

# Design Considerations for Rotating-Prism Cameras

PAPER H-10

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**A**BSTRACT: The performance of the first rotating-prism cameras left much to be desired. There were shortcomings in (1) the selection of a prism with an optimum angle of incidence; (2) the selection of glass for the prism (which was conducive to internal reflections); (3) the design of a sprocket (which was unable to accept easily available commercial film); (4) the selection of motors (which were underpowered or too heavy to give maximum acceleration); (5) the design of shutters and apertures (which resulted in image streaking); and (6) the general mechanical design (which limited the cameras to specific applications).

Very little has been written on the design parameters of rotating-prism cameras. Characteristics that were built into the first cameras, when time was lacking and better components were unavailable, have sometimes

been copied by designers who did not know why the particular parameters were employed in the first place. The general design of some rotating-prism cameras has not been changed in the past 20 to 25 years.

This paper discussed early and recent design features with particular reference to prisms, optical systems other than prisms, shutters, sprockets, mechanical requirements and electrical equipment.

Significant advances have been made in the development of better motors, bearings, optical components, film and other essential parts since the advent of the first rotating-prism camera in 1932. As a result of these vast improvements, pictures of much higher quality are now obtainable with recently designed rotating-prism cameras.

If due attention is given to the points discussed, rotating-prism cameras can be designed and built which will give clear, sharp images. The pictures on projection will be equal to, or will surpass, those of pin registration cameras.

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Presented on October 17, 1960, at the Fifth International Congress on High-Speed Photography in Washington, D.C., by John H. Waddell, P.O. Box 52, Lansing 1, Michigan.