

SCOPE

This specification covers automatic or manual threading, console type machine designed to provide automatic detection of defects in, and automatic removal of, surface debris from standard 16mm sound or silent motion film up to 2,300' long contained on standard open reels.

I. CLASSIFICATION

Types: A. Mechanical Detector
 B. Optical Detector

Classes: 1. 800-900 FPM Constant
 2. 1200 FPM Constant

 a. Manual Threading
 b. Automatic Threading

II. APPLICABLE STANDARDS

Film inspection machines shall comply with applicable standards published by the following:

1. Electronic Industries Association (Standards and Specifications)
2001 Eye Street, NW
Washington, DC 20006
2. American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018
3. National Electrical Code-National Fire Protection Association
60 Batterymarch Street
Boston, MA 02210
4. Underwriters' Laboratories, Inc.
Publications Stock
333 Pfingsten Road
Northbrook, IL 60062

5. Federal Occupational Safety and Health Act Code
200 Constitutional Avenue, NW
Washington, DC 20210

6. State Occupational Safety and Health Act Code
N.C. Department of Labor, OSHA Division
4 West Edenton Street
Raleigh, N.C. 27601

III. REQUIREMENTS

A. DESIGN AND CONSTRUCTION

Cabinet to be free standing and of modular construction (electrical circuits, detector, motors, brakes, cleaning tapes, etc. to be modular designed components and replaceable as separate units).

Material to be heavy, durable fiber glass or minimum 16 gauge steel as called for in the Invitation For Bids. Finished surfaces may be baked-enamel, brushed chrome, stainless-steel, anodized aluminum, vinyl clad, or any combination of molded-in coloration. These finishes shall be prepared in accordance with the manufacturers' best commercial practice. Finishes shall produce smooth, uniform exposed surfaces without runs, wrinkles, grit, areas of thin film, or no film, and separation of color. Special attention shall be given to the bottoms and to the interior to insure that all surfaces are adequately protected against rust. All finishes to be impervious to film handling chemicals.

The cabinet to be electrically shock resistant, to incorporate a 115V AC, 60 HZ electrical outlet for use of an automatic hot splicer, and a minimum 1,000 sq. in. horizontal work surface at desk top height.

B. FUNCTION

The function of the machine is to inspect, detect film flaws, clean, and rewind any length 16mm movie film up to 2,300'; to accept and inspect reels in either heads-up or tails-up position without exchanging reels; to rewind all lengths of 16mm reels without adjustment and to keep track of film footage and splice count by means of accurate, resettable counters.

C. PERFORMANCE

The machine must be capable of finding all standard film defects at the rated inspection speed. The drive system should provide gradual acceleration during the start-up of inspection and rewind to prevent snapping of film.

Machine must be able to detect following flaws:

1. Film break.
2. Film tear or cut anywhere across film width.
3. Improper splices made with tape. Minimum requirements: Length 3/4", Width 1/4".
4. Damaged sprocket perforations: Sprocket hole break, sprocket hole enlargement.
5. Splices made with pins and staples.
6. Imperfect splices made with cement.
7. Longitudinal cuts. Minimum requirement: one frame length.

8. Burned frames.

D. CONTROLS

1. Film Transport System

Film motion shall be so designed that the detected defect is stopped at a visual inspection station which may be illuminated, from which the film can be withdrawn, and defect repaired, and the inspection continued without the need for unthreading and rethreading the machine. The transport system shall regulate the tension of the film as it is being inspected and rewound.

2. Motors

The motors to have brakes employed at the appropriate positions to insure smooth braking. To be of heavy duty cast iron, or equivalent alloy construction rated both for continuous and intermittent duty by NEMA. Brakes to be easily repairable. The film reels shall be so driven and controlled as to preclude any possibility of film spillage during inspection and re-wind, and shall be so mounted or protected as to minimize the hazards associated with rapidly rotating machinery.

3. Rewind

The machine should automatically regulate speed, tension, and torque for all lengths of 16mm reels without adjustment. The machine to have a slow start feature and an automatic stop if film breaks during rewind. The machine shall be capable of rewinding up to 2,200' of film in one minute or less.

4. Electronics

Transport, tension, speed, brake balance, and all controls to be 100% solid state, computer type electronics of advanced design. Modular, printed, plug-in circuit boards using special heat reducing components and nonrheostat designed circuits. Electronics to be easily removed for easy field servicing without the need of special tools. Functions to be self-adjusting. No factory pre-setting or operator adjustments needed.

5. Detection System

To be mechanical with the use of mechanical means of defect-detection like jewel arms, transducers, crystals and combinations; or to be optical with the use of noncontact light beam system where nothing touches the film during defect detection.

The defect detector to be adjustable for sensitivity and to be equipped with a bypass mechanism which shall allow selective ignoring of properly shaped indexing notches made in the sprocket edge of the film. Detector to allow film passage in either direction without damage to either the film or to the detector itself.

6. Cleaning Mechanism

The mechanism shall thoroughly and safely clean both surfaces of the film during the inspection pass and shall be capable of being made inoperative, at the discretion of the operator during film rewind.

7. Storage

The machine shall be equipped with storage and dispensing facilities for at least 1,000' of standard film leader.

8. Power Cord

The machine shall come with a standard source of 115V + 10V, 60 HZ, single phase AC - power cable, UL approved, at least 8' long with standard 3-prong, grounding type AC plug.

9. Liquid Cleaning Attachment

If called for in the Invitation For Bids, a liquid cleaning attachment should be furnished. This attachment to be the liquid/conditioner type, 65 pounds maximum weight. It shall clean film at the speed of the inspection machine to which it is installed. It shall recondition drying, brittle films, making them flexible and pliable, and adding a protective coat of film preservative. To include monitoring system which automatically checks and indicates when cleaning tape and cleaning fluid supplies approach the replacement stage.

IV. WARRANTY

The Contractor guarantees that the equipment offered is standard new equipment, latest model of regular stock product with all parts regularly used with the type of equipment offered, also, that no attachment or part has been substituted or applied contrary to manufacturer's recommendations and standard practice. The Contractor agrees also, under this warranty, to promptly replace any part or parts which by reason of defective material or workmanship shall fail under normal use, free of negligence or accident, for a minimum period of 12 months from date put in operation. Such replacement shall be free of any charge to the owner.

V. SERVICE, PARTS AND MANUALS

The Contractor shall furnish to the using agency two complete copies each of the operator's instruction manual, service manual, and repair parts catalog simultaneously with the delivery of each film inspection machine. Also the manufacturer's company representative shall visit and test the equipment's performance characteristics to agency satisfaction. Representatives to also give agency personnel instructions in equipment operation.

VI. ACCEPTANCE INSPECTION AND TESTING

Upon receipt and installation of each film inspection machine, the purchaser or his authorized representative shall arrange for an acceptance inspection for compliance with the provisions of this specification.

If so stated in the Invitation For Bids, the Contractor will be required to furnish a pilot or sample model for inspection, tests and possible modification and/or adjustments of attachments in accordance with this specification.

The State reserves the right to subject the sample to any test it may be deemed necessary to determine compliance to this specification. Such tests, if required, shall be performed at no cost to the State.

VII. DELIVERY AND PAYMENT

Delivery of, and payment for, any film inspection machine purchased under this specification shall be in accordance with the terms and conditions of the Invitation For Bids. The contractor shall be responsible for any packing, packaging, or protection required to insure safe delivery in an undamaged condition.

VIII. ORDERING DATA

Purchasers should exercise any desired option offered herein and should specify the following in the Requisition and Invitation For Bids:

1. Title, number, and date of this specification.
2. Type, class, manual or automatic threading (See I. CLASSIFICATION).
3. Material and finish. (See III. REQUIREMENTS. A. DESIGN AND CONSTRUCTION).
4. Liquid cleaning attachment (See D. CONTROLS 9. Liquid Cleaning Attachment).
5. Sample model for testing (See VI. ACCEPTANCE INSPECTION AND TESTING).