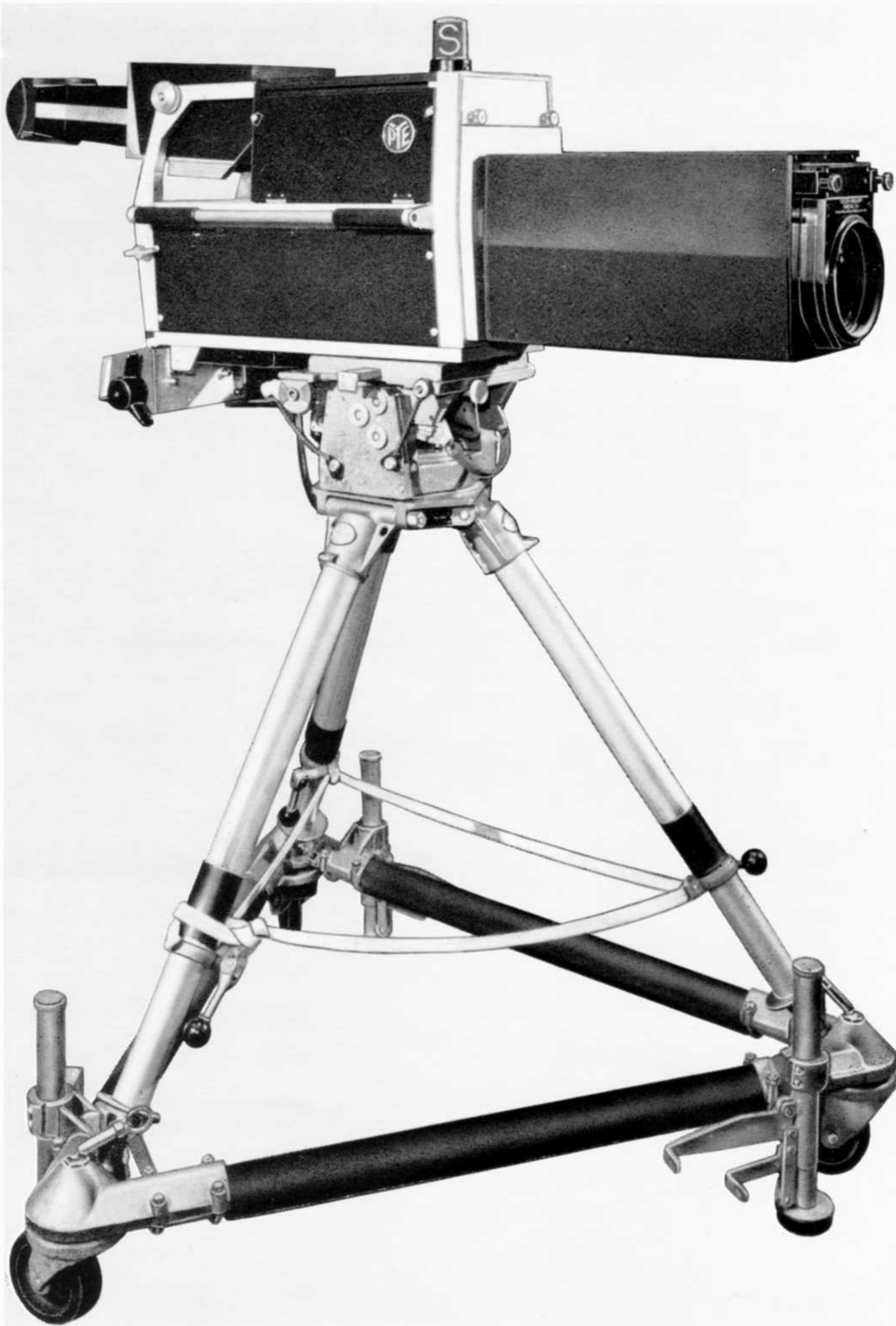




4½ inch Image Orthicon Camera Type 2116



Zoom Image Orthicon Monochrome
Camera

All solid state modular construction

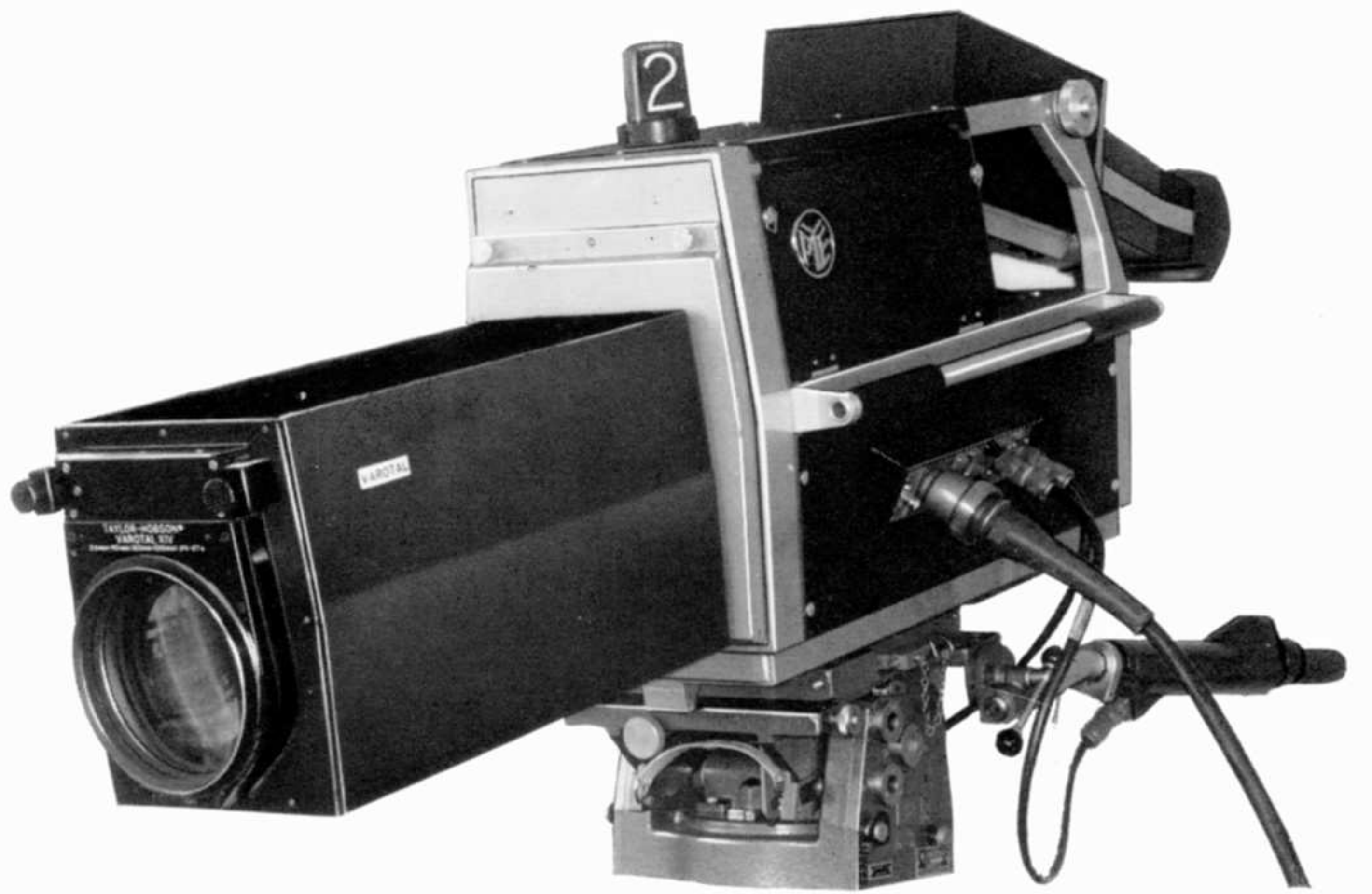
Unique analogue pulse-check system

Instant checking and adjustment—local
or remote

New, multi-purpose control unit design
for a variety of studio cameras

Tilting, detachable 7 inch viewfinder

Suitable for studios and O.B. use



CAMERA

FEATURES

Our Image Orthicon camera has been designed to accept zoom lenses with a standard zoom base, which can either be servo or manually controlled. An adaptor is available, enabling TV 88 lenses to be fitted to the camera.

The Focus and Zoom shot-box controls may be placed in a variety of positions to suit the cameraman. A zoom rate control is provided on the planning handle.

There is a 5-way filter wheel, operated from the rear of the camera, permitting a wide range of filters to be employed. The 18 cm (7 in) diagonal screen viewfinder is detachable and can be tilted to a suitable convenient viewing angle.

The complete video channel, including the image orthicon, can be rapidly checked by

inserting pulses at various points in the built-in test circuit. When correctly aligned the brightness of each test pulse displayed on the picture monitor is the same. The camera design also incorporates facilities for rear withdrawal of the Image Orthicon tube and simplified cleaning of the face plate from the front.

CONTROL UNITS

Standard camera control units and engineering control units may be rack mounted or re-arranged to suit individual customer layout requirements.

In both the camera and camera control units modular construction with small standard size plug-in printed circuit boards are used.

The camera control equipment is similar to that used in the monochrome telecine camera. Many of the boards and components are interchangeable.

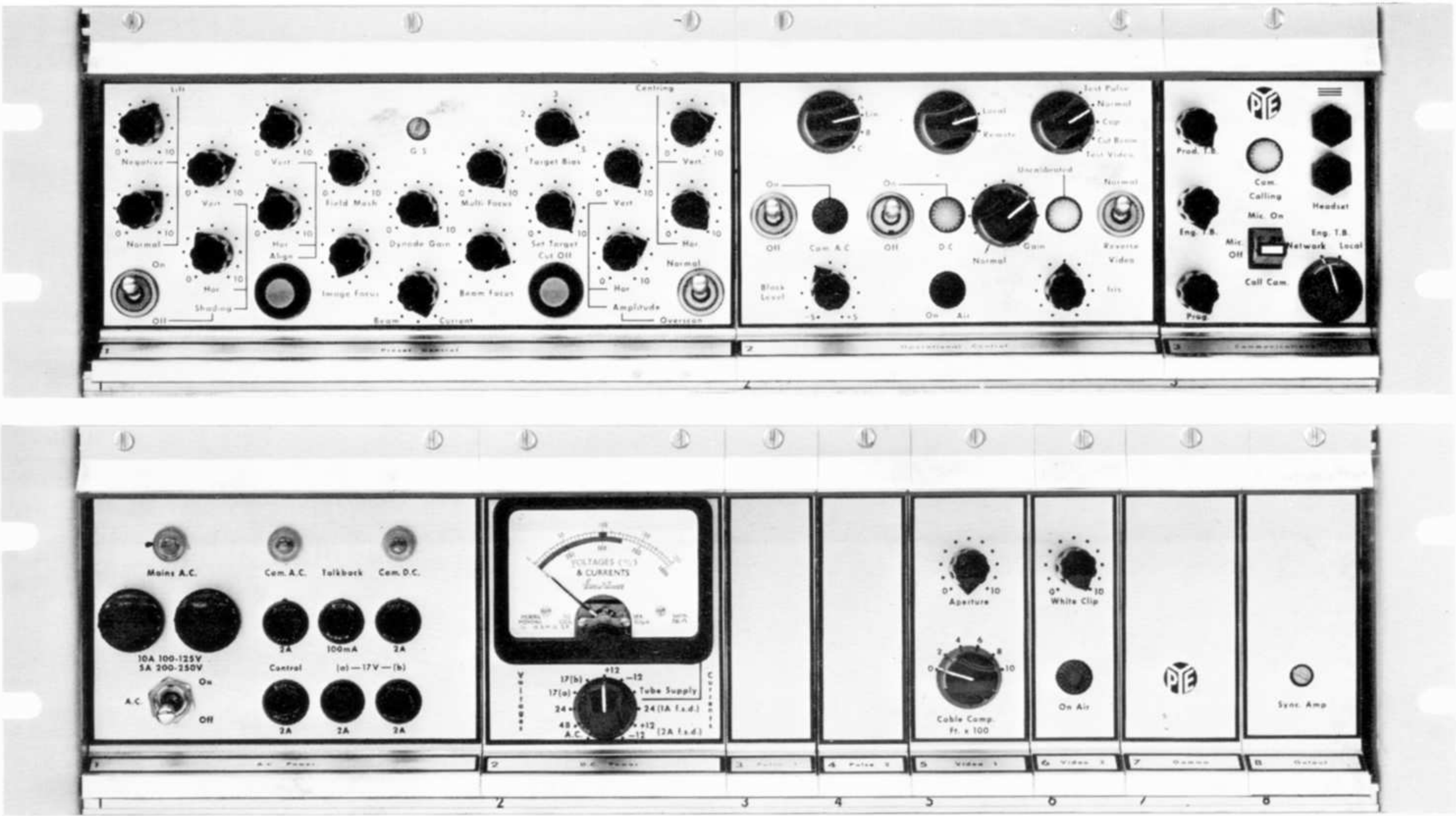
Comprehensive talkback facilities are provided with separate channels, individual volume controls at both camera and E.C.U. for programme sound, production talkback and engineering talkback. These services are brought out from the E.C.U. in a manner allowing flexible adaptation to different talkback systems.

An accessory unit is available for up to 600 m (2,000 ft) of cable.

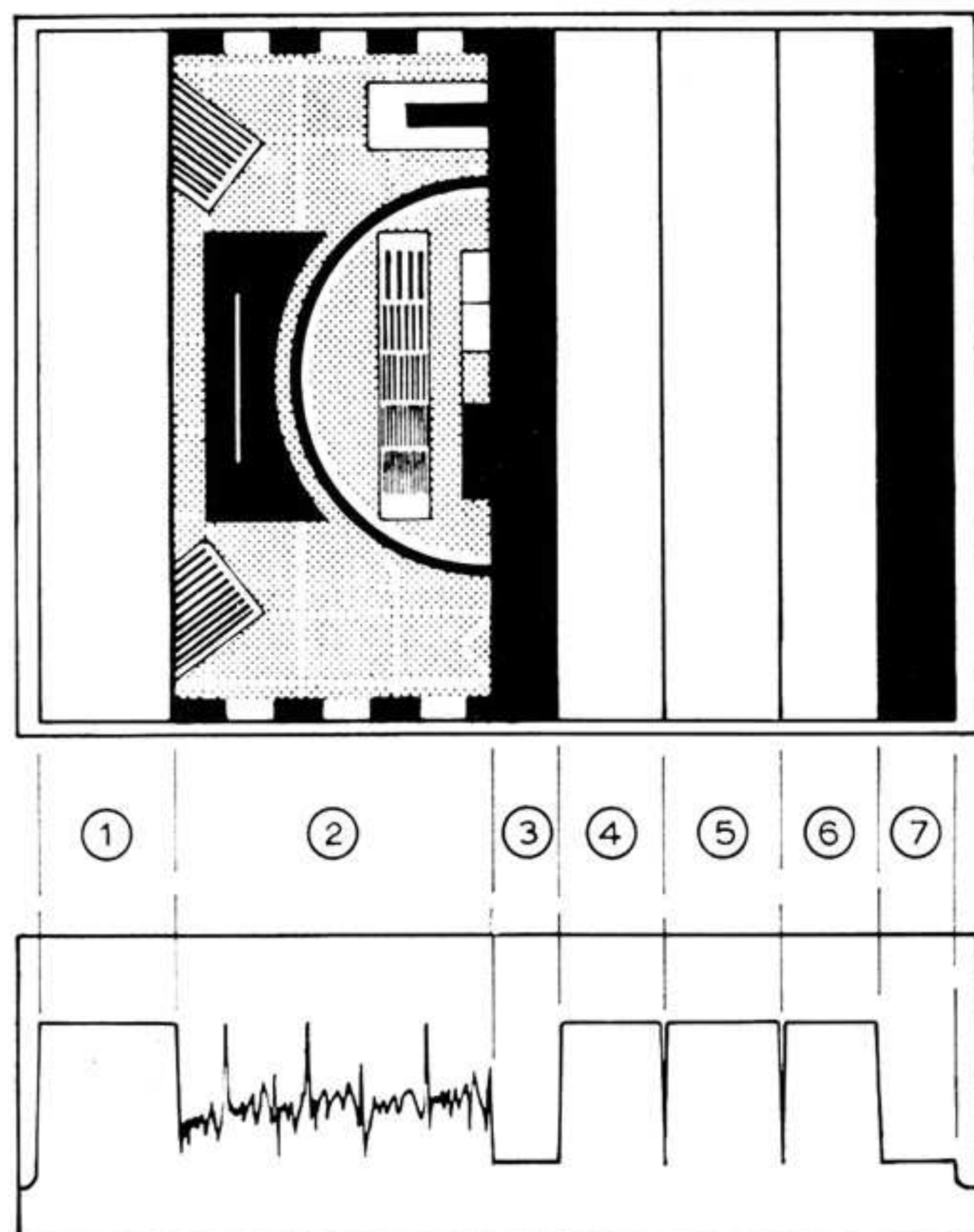
The camera control unit and the engineering control unit are of a similar size each requiring only 12.8 cm (5¼ in) of 48 cm (19 in) rack space.

Remote joystick facilities are available.

*Photographs below are
top: Engineering Control Unit
bottom: Camera Control Unit*



PICTURE MONITOR DISPLAY



WAVEFORM MONITOR LINE WAVEFORM

SPECIFICATION

Systems:

625 lines 50 frames per second, 525 lines 60 frames, 405 lines 50 frames

Output Signal:

Two outputs composite video, or two outputs non-composite video, or one output composite video with one output non-composite, selected by internal link. Synchronising pulses negative

Output Signal Amplitude:

1 V p-p composite, or 0.7 V p-p non-composite into 75 ohms

Isolation Between Video Outputs:

Greater than 50 dB at 10 kHz, 38 dB at 3 MHz, 30 dB up to 5.5 MHz

Camera Cable:

B.I.C.C. Mk. IV with quick release couplers, maximum length 1,000 ft (300 m). Accessory unit to allow for a further 1,000 ft to be used

Power:

450 VA approximately at 100–125 volts or 200–250 volts a.c. 47–65 Hz

System Waveform:

Standard complete sync and complete blanking. Pulses negative going and between 1.5 and 5 volts amplitude into 75 ohms, with bridging-out connectors (Camera Horizontal and Vertical Drive pulses are internally generated from complete sync)

Test Video and Viewfinder Effects

Signal:

1 V p-p composite or 0.7 V p-p non-composite into 75 ohms, with bridging-out connector

OPTICAL SPECIFICATION

Lenses:

Standard range of zoom lenses, adaptor for lens on TV 88 mounting

Filters:

Five filter positions are provided on a filter turret between the lens and the image plane. One or two filters can be accommodated together at each position. Filter diameter $2\frac{1}{4}$ inches (5.7 cm) total thickness (double filter $\frac{1}{8}$ inch (3 mm). Filter turret operation by rear knob control

Image Size:

1.6 inch (40.6 mm) diagonal at photocathode

PICTURE GEOMETRY SCANNING

Camera Picture Geometry and Scanning Linearity:

Within $\pm 1\%$ within a central circular portion of the raster having a diameter equal to picture height. Within $\pm 2\%$ in remaining areas
Differential velocity error not greater than 2% in central circular area

Aspect Ratio: 4 : 3

Overscan Amplitude:

Horizontal and vertical, set at 5%

Scan Amplitude Range: (camera and viewfinder):

Horizontal and vertical: minimum range $\pm 10\%$ of normal amplitude

Scan Centring Range:

Horizontal and vertical: $\pm 10\%$ of width and height from mid-range position

Camera and Viewfinder Scan Stability:

Within $\pm 1\%$ of picture width and height of 5% a.c. power supply voltage change after a 30 minute stabilising period



Scan Direction:

Horizontal and vertical independently reversible from camera position

Viewfinder Geometry and Scanning Linearity:

Within $\pm 1\%$ within central circular portion of the raster having a diameter equal to picture height
Within $\pm 2\%$ in remaining areas. Differential Velocity error not greater than 2% in central circular area

Viewing Scan Centring Range:

Horizontal and vertical: $\pm 10\%$ of width and height from mid-range position

Viewfinder Display Size:

$4\frac{7}{8}$ by $3\frac{5}{8}$ inches (12 by 9 cm)

Viewfinder Brightness:

200 foot Lamberts, peak white

VIDEO AMPLIFIER CHANNEL**Channel Gain:**

Sufficient to give standard output level for an Image Orthicon signal current of 4 micro-amps with 6 dB of gain in hand

Channel Linearity:

Amplitude non-linearity less than 2%. Differential Gain distortion less than 5% for any duty cycle

Channel Frequency Response:

K rating 0.5% pulse/bar ratio between 0.98–1.02
K_T rating 4% pulse/bar ratio between 0.85–1.0
Overall with 0–1000 ft cable, but less cable tolerance

Square Wave Tilt:

L.F. response tilt less than 0.25% per m.s.

Stability:

Black level within $\pm 1\%$ white level clipper within $\pm 2\%$ overall video gain ± 1 dB for extended periods after 30 minutes warm-up and including mains change of up to 5%

Signal to Noise Ratio:

Better than 50 dB for 5 MHz band width (with Image Orthicon beam cut). Channel does not worsen by more than 1 dB the signal to noise ratio of the Image Orthicon pick-up tube

Aperture Correction:

Continually adjustable cosine law corrector. Cross-over frequencies matched against roll-off characteristics of average Image Orthicon tube in camera yoke

Gamma Correction:

4 preset transfer characteristics available, switch selected from the E.C.U. The laws normally fitted are: (a) Black crush (b) Linear (c) Black stretch

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% peak white down to 40% below system black level while maintaining picture white constant

Output Polarity:

Positive or negative video switchable from control panel. Separate preset adjustment of negative video lift

Shading Correction:

Horizontal and Vertical shading sawtooth signal adjustable in amplitude through zero to full video amplitude from the control panel. Shading injection is before the Black level control and its polarity remains correct for negative picture. Shading adjustment does not affect lift level

Pedestal:

By internal link pedestal may be added to the main video output. Set at 5% peak white

Hum and Spurious Signals:

60 dB down on peak to peak video

VIEWFINDER VIDEO AMPLIFIER**Picture Source:**

Switchable by key on viewfinder to originate from:
(a) Its own camera
(b) An external source
(c) A mixture of (a) and (b)
Provided the external source is at standard level there is no change in amplitude when switching between sources (a) or (c)

Amplifier Gain:

Sufficient to modulate C.R.T. to give highlights of 200 ft Lamberts with 6 dB of gain in hand and controllable down to zero by contrast on Viewfinder control

Detail Emphasis:

Continuously variable in the camera. Gives boost up to 10 dB

Black Reference:

By line clamping

TYPE NUMBERS**Camera Channel:**

Camera 2116, including viewfinder 2116, 2116/00, 525, 625 line only or /01, 405 only
Control Unit, including power unit and 2 ft cable to ECU, 6370/00
Engineering Control Unit 4431/00. Both units rack mounted

DIMENSIONS AND WEIGHT**Camera:**

Length: $26\frac{3}{4}$ in (68 cm) over Viewfinder
Height: $17\frac{5}{16}$ in (44 cm),
+ $3\frac{5}{16}$ in (8.4 cm) cue lamp
Width: $14\frac{1}{4}$ in (36.2 cm) over handles
Weight: Camera only 99 lb (45 kg);
Viewfinder 13 lb (15.9 kg) (Less Lens)

Camera Control Unit:

Length: 19 in (48 cm)
Height: $5\frac{1}{4}$ in (13.6 cm)
Width: 17 in (43 cm) over connectors
Weight: 50 lb (27.6 kg)

Engineering Control Unit:

Length: 19 in (48 cm)
Height: $5\frac{1}{4}$ in (13.6 cm)
Width: 9 in (23 cm) over connectors
Weight: 17 lb (7.7 kg)

Joystick Control Panel:

Length: $2\frac{3}{4}$ in (7 cm)
Height: $8\frac{3}{4}$ in (22.2 cm)
Width: $3\frac{1}{2}$ in (8.9 cm), +3 in (7.6 cm)
Joystick Housing and Control
Weight: 2 lb (0.91 kg)

ASSOCIATED ITEMS

(to customer's order)

Lenses:

Varotal XIV SP, V SP, TV 88
Evershed 10 x 35 B, or any zoom designed for pulley wheel mounting
Camera Cable 750586, length to requirements
Plug-in boards for alternative line systems
Cable, C.C.U. to E.C.U. AG 26312, length as required
Cable, E.C.U. to Joystick R.C.P. AG 26313 lengths as required
Joystick Remote Control Panel 4679/00
Extension Box for 2,000 ft cable AG 27894
Headsets for camera or control positions
Visor face piece Moulding BG 21000
Viewfinder Visor Assembly AG 27698
Viewfinder Hood AG 27699
Waterproof Cover EA 19513
Shot Card Holder AG 27477
Illuminator AG 27906
Cue lamp with Numeral Identity
AG 2756/1–7

Specification details subject to change without notice



PYE TVT LIMITED

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