

Television Camera

TYPE
2014

Features

- ★ Light-weight construction.
- ★ Electronic viewfinder incorporated.
- ★ Focus control identical for all lenses.
- ★ Extremely sensitive pick-up tube.
- ★ 4-lens turret with push-button selector.
- ★ Suitable for both field and studio.
- ★ Designed for local or remote operation.
- ★ Only one cable connection required (two when remote control unit is employed).
- ★ Lenses quickly fitted to lens turret.
- ★ Automatic indication of iris setting.
- ★ Focusing and fingertip iris controls on both sides of camera.
- ★ A preloaded filter disc is included with provision for masks in place of filters.
- ★ Extended focus range switch for extreme close-ups.
- ★ Swivelling viewfinder hood.
- ★ Iris control from camera or camera control unit.
- ★ Locking focus control with variable turning resistance.
- ★ Built-in blower with silent operation.

Uses

This camera has been specially designed to be suitable for both studio and field use. Its light weight and compactness have resulted in a unit which can be transported with ease and set up in a few moments. These features, together with the large range of viewing angles, and extremely high sensitivity, combine to give a unit which is ideal for field use, whilst its robust construction and the precision of the engineering details have resulted in a camera having the rigidity demanded for studio work.

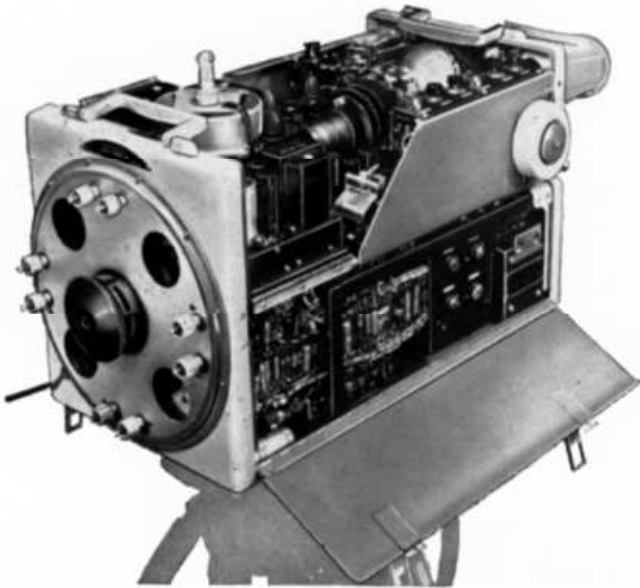
When connected to a remote control unit, the turret changing, focusing and iris setting can all be controlled from the central control point, enabling the cameraman to give undivided attention to the framing and composition of fast action pictures, or the camera to be set up in position and left unattended.

Description

The camera Type 2014 employs Elektron pressings to provide a light but strong construction and contains the following units:—

Image Orthicon deflection yoke and magnetic assembly with Head Amplifier,
Image Orthicon Supply and Distribution Unit,
Viewfinder,
Servo Amplifier.

These units can be serviced without removal from the camera, but can all be removed very quickly if desired.



By releasing three knurled screws and the plugs of the interconnecting cables the tube assembly can be slid out for changing the tube. When in position in the camera the head amplifier is completely accessible, but may be removed by the release of a single screw. A small tie rod enables the side cover of the camera to be used as a support for the tube assembly during this operation. The viewfinder and servo unit both swing upwards and outwards from the side of the camera. Flying leads on these units then enable servicing and adjustments to be carried out with power supplies connected. With the units in this position all normal servicing can be achieved on any part of the camera. However, in the event of a major repair being necessary, the viewfinder may be completely removed by releasing one knurled screw and the interconnecting lead plug, while the servo unit may also be easily taken out by removing three screws and one interconnecting lead plug.

A four-lens turret is provided, on which a range of wide and narrow angle lenses may be mounted together, suitable for any programme. The turret is strongly constructed and has a peripheral ball-race to withstand the strain imposed by the largest lenses.

Lens changing is accomplished by a motor drive on the turret which is controlled by a push-button selector at the rear of the

camera. The operation of any button sets the motor in motion and the turret rotates until the selected lens is brought into position opposite the pick-up tube, where it stops and is automatically locked. The time taken to change from any lens to one adjacent to it is 1.25 seconds, and from any lens to the one on the opposite side of the turret 2.5 seconds. To keep changing time to a minimum the mechanism is so arranged that when an adjacent lens is selected the direction of rotation of the turret is such that the required lens moves automatically into position by the shortest route.

Lenses may be fitted to the turret in a matter of seconds, locating pins and large knurled nuts ensuring rigid mounting. Focusing is accomplished by positioning the image orthicon pick-up tube assembly in the camera. The special carriage designed for this purpose is fitted with roller bearings, and provides a very smooth, easy lateral motion, at the same time ensuring the utmost rigidity in all other directions. The image orthicon assembly is actuated by a servo mechanism which follows the setting of the focus control potentiometer.

A focus range switch is provided for normal or extended ranges. With the switch at NORMAL the focusing range is from infinity to a distance where a 9" diagonal just fills the screen for lenses having a focal length up to 12". For lenses of 12" to 24" focal length the close-up distance will vary from 6½ ft. to 24½ ft. Resistors fitted into each lens mount automatically come into circuit as soon as the lens is brought into the viewing position, and these are so chosen that the full rotation of the focus control knob produces the necessary movement of the pick-up tube for that lens. This arrangement produces the same focusing knob movement for all lenses from close-up to infinity, and irrespective of the lens in use, the "feel" of the control remains the same. When the focus range switch is set to EXTENDED, the lens resistors are cut out of circuit and a full 2½" movement of the image orthicon carriage is obtained for all lenses, thus facilitating unusual effects using extreme close-ups. Focusing may be performed at either side of the camera according to the preference of the cameraman, a switch on the rear panel selecting either L.H., R.H. or REMOTE. Full range is covered with a 300° movement, and the control and tube assembly will remain stationary when left in any position, irrespective of camera angle. A small lever under the focusing knob actuates a friction clutch, and is set by the operator to provide the desired amount of friction on the control, or may be set to lock the control when required.

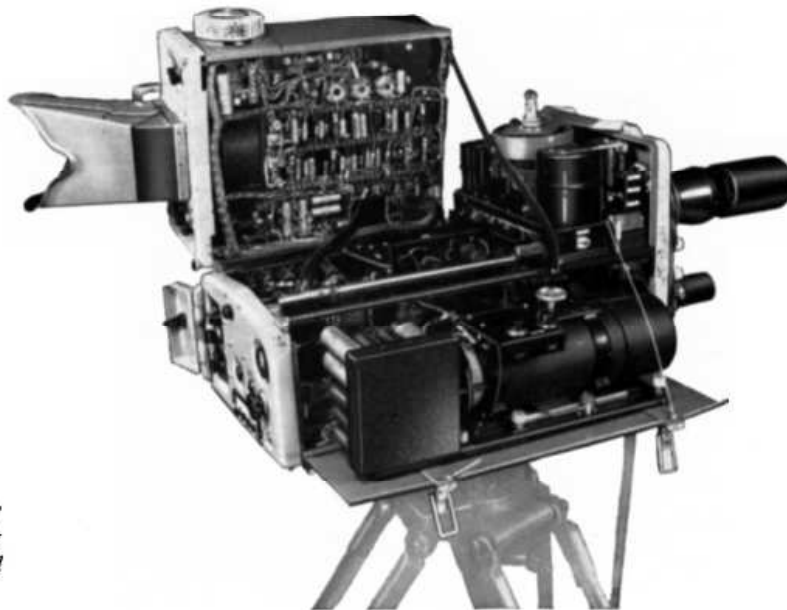


Image Orthicon Assembly withdrawn for servicing pick-up tube and head amplifier.

FIELD OR STUDIO

Television Camera Type 2014 (continued)

The lens iris aperture is normally adjusted from the camera control unit where the picture monitor is available to determine the best setting. A lever key on the panel controls a small motor in the camera which operates the opening and closing mechanism.

The setting is registered automatically on a meter adjacent to the control by the movement of an accurately shaped cam which is individual to each lens assembly. This cam, together with the way in which it is operated, obviates the necessity for lenses to be specially made with identical angular rotations of the iris ring. A feature of this arrangement is that the iris change mechanism disengages as the lens is moved away from the viewing position, and thus when returned, the lens will have the same iris setting as it had when previously used, irrespective of the setting of the control for the previous lens in use.

Although the iris settings are normally controlled from the camera control unit, thereby relieving the cameraman, they may be set at the camera if desired. Push-button switches are mounted on each side of the camera so that they can be operated by the fingertips without taking the hand from the focusing knob. A meter on the rear panel indicates the iris setting as on the camera control unit.

A flat-ended 5-inch cathode ray tube is employed in the viewfinder enabling the operator to see a picture identical with that which is being transmitted. The use of an electronic viewfinder eliminates the possibility of incorrect focusing or aiming due to misalignment between camera and viewfinder, and also provides the operator with a clear picture when working at a low light level. The tube produces a black and white picture, the size of which is increased by a special lens. A neutral colour filter with engraved composition lines helps to improve the contrast when viewed under high external lighting conditions.

A cue light is fitted at the top of the camera, and another inside the viewfinder to enable the operator to know when his camera



is on or off the air, although he may be looking into the hood continuously. The top cue light can be switched off from the inside of the unit should it be desirable that the performers remain unaware that a camera is "alive."

The meter on the panel is normally used as an iris setting indicator. It may, however, be used for test purposes when required. An adjacent switch enables it to be used for checking the multiplier anode voltage, the focusing current, or to be used as a voltmeter in conjunction with a test lead which can be plugged into the socket provided in the camera.

Built into the camera immediately behind the turret is a filter plate into which are screwed three light filters. These consist of two neutral colour filters (one having 1 per cent. light transmission and the other 10 per cent.), and a yellow filter. Any of these can be selected by the cameraman and be brought quickly into use by operating an external thumb control on the top of the camera. Extra rings fitted with masks cut to any desired shape can be inserted in place of the filter.

Provision is made for the attachment to the camera of an extra cable for remote control facilities. This enables the focusing and turret mechanisms to be controlled from any convenient location such as the camera control unit position, or a central camera control desk.

The viewing hood supplied slips easily into position on the viewfinder and has a vertical swivelling movement designed to compensate for the tilting of the camera during transmission. The amount of crouching and stretching necessary by the cameraman is thus considerably reduced.

Provision is made for two intercom. telephone headsets for listening to programme and instructions from the programme director. A volume control is provided, and also a signalling key to call the control unit operator who can bring into operation a circuit giving independent conversation between the two operators.

Special precautions are taken to ensure a constant current in the focusing field coil of the Image Orthicon tube, and a compact, silent blower maintains a stream of cool air circulating through the camera.



*Viewfinder unit removed.
Servo unit raised for servicing.*



Specification

System. 525 lines interlaced, 60 fields per second, 30 frames per second, OR
625 lines interlaced, 50 fields per second, 25 frames per second.

(The unit will work on either system without modification.)

Pick-up Tube.* Image Orthicon, type 5820.
OR, " " " " P807.

Viewfinder Tube. MW13/35 or 5FP4A (American).

Turret. 4-position, motor operated.

Lenses.* See separate page for standard range.

Video Output. 0.25 V. peak to peak (white +).

Working range of illumination incident on scene: Type 5820.

Minimum 0.5 ft. candle (with f3.5 lens).

Minimum for first grade results—10 to 20 ft. candles.

Maximum—Bright sunlight.

* Supplied as extra items.

Controls:

	<i>External</i>	<i>Internal</i>
	Turret push-buttons.	Horizontal linearity.
	Filter selector.	Horizontal centring.
	Decelerator.	Multi anode.
	Accelerator.	Focus current.
	Horizontal shading.	Alignment.
	Target heater ON/OFF.	Iris set zero.
	Meter switch.	Cue light ON/OFF.
	Optical focus switch.	
	Focus range switch.	
Viewfinder:	Optical focus.	Horizontal ampli-
	Iris push-buttons.	tude.
	Contrast.	Vertical amplitude.
	Brightness.	Horizontal linearity.
	Viewfinder focus.	Vertical linearity.
	Call C.C.U.	Horizontal centring.
	Headset gain.	Vertical centring.

Dimensions.

	<i>Case</i>	<i>Overall</i>
Height ..	14½ ins. (36.8 cms)	18 ins. (45.7 cms)
Width ..	12 ins. (30.4 cms)	15½ ins. (39.4 cms)
Length ..	22 ins. (55.8 cms)	25 ins. (63.5 cms)

Weight.† 105 lbs. (48 Kgs) (109 lbs. (50 Kgs) including transit covers).

Finish. Two tone blue, with black anodising and chrome plating.

Part No. 842014.

Includes: Viewfinder Tube .. MW13/35 (5FP4A)
Viewing Hood 733339
Telephone Headset 732851
Full complement of valves and transit covers for turret and rear panel.

Type No. 2014E. Modified version. Can be switched to operate on either 625 or 819 line systems.

† Excluding lenses and viewfinder hood.

Accessories

Lenses as required. See separate page.

Camera cable as required. See separate page.

Extra filter or mask mounts. Part No. 301428.

Waterproof camera cover with case. Part No. 711320.



Two positions of viewfinder hood showing operating advantage.