

RICHTER CINE EQUIPMENT
EMP®

**WORLD'S SMALLEST AND LIGHTEST
PROFESSIONAL CINE CAMERA**

90 mm high, 60 mm wide, 175 mm long
Weight: 1.2 kilograms including battery

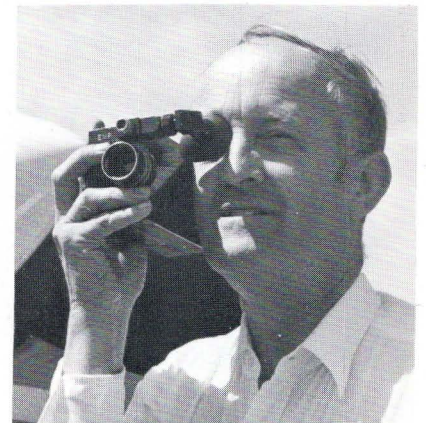


**ACTUAL
SIZE**

16 MM CRYSTAL SYNC, WITH SELF-CONTAINED POWER

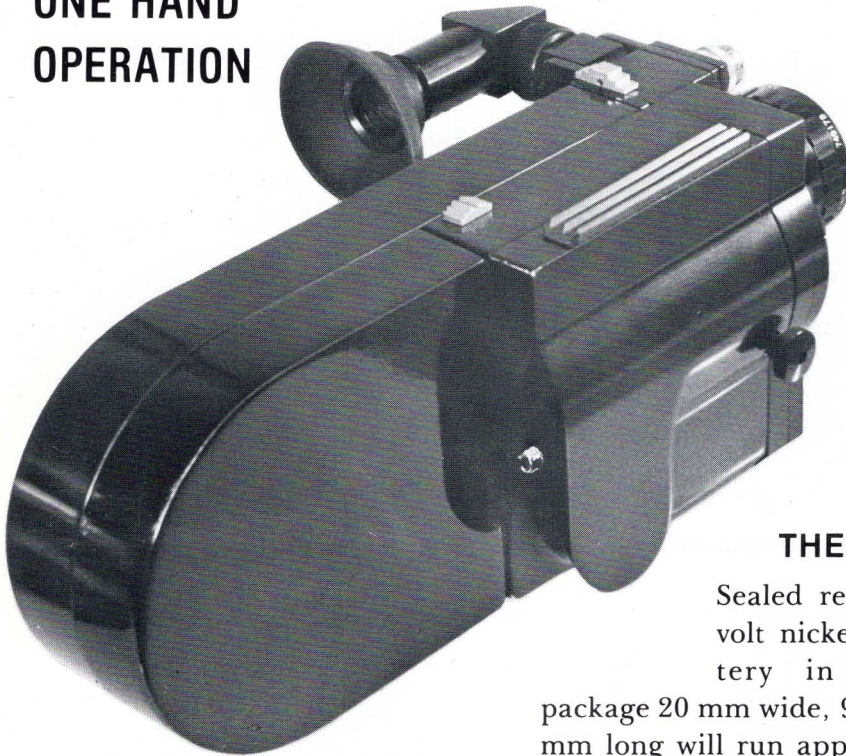
FILM CAPACITY: 30 M STANDARD TRIACETATE BASE, 60 M POLYESTER THINBASE. OTHER MAGAZINES TO 120 M.

The designation EMP means "Envelope: Minimum Possible." The EMP has been designed to be the smallest and lightest professional motion picture camera in the world. With its associated equipment, it is intended to open a whole new approach to movie making. Many components, such as the pulldown and the crystal sync circuitry, are of proven conventional construction, but some features use technology unavailable even a few months ago. The EMP camera is planned as part of a complete sound and camera system which will render film making a far less conspicuous activity.



MADE BY
RICHTER CINE EQUIPMENT ESSEX, NEW YORK, 12936, U.S.A.

ONE HAND OPERATION



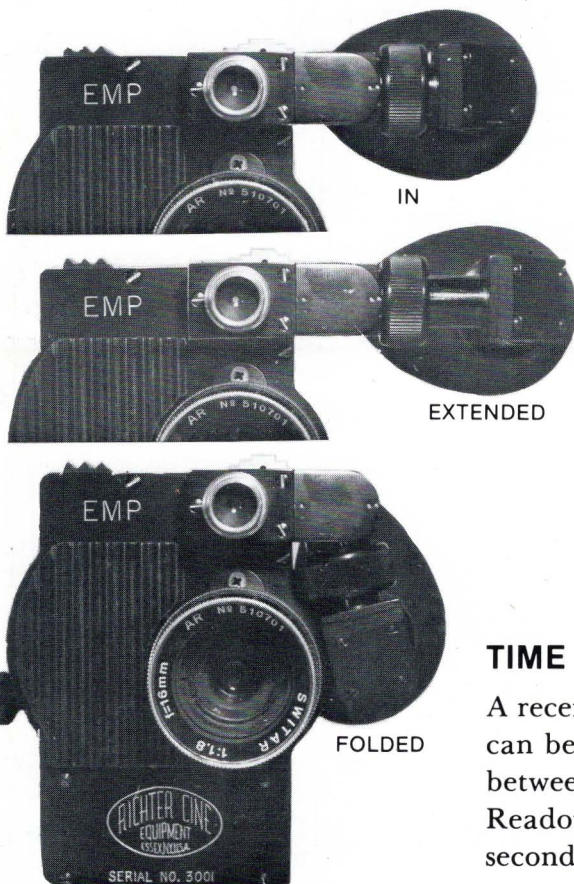
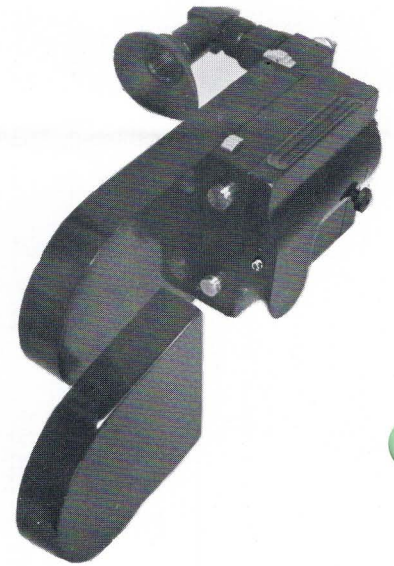
THE CAMERA

Designed by a working cameraman, in consultation with many cameramen and camera service technicians around the world, the EMP is comparatively simple and reasonably rugged. The ergonomic grip allows secure one-hand operation. To reduce in-hand weight to 920 grams, the battery can be carried separately and connected by wire to the camera.

THE BATTERY

Sealed rechargeable 14.4 volt nickel-cadmium battery in quick-change package 20 mm wide, 90 mm high, 100 mm long will run approximately 1000

meters of film. An optional reloadable battery holder for ten pen-light cells will run the same amount of film when recharging from mains is not feasible.



THE VIEWFINDER

Critically alignable viewing system uses Bell and Howell type positive viewfinder objectives. Forward mounted eyepiece enables user to hold camera firmly at side of head. The optical system permits lateral extension up to 20 mm to accommodate varying eye placement, or longer for left eye use. The finder folds against the side of the camera for transport. The entire finder assembly is easily removable for applications requiring no finder or for use with zoom lenses with AV30 short finder, for through-the-lens focus and viewing.

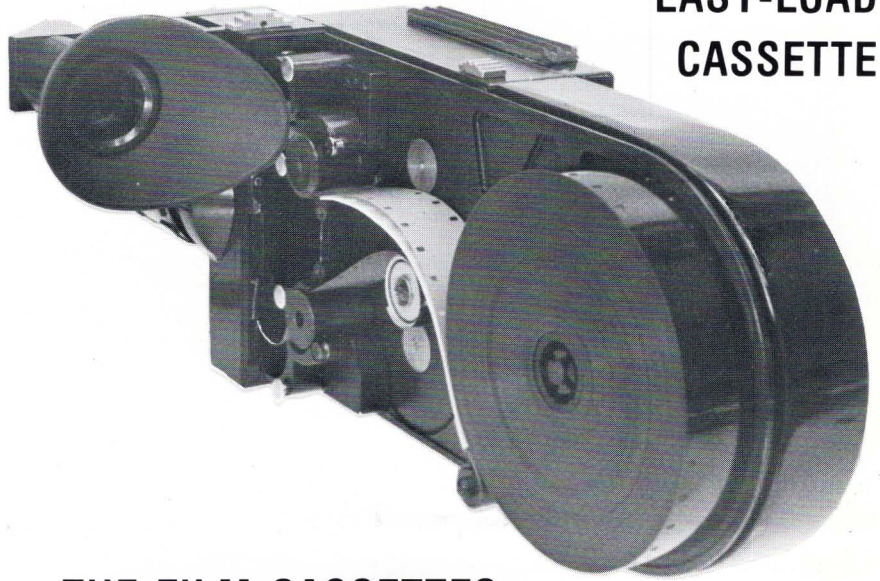
TIME BASE DISPLAY OPTION

A recently developed Hughes Microcircuit liquid crystal chronograph can be incorporated in the camera, with optics to image the display between the perforations once each second beginning at start. Readout, which needs no decoding, shows day, date, hour, minute, second, tenth.

SOPHISTICATED SIMPLICITY

The EMP is an exceptionally simple mechanism, with only fourteen moving parts, seven in the cassette and seven in the camera head. Cassette mainplate and gears, aperture and pressure plate are Teflon® coated, to eliminate film scratch and need for lubrication. Direct drive gears are made on our own Mikron watch-makers hobber. Retractable loop formers interlock with cassette cover for foolproof loading, while a locating claw retains film in exact alignment. Side guides: synthetic rubies.

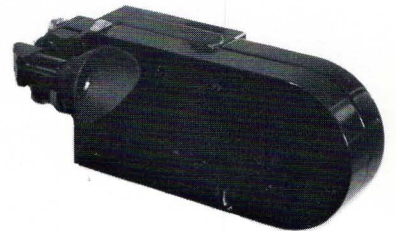
EASY-LOAD CASSETTE



THE FILM CASSETTES

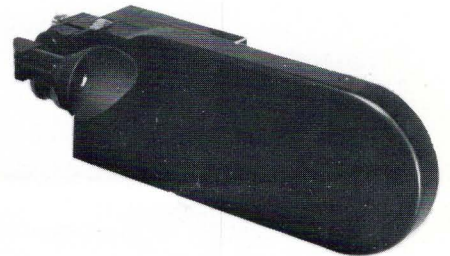
30 METER CORE LOAD

With this magazine the camera has its smallest envelope. This chamber will also hold 60 meters of 0.06 mm polyester base film. It must be loaded in the dark. Retractable threading guides simplify loading.



30 M DAYLIGHT SPOOL

This makes the camera 52 mm longer and 8 mm taller, but offers the convenience of loading the cassette in subdued daylight.



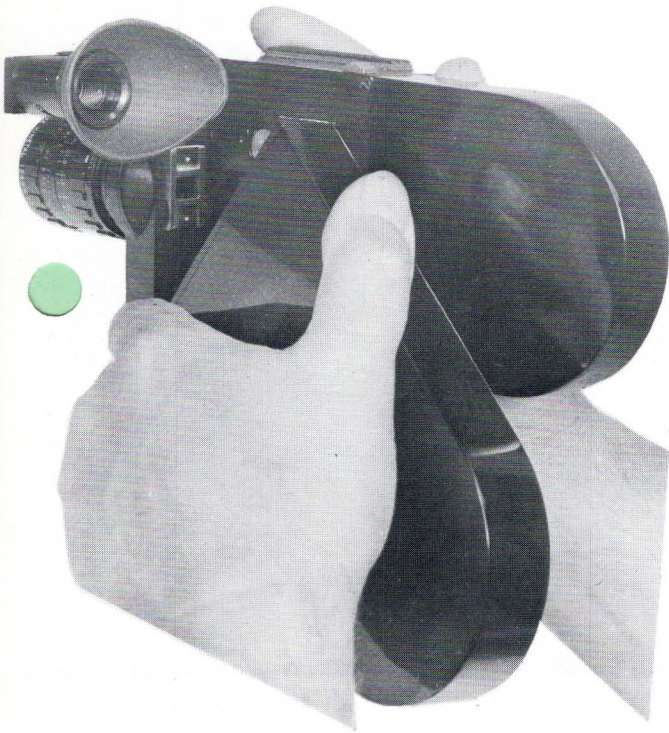
120 M COAXIAL MAGAZINE

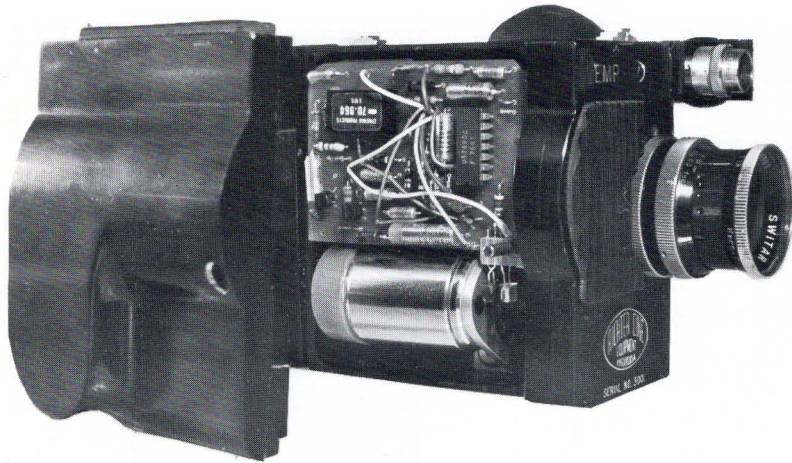
Has the torque motor inside the takeup hub, reducing the overall dimensions to 180 mm diameter, 36 mm width, 210 mm length.



FIVE SECOND RELOAD

Many quick-reloading cameras have design compromises that trade focal plane repeatability or frame line variation for quick change capability. EMP cassettes have a solid bottom flat steel hook and a parallel-wedge draw-in for accurate repeatability. One slide latch releases and engages both the magazine and drive system.





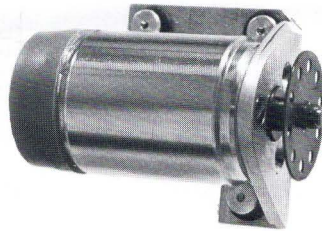
THE ELECTRONIC SPEED CONTROL

Speed 24 fps or 25 fps, crystal sync with accuracy within one-half frame in 120 meters over temperature range of -18°C to $+60^{\circ}\text{C}$. Synchronous drive system uses proven Cinema Products hybrid I.C. Circuit board has quick exchange feature and easy access test points.

THE MOTOR

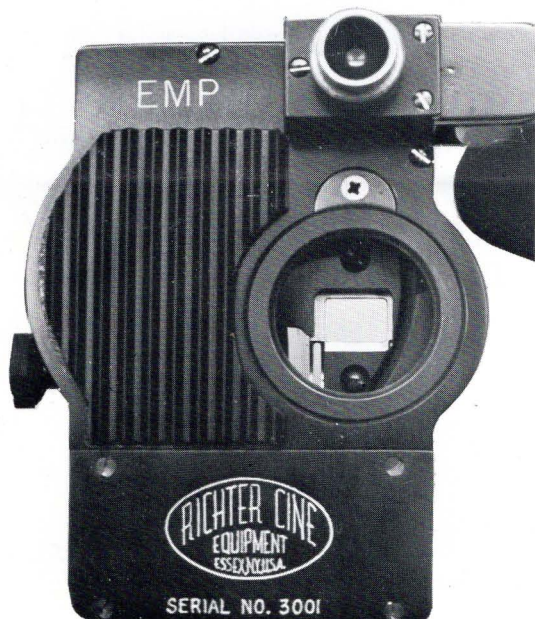
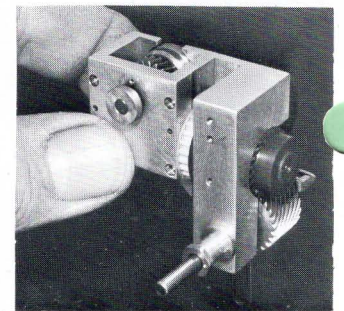
Samarium-cobalt field magnets, a recent development made possible by Japanese refining techniques, give this precision

Swiss motor the torque of a conventional motor of twice the diameter. Although much more costly than an ordinary instrument quality motor, this extraordinary component helped reduce the size of the EMP camera.



THE MOVEMENT

Simple, reliable, quiet claw on helical gear gives same image stability as conventional cameras using same pulldown system. Movement and aperture plate are in camera head, so the frameline remains stable, not subject to possible variations in film chamber. Monobloc construction enables precision component alignment independent of camera housing. Gear mesh adjustable for lowest torque and noise.



OTHER EMP FEATURES

Lens mount accepts C mounts or lenses adapted to C mount. Lens seat is user-adjustable so variations up to 0.2 mm of lens back focus can be compensated without having to dismantle the lens. This unusual feature permits the highest standard of image sharpness to be achieved. The aperture plate is adjustable vertically for frame line zeroing. These two parts can be exchanged easily for an offcenter ring and a cutout aperture plate, permitting Super 16 filming with no other changes except the finder mask.

The EMP was designed by Kenneth Richter, internationally known cinematographer, film producer and designer of the R2 Reflex Autocollimator, with the collaboration of engineers Raymond Miller and Charles Dolson. The EMP is made in Richter Cine Equipment's well-equipped small factory in the village of Essex, in the northeast corner of New York State.