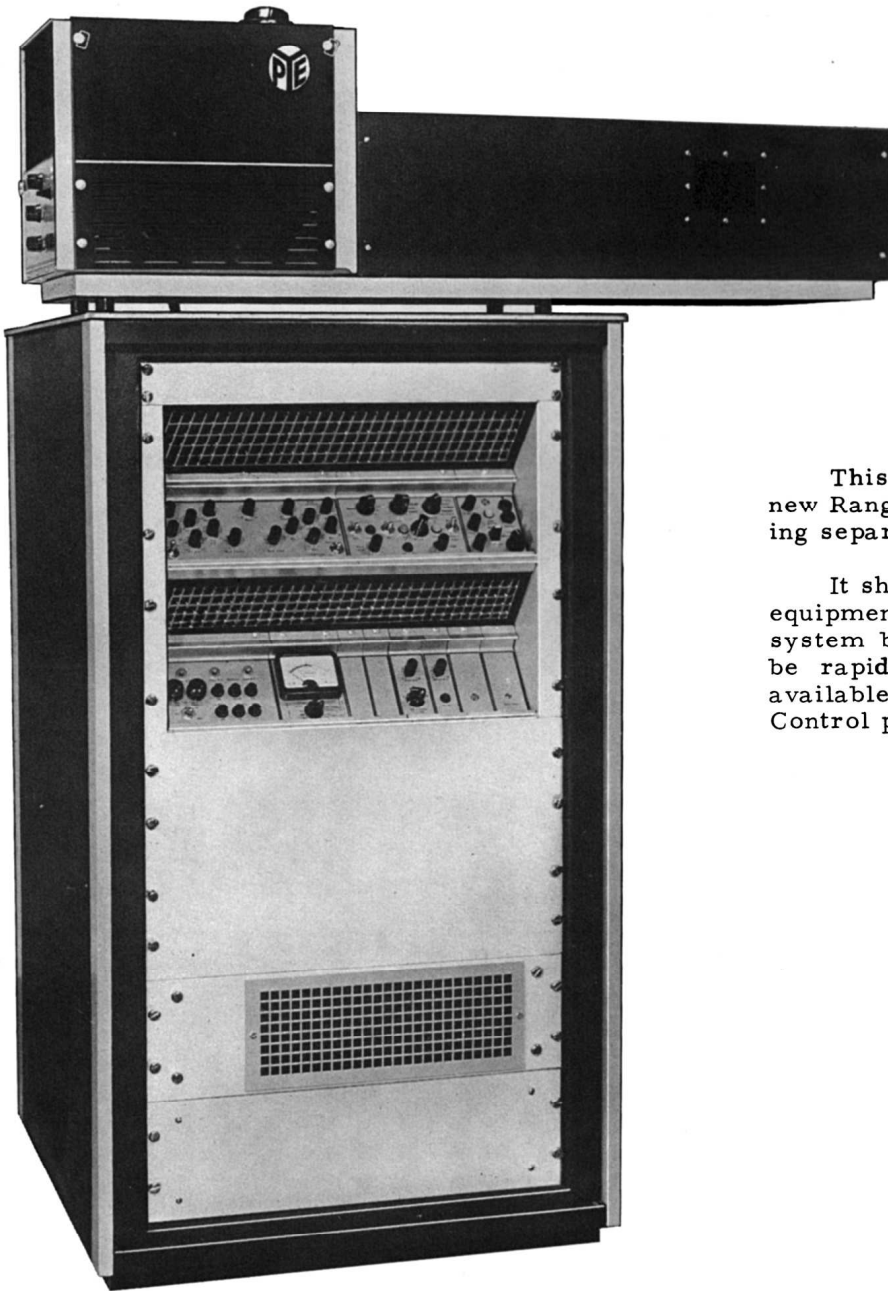


# Monochrome Teleciné Camera



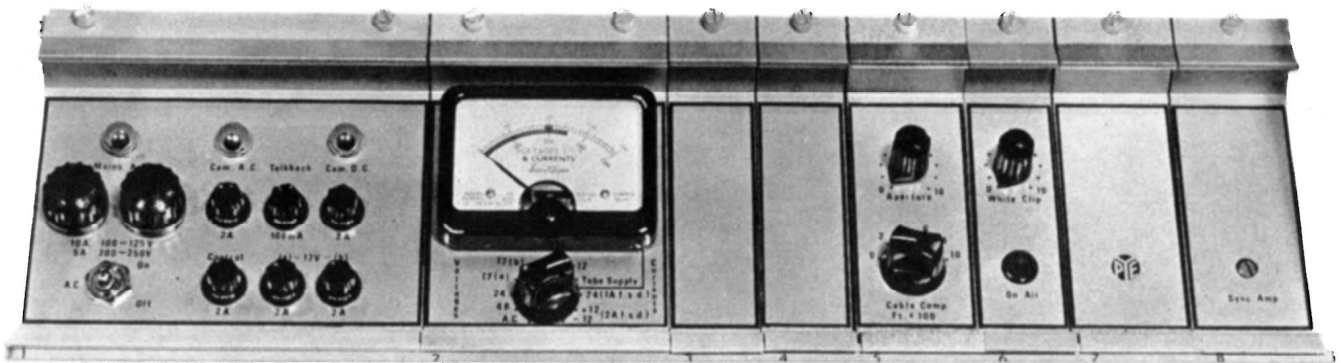
This camera channel is a completely new Range 70, solid state system employing separate-mesh vidicon pick-up, tubes.

It shares with other Range 70 camera equipment a unique analogue test pulse system by which any misadjustment can be rapidly pinpointed. This facility is available even at the Remote Joystick Control position.



RANGE 70

# Control Units



**CAMERA CONTROL UNIT**

## FEATURES

Incorporates optical multiplexer to permit operation with up to 3 projectors.

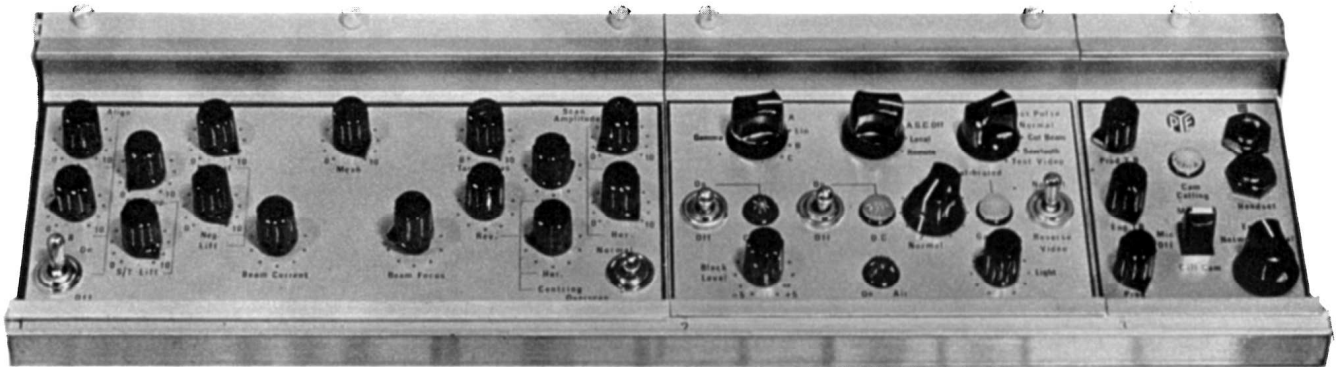
Employs separate mesh Vidicon tube to give high resolution, and freedom from shading.

Camera Control Unit and Engineering Control Unit are rack mounting and may be installed either in the cubicle below the camera, for installations in which control of the Camera channel is considered a function of the telecine operator; elsewhere for installations in which the control of all cameras is centralised.

Completely solid state with exception of one special low noise valve in head amplifier. Modular construction, with small standard size plug-in boards employed in the camera and control equipment.

Analogue pulse check system, provides instantaneous check of the complete video channel.

# Control Units



**ENGINEERING CONTROL UNIT**

Single switch for positive or negative film reproduction with appropriate pre-selected gamma corrections applied in each case, also provision for selecting linear response.

Variable aperture correction provided in control unit matched against roll off characteristics of Vidicon tube.

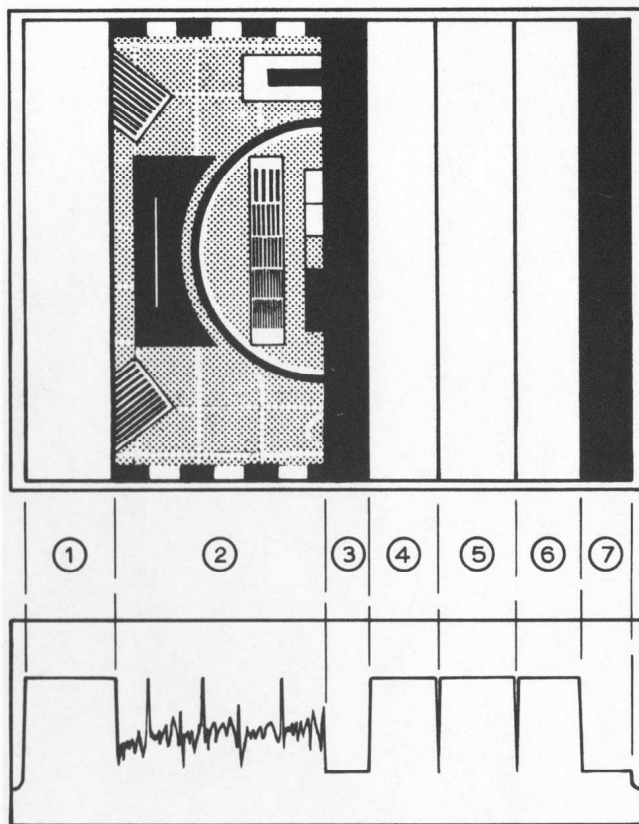
Special circuit in camera samples peak Vidicon output. White signal for positive film, and black signal for negative film is used to command light control mechanism in associated projectors.

Remote joystick provides convenient operator control of essential functions. It may be mounted together with projector and audio controls or separately depending on the desired control layout.

Full talkback facilities provided between camera and Engineering Control Unit.

# Analogue Pulse Check

PICTURE MONITOR DISPLAY



When the channel is correctly set up all peak white pulses should be the same brightness on Picture Monitor or of same amplitude on Waveform Monitor. The peak white and black areas of the optical strip can be compared with the white and black pulse strips as an indication of exposure and contrast range of the Vidicon.

Serious changes of pulse level, or loss of one or more pulses, indicates instantly the section of circuit in which misadjustment or failure has occurred.

WAVEFORM MONITOR LINE WAVEFORM

When Test Pulses are selected a series of pulses appear across the screen as follows:-

- (1) Peak white pulse injected at input of Head Amplifier.
- (2) Portion of target near centre of picture is unblanked presenting a vertical strip of optical picture.
- (3) & Signal from blanked target, presenting Vidicon tube black level.
- (7)
- (4) Peak white pulse injected at input of the camera control unit processing amplifier (i. e. at camera control unit end of camera cable).
- (5) Peak white pulse injected after blanking mixer and before the gamma correction stage.
- (6) Peak white pulse injected on output line from the camera control unit (on monitoring output only).

# Joystick Controls

Joystick controls have been in use for some time. Pye have applied new thinking to this very important item and unique results are obtained with the unit illustrated.



**JOYSTICK REMOTE CONTROL**

A novel arrangement allows full range of light control with vernier or "bandsread" adjustment. The large thumbwheel provides adjustment over the full range of light control available while end to end movement of the joystick within its slot gives the fine adjustment.

Rotation of the joystick knob adjusts the picture black level.

Because it is common practice in modern studios for one operator to control a number of video sources, the analogue pulse check facility is made available on the joystick unit. Thus all the facilities for checking misadjustments are available.

The gain control is provided for emergency operation. A warning light shows when this additional 6db gain control is operated since black level tracking will no longer be correct.

## FEATURES

- Controls:
- ON/OFF Switch.
  - Gamma Correction on off.
  - Coarse and Fine Light Control.
  - Black Level.
  - Functions Switch.
  - Video Reversal.
  - Emergency Gain.

# Specification

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## SYSTEMS

625 lines 50 frames, 525 lines 60 frames,  
405 lines 50 frames.

## OPTICAL

Number of Projector inputs 3  
Height of Optical Axis 48" (122 cm)  $\pm$ 1" (2.5 cm).  
Field Lens 9" (255 mm) focal length  
Camera Lens 2" (50 mm) focal length  
Dimensions of Image at field lens  $3\frac{1}{4}$ " (82 mm) diagonal  
Vidicon Format 0.625" (16 mm) diagonal 4:3 aspect ratio

## VIDEO

Frequency response: K rating 0.5% pulse/bar ratio between 0.98-1.02  
KT rating 4% pulse/bar ratio between 0.85-1.0  
Overall figures with up to 1000 ft camera - cable,  
less cable tolerance and not including Vidicon tube  
or optical performance

Signal-to-noise ratio: Better than 42db unweighted p.p signal to r.m.s.  
noise, for a linear channel of - 5MHz bandwidth,  
300 nano-amp signal current

Gain : Sufficient to give 0.7V peak video output for Vidicon  
signal current - of 100 nano-amps,  
with 6db of gain in hand

Amplitude linearity: Non linearity less than 2%. Differential Gain dis-  
tortion less than 5% for any duty cycle. (Gamma  
circuits inoperative)

Aperture Correction: Continuously adjustable cosine law corrector, with  
cross over frequencies matched against roll off  
characteristics of average tube in camera yoke

Gamma Correction: Two preset transfer characteristics are automati-  
cally selected when switching between positive and  
negative film. The gamma for positive film may be  
adjusted from 0.5-1.0, and for negative film  
between 1.0 and 2.0. A linear position is provided.

Polarity: Positive or negative Video switched at Engineering  
Control Unit, or joystick remote control. A  
separate preset adjustment is provided for negative  
lift. Gamma correction is automatically switched  
with polarity change.

Stability: Black level within  $\pm$ 1%; white level clipper within  
 $\pm$ 2%; overall video gain within  $\pm$ 1db; for extended  
periods - after a 30 minute stabilising period and  
including mains changes up to 5%.

# Specification

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Low frequency response:	Tilt less than 0.25% per ms.
Hum & Spurious Signals:	60db below 1.0V p.p output
White clipper:	Adjustable between 90% and 120% peak white
Black level control:	By adjustment of gain referred to a peak white clamp giving a range which moves picture black from 40% of peak white to 40% below system black level, while maintaining picture white constant. The auto black level control maintains the picture black level at the predetermined value.
Pedestal:	A pedestal of 5% of peak white may be added to the main video output by an internal link.
Outputs:	Two independent outputs either of which can be 0.7V peak non-composite, or 1.0V p.p composite. Synchronising pulses selected by internal link.
Isolation between outputs:	Greater than 50db at 10KHz, 38db at 3MHz, and 30db up to 5.5MHz.

## SCANS

Picture Geometry and Scanning linearity:	Within $\pm 1\%$ in the central circular portion of the raster having a diameter equal to picture height. Within $\pm 2\%$ in the remaining areas. Differential velocity error not greater than 2% in the central circular area.
Amplitude range:	Horizontal and Vertical: minimum range $\pm 10\%$ of normal amplitude.
Centring range:	Horizontal and Vertical: $\pm 10\%$ of Width or Height from mid position.
Overscan Amplitude:	Horizontal and Vertical set to fully display target for setting up adjustments.
Stability:	Within $\pm 1\%$ of picture width and height after a 30 minute stabilising period, and including mains changes up to 5%.
Direction:	Horizontal and Vertical Scans independently reversible from the camera position.

## CAMERA CABLE

## SUPPLIES & FUSES

	BICC MKIV with quick release couplers maximum length 1000 ft (300 m)
Power:	100-125 volts or 200-250 volts a.c. 40-65 Hz, 150VA approximately
System Waveforms:	Negative going complete sync. and complete blanking, between 1.5 and 5 volts p.p. into 75 ohms, with bridging out connectors. (Camera Vertical and Horizontal drive pulses are internally generated from complete sync.)

# Specification

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## DIMENSIONS & WEIGHTS

Camera with Optical System mounted on Cubicle containing C. C. U. & Eng. C. U.	Width: 20" (52 cm) Height: 55" (140) Length: 41" (104 cm) Weight: 176 lbs (80 kg)
Camera Control Unit: (If mounted separately)	Width: 19" (48 cm) Height: 5 $\frac{1}{4}$ " (13.6 cm) Depth: 17" (43 cm) overconnectors Weight: 50 lb (27.6 kg)
Engineering Control Unit: (If mounted separately)	Width: 19" (48 cm) Height: 5 $\frac{1}{4}$ " (13.6 cm) Depth: 9" (23 cm) overconnectors Weight: 17 lb (7.6 kg)
Joystick Remote Control	Width: 2 $\frac{3}{4}$ " (7 cm) Height: 8 $\frac{3}{4}$ " (22.2 cm) Depth: 3 $\frac{1}{2}$ " (8.9 cm) + 3" (7.6 cm) over joystick control Weight: 2 lb (0.91 kg)

## TYPE NUMBERS

Telecine Camera assembly including camera optical multiplexer, cubicle, Camera Control & Engineering Control Units, Cable Camera to CCU.	842632/00
Rack mounted Camera Control Unit including power unit and 2 ft cable to ECU (unless otherwise specified)	846370/02
Rack Mounted Engineering Control Unit	844432/00

## ASSOCIATED ITEMS (to customers order)

16 mm film projector	842635/00
35 mm film projector	842634/00
Camera Cable, length as required	750586
Cable CCU to ECU, length as required	AG26312
Joystick remote control	844679/00
Cable CCU to Joystick, length as required	AG26313
Headset for Camera & Control Positions	EA19746

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