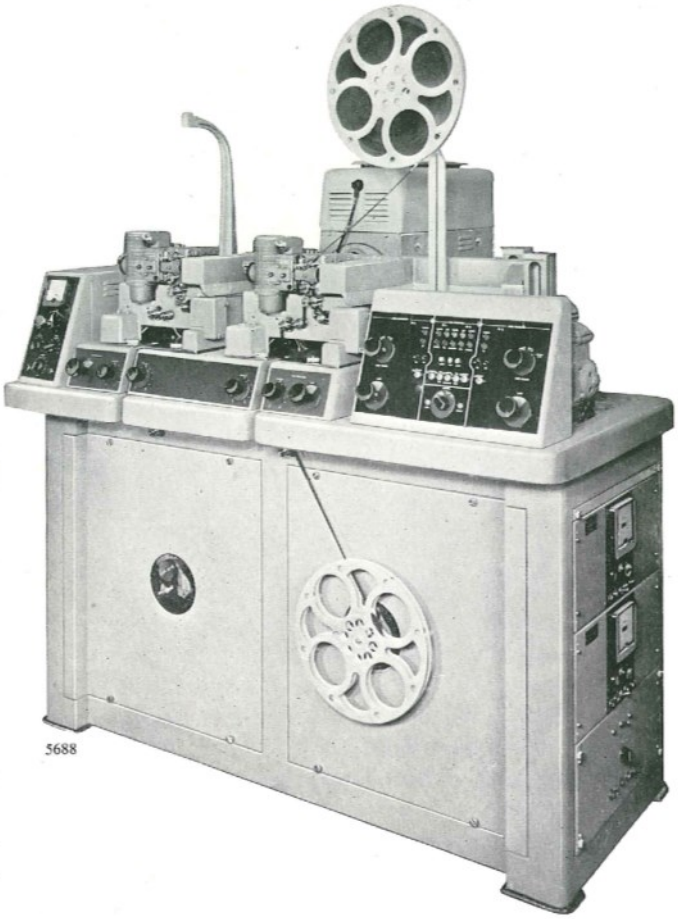
# Image Orthicon Telecine Equipment (16 mm.) *Type BD 680*

OPERATING in conjunction with a standard image orthicon camera channel, the Type BD 680 telecine equipment is designed to televise both 16 mm film and standard 2 × 2 in. slides. The complete telecine equipment includes a standard camera Type BD 624 (see page 77), a camera pulsing unit, two 16 mm sound-film projectors, two magazine slide projectors, a sound amplifier, a control panel, two projector drive chassis and a power supply chassis, all of which are mounted on a main framework to form a complete, self-contained equipment.



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## FEATURES

Use of standard camera equipment simplifies maintenance. In an emergency units can be replaced by similar equipment from studios or mobile equipment.

Camera can be rotated to televise opaque captions, a clock, etc.

Large film capacity, with motor-driven take-up.

Single button control of changeover between film projectors for continuous programme.

Magazine type slide projectors with knob control of slide change and automatic blanking. Capacity 50 slides.

Still film pictures can be used, particularly for setting up.

Facilities for superimposing or fading film and slide projectors.

Electronic pulsing of image orthicon photocathode obviates mechanical shutters or pulsed light systems and needs no adjustment.

Automatic phasing of film projectors to television system.

Colour response of camera correct to that of the eye and illumination correction gives faithful reproduction of colour material.

Wide range sound system to 7 kc/s with variable equalisers. Low noise, distortion, 'wow', etc. Photocell suitable for dye image tracks.

Control of projection may be either local or remote (up to three positions, *e.g.*, two studios and master control).

## SYSTEM

The images from the four projectors are multiplexed optically on to the camera photocathode by a system of prisms and lenses in a light-tight housing; a connection to this housing for projectors and camera being through small bellows. The camera uses its normal lens turret and a quick-release mechanism connects the bellows to the turret. To televise film using a normal type of projector, it is necessary to prevent the intermittent motion of the film from being seen. This is accomplished by pulse modulating the photocathode of the image orthicon by means of a pulsing unit which mounts on top of the camera. This action may be considered equivalent to a pulsed light source (either mechanical or electrical) but of greater simplicity in design and ease of synchronisation. Use is made of the storage characteristic of the image orthicon. The emission from photocathode is limited to the period during which field blanking occurs and the charge pattern formed on the target is scanned during a normal scanning period.

A regulated DC voltage is obtained from the projector drive chassis to drive the film projector motor. This voltage is finally controlled by the output of a frequency and phase discriminator which compares the television field-drive pulse with a pulse derived from the film pull-down claw mechanism. By this means the film transport is automatically synchronised to the television system so that film pull down occurs only between field blanking periods when the camera photocathode is biassed off.

Changeover from one projector to the other is by a single push button, the pulse cueing method being standard, and it is possible to run unmarried prints, *i.e.*, picture on one projector and sound on the other.

Still frames from either projector can be scanned without any need for changing lamp brightness or other controls.

The sound channels are amplified to give 0 VU (+4 dbm) with ±4 db output variation and a monitor output is also provided. Bass and treble equalisers are fitted. Standard projectors are used, the sound heads thereof being rebuilt to work up to 7000 c/s.

The slide projector magazine holds fifty slides which may be easily changed by front-of-panel control. Light from the projectors is focused on to the photocathode of the camera and directed there by prisms. When loaded, projectors are switched on and off by push buttons on the control panel which control may also be effected remotely.

Cue and communications facilities are incorporated in this equipment.

## DATA SUMMARY

**Inputs:** Mains input power, not including camera channel, 1 kVA.
Field drive at standard level.

**Outputs:** Vision, composite or non-composite at standard level.
Sound, 0 to +8 dbm, 600 Ω.

**Performance:**
Vision, as for camera Type BD624 (see page 78).
Sound. Frequency response within ±1 db from 80 c/s to 7 kc/s.
Bass control +5 db, −12 db at 70 c/s.
Treble control +5 db, −12 db at 7 kc/s.
Distortion, less than 1% 300 c/s to 9 kc/s; 2% at 70 c/s.
Noise and hum, greater than −50 db rel. +4 dbm.
Wow and flutter, less than 0·3%.
Effective slit width, less than 0·0005 in.
Photocell, antimony, vacuum. Blue sennitine suitable for colour-film dye tracks.

**Slide scanned area:** 28 × 21 mm (1·1 × 0·827 in.).

**Dimensions:**
Height (overall camera) 4 ft 11 in. (150 cm)
Width 5 ft 1½ in. (156 cm)
Depth (including camera) 3 ft 9 in. (114 cm)
Weight 700 lb (318 kg)
Height of optical centre line
4 ft (122 cm) ± ½ in. (1·27 cm)
Height of table 3 ft (91 cm)

Marconi

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