

# FOCAL POINTS



From **WOLLENSAK** *The Latest in Optical, Electro-Mechanical Developments*

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## NEW NAME, NEW DIVISION

With this issue we are pleased to announce to all our friends, who over the years have continued to think of us as "Wollensak" despite numerous name changes, that we have had our name restored. The complete name is:

WOLLENSAK OPTICAL PRODUCTS  
**Microfilm Products Division** **3M** COMPANY

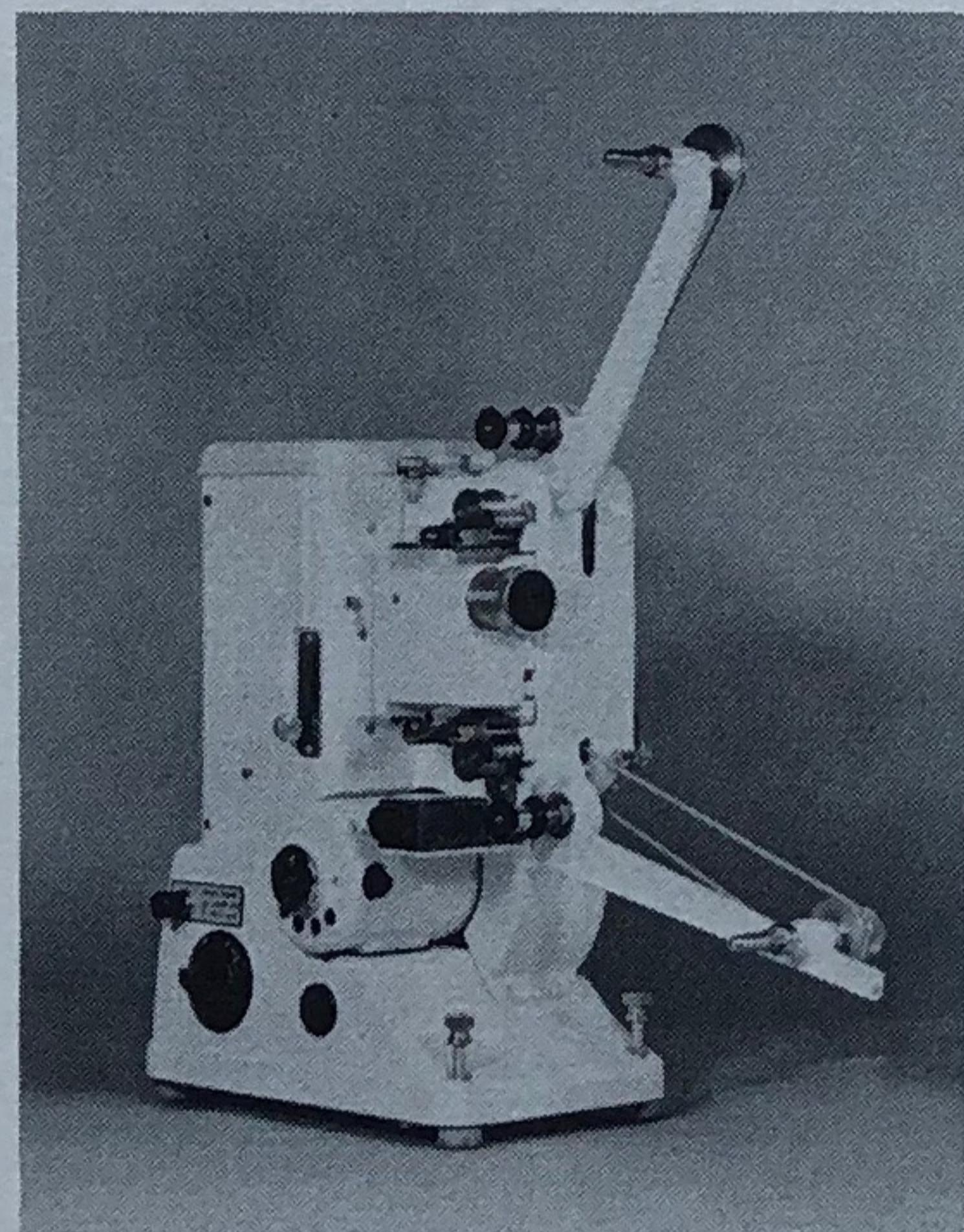
The address remains the same:

850 Hudson Avenue  
Rochester, N. Y. 14621

Under the new dynamic leadership of the Microfilm Division, the manufacturing and engineering organization has already been strengthened. We are fully confident that this new direction will further enhance our reputation for quality optics, and mean more and better products and services.

—3M—

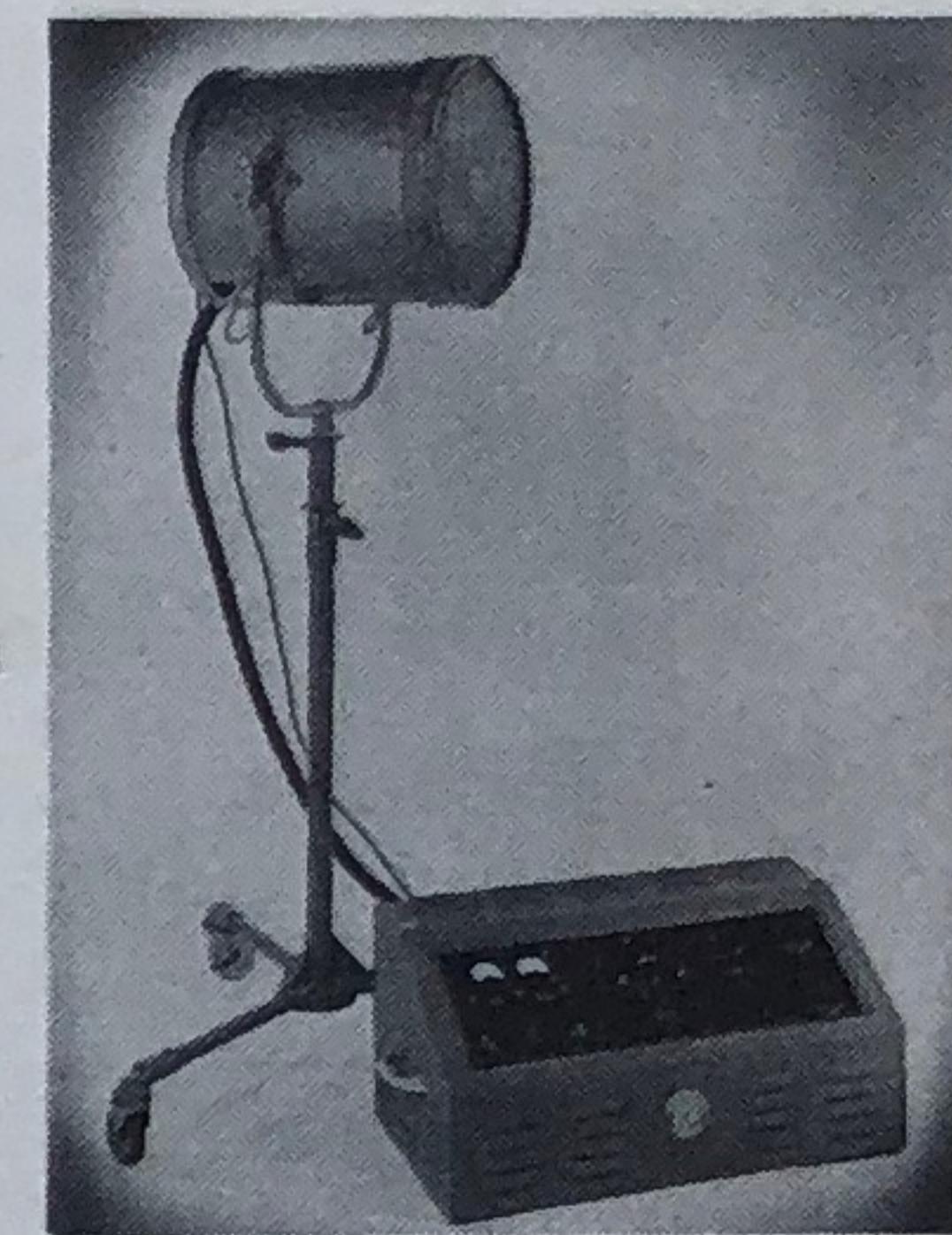
## IMPROVED MOTION ANALYSIS PROJECTOR



A new quartz-iodine light source in the WF329C Wollensak 16mm full-frame Specto Motion Analysis Projector increases screen brightness by more than 50%. Even with this greater light output, flicker-free projection is achieved at projection rates of 2 frames and 16 frames per second respectively because of a unique shutter design.

As with earlier models, single frame advance may be controlled at either the projector or at the screen position with the remote fitting and cord supplied. There is negligible loss in screen brightness when in the single frame projection mode. Images remain in sharp focus through changes in projection rates. A reset type frame counter enables an individual frame to be identified and correlated with respect to other time reference data recorded. Film sprockets on the new model engage the film along the outboard edge only, permitting the projection of both camera originals or single-perforated prints. A gleaming white enamel finish identifies the new model.

## POWERFUL LIGHTING SYSTEM



While the WF-360 High Intensity Xenon Lamp System was designed specifically to meet the high light level illumination requirements of high-speed motion picture photography, this compact light source has more general photographic application. In addition, it has many uses in the test laboratory and for general scientific purposes. The extremely small illumination source lends itself to Schlieren and shadowgraph photography, as well as for projection use. Being a "cold" light, it is ideal for many medical lighting applications where tissue damage may result from the use of incandescent lamps and for industrial research studies on such materials as films that are deformed by heat.

The light source is a Xenon high pressure discharge quartz lamp with arc dimensions approximately 4.0mm wide by 8.5mm long. It emits radiation from within the ultra-violet, through the visible, to the infra-red region of the spectrum. Having an approximate color temperature of 5600° K, the color of the radiation is very similar to sunlight at noon. The lamp housing contains a 13" parabolic mirror reflector which can be adjusted with respect to the arc position, thus changing areas of coverage.

Light output of the lamp is controlled by the amount of power supplied — either 2.5, 5.0 or 7.5 KW. The basic power supply to the control unit are 36 to 42V batteries of 110 ampere-hour capacity.

At the 7.5 KW power setting, approximately 500,000 foot candles are obtained at a 36" lamp-to-subject distance. This value is with an accessory clear cover glass which is recommended for ultra-violet protection. The area of illumination at this distance is a 3" circle. Changes in the reflector-lamp position and use of diffusion filters will widen the coverage to an 18" circle.

A period-limiting circuit controls the pulse duration, depending on the power setting selected. The maximum pulse length is 10 seconds at 2.5 KW and the minimum pulse 2 seconds at 7.5 KW.

The life of the lamp is virtually limitless; a lamp pulsed 10,000 times showed negligible loss in efficiency. The lamp may be operated remotely or through a connection on the control panel. Provision is made for synchronizing the period of operation with auxiliary equipment.

The lamp system is supplied complete with a control unit, lamp stand, and cables. Batteries are not supplied.

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## QUARTZ LENS HELPS DESIGN ROCKET ENGINES

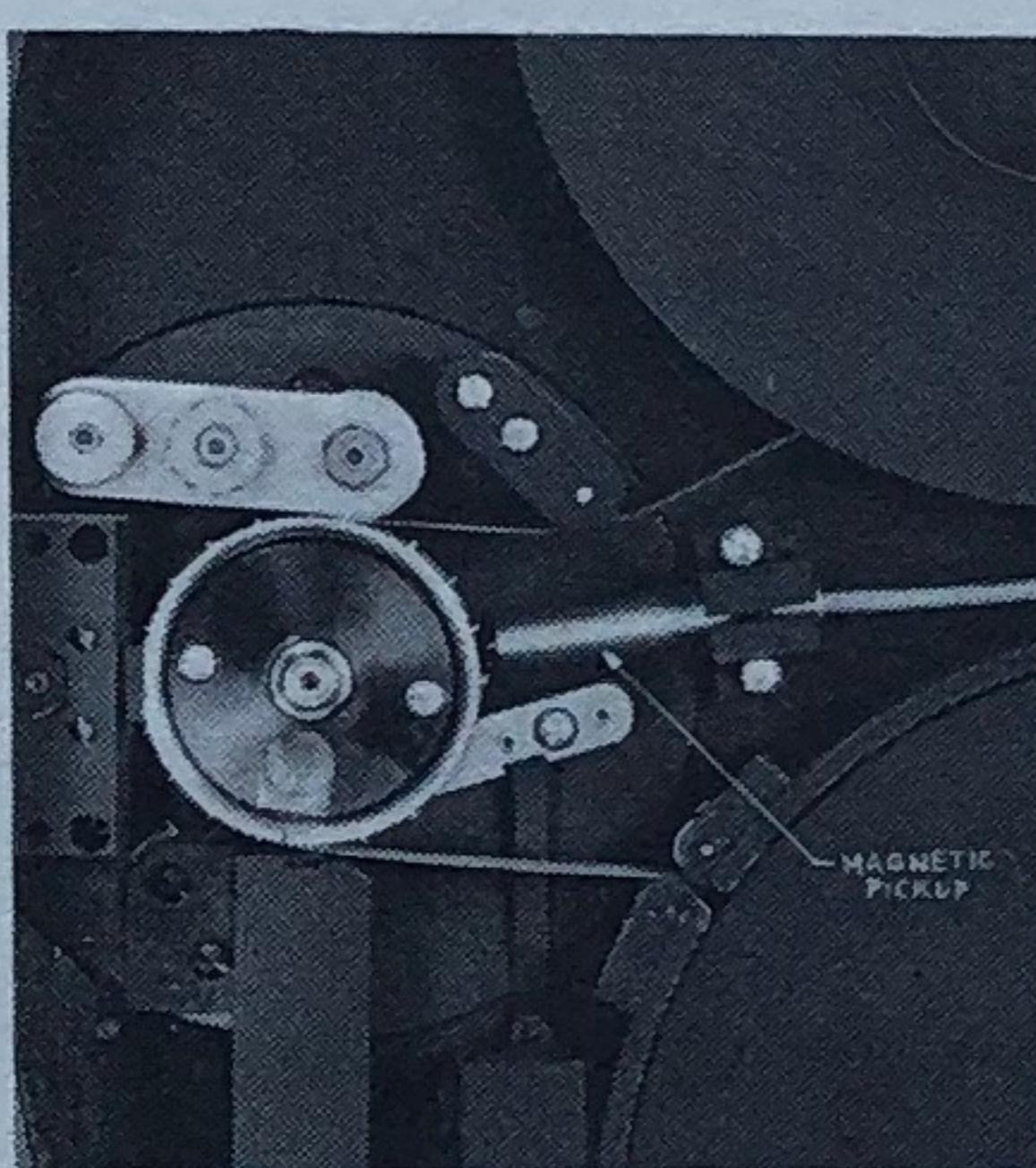
Within the combustion zone of a high pressure rocket engine, liquid propellants break into ligaments and droplets which then evaporate and burn. Information on the nature of this liquid atomization and evaporation behaviour, derived from high-speed streak photography, is important in the design of more efficient and stable combustion chambers.

Photography is extremely difficult because the reaction zone is a relatively dense environment and sufficient light is not transmitted to produce satisfactory image quality. By the use of a special quartz window and a quartz camera lens with high ultra-violet transmission, higher camera speeds and higher resolution films can be used. Ultra-violet radiation in the 2000 to 4000  $\text{A}^\circ$  wave length region is utilized, as obtained from a high intensity hydrogen-argon light source.

The special quartz lens, a 2-inch UV Amaton originally designed by Wollensak for use with the Fastax High-Speed 16mm Oscillo-Streak Camera, can also be used with other cameras as well. This lens can be supplied in the Fastax FX-1 mount, or in any other type of mounting desired. It has a coverage of 23° (1/2 angle), and is suitable for use with format sizes to 24 x 36mm.

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## WF-180 FASTAX MICRO-FLASH SYNCHRONIZER



For ultra-high speed motion picture photography, multiple micro-flash lighting equipment with pulse rates of several thousand cycles per second and flash duration in the micro-second range is available. To synchronize these repetitive flashes with the Fastax moving film camera which drives film past the aperture at rates up to 225 feet per second, an accessory device, the WF-180 E. G. & G. Magnetic Pickup, is used.

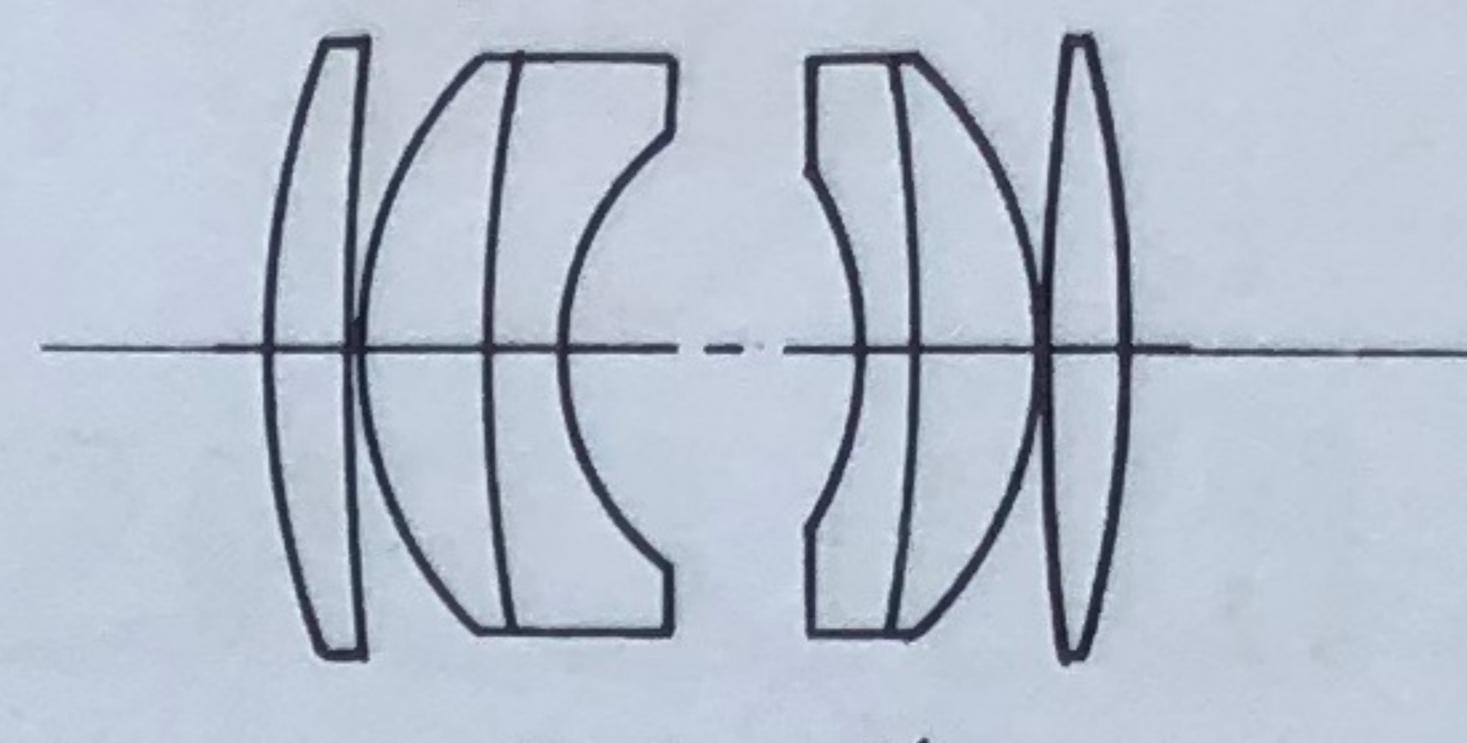
This unit is a small transducer which, placed in close proximity to the film sprocket, creates an external magnetic field. An electrical pulse is generated each time this field is interrupted by a sprocket tooth moving past the pole piece. This pulse changes in frequency (and amplitude) with the speed of the sprocket, and is used to synchronize the lamp discharge with the film movement.

The amplitude of the signal is dependent upon the spacing between the pickup pole piece and the sprocket tooth, but with the normal .005" setting a signal strength of 0.5 to 1.0 volt plus is obtained at 1000 pictures per second.

Amplifying equipment and other related electronic components for triggering the lamp is supplied by the lighting equipment manufacturer.

Factory installation of the WF-180 Magnetic Pickup can be furnished on most models of Fastax cameras for a nominal charge. A kit containing all necessary parts, mounting template, and instructions is available for 100-foot 16mm cameras. 400-foot cameras generally require Wollensak installation.

## HIGH RESOLUTION CRT RECORDING LENSES



32 mm f/2

A 32mm f/2.0 lens with on-axis resolution exceeding 300 line pairs per millimeter, and having resolution above 200 lines at a 17° (1/2 angle), has been developed for high information content display applications. Excellent spectral transmission characteristics throughout a wide range from 350 to 700mu make it well suited for use with P-11 and P-16 Phosphor displays.

While designed as a projection lens for use at high magnification ratios, this lens is equally suitable for extreme reduction camera use in micro miniaturization applications. Resolution values are as follows:

Aperture	On Axis 0°	5	10	15	17
f/2.0	220	220	200	212	207
f/3.5	322	284	247	238	207
f/4.5	322	320	277	238	233
f/5.6	322	284	247	238	233

Note: These values obtained on Kodak High Resolution Plates.

The lens is furnished in a plain barrel slotted for use with Waterhouse stops. Special mountings can be supplied upon request.

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## HIGH SPEED AT HIGHER ALTITUDES

The electric motors used in the standard Fastax High Speed Cameras have carbon brushes which operate successfully within an altitude range of sea level to 5000 ft. At higher altitudes, which are frequently simulated in environmental testing programs within the aerospace industry, special motor brushes are required.

Engineers at General Electric, our motor supplier, have developed a high altitude brush with high thermal conductivity for rapid heat dissipation. This brush, which can be used in existing Fastax motors, extends our camera operating range to 30,000 feet. Operation at greater heights is possible provided a camera enclosure is pressurized to the 30,000 foot equivalent.

When ordering, be certain to include the identifying number of the camera motor and the altitude at which camera is to be operated.

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## PHOTO INSTRUMENTATION GOES COLLEGIATE

California may claim another "first" in their offering of a two-year Electro-Photo-Optics Technologist program at Foothill College, Los Altos Hills. This pioneering course was developed with technical guidance from the San Francisco section of the Society of Motion Picture & Television Engineers. It is evidence of the formal training required to meet today's growing demand for skilled technicians and administrators in the Photo-Instrumentation field.

The course provides training in high-speed and photo data recording, geometric optics, laser application, metric photography, spectrometry, photography for microcircuits, and space optics. Additional details on the program may be obtained by writing directly to Foothill College.

Photographic Equipment And Optical Division

850 Hudson Avenue, Rochester, N.Y. 14621

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