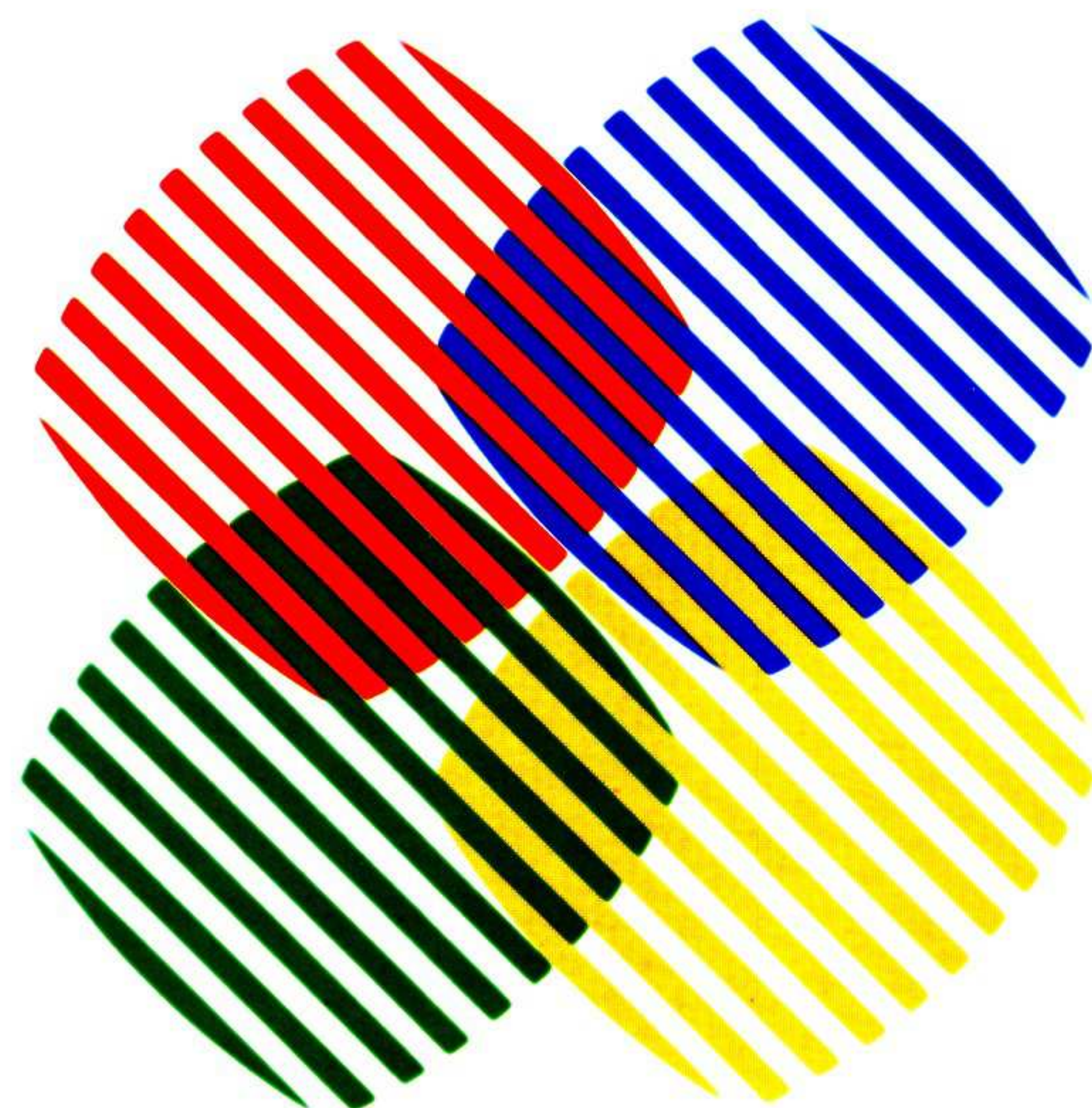


Marconi Mk10 Studio Camera

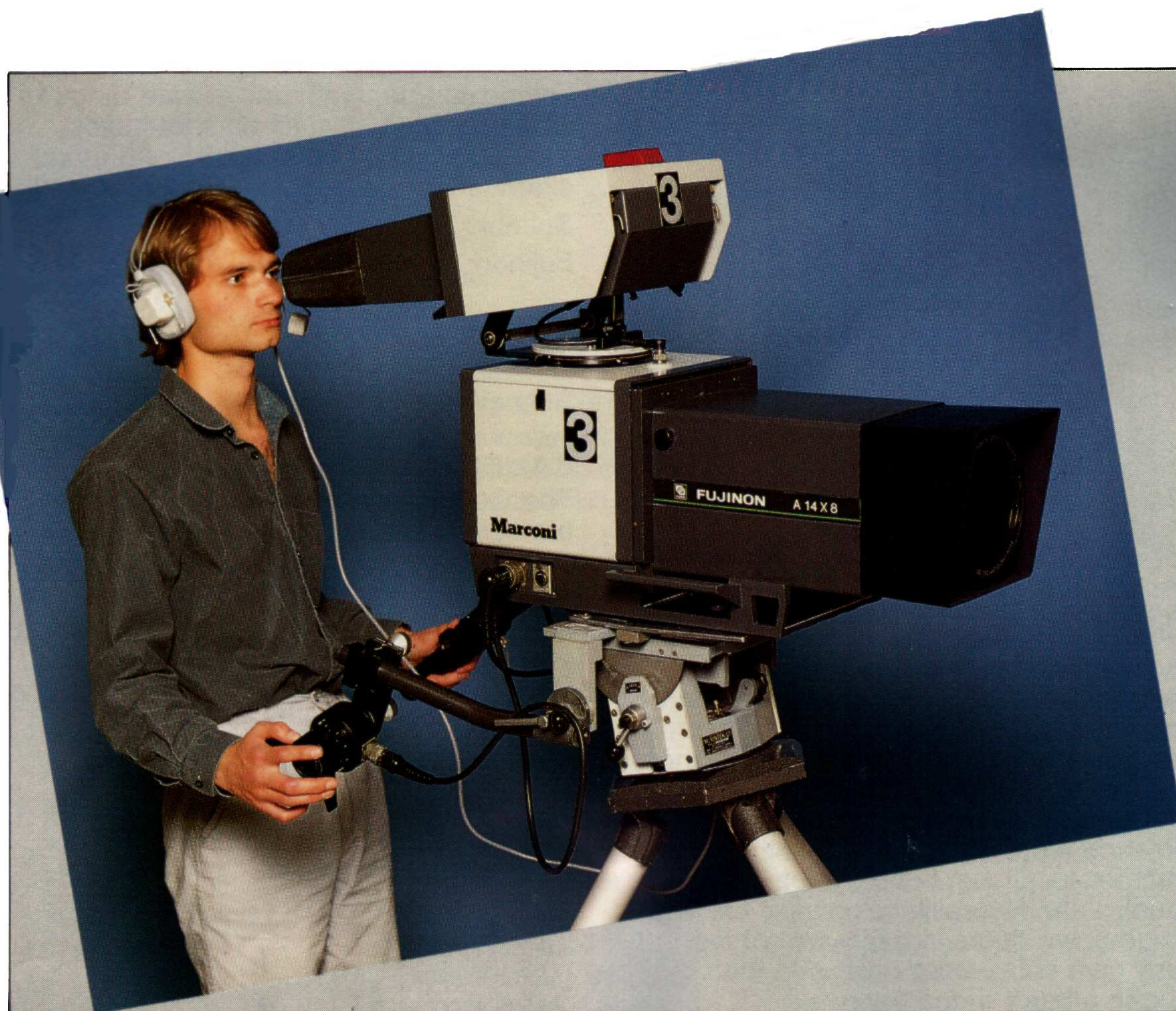


FEATURES

- ★ Compact, robust and cost effective.
- ★ Stable performance.
- ★ Simple to operate and maintain.
- ★ Wide range of Studio and O.B. lenses.
- ★ Short Camera body.
- ★ Small Camera Control Unit.
- ★ Automatic or manual control.
- ★ High sensitivity and signal/noise ratio.
- ★ Wide dynamic range.
- ★ Highlight overload protection.
- ★ Full remote control.
- ★ CCU compatible with a portable head.
- ★ Triax option.
- ★ Low power consumption.

FACILITIES

- ★ Auto Iris.
- ★ Auto White/Auto Black Balance.
- ★ Auto-Centering.
- ★ Automatic Beam Control.
- ★ L.O.C. diode gun tubes.
- ★ Two motor-driven filter wheels.
- ★ Multicore or Triax camera cable.
- ★ Adjustable "knee" control.
- ★ Full talkback.
- ★ 7-inch Viewfinder.
- ★ Two-line vertical aperture corrector.
- ★ Built-in S.P.G.
- ★ In-built colour bar generator.
- ★ Automatic tube protection.
- ★ Full picture and waveform monitoring.



B·R·O·A·D·C·A·S·T
E·Q·U·I·P·M·E·N·T

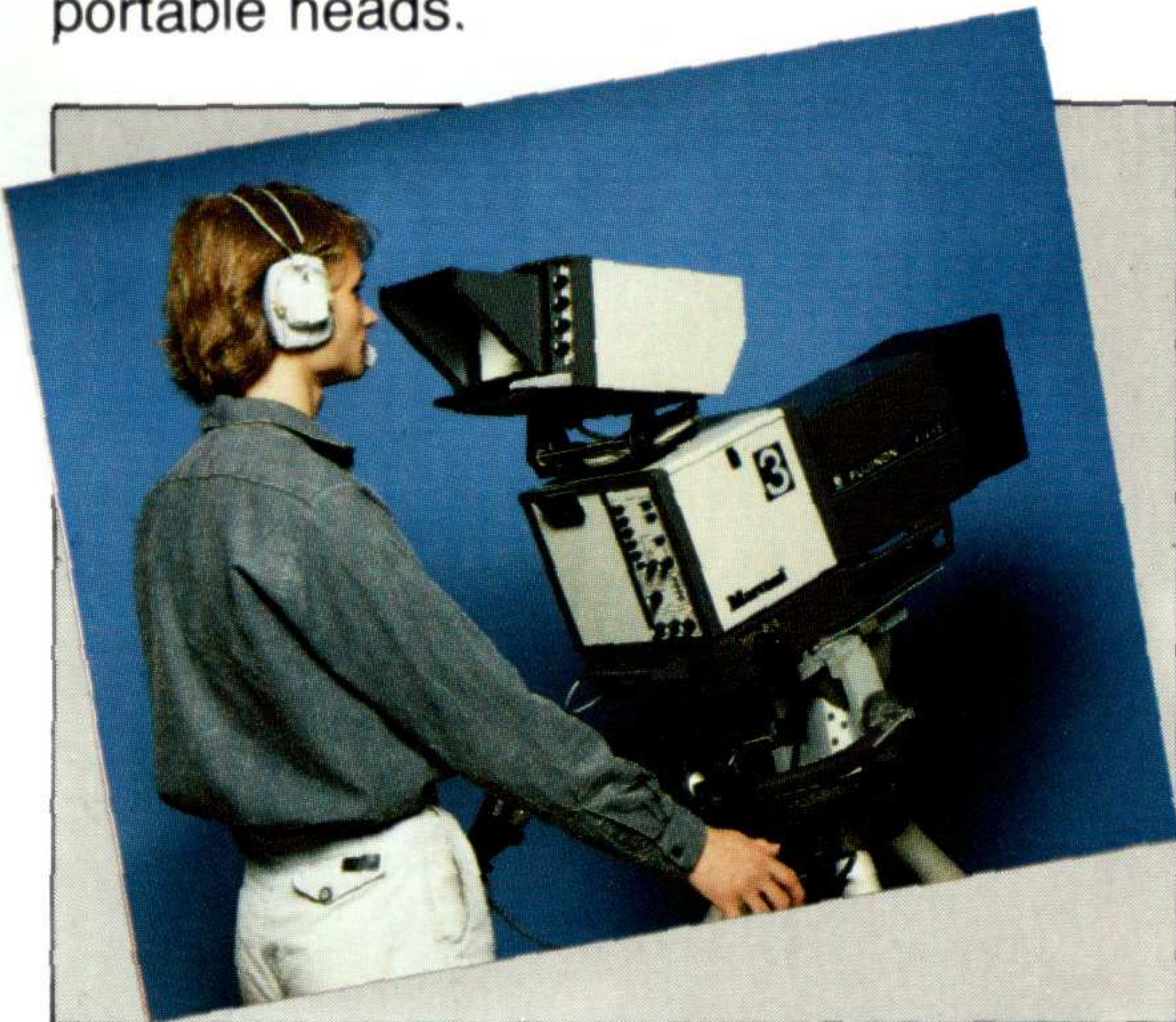
INTRODUCTION

The Mark 10 is the latest in the Marconi line of colour broadcast studio cameras and has been designed as a cost effective general purpose camera for studio and O.B. use. The latest electronic component technologies have been used to design a stable camera channel able to meet full broadcast standards, including the U.K. IBA Code of Practice, without the need for complex computer-based control systems. The camera can therefore be operated and maintained by staff without specialised training or complex test equipment.

To ensure a very high standard of performance in terms of resolution, signal-to-noise ratio and dynamic range, the camera employs three LOC diode-gun photoconductive tubes operating in the high field mode, supplemented by a new design of head-amplifier.

The philosophy behind the detailed design of the Marconi Mark 10, having first ensured an excellent basic performance, was to include all those features that experience shows are essential for the professional user, whilst rejecting unnecessary frills so as to reduce costs and to achieve a high order of reliability.

The camera system comprises the Camera Head, Camera Control Unit (CCU) and an optional operational Remote Control Panel (RCP). The system is designed to permit a portable camera head to be used with the same cable and same CCU as is used by the Studio Camera Head. Printed circuit boards are interchangeable between studio and portable heads.



Marconi Mark 10 Camera

CAMERA HEAD

The Mark 10 camera head is constructed from substantial light-alloy castings, and features a very short body measuring only 240 mm (9½ inches) from the back of the zoom lens to the rear of the camera. This allows greater freedom of camera movement in small studios or other cramped locations. Side and rear carrying handles are integral with the base casting. Hinge-down doors in each side of the body give convenient access to the plug-in printed wiring boards.

OPTICAL SYSTEM

An f/1.4 prism dichroic optical system provides R, G and B outputs for the three pick-up tubes. To minimise the effects of lag at very low light levels, bias illumination is incorporated. In addition, a quartz ¼ wave filter is included in the light path to reduce the effects of polarization.

Two motor-driven, remotely-controllable filter wheels each having four positions are provided. Filter wheel 1 is controlled at the camera and is fitted with a clear glass, two daylight colour temperature correction filters, 4300K and 6300K, and a star special effects filter. Filter wheel 2 is controlled from the CCU and is fitted with a clear glass, two neutral density filters, 0.6 and 0.2 ND, and an opaque cap position. Alternative filters can be readily fitted.

The prism block and tube and yoke mounting form an integral assembly rigidly attached to the substantial vertical camera front casting which directly carries the zoom lens mountings. This arrangement ensures precise and stable optical alignment.

LENSES

Two types of lens mounting are provided so that the widest possible range of lenses can be fitted. For the heavier studio lenses the well-proven wedge-lock type mount is incorporated, with a protected external quick-release handle. For lightweight lenses there is in addition the standard bayonet fixing.

The camera can accept a wide range of lenses designed for the 2/3rd-inch pick-up tube format. Either manual or servo zooms can be used, and a wide range of lens accessories, such as shot-boxes, rayshields, close-up adaptors and range extenders are available for many lenses.

Suitable lens types include:-

Fujinon: A14 x 8ESM, A17 x 8.5ESM,
A30 x 11ESM, A14 x 9ERM,
A17 x 9ERM, A22 x 12.5ERM

Angenieux: 14 x 9

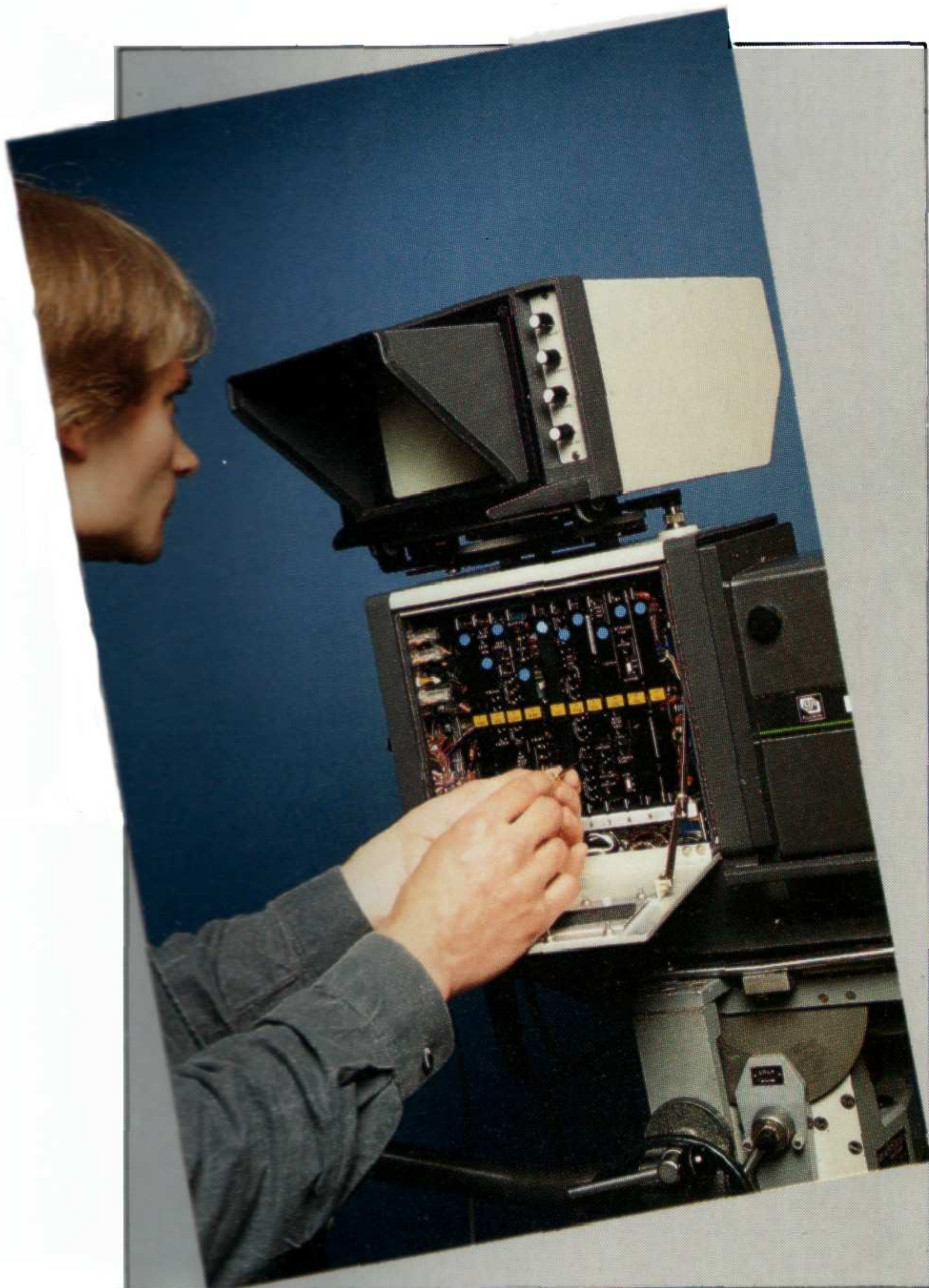
Schneider: 14 x 9 - TV44

CAMERA CONTROL UNIT

The CCU is very compact and includes the camera power supply unit. Two units can be fitted side-by-side in a standard 19-inch rack and occupy only 5¼-inches (3U) rack height. Alternatively one unit can be fitted alongside a waveform or picture monitor, or a triax unit, or can stand alone. All CCU controls needed in normal operation are mounted on the CCU front panel. The panel hinges outwards to provide easy access to the CCU printed wiring boards.

REMOTE CONTROL PANEL

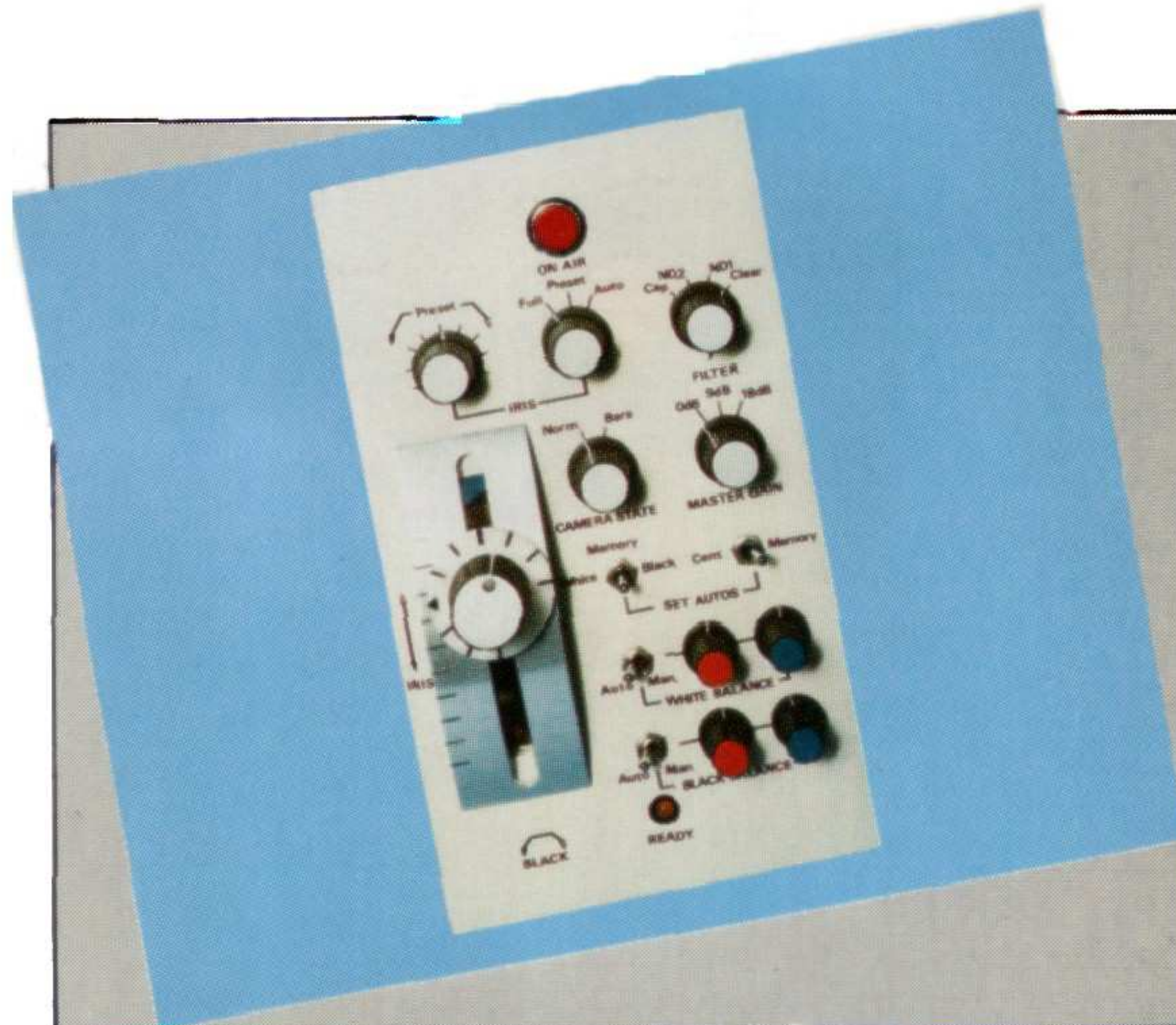
An optional Remote Control Panel is available containing all the controls necessary for both studio and O.B. operations. It may be operated up to 150 m from the CCU. In addition to the operational controls, the automatic black and white balance and centring functions can be activated from this panel. A switch on the joystick may be used to operate a picture-matching switching matrix.



Easy access and convenient viewfinder positioning for servicing

VIEWFINDER

The 7-inch viewfinder is a new design fitted with a tube giving increased brightness for easy viewing under studio lighting conditions. For use outdoors in bright sunlight an optional long viewfinder hood is available. Weighing only 4.5 kg (10 lbs) approximately, the viewfinder can be tilted ± 60 degrees, can be rotated ± 90 degrees and can be locked in any position. Circuit design is of a high standard throughout and includes a black level clamp. Facilities include a picture area indicator and vertical and horizontal cursor lines which can be positioned as required. There is also a curtain type zoom angle indicator, and the viewfinder is fitted with all the usual controls, conveniently placed. Push button switches enable any one of six signals to be displayed: Encoded Video, Return Video, Green, Red, Blue or minus Green, (available if Red or Blue are selected). A 5½-inch viewfinder is optionally available.



The Mark 10 Remote Control Panel

DESIGN FEATURES

Wide Dynamic Range: A number of features incorporated in the Mark 10 give greatly-improved performance and flexibility under difficult lighting conditions. New "knee" and white slope circuits can compress the scene contrast by up to 3:1, providing more detail in shadow areas and allowing a wider highlight range to be reproduced. Comet tails in the highlights are reduced by the Automatic Beam Control (ABC) circuit which can discharge signal currents up to eight times peak white level.

Sync. Pulse Generator: An integral synchronising pulse generator based on a recently developed l.s.i. chip provides for free-running or genlocked operation. The s.p.g. can be locked either by a colour black signal or standard composite video, and it includes digitally-adjustable horizontal and vertical blanking width. For genlock, horizontal and subcarrier phase adjustments are provided.

Automatic Tube Protection: When the camera state switch is set to off, or when colour bars are selected, the lens iris is automatically closed. If either the horizontal or vertical deflection fails, the tube beams are automatically interrupted to protect the pick-up tubes.

Coder and Colour Bar Generator: The inbuilt colour coder includes a colour bar generator which can be switched to the camera output by the Camera State switch. The 625-lines PAL coder provides standard EBU colour bars and the 525-lines NTSC coder provides bars to RS189A. The generator can be set either to full-field or split-field bars.

Other functions include:

Flare compensation – The increase in black level is compensated for in the G and R channels.

Corner Registration – Bow, skew, pincushion and trapezoidal circuits are included to correct R and B relative to G.

Matrix – A colorimetric correction matrix is incorporated.

Vertical Aperture Correction – A two-line correction system with comb filter and level-dependent circuits is used.

AUTOMATIC FACILITIES

The Marconi Mark 10 Camera includes a number of automatic facilities designed for operational convenience and improved performance and versatility.

Auto Centring: This facility uses an 8-bit memory system allowing registration adjustments to be carried out whilst shooting normal subjects. A special test pattern is not required. To operate, the Auto Centring switch is depressed, a white rectangle appearing in the viewfinder until the operation is complete, typically taking only a few seconds. In addition l.e.d. indicators at the CCU and RCP light when the operation is finished. The adjustment conditions are stored in the memory, which is backed up by a battery supply so that it is not erased when power is switched off.

Auto Black Balance: On operation of the Auto Black switch the lens iris is automatically closed to establish black level and black balance is completed in about 2 seconds. Viewfinder and l.e.d. indication is given as above.

Auto White Balance: With a white object framed in the centre of the picture the Auto White switch is operated. This first sets the iris automatically for correct exposure, white balance then being adjusted in about 2 seconds, viewfinder and l.e.d. indications again being provided.

Auto Iris: Automatic control of the iris may be selected, using detection modes

continuously variable between peak and average detection, set by a preset control to suit operational requirements. The facility is capable of producing correctly exposed pictures for live transmission.

CUES AND COMMUNICATIONS

The comprehensive communications (talkback) facilities required for studio and O.B. operations are a feature of the Mark 10 camera. They comprise two-way communications between the cameraman and CCU operator or Producer, with a parallel connection at the camera head for the floor manager's headset. Programme sound is available for the cameraman, floor manager and the CCU operator. Separate volume controls are fitted at the camera and CCU for each source, together with speak/call switches and Call indicator lamps. A socket at the camera carries all cues and communications circuits for use by a tracker.

An On Air lamp is mounted on the top of the viewfinder, and cue lights are fitted in the viewfinder screen surround and on the CCU and RCP control panels.

PROGRAMME MICROPHONE CIRCUIT

A high-quality programme microphone circuit is provided, extending from an XLR connector at the camera via the camera cable to an XLR connector at the rear of the CCU. There is provision for powering a microphone preamplifier.



Two camera control units can be mounted side-by-side



Picture or waveform monitors, or a triax unit, can be mounted alongside the CCU

B·R·O·A·D·C·A·S·T
E·Q·U·I·P·M·E·N·T

CAMERA CABLE

The camera channel employs a tough, highly flexible 19-way multicore cable, allowing operation at up to 320 metres between the camera and CCU. By means of adaptor units at the camera and CCU, triax cable up to 1500 metres length may be used.

CONTROLS

Camera Head

<i>Viewfinder signal selection:</i>	Encoded video, Return video, G, R, B, Minus G – Push buttons.
<i>Viewfinder cursor and Zoom Indicator controls:</i>	Zoom Indicator On/Off, Cursor On/Off, Border On/Off – Push buttons. Cursor horizontal and vertical position controls.
<i>Filter 1 Selection:</i>	Clear, Day 1, Day 2, Star – 4 position switch.
<i>Communications:</i>	Call C.C.U. switch Engineering/Producer switch Engineering, Producer and Programme Sound gain controls. Call indication L.e.d.
<i>Power:</i>	On/Off switch
<i>Lens Focus, and Zoom and 2 x range Extender:</i>	On pan bar
<i>Indicators:</i>	Filter Wheel No. 2 Clear, ND1, ND2, Cap, L.e.d.s.

Viewfinder

<i>Controls:</i>	Height, Width, Vertical Shift, Horizontal Shift, Contrast, Brightness, Peaking, Cue Dim.
<i>Indicators:</i>	On Air lamp. Cue lamps in viewfinder screen surround.

CCU

<i>Power On/Off:</i>	Switch
<i>Master Black:</i>	Control
<i>Iris:</i>	Control
<i>Iris Auto/Manual:</i>	Switch
<i>Filter 2 Selection:</i>	Cap, ND2, ND1, Clear – 4 position switch
<i>Master Gain:</i>	0 dB, +9 dB, +18 dB – 3 position switch
<i>Camera State:</i>	Off, Standby, Normal, Bars – 4 position switch
<i>Local/Remote Control:</i>	Switch
<i>White Balance:</i>	Auto/Manual switch. R and B manual controls
<i>Black Balance:</i>	Auto/Manual switch. R and B manual controls
<i>Set Auto Balance:</i>	White, Memory, Black – Biassed toggle switch
<i>Set Auto Centring:</i>	Auto, Memory, Preset – Biassed toggle switch
<i>Monitor Selection:</i>	R, B, G, Encoded video, R-G, B-G, Sequential, External – Push buttons
<i>Indicators:</i>	Power On L.e.d. Camera On L.e.d. Local/Remote L.e.d. Autos Ready L.e.d.

<i>Communications:</i>	Speak/Call switch. Producer, Camera and Programme Sound gain controls. L.e.d. call indicator
------------------------	---

Remote Control Panel

<i>Iris:</i>	On quadrant control
<i>Master Black:</i>	On quadrant control
<i>Iris:</i>	Full, Preset Range, Auto – 3 position switch
<i>Iris Range Control:</i>	– preset
<i>Filter 2 Selection:</i>	Cap, ND2, ND1, Clear – 4 position switch
<i>Camera State:</i>	Standby, Bars, Normal – 3 position switch
<i>Master Gain:</i>	0 dB, +9 dB, +18 dB – 3 position switch
<i>White Balance:</i>	Auto/Manual switch. R and B manual controls
<i>Black Balance:</i>	Auto/Manual switch. R and B manual controls
<i>Set Auto Balance:</i>	White, Memory, Black – Biassed toggle switch
<i>Set Auto Centring:</i>	Centring/Memory – Biassed toggle switch
<i>Preview:</i>	For picture matching. Operates by depressing knob on Iris quadrant
<i>Indicators:</i>	On Air Lamp, Available L.e.d., Autos Ready L.e.d.

ORDERING INFORMATION

To ensure that your order is quickly processed and that you receive the correct items, please specify:

- (1) Television standard and system required.
- (2) Length of camera cable.
- (3) AC supply voltage and tolerance.
- (4) Type of zoom lens and whether servo or manual, range extenders, etc.
- (5) Cabinet/rack mounting arrangements.
- (6) What options are required.
- (7) If a friction head and tripod/pedestal are required. (State camera application, i.e., studio or outside broadcast.)
- (8) If test charts are required.
- (9) If spares are required.
- (10) If additional handbooks are required.
- (11) If headsets are required.
- (12) If training is required.
- (13) Distance of remote control panel from CCU.
- (14) Any additional items of equipment needed, such as picture and waveform monitors, sync gens., communication units, etc.

Optional Items

Programme microphone.
Camera shot box.
Long viewfinder hood.
Waterproof cover.
Studio extender kit.
Remote Control Panel.

DATA SUMMARY

Systems

CCIR 625 lines, 50 fields/s 2:1 interlaced, or
EIA 525 lines, 60 fields/s 2:1 interlaced (not
switchable).

Inputs

Genlock: Composite video 1.0V or
black burst (colour black)
0.45V, 75 ohm bridging.
B.N.C. connectors.

Auxiliary Video: Composite video, 1.0V,
75 ohm bridging.
B.N.C connector.

Microphone: Unity gain, 600 ohm
balanced. XLR connector.

Cue + Comms: 600 ohm balanced. 25-way
type D connector.

Power: 95-130V or 190-260V,
48-60 Hz, 180 VA.
CE22 connector.

Outputs

Encoded Video: Two outputs 1.0V each
75 ohm source impedance.
Return loss better than
30 dB to 2T pulse and bar.
B.N.C. connector.

R/G/B/Video: 0.7V from 75 ohm source.
Return loss better than
30 dB to 2T pulse and bar.
B.N.C. connector.

Monitor Video: 75 ohm source, return loss
better than 30 dB to 2T
pulse and bar.
B.N.C. connector.

Colour Step: 8V to 15V adjustable, output
impedance less than
500 ohm.

Audio: Unity gain, 600 ohm
balanced. XLR connector.

Talkback: Low impedance, balanced.
25-way type D connector.

Sensitivity

Full signal current is obtained at normal gain
from an illumination of 600 lux (56 ft. candles)
incident on a 60% reflectance white object at
a lens aperture of f2. Signal current at normal
gain – Green: 220 nA, Red/Blue: 125 nA.

Acceptable pictures can be obtained from an
illumination of 54 lux (5 ft. candles) with the
gain switched to +18 dB and with a lens
aperture of f1.6.

Signal/Noise Ratio

Weighted luminance: 50 dB
Weighted chrominance: 45 dB

With the camera at normal gain and normal
operating set up, the noise is measured at
52% of white level using the weighting filters
specified in CCIR Rec. 451-2. Luminance is
measured in the bandwidth 7.5 KHz-5 MHz
and chrominance in the bandwidth 3.5 MHz-
5.5 MHz.

Resolution

100% obtainable at 400 lines/picture height.
Resolution in the corners is not less than 40%
of that obtainable at the centre.

Registration

0.1% in Zone 1, 0.4% outside Zone 1.
(Zone 1 is the inner zone specified in BS 5115
as 80% of full picture height and width with
corners of radius equal to 21% of picture
height. Zone 2 or the outer zone is the
remainder.)

Geometry

1% in Zone 1, 2% outside Zone 1

Gamma Correction

Gamma: 0.45 nominal with adjustable knee
control.

Pick-up Tubes

$\frac{2}{3}$ " L.O.C. diode gun Plumbicon* Type
XQ 3427. The camera will also accept
Leddicon** Type P8462. Electromagnetic
focus and electromagnetic deflection.

(* Registered Trademark N.V. Philips)
(** Registered Trademark English Electric
Valve Co. Ltd.)

Dimensions

Camera Head (without viewfinder or lens):

Camera body: 280 mm (11") high
x 280 mm (11") wide
x 240 mm (9.5") long.

The mounting plate extends 216 mm (8½") in
front of the camera beneath the lens.

Combined C.C.U. and P.S.U.:

125 mm (5") high x 210 mm (8.25") wide
x 440 mm (17.5") long.

Remote Control Panel: 215 mm (8.1") high
x 120 mm (4.75") wide
x 120mm (4.75") long.

Weight

Camera Head without viewfinder or lens:
14 Kg (31 lbs).

Viewfinder: 4.5 Kg (10 lbs)

Ref: TD-1 B3285

This document gives only a general description of the product(s) and shall
not form part of any contract. From time to time changes may be made in
the product(s) or in the conditions of supply.



GEC McMichael Limited
Sefton Park, Bells Hill, Stoke Poges, Slough SL2 4HD.
Telephone +44 (0)2816 2777

Printed in England