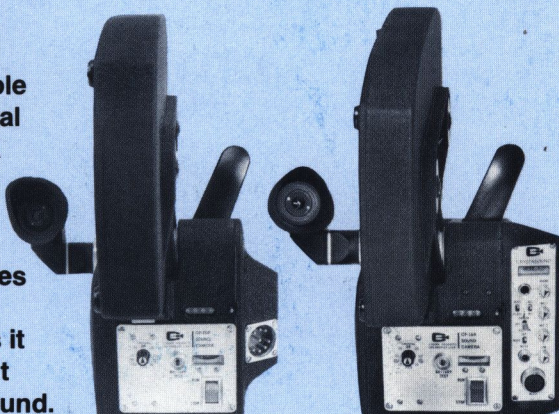# CP-16R & CP-16R/A

16mm REFLEX CAMERA SYSTEMS

Fully up to professional soundstage requirements, and featuring a high-quality crystal-controlled single/double system sound capability that is integral to their design, CP-16R and CP-16R/A cameras are the quietest, most versatile 16mm production cameras ever built.

The CP-16R/A camera incorporates the Crystasound recording system (with built-in amplifier), which makes it ideal for those cameramen who "go it alone" capturing both picture and sound.

Lightweight, rugged and reliable,

CP-16R

CP-16R/A

with a complete line of sophisticated options and accessories (including Studio Rig and Steadicam), CP-16R and CP-16R/A cameras are ideal for filming 16mm feature productions and theatrical documentaries for 35mm blow-up, industrial/scientific films, television commercials and news/documentaries, as well as all other applications where modern production techniques require the ease and efficiency of shooting single system sound with the quality and flexibility of double system sound recording.
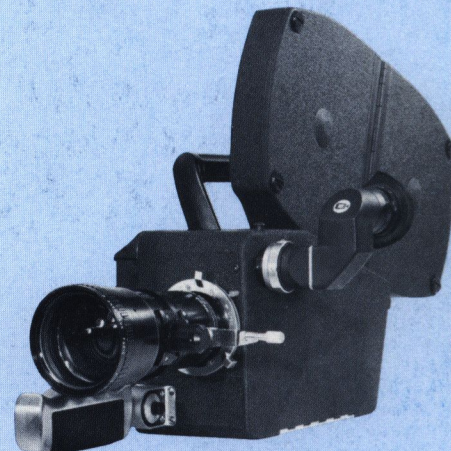
SYSTEM CP-16

CP-16R with Studio Rig and J-4 Zoom Control

28 dBA MAX! (with Studio Rig)

Precision engineered and manufactured under the strictest quality controls, all CP-16R and CP-16R/A cameras leaving the factory are rated at 30 dBA *max*. And, if equipped with Studio Rig, at 28 dBA *max!*

## cinema products CORPORATION

Technology In The Service Of Creativity

Rotating Mirror Shutter: High-efficiency, full speed, belt-driven focal-plane type shutter is set at 45° angle. The single-blade shutter stops automatically in a viewing position.

Shutter Opening: 170°

Shutter Speed: 1/51st second @ 24 fps (1/53rd second @ 25 fps)

170° Single-Blade Spinning Mirror Shutter
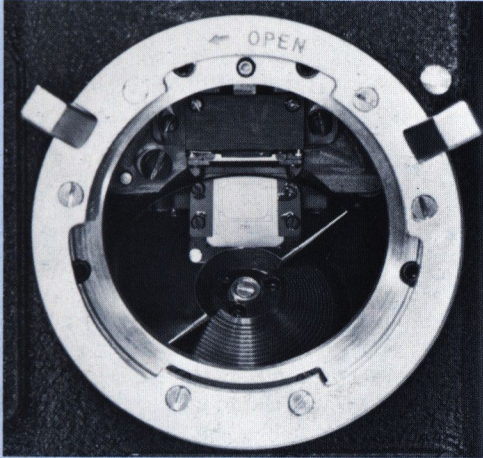
Lens Mount: The CP bayonet lens mount is a unique miniaturized BNCR-type lens mount, with professional-type positive locking ring. A special locating pin installed on the top of the lens mount prevents accidental rotation of the lens. Most professional 16mm lenses may be either converted or adapted to fit the CP lens mount.

Filter Slot: Behind-the-lens.

CP-16R/A shown
with Standard
12× Viewfinder

Standard Reflex Viewfinder: Provides 12× magnification and a super bright image through CP-16R *fiber optics* viewing screen. Features positive click-stop 90° rotation. Located approximately 1″ (25mm) back of the film plane, the standard viewfinder is dioptrically adjustable, with positive lock. It is directly interchangeable with optional CP or Angenieux orientable viewfinders.

Information Display: Visible in the reflex viewfinder, these highly dependable LEDs (light emitting diodes) light up or change in intensity as they monitor vital camera functions. The following indicators are standard in all CP-16R and CP-16R/A cameras:

- VU — audio modulation indicator (varies in intensity to indicate modulation levels in CP-16R/A cameras with built-in Crystasound amplifier)
- S — out-of-sync warning
- B — low battery warning
- F — low film warning

LED exposure indicators (at bottom of display) function when camera is supplied with optional

semi-automatic or fully automatic exposure control system. In which case, the illuminated "O" represents *correct exposure.* And the symbols to the right and to the left, progressing in ASA half-stop increments, light up to indicate over- or underexposure.
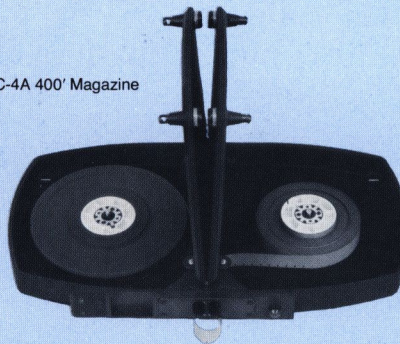
Also visible in the reflex viewfinder are the frame markings plated onto the CP-16R *fiber optics* viewing screen showing 16mm projector aperture, TV safe-action area, plus markings for 35mm blow-up (1.85:1 or 1.66:1).

Information Display

Film Size: 16mm single or double perforated daylight load or core load; "B" wind.
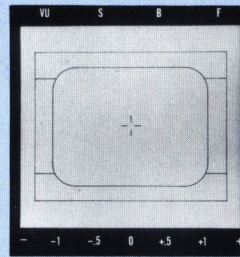
PLC-4A 400′ Magazine

Film Capacity: 400′ (120m) or 1200′ (360m) magazines.

Camera Speeds: The CP-16R camera may be ordered with crystal-controlled sync-sound speeds of 24 fps or 25 fps.

When sync speed is 24 fps, the *corresponding* variable speeds are 12, 16, 20, 28, 32 and 36 fps.

When sync speed is 25 fps, the *corresponding* variable speeds are 12.5, 16.5, 21, 29, 33.5 and 37.5 fps.

Sound Level: 30 dB *max.* measured at 3′ (1m) from film plane on weighted "A" scale. When equipped with Studio Rig: 28 dBA *max!*

Dimensions: CP-16R (camera head *only*): 9¾″ long × 6″ high × 6″ wide (24.8cm × 15.2cm × 15.2cm)
[Note: The CP-16R/A camera is ½″ (1.2cm) *wider.*]

Weight:
- CP-16R camera head with NC-4 battery pack: 11 lbs. 12 oz. (5.3kg).
- CP-16R/A camera head with NC-4 battery pack: 12 lbs. 12 oz. (5.8kg).
- CP-16R camera and battery, with 400′ (120m) PLC-4A magazine *loaded with film,* and Angenieux 10-150mm zoom lens: 17 lbs. 6 oz. (7.9kg).
- CP-16R/A camera and battery, with 400′ (120m) PLC-4A magazine *loaded with film,* Crystasound amplifier, and Angenieux 10-150mm zoom lens: 18 lbs. 6 oz. (8.3kg).

Camera Drive System: CP-16R and CP-16R/A cameras are driven by a built-in, highly efficient, compact DC motor whose sync speed is precisely regulated by a crystal-controlled circuit, providing sync speed accuracy of ±15 ppm over a temperature range of 0°F to 140°F (−18° to 60°C) and of ±8 ppm at 70°F (21°C). The crystal-controlled DC servo drive motor system meets the critical tolerances required by cordless double-system sound recording.

The CP-16R DC motor has sufficiently high torque to operate either 400′ (120m) or 1200′ (360m) magazines with no difficulty, even at *low temperatures.*
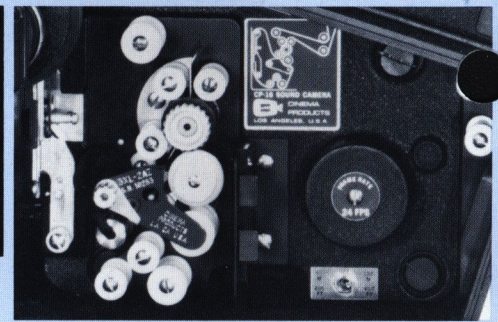
Film Transport System: Sinusoidal, intermittent, high-precision registration movement, utilizing self-engaging single-claw film pulldown of hardened and tempered tool steel, with precision lapped surfaces for quiet, long-life reliability. Film is accurately guided over a series of stainless steel balls to guarantee in-focus, scratch-free pictures (with no emulsion pickup). The stainless steel pressure plate is easily removable for cleaning.
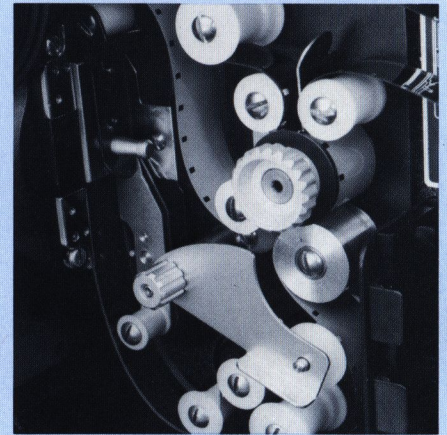
Power Supply: CP-16R and CP-16R/A cameras are powered by the standard NC-4 nicad plug-in battery pack, which can drive approximately 2000′ (600m) of film on a single charge. The NC-4 battery pack is easily and instantly clicked into (or out of) its position in the camera battery channel located on the side of the camera. Two NC-4 battery packs and two NCC-6 battery chargers are supplied with each CP-16R camera model.

NOTE: CP-16R and CP-16R/A cameras can also be operated *directly from standard AC mains.* For additional specifications, see CP-16 Power Supplies & Accessories data sheet.

Handgrip: Adjustable (and removable) front handgrip permits positioning through an arc of 90° for maximum convenience in hand-held operation. A power switch is built into the handgrip.

Power Switches: Two separate camera on-off switching systems are provided with each camera: one located in the rear of the camera and one incorporated into the handgrip — with each switching system able to operate the camera independently of the other.

Tripod Sockets: ¼″-20 and ⅜″-16 tripod mount sockets.

SOUND RECORDING SYSTEMS

CP-16R/A shown with RE50 Microphone and 12V CP/Newslite (mounted on swing-away Accessory Bracket)

CP-16R

CP-16R/A

Double System Sound: Ultra-silent CP-16R and CP-16R/A cameras are ideal for all applications requiring double system sound recording. Camera speeds are precisely controlled by critically-accurate oscillators, *automatically* in cordless sync with all professional-type tape recorders which use crystal oscillators of a similar high degree of accuracy for sync sound control.

Single System Sound: CP-16R and CP-16R/A cameras have been designed to accept Crystasound 3XL-type magnetic heads. The CP-16R (equipped with auxiliary side cover) is compatible in operation with standard external-type amplifiers. The CP-16R/A also features the Crystasound built-in amplifier system, delivering the finest single-system sound recording capability available.

Crystasound 3XL-2AZ Magnetic Head:

Crystasound 3XL-2AZ Magnetic Head

Built with a special hard alloy which provides extra long wearing time, the Crystasound 3XL-2AZ magnetic head features *individual* azimuth adjustment for *both* record and playback heads. (3XL-type magnetic heads are compatible for use with all 16mm single system sound cameras which accept Auricon-type mag heads.)

Crystasound Amplifier: Powered by the same NC-4 battery pack that powers the camera, the built-in Crystasound amplifier features:
1. Two low-impedance dynamic microphone inputs, and one 600 ohm line input, all with independent volume control.
2. Switchable, variable compression, AGC.
3. VU meter.
4. Headphone monitoring channel that automatically switches from live mike to playback when camera is turned on.
5. Regulated bias (with no adjustment for battery condition required).
6. Preview switch (disables bias, so previously recorded material can be checked without erasure).
7. Minimum "stray noise" in playback mode due to magnetic shielding and unique preamplifier design.

Crystasound Amplifier

8. Draws only 50 mA (approx.) in "stand by" mode.
9. "Auto On" capability (power is applied to amplifier *only* when camera is running).
10. Provision for a line feed to a tape recorder (through a pig-tail connector attaching to the auxiliary mixer connector on the built-in amplifier). Ideal feature for recording single and double system sound simultaneously.
11. Auxiliary mixer input.

Crystasound 6C Auxiliary Mixer: An auxiliary mixer is required in situations where additional microphones are needed beyond those which can be accommodated by the Crystasound built-in amplifier. Extremely lightweight and compact,

Crystasound 6C Auxiliary Mixer

the Crystasound auxiliary mixer is designed to accommodate four low impedance dynamic microphones, one condenser mike input, and one 600 ohm line input, with individual mixing pots and on-off switches for each of the six inputs. The auxiliary mixer also features individual and master volume controls, VU meter, as well as switchable AGC. The 6C auxiliary mixer is powered from the same NC-4 battery pack that powers the camera.
Weight: 3 lbs. 1 oz. (1.4kg)
Dimensions: 6½″ long × 2½″ high × 6″ wide (16.5cm × 6.4cm × 15.2cm)
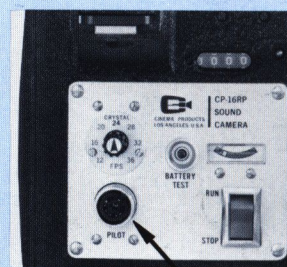

Crystasound Pre-Amplifier

Crystasound Pre-Amplifier: Provides the CP-16R/A camera system with an *additional* condenser microphone capability, without requiring the use of the Crystasound auxiliary mixer. With the Crystasound *pre*-amplifier plugged in, the Crystasound built-in amplifier will still accept two low impedance microphones and one line input as well as the additional condenser microphone, with all systems controlling the built-in amplifier remaining fully operational.
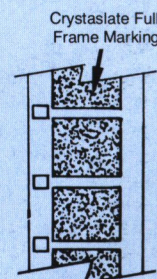

Auxiliary Side Cover (showing battery channel)

Auxiliary Side Cover: The Crystasound built-in amplifier can be easily removed from the CP-16R/A

camera body, and replaced with an auxiliary side cover fitted with an 8-pin connector to provide compatibility with existing external-type amplifiers.

Crystaslate Full Frame Marking

Crystaslate Bloop Tone/Pilotone Output Signal

Crystaslate System: Provides *auto-slate* full frame marking, bloop tone signal, and sync pulse output signal (60 or 50 Hz). For use with Nagra 3 & 4, and similar tape recorders.

Crystalink Wireless Systems: For use with CP-16R/A cameras, Crystalink wireless transmitter/receiver systems are powered by the same NC-4 battery pack which powers the entire camera system.
Crystalink Model CL-1 is supplied with Vega Model 55 or Model 77 transmitters, or Vega Model 54 microphone-transmitter. The CL-1 Vega receiver "sandwiches" between the CP-16R/A camera body and the built-in Crystasound amplifier.

CP-16R/A with Crystalink CL-2 Receiver

Crystalink Model CL-2 is supplied with Swintek Model 50 or Model 50A transmitters. The CL-2 Swintek receiver attaches to the exterior of the Crystasound amplifier. It can also be removed from the CP-16R/A camera and operated by a separate NC-4 battery pack located in an optional accessory battery holder (with dovetail) to which the CL-2 receiver can be mounted.
Crystalink wireless transmitter/receiver systems are available in a wide range of frequencies (which must be specified when ordering).

CP-16R & CP-16R/A OPTIONS & ACCESSORIES

CP Orientable Viewfinder and 7" Extender
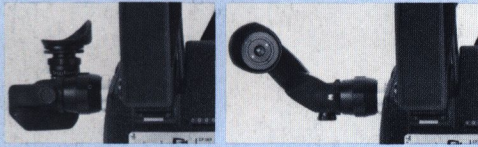
CP Orientable Viewfinder   (shown pivoted for left-eye viewing)

CP Orientable Viewfinder: Viewfinder pivots for left or right eye viewing. Provides full 360° erect image orientation. Delivers brilliant, sharp image (12× magnification) even at low light levels. In normal operation, eyepiece is located 1" (25mm) behind the film plane. Optional 7" (178mm) extender available for convenient viewing when camera is mounted on a tripod or a dolly.

Exposure Control Systems: The *semi-automatic* exposure control system features through-the-lens, elliptical, center-weighted silicon light sensor (with emphasis in the vertical direction). Seven dependable LED exposure indicators appear in the viewfinder. Manual iris control.

The *fully automatic* exposure control system also provides rapid and precise positive exposure control response. Three operational modes: fully automatic, "auto-view" and semi-automatic (with manual override). Automatic exposure control motor-to-lens bracketry available for most 16mm lenses.
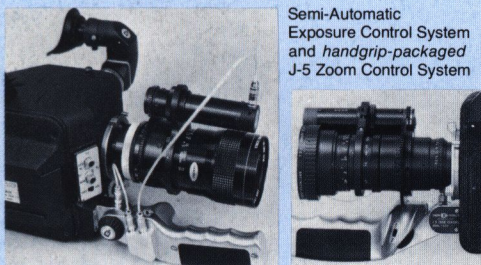

Semi-Automatic Exposure Control System and *handgrip-packaged* J-5 Zoom Control System

J-5 Zoom Control: The J-5 servo feedback system circuitry and thumb-activated *direction/proportional speed* control are compactly packaged in a special CP-16R camera handgrip. J-5 zoom motor-to-lens bracketry is available for most 16mm zoom lenses. (The J-5 zoom control is available in two versions: with variable speeds up to 2½ seconds max. or with variable speeds up to 4½ seconds max.)

Cinevid-16 Video-Assist: The Cinevid-16 video-assist camera picks up the image directly from the CP-16R fiber optics viewing screen and transmits it to any number of commercially available remote monitors. The image can also be recorded on a video tape recorder to provide "instant dailies."

CP-16R with Cinevid-16 Video-Assist System

CP-16R/A with *Ultra T* 9mm Prime Lens (T1.35)
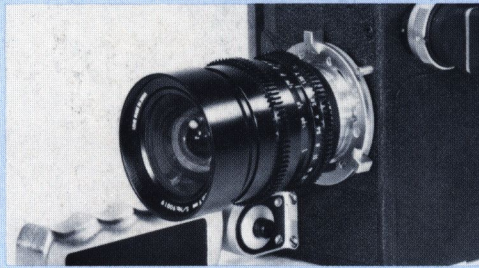
Lenses: The finest available selection of fast zoom and prime lenses from world-renowned lens manufacturers such as Angenieux and Canon, including Cinema Products' own series of *Ultra T* ultra-fast prime lenses for 16mm cinematography.
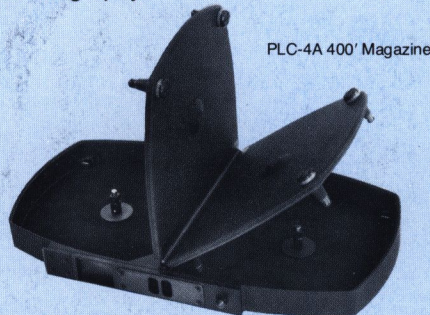

PLC-4A 400' Magazine

PLC-4A Magazine: The most efficient, reliable and silent 16mm 400' (120m) magazine available, the PLC-4A magazine is made of extremely lightweight, glass-filled Lexan® — a material with greater impact strength than magnesium. PLC-4A magazines can be instantly snapped on and off CP-16R and CP-16R/A cameras which feature a unique quick-release snap-latch mechanism. (See PLC-4A data sheet for additional information.)

Camera Carrying Cases: Complete selection of sturdy location carrying cases for fully equipped CP-16R and CP-16R/A cameras, magazines and accessories.

Halliburton Travel Case for CP-16R and CP-16R/A Cameras, Magazines, Lenses and Accessories.

Snap-Latch Camera Mounting System:
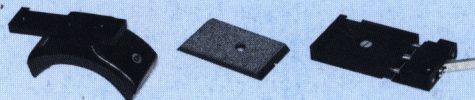
The quick-release CP snap-latch camera mounting system employs a camera baseplate which snaps into the snap-latch shoulder pod or tripod baseplate.
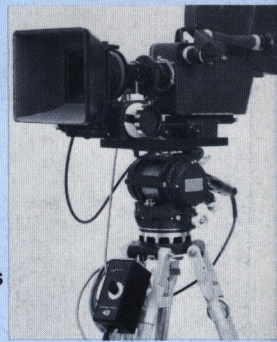

Fluid Head Tripods: Complete selection of fluid head tripods and tripod accessories for 16mm cameras from Sachtler, Universal, etc. (See data sheets for specifications.)

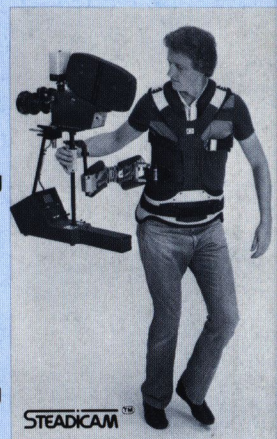CP-16R with Studio Rig and Sachtler 7+7SB Fluid Head Tripod

Studio Rig: Fully up to Hollywood professional standards, the CP-16R with Studio Rig is the ideal 16mm production camera for filming 16mm studio-type features (for 35mm blow-up), television specials, documentaries and TV commercials. Equipped with Studio Rig, the CP-16R is mounted on a riser block which carries matte

CP-16R with Studio Rig, CP Orientable Viewfinder and 7" Extender, and J-4 Zoom Control

box rods. The rods support a follow-focus mechanism fully adjustable to accommodate both zoom and fixed focal length lenses, and a full production matte box capable of carrying an assortment of square or round filters, rotating pola screen, etc. Sound level for the CP-16R equipped with Studio Rig is guaranteed not to exceed 28 dBA(!) when measured 3' (1m) from the optical flat in the matte box while pulling film.

Steadicam: Designed to provide total mobility and portability while recording extremely steady and smooth shots, Cinema Products' Oscar-winning Steadicam camera stabilizing system is an extremely versatile production tool. Steadicam transforms practically anything that moves into an effective camera platform, saving countless hours in production time and

reducing costs while greatly enhancing the creative capabilities of the director and cameraman. CP-16R with Steadicam bestows an extra measure of professionalism on all phases of 16mm film production. (See Steadicam brochure for additional information.)