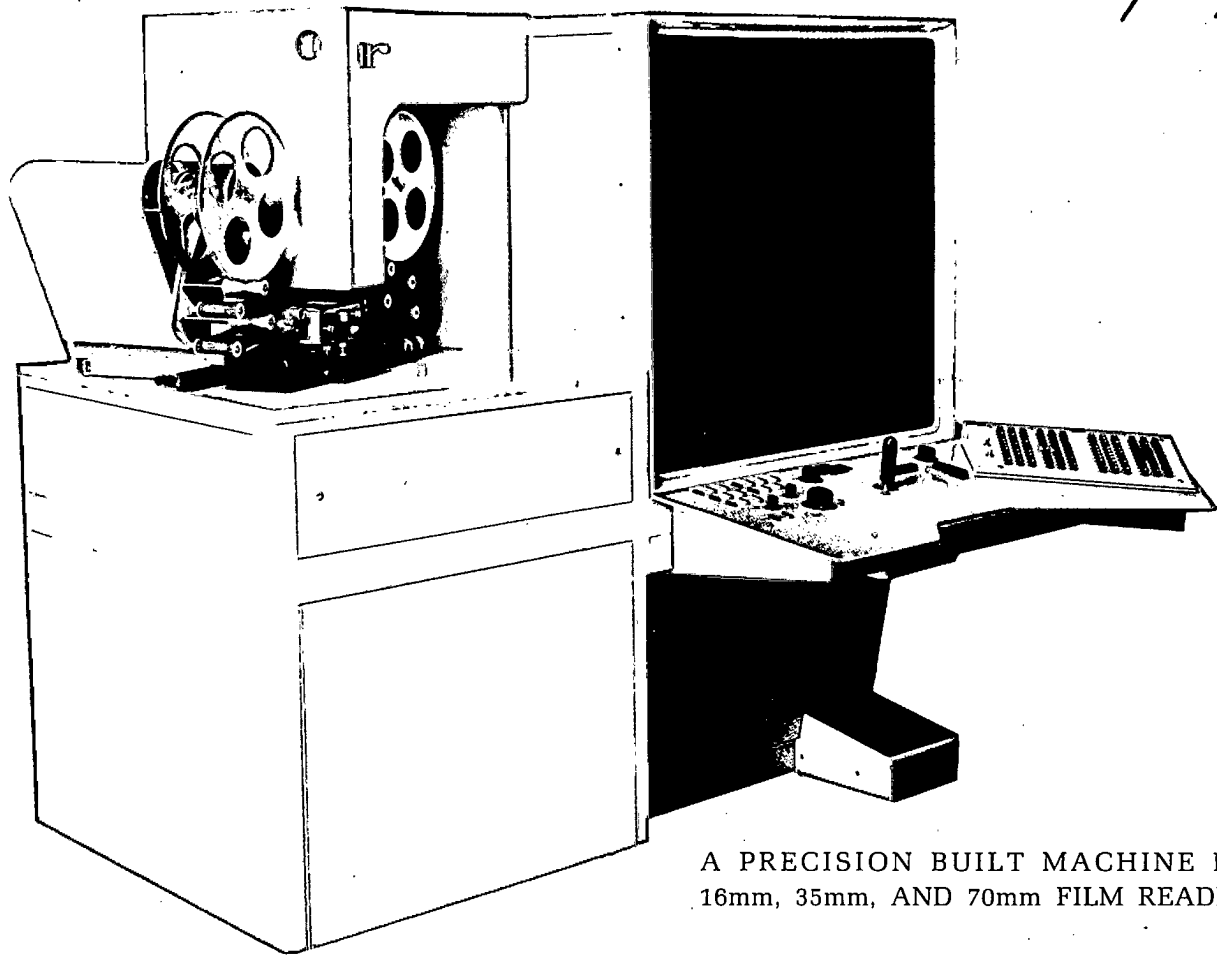
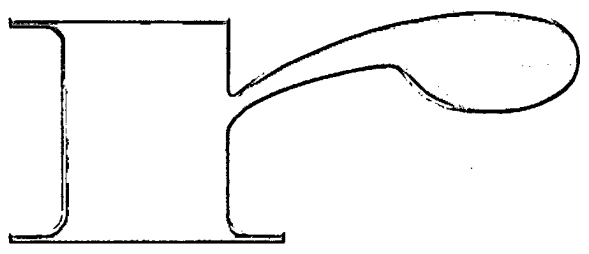


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A PRECISION BUILT MACHINE FOR
16mm, 35mm, AND 70mm FILM READING.

Model R-660 Precision Film Reader

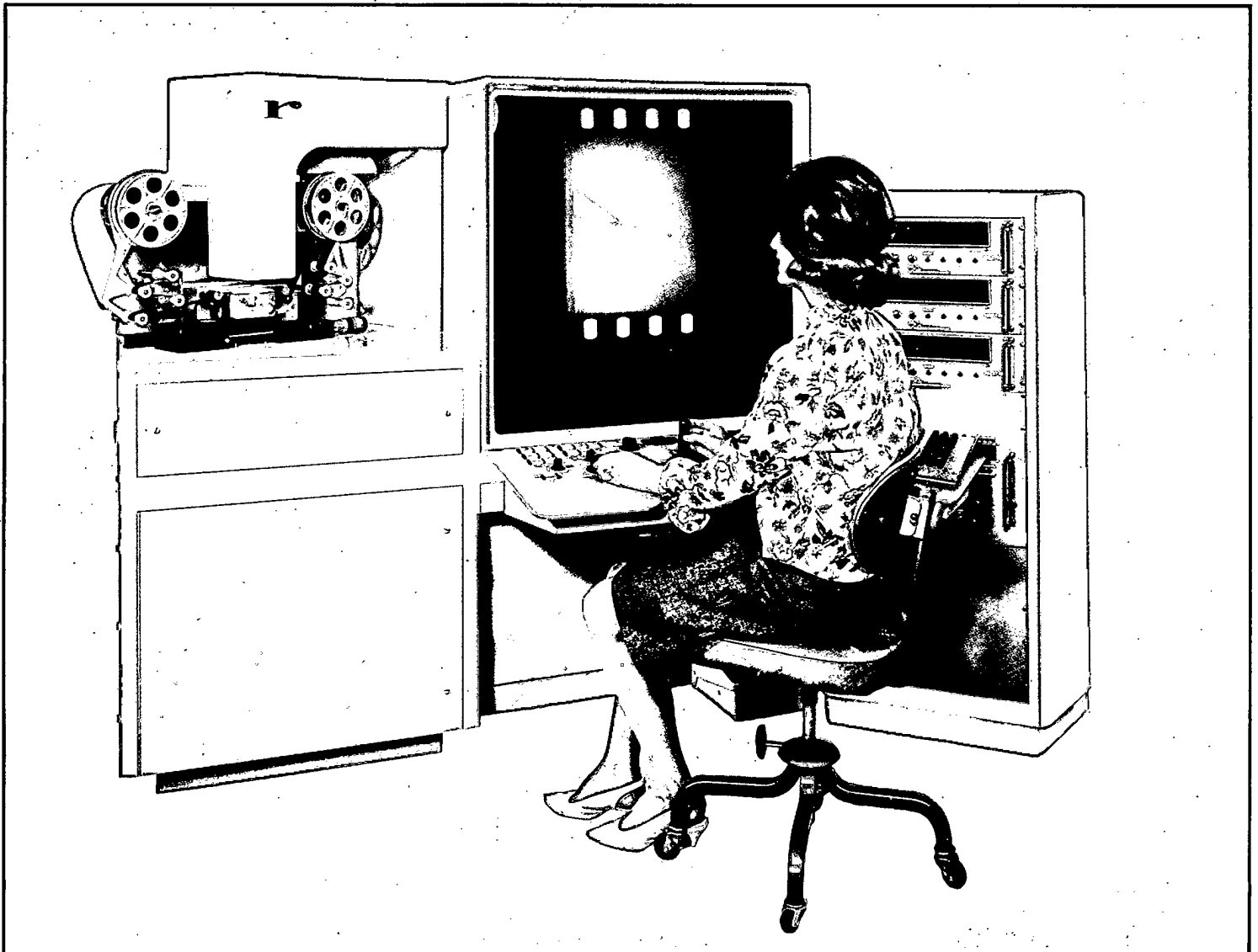


Richardson Camera Company 2201 WEST DESERT COVE ROAD ■ PHOENIX, ARIZONA 85020 ■ P. O. BOX 9187

Model R-660 Precision Film Reader

Richardson Model R-660 Precision Film Reader is the latest approach for semi-automatic recordings of the X, Y, and Θ coordinates of projected film images with repeatable accuracy of less than 10 microns. It also provides for entry of auxiliary data derived from the image into punched cards, tape, or typewriter records. The measurement and analysis of images recorded on various 16mm, 35mm, or 70mm sprocketed film formats can be made with high speed efficiency and comparator accuracy. The Model R-660 incorporates a unique new

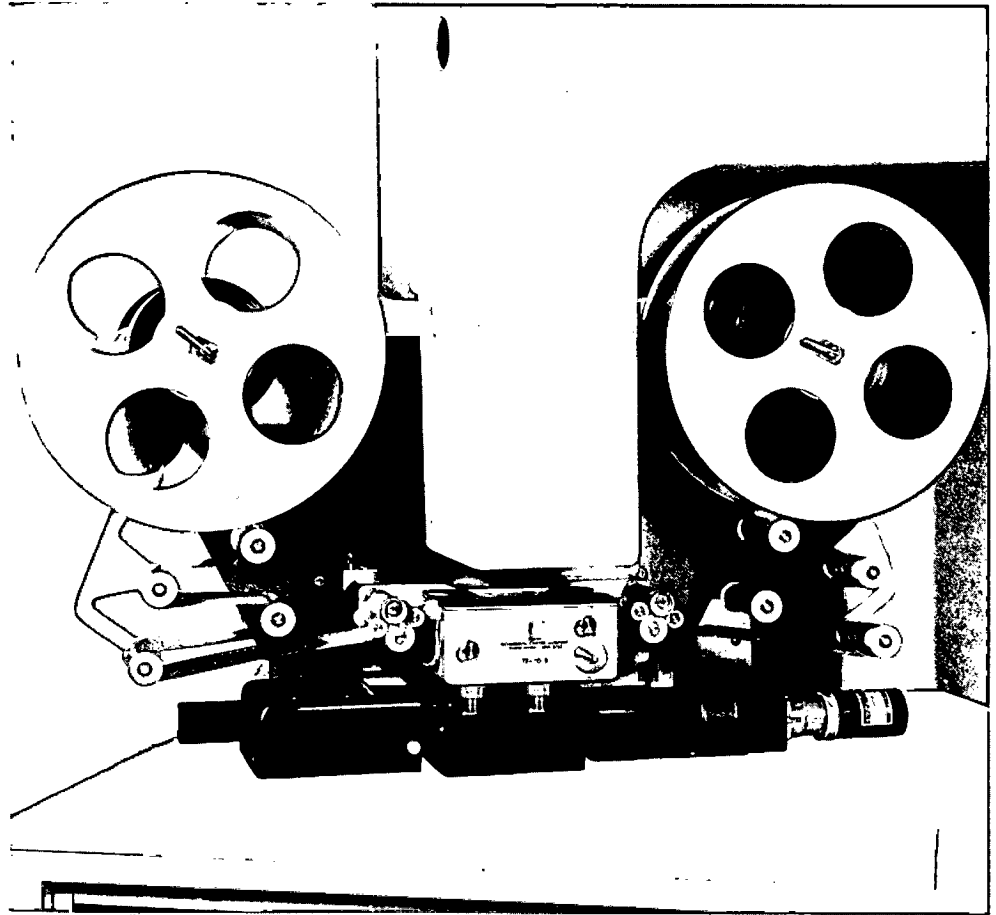
method of measurement which eliminates errors resulting from optical distortion and vibration. This system results in a much higher degree of accuracy than that accomplished with a conventional "crosswire measuring system." This machine is especially designed for those laboratories that cannot tolerate the inaccuracies of film reading equipment which measures a magnified image at a viewing screen. The "X" and "Y" measurements on Model R-660 are made at the film plane while the Θ measurement is made by means of a precision reticle projected through the same objective lens as the film image.



A typical installation of the Model R-660 Precision Film Reader with IBM card punch readout system. An auxiliary 12 column parallel entry keyboard provides additional data entry.

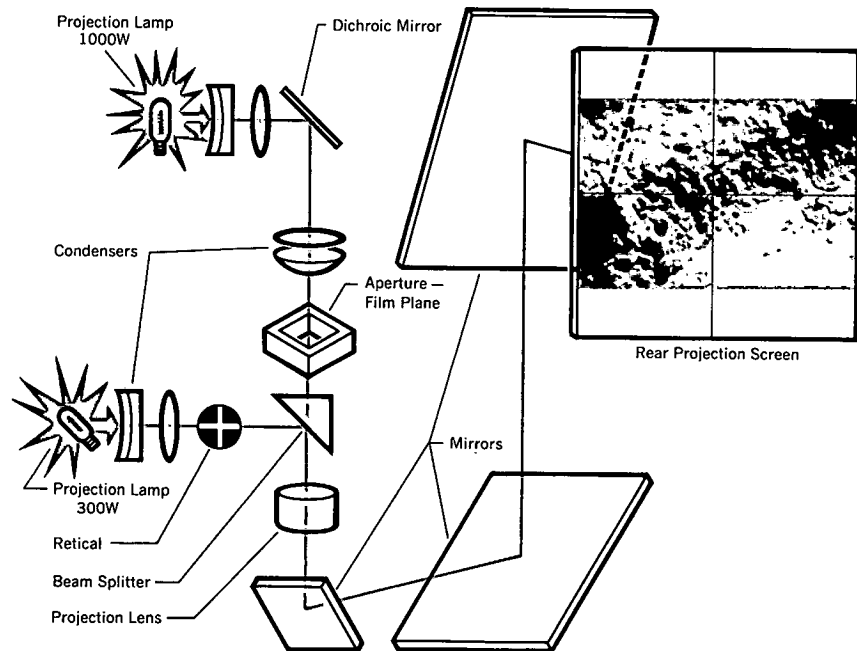
Film Transport

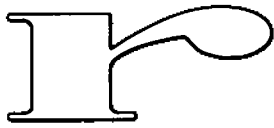
The entire transport and buffered film reel system are mounted on an "X"- "Y" stage located to the left of the viewing screen and in full view of the operator. A variety of precision film transports can be supplied with the Model R-660 Film Reader, each of which is easily interchangeable. (Please refer to Richardson Precision Film Transport Catalog.) The choice of bi-directional film transport modes offered include: single frame, multiple frame to frame, variable cine-motion (all pin-registered), and fast flowmotion. Digitization of this transport stage provides "X", "Y" coordinate readout accuracies of better than 10 microns.



Optical System

This instrument features low distortion optical projection system with pushbutton selection of 5X, 10X, and 20X magnifications. Richardson Camera Co. installs only select optical quality front surface mirrors that are ground and polished in our own plant. Model R-660 is supplied with a 1000 watt hi-intensity color-corrected condenser system which is automatically adjusted for optimum illumination when different magnifications are selected by the operator. A rotatable reticle and separate light source are used to provide reference for "X" and "Y" coordinates as well as measurement for Θ .





SPECIFICATIONS FOR Model R-660 Precision Film Reader

FILM SIZES	16mm, 35mm & 70mm.
FILM CAPACITY	Up to 1000 ft. on standard reels or cores. The spindle is 5/16" diameter. Spacers are provided for the 16mm and 35mm widths.
FILM DRIVE SYSTEMS	A. Standard Drive unit is the Model TF-18. B. Optional system is the Model #27. (Please refer to Richardson Precision Film Transport Catalog.)
θ THETA MEASUREMENT	.1 degree least count. 360° plus bi-directional — variable speed control.
"X" & "Y" MEASUREMENT	± 1 count (least count less than 10 microns) at film plane — variable speed joystick control.
FRAME COUNTER FILM SPEED (Using TF-400) Transports	5-digit Electro-Mechanical, bi-directional, and presettable. 16mm and 35mm single frame up to 24 frames per second in variable cine-motion. 35mm double frame and 70mm up to 12 frames per second in variable cine-motion. Flowmotion from 1/10 inch to 3 feet per second. Single frame advance approximately 1/4 second.
CONTROLS	Illuminated push-button switches are used where practical. All switches have engraved identification. Rotary control for film speed providing variable cine-motion speeds from 2 to 24 frames per second. Illumination controls for main projection lamp, and reticle projection.
READOUT	Electronic System for punched card, tape or typewriter outputs. (To customers specifications.)
SCREEN	Polacoat rear projection screen is standard in neutral or blue-tinted. Minimum area is 28" x 28".
CABINET.	Heavy gauge reinforced tubular steel frame with hinged desk panel to provide easy access through standard 36" door. All panels are hinged or removable for maintenance and inspection.
SIZE	65" wide x 68" high x 36" deep. (With desk panel lowered.)
COLOR	Standard light honey beige, baked enamel finish.
POWER	115 volt AC, 15 AMP, 60 cycle.
WEIGHT	1500 lbs. uncrated.

Richardson Camera Company

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Represented by,