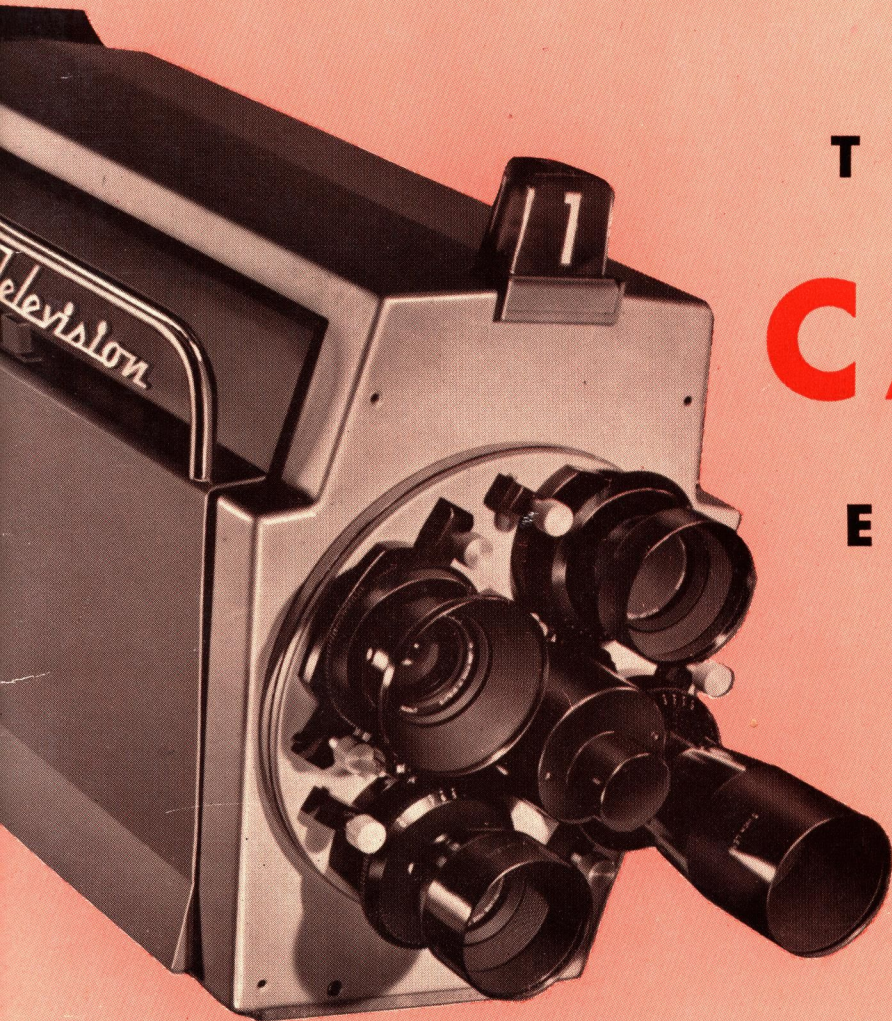


4

EDITION



TELEVISION
CAMERA
EQUIPMENT



TV CAMERAS

CAMERA LENSES

CAMERA ACCESSORIES

CAMERA MOUNTS

LIGHTING EQUIPMENT

MOBILE UNITS

TELEVISION CAMERA EQUIPMENT CATALOG

(Fourth Edition)

PRICE \$1.00



RADIO CORPORATION OF AMERICA

Broadcast and Television Division

Camden, N. J.

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Tmk(s)®

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ABOUT THIS CATALOG

This Catalog provides information on RCA TV camera equipment for television station and closed circuit use. Other RCA Broadcast Equipment Catalogs supply information on film, TV tape, terminal, microwave and audio equipment. Also on AM, FM and TV transmitters, antennas, and transmission line equipment.

The information contained in this catalog is intended to serve as a buying guide for the user. Complete specifications and ordering information are supplied. Readers who desire more information on particular equipment items are invited to write to the RCA Broadcast Representative in the RCA Sales Office nearest them (see opposite page).

OTHER RCA TECHNICAL PRODUCTS

The RCA television equipment described in this catalog is specifically designed for broadcast station and closed circuit use. RCA also manufactures many other electronic products including: two-way radio and microwave radio communication equipment; optical and magnetic film recording equipment; sound systems of all types; 16mm projectors and magnetic recorders; industrial inspection and automation equipment; scientific instruments, such as the electron microscope; industrial and other closed-circuit television systems; intercoms; and many types of custom-built equipment for industry, the military, educational and medical services. Information describing these products may be obtained from RCA Sales Offices.

HOW TO ORDER

The RCA Television Camera Equipment shown in this catalog is sold directly through RCA Broadcast Representatives, who are familiar with broadcast equipment and related problems. One or more of these RCA Representatives are

located in each of the RCA Sales Offices listed below. Orders for equipment shown in this catalog, or requests for additional information, should be directed to the most convenient of these offices.

PRICES

The prices of the various equipment units shown in this catalog are given in a separate price list. Prices are listed in the order in which they are shown in the catalog. To determine the price of any equipment first note the page

on which it is shown in the catalog, then consult the price list in accordance with this page number. Equipments are identified by type and MI (Master Item) numbers which are used to identify apparatus on invoices and packing slips.

YOU CAN LOCATE YOUR NEAREST RCA REPRESENTATIVE FROM THIS LIST

RCA SALES OFFICES

1121 Rhodes-Haverty Building
134 Peachtree Street, N. W.
ATLANTA 3, GEORGIA
Jackson 4-7703

200 Berkeley Street
BOSTON 16, MASSACHUSETTS
Hubbard 2-5765

Front and Cooper Streets
CAMDEN 2, NEW JERSEY
Woodlawn 3-8000

504 Charlottetown Mall
CHARLOTTE, NORTH CAROLINA
333-3996

1186 Merchandise Mart Plaza
CHICAGO 54, ILLINOIS
Delaware 7-0700

1600 Keith Building
CLEVELAND 15, OHIO
Cherry 1-3450

7901 Carpenter Freeway
DALLAS 35, TEXAS
Fleetwood 2-3911

3300 E. 43rd Avenue
DENVER, COLORADO
Alpine 5-6846

12605 Arnold Street
DETROIT 39, MICHIGAN
Kenwood 4-5100

1560 North Vine Street
HOLLYWOOD 28, CALIFORNIA
Hollywood 9-2154

501 N. LaSalle Street
INDIANAPOLIS, INDIANA
Melrose 6-5321

7711 State Line Road
KANSAS CITY 15, MISSOURI
Emerson 1-6770

36 West 49th Street
NEW YORK 20, NEW YORK
Judson 6-3800

495 E. 30th Street
PATERSON, NEW JERSEY
Mulberry 4-0972

1208 S.W. 14th Avenue
PORTLAND, OREGON
Capital 6-6828

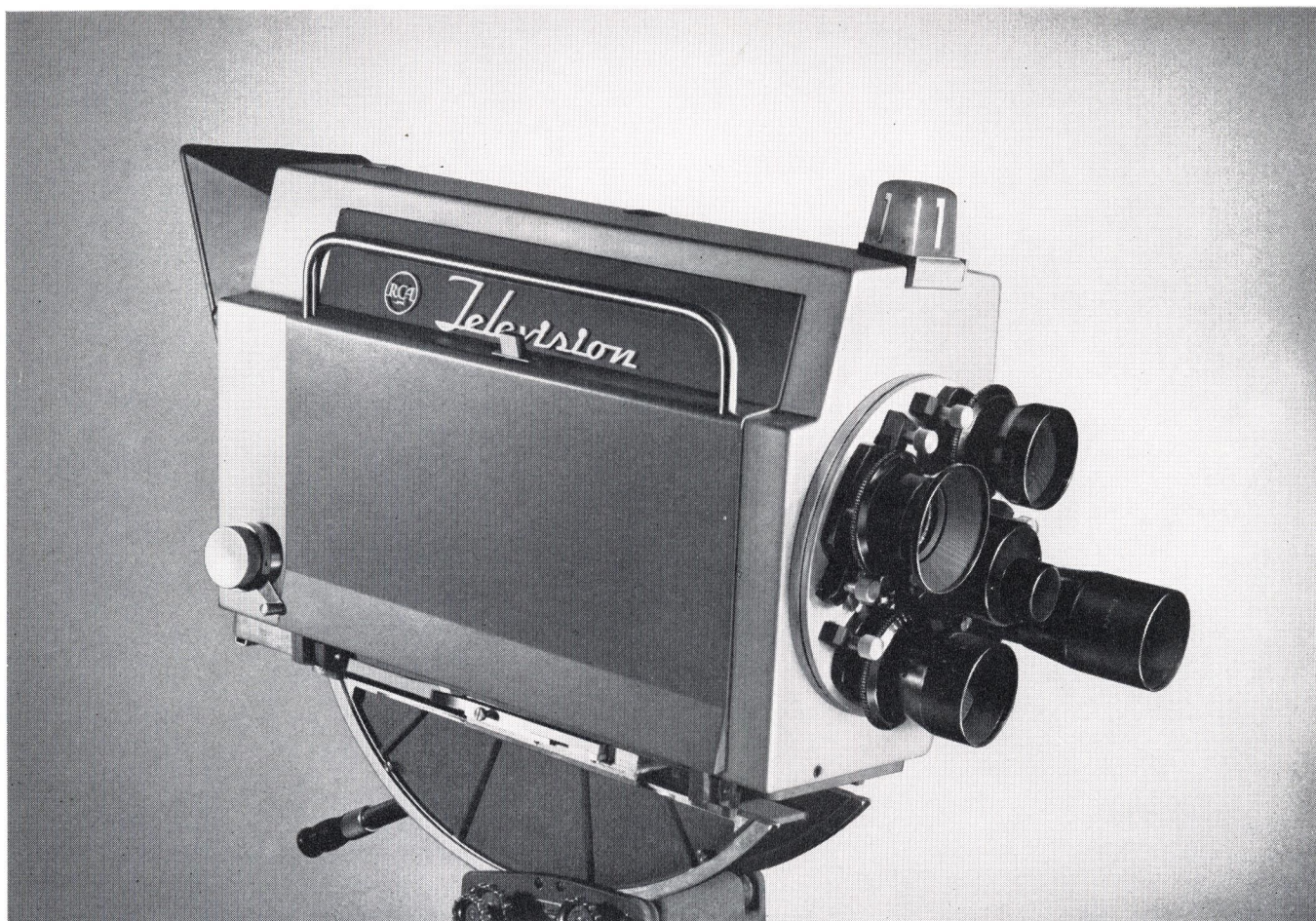
420 Taylor Street
SAN FRANCISCO 2, CALIFORNIA
Ordway 3-8027

2250 1st Avenue, South
SEATTLE 4, WASHINGTON
Main 2-8350

1725 K Street, N.W.
WASHINGTON 6, D. C.
Federal 7-8500

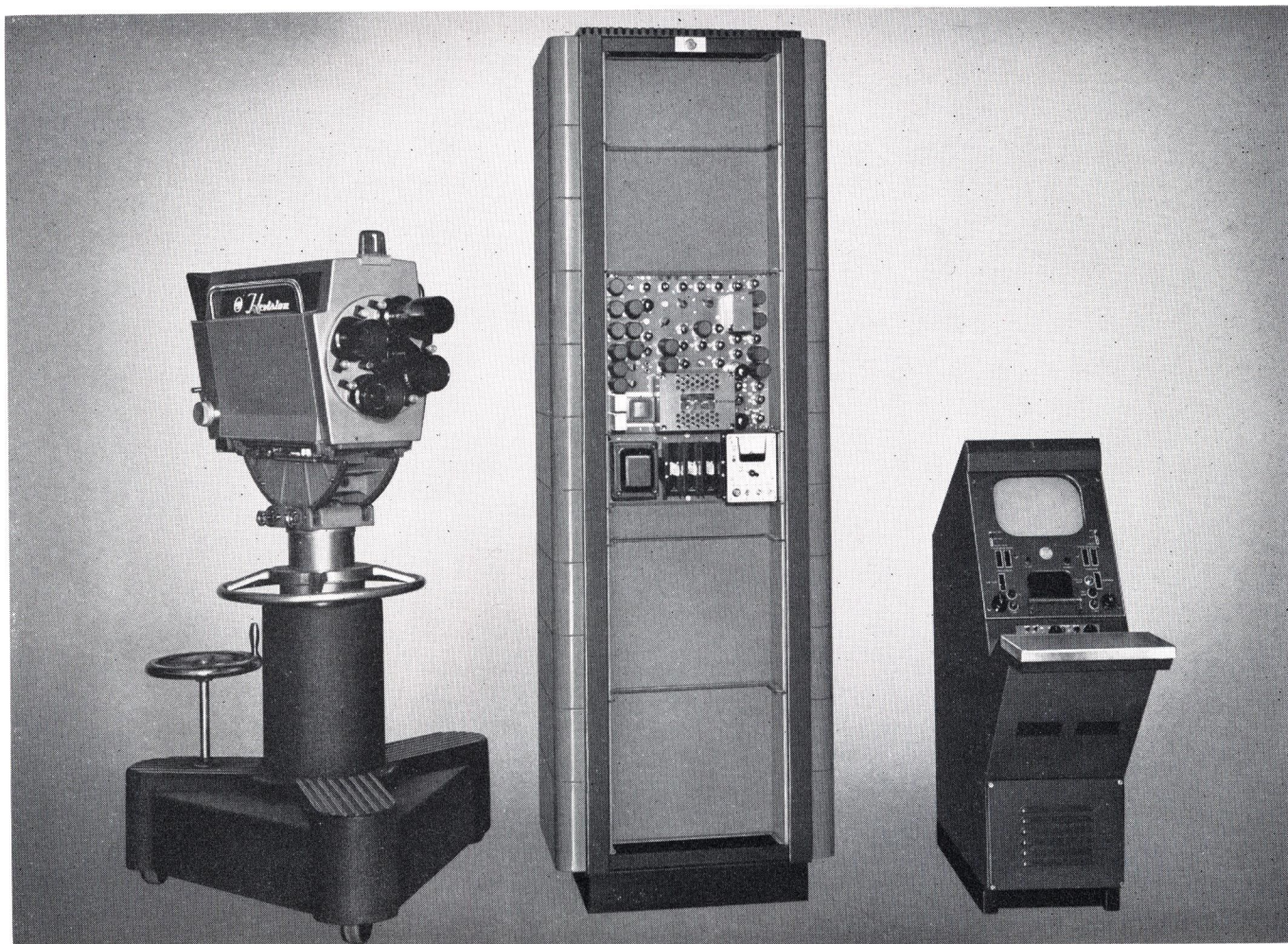
4½-inch Image Orthicon Camera Chains

Types TK-12 Studio and TK-32 Field



FEATURES

- 4½-inch image orthicon for sharper, crisper monochrome pictures
- Compact, simplified control panel with only two operating controls
- Six camera chains easily controlled by one operator
- Rapid stabilization—produces picture within one minute of cold start
- Nuvistor video preamplifier for immunity to microphonics
- Easy focus adjustment — counter-balanced yoke assembly—maintains camera balance while focusing
- 8-inch viewfinder kinescope for large, bright picture
- Built-in electronic lens cap and image orbiter
- Performance unaffected by line voltage variation from 95 to 130 volts or 190 to 260 volts
- Uses standard television camera cable



The complete TK-12 Studio Camera Chain including camera, set of lenses, camera processor, power supply, master monitor, control panel and console housing.

DESCRIPTION

The RCA TK-12 Studio Camera and the TK-32 Field Camera are all new live monochrome camera chains featuring major advances in operational simplicity, stability and performance. The basic camera, which is identical in both the studio and field equipments, utilizes a $4\frac{1}{2}$ -inch image orthicon tube which provides a substantial improvement in resolution, signal-to-noise ratio and gray scale reproduction. These qualities result in pictures having the faithfulness of detail and general high quality normally associated with fine photography.

Extensive use is made of stabilized circuitry in every part of the camera chain, beginning with the voltages applied to the image orthicon and extend through all of the video amplifiers, deflection circuits and processing circuits.

As a result, a great improvement has been achieved in stability of operation, which has permitted in turn a major reduction in the number of operating controls and the amount of effort required for operation. In addition, the frequency with which readjustments of setup controls must be made and the amount of servicing required are minimized.

Only two operating controls are provided at the camera control position. This simplification together with inherent stability makes it possible for one video operator to handle as many as six camera chains. All of the basic set-up controls in the camera chain are found in the camera. Once these set-up controls are adjusted, cameras may be interchanged freely between camera controls without change of set-up adjustments.

THE TK-12 STUDIO CAMERA CHAIN

The major units of the TK-12 Camera Chain consist of a combined camera-viewfinder (MI-26012), a processor (MI-26072), a type WP-16B Power Supply, a TM-6C master monitor (MI-26136-C), and a remote control panel (MI-26217 or MI-26357). The camera chain is supplied complete with tubes including image orthicon, a set of three lenses, a 50-foot camera cable with connectors, a camera wedge mount (MI-26884) and a 13-inch console housing (MI-26786) for the master monitor and remote control panel. The processor and power supply are designed for mounting in a standard cabinet rack. A Cradle Head (MI-26203-A) and one of the available tripods or pedestals should be ordered to support the camera.

Combined Camera-Viewfinder

The camera and viewfinder in the TK-12 are combined in a single unit. The streamlined styling of the new housing with its keystone motif and new sage-gray coloring give it distinctive, pleasing and extremely functional appearance. All circuit functions within the camera have been segregated into three subchassis units and a setup control panel. The sub-chassis units consist of a video preamplifier, a deflection chassis and an auxiliary chassis.

Access to the inside of the camera is provided by two hinged side doors which open downward, forming convenient horizontal working surfaces during maintenance periods. The video preamplifier is located in the lower lefthand side of the camera. The deflection and auxiliary chassis are mounted in opposite sides of the camera by means of swing-out hinges which permit them to be raised for access to other parts of the camera assembly and for servicing. A control panel containing the camera setup controls is mounted toward the rear of the camera in the lower left side. The image orthicon and coil assembly are located on a movable focus carriage at the bottom of the camera.

Large, Bright Viewfinder

The viewfinder of the TK-12 features an 8½-inch rectangular kinescope which produces a large, bright picture display. Maximum usable highlight brightness is at least 150 foot-lamberts with a resolution capability in excess of 600 lines. The viewfinder is normally fed by a signal from the output of the processor, permitting the cameraman to see a picture identical to that delivered to the studio output. This signal is sent over the camera cable and is equalized for flat response to the same degree as the output signal delivered by the camera. Provision is made to select remotely from the camera position an alternative signal feed through the camera cable. This feed may be used to show the cameraman a composite picture from an effects system when the camera is being used as an input

source for special effects. In addition, the input of the viewfinder may be connected locally to the output of the camera preamplifier to provide a quality check on the video signal as it leaves the camera.

Ease of Focusing

A unique arrangement has been provided to counterbalance the weight of the image orthicon focus and deflection coil assembly as it is moved backward and forward during optical focusing of the camera. As the camera is focused, this assembly is counterbalanced by the camera auxiliary subchassis which moves in a direction opposite to that of the coil assembly. In this way, the work required to move the focus mechanism is always minimum regardless of the angle-of-tilt of the camera. Furthermore, there is no tendency for the coil assembly to "slide down hill" when the camera is tilted.

Camera and viewfinder are combined in a single unit, styled for pleasing appearance and simplicity. Large 8½-inch viewfinder produces unusually bright picture with high definition.





Quick change lens mount permits insertion or removal of lens by merely turning two captive thumbscrews.

Transistor Amplifier Intercom System

Each TK-12 Camera Chain includes a self-contained intercom system with its own power supply. Two separate intercom circuits are provided between the camera and camera control position; one each for engineering and production use. Either circuit may be interconnected with the studio intercom system or operated independently. An outstanding feature is the provision of a built-in transistor amplifier and volume control at each point where a headset is plugged into the system. This provides a liberal reserve of intercom level at all times and permits each user to adjust the level to suit his own needs. Each station on the intercom system has back-loading to permit the bridging of a large number of stations without affecting sound level.

Sturdy Lens Turret

The rugged, large diameter lens turret of the TK-12 camera provides mounting facilities for four lenses with remote iris control. The 11¾-inch diameter turret provides liberal spacing between adjacent lenses, thus reducing optical interference. Rigid mechanical support and accurate optical alignment of the lenses are assured by rim support bearings at the edge of the turret, providing a solid mounting for heavy telephoto and zoom lenses. The turret shaft projects through the length of the camera and terminates in a handle at the rear, permitting change of

turret position by a simple, direct rotating motion of the handle.

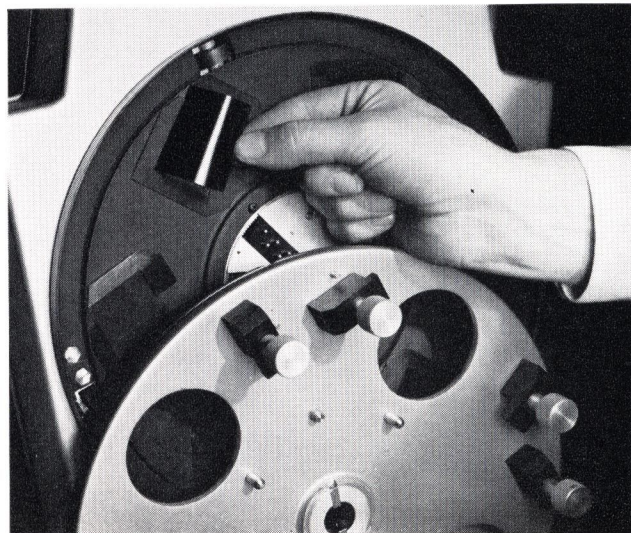
Quick Change Lens Mount

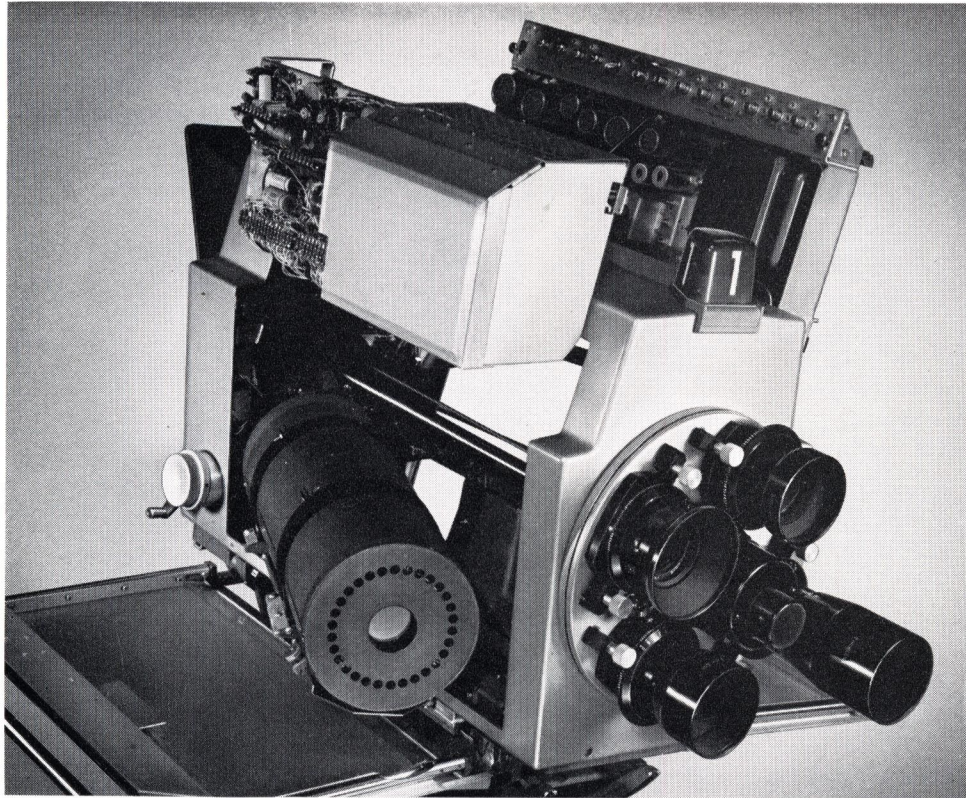
A new precision quick-change lens mount allows replacement of individual lenses by means of two captive mounting screws requiring only one-half turn to secure or to free the lens. The lens mount is designed to accommodate the MI-26882 series lenses which include mechanical provisions for linear, remote controlled iris adjustment. Mounting adaptors (MI-26883) are available to permit the use of standard thread-mounted lenses. These lenses, however, do not permit use of the remote iris control feature. Since light control is a basic technique employed in obtaining superior picture quality with the TK-12, the use of lenses with provision for remote iris control is recommended.

Clutch-Driven Remote Iris Control

Mechanical drive for remote control of iris adjustment is provided by an enclosed precision servo mechanism located at the center of the turret. A single gear engages the iris drive rings of the four lenses permitting simultaneous iris adjustment of all lenses mounted in the turret. The servo motor may be controlled either locally from the rear of the camera or remotely from the camera remote control panel. A slip-clutch guards against the possibility of damage to the lenses or drive mechanism due to jamming, and permits hand operation of iris adjustment at the front of the camera when desired. The iris drive mechanism is easily removable from the turret by loosening two thumbscrews, permitting detachment of the turret by simply removing a center nut.

Easily removable lens turret provides access to filter holder wheel with space for six neutral density filters. Holder wheel is rotated by knob from operator's end of camera. Detent stops between filters provide convenient optical lens cap.



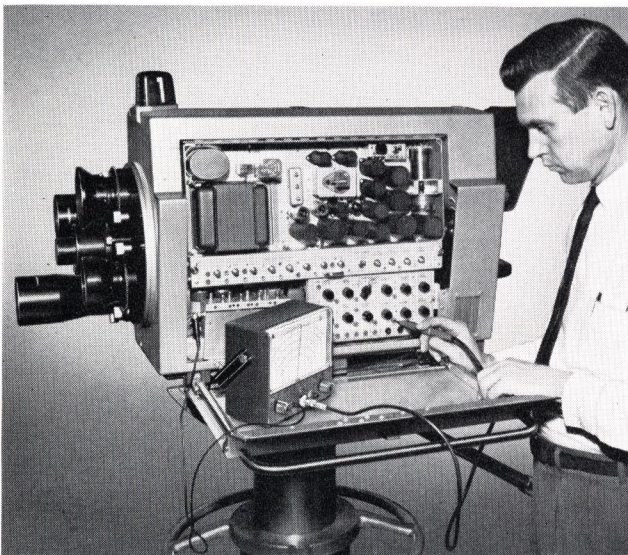


The TK-12 Camera literally turns "inside-out" for complete access to all parts.

Neutral Density Filter Holder

Immediately behind the lens turret is a disc containing six openings for the insertion of neutral density filters, any one of which may be introduced into the light path to compensate for major variations in light level. Selection

Compact pre-set control panel combines camera set-up controls and numerous test probe points for easy servicing. Sturdy side doors provide convenient work space for test instruments.

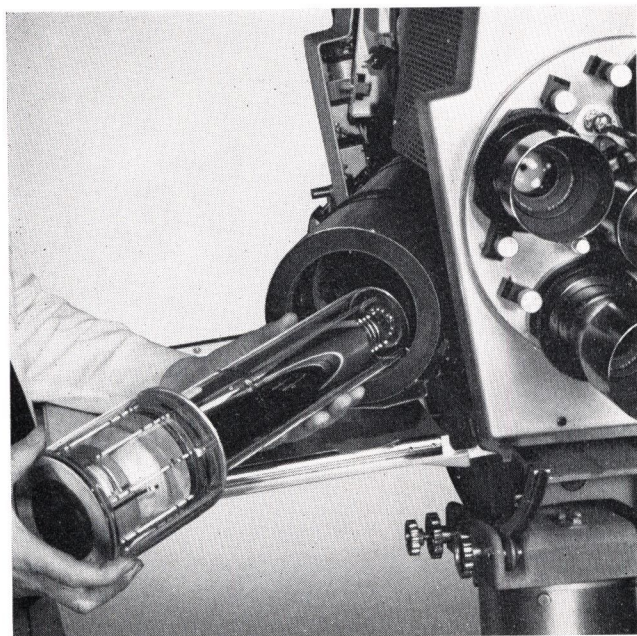


of filters is provided by a control knob at the rear of the camera which rotates the disc to the desired position. Detent stops located between filter positions permit use of the disc as an optical lens cap.

Built-In, Easy-To-Service Features

Many electrical and mechanical features are found in the TK-12 to facilitate servicing. The inherent stability and reliability of the circuits minimize the servicing required. When routine checking and repair are needed, a number of self-testing circuits make the job easy. All significant circuits are wired to pin jacks for making either meter or oscilloscope measurements of signal and power supply voltages.

In stabilized circuits employing feedback and current stabilization, many of the normal tests for tubes and circuit performance do not give significant indications. However, an effective test of such circuits can be made by an arbitrary reduction of filament voltage. In the TK-12 camera chain, means are provided for applying this reduced voltage test to one segment of the system at a time. Thus it is possible to obtain an indication of potential trouble and to isolate it to a particular area. Test switches are included in both the camera and processor for applying this type of test in a routine manner.



Swing-out yoke mounting arrangement permits change of I.O. tube within two or three minutes.

Built-in Calibration Pulse

A control for adjusting gain of the signal multiplier in the image orthicon is included among the setup controls in the camera. A built-in calibration signal is provided for making proper preset adjustment of this control. The calibration signal consisting of a symmetrical square wave at scanning line frequency, is added by a switch to the picture signal at the input of the video preamplifier. The calibration signal is factory-adjusted to provide the normal level of 0.7 volts peak-to-peak at the output of the preamplifier.

Accessibility to Image Orthicon Tube

The focus-deflection coil assembly swings out to one side for easy replacement of the image orthicon tube. This simple approach avoids the need for removal of the turret or of any subassembly within the camera in order to change the pickup tube, and reduces tube replacement time to a period of two or three minutes. The hinged mounting of the two largest chassis subassemblies in the camera provides accessibility to other areas in the camera. These subassemblies are operable in either normal or swing-out positions.

All external connections to the amplifier subassemblies of the camera are made through screw-type terminal boards or plugs and receptacles to simplify the removal of a sub-assembly if necessary. The use of terminal boards also makes it easy to check voltages and signals at terminal points. Both electrical and mechanical mountings can be

easily disconnected in case it is desirable to remove a unit for servicing or replacement.

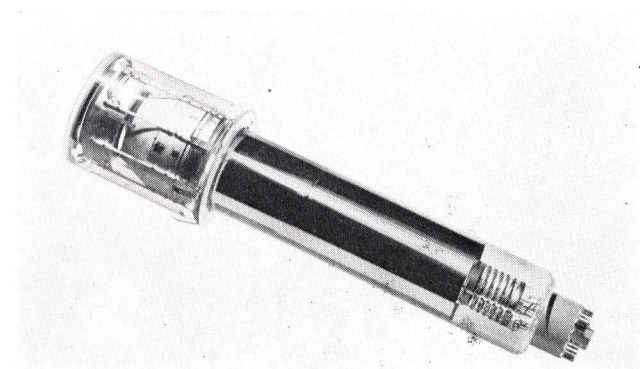
4½-Inch Image Orthicon Tube

The heart of the TK-12 Camera is the RCA 4½-inch Image Orthicon, a newly designed tube made to the same high precision standards as color pickup tubes. It features the use of a wall-mesh and high quality dynode construction which assure uniform beam landing and freedom from shading and background non-uniformities of all kinds. Close tolerances held on electrical characteristics of the 4½-inch tube are a feature of special importance which permits the use of setup controls with restricted ranges in the TK-12.

The 4½-inch tube operates on the same basic principles as the well known 3-inch types. In appearance it has the same general shape, but is simply larger in size. The significant difference from the 3-inch tubes lies in the larger area of the glass target scanned by the electron beam. It is this larger area which accounts for the ability to give increased resolution, or more significantly, increased detail contrast by a factor of almost 2 to 1. Though the target of the 4½-inch image orthicon is larger, the photo-cathode (used diameter) is the same as that of the 3-inch tube. Hence camera lenses having the same size image diagonal may be used with either 4½- or 3-inch tubes. Magnification of the electron image in the 4½-inch tube is brought about by suitable strengthening and shaping of the magnetic focusing field in the image section of the tube.

Another important feature built into the 4½-inch tube is relatively close spacing between the glass target and the mesh. As a result, signal-to-noise ratio is increased and the linear portion of the transfer characteristic is lengthened, permitting more accurate reproduction of the gray scale. Also, broad redistribution of secondary electrons is reduced, thus minimizing the possibility of overshoots and halos in the picture.

Key to superior picture quality in the TK-12 Camera is the 4½-inch image orthicon tube. While target area is twice as large for higher resolution, image magnification permits use of same size lenses as are used with 3-inch tubes.



High Voltage and Focus Current Regulation

Close regulation of the voltages applied to the image orthicon and viewfinder is of prime importance in achieving stable performance. This is accomplished by using corona-discharge tubes to maintain highly accurate voltages. In circuits where desirable to eliminate the possibility of even small variations of the voltages, the corona-discharge tubes are enclosed in a temperature-controlled oven.

In addition to precise voltage regulation for the image orthicon, the magnetic focusing field must be equally stable. Current regulating circuits are employed in the processing amplifier to maintain the focus current within a maximum variation of 0.12 percent. Current reference is obtained from the drop in a resistor having a low temperature coefficient, and voltage reference is obtained from a highly stable zener diode.

Stabilization Techniques

With normally-used fixed bias controls, the beam current in the image orthicon drifts through a rather large range during the first half hour or so of operation. To eliminate the need for constant resetting of this bias during warm-up, beam current stabilization is provided in the TK-12 by the use of feedback between G2 and G1 of the image orthicon tube. This arrangement keeps the beam at the proper value for discharge of picture-whites and for minimum noise at all times.

A separate blower is provided for temperature stabilization of the image orthicon. Separate blowers are provided for overall cooling of the camera and for temperature control of the image orthicon. Two ducts lead from the latter blower to the image orthicon yoke assembly. Cold air is channeled to the rear of the tube to cool the heater and cathode section. The other duct leads to the target area and contains a thermostatically controlled heater element to provide rapid warmup and to maintain proper operating temperature under varying ambient conditions. The thermostat is built into the coil assembly so that it is in contact with the glass shoulder of the tube near the target.

Current stabilization is used in amplifier tube circuits essentially throughout the TK-12 chain. Both temperature and aging effects which tend to cause a slump in cathode current are effectively counteracted where desirable by using a cathode resistor of high value with the grid returned to a positive voltage. Any change in emission characteristics of the tube will therefore result in only a small effective change in cathode current. Maximum use is made of feedback techniques in video output stages, deflection systems, and clamp circuits. Precision resistors

with very low temperature coefficients are used in all critical circuits to minimize drift in voltage and current and to reduce camera warmup time. These are further aids in maintaining stable signal levels, linearity, and low differential gain.

Magnetic Shielding

Special care has been employed in the design of the TK-12 deflection assembly to provide complete magnetic shielding around the tube and its associated coils. This makes it possible to operate the camera in stray fields of intensities as high as 10 gauss without significant deterioration in picture quality.

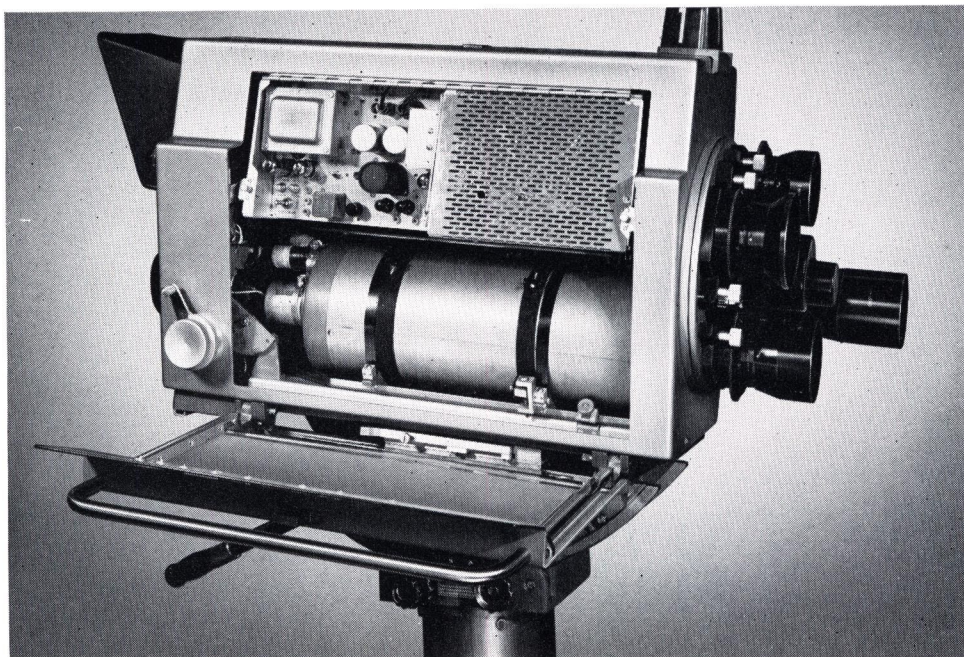
Premium tubes with high performance and long life are used wherever possible. Every effort has been made to minimize the number of tube types and to operate them conservatively. Use of these tubes along with feedback and current stabilization yields a great increase in life expectancy and general reliability. Extensive use is also made of the new, very small, Nuvistor triode tube. It is used exclusively in the video preamplifier, and in a number of other functions associated with blanking and deflection. One of the most significant characteristics of the Nuvistor (especially important to the video preamplifier) is freedom from microphonics. Other desirable characteristics include very small size, very low heat dissipation, high gain, and long life.

TK-12 Camera Controls

Essentially all of the setup controls in the TK-12 equipment are located in the camera where the viewfinder and a built-in calibration signal provide the measuring facilities required for setup adjustment, while only operating controls are placed at the camera control position. A previously adjusted camera may therefore be placed into service without need for adjusting setup controls at the camera or at the control position.

Setup functions at the camera include the usual adjustments for the image orthicon such as beam, beam alignment, target voltage, target calibration, orthicon focus, multiplier focus, G5 and G6. A separate control for the wall-mesh electrode in the image orthicon tube is also located in the camera. Size and centering control (dual centering controls to accommodate reversal of scanning) and linearity adjustments are located on the deflection subchassis, while preset shading controls appear on the auxiliary subchassis.

Operating controls which are located on the camera include turret handle, optical focusing control, and manual control for rotating the neutral density filter holder, and two switches for reversing directions of horizontal and



Camera with right side door open exposing I.O. yoke assembly and deflection chassis.

vertical scanning, respectively. The turret handle and focusing control retain the general locations and modes of operation to which cameramen have become accustomed in earlier RCA cameras. All of the operating controls listed in this group are conveniently located at or near the rear of the camera.

Remote Control Panel

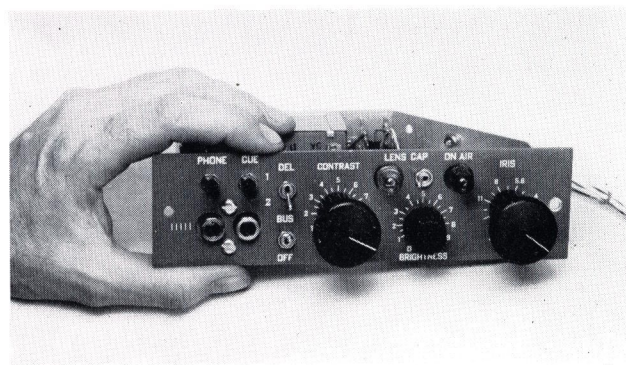
The remote control panel contains the two operating controls of the TK-12 camera chain, consisting of the remote iris control and a contrast control. The remote iris control is the principal operating control in the camera chain. An open-loop servo system drives all four lenses on the turret simultaneously. In the MI-26882 series of lenses, the iris scales are linear and identical in all focal lengths. Thus the calibrated scale at the control (either at the rear of the camera or on the remote control panel as determined by a selector switch) shows the actual iris setting for any lens in the turret.

The other operating control on the remote control panel is an innovation. It is a "contrast" control which permits the operator to change pedestal setting arbitrarily without changing peak white level. The operator may therefore set scene black to black level by adjusting only the contrast control as lighting or object reflectance changes, without the necessity of separately adjusting pedestal and gain as in earlier cameras. In addition, a setup control labeled "brightness" is provided to permit adjusting the video output level of the camera chain to the desired level. Optional connections may be made to permit use of the

contrast and brightness controls as standard video gain and pedestal controls if desired. The remote control panel also contains a remote lens cap switch and tally, an on-air tally, an intercom phone jack and headset level controls.

Two alternate versions of the remote control panel are available, identical in electrical function but designed to accommodate different mounting requirements. The MI-26357 Remote Control Panel is 11 $\frac{1}{8}$ by 2-21/32 inches in size and is designed for mounting beneath the master monitor in the space provided in the MI-26786 thirteen-inch console housing. The MI-26217 Remote Control Panel is 7 $\frac{3}{4}$ by 2 $\frac{1}{8}$ inches in size and is designed to mount in the space provided in the front of a TM-35 Portable Master Monitor.

Small and simplified camera remote control panel contains only two actual operating controls. Two versions of panel are available, MI-26217 (illustrated) for use with TK-32 Field Camera Chains, and MI-26357 for use with TK-12 Studio Chains.



Electronic Lens Cap

A special new feature, of considerable convenience when the camera is left unattended, is an "electronic lens cap." It may be applied at any time by either the cameraman or the video operator. Tallies at both locations show when the camera has been capped. A switch cuts off the accelerating voltage in the image section of the pickup tube and applies a bias of about 4 volts to the target; thus the picture is effectively removed from the tube.

Built-in Image Orbiter

Electromagnetic image orbiting and immobilization, completely self-contained in the camera, are provided at a speed of 1 rpm. A switch at the back of the camera permits orbiting with or without image immobilization or turning the orbiting system off. In the "off" position, a red tally warns operator that the orbiter is not operating.

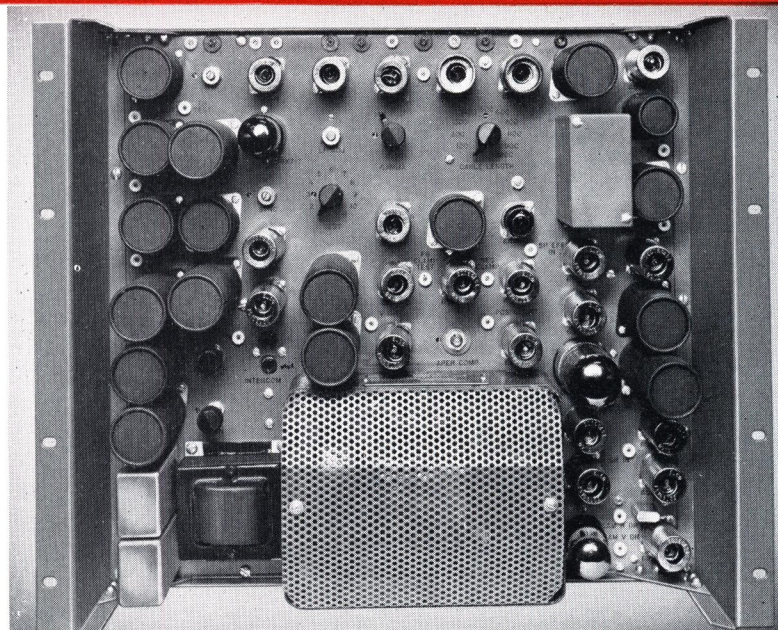
Rack-Mounted Processor

The MI-26072 processor is a rack-mounted unit built on a standard bath-tub chassis occupying 15 $\frac{3}{4}$ inches of rack space. It contains all of the circuits for processing the signal delivered by the camera preamplifier and for providing three separate outputs to the signal switching and distribution system. It contains receptacles for the camera cable, power input to the camera chain, and intercom and remote control circuits. Also included are a 24-volt power supply and other components required for a self-contained intercom system.

The improved signal-to-noise ratio obtainable with the new 4 $\frac{1}{2}$ -inch I.O. tube is sufficient to permit the use of considerable aperture correction to enhance the already improved detail response of the larger tube. Circuits are included in the processor for providing from 0-17 \pm 3 db of aperture correction peaked at 6.0 mc, with continuously variable amplitude adjustment. The same image orthicon characteristics which permit the use of aperture correction also permit the use of gamma correction. Three preset values (0.65, 0.8 and 1.0) may be selected by a switch without affecting output video level.

Accurate Cable Compensation

The processor also includes a tap switch for introducing video equalization to compensate for different lengths of camera cable. This switch provides increments in compensation corresponding to 100-foot increments in length up to a maximum of 1000 feet. The same switch assembly includes equalizing circuits for the coax used for viewfinder feed.



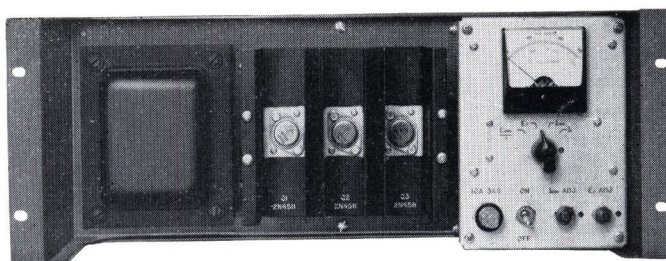
Compact, rack-mounted camera processor, MI-26072, contains variable gamma selector switch and continuously variable aperture compensation adjustment.

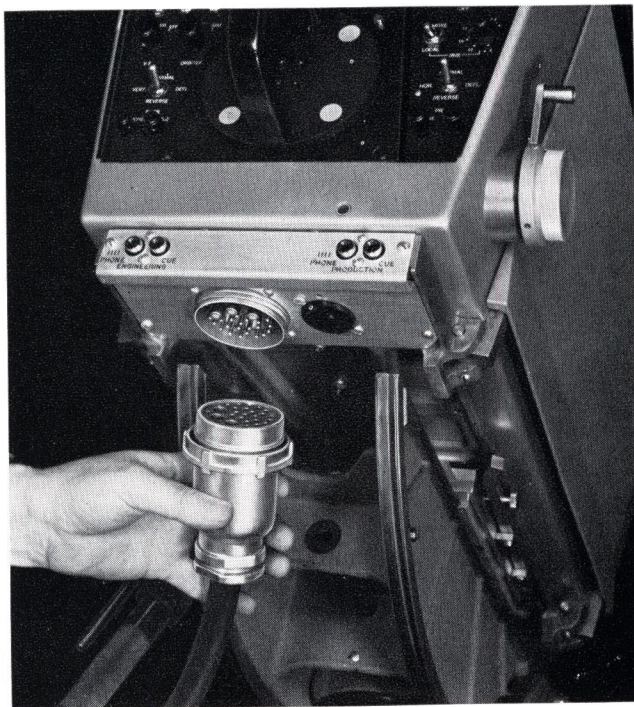
Semiconductor Power Supply

A new power supply, Type WP-16B, completely tubeless and with a current rating of 1.6 amperes at 280 volts, provides the necessary regulated power for the camera, processor and TM-6C master monitor. It also includes the necessary subchassis units which supply unregulated voltage and centering current required in the camera. Designed for minimum heat radiation and space consumption, it occupies only seven inches of rack space.

All power transformers in the entire chain, including the transistorized WP-16B, regulated power supply, are of the self-regulating type. They permit variation in line voltage between 95 and 130 volts without any need for changing transformer voltage taps. This feature also provides automatic compensation for the drop in a-c supply voltage to the camera over the camera cable up to a length of 1,000 feet. In addition, it gives assurance of stabilized heater voltages on all tubes and increases the stability and performance of the regulated d-c power supply.

WP-163 Semi-Conductor Power Supply contains no tubes or blowers. A single unit powers entire TK-12 Camera Chain.



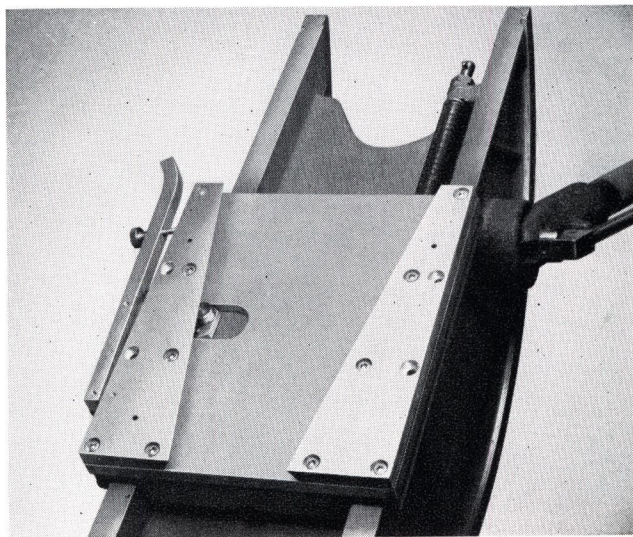


TK-12 uses standard camera cable and connectors for complete interchangeability with existing camera—saves installation cost and effort.

Wedge Mount for Camera Head

A new type of positive mount for the camera on the cradle head is provided in the form of a metal wedge and a mating wedge mount adaptor. This type of fastening permits easy and rapid mounting of the camera. The wedge mount adaptor may be easily attached to an existing cradle head by 4 screws.

Camera Wedge Mount, MI-26884, permits easy mounting of camera with accurate positioning and positive lock mechanism.



Standard Camera Cable

Because of the very extensive use of RCA MI-94 type of camera cable in nearly all television stations, the TK-12 camera chain has been designed to use the same cable. Installation of the new camera, therefore, does not require replacement of existing cables. This is an important consideration in those cases where cables are routed through conduits in studio walls and where large quantities of MI-94 cables are already on hand. The camera cable receptacle is located on the base of the camera at the rear in the position which has become familiar in earlier RCA cameras.

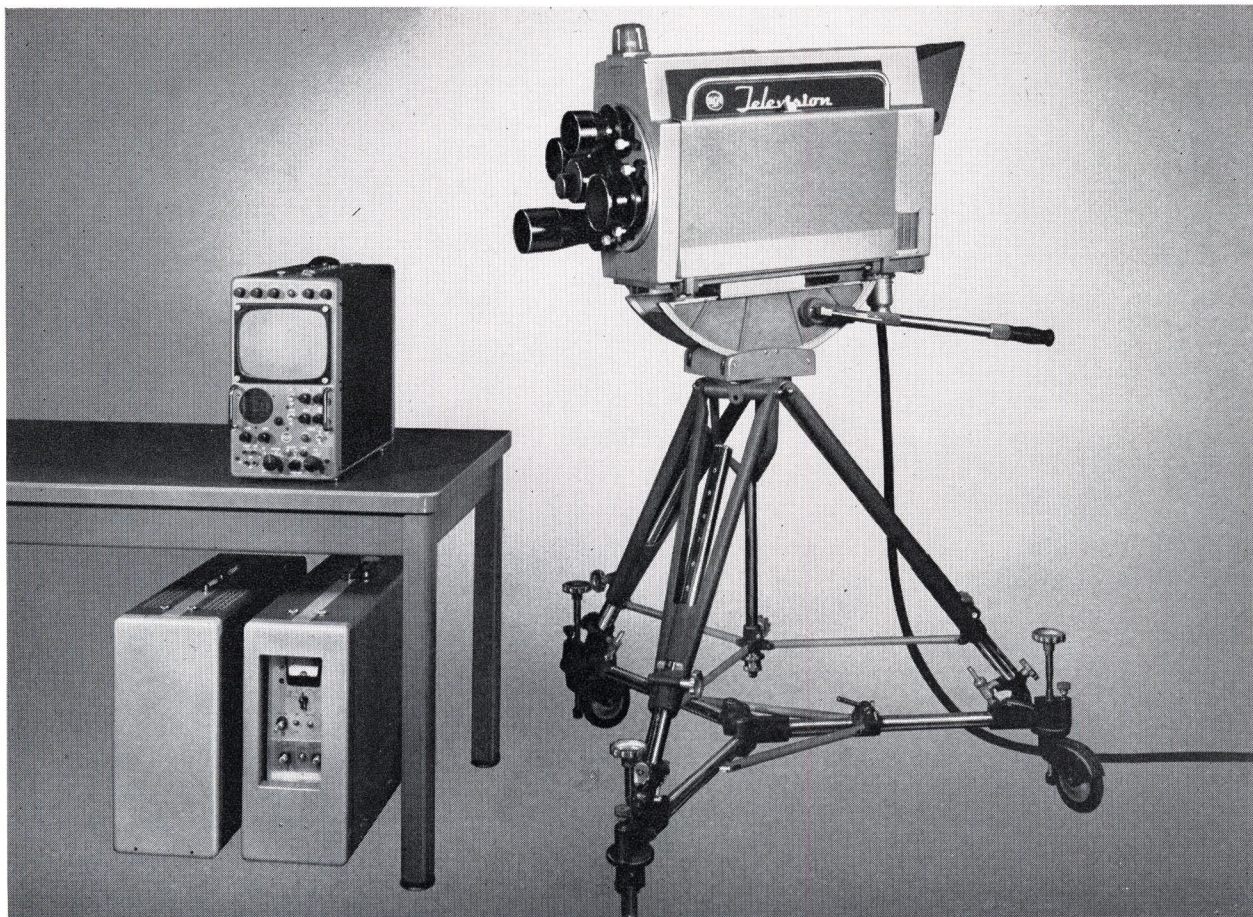
TK-32 FIELD CAMERA CHAIN

The TK-32 Field Camera Chain is similar to the TK-12 Studio Camera equipment with the exception that the TK-32 is packaged for portable field applications. The major units of the TK-32 equipment consist of a combined camera-viewfinder (MI-26012), a field processor (MI-26073), a type WP-16B power supply, a power supply field case (MI-26216), a TM-35 portable master monitor (MI-26154) and a remote control panel (MI-26217). The camera chain is supplied complete with tubes including image orthicon.

A cradle head (MI-26203-A), type TD-11A folding metal tripod (MI-26046), set of interconnecting cables (MI-26359), set of camera cables with connectors (50, 100 and 200 foot lengths), set of three lenses and a set of shock mounts complete the camera chain.

The camera-viewfinder unit of the TK-32 Field Camera Chain is identical with that of the TK-12 equipment. The field processor is similar to the rack mounting processor with the exception that the field unit is housed in an attractive, portable field case and utilizes field type connectors mounted on a sub-panel at one end of the case. A similarly styled field case is supplied for the WP-16B power supply. The camera remote control panel fits into a space provided in the front of the TM-35 portable master monitor.

The TM-35 portable master monitor with remote control in place may be mounted on a portable field desk (MI-26599) or any convenient operating table. The field processor and WP-16B power supply may be mounted beneath the desk since neither unit contains operating controls.



Complete TK-32 Field Camera Chain, including camera with cradle head and tripod, portable master monitor with camera remote control panel installed, field processor (at lower left) and WP-16B Power Supply in field case.

SPECIFICATIONS

General¹

Type of Reproduction.....	Monochrome
Number of Scanning Lines.....	525
Frame Repetition Rate.....	30 per sec.
Field Repetition Rate.....	60 per sec.
Line Repetition Rate.....	15,750 per sec.
Picture Signal.....	1.0 volts, peak-to-peak composite, nominal 1.4 volts, peak-to-peak composite, optional
Picture Polarity at Output.....	Black negative
Viewfinder Display Size.....	4 1/2" by 6" approx.
Viewfinder Brightness.....	150 foot Lamberts Max.
Impedance of Coaxial Transmission Line.....	75 ohms
Maximum Length of Camera Cable.....	1000 feet

Picture Quality

Limiting Horizontal Resolution ²	700 TV lines minimum in center, 500 TV lines minimum in corners
Signal-to-Noise Ratio ²	Nominal 36-0 db peak-to-peak signal/RMS noise for bandwidth of 4.5 mc
Square Wave Tilt.....	Adjustable to zero at vertical rate
Blanking Signal Overshoots.....	Not in excess of EIA specifications
Overall Frequency Response:	
With 100 ft. Camera Cable.....	+0.8 db, -1.2 db to 6 mc Not below -5.5 db at 10 mc
With 1000 ft. Camera Cable.....	+1.8 db, -1.9 db to 6 mc Not below -8.5 db at 10 mc
Power Frequency Hum Output.....	At least 50 db below 0.7 video output level
Scanning Aspect Ratio.....	4:3
Scanning Linearity.....	Within $\pm 1\%$ normal or overscan within that central circular portion of raster having diameter equal to picture height; within $\pm 2\%$ elsewhere.

Overscan Amplitude.....	Horizontal 5%; Vertical 5%
Retrace Intervals.....	Horizontal 7.0 μ sec.; Vertical 635 μ sec.
Range of Centering Adjustment.....	Horizontal $\pm 10\%$; Vertical $\pm 20\%$
Orbiting.....	Approximately circular path 5% dia. of picture height at 1 RPM. With immobilization, motion in received picture not over 1%

Operational

Remote Iris Control.....	Elapsed time to cover entire range: 3 sec.; accuracy of setting: ± 0.25 lens stop
Contrast Control.....	Range: 0% to 50% clipping of blacks; change in peak whites over this range: $\pm 1\%$ maximum of normal peak white level
Electronic Lens Cap Control.....	Two-Way switch on remote control panel, operating in conjunction with similar switch on camera
Gamma Correction.....	Switchable to three preset values of 0.65, 0.8 and 1.0
Aperture Correction.....	Peaked at 6.0 mc; amplitude adjustable continuously from 0 to $+17 \pm 3$
Camera Cable Equalization ²	Adjustable in steps of 100 ft. to a maximum of 1000 ft.

¹ The TK-12 equipment is also available for operation on 625 line, 50 field standards and from 50 cycle, 115 volt or 230 volt power source.

² These values of limiting resolution may be achieved only if specified signal-to-noise ratio is also achieved since excessive noise will tend to mask fine detail. Signal to noise ratio is dependent on proper adjustment of preset controls in camera and on performance of image orthicon tube.

SPECIFICATIONS (Continued)

Electrical

Input:

Horizontal Drive.....	4.0 \pm 0.5 volts, peak-to-peak negative ⁴
Vertical Drive.....	4.0 \pm 0.5 volts, peak-to-peak negative ⁴
EIA Blanking.....	4.0 \pm 0.5 volts, peak-to-peak negative ⁴
Effects Signal to Viewfinder.....	Video at 0.7 volt nominal, 1.0 volt nominal, black negative
Audio Cue Signal.....	Balanced into 60 ohms, 2W level

Output:

Video No. 1, No. 2 and No. 3.....	Non-composite level either 0.7 or 1.0 volt, peak-to-peak black negative ⁵ (Sync may be added to any two outputs)
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Isolation Between Any Two Non-composite

Outputs.....	At least 40 db from 1 kc to 1 mc
	At least 30 db from 10 cps to 10 mc

AC Power Input (Total including master monitor

and WP-16B power supply).....	95 to 130 volts or 190 to 260 volts, 60 cycles, approx. 1,200 watts
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DC Power Load (from WP-16B Power Supply)

	Including TM-6C	Excluding TM-6C
Regulated, +280 V.....	1350 ma	900 ma
Unregulated, \pm 400 V.....	200 ma	200 ma
Centering Current, -4 V.....	1000 ma	1000 ma

Tube and Semiconductor Complement

Camera-Viewfinder:

1-6AU4	2-GV3A1300R	2-2N369 transistor
1-6CZ5	1-GV4S1600A	2-2N404 transistor
2-6DQ5	4-6922	3-2N585 transistor
20-7586	2-7199	1-7295-A I.O.
1-6688	1-M42C	1-8HP4 Kinescope

Processor:

2-12AX7	2-6080	1-7119
2-6BC7	7-6688	1-2N369 transistor
2-6BX7	12-6922	

NOTE: For tube and semiconductor complements of the Master Monitor and Power Supply see separate catalog description of these items.

Mechanical

Overall Dimensions:

Camera-Viewfinder	
Camera Case.....	15" wide, 19 1/2" high, 26 1/4" long
Overall Camera with Viewfinder Hood, Turret, Iris Drive and Tally Light.....	15" wide, 22" high, 36" long
Processor (Rack Mounting).....	19" wide, 15 1/2" high, 10" deep
Field Processor.....	8 1/2" wide, 18 1/2" high, 23" long
Remote Control Panel (TM-35 Mounting).....	7 3/4" wide, 2 1/8" high, 3 1/2" deep
Remote Control Panel, (Console Mounting).....	11 1/16" wide, 2-21/32" high, 3 1/2" deep
WP-16B Power Supply, Rack Mounting.....	19" wide, 10 1/2" high, 13 1/2" deep
Field Case for WP-16B Power Supply.....	8 1/2" wide, 18 1/2" high, 27 1/2" long
TM-6C Master Monitor.....	13 1/8" wide, 18" high, 20" deep
TM-35 Portable Master Monitor.....	8 1/2" wide, 15 7/8" high, 20 3/4" deep
Console Housing.....	12 1/4" wide, 44 1/4" high max., 46" deep max.

Weight:

Camera-Viewfinder	150 lbs.
Processor, Rack Mounted.....	60 lbs.
Field Processor	70 lbs.
Remote Control Panel, TM-35 Mounting.....	1 1/2 lbs.
Remote Control Panel, Console Mounting.....	2 lbs.
WP-16B Power Supply, Rack Mounting.....	71 lbs.
WP-16B Power Supply in Field Case.....	80 lbs.
TM-6C Master Monitor.....	55 lbs.
TM-35 Portable Master Monitor.....	49 lbs.
Console Housing, 13-inch.....	75 lbs.

Equipment Supplied

Type TK-12 Monochrome Studio Camera Chain including the following:

Including TM-6C Master Monitor			Including TM-35 Master Monitor		
Qty.	MI Number	Description	Qty.	MI Number	
1	26012	Camera-Viewfinder	1	26012	
1	26882-3	Lens f/2.0, 50mm.....	1	26882-3	
1	26882-4	Lens f/2.0, 75mm.....	1	26882-4	
1	26882-5	Lens f/2.8, 127mm.....	1	26882-5	
1	26877	4 1/2-inch Image Orthicon, Type 7295-A	1	26877	
1	26072	Processor, Rack Mounting.....	1	26072	
1	26357	Remote Control Panel, Console Mounting	—	—	
—	—	Remote Control Panel, TM-35 Mounting	1	26217	
1	26084-B	WP-16B Power Supply.....	1	26084-B	
1	26083-A	Centering Current Supply, Plug-in	1	26083-A	
1	26082-A	Unregulated High Voltage Supply, Plug-in	1	26082-A	
1	26136-C	TM-6C Master Monitor.....	—	—	
1	26579-B	Blower for TM-6C.....	—	—	
1	26667	CRO Tube for TM-6C, Type 5ABP1	—	—	
1	26655	Kinescope for TM-6C, Type 10SP4	—	—	
—	—	TM-35 Portable Master Monitor.....	1	26154	
—	—	Console Adaptor for TM-35.....	1	26873	
1	26786	13-inch Console Housing.....	1	26786	
1	26725-E5	Camera Cable, 50-feet.....	1	26725-E5	
1	26884	Wedge Mount	1	26884	

Type TK-32 Monochrome Field Camera Chain including the following:

1	Camera-Viewfinder	MI-26012
1	Field Processor	MI-26073
1	Shock Mount for Processor.....	MI-26511-A6
1	Remote Control Panel.....	MI-26217
1	WP-16B Power Supply.....	MI-26084-B
1	Centering Current Sub-chassis.....	MI-26083-A
1	Unregulated High Voltage Sub-chassis.....	MI-26082-A
1	Field Case for WP-16B.....	MI-26216
1	Shock Mount for WP-16B.....	MI-26511-A5
1	TM-35 Portable Master Monitor.....	MI-26154
1	Shock Mount for TM-35.....	MI-26511-A3
1	Lens, 50mm f/2.0.....	MI-26882-3
1	Lens, 75mm f/2.0.....	MI-26882-4
1	Lens, 127mm f/2.8.....	MI-26882-5
1	Wedge Mount	MI-26884
1	Cradle Head	MI-26203-A
1	TD-11 Metal Tripod.....	MI-26046
1	Set of Interconnecting Cables.....	MI-26359
1	Camera Cable, 50 ft.....	MI-26725-E5
1	Camera Cable, 100 ft.....	MI-26725-E6
1	Camera Cable, 200 ft.....	MI-26725-E7
1	Type 7295-A Image Orthicon Tube.....	MI-26877

Optional and Accessory Equipment

Cradle Head	MI-26203-A
Television Pedestal, Type TD-3A.....	MI-26036
Television Pedestal, Motor Drive, Type TD-9M.....	MI-26038
Console Well Adaptor for MI-26357 Remote Control Panel	MI-26212
Rack Adaptor for MI-26357 Remote Control Panel.....	MI-26254
Rack Adaptor for MI-26217 Remote Control Panel.....	MI-26887-2
Left Panel Assembly and Side Cover for Console Housing	MI-26788-1
Right Panel Assembly and Side Cover for Console Housing	MI-26788-2
Upper Left Side Cover Only.....	MI-26789-1
Upper Right Side Cover Only.....	MI-26789-2
TV Mounting Adaptor for Standard Threaded Lenses.....	MI-26883
Spare Video Preamplifier for TK-12 Camera.....	MI-26889
Spare Remote Iris Drive Assembly for TK-12 Camera.....	MI-26888
Spare I.O. Yoke Assembly for TK-12 Camera.....	MI-26880

⁴ Pulse widths as specified by EIA in RS-170. Terminals for signals are arranged for loop-through connections with isolating filters.

⁵ Circuits terminated at sending end and $Z_0 = 75$ ohms.

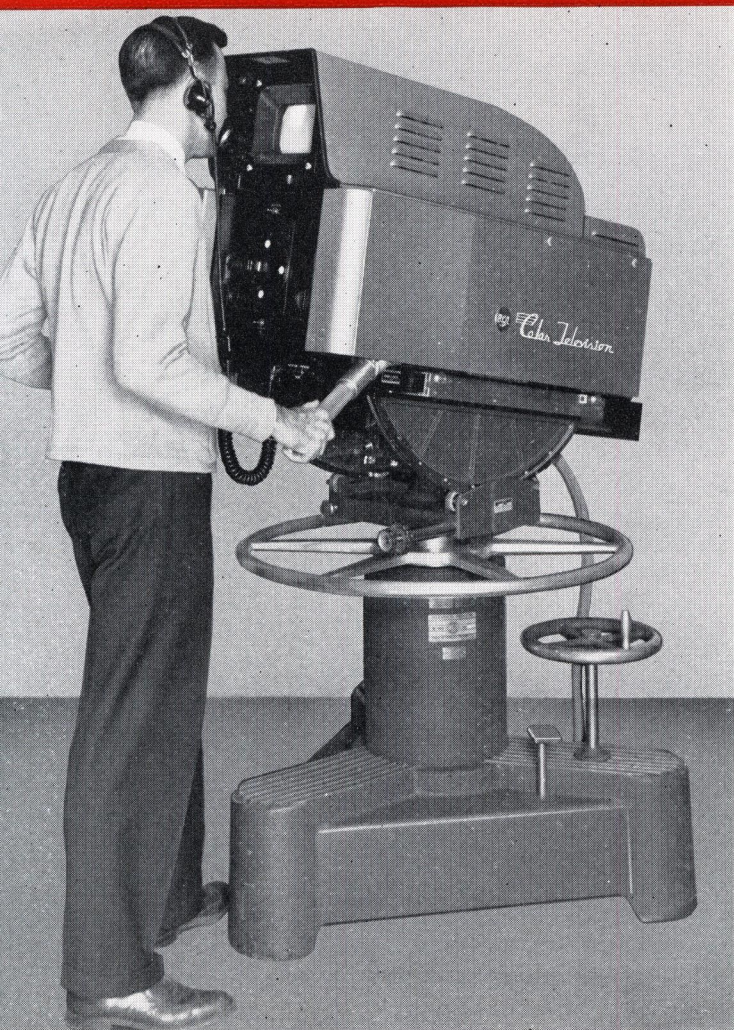
Color Camera Chain

TYPE TK-41C



FEATURES

- All-purpose live color TV camera providing low noise, high resolution picture
- All controls conveniently located—only one master control needed for on-air operation of camera chain
- Prism optics eliminate "ghosts"
- Precision yokes allow precise registration
- Single camera cable included
- Optional console mounting or rack mounting available for camera control equipment
- Performance independent of line voltage variation over wide range
- Built-in camera cable equalization
- Optical orbiter extends life of I.O. tubes
- Forced-air ventilation of pick-up tubes
- Stable, fixed, plug-in gamma corrector units
- Uses standard TV and zoom lenses
- Short warm-up period and drift-free operation achieved by use of highly stabilized circuits throughout camera



Ease of manipulation will delight the studio cameraman and aids in maintaining smooth program performance.

DESCRIPTION

The RCA TK-41C Color Camera Chain provides the television broadcast station with the ideal means of originating beautiful, full-color programs. Live color programming permits maximum realization of the benefits of color—adding a brilliant new dimension to programming techniques and presenting commercial products in thrilling reality. Local color originations of studio programs and commercials, sporting events, community parades and festivals can build station prestige and stimulate sponsor interest. Live color commercial inserts and station breaks between color network and color film features hold and strengthen viewer interest by maintaining color program continuity. Color mobile units, designed to handle up to five color cameras, are available to extend the use of color cameras to a broad variety of field programming applications.

Dependable and Economical Performance

Designed with the objective of providing an easily operated, space-conserving and economical color television

pick-up system, the TK-41 series of cameras have earned wide acceptance throughout the broadcast industry. Their performance and reliability have been thoroughly proven by extensive use under daily operating conditions. The camera is easily handled and is designed for operation by a single cameraman. A cradle type camera mounting head, which accurately maintains the camera in balance about its own center of gravity, results in maneuverability and convenience of operation comparable to that of monochrome studio camera equipment.

The TK-41C camera employs the same complement of standard lenses as monochrome camera equipment. The camera control equipment includes a processing amplifier which is identical with that used with the RCA Type TK-26B 3-Vidicon Color Film Chain. Centralized controls provide minimum setup time. During "on-air" operation, the camera control operator can control signal processing for best picture quality by the use of only one knob. Control operations can be located at a console or rack position as desired.

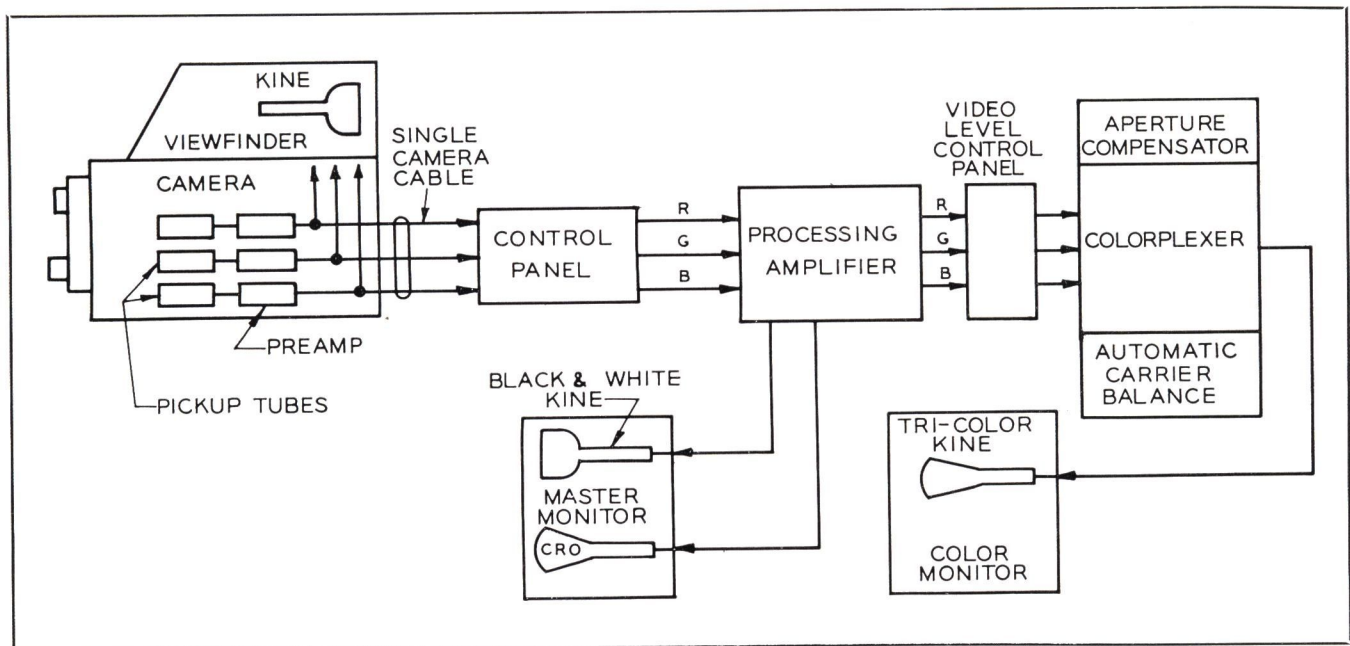
Camera Chain Components

The TK-41C Color Camera Chain is functionally similar to monochrome camera chains in that it consists of a live pick-up camera in addition to signal processing, control and monitor units. The major equipment units include the color camera, viewfinder, camera control panel, processing amplifier, TM-21C color monitor, TX-1D Colorplexer with aperture compensator and automatic carrier balance, TM-6C master monitor, and power supplies.

The color camera proper contains a light splitting prism optical system, three image orthicon tubes to provide red, blue and green signals, horizontal and vertical deflection circuits for the image orthicons, a target blanking circuit, regulated high voltage and negative voltage circuit, image orthicon protection circuit, and three plug-in video pre-amplifiers, one for each of the three color channels. The electronic viewfinder includes a 7TP4 kinescope with necessary deflection and video circuits to provide a picture for the camera operator.

The three video signals from the color camera are fed directly to the camera control panel on which both operating and selected set-up controls are located. These signals are in turn fed to the processing amplifier which performs the functions of cable compensation, video amplification, blanking and shading insertion, feedback clamping, linear clipping, gamma correction and output amplification as well as providing auxiliary switching for the master monitor kinescope and CRO.

The processing amplifier feeds a monochrome master monitor, which provides both kinescope and CRO displays of signals at various vital points in the system, selected by push-button. A colorplexer combines the processed video signals into a single FCC standard color signal. The color-



Simplified diagram showing major components of the TK-41C Color Camera Chain. The lineup features considerable space and cost saving advantages over previous color chains.

plexer feeds a tri-color monitor and the camera switching system. This unit accepts the red, green and blue signals from the image orthicons and transforms them to M, I, and Q signals. These are adjusted with respect to bandwidth and delay and then multiplexed to produce one composite signal from the three input signals. An aperture compensator connects in series with the luminance channel of the colorplexer. The output of the colorplexer is fed to the studio video switching system. A TM-21C Color Monitor is also included in the chain and is utilized at the camera control position to provide a check on the quality of the final color picture.

TK-41C Color Camera

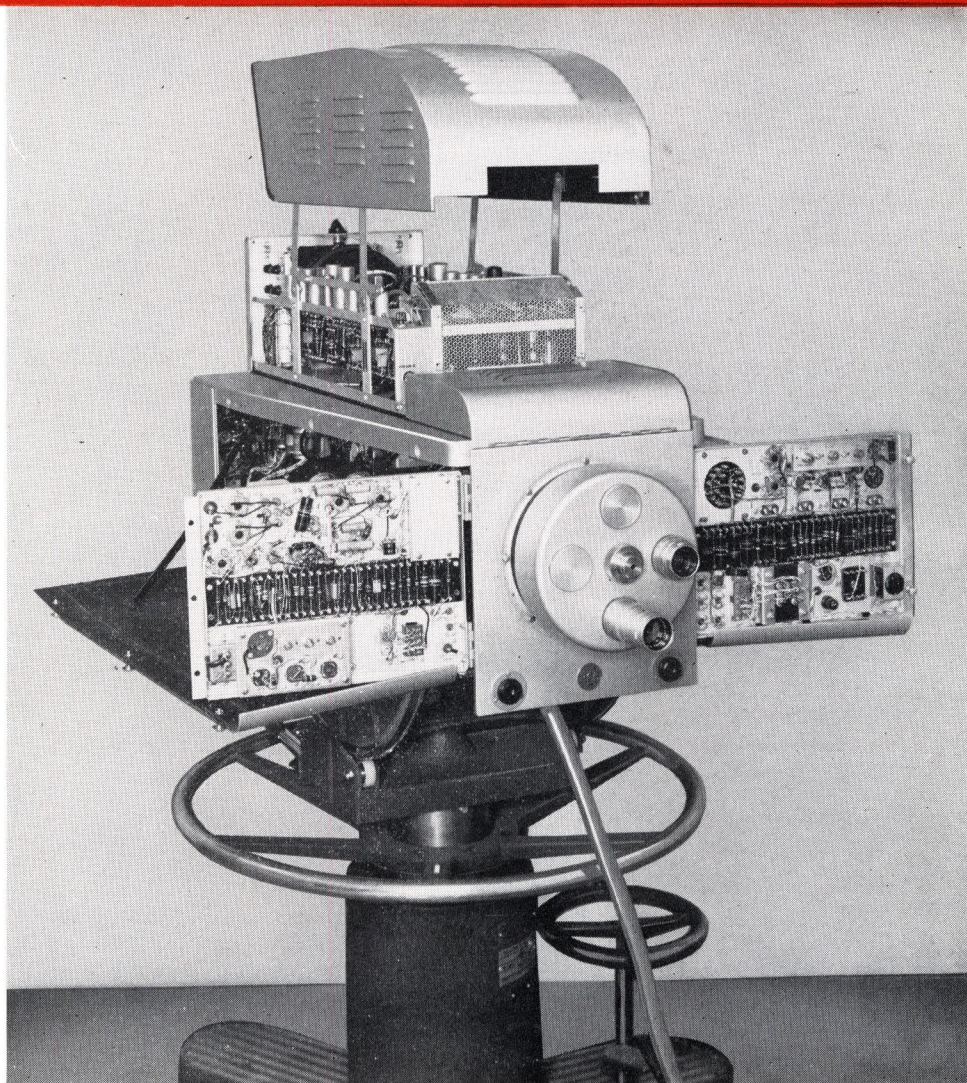
The RCA Color Camera contains the three image orthicon pick-up tubes with their focus, deflection and beam-alignment coils, complete horizontal and vertical deflection circuits, the video preamplifiers, blowers, light-splitting optical system, turret with four lens positions, and means for adjusting optical focus and remote iris opening.

The camera is entirely self-contained with the exception of the d-c power supplies, video processing amplifier and certain electrical controls which are located for operating convenience at the camera control panel. All electrical connections to the camera are made through a single eighty-two conductor camera cable attached by a connector in such manner as to permit the cable to be brought toward the front of the camera, drawn through a special cable clamping bracket, and then draped in a gradual curve to the floor out of way of the cameraman.

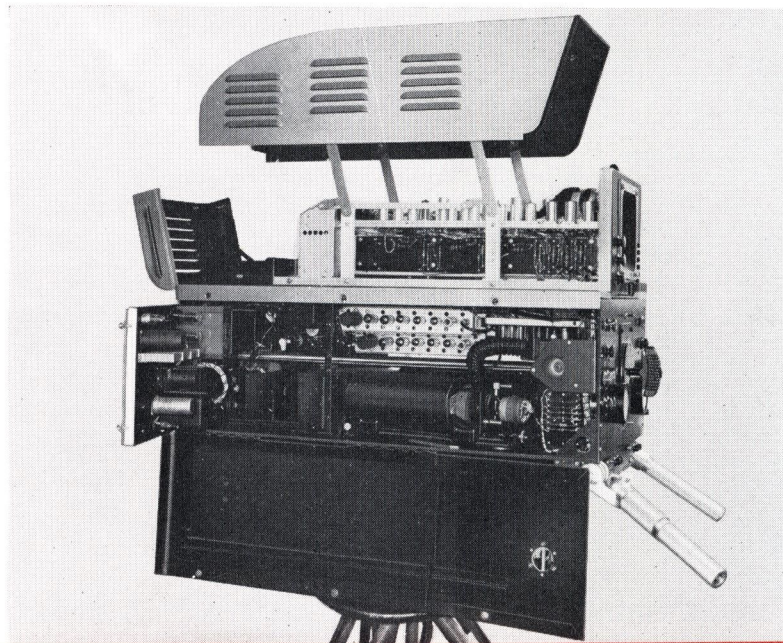
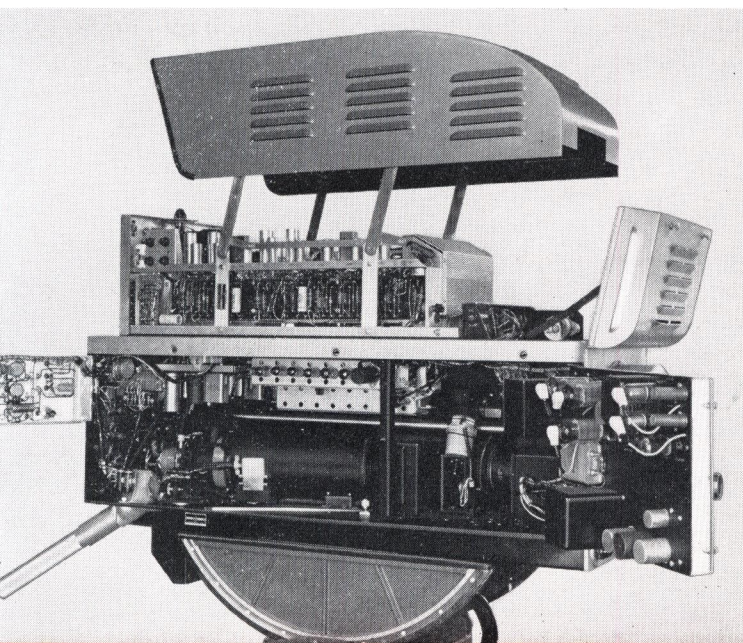
Physically the TK-41C Color Camera is 15 inches high, 44 inches long, and the width tapers from 16 inches at the front to a maximum of 21 inches at the rear edges of the side door covers. On the front end of the camera is the lens turret, and on the rear are the local electrical set-up controls and the control handle for rotating the turret. The optical focus handle is located on the right. This focus control and the turret handle are normally the only two controls which require the attention of the cameraman during a television program.

Improved Operational Stability

The TK-41C incorporates a number of design improvements for ease of operation and assurance of highest picture quality. A new focus current regulator holds focus current to within 0.1 per cent for accurate and stable registration. A low impedance blanking circuit provides immunity to horizontal deflection crosstalk. The addition of temperature compensation to the vertical deflection coils has reduced the required camera warmup period and assures long-term stability of registration. Vernier adjustments are provided for horizontal and vertical size, linearity, skew and centering adjustments. Excellent stability of color balance has resulted from stabilization of the image orthicon multiplier gain. Through "super regulation" techniques the image orthicon electrode voltages are maintained to 0.25 per cent, thereby virtually eliminating electrical focus drift. A stabilized beam current supply assures optimum signal-to-noise ratio and proper shading of the picture over long periods without touchup.



COMPLETE ACCESSIBILITY to all circuits and controls makes maintenance and servicing of RCA color camera a pleasure for both operators and service technicians.



Electro-Mechanical Lens Cap

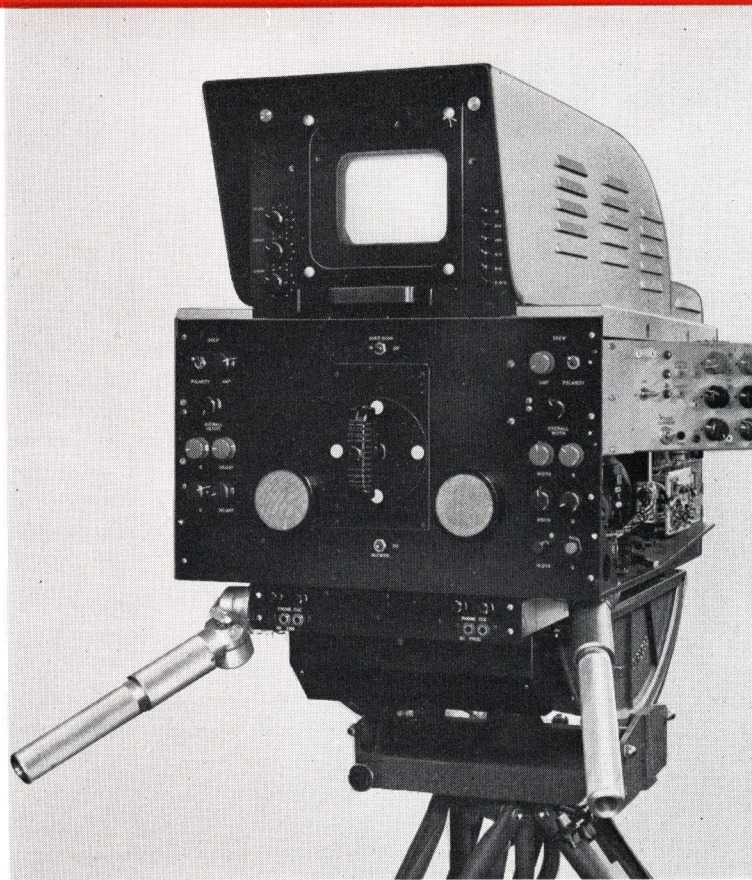
A remote-controlled douser type optical lens cap permits precise adjustment of black level and precision adjustment of color balance for precise matching of cameras. An improved field lens holder maintains precise alignment of the field lenses on the optical axis and avoids vignetting, while a new turret and detent mechanism provides noise-free rotation of the lens turret. Camera test facilities have been centralized with test probe points and selector switches grouped on a convenient test panel within the camera. New full-length side doors provide substantially improved access to the camera interior.

Transistor Intercom System

Two sets of communication and program sound and associated volume controls jacks are mounted on a strip installed below the back operating panel at the rear of the camera. A transistor intercom system provides high level voice communications between the camera operator, the camera control operator, and the program director or other studio personnel. Variable volume controls allow individual adjustment of sound level. Electrical registration controls are also located on the rear plate of the camera behind hinged covers. They include the following independent controls: red and blue skew, with polarity reversing switch, height, width, and vertical and horizontal Q adjustment. An off-on switch operates the blower motors. An overscan switch is also provided. The G-5 controls are located just inside the left side cover near the rear of the camera. Dynode gain controls are similarly located on the right side.

Complete Accessibility

The side door panels of the camera housing swing outward making all components readily accessible for servicing. From the cameraman's position, the right side door exposes the hinged horizontal deflection chassis, which may be swung 180 degrees from its normal position, permitting replacement of tubes and access to the remote iris synchro motor driving mechanism and other parts of the optical system. The yoke assembly of the red channel and the tube side of the red channel video preamplifier are also exposed. When the left side panel is dropped, the hinged vertical deflection chassis can also be swung outward 180 degrees. It permits further access to elements of the optical plate assembly, and the blue and green channel yoke assemblies. The Type 7513 Image Orthicon tubes can be replaced by removing a single holding screw of each yoke assembly and swinging the yoke assembly out the sides of the camera. The yoke assemblies have been designed and are held to very close tolerances



Set-up controls shown above are all conveniently located behind hinged doors. Only two handle controls are needed for on-air operation of camera.

so that when used with Precision Image Orthicons very precise registration is obtainable.

Raising the ventilation hood at the front of the camera gives access to the connections of two heater transformers in this area as well as the relay lens and vertical compensator elements of the optical system. The elapsed time indicator is visible when the hood is raised. Viewfinder component and circuit tests together with tube replacements may be made with the viewfinder cover in the raised position.

The viewfinder may be removed from the camera to provide access to wiring of the hinged shelf type chassis at the rear of the camera. This shelf is used for tie points for the image orthicon sockets, and for filtering components of the deflection circuits. Included here are the three video preamplifier input coupling and filter circuits. The image orthicon protection circuit with its associated tube and relay is also mounted here. Loss of either the vertical or horizontal deflection to the yokes of any of the

image orthicons in the camera causes the circuit to bias off the image orthicons. This prevents the beam from being concentrated in a single line or spot which might cause permanent damage.

Plug-In Video Preamplifiers

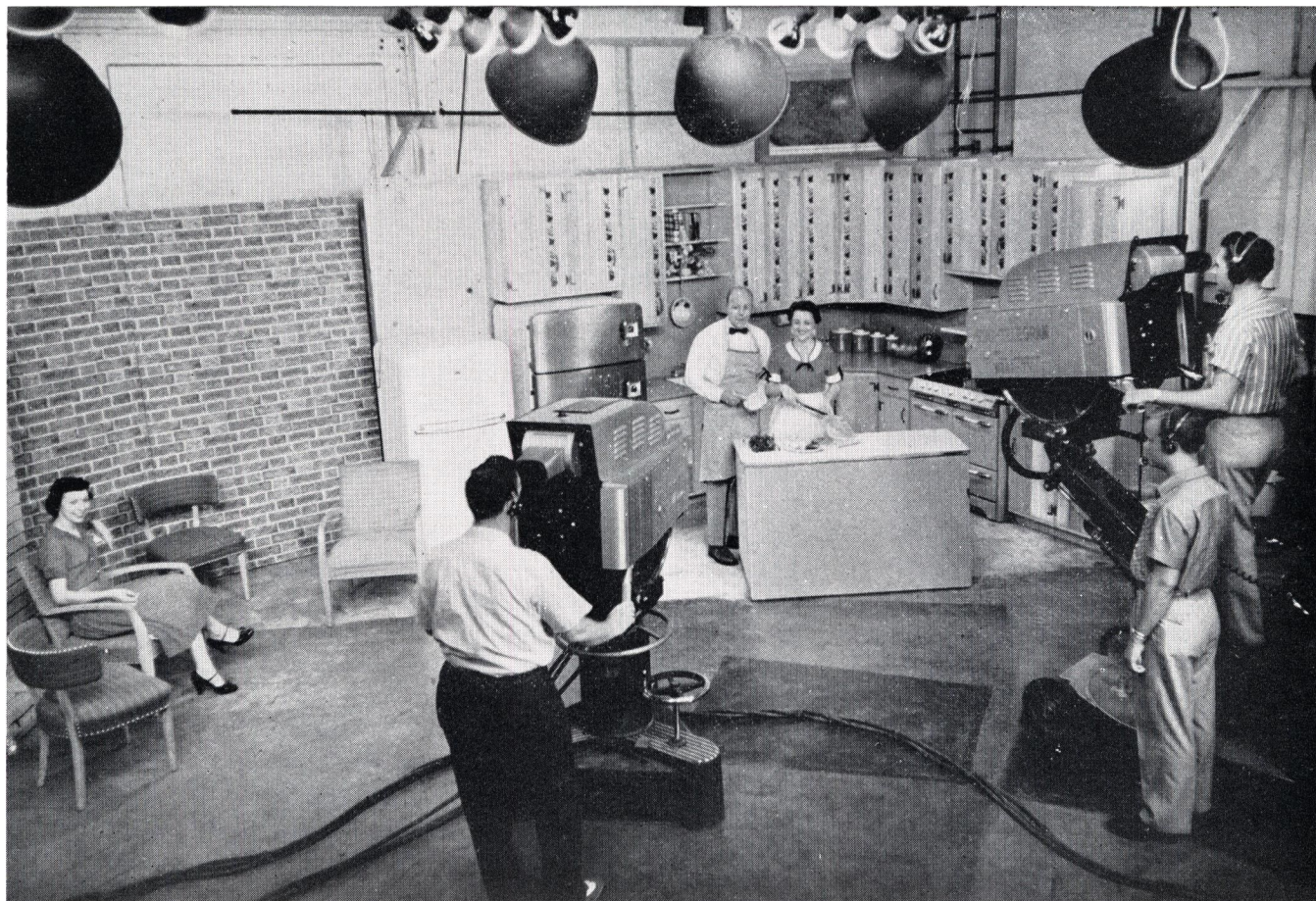
Removing the viewfinder also gives access to the plug-in preamplifiers located just ahead of the top shelf. These supply the red, blue and green signals to the camera cables and the camera viewfinder. Each of the preamplifiers includes six stages. The first four are simple shunt-peaked stages. The second stage has a screwdriver adjusted cathode peaking circuit for adjusting tilt in the low-frequency end of the response curve of the amplifiers. In the cathode of the third stage there is a similar circuit with a knob type control which may be adjusted to give minimum streaking for the associated image orthicon. The last two stages are a feed-back pair, providing cathode output to the 51-ohm camera cables and to the viewfinder. There is an adjustable trimmer in this stage which affects the response curve tilt at the high-frequency end. Each of the preamplifiers is shock mounted and bonded to the cross members of the upper camera framing.

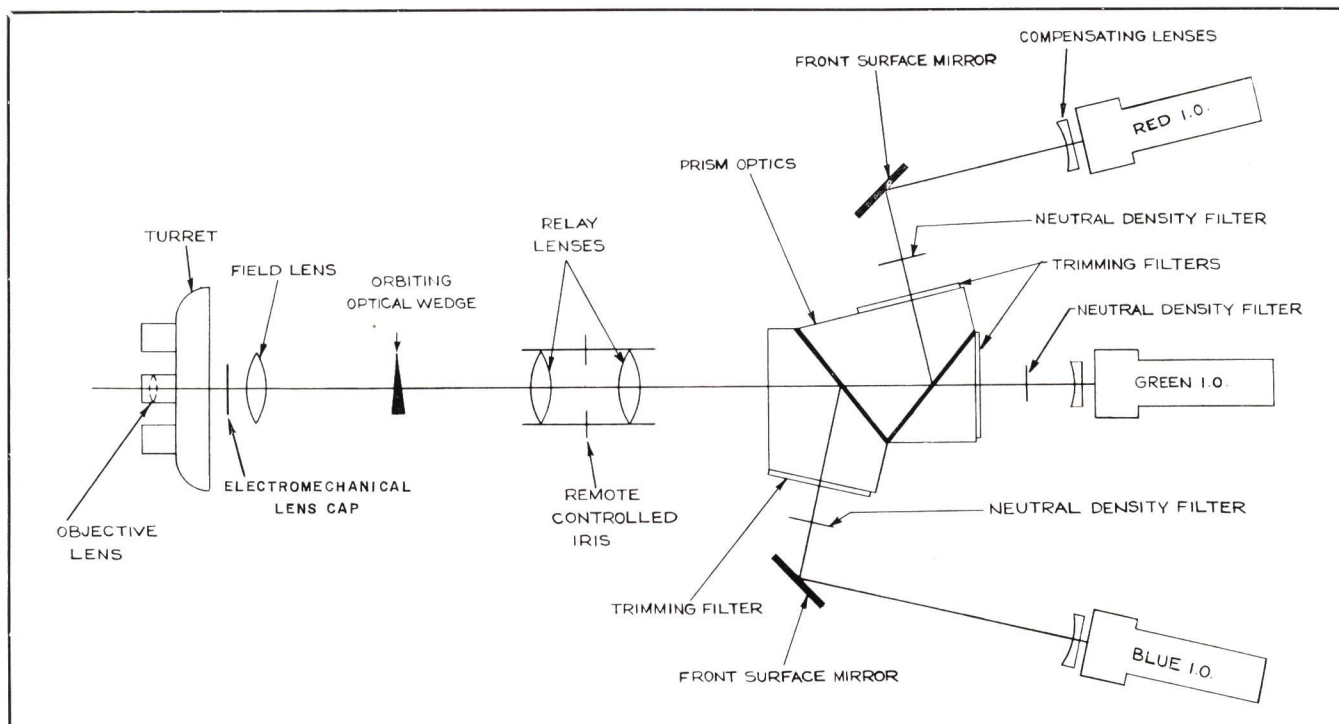
Two tally lights are mounted on the front face of the camera. They serve to indicate to the actors when the camera is in actual use. In addition, there is one on top of the viewfinder for directors and one on the kinescope bezel plate for the operator. The latter are operative, however, only when used in conjunction with a camera switching unit. The lights are normally off until a tally relay is actuated by a control voltage (24 volts d-c).

Filtered Forced-Air Ventilation

The individual image orthicon tubes and the area within the camera housing are forced-air cooled. Separate blowers are used to cool the individual image orthicon tubes. Cooling air is brought into the socket end of each yoke assembly by means of flexible hose leading from its associated blower. Replaceable air filters reduce the necessity for frequent cleaning of the optical system. All external areas of the camera and viewfinder have an aluminum finish to further aid in maintaining optimum temperature conditions within the camera. Two utility outlets and a fuse are mounted on the under side at the back end of the camera. They provide facilities for an independent source of a-c that may be used for test equipment.

WBAP-TV studio scene showing a typical color telecast.





Optical system diagram for MI-40500-B Color Camera.

Prism Optical System

The rotatable lens turret accommodates four objective lenses. A set of camera lenses having focal lengths of 50, 85, and 135 mm is supplied. Telephoto lenses may also be mounted on the turret. The optical axis of the taking lens is at the bottom section of the turret. The turret is attached to a shaft that protrudes through a stationary drum. The drum serves as a light trap as well as a support for the lens turret shaft. Each objective lens has a matching field lens mounted on a "spider" support housed within the drum. The objective lenses and associated field lenses remain properly matched at each selected position of the lens turret. Lens selection is achieved by means of a handle type manual control on the back panel of the camera.

Optical focus is accomplished by moving the lens turret longitudinally along the optical axis. This is done by rotating the focus handle located at the right rear of camera. Focusing secondary image on each of the red, blue and green image orthicons is achieved by sliding the individual image orthicon yoke assemblies backward or forward along their respective optical axis during initial set-up.

A complete relay optical system is mounted behind the field lenses. It consists of a vertical astigmatism corrector, de-polarizing filter, relay lenses, remote control iris, prism-dichroic blocks, light filters, front surface reflective mirrors and field flatteners. The purpose of this system is to separate the light image into three primary color images and direct each to the photo-sensitive cathode of an individual image orthicon tube. The individual components in this system are mounted on a supporting base plate. The com-

plete unit can be taken from the camera by removing four screws that secure the base plate to the camera frame and then disconnecting the cable attached to the iris control selsyn.

Sealed Dichroic Surfaces

The dichroic surfaces are sealed within a solid prism optical block to eliminate any multiple reflections within the optical system and to prevent deterioration of the dichroic surfaces from dust or handling.

Color trimming filters are used in conjunction with the prism-dichroic surfaces to adjust the overall spectral sensitivity curves as desired for the color camera. The front surface mirrors are adjustable in two directions in order to center the image on the red and blue image orthicons after the camera is positioned to center the image on the green image orthicon. These mirror adjustment controls are brought to the outside of the light tight optical assembly so that adjustment can be made in strong light without removing the light box covers. No special tools are required for these adjustments. The neutral density filters required to balance the sensitivity of the three channels can likewise all be inserted without removing the light tight covers. The three image orthicon tubes are mounted within focus and scanning coil assemblies, located at the rear of the optical assembly. Located directly ahead of the photo cathode of each image orthicon is a field flattener lens. These lenses serve as part of the relay optical assembly to provide an evenly illuminated image with good corner geometry and forms.

Optical Image Orbiter

Located in a vertical plane between the vertical astigmatism corrector plates is a rotating circular glass plate with a slight taper that gives a circular movement to the image on the photocathodes of the image orthicon tubes. The unit is driven by an a-c motor at a rate of approximately one orbiting cycle per minute. The picture movement is so slight and so slow that it is not apparent to the viewer; however, it virtually eliminates image burn-in on the image orthicon tubes. This extends the life of the image orthicons and reduces operating costs.

Stabilized Camera Viewfinder

The viewfinder is used by the operator of the color camera to frame the scene, to aid in focusing the camera, and to facilitate in setting up the camera registration. The viewfinder consists of a monochrome kinescope provided with deflection, blanking and video circuits required to provide a picture for the camera operator. A six push-button selector switch at the right of the viewing screen enables the operator to view any channel separately, to view the red or the blue superimposed on the green, or to view all three images superimposed. The focus, brightness, and contrast controls are mounted to the left of the viewing screen.

The single channel positions are used when making adjustments on individual channels; the red on green and blue on green are useful for registration adjustments. The switching is accomplished by altering the bias on the input amplifier tubes; each of these tubes is kept at cutoff except when it is desired to view the particular signal connected to its input. Blanking pulses of adjustable duration are produced by two multivibrators (triggered by horizontal and vertical drive) and added to the video signal before application to the viewfinder kinescope. A d-c restorer is included to maintain optimum contrast and brightness of the viewfinder over a wide range of scene content and compositions.

The viewfinder is designed to slide in guides and lock in position directly above the camera. All signal and operating voltages are fed to the unit through a self-aligning socket connection that automatically engages when the unit slides into place. A pull handle to facilitate the installation and removal of the viewfinder is located on its operating panel just below the viewing screen. To the left of this handle is a thumb latch to release the unit from a locked position. The viewfinder is covered by a multi-louvered hood which can be raised to facilitate ease in servicing the unit. A detachable viewing hood (MI-40502) is attached to the viewfinder control panel for shielding the viewing screen from extraneous light.

Camera Mounting Equipment

A cradle type tilt head, designed especially for use with the color camera, provides ease of maneuverability in both tilting and panning of the camera and viewfinder, comparable to that of the RCA monochrome camera. The TK-41C is provided with a TD-9C Motor Driven Pedestal for general studio use.

The TK-41C camera control units may be conveniently mounted in the Control Console. This control position includes: (1) a TM-6C Master Monitor mounted in its Console Housing with the Video Level Control Panel, and (2) a Master Console Housing in which the Camera Control Panel and the Processing Amplifier may be mounted. This Master Console Housing is designed to mount the 19-inch Camera Control Panel in the indented section of the console desk and the Processing Amplifier in the top sloping portion of the console. The camera control equipment also includes a TM-21C Color Monitor. This may be suspended from the wall or ceiling or set upon a stand.

If preferred, all of the TK-41C control equipment may be rack mounted with the exception of the color monitor. In this case a Rack Mounted Control Desk and Accessory Kit, MI-40415, is available to provide desk space at the rack location.

Simplified Control Panel

The Camera Control Panel, on which the remote control adjustments of the color camera are mounted, is located

Master Monitor and Processing Amplifier mounted in new console housings. The consoles are also designed to house Camera Control Panel, Color Monitor, and other camera chain equipment.



in the sloping portion of the desk section of the 19-inch console which houses the processing amplifier. It lies below and in front of the processing amplifier front panel, and has a cover plate through which only two controls protrude. These are the Pedestal and Iris Control knobs. The latter operates the remote iris selsyn motor in the optical system, and is the only control required during program origination. Mounted directly above this control, in the processing amplifier panel, is the iris f-stop indicator meter. In normal operation, the remote iris control performs the function of overall gain control for the complete color camera chain. The master pedestal control provides simultaneous adjustment of the pedestal voltage in the three channels. Set-up controls for each of the three image orthicons may be reached by lifting the cover plate.

Colored knobs identify the three video channels. The individual channel controls include horizontal and vertical centering, alignment, orthicon focus, multiplier focus, image focus, image accelerator voltage, target voltage, and beam current. Also provided is a target test knob to aid in setting target voltage accurately and rapidly, as well as a selector switch which permits the metering of: target, orth focus, image focus and multiplier focus voltage settings in each color channel.

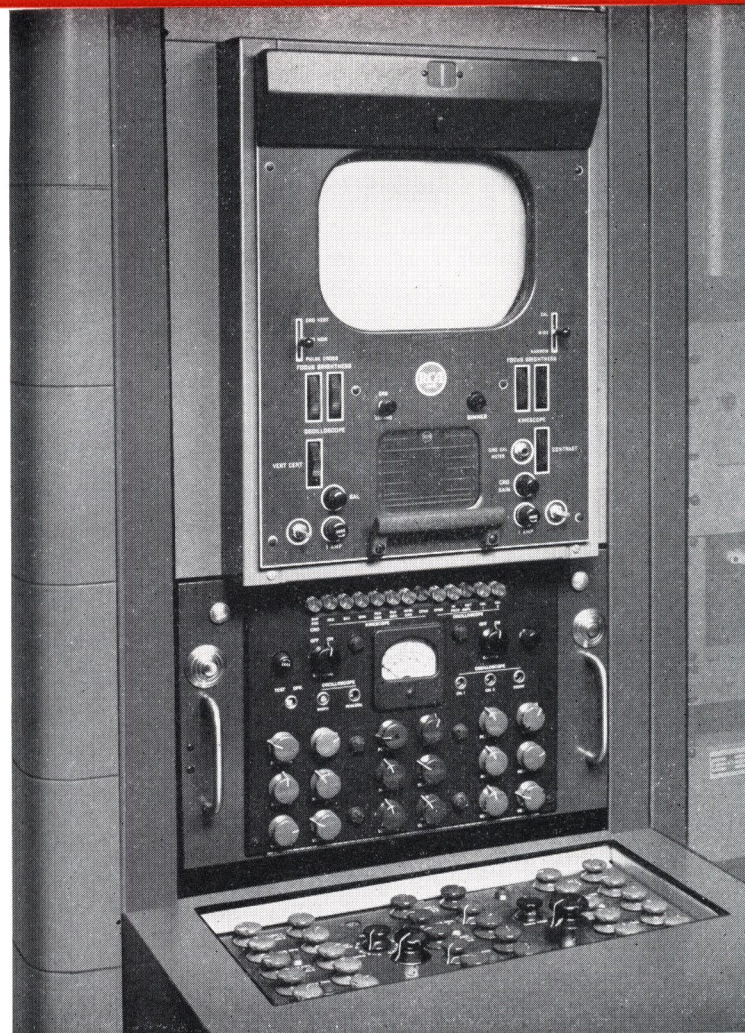
Video Level Control Panel

The Video Level Control Panel is mounted adjacent to the MI-40535 Camera Control Panel. The Video Level Control Panel consists of three attenuator pads located in the video line between the Processing Amplifier and the Colorplexer to allow precise settings of the white balance, thereby completely eliminating pedestal-riding during programming. The control may also be used to introduce color shifts of precisely controlled amplitude into the picture to compensate for minor color differences between cameras. The pads are thus used as trimmer adjustments to achieve true color picture uniformity between cameras.

Compact Processing Amplifier

The Processing Amplifier of the TK-41C has been designed to perform a great number of functions in a single versatile unit. Integration of these electrical functions in a single unit results in a simple, space-conserving system. Use of this design allows set-up time to be substantially reduced and requires fewer video operators and control room engineers for programming. Hence considerable savings in operating costs can be realized. A large reduction in power required as well as increased tube life due to extremely conservative operation of tubes further reduce costs, at the same time improving performance and overall quality.

The basic circuit elements in the processing amplifier are three plug-in video amplifiers which perform accurately and with extreme stability the following functions: cable



Optional rack mounting for the TK-41C control equipment may be specified. A convenient desk with top panel removed to reveal set-up controls is shown above.

compensation, video amplification, blanking insertion, shading insertion, feedback clamping, linear clipping, gamma correction, and output amplification. Pulse circuitry needed for the camera and shading generators, is obtained from stabilized multi-vibrators. These multi-vibrators provide pulses of constant amplitude and width independent of the incoming pulse. These circuits require no tube selection and are completely stable. Shading signals are provided for insertion of either horizontal or vertical shading. A fourth plug-in unit serves as the video section of an electronic switcher which is an integral part of the main chassis. The switcher, used with Master Monitor, TM-6C, provides an individual or combined presentation of red, blue and green video.

The entire chassis of the processing amplifier is drawer-slide mounted for easy pull-out for servicing. The front panel is hinged, thus permitting it to be opened to facilitate removal of tubes and servicing of other components behind the panel.

An edge-lighted translucent plastic escutcheon is mounted on the outside surface of the panel to provide illumination of the nomenclature for the various controls when the unit is operated in semi-darkness. All controls are conveniently mounted on the panel. Thirteen lucite pushbuttons at the top of the panel control the switching arrangement which permits separate Master Monitor Kinescope or CRO observation of important test points, including individual channels, various channels superimposed, and colorplexer output. A staircase signal for the CRO circuit is provided for a sequential display of red, blue, and green channels.

Precision Master and Color Monitors

The Type TM-6C Master Monitor provides in a compact form a complete monitoring unit for the observation of the camera chain's video signals. It is used for both picture (kinescope) and waveform (oscilloscope) monitoring of signals at any stage of transmission from the camera to the output of the colorplexer. Careful scrutinization of a number of details of the video signal may be performed which will aid in maintaining proper level and color balance, as well as obtaining registration during set-up.

The unit employs a special ten-inch aluminized, straight gun, electro-statically focused kinescope for direct picture monitoring and a five-inch, flat faced, cathode ray tube for waveform presentation. When used with the processing amplifier of the color camera, the wide band CRO display consists of three adjacent waveforms corresponding to the red, blue, and green video signals.

The Color Control Monitor, Type TM-21C, provides an accurate, stabilized color picture display at high brightness level and is extremely useful in pinpointing parts of the color chain requiring adjustment. The equipment affords the control operator precision checks on camera registration, color balance, shading, deflection and transmission system transients, and effects of pedestal adjustments, as well as camera deflection linearity, chroma level and phase of hue adjustments. It greatly simplifies camera



Type TM-21C Color Monitor, MI-40226-C, provides stable, accurate color picture display for continuous check of picture quality.

matching and provides a standard against which color performance can be evaluated. Long term stability of the monitor is assured by liberal use of feedback. Time devoted to monitor adjustments is negligible.

Optional Rack Mounting of Camera Controls

All the units normally housed in the consoles—Master Monitor, Control Panel and Processing Amplifier may be rack mounted. To complete the camera chain, a Colorplexer, aperture compensator, automatic carrier balance, focus current regulator and a set of two WP-16B power supplies also mount in standard 84-inch cabinet racks.

Television Color Camera Chain Power, Space, Tube and Weight Information

Equipment	MI	Tubes	D-C ma	A-C Watts	Total Heat	Rack Space	Weight
Color Camera—Defl.	40534	40	225 + (210 at 360 v.)	132	277	—	250
—Preamp.			330				
Viewfinder	40501-A	22	125 + (65 at 360 v.)	58	117	—	45
Processing Amplifier	40520-A	55	360	180	200	10 1/2"	50 1/2
Focus Current Regulator	40524-B	4	12	85	90	5 1/4"	22
Focus Voltage Regulator	40541	6	34 + (150 at 43.5)	17	5	3 1/2"	7 1/2
Colorplexer	40209-C	29	280	90	180	21"	34
Automatic Carrier Balance	40416-A	5	20	—	—	3 1/2"	10
Aperture Compensator	40414	2	33	10	15	1 3/4"	3
TM-6C Master Monitor	26136-C	31	450	90	220	18"	55
TM-21C Color Monitor	40226-B	61	—	900	900	—	213
WP-16B Power Supply (2 Units)	26084-B	—	—	—	—	7" ea.	50 ea.
WP-16B Centering Current Unit	26083-A	—	—	—	—	—	2
WP-16B Unregulated High Voltage Unit	26082-A	—	—	—	—	—	3

SPECIFICATIONS

Electrical

CAMERA:

Input:

Horizontal Drive from Processing Amp-51 Ohm.....	Min. 2 volts, (neg.) peak-to-peak
Vertical Drive from Processing Amp-51 Ohm.....	Min. 2 volts, (neg.) peak-to-peak

D-C Power (from power supplies):

Regulated	
Camera.....	280 volts, 245 ma
Preamplifiers.....	280 volts, (3x110) ma
Unregulated	
Camera and Deflection.....	360 volts, 210 ma
Focus Coil Current.....	75 ma
Tally Lights (Relay Controls).....	24 volts d-c

A-C Power:

Heaters, Blowers.....	117 v., 50/60 cycle, 1 phase, 132 watts
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Output:

Video Response.....	Flat to 3 mc, roll off to 25% at 8 mc
Video Signals (black negative) 51 Ohm.....	0.3 volt, peak-to-peak
Video Signals to Viewfinder.....	0.6 volt, peak-to-peak
Video Gain.....	15 db

VIEWFINDER:

Input:

Video Signals (negative).....	0.6 volt, peak-to-peak
Horizontal Drive (negative—Hi-impedance).....	2 volts, peak-to-peak
Vertical Drive (negative—Hi-impedance).....	2 volts, peak-to-peak

D-C Power (from power supply):

Regulated.....	280 volts, 125 ma
Unregulated.....	360 volts, 65 ma
Tally Lights (Relay Controls).....	24 volts, d-c

A-C Power.....50/60 cycles, single phase, 117 volts, 58 watts

PROCESSING AMPLIFIER:

Input:

Video (red, blue, green and test).....	0.3 volt peak-to-peak
Impedance (red, blue, green and test).....	75 ohm $\pm 5\%$
Horizontal Drive (high impedance).....	1.5 to 5 volts peak-to-peak
Vertical Drive (high impedance).....	1.5 to 5 volts peak-to-peak
Blanking Pulse (high impedance).....	1.5 to 5 volts peak-to-peak
Calibration Pulse (high impedance).....	15 kc sq. wave 0.7 volt peak-to-peak

Output:

Video to Colorplexer (red, blue and green).....	0.7 volt peak-to-peak
Impedance.....	75 ohms
Video to Monitor CRO.....	0.7 volt peak-to-peak
Impedance.....(Sending end 75 ohms, receiving end unterminated)	
Video to Monitor Kinescope.....	0.7 volt peak-to-peak
Impedance.....	75 ohms
Horizontal Drive:	
Width.....	8.5 microseconds $\pm 5\%$
Amplitude.....	3.5 volts peak-to-peak
Impedance.....	75 ohms
Vertical Drive:	
Width.....	800 microseconds $\pm 20\%$
Amplitude.....	3.5 volts peak-to-peak
Impedance.....	75 ohms
Blanking Pulse:	
Width.....	Equal to input pulse width $\pm 1\%$
Amplitude.....	2 volts peak-to-peak
Impedance.....	75 ohms
Calibration Pulse:	
Width.....	Equal to input pulse width
Amplitude.....	0.7 volt peak-to-peak $\pm 1\%$
Impedance.....	Low

Twenty Cycle Staircase Voltage to Master Monitor:

Amplitude (maximum).....	20 volts peak-to-peak
Impedance.....	High

Regulated D-C Supply Voltage.....	280 volts
D-C Current.....	360 ma
Filament Voltage.....	6.3 volts a-c
Filament Current.....	25.0 amps
Regulated D-C Voltage.....	130 volts

Dimensions.....10 15/32" high x 17 5/8" wide x 20 3/16" long

Weight.....50 1/2 lbs.

NOTE: For specifications on Master Monitor, Color Monitor, Colorplexer and Power Supply see separate catalog description of these items.

Tube Complement

CAMERA:

3—RCA 7513	
Image Orthicon	
1—6AL5	5—12AT7
3—6CB5	2—12AU7
2—6V6-GT	12—6AH6
2—1B3-GT	3—5687
4—6U8	1—6922
	1—6AU5
	1—GV3A-1300

VIEWFINDER:

2—6AB4	1—6CB6
1—6197	1—6DQ6A
1—6AH6	2—1X2A
1—6AL5	3—12AT7
1—6AQ5	5—12AY7
1—6AS7-G	1—7TP4
1—GV6A-1450	1—M45G-11.5

PROCESSING AMPLIFIER:

9—12AT7	3—6U8
3—12AU7	1—6CL6
1—12BH7	1—6BX7
1—12AX7	4—6BQ7A
12—6BQ7A	8—6CL6
8—12AX7	4—6AL5

FOCUS CURRENT REGULATOR:

2—6BX7	1—6CW4 (Nuvistor)
1—12AX7	

COLORPLEXER:

10—6AU6	2—OA2
2—6AH6	2—6BX7
3—12AU7	1—5726
3—6BQ7	1—6X4
4—6AS6 (Stock #204603)	1—6BG4

APERTURE COMPENSATOR:

1—6BQ7A	1—6U8
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AUTOMATIC CARRIER BALANCE:

2—6AL5	1—6AW8
1—6AN8	1—6AU6

FOCUS VOLTAGE REGULATOR:

4—6CW4	1—7119
1—6201	

Overall Mechanical

	Camera	Viewfinder	Camera Control Panel
Length.....	44"	34 1/8"	18"
Width.....	21"	13 15/16"	13 1/8"
Height.....	14 1/2"	11 1/8"	8"
Weight.....	250 lbs.*	45 lbs.	10 lbs.

* Camera weight less objective lens, panning and focus handles.

SPECIFICATIONS (Continued)

Equipment Supplied

CONSOLE-MOUNTED CONTROL			RACK-MOUNTED CONTROL		
Qty.	MI Number	Description	Qty.	MI Number	
1	40534	Color Camera (less Image Orthicons).....	1	40534	
1	40501-A	Viewfinder (including Kinescope).....	1	40501-A	
1	40502	Hood	1	40502	
1	40520-A	Processing Amplifier (less Gamma Correctors).....	1	40520-A	
3	40833-1	Gamma Corrector (0.7).....	3	40833-1	
1	40833-2	Gamma Corrector (1.0).....	1	40833-2	
1	40535	Camera Control Panel.....	1	40535	
1	40524-B	Focus Current Regulator.....	1	40524-B	
1	40541	Focus Voltage Regulator.....	1	40541	
1	40829	Neutral Density Filters, Set of.....	1	40829	
1	826160	Lens, 50mm Objective.....	1	826160	
1	826161	Lens, 85mm Objective.....	1	826161	
1	826162	Lens, 135mm Objective.....	1	826162	
1	40802-A1	Field Lens (for 50mm Objective Lens).....	1	40802-A1	
2	40802-A2	Field Lens (for 85mm and 135mm Objective Lens).....	2	40802-A2	
1	40209-C	TX-1D Colorplexer	1	40209-C	
1	40414	Aperture Compensator	1	40414	
1	40416-A	Automatic Carrier Balance Control	1	40416-A	
1	26136-C	TM-6C Master Monitor.....	1	26136-C	
1	26544	Sync Interlock Relay (for TM-6C).....	1	26544	
1	40226-C	TM-21C Color Monitor.....	1	40226-C	
1	26786	Console Housing (for TM-6C).....	—	—	
1	26787	Console Housing (for MI-40520-A and 40523).....	—	—	
1	26579-B	Blower (for TM-6C).....	—	—	
—	—	Rack Mounting Desk for Control Panel.....	1	40415	
—	—	Rack Mount Adaptor for TM-6C	1	26526	
—	—	Rack Extension Kit.....	2	40408	
1	26655	Kinescope Tube, Type 10SP4 (for TM-6C).....	1	26655	
1	26667	CRO Tube, Type 5ABP1 (for TM-6C).....	1	26667	
3	40828	Image Orthicon Tube, Type 7513.....	3	40828	
2	26084-B	WP-16B Power Supply.....	2	26084-B	
2	26083-A	WP-16B Centering Current Sub-chassis Unit.....	2	26083-A	
1	26082-A	WP-16B Unregulated High Voltage Sub-chassis Unit.....	1	26082-A	
1	40868-2	Camera Cable, 50-ft. (with Connectors).....	1	40868-2	
1	40834	Cable Harness and Barrier Strips.....	1	40834	
1	26759-41	Power Cable	1	26759-41	
1	26759-42	Power Cable	1	26759-6	
1	26646	Adjustable Transformer	1	26646	
1	26647	Transformer Mounting Plate (for MI-26646).....	1	26647	
1	40824	Cradle Head	1	40824	
1	40861	TD-9C Motor Driven Pedestal.....	1	40861	
1	40871	Video Level Control Panel.....	1	40871	
—	—	Table Assembly for MI-40871.....	1	40872	

NOTE: The following bulk cable is required and should be ordered separately to meet individual installation requirements:

83-A	RG-11/U 75 Ohm Coaxial Cable.....	83-A
75	RG-59/U 75 Ohm Coaxial Cable.....	75
13380-12	12-Conductor Shielded Cable.....	13380-12
13380-8	8-Conductor Shielded Cable.....	13380-8

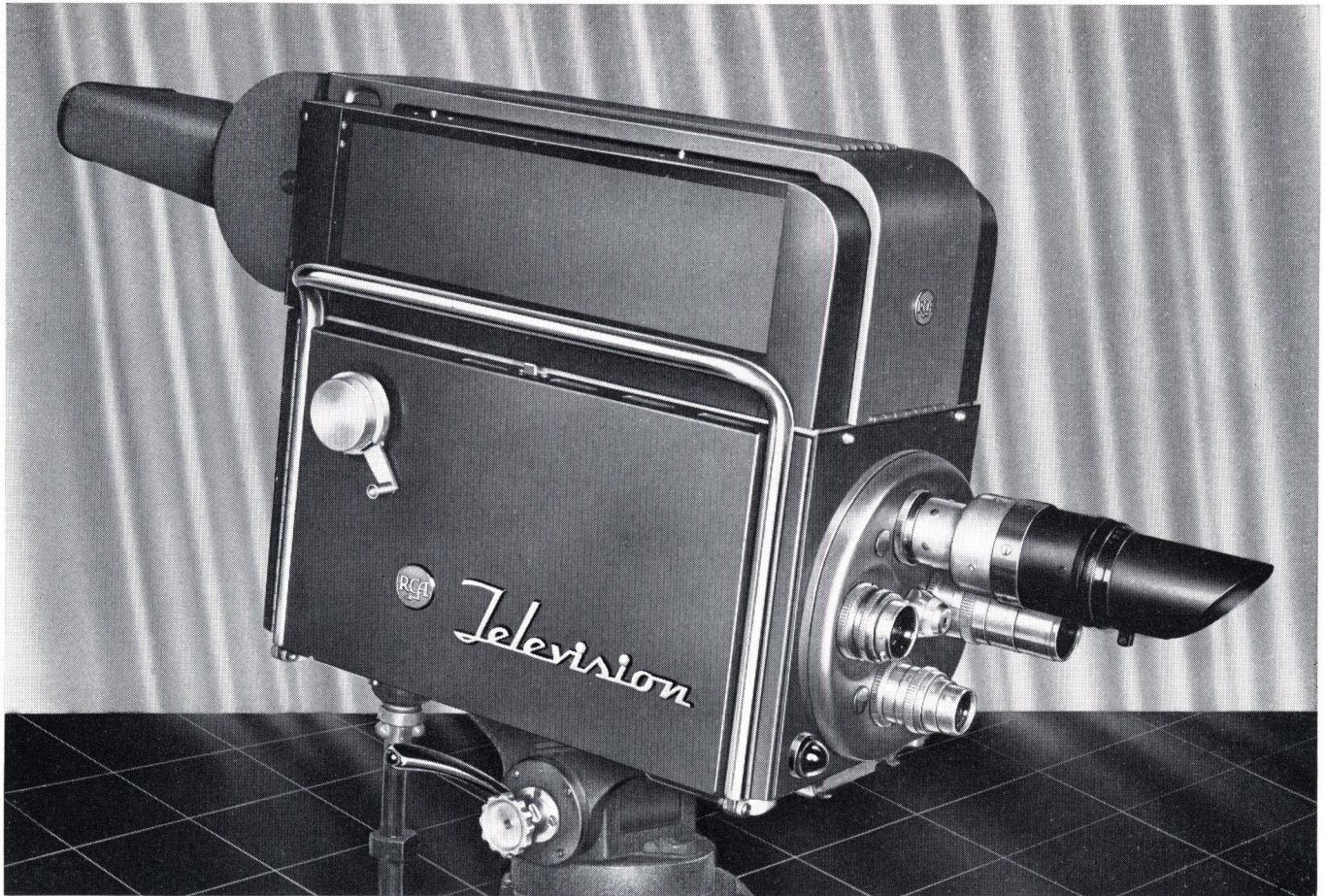
Accessory Equipment

Neutral Density Slide Mechanism for TK-41C.....	MI-40528	EIA Linearity Test Chart.....	MI-26822-1
Left End Panel for Console Housing.....	MI-26788-1	EIA Resolution Test Chart.....	MI-26822-2
Right End Panel for Console Housing.....	MI-26788-2	EIA Registration Test Chart.....	MI-26822-3
Left Side Cover for Console Housing.....	MI-26789-1	EIA Linear Gray Scale.....	MI-26822-4
Right Side Cover for Console Housing.....	MI-26789-2	EIA Logarithmic Gray Scale Chart.....	MI-26822-5
Single Headset	MI-11743	Plastic Cover for TK-41C.....	MI-26862-2
Double Headset	MI-11744	Type BR-84D Cabinet Rack.....	MI-30951-D84
Interphone Connection Unit (Transistorized).....	MI-11784	*WA-9A Calibration Pulse Generator.....	MI-26070
Interphone Retardation Coil.....	MI-11737	*WA-1E Color Bar Generator.....	MI-34001-F
Mounting Plate for Interphone Connection Unit.....	MI-11735	WA-7C Linearity Checker.....	MI-34017-B
Mounting Panel for Retardation Coil.....	MI-11736/-A	Video Transmission Test Signal Generator.....	MI-40436
Spacers for Field Lens Holder.....	8981550-1	TO-524AD Oscilloscope	MI-26500-A
Gamma Corrector (0.5).....	MI-40833-3	Voltohmmyst	Type WV-973
Field Lens Test Pattern Jig.....	MI-40873		
100 Ft. Camera Cable.....	MI-40868-3		
200 Ft. Camera Cable.....	MI-40868-4		

* If not already available, one each of the above starred equipments is necessary for operation of the TK-41C Color Studio Camera Chain.

3" IMAGE ORTHICON CAMERA CHAIN

STUDIO TYPE TK-11B



FEATURES

- All-purpose monochrome TV camera
- High quality viewfinder with 7-inch aluminized kinescope
- Easy access to circuits and controls
- Thermostatically controlled forced ventilation of coil and tube
- Protection circuit for deflection failure
- "Overscan" switch for warm-up and rehearsal
- Four lens positions on a rotatable turret
- Short "set-up" time; fast, accurate focusing
- Electromagnetic orbiter protects against burn-in and prolongs image orthicon life
- Focus modulation for improved edge and corner focus
- Image Orthicon carriage features precision ball bearing slide mechanism and variable speed drive
- Auxiliary orthicon focus control in camera permits "one-man" set-up
- Stability and flexibility in performance
- Single WP-16 Power Supply provides current requirements for entire camera chain

USES

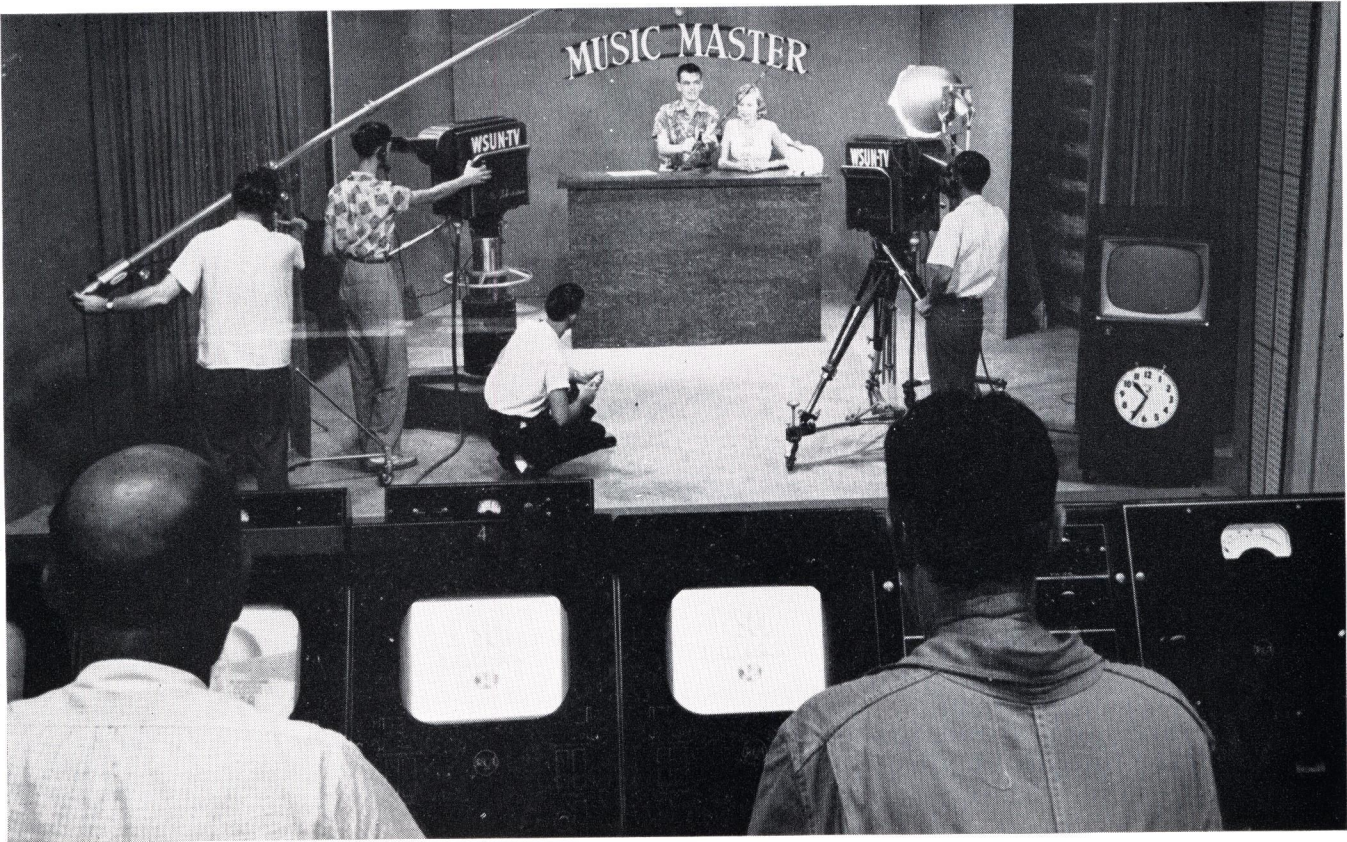
The TK-11B Camera is designed to pick up scenes produced in television studios and provide composite video signals that can be fed to a television transmitter. The equipment introduces a new Image Orthicon Camera, MI-26011-C, and a new Viewfinder, MI-20616-B. The camera uses an Image Orthicon Pickup Tube from which under normal lighting conditions (25-150 foot-candles) an excellent picture is obtained.

The viewfinder features a 7-inch aluminized Kinescope Tube which enables the cameraman to view the scene. The camera and viewfinder provide an all-purpose camera which is used either for field or studio applications. They form the core of both the RCA TK-11B Studio Camera Equipment and the RCA TK-31B Field Camera chain. Short "set-up" time, and fast accurate focusing may be achieved with either chain.

DESCRIPTION

The TK-11B Studio Camera Equipment consists of the camera and viewfinder which can be mounted on a crane type dolly or studio pedestal, a master monitor and camera control which can be mounted in a desk-type console section, and power supplies designed for rack mounting. The size and general appearance of the console section

is identical to that of the Film Camera Equipment and the Studio Switching System. Any number of these console sections (one for each equipment) can be bolted together to form a convenient desk type console. This TK-11B design is centered around a single all-purpose camera which may be used for either field or studio applications.



Two complete RCA Studio Camera Chains are shown installed in the studios of WSUN-TV, St. Petersburg, Florida.



Closeup of the camera from the cameraman's operating position.

Studio Camera

The camera comprises a mounting for the image orthicon pickup tube together with its focus, deflection and beam-alignment coils, complete horizontal and vertical deflection circuits, a video pre-amplifier, target heater, blower duct, yoke assembly, and an optical system consisting of a turret with four lens positions and means for adjusting optical focus and iris openings. It is entirely self-contained except for a B power supply and certain electrical controls which are located, for operating convenience, at the camera control. All electrical connections are made through a single cable and plug which carry input power and sync generator signals to the camera, and video output and control circuits from it.

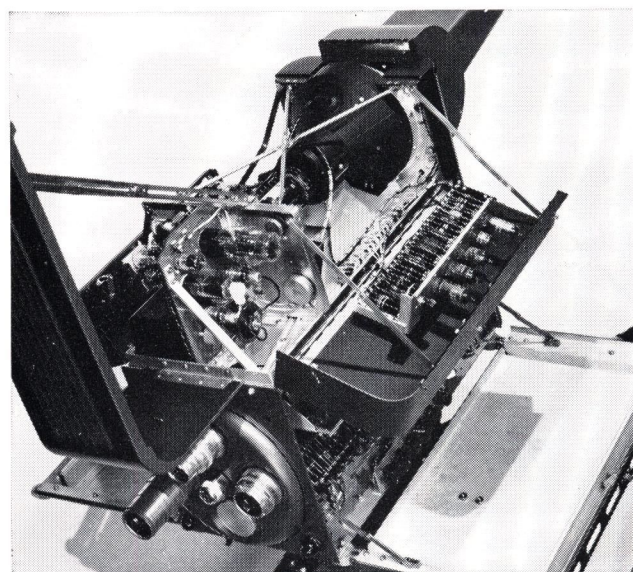
Physically the camera is divided into three main compartments. In the center compartment is located the pickup tube with its deflection, focus and alignment coils. The two side compartments, accessible by opening the side

doors, contain the video and deflection amplifiers respectively. On the front end of the camera is the lens turret, and on the rear are some of the electrical controls and the control handle for rotating the turret. The optical focus control is located on the right hand side of the camera (from the rear or operating position). This focus control and the turret handle are normally the only two controls which require the attention of the cameraman during a television program.

A bracket containing seven controls and switches is attached to the camera frame at the base of the deflection chassis. The blower-motor assembly is located at the bottom front portion of the camera under the yoke assembly. A 24-pin connector and two sets of communication and program sound jacks are within easy reach on the bottom of the camera housing. Two tally lights at the front and one at the rear of the camera are used as "on-the-air" indicators. Interconnecting plug and latch locks are incorporated in the camera to accommodate the viewfinder which mounts directly on top of the camera.

Optical focusing is obtained by moving the tube and its associated yoke coils. The complete yoke assembly is supported on a ball bearing slide mechanism which is an integral part of the assembly.

Hinged doors, fitted with knuckle-type stays, permit easy access to camera and viewfinder.





Side view of camera with viewfinder removed.
Note convenient carrying handles.

Although rigidly fastened to the frame when in position, the entire assembly is removable in a few moments for servicing because it forms a plug-in unit. This suspension is smoothly driven through its entire travel for optical focusing by $2\frac{1}{4}$ turns of a focus knob. The knob remains in place when the side door is opened. This simple yet rugged drive mechanism imparts a non-linear motion so that relatively great image orthicon motion per degree of knob rotation is obtained for close ups. Conversely, vernier motion is provided near infinity focus, where rapid motion would make accurate focusing difficult.

The improved yoke provides better shading, less geometric distortion and improved shielding of deflection fields from the image section. A simple wrap-around mu-metal shield extends from the image end past the alignment coils for complete shielding against external magnetic fields.

Simplified Alignment

The alignment coil assembly incorporated in the camera comprises two pairs of coils in space quadrature so that independent control of currents in the two pairs of coils will produce a correcting cross field in any direction required. In this system, no mechanical adjustment of the coil is required; it is rigidly mounted. The alignment procedure involves the simultaneous adjustment of two potentiometer controls which determine the currents in the two sets of coils. In order to simplify the alignment pro-

cedure, an auxiliary orthicon focus control has been included in the camera.

Thermostatically Controlled Cooling

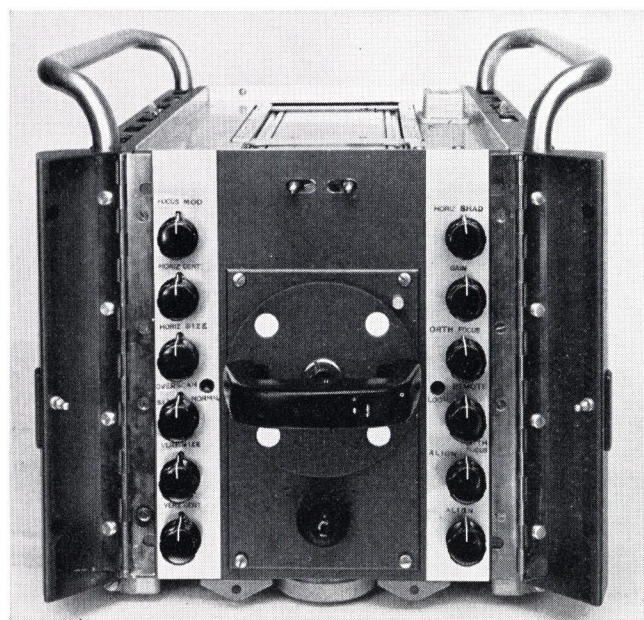
Thermal control of the operating temperature for the image orthicon tube has been incorporated in the TK-11B. The "plug-in" blower which is easily removed from the camera is cycled by a thermostat imbedded in the mask on the face of the pickup tube. The output of the blower couples to a gas mask type hose which directs cooling air through the air passages along the surface of the tube and between the coils. This assures proper operating temperature for stable performance and longer tube life. Provisions are also made for continuous operation of the blower and the target heater to meet extreme conditions.

Image Orthicon Tube Protection

Protection for the image orthicon tube is assured through the use of a protection circuit which cuts off the tube when there is a loss of driving signals, deflection circuit failure, or failure of the activating relay.

Vertical deflection incorporates feedback and phase correction for excellent linearity and stability without need for linearity adjustments. Target blanking insertion is at low impedance to eliminate crosstalk problems. Horizontal deflection has excellent linearity, single knob linearity control, for ease of adjustment, better stability, and freedom from transients by an improved push-pull type circuit and a novel ferrite core output transformer.

View (from cameraman's position) of lens changing handle and camera "setup" controls.



A seven microsecond return time insures good operation even with the extreme delay conditions associated with 1000-foot camera cable operation. Adequate and symmetrical centering controls are available. Both deflection circuits can be switched from normal scan to 15 percent overscan to guarantee against burned target areas during warm-up, rehearsals, and stand-by while maintaining linearity and aspect ratio.

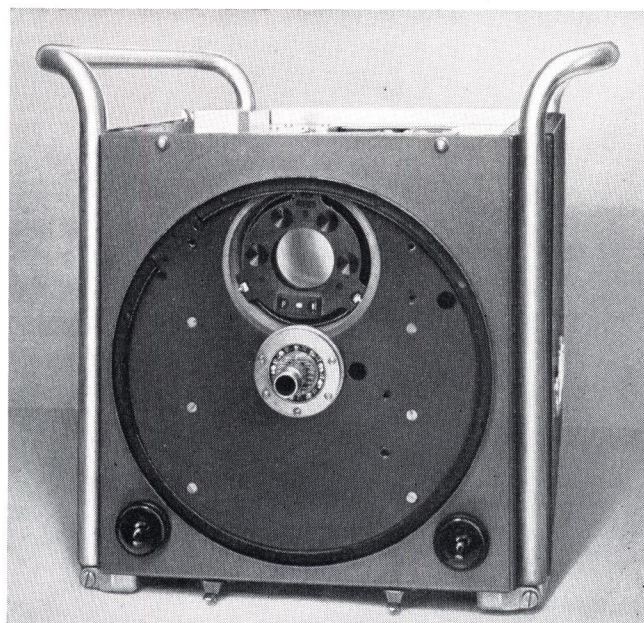
Electromagnetic Orbiter

The yoke assembly is provided with a toroidal coil which is connected to an orbiting generator located at the control position. The current through this coil creates a slight displacement of the focus coil and magnetic field at the image end. The direction of displacement rotates to keep the electron image at the target in a constant orbiting motion to avoid burn-in of the image orthicon. The rate of orbiting is sufficiently slow and slight to be virtually unnoticeable. This feature prolongs the useful life of image orthicons to reduce operating costs.

Extra Features

For maximum picture sharpness and improved corner resolution, a focus modulation circuit is an important feature of the TK-11B camera. This circuit provides low-impedance feed of horizontal and vertical parabolic wave-shapes in a 4/3 aspect ratio to the orthicon wall to provide continuous beam focus over the usable target area. Blemishes inherent on the surface of the signal multiplier of the tube are defocused and are made to disappear without sacrifice of resolution.

The decelerator control is continuously variable from 0-120 volts for accurate "port hole" control. Image accelerator control provides "S-distortion" correction. Vertical deflection reversal is provided by a switch for special effects applications. Switch is made at the same time to a preset centering potentiometer to insure operation with the same



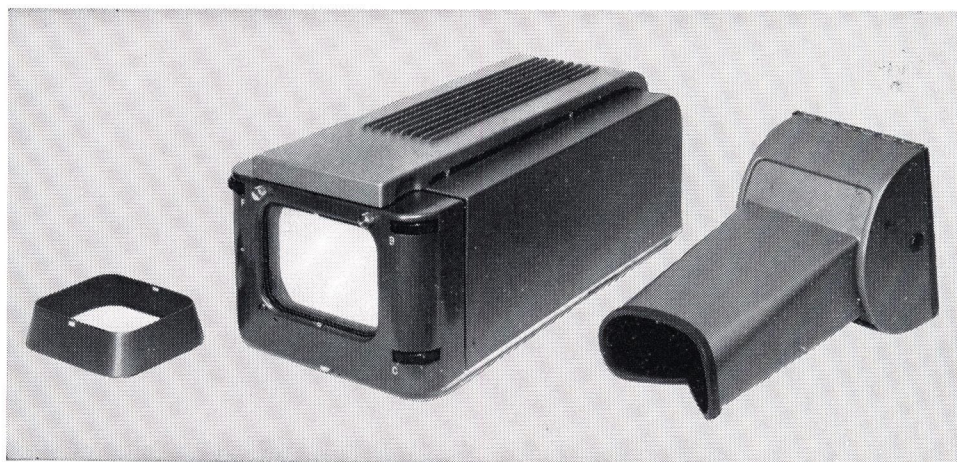
Front of camera with lens turret removed showing turret indexing and blower thermostat mounted in mask.

target area. Horizontal deflection reversal is possible in that two coaxial leads feed the yoke so that a simple change of the yoke connections at the yoke plug will permit, for example, multiplexer operation.

A multiplier video gain control allows correction in case of dynode overload. A line voltage tap switch compensates for line voltage drop associated with different cable lengths. An elapsed time indicator records hours of tube operation conveniently.

The video amplifier is a plug-in unit with all power connections made through a single plug. Three small coaxial connectors are provided for the video input, main output, and viewfinder output signal connections. The amplifier is mounted on rubber to minimize the effects of vibration and shock.

The mask assembly on the left fits over the face of the kinescope thus forming the viewing end of the viewfinder. The detachable viewing head on the right may be rigidly mounted to the mask assembly.



A pulse type high-voltage supply provides stable picture tube operating potentials and, incidental to this, a resistive configuration maintains constant loading on the —500 volt supply as image focus is varied to speed the narrowing-down process when operation is being optimized during setup.

The video preamplifier amplitude response extends to 8 megacycles and performance at low frequencies is free of streaking. Two stages of cathode high peaking eliminate over-shoot and smear by very accurately compensating for the amplifier input loss of high frequencies while reducing microphonics associated with conventional high peaking. A separate output of this amplifier provides signal for the viewfinder. Ample gain assures a bright viewfinder picture with even a low-limit camera tube. Shading signals are introduced in the camera amplifier, thus providing a properly shaded viewfinder picture. A feedback loop in the output stage permits flat overall response and provides viewfinder isolation in addition to sending-end cable termination.

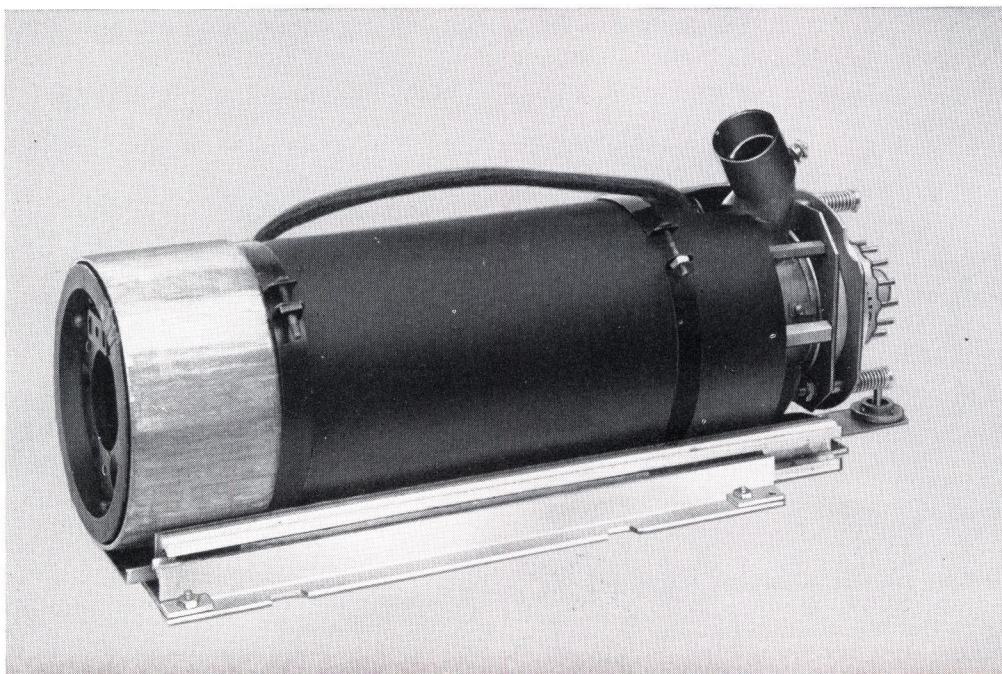
7-Inch Electronic Viewfinder

The Electronic Viewfinder is a picture monitor using a seven-inch aluminized kinescope tube (RCA-7TP4) which enables the cameraman to view the scene. The design of this unit permits ease of access to the circuits and components, without interrupting operation. The kinescope is enclosed in a magnetic shield which minimizes stray fields

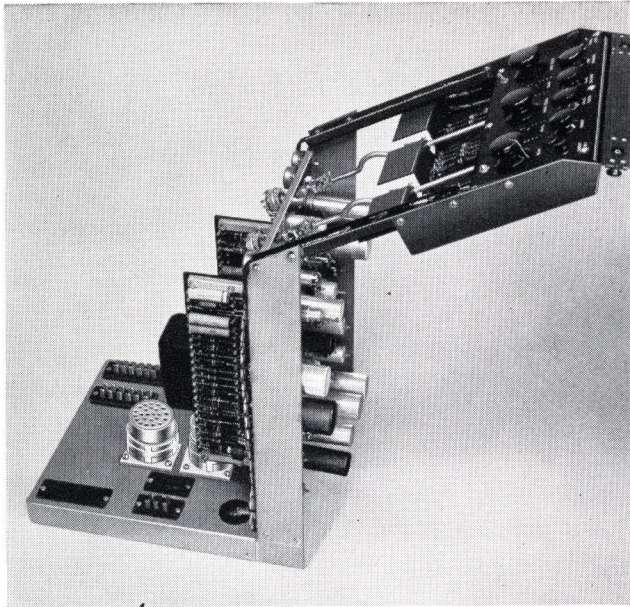
and also serves as a light shield around the tube. The video amplifier includes adjustable blanking width controls to match blanking used in the camera control, thus eliminating confusion in determining the actual edges of the transmitted picture. The Viewfinder unit literally plugs into the top of the camera thus forming a complete operating unit. The front is easily detached for kinescope removal. A detachable viewing hood may be rigidly mounted to the mask assembly to prevent stray light from striking the face of the kinescope. The number of exposed operating controls has been reduced to three (contrast, brightness, and focus) with rim-type control knobs protruding through the rounded corners of the kinescope mask assembly. A small tally light is mounted on the kinescope mask for "on-the-air" indication when operating camera viewfinder with a hood. No interaction exists between the controls of the viewfinder and camera.

Variable-width blanking permits adjustment of the viewfinder picture for accurate framing. Horizontal deflection is highly efficient; vertical deflection is a duplicate of the camera circuit; the video amplifier is wide band; and a driven clamp provides accurate d-c restoration. The viewfinder is attached to the camera by a two-finger, one-hand type release mechanism.

The TK-11B camera and viewfinder design features two utility handles for styling, protection and easy carrying. A pair of station call letter panels are mounted on opposite sides of the viewfinder. These panels are supplied with lettering completed in any color requested.



Yoke assembly removed from the camera showing orbiter coil over image end.



Studio Camera Control showing chassis and control panel.

Studio Camera Control

The Studio Camera Control enables the video operator to monitor and control the quality of the picture signal produced by the studio camera. It is a desk-type console section with a TM-6C Camera Monitor mounted in the upper part, and the control chassis mounted in the compartment below. The camera monitor has a ten-inch picture tube for displaying the picture and a five-inch oscillograph tube which reproduces the picture signal waveform. Controls for gain and black level setting are brought out on the monitor front panel.

The major operating controls have been reduced to three: Beam, Orthicon Focus, and Image Focus. These are equipped with standard, medium sized knobs which match those used on the associated Master Monitor. Less frequently used controls are grouped under a hinged cover over the control panel. The lucite panel is coated with dull black paint and utilizes edge lighting which illuminates designations but does not produce any stray light.

The control chassis contains the necessary circuits for amplifying the video signal, establishing black level, mixing in a sawtooth correcting signal, adding picture synchronizing signal and providing three separate outputs. In order to provide more comprehensive control of the picture quality an arrangement has been included for controlling the non-linearity of the video-amplifier.

Ability to "stretch" the whites or grays is sometimes helpful in improving inferior pictures or producing special effects in contrast. A feedback type of video output am-

plifier provides 3 identical outputs and monitoring is directly from the main video line—all output video lines being terminated at both ends.

Circuitry is provided to allow use of the existing interconnecting lines in the camera cable to feed the driving currents to the electromagnetic orbiter coil located in the camera when the orbiting generator is plugged into the camera control. This does not affect normal operation of the intercommunication circuits. A switch on the camera control is provided to stop the orbiting motion when a perfectly stationary image is required as in the case of super-impositions. A tally provides warning indication when the orbiter is turned off.

WP-16B Semiconductor Power Supply

The WP-16B Semiconductor Regulated Power Supply, MI-26084-B, is a rugged, high-efficiency, lightweight source of precisely regulated voltage, capable of supplying current loads of up to 1600 milliamperes. This is sufficient for an entire monochrome camera chain, live or film, including the master monitor.

Centering current and unregulated voltage are supplied by means of subchassis units which are powered by separate, non-regulating secondary windings of the power transformer. These units are required when the WP-16B is used with the TK-11B camera chain.

The Centering Current Sub-chassis Unit, MI-26083-A, is used for supplying centering current to live camera and master monitor. It contains two transistors and associated circuits mounted on a small sub-assembly. The current is adjustable between 300 and 1200 ma. by means of a control located on the front panel of the power supply. The Unregulated Voltage Sub-chassis Unit, MI-26082-A, is used for the deflection circuits of the camera and master monitor which require a higher voltage than that provided by the regulated voltage output.

The WP-16B Power Supply is factory wired for an unregulated d-c voltage output of 400 volts. Taps are provided on the power transformer which can be connected to provide output voltage of 360, 380, 420 and 460 volts. The ripple content of the unregulated output is only 5 volts peak-to-peak and the output voltage is maintained within one per cent for a fifteen per cent change in line voltage. When the unregulated voltage sub-chassis unit is used, the capacity of the regulated output is reduced to 1350 milliamperes.

An MI-26090-A Current Regulator is provided to supply constant current to the camera focus coil. It is designed for mounting in a standard rack in the studio control room.

SPECIFICATIONS

General

Type of Reproduction.....	Monochrome
Number of Scanning Lines.....	525
Frame Repetition Rate.....	30 per sec.
Field Repetition Rate.....	60 per sec.
Line Repetition Rate.....	15,750 per sec.
Picture Polarity at Output.....	Black negative
Maximum Length of Camera Cable.....	1000 ft.

Electrical

CAMERA:

Input:

Horizontal Drive (negative).....	2 volts, peak-to-peak
Vertical Drive (negative).....	2 volts, peak-to-peak
DC Power (from power supplies)	
Regulated.....	285 volts, 300 milliamperes
Unregulated (for viewfinder).....	380 volts, 80 milliamperes
Focus Coil Current.....	75 milliamperes
AC Power (Heaters, blower, tally lights)	
.....	117 volts, 50/60 cycles, single phase, 90 watts

Output:

Picture Response.....	Essentially uniform to 8 megacycles
Picture Signals (black negative).....	0.4 volt, peak-to-peak
Picture Signals to Viewfinder.....	0.7 volt, peak-to-peak

VIEWFINDER:

Input (from camera).....	0.7 volt, peak-to-peak
Horizontal Drive (negative).....	2 volts, peak-to-peak
Vertical Drive (negative).....	2 volts, peak-to-peak
DC Power (from Power Supply):	
Regulated.....	285 volts, 200 milliamperes
Unregulated.....	380 volts, 80 milliamperes
AC Power.....	117 volts, 50/60 cycles, single phase, 60 watts

CAMERA CONTROL:

Input:

Horizontal Drive (negative).....	3.5 to 5.0 volts, peak-to-peak
Vertical Drive (negative).....	3.5 to 5.0 volts, peak-to-peak
Blanking (negative).....	3.5 to 5.0 volts, peak-to-peak
Video (black negative).....	0.4 volt, peak-to-peak
Sync (negative).....	3.5 to 5.0 volts, peak-to-peak
D-C Power (regulated).....	280 volts at 300 milliamperes
A-C Power (for heaters).....	117 volts, 50/60 cycles, 95 watts

Output:

Horizontal Drive (negative).....	2 volts, peak-to-peak
Vertical Drive (negative).....	2 volts, peak-to-peak
Video Signal (black negative)	
Outputs 1, 2 and 3.....	0.7 to 1.0 volt, peak-to-peak,
non-composite (Sync may be added to Output No. 3)	
Video Response.....	Essentially uniform to 8 megacycles

Mechanical

Camera:

Length.....	27 1/2"
Width.....	16"
Height.....	14 1/2"

Viewfinder:

Length.....	23 1/2"
Width.....	10 1/2"
Height.....	8 1/2"

Studio Camera Control:

Length.....	26"
Width.....	11 3/8"
Height.....	23 3/8"

Weights:

Camera (less lenses, including viewfinder).....	109 lbs.
Studio Camera Control.....	27 lbs.

Finish.....The camera and viewfinder are finished in deep umber gray with chrome trim. Call letters are furnished in any color requested.

Tube Complement

Camera:

1-5820	3-12AT7	3-12AU7	1-6BQ6-G1
1-6S4	1-6AQ5	1-1V2	1-6AS6
1-6X4	4-6AH6	1-5687	1-6U8
1-6CU6			

Viewfinder:

1-6CL6	2-5763	2-12AU7	1-7TP4
4-12AT7	1-6S4	1-6BQ6-GT	3-6AL5
2-1X2A	1-6AS7-G	1-OA2	

Studio Camera Control:

6-6AH6	4-6AL5	1-OA2	1-6AU5-G1
8-12AT7	1-6BQ7A	2-12AU7	1-6AG7

Current Regulator:

1-OD3	1-6SL7-GT	1-6Y6-G
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NOTE: For specifications on Master Monitor, Power Supply and Current Regulator see separate catalog information on these items.

Equipment Supplied

TK-11B Studio Camera Equipment

Equipment below plus miscellaneous cables, fittings, hardware and instruction books are supplied:

1 Image Orthicon Camera.....	MI-26011-C
1 Camera Viewfinder.....	MI-26016-B
1 Camera Control Chassis.....	MI-26056-B
1 Master Monitor, Type TM-6C.....	MI-26136-B
1 Power Supply (WP-16B).....	MI-26084-B
1 Centering Current Sub-chassis Unit.....	MI-26083-A
1 Unregulated Voltage Sub-chassis Unit.....	MI-26082-A
1 Current Regulator.....	MI-26090-A
1 Console Housing.....	MI-26786
1 Blower for Master Monitor Housing.....	MI-26579-B
1 Set of Tubes:	
1 Cathode Ray, RCA 5ABP1.....	MI-26667
1 Kinescope, RCA 10SP4.....	MI-26655
1 Image Orthicon, RCA 5820.....	MI-26656
1 Set of Interconnecting Cables for Studio Camera Control.....	MI-26746
1 Lens, 50mm f1.8.....	MI-826160
1 Lens, 90mm f1.9.....	MI-826161
1 Lens, 135mm f3.5.....	MI-826162
1 Camera Cable, 50 ft. in length.....	MI-26725-E9
1 Orbiting Generator.....	MI-26853
1 Set of Call Letter Panels.....	MI-26546

Accessories

Lens, 8 1/2", f3.9.....	MI-26550-4
Lens, 35mm, f3.3.....	MI-26550-9
Left Panel Assembly and Side Cover.....	MI-26788-1
Right Panel Assembly and Side Cover.....	MI-26788-2
Upper Left Side Cover Only.....	MI-26789-1
Upper Right Side Cover Only.....	MI-26789-2
Television Pedestal, Type TD-7AO.....	MI-26044-A
Television Pedestal, Type TD-10.....	MI-26053
Television Pedestal, Type TD-3A.....	MI-26036
Camera Cradle Head.....	MI-26203-A
Camera Friction Head.....	MI-26205-B
Metal Tripod, Type TD-11A.....	MI-26046-A
Tripod Dolly.....	MI-26042-A
Orbiter Interconnecting Cable.....	MI-13333
Plastic Cover.....	MI-26862-1, -2
Neutral Density Filter Holder.....	MI-26847
Spare Video Pre-Amplifier.....	MI-26153

NOTE: This equipment also available for operation on 625-line, 50-field standards from 220-volt, 50-cycle, single-phase A-C power.

3-inch Image Orthicon Camera Chain

FIELD TYPE TK-31B



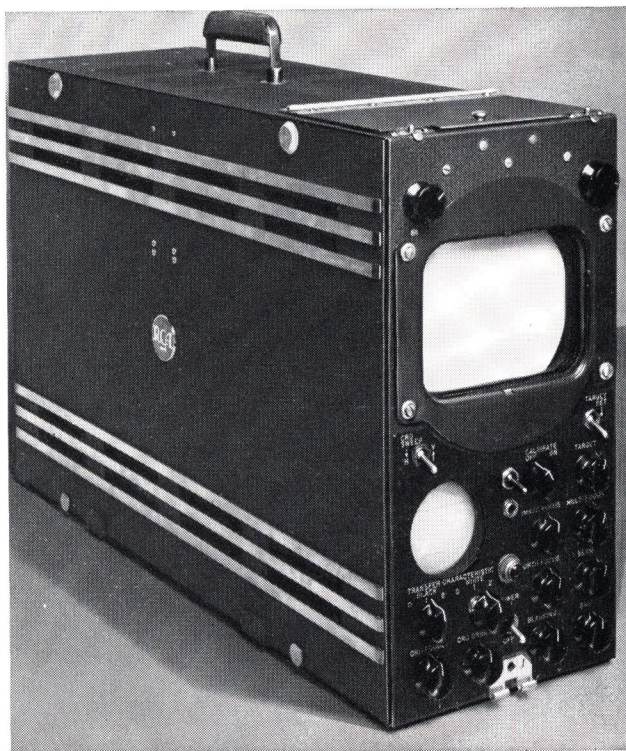
FEATURES

- Short "set-up" time, fast, accurate focusing
- 7-inch Kinescope Viewfinder included
- Four lens positions on a rotatable turret
- Easy access to controls through wide opening hinged doors
- Thermostatically controlled forced ventilation of coil and tubes
- Protection circuit for deflection failure
- "Overscan" switch for warm-up and rehearsal
- Plug-in blower, pre-amplifier and yoke assemblies
- Focus modulation provides precise electrical focus across picture raster
- Electro-magnetic orbiter to eliminate burn-in and prolong image orthicon life

DESCRIPTION

The TK-31B Field Camera Equipment is intended to be used in field television pick-ups of all kinds. The RCA 5820 image orthicon tube is especially suitable for use where the lighting conditions are poor, as is frequently the case at sporting events, in night clubs, and at other remote pick-up points. The minimum required incident illumination on the scene is .5 foot-candle. First grade results are obtained between 25 and 75 foot-candles illumination. The TK-31B Field Television Camera Equipment consists of

the camera and viewfinder, which can be mounted on a lightweight tripod, crane type dolly or studio pedestal; and the field camera control and field power supply units—each contained in portable, easy to carry cases—which can be mounted on a horizontal table surface with all operating controls conveniently available for field use. The TK-31B design is centered around a single all-purpose camera head and viewfinder which are identical with the camera and viewfinder of the TK-11B Studio Camera Chain.



Field Camera Control Unit in carrying case. Combination of video processing picture display and video waveform display in a compact, single unit results in minimum size, weight and operating space requirement.

Portable Field Camera Control

The Field Camera Control for use in remote pick-ups is contained in a suitcase unit for easy carrying, and enables the video operator to monitor and control the quality of the picture signal produced by the field camera. On the front panel are located two cathode ray tubes which serve as picture quality indicators. A seven-inch aluminized kinescope is used as a picture monitor, and a three-inch CRO tube is used as a waveform monitor.

An improved feature of the Field Camera Control is the sub-assembly, plug-in, r-f type high voltage supply. It is a completely separate unit which receives only its B+ and filament voltages from the camera control, and in turn supplies the +1500 volt focus potential and 10 kv ultor voltage for the kinescope as well as the -1500 volt cathode potential for the CRO tube. This extremely compact, efficient, and well-shielded unit provides stable ultor and focus voltages and ensures constant focus and deflection on the kinescope screen.

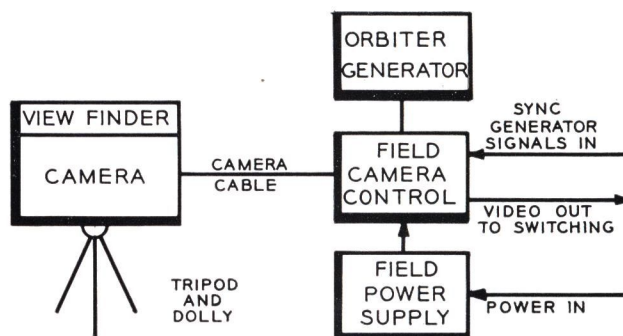
Built-in Master Monitor Facilities

A seven-inch kinescope provides the cameraman an excellent monitor to evaluate his operation. Appropriate circuits to obtain the maximum performance from this tube have been included. Its high contrast and brightness provide a picture which is easily observed under outdoor daylight conditions.

The waveform monitor, or CRO, features a highly stable sweep circuit which operates at either one-half of horizontal scanning frequency or one-half of vertical scanning frequency at the operator's choice. Indirect edge lighting is used with a calibrated lucite scale over the face of the CRO tube for easy and accurate measurements. When sync is mixed in the field camera control, a complete presentation of the CRO is available which enables the operator to set the proper levels.

Improved circuitry assures a video-frequency response that in no way limits the system. New sine-wave clamping employed at three places effectively establishes black level and guarantees gray scale rendition without introducing high-frequency unbalance to damage the blanking waveform. A regenerative type blanking circuit stabilizes blanking insertion. Fixed blanking set-up adds a controlled amount of "blacker-than-black" blanking. Ability to "stretch" the whites or grays is sometimes helpful in improving inferior pictures or producing special effects in contrast. Two "black-white" stretch circuit switches permit selection of four different conditions of gray scale alteration while keeping overall video amplitude constant.

From the output stage of the video amplifier are available two identical isolated video outputs which operate at the



Field camera chain block diagram.

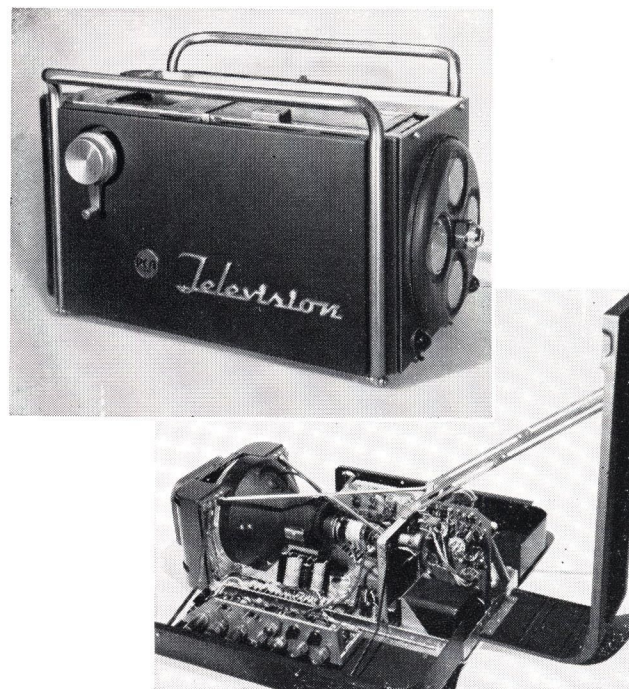
standard level of one volt of picture signal. Monitoring is direct from the outgoing line. Sync can be mixed in the camera control and thus makes available a composite signal at each output.

The mechanical construction of the Field Camera Control has been designed to realize the benefits of sub-assembly construction as far as possible. A small blower provides forced cooling to the unit. Accessibility is excellent, thereby making servicing easy.

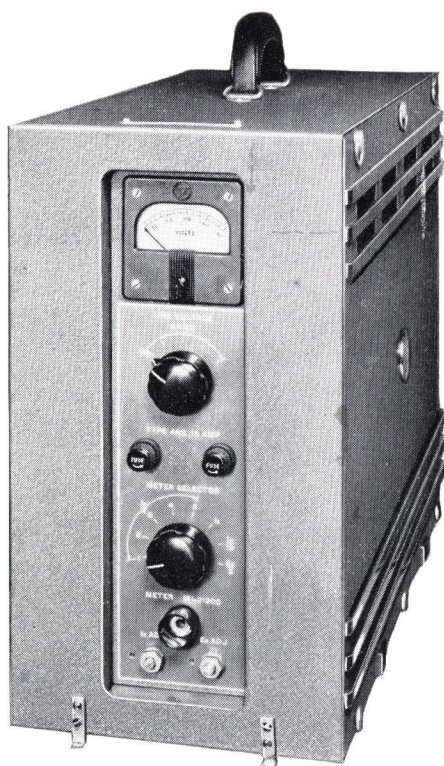
A "target-set" button is provided to automatically reduce the target potential by two volts as a means for rapidly setting the target two volts above cut-off. Both vertical and horizontal sawtooth shading signals of either polarity are available. Video response is compensated by a "3-position" switch for various cable lengths in common use.

Circuitry is provided to allow use of the existing intercommunication lines in the camera cable to feed the driving currents to the electro-magnetic orbiter coil located in the camera, when the orbiting generator is plugged into

TK-31B Field Camera, with viewfinder removed for easy transportation. Hinged doors allow easy servicing and maintenance.



Viewfinder Unit, which plugs into the top of the camera, features easy access to components through use of hinged doors fitted with knuckle-type stays.



Field Power Supply, MI-26091.

the camera control. This does not affect normal operation of the intercommunication circuits. A switch on the camera control is provided to stop the orbiting motion when a perfectly stationary image is required, as in the case of superimpositions. A tally light provides a warning indication when the orbiter is turned off.

Portable Field Power Supply

The Field Power Supply, Type TY-31A, is a portable unit designed to supply all the d-c current required by the TK-31B Field Camera, Viewfinder, and Field Camera Control in one camera chain. A blower cooling system directs an air stream directly over the tubes. An important feature is the broad range of output current values at which regulated voltage may be obtained. The addition of a relay to withdraw a series regulator under light load provides a regulating range from 1.25a at 285 volts down to about 400 ma. The low end of the output range is especially useful when servicing only one unit of the camera chain, in which case the current drain is low.

SPECIFICATIONS

General

Type of Reproduction.....	Monochrome
Number of Scanning Lines.....	525
Frame Repetition Rate.....	30 per sec.
Field Repetition Rate.....	60 per sec.
Line Repetition Rate.....	15,750 per sec.
Picture Polarity at Output.....	Black negative
Maximum Length of Camera Cable.....	1000 ft.

Electrical

CAMERA AND VIEWFINDER:

(See specifications under catalog information for Type TK-11B Studio Camera Equipment.)

CAMERA CONTROL:

Input:	
Horizontal Drive (negative).....	3.5 to 5.0 volts, peak-to-peak
Vertical Drive (negative).....	3.5 to 5.0 volts, peak-to-peak
Blanking (negative).....	3.5 to 5.0 volts, peak-to-peak
Video (black negative).....	0.4 volt, peak-to-peak
Sync.....	3.5 to 5.0 volts, peak-to-peak
D-C Power (regulated).....	280 volts at 700 milliamperes
A-C Power (for heaters).....	117 volts, 50/60 cycles, 125 watts

Output:	
Horizontal Drive (negative).....	2 volts, peak-to-peak
Vertical Drive (negative).....	2 volts, peak-to-peak
Video (black negative)	
Outputs 1, 2 and 3.....	0.7 to 1.0 volt, peak-to-peak
non-composite (Sync may be added to Output No. 3)	
Video Response.....	Essentially uniform to 8 megacycles

FIELD POWER SUPPLY:

Power Input.....	98 to 120 volts, 50/60 cycles, single phase, 1350 watts
Power Output (to camera and viewfinder)	
Regulated.....	285 volts d-c, 1250 ma
Non-regulated.....	400 volts d-c, 90 ma
Focus Coil Current.....	60 to 90 ma, d-c

Mechanical

Camera (case only).....	20 1/4" long, 12 3/8" wide, 12 1/8" high
Camera (overall).....	27 1/2" long, 16" wide, 14 1/2" high
Viewfinder (case only).....	22" long, 10 3/8" wide, 8 1/4" high
Viewfinder (overall).....	23 1/2" long, 10 1/2" wide, 8 1/2" high
Field Camera Control (overall).....	27 1/2" long, 8 1/2" wide, 17 1/2" high
Field Power Supply (overall).....	26" long, 8 1/2" wide, 18 1/2" high

Weights:	
Camera (less lenses, including Viewfinder).....	109 lbs.
Field Camera Control.....	67 lbs.
Field Power Supply.....	58 lbs.
Turret with 3 Lenses.....	4 3/4 lbs.
Camera Cable.....	0.4 lbs. per ft.

Finish.....All units are finished in two-tone umber gray with chrome trim. Call letters are furnished in any color requested.

Tube Complement

Camera:			
1-5820	3-12A7	3-12AU7	1-6BQ6-GT
1-6S4	1-6AQ5	1-1V2	1-6AS6
1-6X4	4-6AH6	1-6U8	1-5687
1-6CU6			
Viewfinder:			
1-6CL6	2-5763	2-12AU7	1-7TP4
4-12A7	1-6S4	1-6BQ6-GT	3-6AL5
2-1X2A	1-6AS7-G	1-OA2	
Field Camera Control:			
8-6AH6	5-6AL5	1-6CL6	10-12A7
6-12AU7	1-6AU5-GT	1-6S4	3-5763
2-6BQ6	1-7TP4	1-3KP1	2-991
1-6L6	4-1X2A	1-6BQ7A	
Field Power Supply:			
6-5R4GY	5-6AS7-G	1-6SL7-GT	2-OD3
1-6Y6-G	1-6AC7		

NOTE: This equipment is also available for operation on 625-line, 50-field standards from 220-volt, 50-cycle, single-phase a-c power.

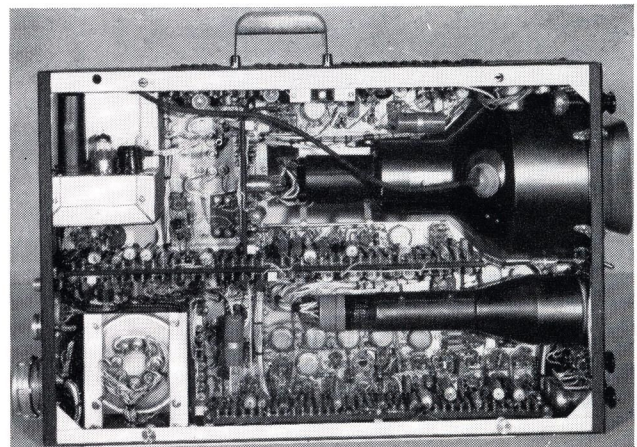
Equipment Supplied

TK-31B Field Television Camera Equipment including Equipment below plus miscellaneous fittings and instructions are supplied:

1 Camera	MI-26011-C
1 Camera Viewfinder	MI-26016-B
1 Metal Camera Tripod.....	MI-26046
1 Camera Control Unit.....	MI-26066-A
1 Power Supply	MI-26091
1 Cradle Head	MI-26203-A
1 Set Interconnecting Cables.....	MI-26730
1 50 ft. Camera Cable.....	MI-26725-E5
1 100 ft. Camera Cable.....	MI-26725-E6
1 200 ft. Camera Cable.....	MI-26725-E7
1 Camera Lens f1.8, 50mm.....	MI-826160
1 Camera Lens f1.9, 85mm.....	MI-826161
1 Camera Lens f3.5, 135mm.....	MI-826162
2 Shock Mounts	MI-26511-A1
1 Shock Mount	MI-26511-3
1 3KP1 Cathode Ray.....	MI-26650
1 5820 Image Orthicon.....	MI-26656
1 7TP4 Kinescope	MI-26666
1 Set Call Letter Panels.....	MI-26546
1 Orbiting Generator	MI-26853

Accessories

Camera Lens 8.5", f3.9.....	MI-26550-4
Camera Lens 13", f5.....	MI-26590-14
Camera Lens 17", f5.....	MI-26590-15
Camera Lens 25", f5.....	MI-26550-8
Plate Current Meter.....	MI-21200-C1
Tripod Dolly	MI-26042-A
Friction Type Pan and Tilt Head.....	MI-26205-B
Neutral Density Filter Holder.....	MI-26847
Protective Camera Cover.....	MI-26862-2
Orbiter Interconnecting Cable (bulk).....	MI-13333
Spare Video Preamplifier.....	MI-26153
Spare Yoke Assembly.....	MI-26747-2



Field Camera Control Unit with side panel removed showing kinescope and CRO mounting, and circuit wiring.

Vidicon Camera Chains

STUDIO TYPE TK-15A AND FIELD TYPE TK-35A



FEATURES

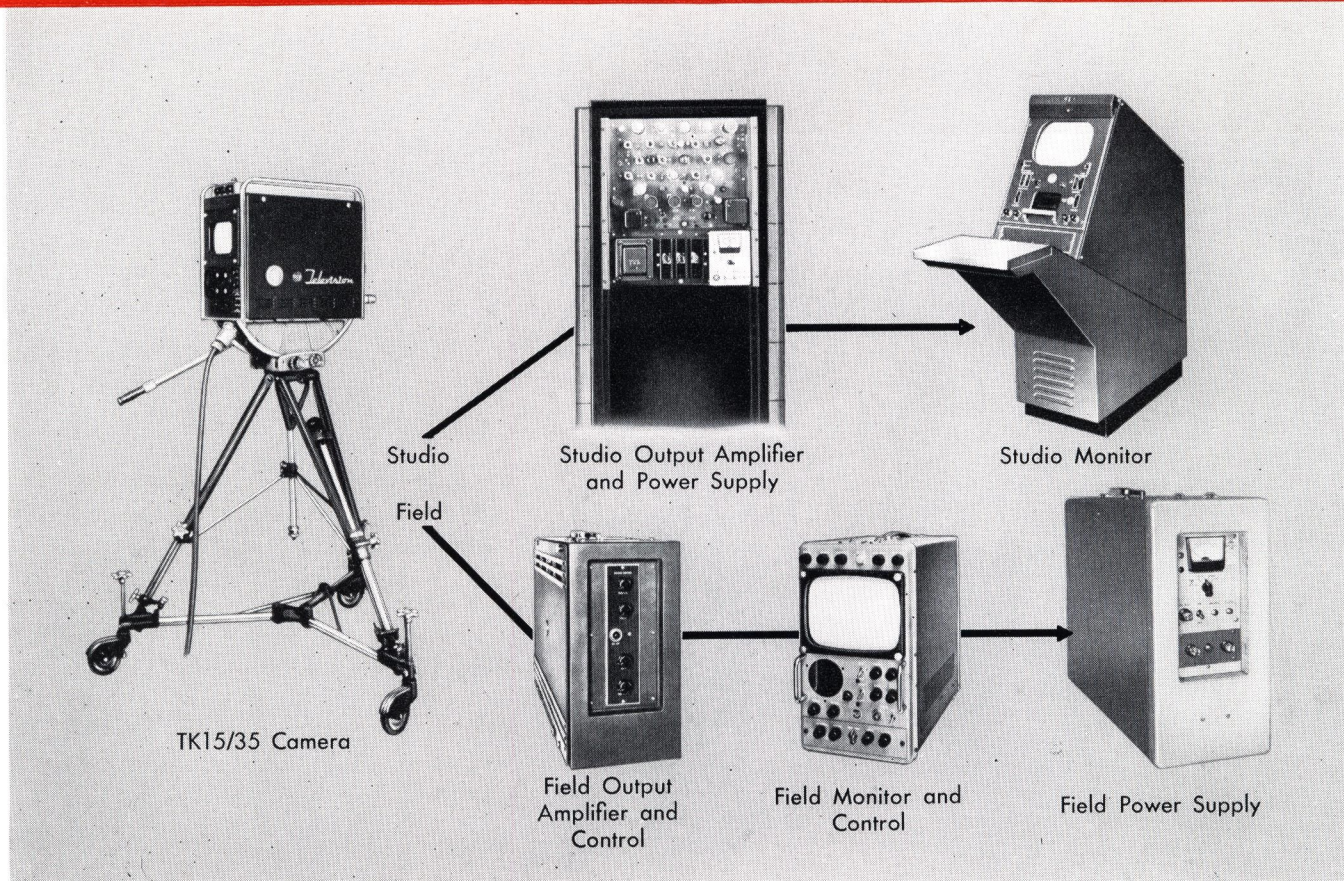
- Precision vidicon camera with integrated 7-inch electronic viewfinder
- Low-noise preamplifier, variable gamma and aperture correction assure excellent picture quality
- Reliable picture performance at all times by feedback stabilized black level, video, and deflection amplifiers
- Electromagnetic vidicon alignment, amplifier test pulse and local camera controls simplify setup and maintenance
- Output amplifier available in field case or rack mounting provides three sending and terminated video signals
- Precision focus mechanism with optical focus over full range in less than one turn of knob
- Automatic Sensitivity Control available

USES

The TK-15A and TK-35A Vidicon Cameras have many applications in both television stations and closed-circuit installations. As a source of live programming in television stations, this new vidicon camera is extremely useful for picking up scenes on which adequate lighting levels (approximately 200 foot-candles) can be maintained. For example, a single TK-15A/35A camera can be utilized for live newscasts, simple product demonstrations and flip-chart commercials. Under adequate lighting conditions, excellent picture quality is available from the vidicon tube. Usable pictures can be obtained with lighting levels of 50 foot-candles or less, depending upon the picture quality requirements of the application. The economy of operation inherent in the vidicon makes the TK-15A/35A an excellent investment for the uses described.

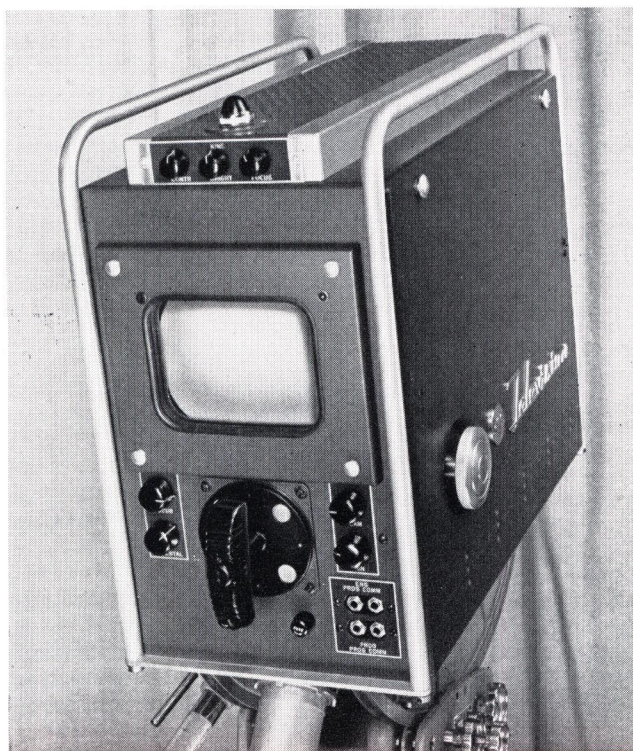
Design of the TK-15A/35A meets professional requirements in every way. Mechanically, the camera is designed for rugged use and utmost accessibility to components. Electrically advanced circuit techniques, a reduced tube complement and simplified operating controls have been introduced without compromise to performance. Signal-to-noise ratio, gray scale rendition and detail resolution are excellent.

The TK-35A is the portable or field version of the TK-15A Studio Camera. Both cameras are identical electrically and mechanically. The TK-35A however, utilizes a carrying case for the output amplifier. This case has an opening for the control panel on one end. Additional accessory units such as Automatic Sensitivity Control, the TM-35 Master Monitor and TG-31 Synchronizing Generator are available.



TK-15A (top arrow): Camera and rack-mounted equipments comprise the basic camera chain. Optional remote-control facilities are mounted in standard control console at the right. TK-35A (bottom arrow): Camera, case-mounted amplifier and power supply comprise the basic camera chain. A camera control panel can be supplied for mounting in the amplifier case or the monitor case as shown.

Local operating controls (gain, pedestal, beam and electrical focus) are available at the rear of the camera, where they are convenient to the operator for setup and maintenance.



DESCRIPTION

The TK-15A/35A camera and 7-inch electronic viewfinder constitute a single, self-contained chassis equipped with a 4-lens turret and all operating controls (gain, pedestal, beam and electrical focus). A standard camera cable connects the camera with the output amplifier which may be mounted in either a standard cabinet rack or a portable fieldcase housing. These units, plus a WP-16 Power Supply, comprise the basic camera chain.

Operating control of all electrical adjustments including an ASC "on-off" switch is available by means of optional remote camera control panels. The MI-26213-A Remote Control Panel may be mounted along with a master monitor, in a standard 13¼-inch television console housing or cabinet rack. For field application, the MI-26213-A Panel can be mounted in the fieldcase housing of the output amplifier. An alternate Remote Control Panel, MI-26161-A, mounts in the TM-35. Each panel includes an ASC "on-off" switch as well as gain, focus, pedestal and beam controls.

Rugged, vertical plane chassis construction has been featured in the TK-15A/35A camera design. Hinged doors on either side of the camera open downward to expose the camera interior for inspection and maintenance. The video

amplifying circuits are mounted on a hinged subchassis which swings outward from the camera, providing easy access to every component. The video preamplifier circuits are contained on a separate shock-mounted subchassis.

Precision Optical Focus Mechanism

Special attention has been given to the precise mechanical requirements of the optical system for the vidicon. Due to the small size of the picture on the surface of the vidicon photocathode, extremely close tolerances must be maintained on optical focus travel to avoid focus backlash. This is achieved by an ingenious, cam-operated mechanism which precisely translates the focus knob rotation into an exact, nonlinear characteristic motion to the vidicon and yoke assembly. Complete absence of focus backlash is thus assured, even under the severe tolerance requirements of short focal length lenses. Also, due to the special nonlinear focus motion characteristic, the amount of focus knob rotation required to adjust optical focus is essentially independent of distance.

Any high quality, 16mm Type "C" mount lenses may be used with the TK-15A/35A camera. Up to four lenses may be mounted in the turret at any time. A hollow-turret shaft makes it possible to use a manual zoom lens as one of the four lenses.

Through Electrical Filtering

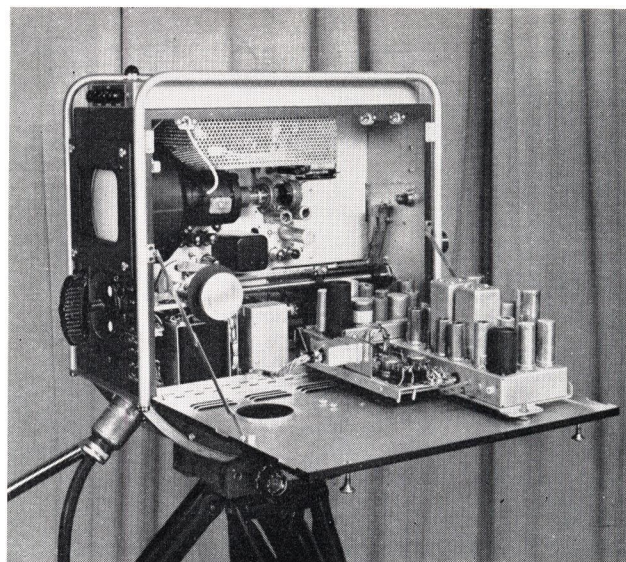
Electrical interference in the camera is eliminated by means of individual camera cable conductor barrier filters at the cable connector and thorough shielding of the low level video circuits. These facilities are vital to the quality of pictures and operational reliability.

The output amplifier performs the functions of video amplification, blanking insertion, feedback clamping, linear clipping, camera pulse amplification, gamma compensation and sync mixing. A variable gamma compensation circuit is provided in the output amplifier chassis to provide "stretching" of black information in the picture, thereby compensating for the black "compression" inherent in kinescope picture reproduction. Three separate feedback isolated video output circuits are provided with a minimum of 40 db of isolation between circuits.

Simplified Self-Stabilized Circuits

A substantial saving has been achieved in the total number of tubes used in the camera chain. In addition, the number and complexity of setup and operating controls have been minimized, resulting in savings to the user through reduced demands on the skill of technical personnel. At the same time, stability and reliability of the camera have actually been improved. For example:

- (1) All video amplifier stages are gain stabilized.
- (2) Pedestal levels are stabilized by feedback clamp circuits.



Vertical plane construction with hinged subchassis provides complete accessibility.

- (3) Deflection linearity and amplitude are feedback stabilized.
- (4) Vidicon split anode focus yields maximum flatness of focus; minimum picture rotation during adjustment.
- (5) Internal calibration signal permits accurate setting of channel gain; simplifies vidicon setup adjustments.
- (6) Cascode high transconductance video preamplifier provides high signal-to-noise ratio.
- (7) Detail resolution is sharpened by delay line aperture compensation.

The TK-15A/35A camera is available with several combinations of accessory equipment to fit a variety of applications. For broadcast television studio use and other applications requiring a very high quality picture monitor and waveform monitor, a studio camera chain is available including a TM-6C Master Monitor and console housing. An alternate equipment group for field applications includes the master monitor, camera output amplifier and power supply mounted in fieldcases. A single WP-16B Power Supply is capable of powering two camera chains. The TK-15A Vidicon Camera working in conjunction with an Automatic Sensitivity Control, MI-26191, makes possible virtually unattended operation. The ASC continuously monitors the output of the vidicon camera and translates this information into a control signal which is fed back to the Vidicon tube. The control voltage is applied to all of the control electrodes of the Vidicon, but not to the Vidicon target. This results in an effective change of target voltage, but avoids the introduction of d-c components into the video signal with changes in control voltage. Changes in vidicon sensitivity may thus be made automatically to compensate for changes in scene highlight level of approximately 20 to 1.

General

Type of Reproduction.....	Monochrome
Viewfinder Kinescope.....	Seven-inch diameter, P4 phosphor
Number of Scanning Lines.....	525, 2 to 1 interlaced
Frame Repetition Rate.....	30 per second
Field Repetition Rate.....	60 per second
Line Repetition Rate.....	15,750 per second
Incident Illumination for Best Results.....	200 foot-candles
Picture Polarity at Output.....	Black negative
Maximum Length of Camera Cable.....	500 feet
Lens Type.....	16mm C-mount
Intercom Facility.....	Engineering, production, and program cue

Electrical

Power Requirements (Camera and Viewfinder):

Line Rating.....	105-125 volts, 50/60 cycles, single phase
Power.....	376 watts
Current.....	5 amperes

Input Signals:

Horizontal Drive.....	4 volts peak-to-peak negative
Blanking.....	4 volts peak-to-peak negative
Sync.....	4 volts peak-to-peak negative

Output Signals:

Picture #1.....	Picture with optional sync 1.4 volts
Picture #2.....	Picture with optional sync 1.4 volts
Picture #3.....	Picture only, 1.0 volt
Bandwidth.....	Essentially flat to 6 megacycles, 3 db down at 8 megacycles

Aperture Compensation Peak

Boost Frequency.....	4.5 megacycles, ± 0.25 mc
Aperture Compensation Amplitude.....	Continuously variable from 0 to 10 db

Gamma Correction Factors.....

	0.5, 0.7 and unity
Isolation between Output Lines.....	40 db minimum
Output Impedance.....	75 ohm coaxial, doubly terminated

Mechanical

Dimensions:

Camera Case.....	11" wide, 19" high, 22 1/4" deep
Output Amplifier (rack mounting).....	14" high, 19" wide, 9" deep
Camera Control Panel (console mounting).....	11 1/8" wide, 2-21/32" high, 2 3/4" deep
Camera Control Panel (TM-35 mounting).....	7 3/4" wide, 2 1/8" high, 3 1/2" deep

Weight:

Camera.....	72 lbs.
Output Amplifier.....	20 lbs.
Camera Control Panel.....	2 1/2 lbs.

Note: More complete technical specifications are available on request.

Equipment Supplied

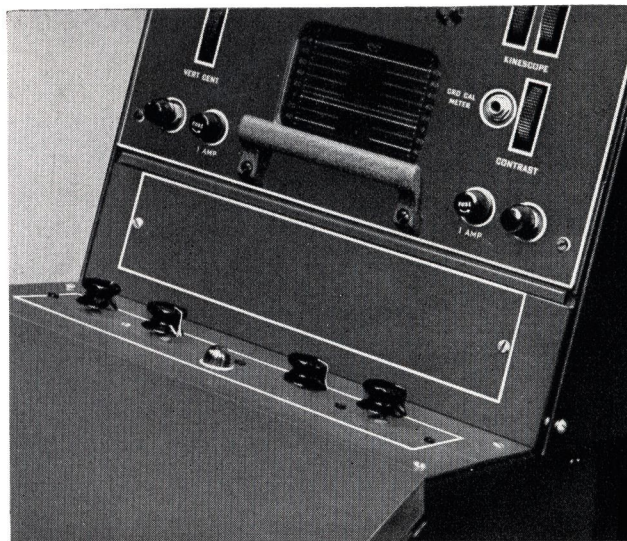
TK-15A Studio Vidicon Camera Chain with TM-6C Master Monitor, including the following:

1 TK-15A Vidicon Camera.....	MI-26023-B
1 Output Amplifier.....	MI-26063-A
1 Remote Camera Control Panel.....	MI-26213-A
1 Viewfinder Shade.....	MI-26842
1 WP-16B Power Supply.....	MI-26084-B
1 Centering Current Subchassis for WP-16B.....	MI-26083-A
1 Unregulated Voltage Subchassis for WP-16B.....	MI-26082-A
1 Camera Cable, 50 ft.....	MI-26725-E5
1 Lens, 25 mm, f/1.5.....	MI-36316-25
1 Lens, 50mm, f/1.5.....	MI-36316-50
1 Lens, 75mm, f/1.9.....	MI-36316-75
1 Vidicon Tube Type 7735-A.....	MI-36323-A
1 TM-6C Master Monitor.....	MI-26136-C
1 Kinescope Tube Type 10SP4.....	MI-26655
1 CRO Tube Type 5ABP1.....	MI-26667
1 Blower for TM-6C.....	MI-26579-B
1 Console Housing, 13-inch.....	MI-26786
1 Console Well Adaptor for Remote Camera Control Panel.....	MI-26212

TK-15A Studio Camera Chain with TM-35 Master Monitor, including the following:

1 TK-15A Vidicon Camera.....	MI-26023-B
1 Output Amplifier.....	MI-26063-A
1 Remote Camera Control Panel.....	MI-26213-A
1 Viewfinder Shade.....	MI-26842

NOTE: This equipment is also available for operation on 625 line, 50 field standards and 220 volts, 50 cycle, single phase, a-c power.



Remote control panel mounts below master monitor for control room operations with waveform and picture display.

1 WP-16B Power Supply.....	MI-26084-B
1 Centering Current Subchassis for WP-16B.....	MI-26083-A
1 Unregulated Voltage Subchassis for WP-16B.....	MI-26082-A
1 Camera Cable, 50 foot.....	MI-26725-E5
1 Lens, 25mm, f/1.5.....	MI-36316-25
1 Lens, 50mm, f/1.5.....	MI-36316-50
1 Lens, 75mm, f/1.9.....	MI-36316-75
1 Vidicon Tube Type 7735-A.....	MI-36323-A
1 TM-35 Master Monitor.....	MI-26154
1 Console Mounting Adaptor for TM-35.....	MI-26873
1 13-inch Console Housing.....	MI-26786
1 Console Well Adaptor for Remote Camera Control Panel.....	MI-26212

TK-35A Vidicon Field Camera Chain with TM-35 Master Monitor, including the following:

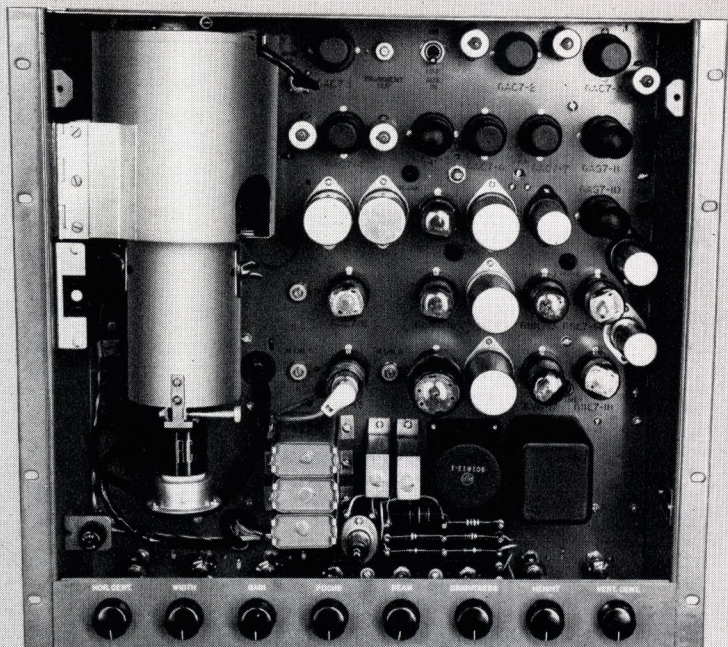
1 TK-15A Vidicon Camera.....	MI-26023-B
1 Output Amplifier.....	MI-26063-A
1 Remote Camera Control Panel.....	MI-26161-A
1 Viewfinder Hood, Adjustable.....	MI-26843
1 Field Case for Output Amplifier.....	MI-26863
1 End Panel and Cable Assembly.....	MI-26864
1 Shock Mount for Output Amplifier.....	MI-26511-A2
1 Vidicon Tube Type 7735-A.....	MI-36323-A
1 WP-16B Power Supply.....	MI-26084-B
1 Field Case for WP-16B.....	MI-26216
1 Centering Current Subchassis.....	MI-26083-A
1 Unregulated Voltage Subchassis.....	MI-26082-A
1 Shock Mount for WP-16B.....	MI-26511-A5
1 TM-35 Master Monitor.....	MI-26154
1 Shock Mount for TM-35.....	MI-26511-A3
1 Video Cable, with connectors.....	MI-26759-12
1 Camera Cable, 50 foot.....	MI-26725-E5
1 Set of Interconnecting Cables.....	MI-26730
1 Control Cable, 4 foot.....	MI-26759-57
1 Lens, 25mm, f/1.5.....	MI-36316-25
1 Lens, 50mm, f/1.5.....	MI-36316-50
1 Lens, 75mm, f/1.9.....	MI-36316-75

Accessories

Automatic Sensitivity Control Chassis.....	MI-26191
Camera Cradle Head.....	MI-26203-A
TD-10 Hydraulic Pedestal.....	MI-26053
TD-11A Metal Tripod.....	MI-26046
TD-15A Tripod Dolly, folding type.....	MI-26042-A
TG-2A Studio Sync Generator.....	MI-26102-A
TG-12A Field Sync Generator.....	MI-26112-A
TG-21 Simplified Sync Generator.....	ES-26986
TG-31 Simplified Field Sync Generator.....	ES-26987
Adjustable Viewfinder Hood.....	MI-26843
Interphone Connection Unit.....	MI-11784

Monoscope Camera

TYPE TK-1C



FEATURES

- Useful to television transmitting station, laboratory, factory, or service bench
- Centralized operating controls
- Compact construction; "bath tub" chassis for standard rack mounting
- Built-in high voltage power supply
- Auxiliary input for alignment purposes
- Provision for remote control of gain and focus
- Pattern shows scanning symmetry, vertical and horizontal resolution, shading, reproduction of isolated details, contrast and brightness
- Accessible arrangement

USES

The Type TK-1C Monoscope Camera is a completely self-contained television camera which produces a video signal by scanning a picture pattern built into the monoscope pickup tube. The camera may be used as a convenient means of generating a television picture signal for video testing of television transmitting equipment, or for "test pattern" transmission during warm-up and stand-by periods. In the latter case, the station call letters may be made a part of the pattern, thereby providing station identification. It may, likewise, be used in the television transmitting station as a readily available source of video signal, of high quality, to be used in place of the studio camera when making tests or adjustments on other units of the system. In the laboratory, factory, or service bench, the equipment may be used as a source of video signal to test or adjust television receivers, video amplifiers, and picture tubes.

DESCRIPTION

The TK-1C Monoscope Camera comprises the monoscope tube, the scanning generators, the video output amplifiers, and the high voltage power supply for the monoscope tube. This equipment is built on the familiar recessed "bath tub" type of chassis which fits into a standard 19-inch rack. All tubes and large components are located on the front of the chassis, while the wiring and smaller components are on the rear. The controls are grouped on a narrow control panel along the bottom of the chassis. When installed and in operation, the front is covered by a large cover plate which conceals everything but the control panel. This cover plate is interlocked to protect operating personnel from the high voltages present in the equipment.

The monoscope tube in the TK-1C is mounted in a vertical position at the left of the chassis. The upper part of the tube is enclosed in a Mumetal shield. The magnetic deflecting coils are mounted within the shield, and are attached to it. By disconnecting the tube socket, anode, and

signal leads, the whole assembly—tube, coils, and shield—may be swung outward. This arrangement allows the tube to be changed very easily, and at the same time, conserves rack space.

The monoscope tube ordinarily used in the TK-1C is an RCA 2F21. This tube provides a standard test pattern which shows the following details of the quality of reproduction in a given television system: scanning symmetry, resolution in both vertical and horizontal directions, shading and reproduction of isolated details. In addition it provides a pattern to facilitate proper adjustment of contrast and brightness. Monoscope tubes may also be obtained with special pattern showing station call letter, monogram, or other subject matter of the customer's choice. These tubes are available on a custom basis and are designated Type 1699.

Circuit Description

The Vertical Deflection Generator consists of four tubes and associated circuits. The first of these tubes amplifies the driving signal received from the synchronizing generator and generates a saw-tooth voltage wave which is amplified in the second, third, and fourth tubes. The output is applied to the magnetic deflecting coils of the monoscope tube. Negative feedback is employed to improve scanning linearity.

The Horizontal Deflection Generator includes three tubes and associated circuits. The first tube is the driving signal input amplifier and saw-tooth voltage generator; the second and third tubes amplify the output wave and feed it to the horizontal deflecting coils of the monoscope tube.

The Blanking Amplifier is used to provide the proper level and polarity of the blanking pulses received from the synchronizing generator before these pulses are fed into the Video Amplifier for mixing with the video signal.

The Sync Amplifier is used to provide proper level and polarity of synchronizing pulses from the synchronizing generator. These pulses are fed into the video amplifier for mixing with the video signal.

The Video Amplifier includes six stages of video amplification—together with a clipper stage which is inserted between the fifth and sixth stages. The monoscope output signal is fed directly into the first stage of this amplifier, and the blanking signal is introduced in the output of the fifth stage. The output of the fifth stage (which contains both video and blanking signals) is fed to a clipper stage which adjusts the height of the blanking "pedestals". The clipper feeds an output stage which consists of two tubes having their grids tied in parallel, but with the plate circuits separate. This provides two separate outputs—one for picture output and one for monitoring purposes.

SPECIFICATIONS

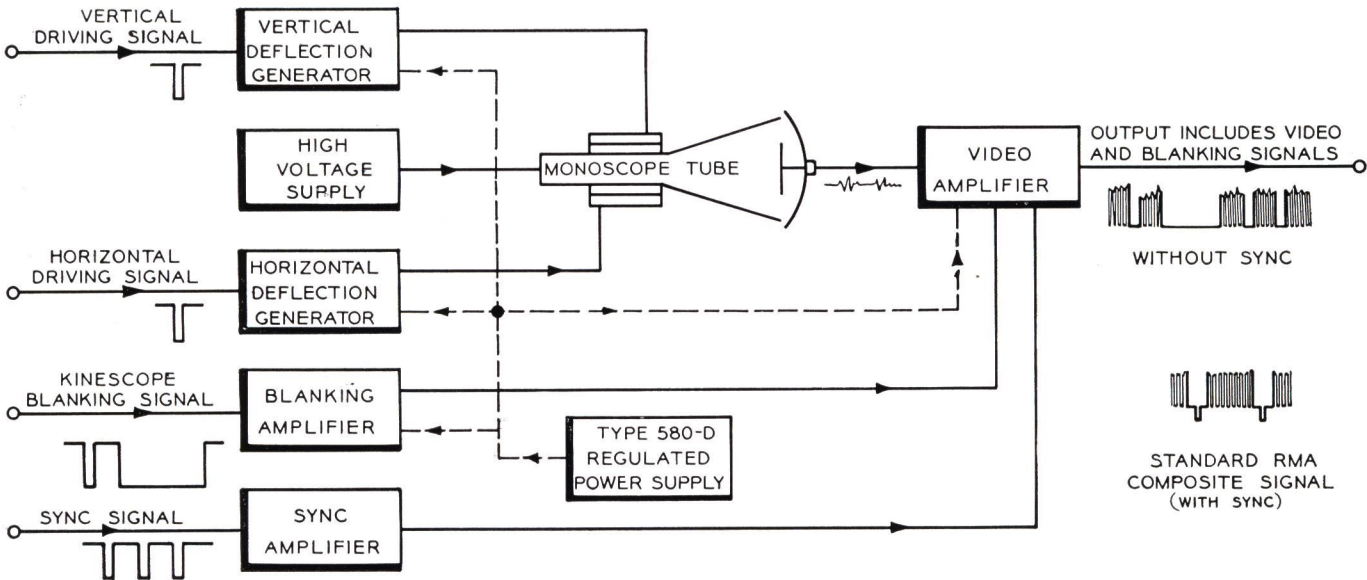
Output Voltage.....	1.5 volts peak-to-peak
Output Impedance.....	75 ohms
Input Pulses Required:	
Blanking, Horizontal Drive and Vertical Drive (neg. polarity).....	3.5 to 5 volts
Resolution Capability.....	At least 450 lines
Power Consumption:	
110-220 volts a-c 50/60 cycles.....	100 watts
280 volts d-c (from Type 580-D Power Supply).....	200 ma.
Dimensions.....	17 1/2" high, 19" wide, 11" deep
Weight.....	.55 lbs.
Tube Complement:	
6-6AC7	1-6Y6-G
3-6AG7	1-1B3-GT
3-6SL7-GT	1-991
1-6V6-GT	1-2F21
	3-6SN7-GT

ORDERING INFORMATION

Monoscope Camera complete with tubes.....	ES-26960-B
Monoscope Camera (less monoscope tube).....	MI-26030-B

Accessories

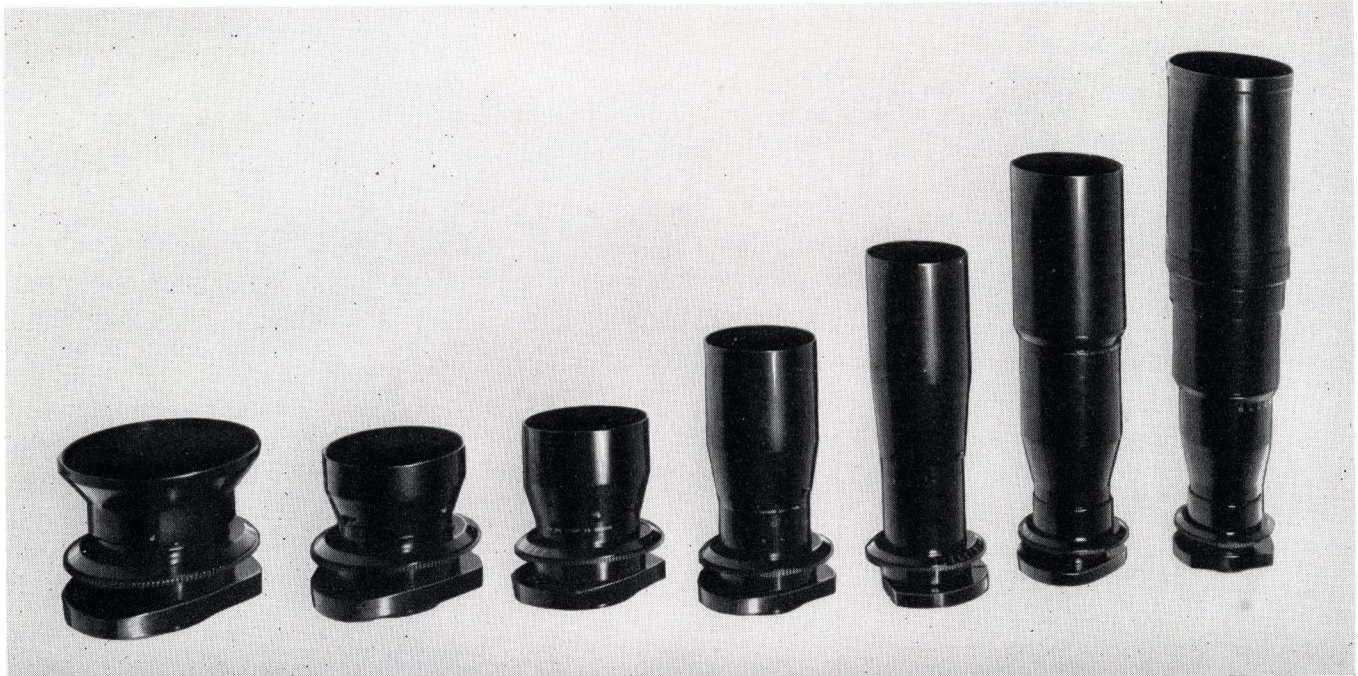
Spare Monoscope Tube 2F21.....	MI-26657
Special Monoscope Tube.....	Type 1699
Spare Set of Tubes for Camera.....	MI-26679-A



Block Diagram of TK-1C Monoscope Camera Circuit.

Ortal Fixed Focus Lenses

FOR 4½-INCH IMAGE ORTHICON CAMERAS



35mm
MI-26882-2

50mm
MI-26882-3

75mm
MI-26882-4

127mm
MI-26882-5

8-inch
MI-26882-6

12½-inch
MI-26882-7

16-inch
MI-26882-8

- Choice of lenses from 35mm to 22-inch focal length
- Specifically designed for 4½-inch image orthicon cameras
- Quick-change lens mount for ease of insertion and removal from lens turret
- Geared iris ring may be operated by remote control servo drive motor
- Iris opening linear with respect to rotation of index ring
- Possible to maintain linear relationship between rotation of index ring and size of iris opening

DESCRIPTION

The Ortal Fixed Focus Lenses are a series of optically superior type fixed focus lenses for use with RCA TK-12 4½-inch Image Orthicon TV cameras. In the design of the Taylor-Hobson Ortal range, the specialized requirements of television have been most fully taken into account. Each lens is shaped to transmit maximum possible information within the limits set by the television system.

The mechanical construction of the Ortal range of lenses, like the optical design, has been evolved specifically for TV camera requirements. Internal flare has been reduced to a minimum by the use of annular reisses and by matt blacking of all internal surfaces, together with the use of critically positioned baffles of suitable size. This is particularly advantageous because of the low frontal lighting often encountered in the TV studio, coupled with the extremely high sensitivity of the Image Orthicon tube as

compared with a photographic emulsion. The lenses are treated with anti-reflective coatings to assure optimum contrast in image formation and maximum transmission from a given construction.

An important feature of the lens design is the iris diaphragm control mechanism which provides for complete interchangeability between lenses on camera turrets fitted with remote control of the lens diaphragm. This provision is independent of focal length or maximum aperture. The mechanism provides a linear relationship between the rotation of the index ring and the size of the diaphragm aperture; the f/scale is, therefore, absolutely linear between all stops. Overall rotation of the index ring, as well as rotation between marked aperture values, is common to all lenses irrespective of focal length or maximum aperture.

DESCRIPTION (Continued)

When the lens is used on a camera turret incorporating iris-drive the index ring serves as the lens gear ring. The maximum torque required to drive the gear ring is 15 inch-ounces per lens, and the movement is smooth and free. The mechanism is totally enclosed within the lens iris barrel to prevent entrance of foreign matter which might cause deterioration of the movement. Good balance on the

camera turret is achieved by maintaining a weight of 2½ pounds for each lens below 12½-inch focal length.

The Ortol lenses feature a quick-change type TV-88 lens mount, which utilizes two captive screws to secure the lens in position. Only a half-turn of each clamp is required to insert or remove the lens from the camera turret.

SPECIFICATIONS**Depth of Field: MI-26882-2 f/2.8, 35mm (1.38-inch)**

Distance Focused On (Feet)	f/2.8			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	22	7	inf.	11	4	inf.	8	0	inf.	5	10	inf.	4	1	inf.	3	0	inf.
15	9	1	43 6	6	7	inf.	5	4	inf.	4	4	inf.	3	3	inf.	2	7	inf.
8	6	0	12 2	4	10	25 4	4	1	inf.	3	6	inf.	2	8	inf.	2	4	inf.
5	4	2	6 3½	3	7	8 6	3	2	12 3	2	10	28 1	2	5	inf.	1	10	inf.
4	3	5½	4 9	3	0	5 11	2	9	7 5	2	6	11 2	2	3	72 3	1	10	inf.
3	2	8¼	3 4¼	2	5½	3 11	2	3	4 6	2	1	5 6½	1	10	9 4	1	7½	56 9
2½	2	3½	2 9	2	1½	3 1	2	0	3 5	1	10	4 2	1	8	5 6	1	6	10 5
1½	1	5¼	1 7	1	4¼	1 8	1	6	1 9	1	3¼	1 10¼	1	2¼	2 1	1	1¼	2 5½
1	0	11¾	1 ¼	0	11½	1 ¾	0	11¼	1 1	0	11	1 1¼	0	10½	1 2	0	10	1 3
.75	0	8¾	0 9¼	0	8¾	0 9¼	0	8½	0 9½	0	8½	0 9½	0	8¼	0 9¾	0	8¼	0 10¼

Depth of Field: MI-26882-3 f/2.0, 50mm (2-inch)

Distance Focused On (Feet)	f/2.0			f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	65	8½	inf.	32	11	inf.	23	6¾	inf.	16	6½	inf.	12	¾	inf.	8	4	inf.	6	1¼	inf.
25	18	2¼	39 11¼	14	3¾	100 4	12	2¾	inf.	10	¾	inf.	8	2¾	inf.	6	4	inf.	4	11¾	inf.
15	12	3½	19 3¾	10	5	27 1¼	9	3¼	40 1¼	7	11¾	inf.	6	9½	inf.	5	5½	inf.	3	7	inf.
8	7	2	9 ½	6	6	10 4¾	6	¾	11 10	5	6	14 11¼	4	11	22 3¼	4	2¼	inf.	4	5¼	inf.
5	4	8	5 4½	4	4¾	5 9¾	4	2¼	6 2½	3	11	6 11¼	3	7½	8 1¾	3	2¾	11 5¾	2	10¼	22 10¼
4	3	9½	4 2¾	3	7¼	4 5¾	3	5¾	4 8¾	3	3½	5 1½	3	1	5 8¾	2	9¾	7 1¾	2	6¼	10 3
3	2	10¾	3 1½	2	9½	3 3	2	8½	3 4½	2	7¼	3 6¾	2	5¾	3 10	2	3½	4 4¾	2	1½	5 4
2½	2	5	2 7	2	4¼	2 8	2	3½	2 9	2	2¾	2 10¼	2	1¾	3 ¼	2	0	3 4¼	1	10½	3 10¼
2	1	11½	2 ½	1	11	2 1¼	1	10½	2 1¾	1	10	2 2½	1	9¼	2 3¾	1	8¼	2 5¾	1	7¼	2 8¾
1½	1	5¾	1 6¼	1	5½	1 6¾	1	5¼	1 7	1	5	1 7¼	1	4½	1 7¾	1	4	1 8¾	1	3½	1 10

Depth of Field: MI-26882-4 f/2.0, 75mm (3-inch)

Distance Focused On (Feet)	f/2.0			f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	145	7	inf.	72	11	inf.	52	2	inf.	36	7	inf.	26	8	inf.	18	5	inf.	13	6	inf.
50	37	4	75 8	29	10	156 3	25	9	inf.	21	4	inf.	17	7	inf.	13	7	inf.	10	9	inf.
25	21	5	30 1	18	9	37 8	17	1	47 2	15	1	76 5	13	1	344 3	10	10	inf.	8	11	inf.
15	13	8	16 8	12	7	18 8	11	9	20 9	10	10	24 10	9	9	33 11	8	5	73 5	7	3	inf.
10	9	5	10 8	8	10	11 6	8	6	12 2	8	0	13 6	7	5	15 6	6	8	20 8	5	11	34 11
8	7	7	8 5	7	3	8 11	7	1	9 4	6	8	10 0	6	3	11 1	5	9	13 5	5	2	18 1
6	5	9	6 2	5	7	6 6	5	5	6 8	5	3	7 0	5	0	7 6	4	8	8 5	4	4	10 1
4	3	11	4 1	3	10	4 2	3	9	4 3	3	8	4 5	3	7	4 7	3	5	4 11	3	3	5 4
3	2	11	3 0	2	11	3 1	2	10	3 2	2	10	3 3	2	9	3 3	2	8	3 5	2	7	3 8
2	1	11	2 0	1	11	2 1	1	11	2 1	1	11	2 1	1	11	2 1	1	10	2 2	1	10	2 3

SPECIFICATIONS (Continued)

Depth of Field: MI-26882-5 f/2.8, 127mm (5-inch)

Distance Focused On (Feet)	f/2.8			f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0		
	ft. in. to ft. in.			ft. in. to ft. in.			ft. in. to ft. in.			ft. in. to ft. in.			ft. in. to ft. in.			ft. in. to ft. in.			ft. in. to ft. in.		
INF.	297	3	inf.	208	2	inf.	148	10	inf.	104	4	inf.	76	0	inf.	52	4	inf.	38	3	inf.
100	75	1	150	0	67	10	191	1	60	2	300	10	51	5	inf.	43	6	inf.	27	11	inf.
50	42	11	59	10	40	6	65	4	37	8	74	6	34	1	94	6	30	5	142	2	25
25	23	2	27	1	22	5	28	3	21	7	29	9	20	4	32	5	19	1	36	7	17
15	14	4	15	9	14	1	16	1	13	9	16	6	13	3	17	4	12	8	18	4	11
10	9	8	10	4	9	7	10	5	9	5	10	7	9	3	10	11	9	0	11	4	8
8	7	10	8	2	7	9	8	3	7	8	8	4	7	6	8	7	7	4	8	9	8
6	5	11	6	1	5	10	6	2	5	10	6	2	5	9	6	4	5	8	6	5	5
5	4	11	5	1	4	11	5	1	4	10	5	1	4	10	5	2	4	10	5	3	4
4	3	11	4	1	3	11	4	0	3	11	4	3	3	11	4	1	3	10	4	2	3

Depth of Field: MI-26882-6 f/4.0, 203mm (8-inch)

Distance Focused On (Feet)	f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	541	3	inf.	386	10	inf.	271	1	inf.	197	5	inf.	136	0	inf.	99	2	inf.
150	117	11	206 6	108	7	243 2	97	2	331 9	85	10	610 4	71	11	inf.	60	4	inf.
75	66	2	88 8	62	2	92 5	59	2	102 8	54	10	119 3	48	11	163 3	43	4	294 2
50	46	0	54 10	44	6	57 0	42	7	60 9	40	4	66 1	37	1	77 5	33	10	97 8
30	28	7	31 7	28	0	32 4	27	3	33 5	26	4	34 11	24	11	37 9	23	6	41 10
25	24	0	26 1	23	7½	26 7	23	1	27 3	23	5	28 3	21	5	30 5	20	4	32 6
20	19	4½	20 8	19	1½	20 11½	18	9½	21 4¾	18	4½	21 11½	17	8½	23 0	17	0	24 4¾
15	14	8	15 4¼	14	6¼	15 6	14	4	15 8¾	14	1¼	16 ¼	13	8¾	16 6½	13	3¾	17 2½
12	11	9½	12 2½	11	8½	12 3¾	11	7¼	12 5¼	11	5½	12 7½	11	2½	12 11	11	11¼	13 3¾
9	8	10¾	9 1¼	8	10¼	9 1¾	8	9½	9 2¾	8	8½	9 3¾	8	7	9 5½	8	5¼	9 7¾

Depth of Field: MI-26882-7 f/4.0, 318mm (12 1/2-inch)

Distance Focused On (Feet)	f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0			f/32.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	1325	10	inf.	947	5	inf.	663	7	inf.	483	0	inf.	322	6	inf.	242	2	inf.	116	11	inf.
400	307	7	569 7	281	9	687 2	250	3	995 2	219	7	inf.	182	5	inf.	151	8	inf.	118	6	inf.
200	174	3	234 10	165	8	252 5	154	5	284 5	142	3	338 1	125	10	493 7	110	6	inf.	92	0	inf.
150	135	1	168 8	130	0	177 6	122	11	192 7	115	2	215 8	104	2	269 5	93	7	385 0	80	0	inf.
100	93	3	107 10	90	9	111 4	87	4	117 0	83	5	125 0	77	7	141 2	71	7	167 1	63	5	241 4
75	71	2	79 3	69	9	81 1	67	9	84 1	65	4	88 1	61	9	95 8	58	0	106 9	52	7	132 4
50	48	4	51 10	47	8	52 7	46	9	53 9	45	8	55 4	43	11	58 2	42	0	61 11	39	2	69 7
35	34	2	35 10	33	11	36 2	33	5	36 9	32	11	37 5	32	0	38 8	31	0	40 3	29	6	43 2
25	24	7	25 5	24	5	25 7	24	3	25 10	23	11	26 2	23	6	26 9	23	0	27 5	22	2	28 8
20	19	9	20 3	19	8	20 4	19	6	20 6	19	4	20 8	19	1	21 0	18	9	21 5	18	3	22 2

SPECIFICATIONS (Continued)

Depth of Field: MI-26882-8 f/4.0, 406mm (16-inch)

Distance Focused On (Feet)	f/4.0			f/5.6			f/8.0			f/11.0			f/16.0			f/22.0			f/32.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	2167	9	inf.	1548	11	inf.	1084	9	inf.	789	5	inf.	543	3	inf.	395	7	inf.	272	6	inf.
750	556	7	inf.	505	1	inf.	443	7	inf.	385	1	inf.	315	9	inf.	259	9	inf.	200	8	inf.
400	338	4	489 3	318	8	537 3	293	2	630 2	266	7	804 1	231	7	inf.	200	2	inf.	163	4	inf.
200	183	6	219 10	117	8	228 11	169	6	244 0	160	4	266 0	147	2	313 2	133	11	398 0	116	7	727 6
150	140	7	160 9	137	2	165 7	132	4	173 3	126	9	184 0	118	5	205 2	109	9	238 1	97	11	325 7
100	95	10	104 7	94	3	106 7	91	11	109 8	89	3	113 9	85	1	121 5	80	7	132 0	74	2	154 8
75	72	8	77 6	71	9	78 7	70	5	80 2	68	11	82 4	66	5	86 2	63	9	91 4	59	8	101 5
50	49	0	51 1	48	7	51 6	48	0	52 2	47	4	53 0	46	2	54 7	44	11	56 6	42	11	60 1
35	34	6	35 6	34	4	35 8	34	1	36 0	33	9	36 5	33	2	37 1	32	6	37 11	31	6	39 5
28	27	8	28 4	27	7	28 5	27	5	28 7	27	2	28 10	26	10	29 3	26	6	29 9	25	10	30 8

Depth of Field: MI-26882-9 f/5.6, 559mm (22-inch)

Distance Focused On (Feet)	f/5.6			f/8.0			f/11.0			f/16.0			f/22.0			f/32.0		
	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.	ft.	in.	to ft. in.
INF.	2885	10	inf.	2020	11	inf.	1470	6	inf.	1011	10	inf.	736	7	inf.	507	3	inf.
750	597	5	inf.	549	2	inf.	498	11	inf.	433	0	inf.	373	9	inf.	304	7	inf.
400	351	8	462 5	334	6	496 0	315	4	545 6	287	11	654 7	260	8	861 8	225	3	inf.
275	252	2	303 11	243	4	317 11	233	1	337 5	217	10	375 10	202	0	435 5	180	3	592 4
200	187	6	214 4	182	7	221 2	176	10	230 4	168	0	247 5	158	6	271 7	144	11	324 8
150	142	11	157 10	140	1	161 5	136	9	166 2	131	5	174 10	125	8	186 5	117	1	209 8
100	96	11	103 4	95	7	104 10	94	1	106 9	91	7	110 2	88	10	114 6	84	6	122 8
80	78	0	82 1	77	3	83 0	76	3	84 2	74	8	86 3	72	10	88 10	70	0	93 7
60	58	11	61 1	58	6	61 7	57	11	62 3	57	0	63 4	56	0	64 8	54	4	67 1
50	49	3	50 9	49	0	51 1	48	7	51 6	48	0	52 3	47	3	53 1	46	1	54 8

ORDERING INFORMATION

Stock Identification	Description	Lens Opening	Total Vertical Field Angle	Total Horizontal Field Angle
MI-26882-2	1.38" Ortol Lens.....	f/2.8	50°	38.6°
MI-26882-3	2" Ortol Lens.....	f/2.0	34.6°	28.0°
MI-26882-4	3" Ortol Lens.....	f/2.0	23.6°	19.2°
MI-26882-5	5" Ortol Lens.....	f/2.8	14.2°	11.4°
MI-26882-6	8" Ortol Lens.....	f/4.0	9.0°	7.2°
MI-26882-7	12 1/2" Ortol Lens.....	f/4.0	5.7°	4.5°
MI-26882-8	16" Ortol Lens.....	f/4.0	4.5°	3.6°
MI-26882-9	22" Ortol Lens.....	f/5.6	3.2°	2.6°

Fixed Focus Lenses

FOR 3-INCH IMAGE ORTHICON CAMERAS



35mm
MI-826159

50mm
MI-826160

85mm
MI-826161

135mm
MI-826162

FEATURES

- Specifically selected for TV camera use
- High optical quality at economical cost
- Lightweight construction for easy turret manipulation
- Full range of focal length and speed to meet TV studio programming needs
- Color corrected for both color and monochrome television applications

DESCRIPTION

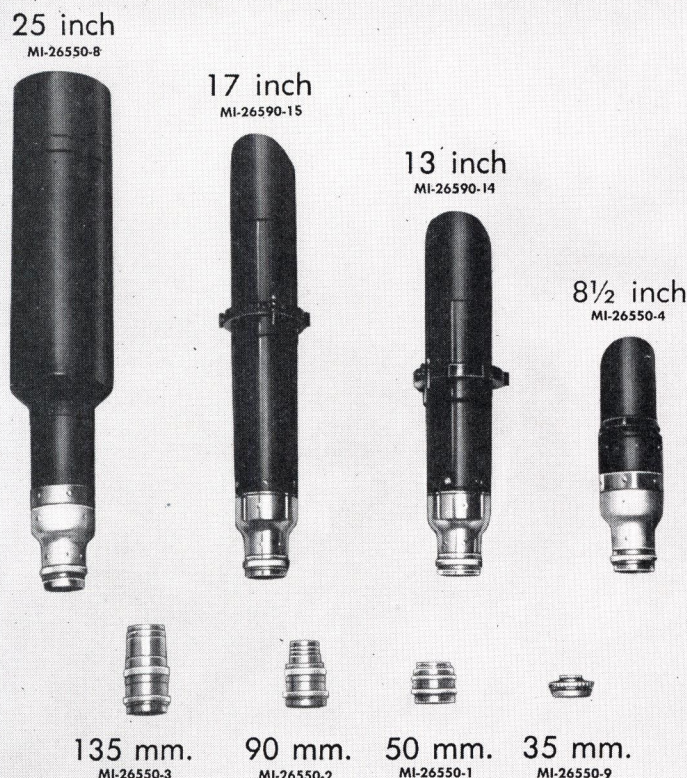
The Fixed Focus Lenses are specially designed for high quality optical performance with 3-inch image orthicon cameras. All lenses are fixed-focused at infinity and are available with focal lengths from 35 to 135mm. When used with RCA 3-inch image orthicon cameras, focus adjustment is provided by means of the camera focus carriage. These lenses feature high resolution which only superior optical design and workmanship can attain; varied focal length and adjustable speed which provide the high degree of flexibility required for TV programming; and precision design and lightweight construction which permit smooth, convenient turret manipulation. All lenses mount directly in the four-lens turret of both monochrome and color type RCA 3-inch image orthicon cameras. They have a mechanical back length of 28.9mm and are supplied with a lens hood for protection from random reflections.

SPECIFICATIONS AND ORDERING INFORMATION

Focal Length	Lens Opening	Aperture Dial Setting	Angle of View	Weight lb.	Length Inches	Stock Identification
35mm	f/2.0	2, 2.8, 4, 5.6, 8, 11, 16, 22	64°00'	3/4	4.25	MI-826159
50mm	f/1.8	1.8, 2, 2.8, 4, 5.6, 8, 11, 16, 22	46°06'	1/2	2.72	MI-826160
85mm	f/1.9	1.9, 2.8, 4, 5.6, 8, 11, 16	29°00'	1	4.66	MI-826161
135mm	f/3.5	3.5, 4, 5.6, 8, 11, 16, 22	18°00'	1	5.43	MI-826162

Standard and Telephoto Lenses

FOR 3-INCH IMAGE ORTHICON CAMERAS



FEATURES

- Complete line of high quality lenses selected specifically for TV camera use
- Wide range of focal lengths provide flexibility in programming
- Lightweight construction provides minimum turret load, easy installation and removal
- Bayonet-type mounting of long focal length lenses permit quick exchange without screwing threaded mount
- Each lens includes variable iris opening, individual focus adjustment and engraved depth-of-field scale

DESCRIPTION

The variable focus lenses for 3-inch image orthicon cameras cover a broad range of focal lengths for both studio and field use. All lenses mount directly in the four-position turrets of RCA TV cameras. The lens group provides utmost versatility in television studio scenes, sporting events, dramatic closeups and fast action scenes . . . and makes possible the detailed pickup of objects varying in size, from a coin less than 3 inches from the lens, to a ball player located over 400 feet away.

The RCA series of camera lenses range in focal lengths from 1½ inches to 25 inches (35mm to 610mm). For purposes of description, the group of lenses will be divided into two classes (1) Standard Lenses for Television Studio and Field Use and (2) Telephoto Lenses for Television Field Use.

Long Focal Length Lenses for Field Use

The group of special lenses, frequently called telephoto lenses, include the 13-inch, 17-inch and 25-inch lens sizes.

All incorporate simplicity of design and lightweight construction. They are ideally suited for television field uses, sports pickup, etc. Focal lengths from 13 to 25 inches enable interesting closeup, particularly when the action is over 50 feet away. The design requirement of lightweight construction is met by use of a thin, lightweight barrel which is provided with a light baffle to prevent internal reflections of the lens tube. The 13-inch and 17-inch focal lengths employ Cooke three-element type lens design with all optical elements coated to improve shadow details and brilliancy in the image for both black-and-white and color television work. Each lens has an adjustable graduated iris diaphragm to permit stopping the lens to f/32. A locking clamp prevents accidental movement of settings. A rotatable lens hood is provided which can be easily removed, if desired. All lenses incorporate a quick-change, precision-machined bayonet mount which permits rapid interchange or removal of long lenses from the camera turret as desired. The 25-inch lens is supplied with a complete set of fixed iris diaphragms.

Standard Lenses (Studio and Field Use)

This group of lenses includes the 35mm, 50mm, 90mm, 135mm and 8½-inch sizes. The first four lenses in this group are of short focal length with a substantial depth of field and require little adjustment for closeup scenes. They are corrected for lateral and longitudinal chromatic aberration. The 8½-inch lens is similar in design to the long lenses described above—it features the same lightweight barrel, built-in iris and turret mounting bayonet adaptor. Focusing barrel adjustments, suited to RCA camera turret designs, permit the pre-setting of a given lens for closeups while other lenses remain at infinity focus. This avoids time-consuming re-adjustment of the focus knob for extreme

closeups. All lenses are threaded to receive standard filters and sunshades are available but not supplied.

The studio lenses employ an adjustable built-in iris and double threaded mountings of stainless steel for long wear and safety. Lenses are specially treated by a coating process which increases efficiency of light transmission, thus improving the clarity, brilliance and black and white contrast of pictures obtained. Lens elements are accurately assembled and positioned in mounts. Inside the mounts are light baffles which give added contrast by reducing flare. All lens barrels carry diaphragm scales and depth of field scales.

SPECIFICATIONS

Depth of Field: MI-26550-9 f/3.3, 35mm

Circle of Confusion, .002 in.

Distance* Focused On	f/3.3		f/5.6		f/8		f/11		f/16		f/22	
	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.
INF.	24 —	inf.	14 6	inf.	10 —	inf.	7 6	inf.	5 3	inf.	3 9	inf.
35 feet	14 6	inf.	10 3	inf.	8 —	inf.	6 3	inf.	4 6	inf.	3 6	inf.
15 feet	9 4	40 —	7 6	inf.	6 3	inf.	5 —	inf.	4 —	inf.	3 3	inf.
10 feet	7 3	17 9	6 —	32 —	5 3	inf.	4 4	inf.	3 6	inf.	2 9	inf.
8 feet	6 —	11 9	5 3	17 6	4 6	36 —	4 —	inf.	3 3	inf.	2 8	inf.
6 feet	4 9	7 9	4 4	10 —	3 9	14 —	3 6	29 —	3 —	inf.	2 6	inf.
5 feet	4 3	6 3	3 9	7 6	3 6	9 6	3 —	14 6	2 9	130 —	2 3	inf.
4 feet	3 6	4 8	3 3	5 4	3 —	6 4	2 9	8 —	2 4	16 —	2 —	inf.
3 feet	2 9	3 4	2 7	3 8	2 5	4 1	2 3	4 9	2 —	6 6	1 10	12 —
2 feet	1 10½	2 1¾	1 9¾	2 3	1 8¾	2 4	1 8	2 7	1 6½	3 —	1 5	3 8

Depth of Field: MI-26550-1 f/1.9, 50mm

Circle of Confusion, .002 in.

Distance* Focused On	f/1.9		f/2.8		f/4		f/5.6		f/11		f/22	
	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.
INF.	85 —	inf.	59 —	inf.	41 —	inf.	29 —	inf.	15 —	inf.	7 6	inf.
50 feet	32 —	120 —	27 —	inf.	23 —	inf.	19 —	inf.	11 9	inf.	6 9	inf.
25 feet	19 6	37 —	17 6	43 —	15 8	63 —	13 9	162 —	9 6	inf.	6 —	inf.
15 feet	12 9	17 9	12 —	20 —	11 —	23 —	10 —	32 —	7 9	inf.	5 3	inf.
10 feet	9 —	11 3	8 8	12 —	8 2	13 —	7 6	15 —	6 3	28 —	4 6	inf.
8 feet	7 4	8 9	7 1	9 2	6 10	9 10	6 5	10 9	5 4	16 4	4 —	inf.
6 feet	5 8	6 6	5 6	6 7	5 3	6 11	5 1	7 1	4 5	9 6	3 6	25 —
5 feet	4 9	5 3	4 8	5 4	4 6	5 7	4 4	5 10	3 11	6 6	3 2	13 —
4 feet	3 10¼	4 1¾	3 9¼	4 3	3 8¾	4 4½	3 7	4 6½	3 3	5 3	2 9	7 9
3 feet	2 11½	3 1	2 10½	3 1½	2 10	3 2½	2 9	3 3	2 7	3 7	2 3	4 6
2 feet	1 11½	2 ¾	1 11¾	2 ⅝	1 11	2 1	1 10¾	2 1¼	1 9⅞	2 2½	1 8¼	2 5¾

* Distances are measured from the subject to the image plane of the camera.

Depth of Field: MI-26550-2 f/3.5, 90mm

Circle of Confusion, .002 in.

Distance* Focused On	f/3.5		f/5.6		f/8		f/11		f/16		f/22	
	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.
INF.	150 —	inf.	94 —	inf.	66 —	inf.	48 —	inf.	33 —	inf.	24 —	inf.
200 feet	88 —	inf.	66 —	inf.	50 —	inf.	39 —	inf.	29 —	inf.	21 —	inf.
100 feet	62 —	350 —	50 —	inf.	41 —	inf.	33 —	inf.	25 —	inf.	20 —	inf.
50 feet	38 —	75 —	33 —	106 —	29 —	210 —	25 —	inf.	20 —	inf.	17 —	inf.
25 feet	22 —	29 —	19 6	33 —	18 4	39 —	16 8	50 —	14 6	96 —	12 8	inf.
15 feet	13 9	16 8	13 —	17 6	12 4	19 —	11 8	21 —	10 6	26 —	9 6	37 —
10 feet	9 6	10 8	9 —	11 —	8 9	11 8	8 6	12 4	7 10	13 9	7 4	16 3
8 feet	7 8	8 4	7 5½	8 8	7 3	9 —	7 —	9 4	6 8	10 3	6 3	11 4
6 feet	5 10	6 2½	5 8½	6 4	5 7	6 6	5 5	6 8	5 3	7 —	5 —	7 8
5 feet	4 10½	5 1½	4 9½	5 2½	4 8½	5 4	4 7½	5 5½	4 6	5 8	4 4	6 —
4 feet	3 11	4 1	3 10½	4 1½	3 9½	4 2½	3 9¼	4 3	3 8	4 4⅝	3 6¾	4 6¾

Depth of Field: MI-26550-3 f/3.8, 135mm

Circle of Confusion, .002 in.

Distance* Focused On	f/3.8		f/5.6		f/8		f/11		f/16		f/22	
	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.
INF.	310	— inf.	250	— inf.	150	— inf.	130	— inf.	74	— inf.	54	— inf.
200 feet	119	— inf.	103	— inf.	85	— inf.	72	— inf.	54	— inf.	42	— inf.
100 feet	75	— 148	69	— 176	59	— inf.	52	— inf.	42	— inf.	35	— inf.
50 feet	42	— 59	40	— 65	37	— 75	34	— 90	30	— 148	26	— inf.
25 feet	23	— 27	22	6 28	22	— 29	21	— 32	19	— 36	17	6 44
15 feet	14	5 15	14	3 16	13	10 16	13	5 17	12	9 18	12	— 20
10 feet	9	9 10	9	8 10	9	6 10	9	4 10	9	— 11	8	9 11
8 feet	7	10 8	7	9 8	7	8 8	7	6 8	7	4 8	7	2 9
6 feet	5	10 7/8	5	10 1/2	5	9 7/8	5	9 6	5	8 6	5	6 6
5 feet	4	11 3/8	4	11 5	4	10 3/4	4	10 1/4	4	9 1/2	4	9 5
4 feet	3	11 5/8	3	11 3/8	3	11 1/8	3	10 7/8	3	10 1/2	3	10 1/8

Depth of Field: MI-26550-4 f/3.9, 8 1/2" Objective

Circle of Confusion, .003 in.

Distance Focused On (Feet)	f/3.9		f/5.6		f/8.0		f/11		f/16		f/22		f/32	
	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.
INF.	309	inf.	215	inf.	150	inf.	110	inf.	75	inf.	55	inf.	38	inf.
1000	236	inf.	177	inf.	131	inf.	99	inf.	70	inf.	52	inf.	36	inf.
500	191	inf.	150	inf.	116	inf.	90	inf.	65	inf.	49	inf.	35	inf.
200	121	568	104	2861	86	inf.	71	inf.	55	inf.	43	inf.	32	inf.
100	76	148	68	187	60	298	52	1156	43	inf.	35	inf.	27	inf.
50	43	60	41	65	38	75	34	92	30	149	26	578	22	inf.
	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.
25	23	2 27	22	5 28	21	5 30	20	4 32	18	9 37	17	2 46	15	74
15	14	3 15	14	— 16	13	8 16	13	2 17	12	6 18	11	9 20	10	9 24

Depth of Field: MI-26590-14 f/5.0, 13" Objective

Circle of Confusion, .003 in.

Distance Focused On (Feet)	f/5.0		f/6.3		f/8.0		f/11		f/16		f/22		f/32	
	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.
INF.	470	inf.	373	inf.	293	inf.	213	inf.	147	inf.	107	inf.	73	inf.
1000	484	inf.	427	inf.	370	inf.	299	inf.	227	inf.	176	inf.	128	inf.
500	326	1070	299	1520	270	3380	230	inf.	185	inf.	150	inf.	113	inf.
200	165	254	158	273	149	303	136	376	119	628	103	3185	85	inf.
100	91	112	88	116	85	121	81	131	75	152	68	188	60	314
50	48	53	47	54	46	55	45	57	43	60	41	65	37	76
	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.
25	24	5 25	24	2 25	24	— 26	23	7 26	23	— 27	22	5 28	31	5 30
15	14	9 15	14	9 15	14	8 15	14	6 15	14	3 15	14	— 16	13	7 16

Depth of Field: MI-26590-15 f/5.7, 17" Objective

Circle of Confusion, .003 in.

Distance Focused On (Feet)	f/5.6		f/6.3		f/8.0		f/11		f/16		f/22		f/32	
	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.
INF.	717	inf.	637	inf.	502	inf.	365	inf.	251	inf.	183	inf.	126	inf.
1000	589	3307	560	4646	501	inf.	422	inf.	334	inf.	267	inf.	201	inf.
500	371	768	359	823	334	996	297	1588	250	inf.	211	inf.	167	inf.
200	176	232	173	237	166	250	157	276	143	333	129	443	111	986
100	94	108	93	109	91	111	88	116	83	125	79	138	72	166
	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.	ft.	in. to ft. in.
50	48	3 51	48	1 52	47	7 52	46	10 53	45	6 55	44	— 57	41	9 62
25	24	7 25	24	6 25	24	5 25	24	2 25	23	10 26	23	5 26	22	9 27

Depth of Field: MI-26550-8 f/5.6, 25" Objective

Circle of Confusion, .003 in.

Distance Focused On (Feet)	f/5.6		f/6.3		f/8.0		f/11		f/16		f/22		f/32	
	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.	ft.	to ft.
INF.	1669	inf.	1378	inf.	1085	inf.	789	inf.	542	inf.	394	inf.	271	inf.
1000	770	1428	734	1570	685	1855	612	2729	520	inf.	441	inf.	352	inf.
500	435	588	423	611	406	650	380	732	342	927	306	1365	260	6382
200	189	213	187	216	183	220	178	229	169	245	160	268	146	317
100	97	103	96	104	95	105	94	107	92	110	89	115	84	123
	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.	ft. in.	to ft. in.
50	49 3	50 10	49 1	50 11	48 11	51 2	48 6	51 7	47 10	52 5	47	53 5	45 10	55 1
25	24 10	25 2	24 10	25 2	24 9	25 3	24 7	25 5	24 5	25 7	24 3	25 10	23 11	26 2

ORDERING INFORMATION

Stock Identification	Description	f No.	Full Vertical Field Angle	Total Horizontal Field Angle*
MI-26550-9	Studio Camera Lens, 35mm.....	f/3.3	38°	48.5°
MI-26550-1	Studio Camera Lens, 50mm.....	f/1.9	27°	35°
MI-26550-2	Studio Camera Lens, 90mm.....	f/3.5	15°	20°
MI-26550-3	Studio Camera Lens, 135mm.....	f/3.8	10°	13.3°
MI-26550-4	Studio and Field Camera Lens, 8 1/2".....	f/3.9	6.47°	8.4°
MI-26590-14	Field Camera Lens, 13".....	f/5.0	4.23°	5.5°
MI-26590-15	Field Camera Lens, 17".....	f/7.0	3.23°	4.17°
MI-26550-8	Field Camera Lens, 25".....	f/5.0	2.20°	2.83°

* Field angle applies for use with Monochrome Cameras only; to calculate angle for Color Camera divide by 1.1.

FIELD LENSES FOR TK-41 COLOR CAMERAS**DESCRIPTION**

The MI-40802 Series of Field Lenses are required to complement the normal (objective) lenses used with the RCA TK-41 Color Camera. The field lenses serve to redirect all of the light reaching the image plane from the objective lens so that it will enter the relay lens system of the color camera. This insures uniform illumination of the relayed image. The size of the primary image is not changed by the field lens.

The field lenses range in diopter power from 24.7 to 4.5. In general, a field lens having a different power is required for each objective lens. Occasionally, however, the same field lens can be used satisfactorily with more than one objective lens. The field lenses designed for each of the objective lenses used are mounted on a spider located directly behind the lens turret support drum. This spider rotates with the lens turret as lens positions are changed. All the field lenses are designed with identical thickness and location to avoid changes in the position of the primary image as lenses are interchanged.

Field lenses are made of spectacle crown glass of finest quality, precision centered and edged. Each is 1.812 inches in diameter with 1/2mm beveled edge and is 1/2 inch thick

at the central point. Both surfaces have a baked magnesium fluoride coating for minimum green reflection at normal incidence.

Each field lens is set in a brass lens assembly consisting of a lens holder approximately 3 inches in diameter before knurling, with lens cap and a mask. Each of the lens elements are accurately assembled and positioned. All lens holders carry stencilled diopter power markings.

ORDERING INFORMATION

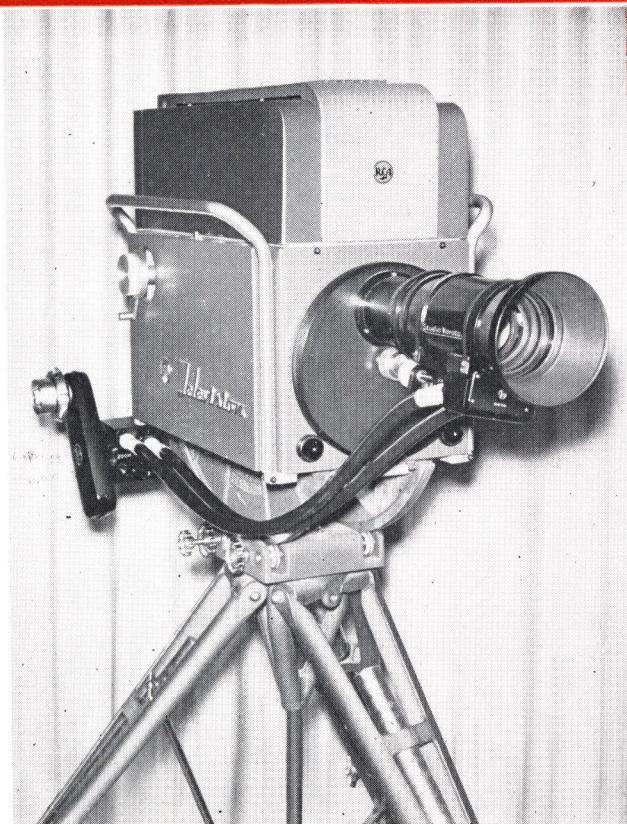
Field Lens (20.0 diopter) for 50mm objective lens.....	MI-40802-A1
Field Lens (13.5 diopter) for 85mm, 90mm and 135mm objective lens	MI-40802-A2
Field Lens (7.0 diopter) for Electra Zoom and also 8 1/2 objective lens.....	MI-40802-A3
Field Lens (5.75 diopter) for 13", 15", 17" and Berthiot Zoom objective lenses.....	MI-40802-A4
Field Lens (4.5 diopter) for 25" objective lens.....	MI-40802-A5
Field Lens (16.5 diopter) for 75mm objective lens.....	MI-40802-A6
Field Lens (24.7 diopter) for 35mm objective lens.....	MI-40802-A7

Varatol Lenses

STUDIO VAROTAL II, OUTDOOR VAROTAL III

FEATURES

- Variable focal length lens for either color or monochrome RCA cameras
- Optical quality comparable to high-quality fixed focal length lenses
- Continuously variable focal length
- Constant optical speed throughout range
- Fully color corrected
- Smooth, precise lever action provided for manual control
- Easily installed or removed from camera



Studio Varotal II Lens

DESCRIPTION

The Studio Varotal II and Outdoor Varotal III are high quality, variable focal length lenses designed to cover the full range of focal lengths normally used for television programming. By eliminating the need to switch to a second camera for change of lens turret position, the Varatols provide means of producing a variation of closeup and distance "shots" with only one camera. The lenses enable observation of detailed processes without the loss of continuity entailed in changing lenses. In addition, dramatic effects may be obtained by "zooming" from a distance shot to a close-up of one portion of the scene, or from a close-up view to a distance shot.

The Studio Varotal II Lens has been designed specifically to provide high quality optical performance under the space restrictions imposed by studio operating conditions. This has been achieved through the ability of the lens to maintain focus and constant optical speed over a focal length range of $2\frac{1}{4}$ to 8 inches, at a distance as low as five feet from lens to object. The optical performance of the lens throughout the full range of focal length compares favorably with high quality fixed focal length lenses.

The Varotal lens is equipped with a continuously variable iris diaphragm calibrated in "f" stops. The relative aperture is adjustable between f/4.5 and f/45. The optical speed of the lens remains constant at the value indicated by the aperture adjustment throughout the focal length range, even at maximum aperture. No field lens is required for use of the Studio Varotal II Lens with RCA color studio cameras.

The Outdoor Varotal III Lens has been designed for versatile use in studios or on remotes. It features a unique dual range change from 4 to 20 inches and from 8 to 40 inches by means of a small lever on the lens—without change of rear element or loss of picture focus. Definition of the same high quality as the Varotal II is achieved. It is fully color corrected and designed for use on both color or monochrome cameras. Minimum object distance while holding true zoom is 12 feet, and a close up adapter is available for reducing the object distance to 6 feet.

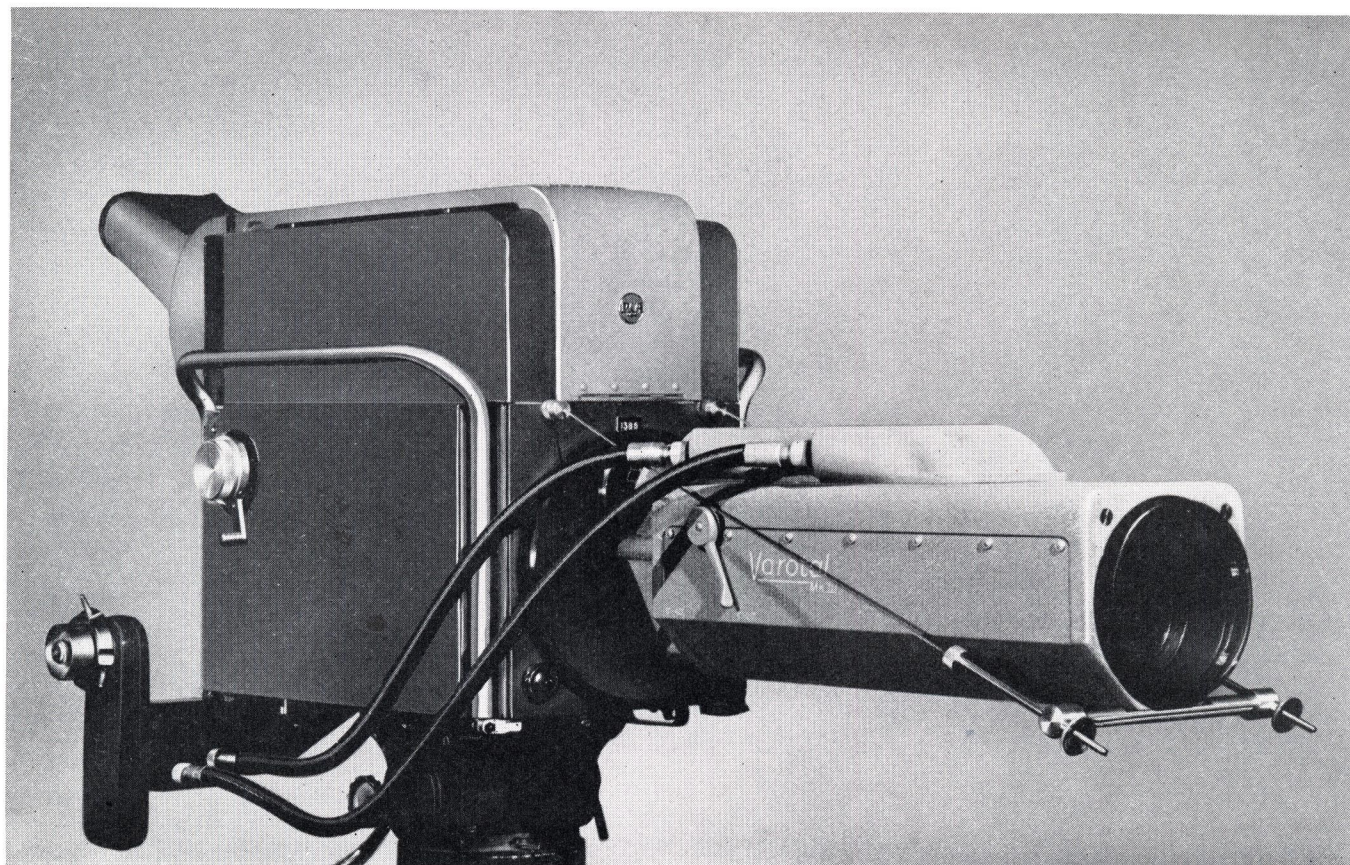
The Varotal II and III are mounted on RCA cameras by means of a special mounting plate which is readily in-

stalled in place of the standard camera turret. A suitable mounting plate and cables are included to accommodate the mounting requirements of the cameras. Ordering information should specify RCA camera type upon which lens is to be mounted.

The zoom and focus controls are combined in a lever mechanism which mounts on a bracket attached to the rear of the camera. The controls are mechanically coupled to the lens by means of a pair of flexible cables and a precision gearbox which is mounted on the lens. Zoom control is provided by rotation of the lever. Focus control is provided by rotation of a knob mounted on the zoom control lever. The direction of rotation of the focus knob, with respect to focusing action, corresponds to that of the regular camera focus knob, for ease and familiarity of operation. An adjustable friction brake is provided to vary the amount of pressure required to operate the zoom control in accordance with individual operator preference. This brake may also be used to lock the zoom control at any desired point within the zoom range.

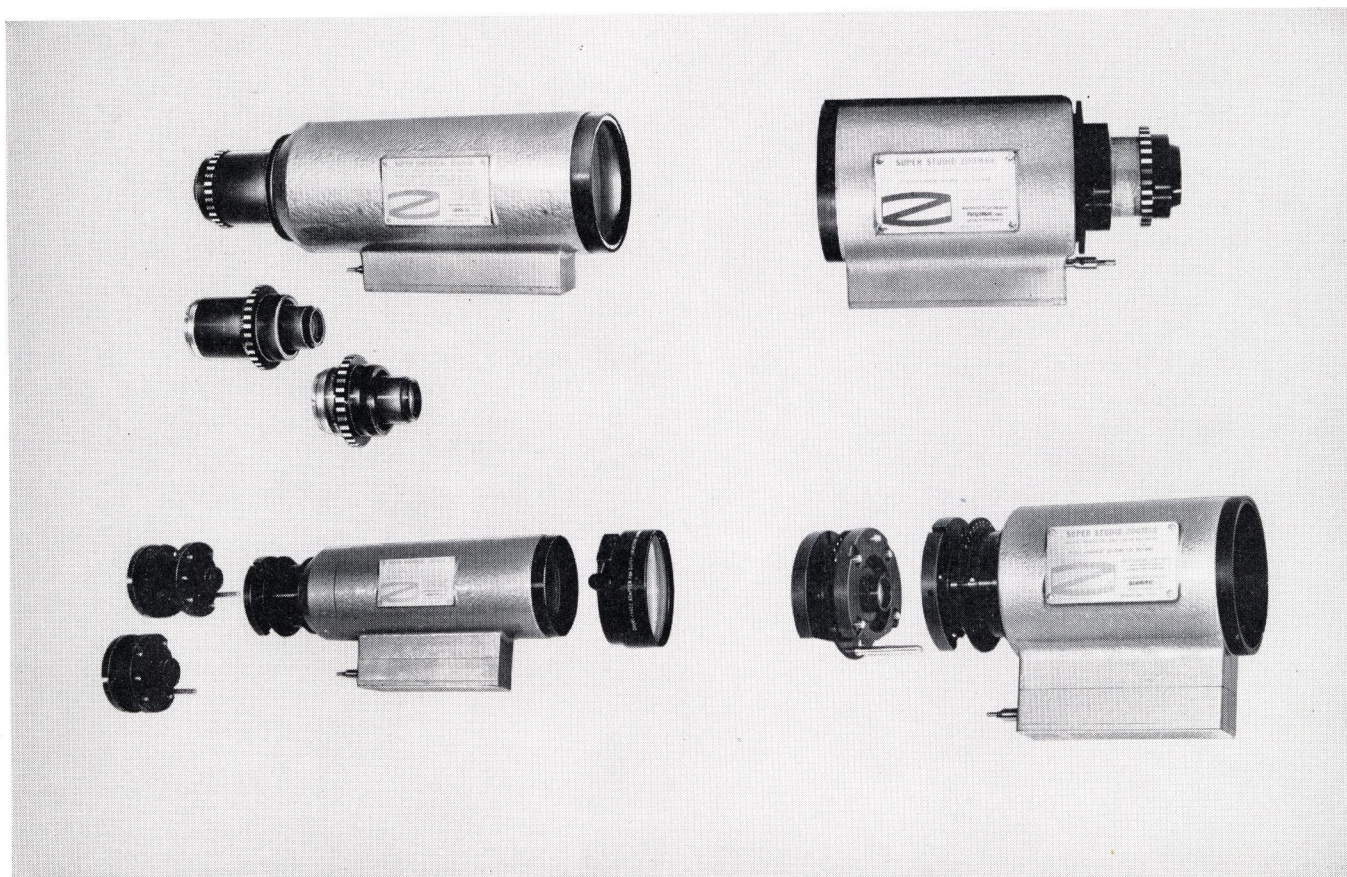
SPECIFICATIONS

	<i>Varotal II</i>	<i>Varotal III</i>
Focal Length Range.....	2¼ to 8 inches	4 to 20 and 8 to 40 inches dual range
Optical Speed	f/4.5 to f/45.0	f/4.0 to f/32.0 f/8.0 to f/32.0
Object Distance	5 feet to infinity	12 feet to infinity
Length (face of turret to end of lens)	14¾ inches	25¼ inches
Approximate Weight:		
Basic Optical Unit	11 lbs.	33 lbs. (68 lbs. in transit case)
Control Lever and Cables....	3½ lbs.	4 lbs.
ORDERING INFORMATION.....	Order as Varotal II and specify RCA Type Camera	Order as Varotal III and specify RCA Type Camera



Outdoor Varotal III Lens mounted on RCA Type TK-31B Field Camera.

Zoomar Lenses



Upper left—Super Universal Zoomar, upper right—Super Studio Zoomar both for use with all 3-inch Image Orthicon Cameras. Lower left—Model "B" Super Universal Zoomar, lower right—Model "B" Super Studio Zoomar both for use on all RCA Image Orthicon Cameras. Accessory converter lenses are also shown.

FEATURES

- Completely color-balanced and corrected for monochrome and color cameras
- Conversion of zoom ranges by means of quick-change adaptor
- Zoom operations and focus adjustment combined in single control rod
- Self supporting—no external bracing necessary
- Maintains optical speed throughout zoom

DESCRIPTION

Television Zoomar Lenses greatly facilitate programming by eliminating many problems of camera location and by reducing the number of cameras required to cover an event. Four models of Zoomar Lenses are available to fit all RCA Image Orthicon Cameras for studio or field operation.

The Super Universal Zoomar (for use with all RCA 3-inch Image Orthicon cameras) zooms from 2½ to 72 inches in four fast ranges and is recommended for both remote or studio operation. The Model "B" Super Universal Zoomar is designed for use with 4½-inch as well as 3-inch Image Orthicon Cameras and covers the same focal length range as the Super Universal Zoomar. The Super Studio Zoomar (for use with all RCA 3-inch Image Orthicon cameras)

zooms from $2\frac{1}{4}$ to 15 inches in two ranges and is specifically designed for studio use and for field applications involving moderate object distances such as basketball, tennis, hockey, etc. The Model "B" Super Studio Zoomar is designed for use with $4\frac{1}{2}$ -inch as well as 3-inch Image Orthicon Cameras and covers the same focal length range as the Super Studio Zoomar.

Direct Mounting on Camera Turret

All Zoomar Lenses are completely color balanced and corrected. The lenses are moderate in size and weight and are designed to mount directly in the camera lens turret without external support. Zoomars can be changed from camera to camera like a standard fixed focus lens. Change of zoom range can be accomplished quickly by simply adding or exchanging optical adaptors. Zoom and focus control are provided by means of a rod which passes through the camera to the rear. Zoom adjustment is performed by moving the rod in or out, and focus is adjusted by rotating the same control rod.

The Super Universal and Super Studio Zoomar Lenses are equipped with standard threaded lens mounts for use on RCA 3-inch Image Orthicon cameras. The control rod passes through the center of the lens turret shaft, permitting rotation of the turret for use with other lenses mounted in the same turret.

The "B" Model Zoomar Lenses are equipped with a quick-change mount for use in the RCA Type TK-12 $4\frac{1}{2}$ -inch camera. They also include an iris drive gear for operation with the remote iris drive mechanism of the TK-12 camera. When used on a TK-12 camera, the lens control rod is passed through an opening in the lower right corner

of the camera since the space at the center of the turret is occupied by the iris drive mechanism. The "B" model lenses are supplied with a mounting adaptor to permit use with RCA 3-inch Image Orthicon cameras, in which case the control rod position is changed to permit passing through the lens turret shaft.

Wide Range of Focal Length

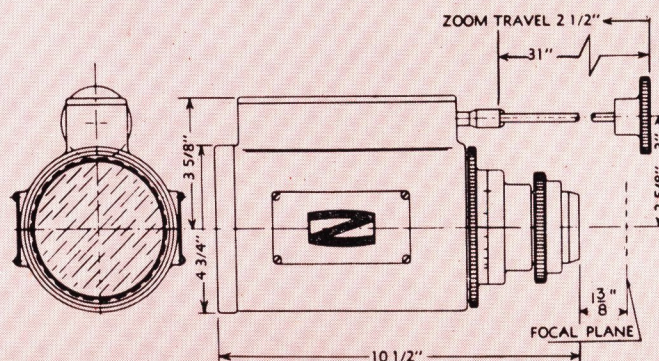
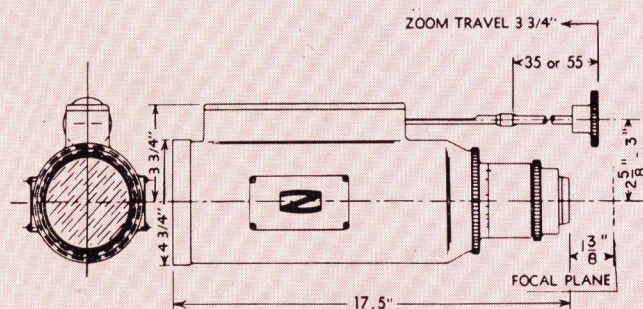
The basic Super Studio Zoomar lens covers the range of $2\frac{1}{4}$ to $7\frac{1}{4}$ inches at f/2.7. A 5 to 15-inch converter at f/5.6 is available as an accessory. The basic Super Universal Zoomar lens covers the range of $2\frac{1}{2}$ to 16 inches at f/3.9. The lens is supplied with two converters having a range and speed of 4 to 25 inches at f/5.6 and $6\frac{1}{2}$ to 40 inches at f/8.0 respectively. A close-up adaptor for portrait work and a 12 to 72-inch converter at f/20.0 are available as accessories for use with the Super Universal Zoomar lens.

SPECIFICATIONS AND ORDERING INFORMATION

	Super Universal and Super Universal Model "B"	Super Studio and Super Studio Model "B"
Zoom Range and Speed:		
Basic Lens.....	$2\frac{1}{2}$ " to 16" at f/3.9	$2\frac{1}{4}$ " to $7\frac{1}{4}$ " at f/2.7
With Converter #1.....	4" to 25" at f/5.6	5" to 15" at f/5.6*
With Converter #2.....	$6\frac{1}{2}$ " to 40" at f/8.0	
With Converter #3.....	12" to 72" at f/20.0*	
With Portrait (wide-angle) Adaptor	$2\frac{1}{2}$ " to 16" at f/3.9*	
Max. Length (less converter)....	17 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "
Weight	12 lbs.	6 $\frac{1}{2}$ lbs.
Mounting Dimensions.....	See dwg.	See dwg.

*Not regularly supplied with lens but available as accessories.

Outline drawings of the Super Universal Zoomar and Super Studio Zoomar Lenses.



Counterbalanced Camera Pedestal

TYPE TD-3A



FEATURES

- Easily operated by one man
- Dual rubber-tired wheels for extra stability
- Counterbalanced camera is easily raised or lowered
- Storage compartments in base for extra weights, tools, etc.
- Arrows on steering wheel show direction of wheels
- Adjustable guards prevent wheels from running into cables
- Drag clutch to suit individual requirements

USES

The Counterbalanced Camera Pedestal, TD-3A, offers complete mobility to cameras for normal studio requirements and needs only the cameraman to operate. The Pedestal provides for smooth, running dolly shots, raising and lowering of the camera while on the air, and smooth horizontal and vertical panning when used with the Friction Head, MI-26205-B, or Cradle Head, MI-26203-A. It gives a firm, stable mount to television cameras, resulting in more versatile operation and steadier pictures. The TD-3A has been especially designed for use in the studio and in other indoor places where telecasts might be made. It provides especial safety features for both operators, and programming equipment cables and studio props.

DESCRIPTION

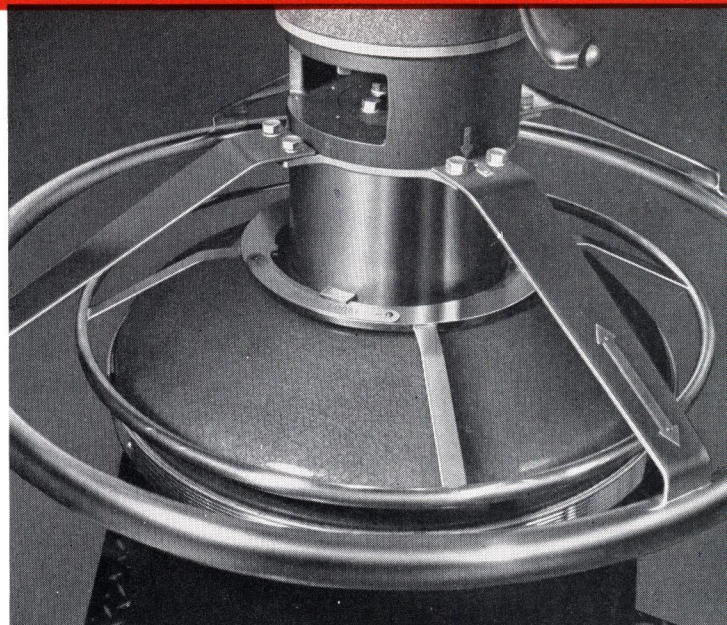
The TD-3A Pedestal is illustrated above. An MI-26205-B Friction Head (not supplied) is shown mounted on the Pedestal. The Pedestal is quickly and easily moved in any direction by the cameraman. A steering wheel, which is directly below the camera at all heights, guides the three sets of dual wheels. Two types of steering are available:

- (1) Synchronous steering in which all wheels are locked parallel and turn simultaneously. This is best for tracking in a straight line.
- (2) Tricycle steering in which only the forward wheel turns with the steering wheel; the back wheels are locked parallel. This enables the Pedestal to be turned sharply in any direction.

The Pedestal may be changed instantly from one type of steering to the other without displacement of the camera. Six hard-rubber-tired wheels are mounted in pairs and equipped with ball bearings for smooth and silent rolling. Wheel cable guards can be raised or lowered as desired.

Since the camera is carefully counterbalanced with adjustable weights, it may be raised or lowered simply by lifting or pushing on the steering wheel or camera. Additional camera weight such as large lenses, lights, etc., is easily compensated for by the use of additional weights to counterbalance. A drag clutch is provided to suit individual requirements. A brake locks the column at any desired height. Raising, lowering, locking or drag adjustment can be made by the cameraman anywhere in the 360 degree position of the Pedestal without his having to stoop or bend. This makes it possible to raise or lower the camera while the Pedestal is in motion.

The Pedestal base is made of arc-welded steel; the center column of seamless steel tubing. It is finished in gray hammertone; the trim and steering wheel of satin chrome.



Arrows on steering wheel show direction of wheels.
Lower ring locks column and controls drag.

SPECIFICATIONS

Overall Dimensions (not including Friction Head):

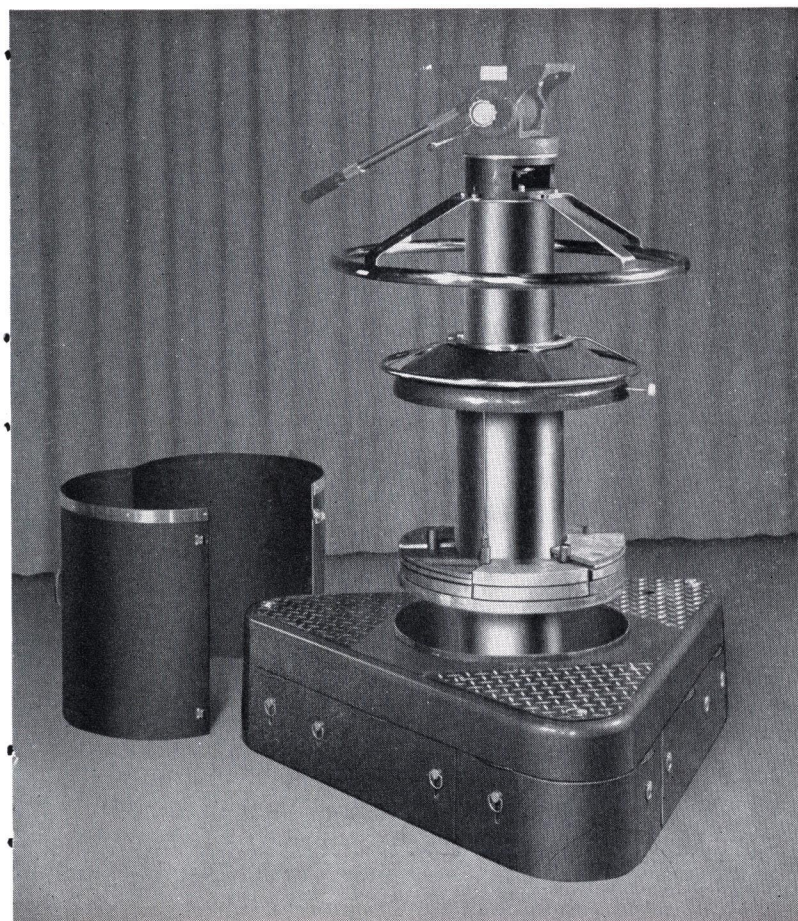
Height (maximum)	57"
Height (minimum)	36"
Base Width	38 1/4"
(Will pass through doorway 34 1/2" wide)	
Net Weight	596 lbs.
Shipping Weight	750 lbs.

ORDERING INFORMATION

TD-3A Pedestal, completely assembled, with lead counterweights
stowed in base storage compartments.....MI-26036

Accessories

Friction Head	MI-26205-B
Cradle Head	MI-26203-A



Pedestal with housing removed, showing placement of lead weights for counterbalancing camera.

Storage compartments in base provide convenient space for extra lead weights, tools, etc.

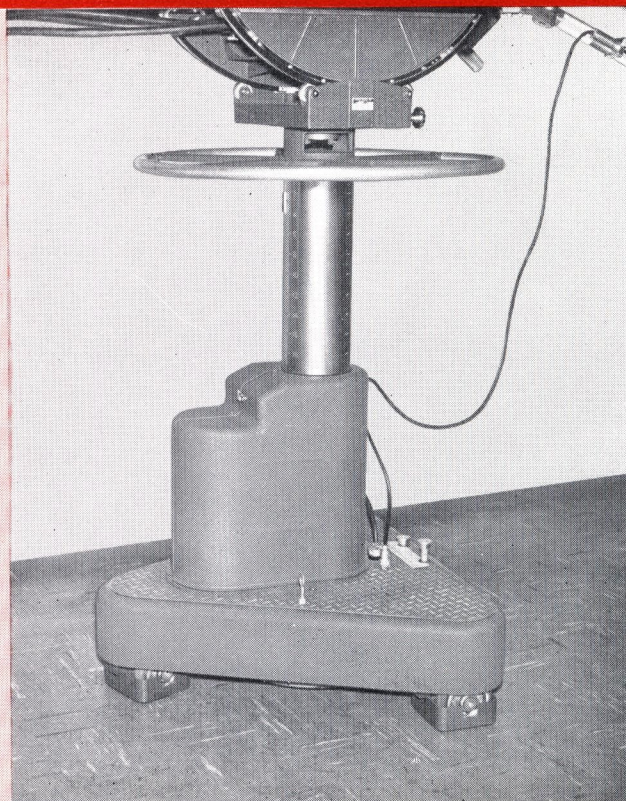


Motor Driven Camera Pedestals

TYPES TD-9C & TD-9M

FEATURES

- Motor driven lift mechanism provides new ease and smoothness of operation—allows cameraman to raise or lower camera effortlessly without taking hands off camera control
- Adjustable height from 34 to 54 inches
- Lightweight — yet sturdily constructed to carry all types of studio cameras
- Seven-second cycling from maximum low to maximum high
- 1/3 h.p. drive mechanism shock mounted in sound proof casing
- Synchronous and tricycle steering offers complete mobility in small areas



USES

The new Motor Driven Camera Pedestals, Type TD-9C and TD-9M, provide a convenient and useful mounting for the television camera. They are designed to provide maximum maneuverability and ease of operation for a single operator in the studio or other indoor telecasting site. Two models are provided by RCA: the TD-9C, MI-40861 with large 34" steering wheel, is designed to mount color television cameras, and the TD-9M, with 25" diameter steering wheel, is specified for monochrome and smaller type cameras. The TD-9C and TD-9M Pedestals are identical except for size of the steering wheel. The steering wheels are interchangeable so that one pedestal can be used for either color or monochrome cameras.

DESCRIPTION

The TD-9C Motor Driven Camera Pedestal without camera mounted is illustrated above. The pedestal is quickly and easily moved in any direction by the cameraman by means of a steering wheel, which is directly below the camera at all heights, and guides the three sets of wheels. Two types of steering are available: synchronous in which all wheels are locked parallel and turn simultaneously, or tricycle in which only the forward wheel turns with the steering

wheel and the back wheels are locked parallel. The former is best for tracking in a straight line, the tricycle steering enables the pedestal to be turned sharply in any direction. The pedestal may be changed instantly from one type of steering to the other without displacement of the camera by means of a foot operated press-button control.

Pedestal height is controlled by a 1/3 h.p. motor which operates through a reduction gear and lifting cable. The entire drive mechanism is shock mounted and encased in a sound proof casing. The casing has three suit-case type catches which open for easy access to motor, relays, and associated control mechanism. The drive mechanism is operated by a single two-way (nominally off) control switch. The camera can be raised from lowest to highest position in 7 seconds. The direction is instantly reversible. The pedestal has a ruggedly constructed re-inforced metal base with non-skid diamond pattern base plate, the column is of seamless tubing, and a special column head casting permits accessibility to the tilt or cradle head mounting nut. The base contains the a-c power socket and control cable connector. It rolls quietly on rubber-tired wheels. Adjustable cable guards are provided on each wheel to protect cables and other studio equipment. The pedestal is finished in umber gray and styled to match other RCA Studio television equipment.

SPECIFICATIONS

Power Requirements.....115 volts a-c, 60 cycle, 6 amps.

Overall Dimensions (not including friction or cradle head):

Height (maximum)53¾"

Height (minimum)34½"

Width and Depth (maximum at base).....38¼"

Width and Depth (minimum at base)35"

Net Weight365 lbs.

Shipping Weight490 lbs.

ORDERING INFORMATION

TD-9C Pedestal (for Color TV Cameras).....MI-40861

TD-9M Pedestal (for Monochrome TV Cameras).....MI-26038

Accessories

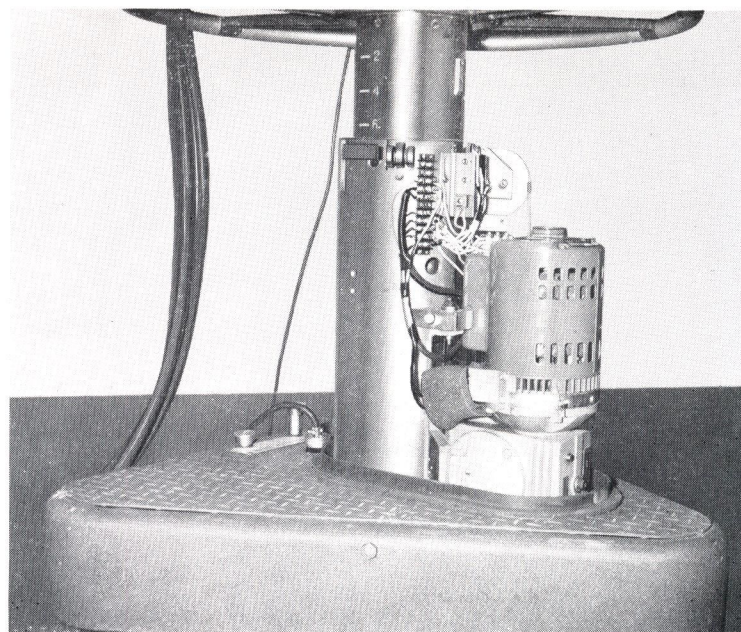
34" Diameter Steering Wheel.....MI-40862

25" Diameter Steering Wheel.....MI-26039

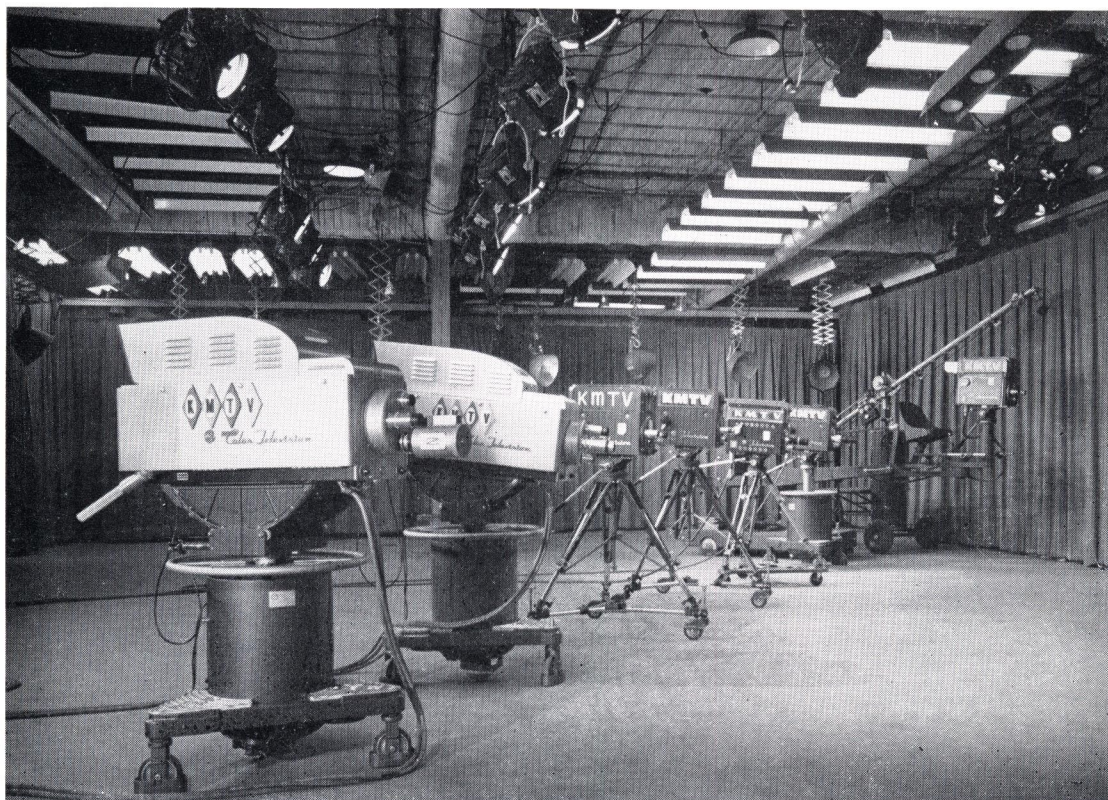
Color Camera Cradle Head.....MI-40824

Monochrome Camera Cradle Head.....MI-26203-A

Monochrome Camera Friction Head.....MI-26205-B



TD-9C Pedestal with cover removed showing motor drive mechanism, relays and shock mounting



Versatile camera mountings for color and monochrome television cameras are essential for good programming in the modern television studio. RCA offers a wide choice of camera mounts for any type operation.

Lightweight Camera Pedestal

TYPE TD-7

FEATURES

- Ideal for the small studio
- Choice of parallel or tricycle steering
- Easy, smooth dollying
- Adjustable guards prevent wheels from rolling over cables
- Height adjusts from 34 to 55 inches
- Sturdy construction for years of service

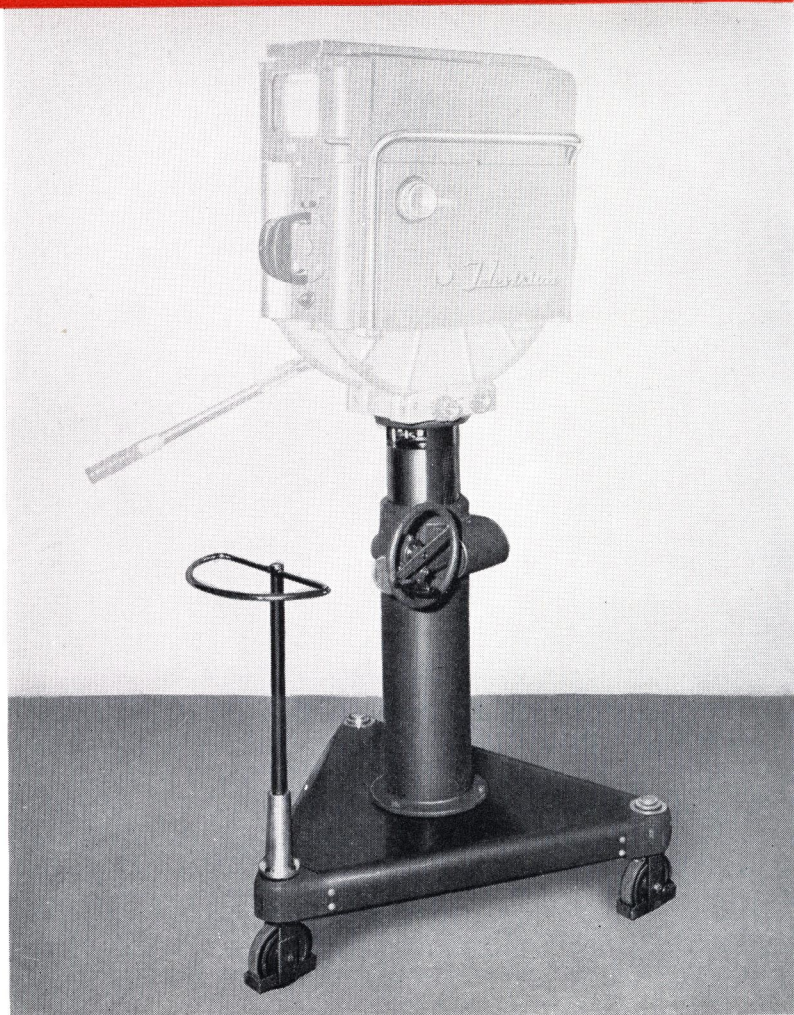
USES

The TD-7 Lightweight Camera Pedestal provides a firm, stable mount for television cameras. The new pedestal is lightweight and maneuverable and designed with the small type TV studio in mind. It accommodates friction, cradle or any other standard type heads for smooth horizontal panning and vertical tilting. The pedestal is easily positioned in the studio or rolled for running dolly shots, and it has provisions for raising and lowering the camera quickly and easily. Better showmanship, more versatile camera effects and smoother television production can be achieved by the cameraman as a result of the new operating ease and better control afforded by the TD-7. Two models are available: The Type TD-7AO for use with studio cameras such as the RCA TK-11 and TK-12 Cameras (90 to 170 lbs.), and the Type TD-7AV counterbalanced for lighter Vidicon cameras (60 to 90 lbs.) such as the RCA TK-15 Camera.

DESCRIPTION

The TD-7 Lightweight Camera Pedestal is precision built of the finest metals—steel, aluminum, bronze—each tested and selected for its specific purpose and engineered to give years of dependable service. Weighing only 140 pounds, it is easily positioned in the studio or rolled to any studio point by the cameraman alone. It rolls smoothly and quietly on rubber-tired, ballbearing wheels. Adjustable cable guards are provided on each wheel to protect cables and other studio equipment.

The TD-7 features two types of steering: parallel steering, in which the three wheels are locked parallel and turn together; and tricycle steering, in which all steering is done with the rear wheel, while the front wheels are locked in parallel. The former type is used for straight-line tracking in running dolly shots, while tricycle steering enables the pedestal to turn sharply in any direction or to rotate around its own axis. Changing from one type of steering



to the other is accomplished by simply lifting the steering wheel. By rotating the wheel 180 degrees, it can be used either as a tee handle or a semi-circular steering wheel. The camera pedestal is quickly and easily raised or lowered by turning a hand wheel conveniently located on the side of the column. The center column and steering shaft are readily removed from the base for transporting the pedestal to field locations.

SPECIFICATIONS

Overall Dimensions (not including Head):

Height.....	55" max., 34" min.
Width.....	34" max., 30" min.
Net Weight.....	140 lbs.
Shipping Weight.....	200 lbs. (approx.)

ORDERING INFORMATION

Type TD-7AO (Crank lift type for TK-11, TK-12 Cameras).....MI-26044-A
Type TD-7AV (Crank lift type for TK-15, TK-205 Cameras).....MI-26054

Accessories

Friction Head (for TK-11 or TK-15).....MI-26205-B
Cradle Head (for TK-11, TK-12 or TK-15).....MI-26203-A

Hydraulic Camera Pedestal

TYPE TD-10

FEATURES

- Camera easily and rapidly raised with hydraulic lift
- Base legs adjustable to expand wheel spread
- Fully adjustable cable guards
- Large 8-inch diameter wheels for smooth dollying
- Swivel locks on wheels
- Low cost

USES

The TD-10 Hydraulic Camera Pedestal, MI-26053, is an attractive chrome-trimmed mount designed for use with RCA TK-11, TK-15, and other monochrome television cameras. This sturdy pedestal is an economical choice for many studio and field applications.

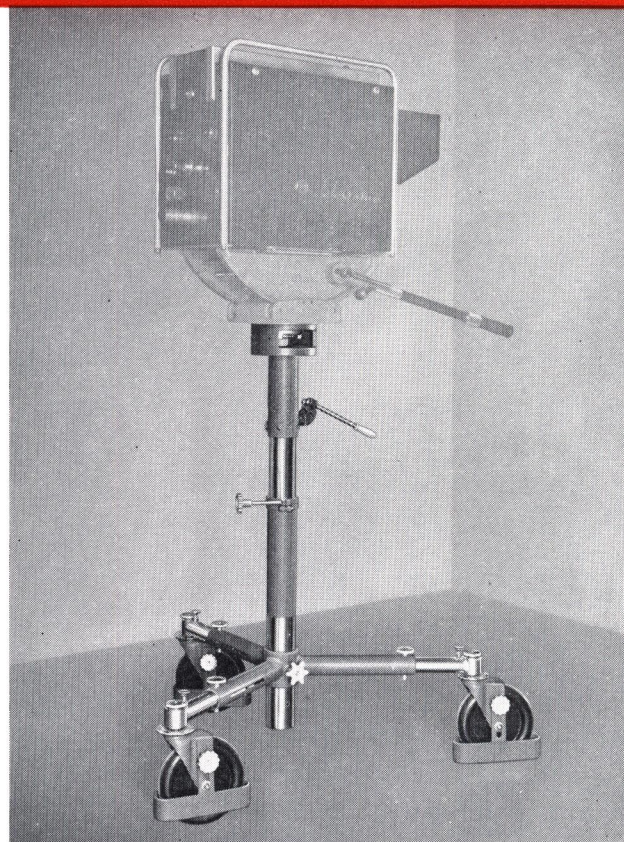
The TD-10 offers greater convenience and utility than a combination tripod and dolly at a comparable price. Set up time is held to a minimum. Between camera shots the hydraulic lift allows height adjustments to be made easily and rapidly for operator preference; an important feature not easily accomplished with the tripod and dolly. Simple adjustments to the legs may be made to expand the wheel base. The large wheels provide smooth dolly shots.

The TD-10 pedestal meets the requirement for a camera mount that is easier to adjust in base width and height than the tripod-dolly combination, yet is more economical than pedestals which have the facility for providing smooth "on air" height adjustments.

DESCRIPTION

The Type TD-10 Camera Pedestal features a hydraulic lift built into the lightweight center column to allow camera operator to easily raise the top of the pedestal to any desired operating height between 35 to 60 inches from the floor. The camera is lowered by simply releasing the hydraulic valve. A three-position positive lock is provided at the pedestal base for a coarse adjustment of pedestal height.

The pedestal comes complete with sturdy metallic three-legged base which eliminates the need of a mounting dolly. A three position positive lock is provided on each leg to extend the base to achieve maximum stability and



maneuverability. The base dimensions may be expanded from 32 to 43 inches. Large eight-inch diameter wheels employ full caster ball bearings for smooth dollying action. They are provided with individually adjustable cable guards. A swivel lock is included on each wheel so that a fixed position may be maintained when desired.

The TD-10 Pedestal makes possible an attractive highly versatile mounting for monochrome cameras at a remarkably low price. Provisions are made for easy access to the head mounting nut. The standard RCA cradle or friction head may be used. The pedestal is easily disassembled into a small package for transporting to remote locations.

SPECIFICATIONS

Overall Dimensions (not including friction or cradle head):

Height (maximum)	60"
Height (minimum)	35"
Base, not extended (minimum dimension).....	32"
Base, extended (minimum dimension).....	43"
Weight	76 lbs.

ORDERING INFORMATION

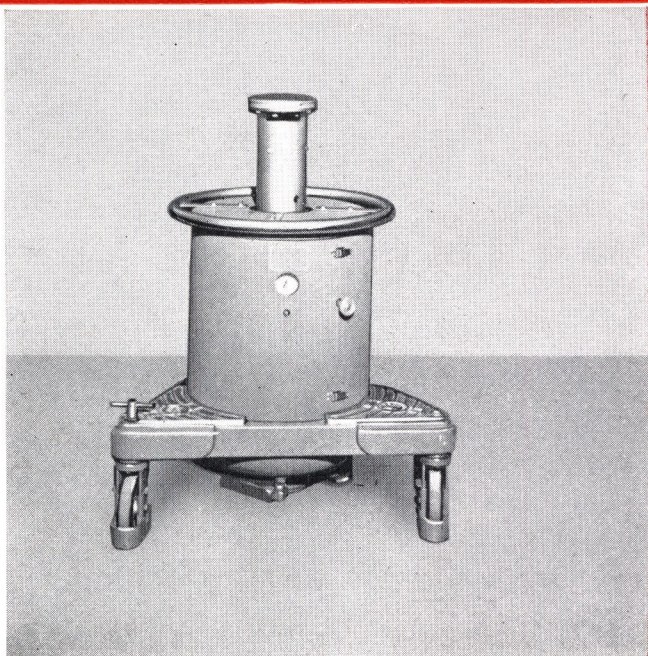
Hydraulic Camera Pedestal.....MI-26053

Accessories

Friction HeadMI-26205-B
Cradle HeadMI-26203-A

Pneumatic-Balance Pedestals

TYPE PN6 Series



DESCRIPTION

The PN6 Series of Pneumatic-Balance Pedestals fill the need for a camera support that provides smooth, even motion in both the vertical and horizontal planes, and consequently allows the most flexible camera performance.

Three models of Pneumatic-Balance Pedestals are available: (1) The Model PN6-29 standard Pneumatic-Balance Pedestal; (2) the Model PN6-29B Pneumatic Pedestal with Brake; and (3) Model PN6-33B Pneumatic Color Pedestal with Brake. The PN6-29 and PN6-29B camera pedestals may be used with either vidicon or image orthicon monochrome camera equipment. The heavier type PN6-33B has been especially designed for color cameras.

The Pneumatic-Balance Camera Pedestal incorporates a closed air system reservoir. The camera mount is on a piston which rides in a cylinder on a cushion of compressed air. An encircling reservoir provides the storage space for excess air when the camera is at the lower heights. The spring-like effect of the compressed air on the piston results in a practically weightless camera load. Addition of air may be made through the use of an ordinary tire pump, a transfer bottle, or a compressor.

The Pneumatic-Balanced Pedestal is a flexible lightweight unit. In addition to the counter-balanced action on the elevation adjustment, the pedestal is easily moved about the studio by a single camera operator. It is equipped with ball-bearing, rubber-tired wheels providing silent,

FEATURES

- Lightweight unit with counter-balanced action easily does two-man dolly shots with single operator
- Smooth effortless camera positioning in both vertical and horizontal planes
- Rotatable base—readily relocated anywhere in 360 degrees
- Light enough to be dollyed sideways, either direction, while "booming" up or down
- Welded steel construction—light but strong
- Simple, easy maintenance

smooth and effortless movement. Cable guards act as pushers on any cables that may be in the line of travel. Due to the fact that there is practically no loss in the closed air system, replenishment of the air supply in the pedestal is seldom needed. In case of a change of camera load, the pressure in the system is readily compensated. A special brake control mechanism is available on the Models PN6-29B and PN6-33B. This consists of a three-position switch which provides desired height adjustment and locking as well as free-wheeling on the pedestal column. A larger wheel base and larger diameter steering wheel make the PN6-33B Model especially suitable for color television cameras.

SPECIFICATIONS AND ORDERING INFORMATION

Air Pressure Requirements P.S.I.	1/3 weight of camera load		
Base Position	Can be repositioned anywhere in 360° circle by lifting "T" handle on corner		
Wheels	6" rubber tired, ball bearing with Alemite grease fittings		
	PN6-29	PN6-29B	PN6-33B
Net Weight	175 lbs.	185 lbs.	210 lbs.
Shipping Weight	215 lbs.	225 lbs.	250 lbs.
Height (excluding head) max.	50 1/2"	50 1/2"	50 1/2"
Height (excluding head) min.	30 1/2"	30 1/2"	30 1/2"
Wheel Base (center to center)	29"	29"	33"
Base Width Max.	34 1/2"	34 1/2"	37 1/2"
Base Width Min.	29 3/4"	29 3/4"	32 3/4"
Electric Column Brake	Available as kit	Included	Included
A-C Power Requirement	None	117 v. a-c, 0.75 amps.	117 v. a-c, 0.75 amps

Accessories

Air Compressor	PN-100
Monochrome Friction Head	MI-26205-B
Monochrome Cradle Head	MI-26203-A
Color Cradle Head	MI-40824

Metal Tripod

TYPE TD-11A

FEATURES

- Three-point leg bracing with individual tie rods and sturdy center post assure rigidity and stability
- Light in weight—yet rugged in design
- Folds into small, compact, self-locking package for carrying
- Leg length calibration aids in accurate positioning and adjusting
- Attractively finished in deep umber gray wrinkle and hard chrome

USES

The type TD-11A tripod is designed to support all types of RCA television studio and field cameras (with friction head MI-26205-B, or cradle heads MI-26203-A and MI-40824). When used with television tripod dolly type TD-15A, it provides a maximum of convenience and mobility for dollying operations.

DESCRIPTION

The type TD-11A consists of an all-metal tripod structure of aluminum castings and tubular steel construction which provides a compact, lightweight, yet rugged design. It folds into a small-size unit which is easily portable. When collapsed for carrying, legs are latched to the center stabilizing post, thus preventing leg spread during transport.

In operation the TD-11A provides a "working-height" range of approximately 25 to 42 inches. Outstanding in design are individual tie rods which connect to and brace all tripod legs (these same three tie rods also couple to the center stabilizing post and provide a stable, rigid support).

The lower tubular portion of each leg is easily adjusted and slides within a long-length bearing which is held to close tolerances. Thus, minimum play and maximum rigidity are assured throughout the working range. When tripod

legs are adjusted for desired height, they may be locked in position by means of hand-operated clamp screws. Calibration numbers are engraved on the lower legs to simplify leveling. The lower end of each leg is provided with a self-aligning, universally-mounted casting, which in one plane has a flat surface for use on level flooring—and in another plane has a steel spike for use on rough surfaces. The flat-surface also provides a suitable mounting for use with Tripod Dolly, TD-15A.

SPECIFICATIONS

Recommended Operating Heights:	
Minimum	25 $\frac{5}{8}$ "
Maximum	42 $\frac{1}{2}$ "
Maximum Diameter at Feet (legs extended).....	70"
Dimensions (folded for transport):	
Overall Height (legs collapsed).....	31 $\frac{5}{8}$ "
Overall Diameter	10"
Net Weight	25 lbs.

ORDERING INFORMATION

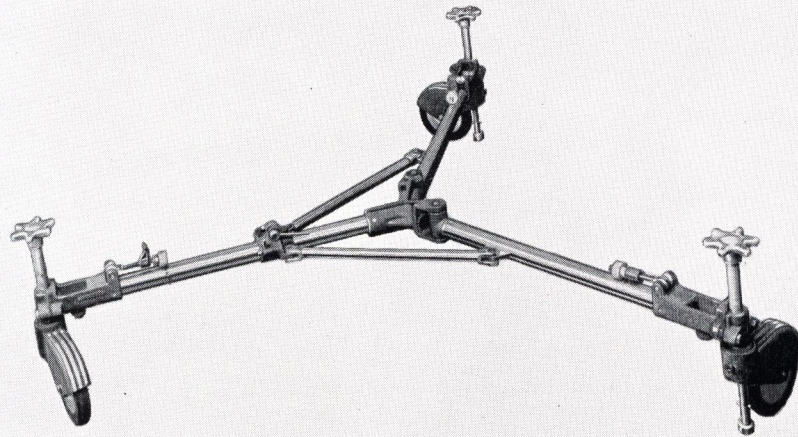
Metal Tripod MI-26046

Accessories

Color Camera Cradle Head.....	MI-40824
Camera Cradle Head.....	MI-26203-A
Camera Friction Head.....	MI-26205-B
Tripod Dolly, Type TD-15A.....	MI-26042-A

Tripod Dolly

TYPE TD-15A



FEATURES

- Provides mobility for tripod camera mounting
- Folds into compact lightweight self-locking portable package
- Large diameter 5-inch wheels permit easy movement
- Wheel stops provide for locking tripod in position
- Tripod locks firmly to dolly

USES

The TD-15A Tripod Dolly is designed for use with the TD-11A Tripod fitted with television cameras. When tripods are used indoors, which is very often the case, use of the dolly precludes any possibility of marring the floor, and provides greater mobility for the tripod. Used in the field with reasonably flat terrain, the dolly makes it convenient and easy to change the position of the tripod.

DESCRIPTION

The TD-15A Dolly consists of a lightweight triangular-shaped steel structure supported on three swivel wheels, five inches in diameter. The finish is hard chrome. For convenience in transporting, the dolly folds into a package 8 by 14 by 29 inches. When extended and fastened to the tripod, it occupies a circular area 57 inches in diameter. The dolly is fastened firmly to the tripod by a clamp at each leg. Spring-loaded stop feet at each wheel serve to hold the tripod in a fixed position. Wheels may be removed readily if such should be required.

As each wheel is on a swivel, the course can be easily changed by merely pushing in the proper direction. Caster locking devices at each wheel make it possible to lock two

or all three wheels in a parallel position, enabling the dolly to track in a straight line for rolling dolly shots, closely simulating results obtained with more expensive equipment.

SPECIFICATIONS

Dimensions (unfolded and extended):

Height (to mounting surface for tripod legs).....6"

Diameter57"

Folded for Transport:

Height8"

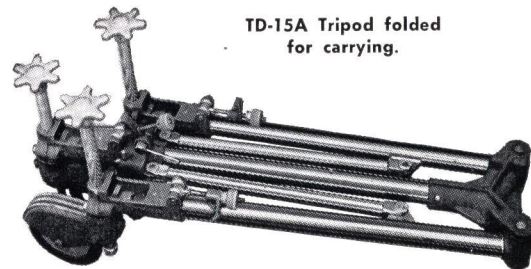
Width14"

Length29"

Net Weight25½ lbs.

ORDERING INFORMATION

Tripod DollyMI-26042-A



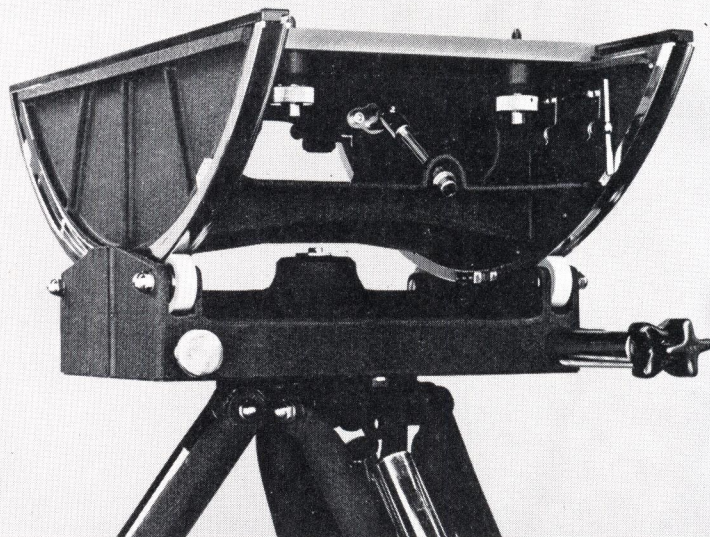
TD-15A Tripod folded
for carrying.

Television Camera Cradle Heads

MI-40824 and MI-26203-A

FEATURES

- New ease of camera operation
- Accurate balance
- Rugged construction
- Adapted to fit all standard tripods, pedestals, dollies, cranes or hi-hats
- No counterbalancing springs to get out of adjustment or to produce noise



Color Camera Cradle Head, MI-40824

DESCRIPTION

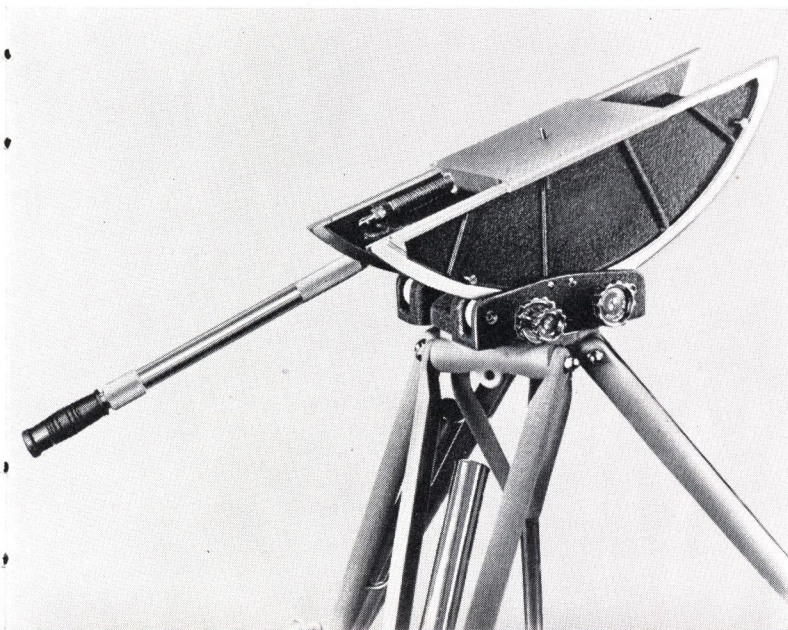
The MI-40824 Cradle Head is designed especially for use with the RCA Color Image Orthicon Cameras, while the MI-26203-A Cradle Head is specified for the Monochrome Image Orthicon Cameras. The Color Cradle Head fits all standard heavy duty pedestals, dollies, cranes, tripods or hi-hats, and the Monochrome Cradle Head may be used with the same units as well as the TD-7A Lightweight Camera Pedestal, and lightweight Mounting Adaptors.

The cradles provide a new balance and ease of camera operation. When the camera is tilted up or down, the cradle rotates around a constant center of gravity, maintaining absolute balance at all times. There are no counterbalancing springs to get out of adjustment or to produce noise. Panning action is accomplished with the same ease as the tilt action due to precision ball bearing construction. The heads have special flexibility for both studio or outdoor camera operation.

Sturdy rigid aluminum castings are used for all major parts of the new Monochrome and Color TV Camera Cradle Heads to provide and maintain accurate alignment. Separate cradle tracks allow for replacement in case of damage. The new mountings feature perfect balance around a constant center of gravity when tilting or panning.

The camera with all accessories attached, can be balanced perfectly when mounted on the head without loosening the camera hold-down screws. This is accomplished by moving the top camera plate on the head forward or back with a lead screw.

◀ Monochrome Camera Cradle Head, MI-26203-A



Tilting is controlled by an adjustable handle, which comes mounted with the Monochrome Model. The Color Cradle Head is controlled by the camera handle itself. Four phenolic-covered ball bearing rollers mounted in the base of the head support the cradle. The cradle tracks ride on these bearings, providing smooth, quiet operation. The head tilts down 38 degrees and up 30 degrees. Stop blocks prevent the cradle from riding off the bearings at the extreme limits of travel. The amount of drag on the tilt is controlled by a convenient knob, provided with a vernier differential screw for fine adjustment.

Panning action is accomplished by two precision ball bearings in the base of the head which carry the vertical load. All ball bearings are of the sealed type and require no

service lubrication for the life of the unit. Drag adjustment is provided on the tilt. Brakes on the pan and tilt quickly lock the camera in a fixed position.

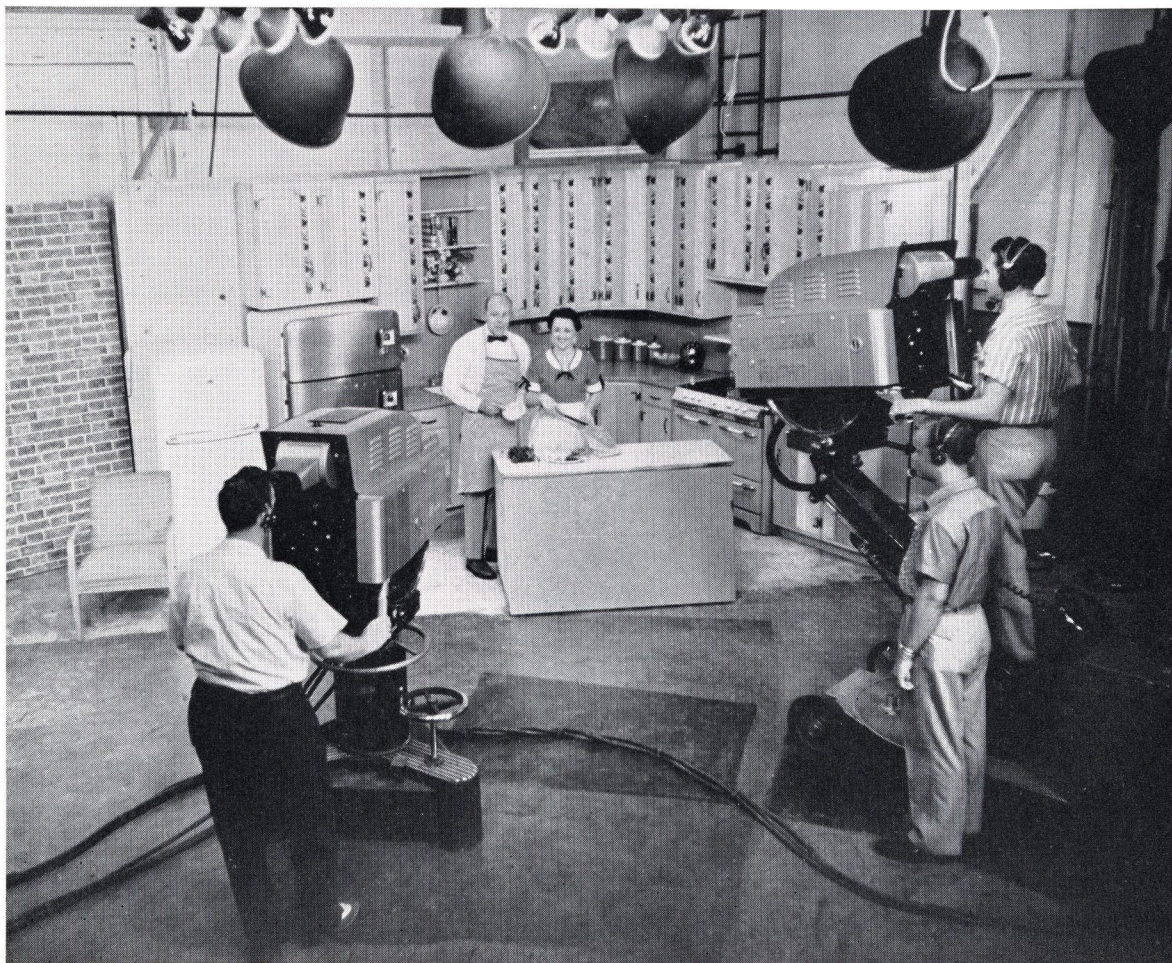
SPECIFICATIONS

	Monochrome Cradle Head	Color Cradle Head
Angle of Rotation.....	360°	360°
Top Plate	67/8" wide x 5" long	12" wide x 14" long
Height	71/4"	101/2"
Weight	26 lbs.	55 lbs.
Shipping Weight	45 lbs.	90 lbs.
Finish	Umber gray	Umber gray

ORDERING INFORMATION

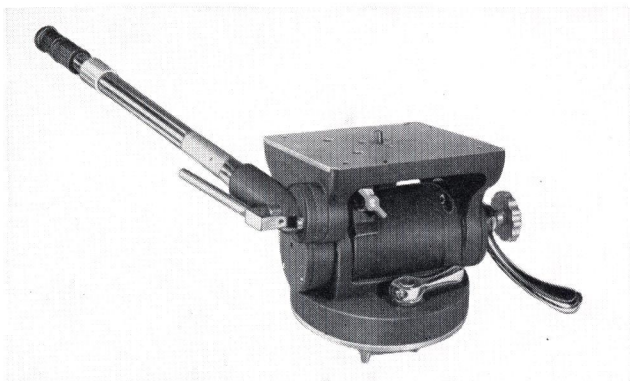
Cradle Head	MI-26203-A	MI-40824
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Cradle heads provide flexibility for both studio or outdoor operation, and they fit all standard pedestals, dollies, cranes, tripods or hi-hats.



Camera Friction Head

MI-26205-B



DESCRIPTION

The MI-26205-B, Friction Head, is designed especially for use with the RCA Monochrome Image Orthicon Cameras and may be mounted on any of the RCA type pedestals, tripods or hi- or lo-hat adaptors. The Friction Head is mounted on these units by means of a single hand-operated wing nut, which is furnished with the Friction Head.

The MI-26205-B, Friction Head, is of rugged all-metal construction, in which all materials have been carefully selected for both field and studio use. An outstanding

feature is the unique balance spring adjustment provided to compensate for camera unbalance.

Since all castings used are aluminum, the friction head is light, yet sturdy, and lends itself to extreme portability. All visible surfaces of the castings are attractively finished in deep umber gray wrinkle and present a very neat appearance.

Rotation through 360 degrees in azimuth and ample tilt, up and down, are provided for operation with the RCA cameras. Extremely smooth in operation, RCA Field and Studio Cameras when mounted on this unit are well balanced in any position of tilt, by means of specially designed counterbalance springs. Thus, a minimum of effort is required by the camera operator.

SPECIFICATIONS

Dimensions:	
Overall Height	8 1/4"
Overall Length	8 1/2"
Overall Width	13"
Weight (including panning handle).....	28 lbs. (approx.)
Finish.....	Dark umber gray wrinkle
Angle of Rotation.....	360°

ORDERING INFORMATION

Friction Head	MI-26205-B
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HI-HAT MOUNTING ADAPTOR, MI-26190-3

DESCRIPTION

The Hi-Hat Adaptor, MI-26190-3 is designed to serve as a television camera mount for use in restricted quarters where a tripod may not prove convenient. Installation of the adaptor may save time on fixed location from which

frequent pick-ups are made. The adaptor is also used to mount RCA microwave relay equipment.

The MI-26190-3 Hi-Hat is a lightweight aluminum adaptor designed to accommodate either a camera friction head, MI-26205-B, camera cradle heads, MI-26203-A, or MI-40824, or relay antenna tilt head, MI-26204. All are machined to a top diameter of 7 inches and a base mounting diameter of 10 1/4 inches. The Hi-Hat adaptor is 6 inches high, and has a deep umber gray wrinkle finish. The adaptor may be used in combination with parapet clamp, MI-26189.



Hi-Hat, MI-26190-3.

SPECIFICATIONS

Construction.....	Cast aluminum, deep umber gray finish
Height	6"
Net Weight.....	2 1/2 lbs.

ORDERING INFORMATION

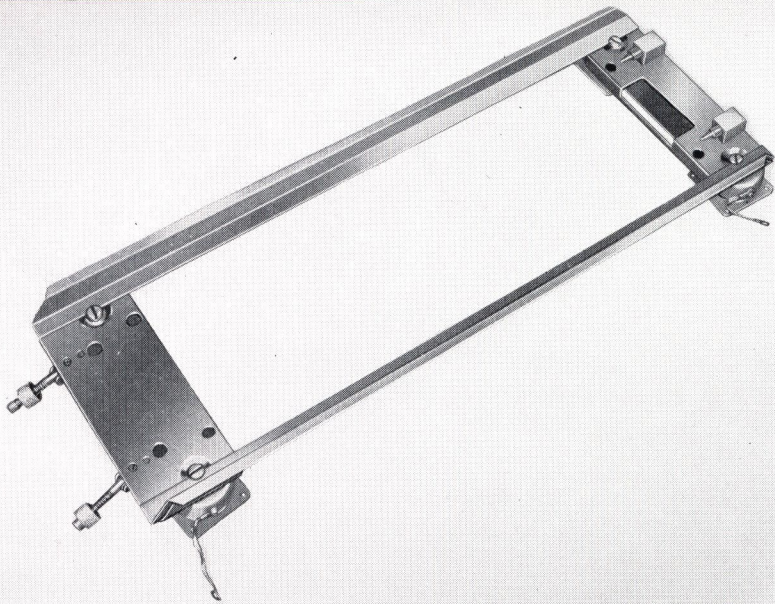
Hi-Hat Mounting Adaptor.....	MI-26190-3
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Shock Mounts

For RCA Field Television Equipment

FEATURES

- Afford added life and protection to field television equipment
- Barry type mounts absorb harmful shock and vibration
- Sturdily constructed of stainless steel
- Protective cadmium plated finish
- Equipment slides into place with added ease



DESCRIPTION

Shock mounts are available for use with all RCA Field TV Camera Equipment. These mounts are designed to protect the camera chain from harmful shock and vibration during transportation and normal field usage. The MI-26511-A1 mounting bases are individually designed for use with Field Camera Controls, Switchers, Power Supplies, Sync Generator Units, Processing Amplifiers, etc.

A variety of slide-type mounting racks with Barry-type rubber shock mounts able to withstand loads up to 50 pounds each are carried in different base sizes to accommodate all Field Television Camera Equipment units. The

chassis shock mountings are made of .063-inch stainless steel with Barry-type rubber mounts grounded to the frame by flexible strap or similar means. All steel fasteners and parts other than stainless steel are protectively plated with cadmium. Two spring-loaded index pins grip the equipment through holes in the rear of the chassis, while lock down clamps bolt the equipment into place from the front so that the equipment is securely lashed down at all times. Each mount is 2³/₈ inches square by 1-17/32 inches high and has four .234-inch diameter mounting holes spaced 1¹³/₁₆ inches apart. The shock mounts accommodate the 1/4-inch diameter clamping thumbscrews.

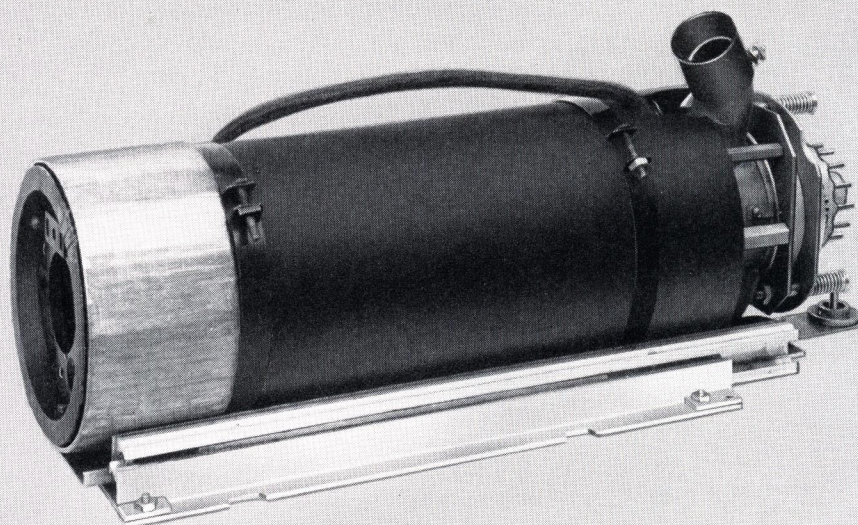
SPECIFICATIONS AND ORDERING INFORMATION

Stock Identification	Used With	Overall Length	Inside Width	Free Height*	Mountings	Loading
MI-26511-2.....	TM-6 Field Master Monitor	23 ⁵ / ₈ "	14 ³ / ₈ "	1 ¹³ / ₁₆ "	4-rubber	13—31 lbs.
MI-26511-3.....	TK-31 Field Camera	23 ⁷ / ₁₆ "	9 ⁷ / ₁₆ "	1 ¹³ / ₁₆ "	4-rubber	20—48 lbs.
MI-26511-A1.....	TK-31 Camera Control, TY-31 Field Power Supply, TG-21 Sync Generator	28 ⁵ / ₁₆ "	9 ⁷ / ₁₆ "	1 ¹³ / ₁₆ "	4-rubber	13—31 lbs.
MI-26511-A2.....	TK-35 Output Amplifier in Field Case	28 ³ / ₄ "	10 ⁵ / ₈ "	1-13/32"	4-rubber	13—31 lbs.
MI-26511-A3.....	TM-35 Portable Master Monitor	20-5/32"	9 ⁷ / ₁₆ "	1-13/32"	4-rubber	13—31 lbs.
MI-26511-A4.....	TG-31 Portable Sync Generator	24-5/32"	9 ⁷ / ₁₆ "	1-13/32"	4-rubber	13—31 lbs.
MI-26511-A5.....	WP-16 Portable Power Supply in Field Case	28-29/32"	9 ⁷ / ₁₆ "	1-13/32"	4-rubber	13—31 lbs.
MI-26511-A6.....	TK-32 Field Processor	25-13/32"	9 ⁷ / ₁₆ "	1-13/32"	4-rubber	13—31 lbs.

* Free height from mounting surface to bottom of equipment.

Electro-Magnetic Orbiters

For Monochrome Image Orthicon Cameras



FEATURES

- Adds new life to image orthicon tubes by minimizing "burn-in"
- Equipment mounts inside camera without affecting normal operation or appearance
- Separate remote control requires no additional wires to camera
- Orbiting movement so steady it is undetectable by viewer
- Greatly cuts tube cost—orbiter soon pays for itself
- Orbiting Cycle one minute

USES

RCA's series of Electro-Magnetic Orbiters are designed to prevent "burn-in" and increase the life of image orthicon tubes used in standard monochrome type television cameras. The equipment, which mounts inside the cameras without affecting normal operation or appearance, causes a slow continuous elliptical movement of the image approximately five percent of picture height on the photo-sensitive surface of the tube. Operating at about one revolution per minute such motion is not apparent to the viewer yet is sufficient to prevent sticking or "burn-in." The control unit for the monochrome orbiter permits remote operation from the control position, utilizing wires already available in the camera cable.

Image orthicon tubes are often retired from operation because of "burn-in" damage even though the other

characteristics which affect picture quality have not deteriorated. The installation of an RCA Electro-Magnetic Orbiter will allow many of these tubes to be returned to service.

There are several types of monochrome yoke assemblies in present-day studio TV cameras, so it is important when ordering the Electro-Magnetic Orbiter to state the type of camera in which the equipment is to be used. The following equipment is specified for RCA type cameras:

MI-26850/26853/26857 for TK-11/31 Series Monochrome Cameras

MI-26851/26853/26857 for TK-10/30 Series Monochrome Cameras

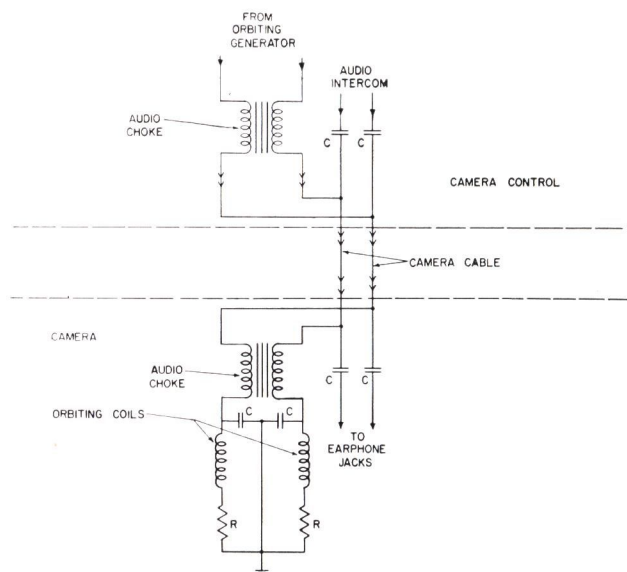
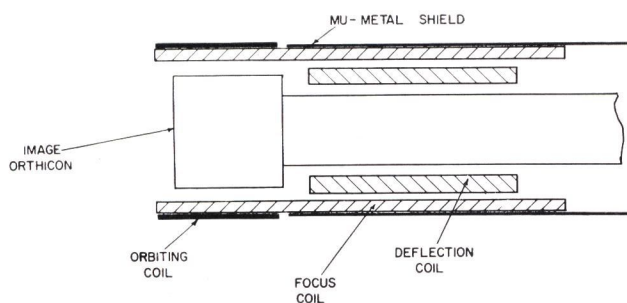
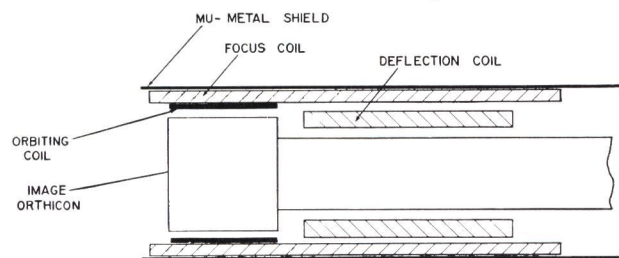
MI-26852/26853/26857 for TK-10/30 Monochrome Cameras modified by RCA Service Co.

DESCRIPTION

The RCA Electro-Magnetic Orbiters for monochrome television cameras employ a suitable deflection yoke placed over the image section of the image orthicon tube and is excited by appropriate currents to make possible a non-mechanical method of orbiting the target charge image in its translation from the photocathode to the target. The equipment consists of two parts, the deflection yoke for the image section and a generator chassis for producing the required yoke exciting currents. The generator is supplied on a rack-mounting adaptor, but it may be removed for mounting elsewhere.

The yoke assembly is of toroidal construction to make it as thin as possible. The core is a thin section of either mu-metal laminations or iron wire wrap depending on type camera on which it is to be used. The mu-metal core in the case of the external yoke for TK-11/31 and TK-10/30 Series camera preserves the continuity of the mu-metal shielding over the focus coil. The iron wire core for the internal yoke for TK-10/30 Series Cameras modified by RCA Service Co., presents a high-reluctance path for the focus field and hence does not disturb the normal magnetic focus fields within the image section of the tube. Two toroidal coils are placed in quadrature about the image section of the yoke assembly. The coils are driven from a small generating assembly, located at the control position, which contains a geared down motor driving a selsyn generator. The output of the selsyn consists of two 60 cps currents, one modulated with a 1 cycle-per-minute sine wave and the other with a 1 cycle-per-minute cosine wave. These waveforms are demodulated to produce two 1 cycle-per-minute currents 90 degrees out of phase.

Schematic of image orthicon focus assembly showing location of internal and external orbiting coils.



Cable circuit schematic.

The toroidal coils are fed through the intercommunication circuits in the camera cable. A phantom circuit is employed to avoid interference with the intercommunication function. The resultant magnetic field produced by the current through these coils slowly rotates and slightly deflects the electron image from its normal travel between the photocathode and the target. Since all of the "burn-in" takes place at the target, this prevents "sticking" as well as orbiting the optical image on the photo-cathode. The small amount of orbiting and the slow rate used make the effect unnoticeable by the viewer. TV stations wishing absolutely motionless pictures may secure as an accessory an Immobilizer Coil Kit to suit their installation. Interconnecting cable, MI-13333, is required for connecting the generator unit and camera control. A modification kit, MI-26857 is required at the camera control.

SPECIFICATIONS

Power Requirements.....	117 volts, 60 cycles, single phase 8 watts
Orbiting Cycle.....	1 minute
Orbiting Deflection.....	5% picture height (approx.)
ORBITER GENERATOR	
Generator Dimensions (excluding rack mounting adaptor):	
Length	8"
Width	3 1/4"
Height	5"
Weight.....	Approx. 5 lbs.
Rack Mounting Adapter Height.....	5 1/4"

ORDERING INFORMATION

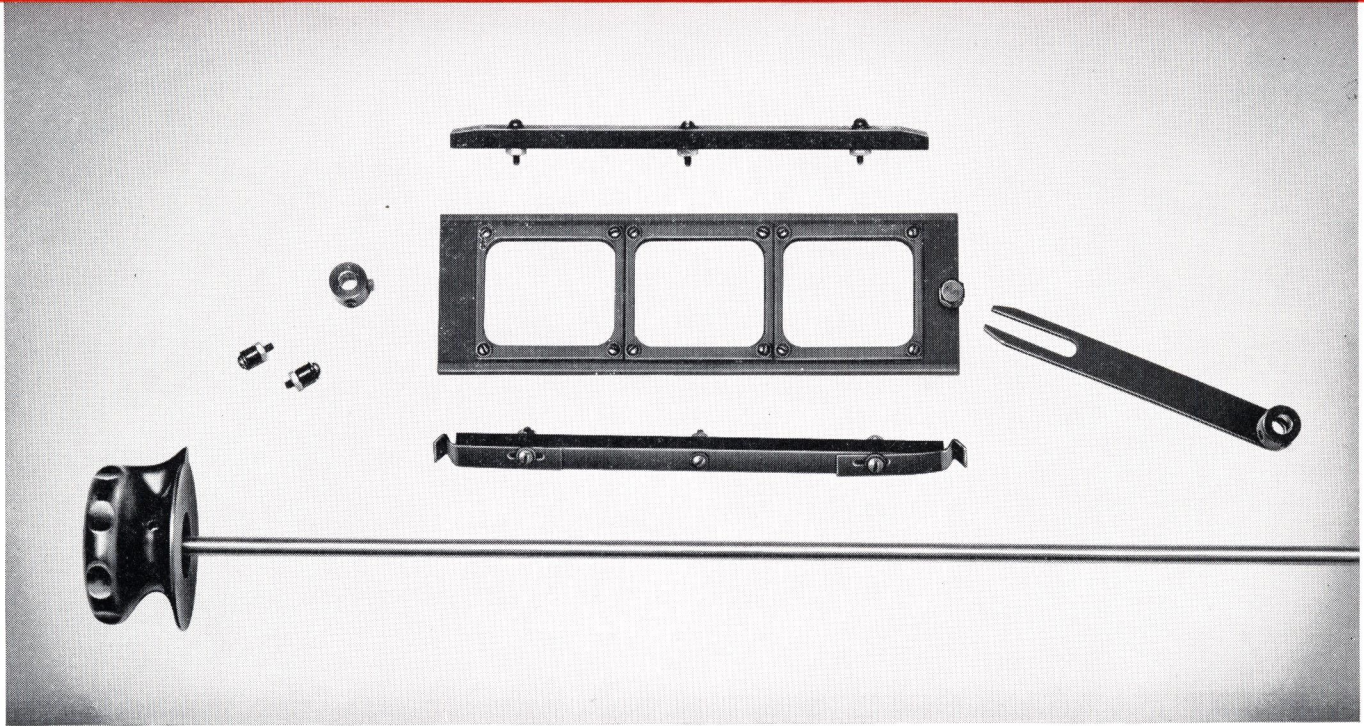
Electro Magnetic Orbiter Coil for TK-11/31 Series	
Monochrome Cameras	MI-26850-A
Electro Magnetic Orbiter Coil for TK-10/30 Series	
Monochrome Cameras	MI-26851-A
Electro Magnetic Orbiter Coil for TK-10/30 Monochrome Cameras Modified by RCA Service Co.....	MI-26852
Electro-Magnetic Orbiter Generator.....	MI-26853
Modification Kit for Camera Controls.....	MI-26857

Accessories

Interconnecting Cable (required accessory, supplied in bulk, specify length when ordering).....	MI-13333
Immobilizer Coil Kit (for use with MI-26850/26853).....	MI-26854
Immobilizer Coil Kit (for use with MI-26851/26853).....	MI-26855

Neutral Density Filter Slide Mechanism

FOR TYPE TK-40A and TK-41 COLOR CAMERAS



FEATURES

- Neutral density filters compensate for large variations of light level
- Permits operation of image orthicons at optimum signal to noise ratio
- Filters accommodated by convenient and easy to operate slide mechanism
- Instantaneous change from rear camera control
- Compensation does not affect color

DESCRIPTION

The Neutral Density Filter Slide Mechanism, MI-40528, provides a useful means of controlling large variations of light levels for RCA TK-40A and TK-41 Color TV Cameras. The remote iris control in the camera lens can handle variations of light levels up to 30 to 1 without difficulty; however, during the televising of outdoor events in color where daylight is the light source, the variation of incident illumination levels can be expected to vary as much as

100 to 1. By selecting neutral density filters (values of 1.0 to 2.0 supplied), all light ranges normally encountered can be handled. The MI-40528 slide mechanism kit is easily installed in RCA color TV cameras.

The MI-40528 Neutral Density Filter Slide Mechanism is provided as a kit of parts consisting of a brass slide assembly, three hard-brass filter holders, two rails of sturdy brass bar, two beryllium copper springs, steel control shaft, a black plastic control knob, lever assembly, three vertical compensation shields and mounting hardware. The kit may be easily installed in the optical path common to the three color image orthicon tubes. Complete instructions are furnished with the equipment.

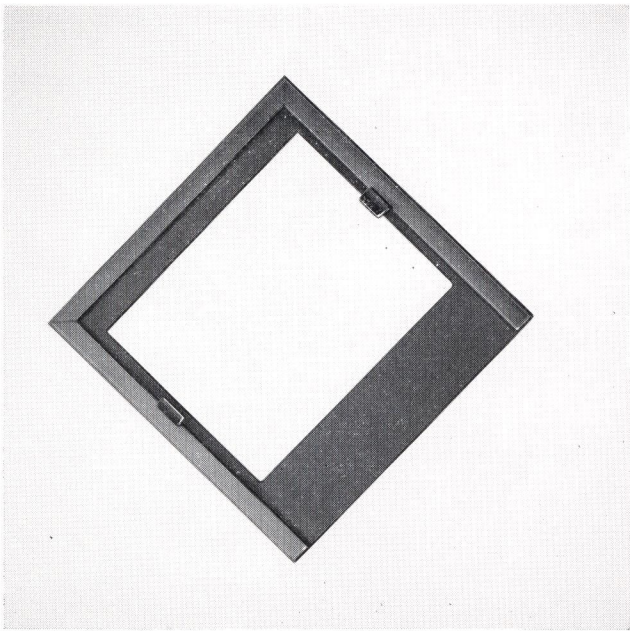
Two neutral density filters, with values of 1.0 and 2.0 density respectively, are provided with the slide mechanism. They may be inserted into two of the three filter holders. When installed the slide mechanism is easily operated from the rear of the camera by turning the control knob to any of three positions. The central position may be used to provide normal illumination, while a turn to the left or the right instantly provides the required amount of compensation from the two filters.

ORDERING INFORMATION

Neutral Density Filter Slide Mechanism.....MI-40528

NEUTRAL DENSITY FILTER HOLDERS

FOR TK-11/31 SERIES CAMERAS



DESCRIPTION

The Neutral Density Filter Holder for TK-11/31 Series Cameras, MI-26847, provides a useful means for holding a neutral density filter in front of the image orthicon face plate to reduce the light level reaching the image orthicon. One filter attenuates the light equally for all lenses on the turret. This is especially useful outdoors where there is no control of lighting and the iris on the lenses cannot be stopped down sufficiently.

MI-26857 consists of a single phosphor-bronze filter holder with two tines for snapping the filter into position on the bakelite mask immediately in front of the face of the image orthicon tube. Two filters are provided with neutral density values of 1.0 and 2.0 respectively.

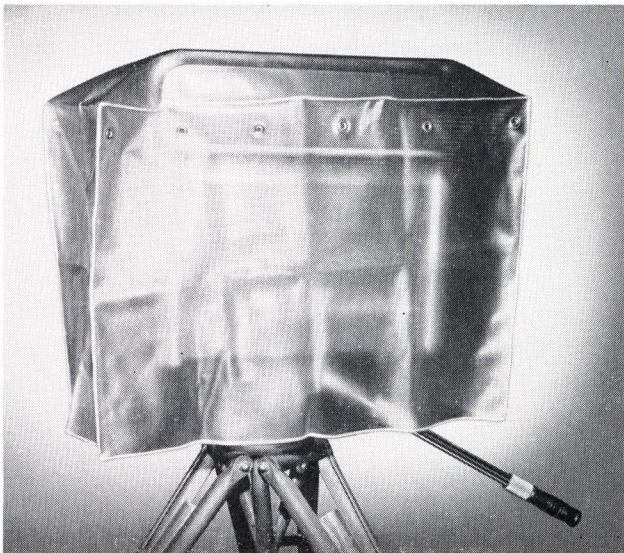
ORDERING INFORMATION

Neutral Density Filter Holder.....MI-26847

TELEVISION CAMERA COVERS

DESCRIPTION

Three plastic covers designed to protect RCA studio or field television cameras from dust, grime, and the elements are available. They are especially recommended for cameras in field use, and as a protective covering during transportation or storage. The translucent covers are made of reinforced material for durability and attractiveness. The MI-26862-1 is long enough to slip directly over a camera with either a viewfinder hood or telephoto lenses. The MI-26862-2 has a zippered end to allow accommodation of camera accessories that may increase its length. Color TV cameras require the large size cover, MI-26862-3.



SPECIFICATIONS

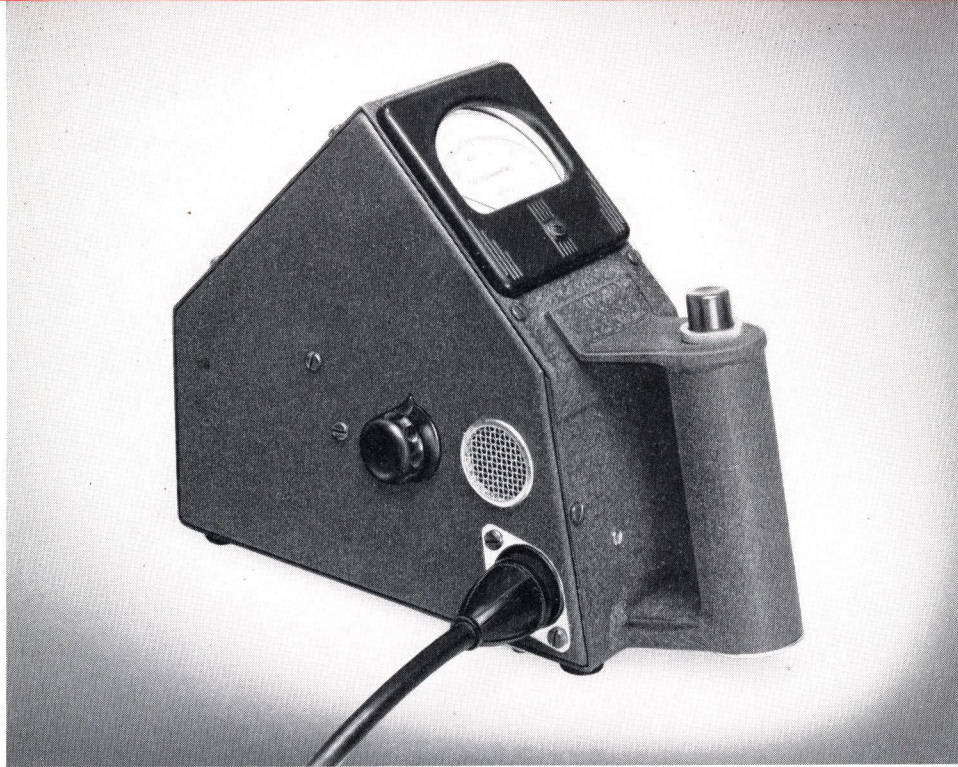
	MI-26862-1	MI-26862-2	MI-26862-3
Dimensions (overall):			
Length	35"	30"	54"
Width	15"	17"	22"
Height (at rear)	21"	22"	25"
Weight (approx.)	3 lbs.	2½ lbs.	4 lbs.

ORDERING INFORMATION

Plastic Cover for TK-11B or TK-31B Camera and Viewfinder with hoodMI-26862-1
Plastic Cover for TK-11B or TK-31B Camera and Viewfinder, zippered endMI-26862-2
Plastic Cover for TK-40A/41 Cameras.....MI-26862-3

Luminometer

FOR MEASURING GRAY SCALE VALUE OF COLORED OBJECTS



FEATURES

- Aids in improving monochrome transmission of color TV programs
- Saves rehearsal time by eliminating camera check-out of scenery
- Self-contained 115 volt a-c light source
- Direct reading meter measures gray scale values as reproduced by live color cameras

USES

The Luminometer, MI-40869, can be used to foretell how various colors will reproduce on a monochrome receiver when picked up with a live color camera. A scene designer can measure directly the gray scale values of colored objects or background scenery to allow him to select colors which will show separation on monochrome receivers. Without a Luminometer this must be checked on camera, often when it is too late to make a change. With the self-contained Luminometer, this can now be checked in the paint shop or costume room. Two different hues that look well side by side on a color receiver may have the same gray scale value and blend together on a monochrome receiver.

DESCRIPTION

The MI-40869 Luminometer contains an incandescent light source and a photo-electric cell which activates a scaled direct-reading meter. The face of the photo-electric cell is covered with a red, a blue, and a green colored filter, each showing an area proportional to that color's contribution to the luminance signal. The spectral response of the filters in conjunction with the photo-electric cell is equal to that of the TK-41 color camera.

The Luminometer is held against the material to be tested and an internal light source is triggered on. The light reflected from the material is filtered in passing to the photo-electric cell. The current produced is measured by the meter which is calibrated in percent response.

SPECIFICATIONS

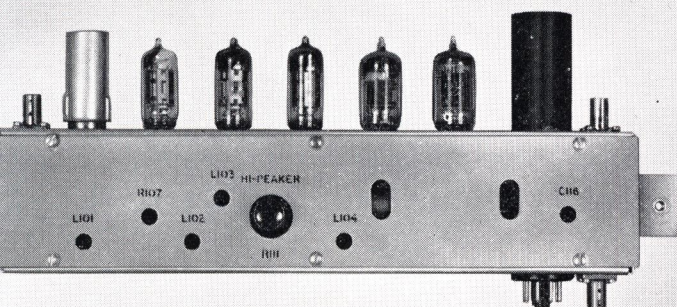
Range Scale	0-100%
Dimensions (Overall).....	10" long, 7 1/4" high, 4 1/2" deep
Weight	3 1/2 lbs.
Finish.....	Umber gray crackle
Cable.....	10 ft. utility cord
Power Requirements.....	115 volts, a-c, 50/60 cycles, 75 watts

ORDERING INFORMATION

LuminometerMI-40869

Video Pre-Amplifiers

FOR TK-11B, TK-31B AND TK-41C CAMERAS



Video Pre-Amplifier, MI-40800-A, for TK-41C Color Cameras.

USES

The Video Pre-Amplifier, MI-26153, is supplied as part of every RCA TK-11B Studio Camera and RCA TK-31B Field Camera. The Color Video Pre-Amplifier, MI-40800-A is the corresponding plug-in sub-chassis supplied as part of all TK-41C Color Television Cameras. Either unit may be ordered as a spare sub-assembly. Since the units are easily interchangeable through "plug-in" connection features, pre-amplifier units can be removed from in-use cameras in a matter of seconds, and a replacement quickly installed. This allows bench-testing of a defective pre-amplifier unit and repair by station operators without interruption of the use of the camera.

DESCRIPTION

This video pre-amplifier is a plug-in unit with all power connections made through an octal plug in the bottom and with three small co-axial connectors for input, main output and viewfinder output connections. When in place it is shock mounted to minimize the effect of vibration.

Ample gain is available to provide a normal signal to the viewfinder and camera control with a low limit camera tube. Two stages of cathode high peaking eliminate overshoot and smear by accurately compensating for the capacitive loading of the image orthicon, while reducing microphonics associated with other types of high peaking. Excellent low frequency response insures against streaking.

A video frequency response flat to 3 mc, roll off to 25 per cent at 8 mc faithfully transmits the video information produced by the image orthicon. The feed-back output

FEATURES

- Plug-in type construction
- Frequency response extends to 8.0 mc
- Very good low frequency response
- Shock mounted
- Frequency compensated through usable band
- Separate video output for viewfinder
- Low impedance output. Output line sending end terminated

stage provides a separate viewfinder output, sending end termination for the output video line, and excellent linearity and stability. Ferrite beads are used in all grid circuits to prevent the possibility of oscillations. Special decoupling circuits required for color camera operation are included in the MI-40800-A Color Video Pre-Amplifier.

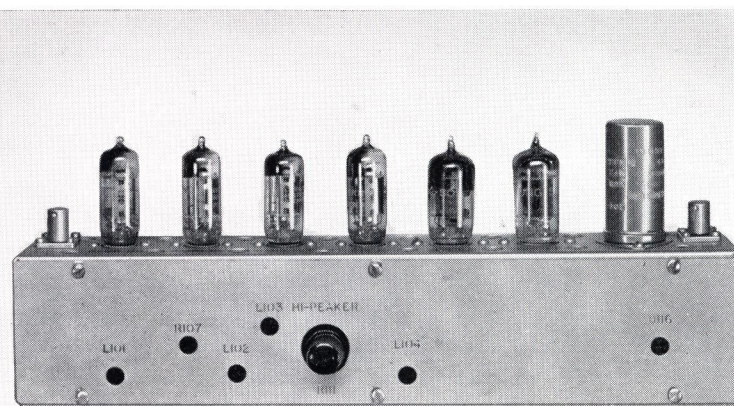
SPECIFICATIONS

Tube Complement.....4-6AH6, 1-6U8, 1-5687
Dimensions, Overall.....Approximately 12¼" wide, 6" high, 2⅝" deep

ORDERING INFORMATION

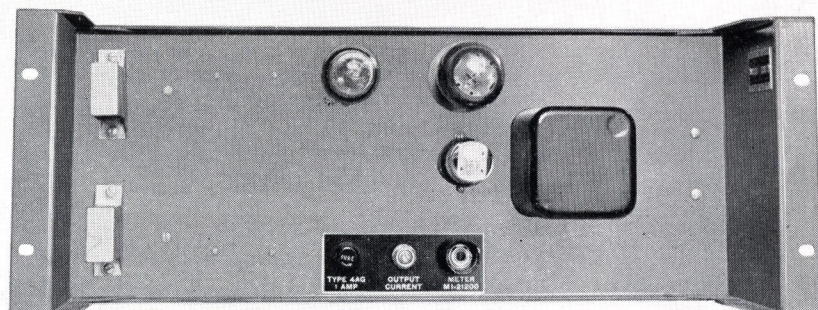
Monochrome Video Pre-Amplifier Assembly,
including tubes in place.....MI-26153
Color Video Pre-Amplifier Assembly,
including tubes in place.....MI-40800-A

Video Pre-Amplifier, MI-26153, for TK-11B and TK-31B
Monochrome Cameras.



Current Regulator

FOR TK-11B CAMERA



FEATURES

- Counteracts current variations in camera focus coil circuit
- Current can be manually adjusted over a range from 65 to 85 milliamperes
- Uses common tube types
- Tubes easily replaced from front of Regulator

USE

The Current Regulator is an electronic device which maintains constant current in the focus coil of the TK-11B Studio Camera. Variations in the magnitude of current flowing through the coil are produced by changes in the applied voltage or by changes in the resistance of the coil as a result of changes in the operating temperatures, which would impair the focus of the camera. The Current Regulator counteracts these variations and also provides a means for adjusting the focus coil current to the proper value.

DESCRIPTION

All components of the Current Regulator are mounted on a recessed chassis designed for rack mounting. The unit employs an RCA 6SL7-GT twin triode as a d-c amplifier, and an RCA 6Y6-G current regulator tube. The cathodes of the d-c amplifier are kept at fixed levels by voltage regulator tubes.

The 6Y6-G current regulator tube is effectively in series with the camera focus coil and its 400-volt source of unregulated d-c so that the internal resistance of the 6Y6-G, which is controlled by the d-c amplifier, determines the magnitude of current flowing in the coil circuit. The input of the d-c amplifier is connected across a small resistor also connected in series with the focus coil. Thus variations in the voltage developed across the small resistor (as a result of current changes in the focus coil circuit) are fed to the d-c amplifier which in turn raises or lowers the

conductance of the 6Y6-G to counteract the current change taking place. Regulation is, of course, instantaneous and the result is a constant flow of current through the focus coil of the camera. The Current Regulator will maintain constant current at a preset value over wide ranges of resistance change in the load and over wide ranges of input voltage.

SPECIFICATIONS

Power Requirements

Input:

Filament Supply.....117 volts, 60 cycles, single phase, 15 watts
Focus Coil Supply.....360-400 volts, dc unregulated
and 280 volts dc regulated

Output:

Regulated.....65 to 85 milliamperes

Chassis Dimensions:

Depth5 1/2"
Width19"
Height7"
Weight9 lbs.

Tube Complement

1—RCA OD3 Voltage Regulator
1—RCA 6SL7-GT D-C Amplifier
1—RCA 6Y6-G Current Regulator

ORDERING INFORMATION

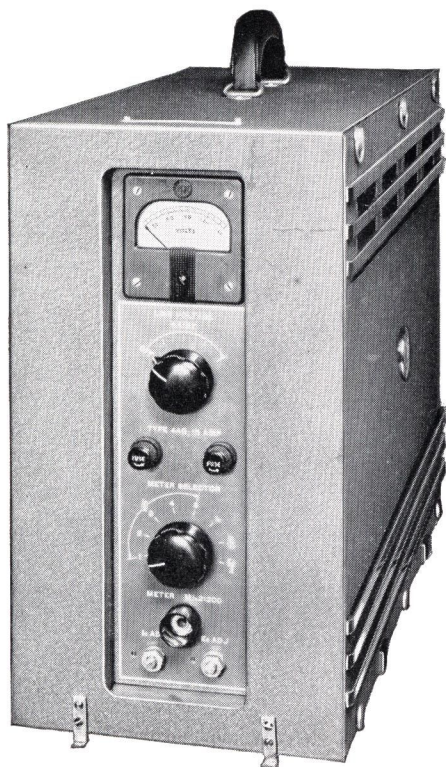
Current Regulator complete with Tubes.....MI-26090-A

Accessories

Plate Current Meter.....MI-21200-C1

Field Power Supply

TYPE TY-31A



DESCRIPTION

The Type TY-31A Field Power Supply, MI-26091, is a portable unit designed to supply all the d-c current required by the TK-31B Field Camera, Viewfinder and Field Camera Control in one camera chain. It is also a com-

panion unit used with the RCA TS-30D Field Switching System. When used in combination with a Field Master Monitor such as the RCA Type TM-6C, these units form the field equivalent of a director's console in a studio.

The Field Power Supply is contained in a sturdy, portable case. A blower cooling system directs an air stream directly over the tubes. An important feature is the broad range of output current values at which regulated voltage may be obtained. The addition of a relay to withdraw a series regulator under light load provides a regulating range from 1.25 at 285 volts down to about 400 ma. The low end of the output range is especially useful when servicing only one unit of a camera chain, in which case the current drain is low.

SPECIFICATIONS

Input and a-c Power.....98-129 volts 50/60 cycles, single phase—
1400 watts full load; 14 amperes, 117 volts

Output d-c Power:
Unregulated at Full Load.....400 volts
Regulated, Operating Voltage.....285 volts
Regulated Voltage Range.....275 to 295 volts

Current:
Total Maximum.....1430 ma
Regulated—min. to max.....600 to 1250 ma
Unregulated Max.....1430 ma less regulated or focus currents

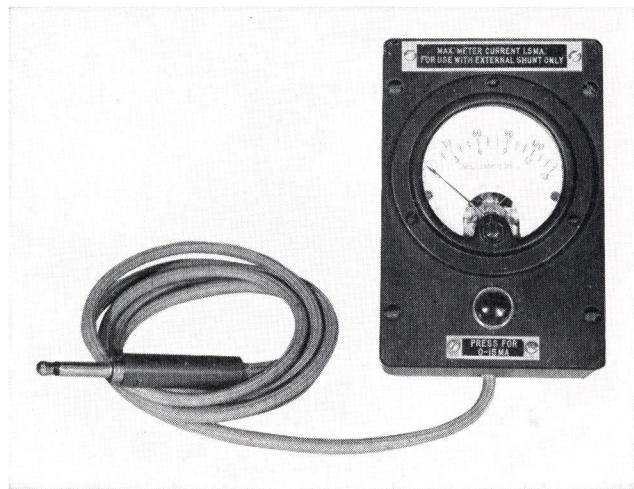
Output Focus Coil:
Regulated, Operating Current.....75 ma
Regulated Current Range.....60-90 ma

Tube Complement:
6-5R4GY, 5-6AS7-G, 1-6SL7-GT, 1-6Y6-G, 1-6AC, 2-OD3
Dimensions (overall).....26" long, 8½" wide, 18½" high
Weight58 lbs.

ORDERING INFORMATION

Type TY-31A Field Power Supply.....MI-26091

PLATE CURRENT METER, MI-21200-C1



DESCRIPTION

Plate current Meter, MI-21200-C1, is a two scale meter for checking the plate currents drawn by the regulator tubes in RCA Power Supplies Types WP-15, WP-33, 580-D and TY-31. It also is used for measuring the output voltage and total output current of these power supplies, and for measuring the focus coil current in RCA Image Orthicon Camera Equipment. The 0-150 ma scale is used for these metering functions. By pressing the button on the meter panel, the 0-15 ma scale can be used to measure the signal level calibration voltage in the TM-6C Master Monitor. The proper external shunts are included in each of the equipments with which the meter is used.

SPECIFICATIONS

Range Scales.....0-150 ma., 0-15 ma.
Approximate Size.....3⅝" x 5⅞" x 2⅜"
Net Weight3 lbs.
FinishBakelite case
Cable.....5' 9" cord with plug-in jack

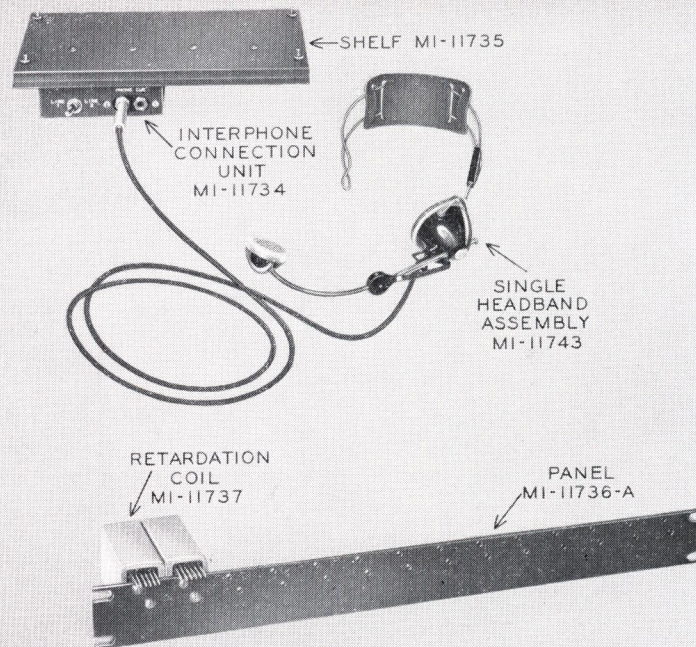
ORDERING INFORMATION

Plate Current Meter.....MI-21200-C1

Interphone Equipment

FEATURES

- Convenient intercom with studio personnel or remote line as desired
- Can mount to console, desk, or wall
- Designed to be compatible with other RCA TV equipment
- Simple circuit with anti-sidetone feature
- Regulated power supply



USES

RCA Interphone Equipment is designed to provide convenient switching and headset connection facilities for an internal communication system. Such a system is particularly useful for the radio or television broadcast studio since it allows talking and listening with selected personnel

and with a conference bus or remote private line as desired. Any number of interphone connections may be used. The 24-volt d-c regulated power supply provides interphone power for a system using up to 30 headsets simultaneously.

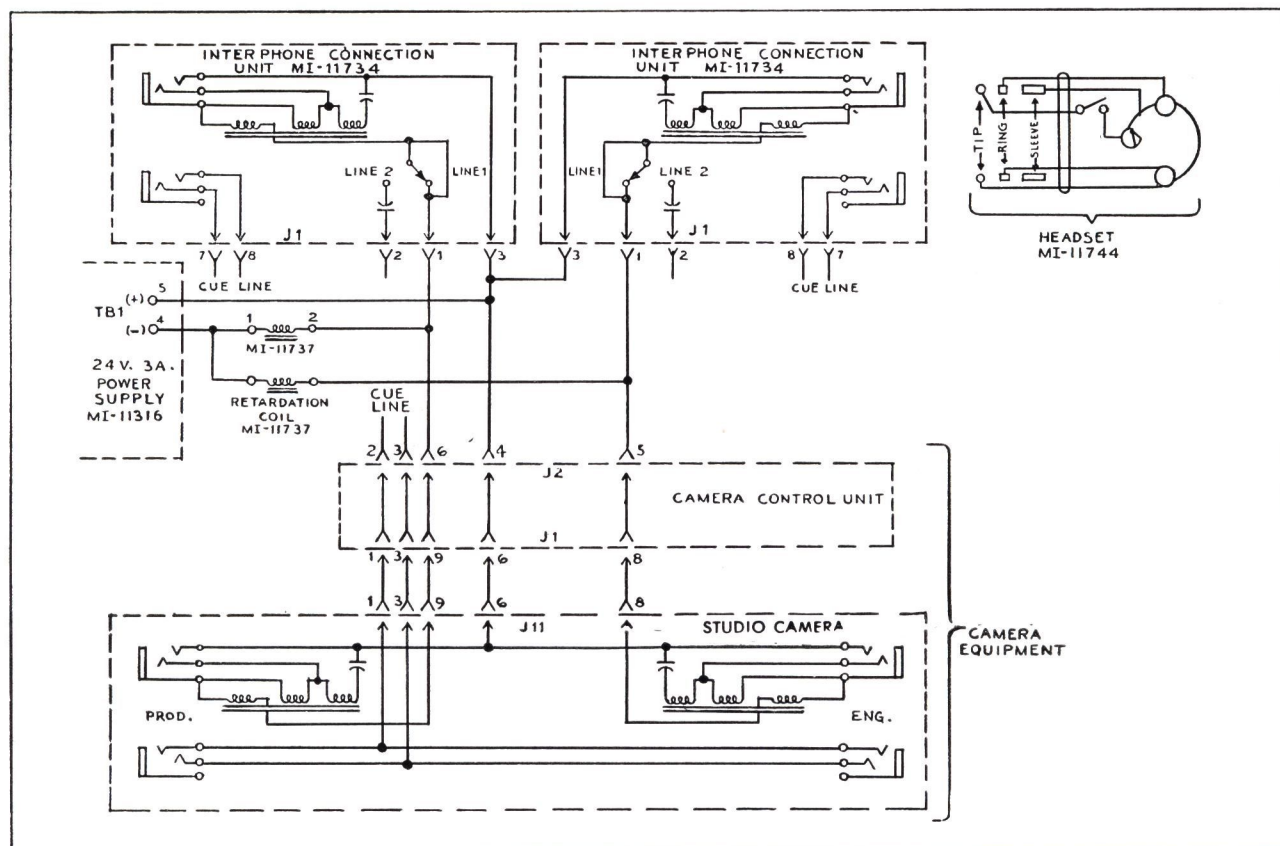
DESCRIPTION

Heart of the Studio Interphone System is the interphone Connection Unit, MI-11734, which consists of a compact jack box designed for plate mounting. The unit consists of a simple circuit having an induction coil and capacitor to provide an anti-sidetone feature. This results in local sounds being partially cancelled in the local earpiece. The circuit is housed in a small metal box having two phone jacks for use either with a single or a double headset as required, and a two-position toggle switch for selecting a local circuit or a remote line. A cable plug is mounted in the rear.

A Retardation Coil, MI-11737, permits simultaneous use of four carbon microphones such as one interphone connec-

tion unit and three camera headsets on a common battery or power supply. The coil permits a d-c power voltage to be imposed upon the two-wire telephone talking line. This audio frequency choke minimizes the effect of the power supply from lowering the two-wire telephone impedance at voice frequencies, and also allows adequate flow of direct current.

Mounting Panel, MI-11736-A, will permit mounting up to 14 retardation coils in the rack. Either a Single Headband Assembly, MI-11743, or a Double Headband Assembly, MI-11744, can be used for listening and talking with the Studio Interphone System.



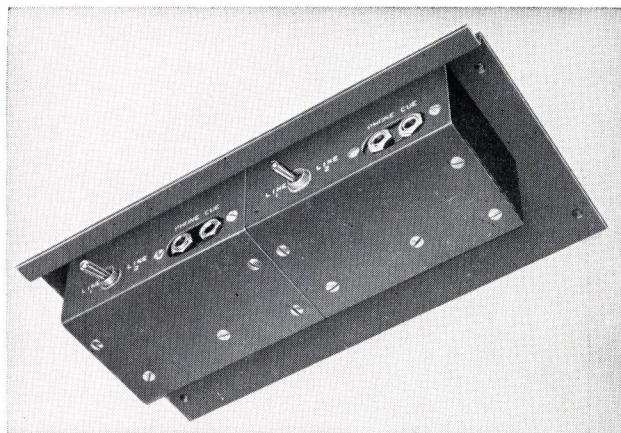
Schematic diagram of typical Interphone System.

SPECIFICATIONS

D-C Resistance (Headset):	
Microphone Switch On.....	70 ohms approximately
Microphone Switch Off.....	Infinite
Inductance at 1000 Cycles (Headset):	
Microphone Switch On.....	70 millihenries approximately
Microphone Switch Off.....	245 millihenries
D-C Resistance (Retardation Coil).....	165 ohms
Inductance (Retardation Coil).....	3.4 henries
Maximum Recommended Load Current.....	125 ma d-c
Power Supply.....	Regulated 24 volts, 3 amps, d-c
Dimensions:	
Interphone Connection Unit.....	4 $\frac{5}{8}$ " x 4 $\frac{1}{4}$ " x 2 $\frac{3}{16}$ "
Retardation Coil.....	4 $\frac{5}{8}$ " x 1 $\frac{45}{64}$ " x 1 $\frac{1}{16}$ "
Mounting Plate.....	11" x 6 $\frac{3}{8}$ "
Retardation Coil Panel, MI-11736.....	19" x 1 $\frac{3}{4}$ " x 3 $\frac{1}{16}$ "
Retardation Coil Panel, MI-11736-A.....	19" x 1 $\frac{3}{4}$ " x 3 $\frac{1}{16}$ "
Regulated Power Supply.....	9" x 7 $\frac{3}{4}$ " x 5 $\frac{3}{4}$ "
Weight:	
Interphone Connection Unit.....	1 lb., 11 ozs.
Retardation Coil.....	15 ozs.
Retardation Coil Panel, MI-11736.....	19 ozs.
Retardation Coil Panel, MI-11736-A.....	18 ozs.
Single Headband Assembly.....	6 ozs. (less cord)
Double Headband Assembly.....	9 ozs. (less cord)
Regulated Power Supply.....	25 lbs. (net)

ORDERING INFORMATION

Interphone Connection Unit.....	MI-11734
Retardation Coil.....	MI-11737
Shelf for Mounting MI-11734.....	MI-11735
Panel (Accommodating 14 Retardation Coils).....	MI-11736-A
Single Headband Assembly.....	MI-11743
Double Headband Assembly.....	MI-11744
Regulated Power Supply.....	MI-11316



Console Shelf, MI-11735, has mounting accommodations for two Interphone Connection Units.

Transistor Interphone Connection Unit

MI-11784

FEATURES

- Provides ample gain for connection among 30 connected stations
- 3 line output
- Phone and cue volume controls
- Uses present retards and other interphone components
- Mounts on existing hardware
- Convenient cable connectors



DESCRIPTION

The Transistor Interphone Connection Unit, MI-11784, can be used to modernize existing RCA interphone systems since the unit provides amplifier receiver level and a sidetone compensation characteristic specifically designed for TV requirements. The unit physically replaces the MI-11734 Interphone Connection Unit and will operate with virtually all commercially available TV headsets using carbon microphones.

The Transistor Interphone Connection Unit features ample gain to provide parallel connection to 30 conference-connected stations simultaneously, comparable to that obtained when only two conventional interphone stations are connected.

The MI-11784 Transistor Interphone Connection Unit must be used with RCA TK-12/32 camera chains since parts of the system are already built into the camera intercom circuits. In modifying intercom systems on other camera chains it is possible to substitute the MI-11784 for the MI-11734 connection unit. The MI-11784 connection unit cannot be intermixed with existing equipment.

The MI-11784 unit includes a single stage transistor amplifier, with bridge rectifier and sidetone compensation network with level control to adjust volume level. Thus each person in the conference connected stations can adjust the volume to suit their individual requirements. The entire unit is housed in a box $4\frac{5}{8}$ inches wide, $2\frac{1}{2}$ inches high and $6\frac{3}{4}$ inches deep. On the front is a three-way switch for selection of three intercom lines, and the separate

volume controls for "phone" and "cue" adjustment. The box also contains two jacks to accommodate single or double headsets. A 9-pin and a 12-pin cable connector plug on the rear are used for external connection.

Operating power for the MI-11784 interphone unit is derived from the common-battery interphone circuit to which the interphone unit is connected. A bridge-rectifier is interposed in the line to the amplifier to maintain correct polarity at the amplifier regardless of the polarity of the interphone battery voltage. The sidetone compensation bridge is designed to hold the sidetone level to within 2 db of the received level for any number of connected stations up to 32.

SPECIFICATIONS

Dimensions Overall..... $4\frac{5}{8}$ " wide x $2\frac{1}{2}$ " high x $6\frac{3}{4}$ " deep
Weight3 lbs. approx.

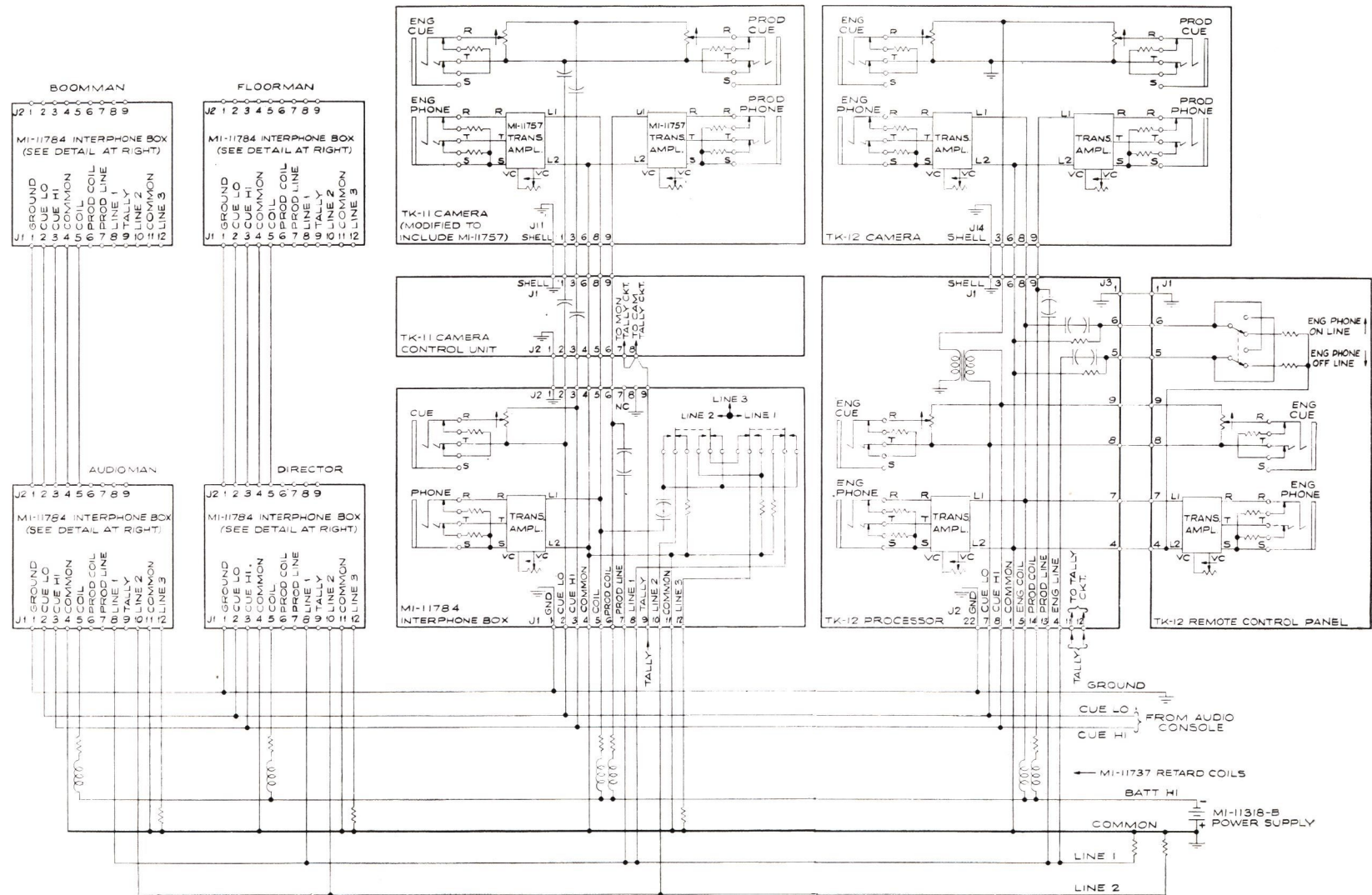
ORDERING INFORMATION

Transistor Interphone Connection Unit.....MI-11784

Accessory Equipment

Shelf	MI-11735
Panel	MI-11736-A
Retard Coil	MI-11737
Single Headset	MI-11743
Double Headset	MI-11744
Transistor Amplifier (Replacement for Induction Coil).....	MI-11757

SCHEMATIC DIAGRAM FOR TRANSISTOR INTERPHONE SYSTEM



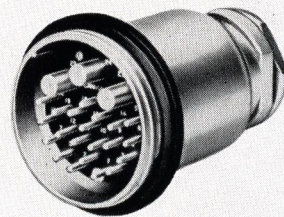
TV Cables, Plugs, Connectors

FEATURES

- Cable designs for every broadcast service—either studio or remote
- Exact replacements for cables and connectors supplied with RCA television equipment avoids unnecessary installation delays
- Various cable lengths and special cables available as kits
- Connectors and bulk cable available separately or as wired cable assemblies
- High quality, conservatively rated connectors and cable used throughout
- Insulations with conservative voltage ratings and special shields employed



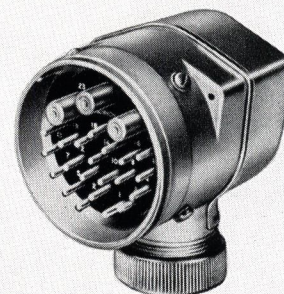
MI-26759 -22



MI-26759 -21



MI-26759 -23



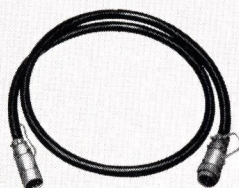
MI-26759 -24

DESCRIPTION

RCA television cables, plugs and connectors are made available for inter-connecting the various components of TV broadcast equipment—studio, control room and remote. Camera, power, pulse, intercom, coax transmission line and inter-connecting cables with companion connectors are available as individual items or in groups for use with various equipment systems. Refer to the individual equipment catalog sheets to determine which cables are required with specific items of video equipment.

Camera Cables

The multi-conductor, flexible camera cables listed here are supplied in convenient lengths complete with necessary male and female connectors. These cables facilitate making required inter-connections between cameras and camera controls. Conductors are stranded and covered with "color-coded" silk and cotton braid insulation. An inner shield of tinned copper braid is provided. Dust caps are provided where necessary. Outer coverings are of a durable plastic compound.

8-Conductor Intercom
Cable, MI-26759-11

Pulse Cable MI-26759-9

Camera Cables and Plugs

Stock Identification	Description	Length
MI-26725-E5	25-Conductor, neoprene cover, with straight male and female connectors. With dustcaps.	50 feet
MI-26725-E6	Same as above except length.	100 feet
MI-26725-E7	Same as above except length.	200 feet
MI-26725-E9	25-conductor, neoprene cover, with 90 degree male and a straight female connector.	50 feet
MI-26725-E10	25-conductor, neoprene cover, with 90 degree female and a 90 degree male connector. With dustcaps.	50 feet
MI-40831-1	Control Cable; 33-conductor, flexible rubber-covered, shielded and individually color coded with Jones type male and female connectors.	50 feet
MI-40831-2	Shading Generator Cable; 8-conductor, rubber-covered, flexible, with Jones type male and female connectors.	4 feet
MI-40835	Set of Interconnecting Cables (Camera to Camera Auxiliary): (a) Camera Cable; 20-conductor, flexible, rubber-covered, shielded, and individually color coded with rectangular Cannon type male and female connectors.	3 feet
	(b) Coaxial Cable; Type RG-59/U, flexible, rubber-covered.	3 feet
MI-40868-2	TK-41C Color Camera Cable. 82-conductor, single cable, vinyl covered flexible, with straight male and female connectors.	50 feet
MI-40868-3	Same as above except length.	100 feet
MI-40868-4	Same as above except length.	200 feet

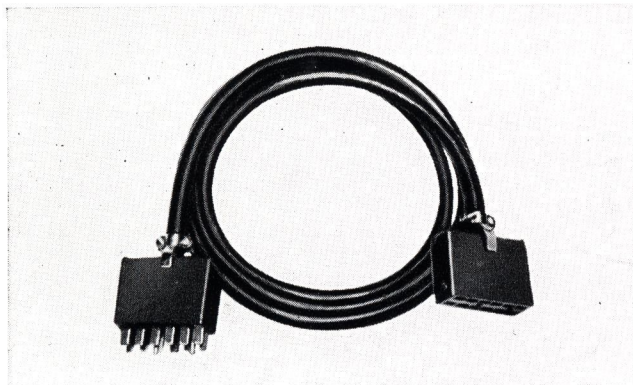
Camera Cable Connectors and Accessories

The connectors described below include both the 90 degree and straight type for use in making up camera cables in any desired length, using bulk camera cable.

Stock Identification	Type	Description
MI-11719-A	Lacing Cord.	Black #6.
MI-26759-A21	Straight Male Camera Cable Connector.	24-contact for use as a cable termination.
MI-26759-A22	Straight Female Camera Cable Connector.	24-contact for use as cable termination.

Camera Cable Connectors (Cont.)

Stock Identification	Type	Description
MI-26759-23	90° Female Camera Cable Connector.	24-contact for use as cable termination. Designed so that cable enters connector at 90° to axis of contact pins.
MI-26759-24	90° Male Camera Cable Connector.	24-contact for use as cable termination. Designed so that cable enters connector at 90° to axis of contact pins.
MI-26759-A41	Dustcap for male cable connector.	2 $\frac{11}{16}$ " dia. x $\frac{13}{32}$ " deep, internal thread, with #10 chain and fastener.
MI-26759-A42	Dustcap for female cable connector.	2 $\frac{11}{16}$ " dia. $\frac{11}{16}$ " deep, internal thread, with #10 chain and fastener.
MI-26759-45	Coaxial Termination. 75 ohm 1%.	Includes single contact coaxial connector plug, terminal assembly with a $\frac{1}{2}$ watt, 75-ohm resistor.
MI-26759-48	Straight Female Connector with waterproof jacket.	24-contact for use as microwave cable termination.
MI-26759-49	Gasket for MI-26759-48.	Buna "N" rubber $\frac{1}{4}$ " square with knitted monel mesh bonded to rubber.
MI-40529-1	Male connector for color camera cable.	82-contact, for use as cable termination.
MI-40529-2	Female connector for color cable.	82-contact—same as above.
MI-40529-3	Male chassis connector.	82-contact for use with a color camera cable connector.
MI-40529-4	Female chassis connector.	Same as above.
MI-40529-5	60° Adaptor.	For color cable chassis connector.
MI-40529-6	Kellum Grip Kit.	For use with MI-40529-1 or 2.
MI-40531-1	Color Cable Adaptor.	For converting color camera from 3-cable connection to single color camera cable connection.
MI-40531-2	Color Cable Adaptor.	For converting camera control position from a three-camera cable input to a single cable input.
MI-40856	Straight Jones Type Connector with plug button.	Dummy plug, 18-contact, for use as jumper unit to make axis shading of processing amplifier operable when shading amplifier is not used.
MI-40857	Dummy plug.	Two plugs replace two camera subchassis when color film camera is used for monochrome only.



12-Conductor, Power Cable MI-26759-6 supplied with Jones type connectors.

Power and Control Cables and Plugs

The cables and connectors described below are available for use as spare units or replacements for those supplied with RCA television studio equipment.

Stock Identification	Power Cable Description	Length
MI-26759-2	2-conductor, vinyl covered, flexible with male plug and female Cannon type connector with dustcap.	10 feet
MI-26759-6	12-conductor, vinyl covered, flexible with male and female Jones type connectors.	34 inches
MI-26759-7	12-conductor, vinyl covered, flexible with male and female Cannon type connectors and dustcaps.	6 feet
MI-26759-8	12-conductor, vinyl covered, flexible with male and female Jones type connectors.	6 feet
MI-26759-41	18-conductor, vinyl covered, flexible with male and female Jones type connectors.	4 feet
MI-26759-42	12-conductor, vinyl covered, flexible with male and female Jones type connectors.	5½ feet
MI-26759-46	12-conductor, vinyl covered, flexible with male and female connectors and dustcaps.	10 feet
MI-26759-57	8-conductor, vinyl covered, flexible with straight male and 90° female connector.	36 inches
MI-26759-58	3-conductor, heavy duty Cord type S, synthetic rubber insulation, with Cannon type female connector and Hubbell type 3-wire polarized armored cap (twist-lock).	10 feet

Coax Cable Assemblies

The coaxial transmission line cable assemblies are made available in several different convenient lengths as shown in the accompanying chart. All are durable, vinyl covered, flexible cables with inner conductor and outer shielded conductor.

Stock Identification	Description	Length
MI-26759-12	Coax Cable Assembly with 2 male plugs and dustcaps. Impedance, 75 ohms.	7 feet
MI-26759-13	Same as MI-26759-12.	25 feet
MI-26759-15	Coax Cable Assembly with 2 male plugs and dustcaps. Impedance, 75 ohms.	100 feet
MI-26759-59	Coax Cable Assembly with 2 male plugs and dustcaps. Impedance, 75 ohms.	10 feet

Pulse and Interphone Cables

Stock Identification	Description	Length
MI-26759-9	Pulse Cable—8-conductor, neoprene covered, flexible with straight male and female Cannon type connectors and dustcaps.	7 feet
MI-26759-11	Interphone Cable—8-conductor, vinyl covered, flexible, with male and female Cannon type connectors and dustcaps.	7 feet
MI-26759-60	Remote Control Cable (TK-12 Process Amplifier to Control Panel) 19-conductor shielded, black vinyl jacket, flexible with Cannon type male and female connectors and dustcaps.	7 feet
MI-26759-61	Interphone Cable—9-conductor, flexible, shielded, black vinyl jacket non-contaminating, with Cannon type male and female connectors and dustcaps.	10 feet

Sets of Interconnection Cables

The cables listed below are supplied in groups in accordance with the requirements of the indicated video equipment systems.

MI-26359, INTERCONNECTING CABLES FOR TK-32 FIELD CAMERA CHAIN Includes:

- 2—10 ft., 3-cond., Power Cable with Plugs and Covers, MI-26759-58
- 1—7 ft., 7-cond., Pulse Cable with Plugs and Covers, MI-26759-9
- 2—10 ft., 12-cond., Power Cables with Plugs, MI-26759-46
- 4—7 ft., Transmission Line Cables with Plugs and Covers, MI-26759-12
- 1—10 ft., Transmission Line Cable with Plugs and Covers, MI-26759-59
- 1—7 ft., 19-cond., Remote Cable with Plugs and Covers, MI-26759-60
- 1—10 ft., 9-cond., Interphone Cable with Plugs and Covers, MI-26759-61

MI-26730, INTERCONNECTING CABLES FOR TK-31 FIELD CAMERA EQUIPMENT Includes:

- 1—10 ft., 2-cond., Power Cable with Plugs and Dust-caps, MI-26759-2
- 1—6 ft., 12-cond., Power Cable with Plugs and Dust-caps, MI-26759-7
- 1—7 ft., 8-cond., Pulse Cable with Plugs and Dust-caps, MI-26759-9
- 1—7 ft., 8-cond., Interphone Cable with Plugs and Dust-caps, MI-26759-11
- 1—7 ft., Coaxial Transmission Cable with Plugs and Dust-caps, MI-26759-12

MI-26736, INTERCONNECTING CABLES FOR TG-12A FIELD SYNC GENERATOR Includes:

- 1—10 ft., 2-cond., Power Cable with Plugs and Dust-cap, MI-26759-2
- 1—100 ft., 4-cond., Power Cable with Plugs, MI-26759-4
- 1—2 ft., 4-cond., Power Cable with Female Plug, MI-26759-5
- 1—7 ft., Transmission Line Cable with Plugs and Dust-cap, MI-26759-12
- 1—Pulse Termination Plug, MI-26759-17

MI-26740-A, INTERCONNECTING CABLES AND FITTINGS FOR TS-30D FIELD SWITCHING EQUIPMENT Includes:

- 1—10 ft., 2-cond., Power Cable with Plugs and Dust-caps, MI-26759-2
- 1—6 ft., 12-cond., Power Cable with Plugs and Dust-caps, MI-26759-7
- 1—25 ft., Coaxial Transmission Cable, MI-26759-13
- 1—100 ft., Coaxial Transmission Cable, MI-26759-15
- 1—Set of Coaxial Fittings, MI-26759-18

MI-26746, INTERCONNECTING CABLES FOR TK-11B STUDIO CAMERA CONTROL Includes:

- 1—34 inch., 12 cond., Power Cable with Plugs, MI-26759-6
- 1—64 inch, Coaxial Transmission Line Cable with Plugs, MI-26759-14

Bulk Cable and Accessories

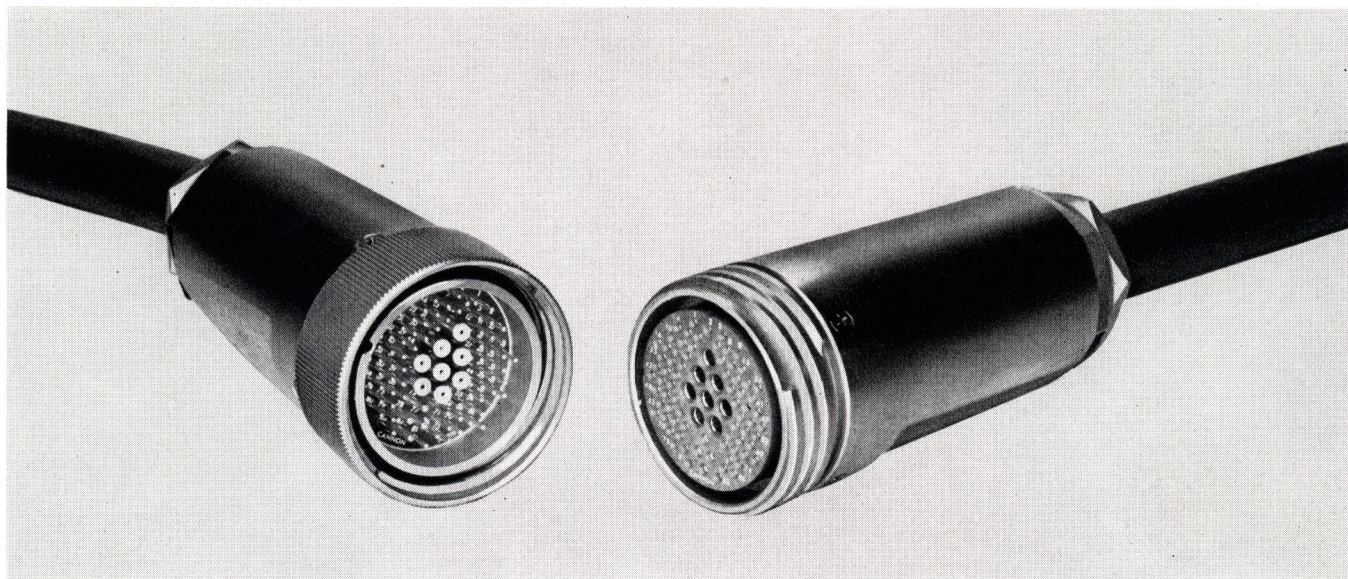
The various cables described in the accompanying table are available to the broadcaster in bulk quantities for making TV interconnections in special or nonstandard lengths as desired.

Stock Identification	Type Cable	Approx. Diam.	Characteristics
MI-43D	MICROPHONE CABLE—3-conductor, rubber covered, with outer neoprene covering, flexible.	0.300"	3 conductors of #20 A.W.G. tinned cadmium bronze, stranded for low impedance circuits.
MI-48	PULSE CABLE—8-conductor, rubber covered, flexible with individual color coding.	0.75"	4 coax conductors of 72 ohms impedance and 4 conductors of #16 A.W.G. with insulation for 600 v d-c
MI-74B	COAXIAL CABLE—Type RG-8/U, flexible, vinyl covered. Single inner conductor and outer shield conductor.	0.405"	Impedance 52 \pm 2 ohms. Normal capacitance 30.5 MMF/ft.; max. operating voltage 4000 RMS.
MI-75	COAXIAL CABLE—Type RG-59A/U, flexible, vinyl covered. Single inner conductor and outer shield conductor.	0.242"	Impedance, 75 ohms. Normal capacitance 20.5 MMF/ft.; max. operation voltage 2300 RMS.
MI-83A	COAXIAL CABLE—Type RG-11A/U, flexible, vinyl covered. Single inner conductor and outer shield conductor.	0.405"	Impedance, 75 ohms. Normal capacitance 20.5 MMF/ft.; max. operating voltage 4000 RMS.
MI-94N	CAMERA CABLE—25-conductor, neoprene-covered, flexible, color coded, shielded cable consisting of: (A) 3 coaxial conductors, (B) 18 stranded, tinned copper conductors, and (C) 1 group of 4 tinned copper conductors.	0.83"	Coax conductor impedance, 50 ohms \pm 2 ohms, 18 conductors of #22 A.W.G. and 4 of #14 A.W.G. with insulation for 1000 v, RMS max.
MI-13307	MICROPHONE CABLE—2-conductor, flexible, shielded, color coded.	0.285"	2 conductors each consisting of 41 strand tinned copper wire .0063" dia. to meet RMS specifications.
MI-13318-A	COAXIAL CABLE—Type RG-58C/U, flexible, vinyl covered.	0.20"	Impedance 50 ohms. Insulation for 1900 v, RMS.
MI-13319	POWER CABLE—18-conductor, rubber-covered, flexible, shielded and individually color coded.	0.590"	16 conductors of #22 A.W.G., 2 conductors of #16 A.W.G. with insulation for 2500 v, RMS, 60 cycles.
MI-13320	3-V FILM CAMERA CABLE—33-conductor, flexible, rubber-covered, shielded and individually color coded.	0.75"	27 conductors #22 A.W.G., wire jacketed; 4 conductors #22 A.W.G., wire jacketed; and 2 wires, #22 A.W.G., same shielded.

Stock Identification	Type Cable	Approx. Diam.	Characteristics
MI-13321	DELAY CABLE—Type RG-65/U, flexible, shielded.	0.75"	Impedance 1000 ohms.
MI-13325	COAXIAL CABLE, flexible, double shielded, rubber cover.	0.305"	Impedance 74.99 ohms at 4 mc, normal capacitance 20 MMF/ft., max voltage 4000 RMS.
MI-13333	POWER CABLE, 7-conductor, shielded, black rubber jacket.	0.360"	7 conductors #20 A.W.G. 600 v, RMS max.
MI-13334	POWER CABLE, 24-conductor, stranded wire, black vinyl jacket.	0.525"	4 conductors #16 A.W.G., 6 conductors #20 A.W.G., 14 conductors #22 A.W.G. 600 volts RMS.
MI-13341	POWER CABLE, 26-conductor, shielded, black vinyl jacket.	0.625"	5 conductors #16 A.W.G., twisted and shielded overall as a group, 3 pairs #22 A.W.G. each pair shielded, 15 conductors #22 A.W.G.
MI-13380-2	POWER CABLE—2-conductor, flexible, shielded, black vinyl jacket, non-contaminating.	0.420"	2 conductors #14 A.W.G., 600 v, RMS max.
MI-13380-3	POWER CABLE—Same as above except 3 conductors.	0.450"	Same as above except 3 conductors.
MI-13380-4	POWER CABLE—Same as above except 4 conductors.	0.480"	Same as above except 4 conductors.
MI-13380-5	POWER CABLE—Same as above except 5 conductors.	0.540"	Same as above except 5 conductors.
MI-13380-6	POWER CABLE—Same as above except 6 conductors.	0.610"	Same as above except 6 conductors.
MI-13380-8	POWER CABLE—Same as above except 8 conductors.	0.610"	3 conductors #14 A.W.G.; 5 conductors #18 A.W.G.; 600 v, RMS max.
MI-13380-12	POWER CABLE—Same as above except 12 conductors.	0.625"	12 conductors #18 A.W.G.; 600 v. RMS max.
MI-13394	COLOR CAMERA CABLE—82 conductors.	1.24"	67 conductors #22 A.W.G.; 3 conductors #16 A.W.G.; 4 conductors #14 A.W.G.; 8 coaxial cables, Type RG-58C/U, 50 ohms impedance.
MI-40422-A	Crimping Tool (for use with MI-13325 Cable and MI-40423 fittings).		Crimps adaptor to PL-259 connector and sleeve to shield.
MI-40423	Fittings for adapting MI-13325 Cable to PL-259 Connector.		Consisting of 25 pieces each of inner and outer sleeving.

Single Cable and Adaptors

FOR TYPE TK-40A AND TK-41 COLOR CAMERAS



Male Cable Connector, MI-40529-1.

Female Cable Connector, MI-40529-2.

FEATURES

- Improves maneuverability of color camera
- Facilitates connecting and dismantling of the camera
- Less weight and bulk
- Neater appearance
- Designed specifically for TV Color Cameras
- Adaptors provide simple conversion of present equipment
- Cable assemblies or individual components available

DESCRIPTION

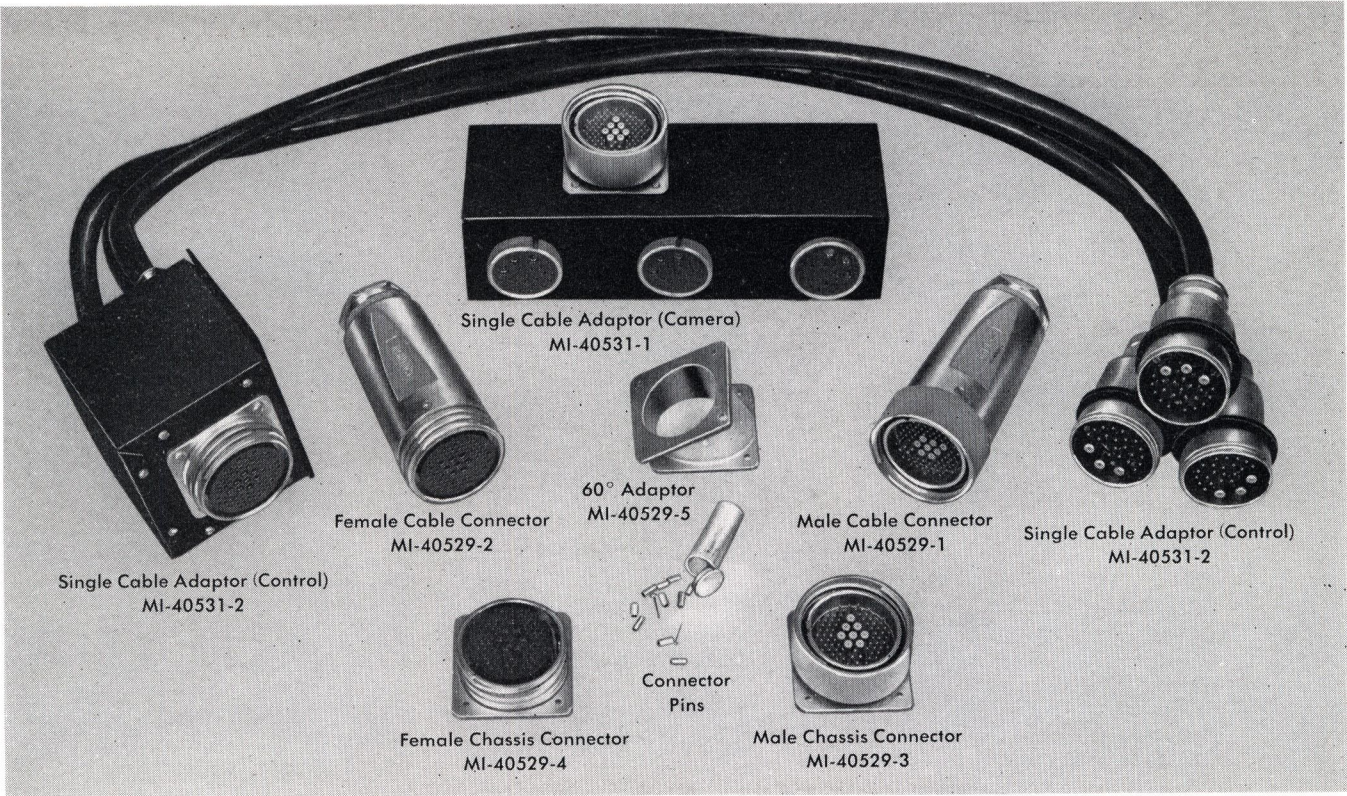
The MI-40868 Series of Cable Assemblies serve to replace the three cables previously required for RCA Type TK-40A or Type TK-41 Color Television Cameras with a single easy-to-handle cable. Operation of the camera is greatly facilitated by eliminating the extra effort required to handle three cables taped or braided together. In addition, the camera area of the studio is kept clear for better appearance and easier handling of props. The conservation of space and weight facilitates transportation of the camera and reduces system assembly time.

Adaptors are available to convert the camera and the camera control from three-cable to single-cable operation. They are easily plugged into existing facilities to eliminate extensive wiring changes. Bulk, 82-conductor cable and cable connectors are available separately so that studios may be wired for single-cable use. A 60-degree

adaptor can be used with an 82-pin chassis connector to angle the cable connector away from a studio cable panel or for installation of chassis connectors on a cable patch panel.

The MI-40531-1 Adaptor is designed to plug into the three connectors presently a part of the RCA Type TK-40A and TK-41 Color Television Cameras after the three-conductor mounting boxes are removed. It consists of a single box which replaces the three-conductor mounting boxes and contains an MI-40529-3 82-pin Chassis Connector. All wiring of the adaptor is complete within the box reducing the modification of the camera to a single mechanical job.

The MI-40531-2 Adaptor converts the camera control position from a three-camera cable input to a single cable input. This unit, which may be inserted at any point in the camera cable run, consists of a junction box with



DESCRIPTION (Continued)

an 82-pin female chassis connector, MI-40529-4, wired to three five-foot cables with 24-pin cable connectors on the ends. No modification to the camera control is required for the conversion at this position.

The Single Cable for RCA Color TV Cameras is available in bulk as MI-13394. It contains 82 color-coded conductors including eight coax cables. Proper shielding is applied to eliminate crosstalk and external interference. The outside diameter of the cable assembly measures 1.280 inches. The jacket is a tough covering that will withstand the abuses to which cables are often subjected. It is designed to glide easily on the floor, leaving no marks and causing no noise.

The MI-40868-2, -3, and -4 Cable Assemblies are 50, 100 and 200-foot lengths of MI-13394 cable respectively with cable connectors on each end. The cable connectors are equipped with coarse double-threaded screw locks for fast, solid interconnection of cables or for attachment to chassis connectors.

The 60-degree Adaptor for chassis connectors, MI-40529-5, consists of a short hollow casting with two flanges 60-degrees apart. One flange is designed to fit a flat mounting surface and the other attaches to an MI-40529-3 or MI-40529-4 Chassis Connector.

SPECIFICATIONS

Bulk Cable:
Length.....To be specified on order
Outside diameter1.280" max.
Weight (nominal)874 lb./ft.
Stock IdentificationMI-13394

Cable Assemblies with Connectors:
Stock IdentificationMI-40868-2 MI-40868-3 MI-40868-4
Length50 ft. 100 ft. 200 ft.
Weight (nominal)49 lbs. 92 lbs. 180 lbs.

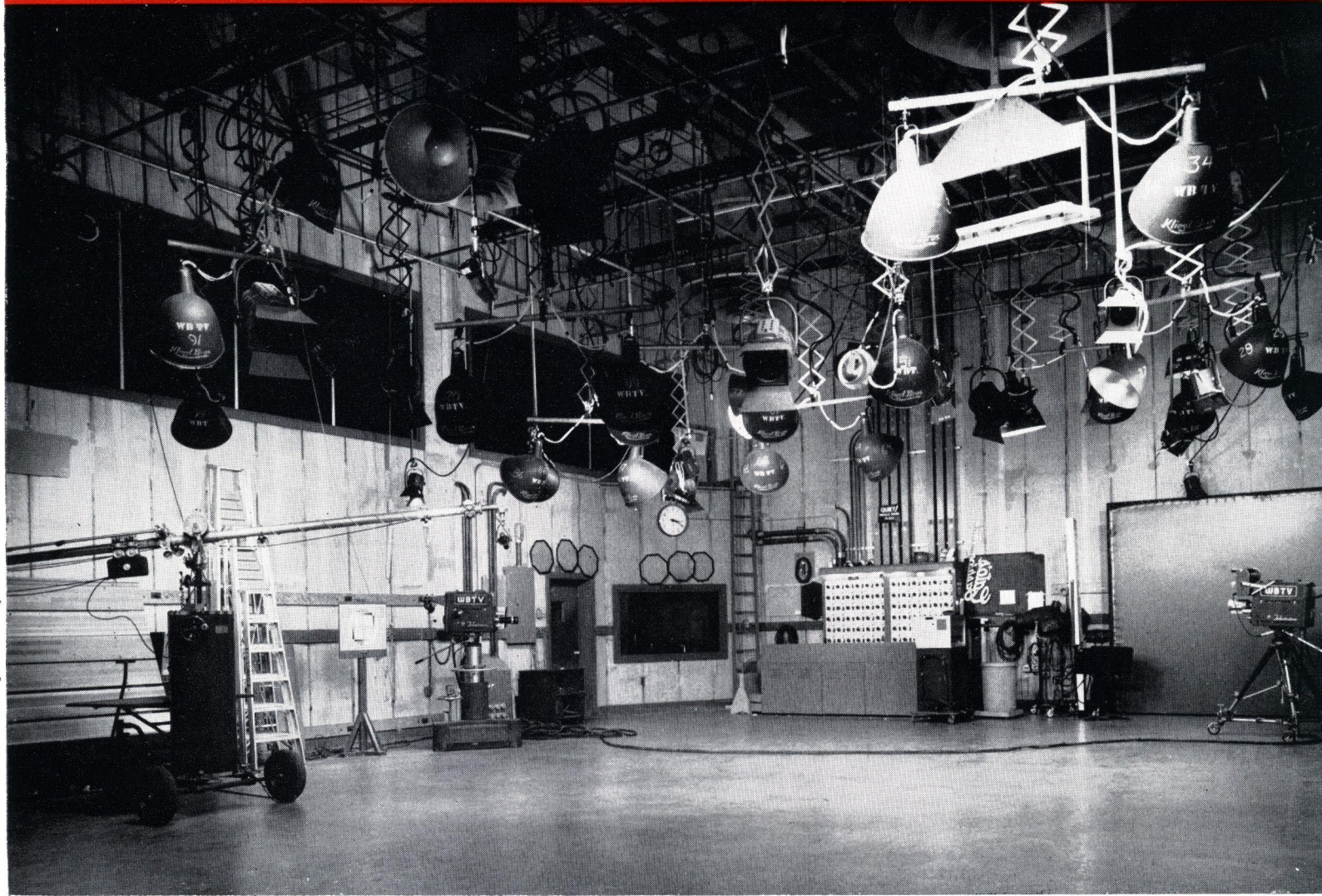
Single Cable Adaptor for TK-40A and TK-41A/B Camera:
Dimensions overall12⁷/₁₆" long, 4¹/₈" wide, 5" high
WeightApproximately 6 lbs.
Stock IdentificationMI-40531-1

Single Cable Adaptor for TK-40A and TK-41A/B Camera Control:
Box dimensions overall.....6¹/₂" long, 5¹/₂" wide, 4¹/₂" high
Weight (less cable)Approximately 5 lbs.
Length of Cables.....5 ft.
Stock IdentificationMI-40531-2

Connectors:			
Description	Stock Identification	Dimensions Overall	Weight
Male Cable Connector	MI-40529-1	3 ¹ / ₈ " O.D. x 7" long	2.5 lbs.
Female Cable Connector	MI-40529-2	2 ⁷ / ₈ " O.D. x 6 ⁵ / ₈ " long	2 lbs.
Male Chassis Connector	MI-40529-3	3 ¹ / ₈ " square x 1 ⁵ / ₈ " high	1/2 lb.
Female Chassis Connector	MI-40529-4	3 ¹ / ₈ " square x 1 ¹ / ₈ " high	6 oz.
60° Adaptor	MI-40529-5	3 ¹ / ₈ " square x 3 ⁵ / ₈ " high	2 lbs.

Replacement Coaxial Connector Pins
Set of 10 Male Connector Pins.....# 221210
Set of 10 Female Connector Pins.....# 221209

Television Lighting Equipment



FEATURES

- Complete lighting facilities from lamps to lugs—for monochrome and color TV
- Experienced lighting engineers available to help plan studio requirements
- Recommendations based on many successful stations in operation
- Efficient, economical studio lighting for any type of TV studio
- Lighting equipment designed with maximum "flexibility" in mind
- All lighting fixtures designed for maximum reliability and safety



Closeup of lighting used in a typical TV set.

DESCRIPTION

RCA's complete line of Television Lighting Equipment offers maximum flexibility, efficiency and economy in meeting the programming needs of modern, up-to-date TV studios. Based on their wide experience with the great number of today's television stations, RCA engineers have carefully selected a representative line of equipment of leading lighting manufacturers such as Kliegl Bros. and Century Lighting Inc. Such equipment includes all the fixtures, accessories and wiring and control devices needed for a workable and versatile studio lighting system.

During the planning of the television camera and control equipment for your TV studio, RCA engineers are also available to help plan your lighting system—whether it be for a "workshop-type" of studio, TV theatre studio, or a "repetitive programming" studio. RCA will plan your lighting in accordance with your studio's architectural properties, degree of flexibility desired, and as general program material dictates.

"Present-Day" TV Lighting

With the greater trend to color telecasts, proper studio lighting is occupying the attention of station designers. Rule-of-thumb lighting requirements have been drastically revised, and with the introduction of new close-spaced image orthicon tubes the philosophy of lighting has changed. Excellent pictures for monochrome or color require evenly lighted scenes. In order to secure such picture quality, light should overlap to cover scene areas with an even distribution of light.

In general, a typical flat lighting requirement for monochrome can be taken at about 100 foot candles. Flat lighting for color requirement is approximately twice that required for monochrome and will range from 150 foot candles for use with highly sensitive I.O. tubes to 300 to 400 foot candles with less sensitive I.O. tubes. These lighting ranges will generally require a lens opening of approximately $f/8.0$.

The additional lighting requirement for color can be satisfied by any one or by a combination of methods—by

raising the wattage of existing fixtures, by the addition of more fixtures of the same type and wattage (especially desirable in low-ceiling studios of 12 to 14 feet), or by adding higher wattage fixtures. Another approach may utilize the use of the new improved high sensitivity image orthicon tubes which greatly reduces the color lighting requirements. Forty watts per square foot is generally suggested for 200 foot candles of lighting.

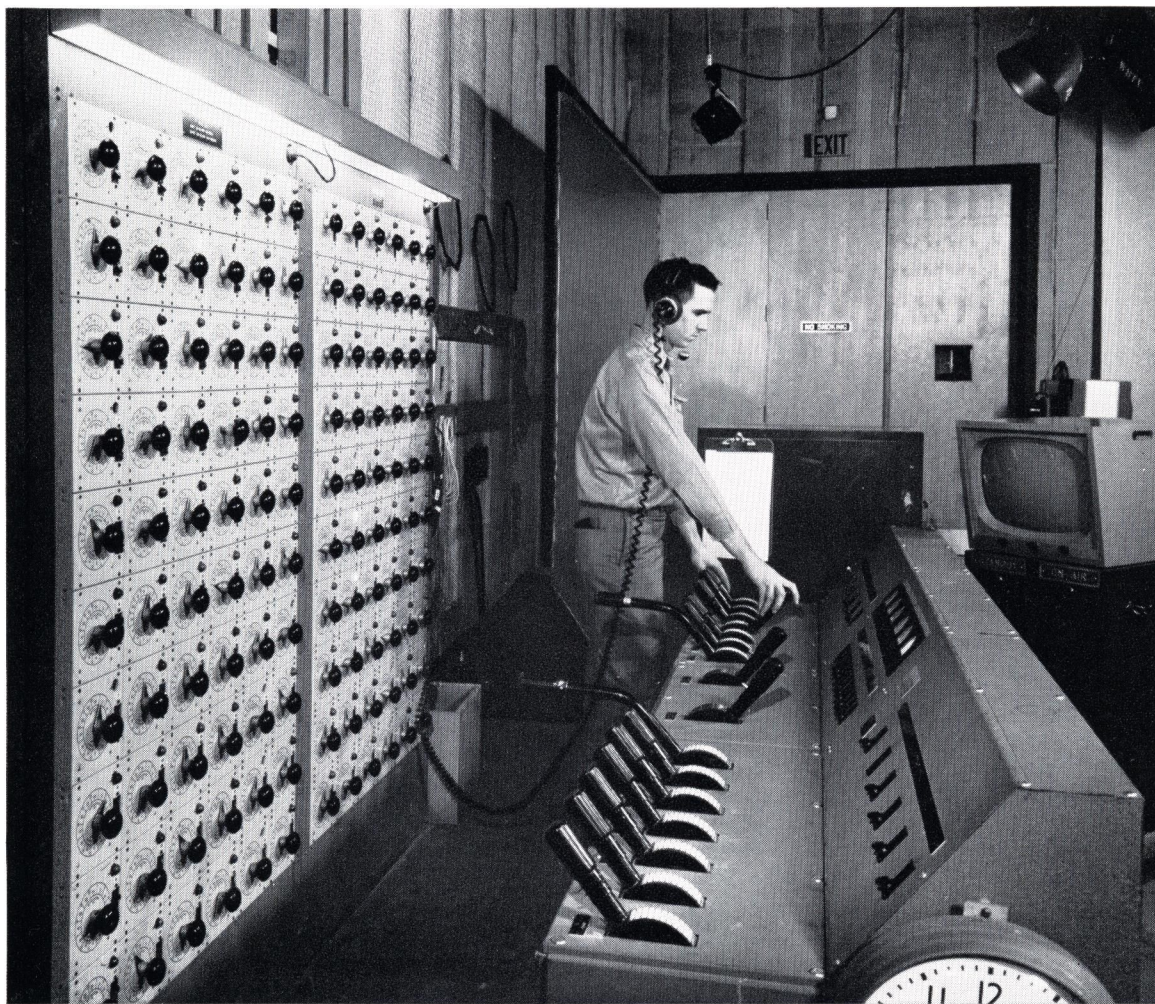
The more sensitive I.O. tubes have accounted for greater use of special or "trick" lighting effects. In black-and-white telecasting dimmer lighting fixtures are used chiefly for adjusting the contrast between front, back and side lighting and also for effects lighting to create silhouettes, transitions, and so forth. They can be equally useful in color telecasting, but in color, subject lighting is rarely dimmed except for unusual dramatic effect. However, dimmers can be used on background and base lights to show changes in the time of day, complement the action or mood, change background color, cut down scenery requirements, and to make smooth transitions from one scene to another.

In the studio, lighting fixtures are mounted from a fixed cross hatched gridwork, or if the ceiling height permits, on counterbalanced pipe battens or rope, chain, and wire cable suspended battens. Together with the pantographs, complete versatility is obtained with a minimum of labor and delay in rehearsal time. Any size of scenery may, therefore, be accommodated, and the front fill lights may be adjusted easily to approximately the recommended camera level.

More complex switching and dimming will require control boards. Outlet load selection by means of patch plugs or rotary selector switchers greatly improve the safety and efficiency of lighting control. Electronic dimming has now taken its place in the lighting field to simplify the control functions. Because they control large studio currents with small control voltages, the electronic console may be located in the studio control room near the video operator.

Check List

In planning a TV lighting system, a great many factors must be kept in mind by the TV station engineer and the



View of an auto-transformer dimmer control console and load selector panels which combine to provide efficient and precise control of lighting for a large studio.

TV systems engineer as well. Listed here as a convenient check list are some of the objectives of the TV studio designer.

1. To provide a safe and rapid means of energizing the lighting fixtures:
 - a. By minimum lengths and number of time consuming portable cables.
 - b. By initially installing ample carrying capacity of wiring, control devices and feeders, additional costly electrical construction in an operating studio can be eliminated.
2. To specify equipment that is reliable and can be easily installed.
 - a. To assure dependable operation.
 - b. To keep maintenance and time consuming improvisations to a minimum.
 - c. To obtain the most favorable casualty, compensation, and fire insurance rates.
3. Fixtures should be specified that are:
 - a. Light weight for easy handling, yet durable to withstand the handling.
 - b. Easily adjusted, repositioned, and focused.

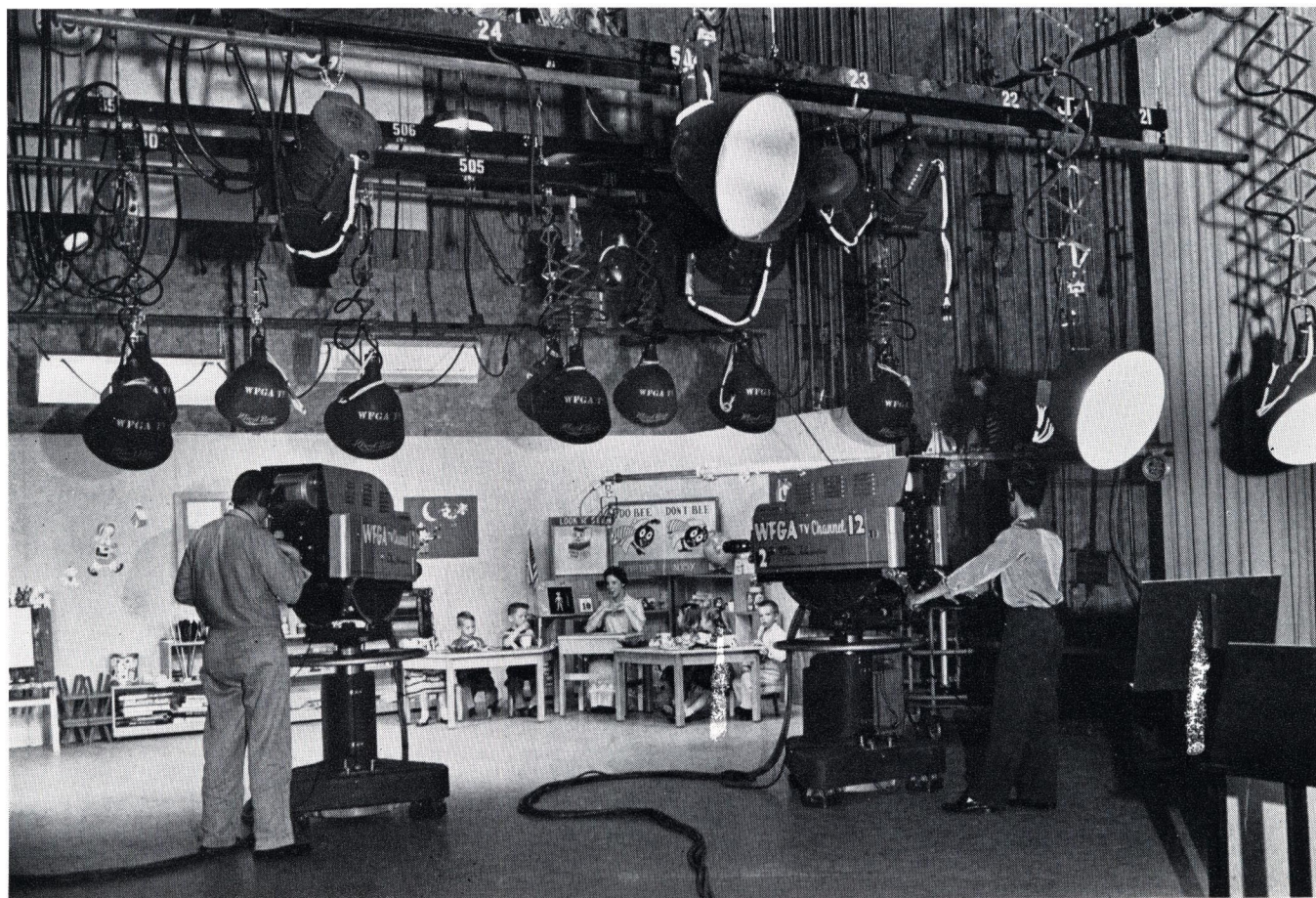
- c. Safely constructed and wired.
- d. The number and type of fixtures should be adequate to prevent the use of lamps of higher wattage than the units are designed for.
- e. Equipment should include a variety of accessories specifically made for the fixtures. These are barn doors, diffuser frames, etc. This is to prevent the use of improvised 'wired on' gadgets that may drop off or cause damage.
- f. Provide maximum light output per dollar invested.

Studio Lighting Techniques

Every television lighting system should be capable of providing the following functions. RCA has selected and makes available its line of Lighting Equipment to satisfy the various requirements set forth here:

1. Base or General Lighting.
2. Modeling Lighting.
3. Back Lighting.
4. Effects Lighting.

Base lighting is that uniform, wide angle illumination which covers the whole scene to be televised and is defined as uniform, diffuse illumination, approaching a shadowless



In this studio scene overhead spots and floods are manipulated to provide desired lighting effect.

condition, sufficient for a television picture of technical acceptability, and which may be supplemented by other lighting. The minimum level is limited to a value which will produce an acceptable signal-to-noise ratio with the studio camera used. The actual value of incident light required is also determined by the depth of field and normally ranges from 6 to 120 foot-candles for average lens stops for monochrome and 100 to 400 foot-candles for color. Productions may require even greater variations than this, and for our plans, we will specify 80 foot-candles for an average interior for monochrome and 240 foot-candles for color. This base or general light can be provided by incandescent floods (scoops), or long range scoops (for long distance throws). *Base lighting* can also be obtained by using the Fresnel spot lights at flood position.

Modeling light is directional light at an angle to the camera axis which develops forms in the scene. Shadows are then produced, and give an illusion of depth to the subject. This can be obtained by unbalanced base light without destroying the illusion of the space effect. More generally, however, Fresnel lens spotlights provided with diffusers and barn doors can effectively create the form and enhance the appearance of the scene. The intensity of this lighting should be 20 to 30 percent greater than the base light in the scene.

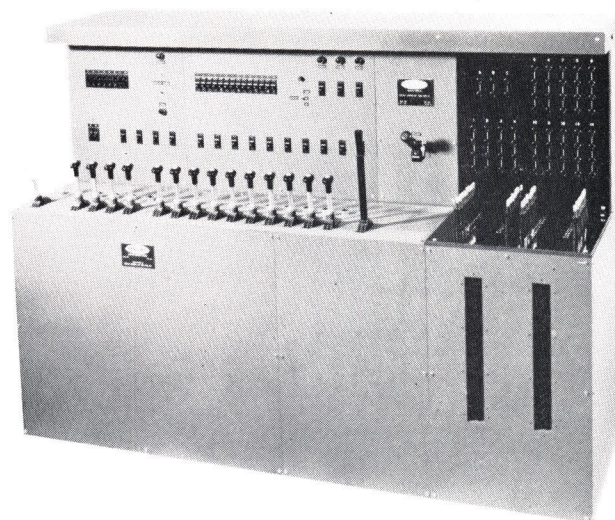
Back lighting. The purpose of back lighting is to separate the actors from the background. This is obtained by using spotlights at the rear of the set, directed from above. The level of this backlight should approach an intensity 50% greater than that of the base light, and should be applied with caution since light should never enter the television camera lens.

Effects lighting is specialized lighting which injects reality to the televised scene. Such effects as clouds, snow, rain, lightning, firelight, can be obtained by rear projection or by simple silhouettes in front of a light source. Many types of lighting equipment are available for special beam patterns which project light or shadows through windows, open doors or fireplaces. The background projector has been used more recently. It can project a simulated background which may be stationary as produced from a slide or moving objects from motion picture film. For proper picture quality, the highlights thus projected should be equal to or at least half of those of the live scene highlights.

The proper combination of these various functions of light can give the illusion of three dimensions to the television picture and impart the desired artistic results. Complete flexibility in all phases of the lighting system is necessary to satisfy the techniques of present day television.

Lighting Application Tools

Unobstructed flexibility of camera and mike boom is required on the studio floor; therefore, the lighting is done



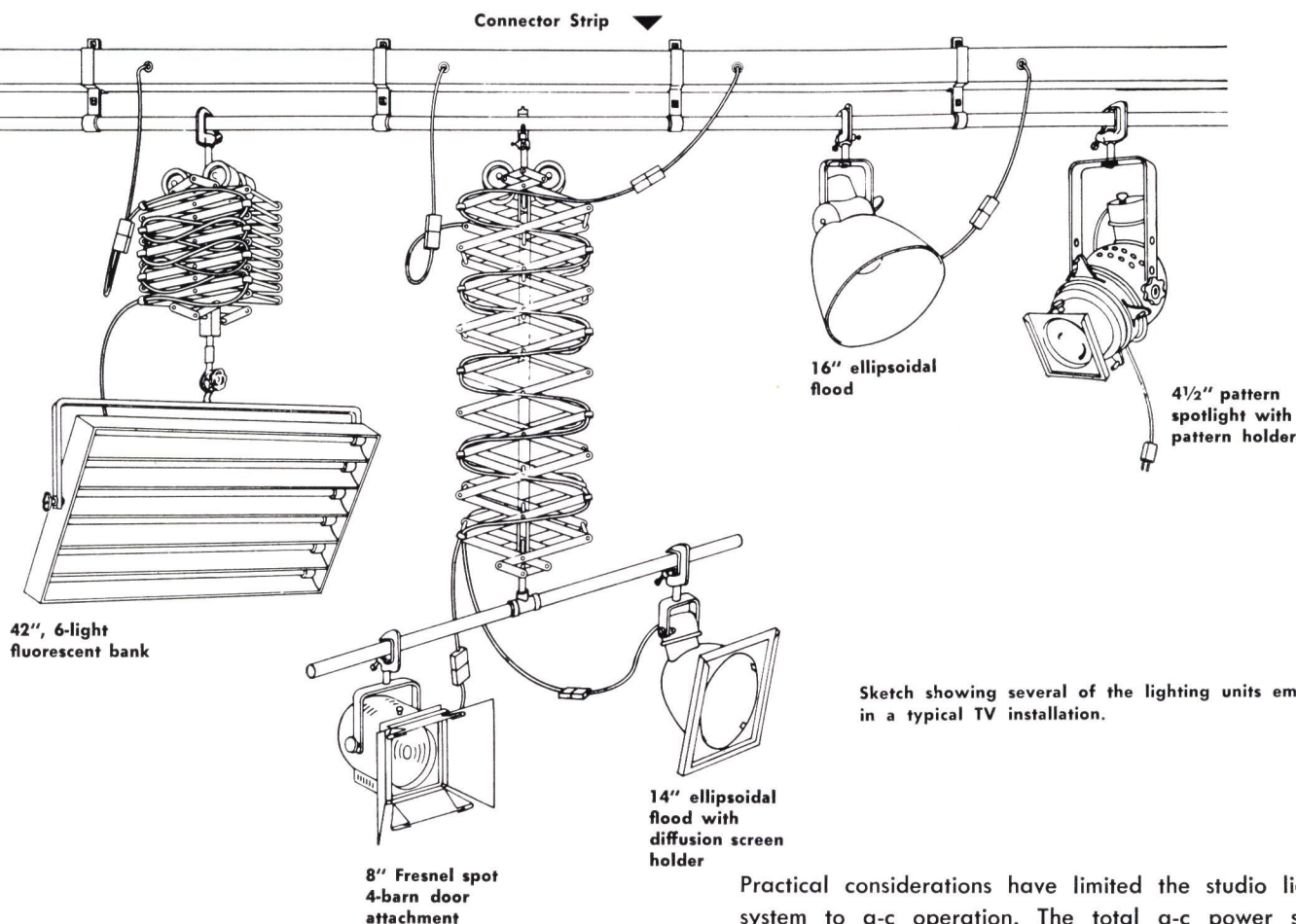
Custom combination auto-transformer board and patch panel where all the lighting load circuits terminate in "Saf-T-Plugs." The dimmers control female receptacles in the patch section. Fast easy selection and grouping of lighting loads is achieved in this low-cost assembly.

from overhead. The means of supporting the lighting fixtures is facilitated by the application tools—viz., grid-work and pantographs.

The ceiling height of 14 to 18 feet prompts the use of a primary-secondary type of grid structure using a 1¼-inch black iron pipe. The primary grid is installed as close to the ceiling as possible—allowing clearance for raceways, ducts, and sprinklers. From this permanent group of parallel pipes is suspended a secondary grid. The secondary pipes are suspended by means of double "C" clamps or chain from the primary pipes and are perpendicular to them. The criss-cross network formed should be on 6- to 8-foot centers to insure adequate facilities for suspension of fixtures. The secondary pipes allow flexibility, as they make it convenient to reposition a fixture at any point on the scene required. Normally, the resulting grid is spaced 12 to 14 feet from the studio floor. From this grid the fixtures can be hung directly, or through pantograph hangers.

Pantographs permit raising and lowering of lighting fixtures and when used with crossarms can support a number of fixtures. Current pantographs can support weights up to 60 pounds and allow for a vertical travel from 8½ to 12½ feet at maximum extensions. A number of pantographs supported from the grid have a great advantage for rapid vertical adjustment. Their most important use in the studio is the support of base lights which, for best pictures, should be approximately 8 feet from the floor.

For studios of ceiling heights above 16 feet a counter-weighted type of grid-work is recommended. This type of grid is described in Plan #3.



Sketch showing several of the lighting units employed in a typical TV installation.

Wiring and Control Devices

Mounted to the secondary pipes are the connector strips, each with 5 outlets. These outlets are pigtails of 3- or 4-foot cables with female stage connectors attached. A total of one ceiling outlet for every 20 square feet of working studio space should be provided in the studio.

From each connector strip, a 12-conductor cable brings the branch circuits directly, or through 4 by 4-inch duct to the studio lighting control. The control board is located on the studio floor so that the operator can view the scene or the control room for cues, and has sufficient switches and dimmers for the accurate and noiseless control of each outlet.

The switchboard should contain a master switch to make possible blackouts and control of everything but work lights. The power is fed to individually fused and switchable outgoing 20 amp. circuits—one for each ceiling outlet. With the addition of a dimmer board, even greater flexibility is obtained. Dimming makes possible special effects, transitions, and control of overall light level.

Practical considerations have limited the studio lighting system to a-c operation. The total a-c power service recommended for the switchboard input is 30 to 40 watts per square foot of working studio space from a 3-phase, 4-wire, 60-cycle system. In addition to this, a special floor outlet box is recommended. This outlet in the middle of the scenic studio area should have a 60-amp. female outlet and 3-pole switch to provide power for special high current equipment such as an electric range in the kitchen set.

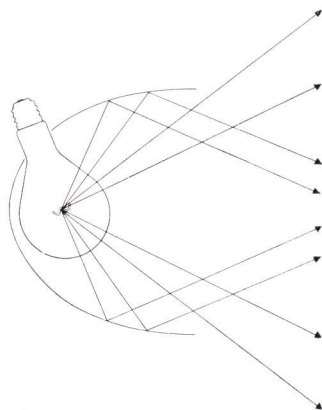
The wiring system of this studio should have, in addition, outlets and connectors of suitable uniformity to make possible complete interchangeability of cable, outlets, or instrument. An equipment ground, carried throughout the system, insures the safety of all personnel.

Lighting Sources

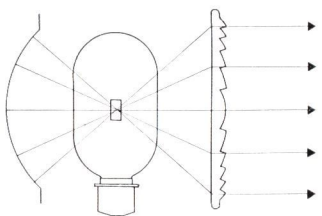
The scoop is a practical source to be considered for use in the TV studio. Several of these units on each scene can provide easily the desired wide angle base light. This light level will vary with the mood of the scene to be televised. When mounted on the pantograph hanger, they can be adjusted with the result that their beam strikes the scene at an angle no greater than 20 degrees and, with diffuser frames, give the proper breakup of the harsh light.

A number of Fresnel spotlights can provide the key and modeling light for the scenes. These units, together with suitable barn doors, can provide the proper, narrow-angled light to supply form for the scene. Their level should contribute a 20 to 30 percent increase in intensity above the average base lighting.

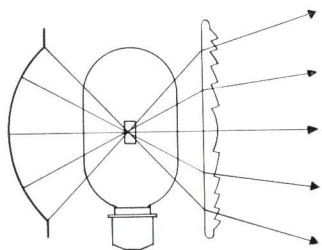
These spotlights can provide backlight of 50 percent greater intensity than the base light. The purpose of backlight is to separate the main actors from the background scenery.



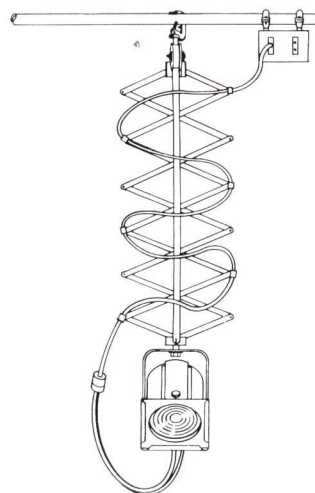
THE SCOOP: These 18-inch diameter, 750 to 2,000 watt wide angle, versatile floodlights provide efficient, soft, diffuse beam. Use with base and fill lights. Included are yoke, C-clamp and pin-connector. Also available are diffusers, cinemoid holder and pantographs.



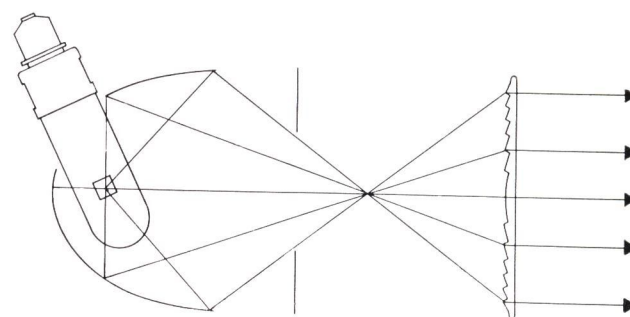
THE FRESNEL SPOT: This soft edge efficient spotlight is the single most valuable lighting instrument for TV usage. Spots rated 3-inch—150 watt, 6-inch—750 watt, 8-inch—2,000 watt, 12-inch—2,000 watt, 16-inch—5,000 watt, or 20-inch—10,000 watt provide variable beam spread in a smooth even field. Use with high and low key lighting, controlled fill lighting, or specials. Each spot includes, yoke, C-clamp, pin-connector. Also available are barn doors, "pole-op," rectangular beam lenses, "cookies," and "lite lifts."



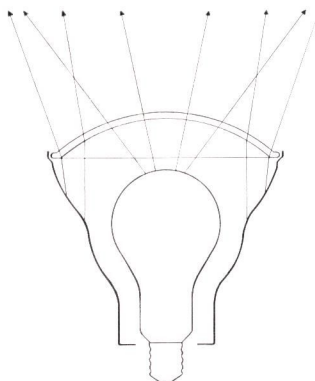
FOLLOW SPOTS: This is a useful specialized instrument available from 750 watts up to 5,000 watts. They provide a finely controlled beam of light with a hard-edge, and are recommended for use with follow spot, accent on star performer and special effect lights. They are provided with stand, yoke, iris, pin-connector and color booms, spread lenses and color wheels are available.



THE LIGHT-LIFT OR PANTOGRAPH: Negator springs permit automatic counter balance and height adjustment of these lighting fixtures. Light-Lifts are available for 12-15 pounds, 18-22 pounds, 26-30 pounds, 0-24 pounds, and 0-60 pound loads in either 7-foot or 12-foot extensions. They are used to quickly change the height or angle of a lamp, soften shadow when used with a fill-light scoop, or correct a shadow angle when used with a key-light fresnel.

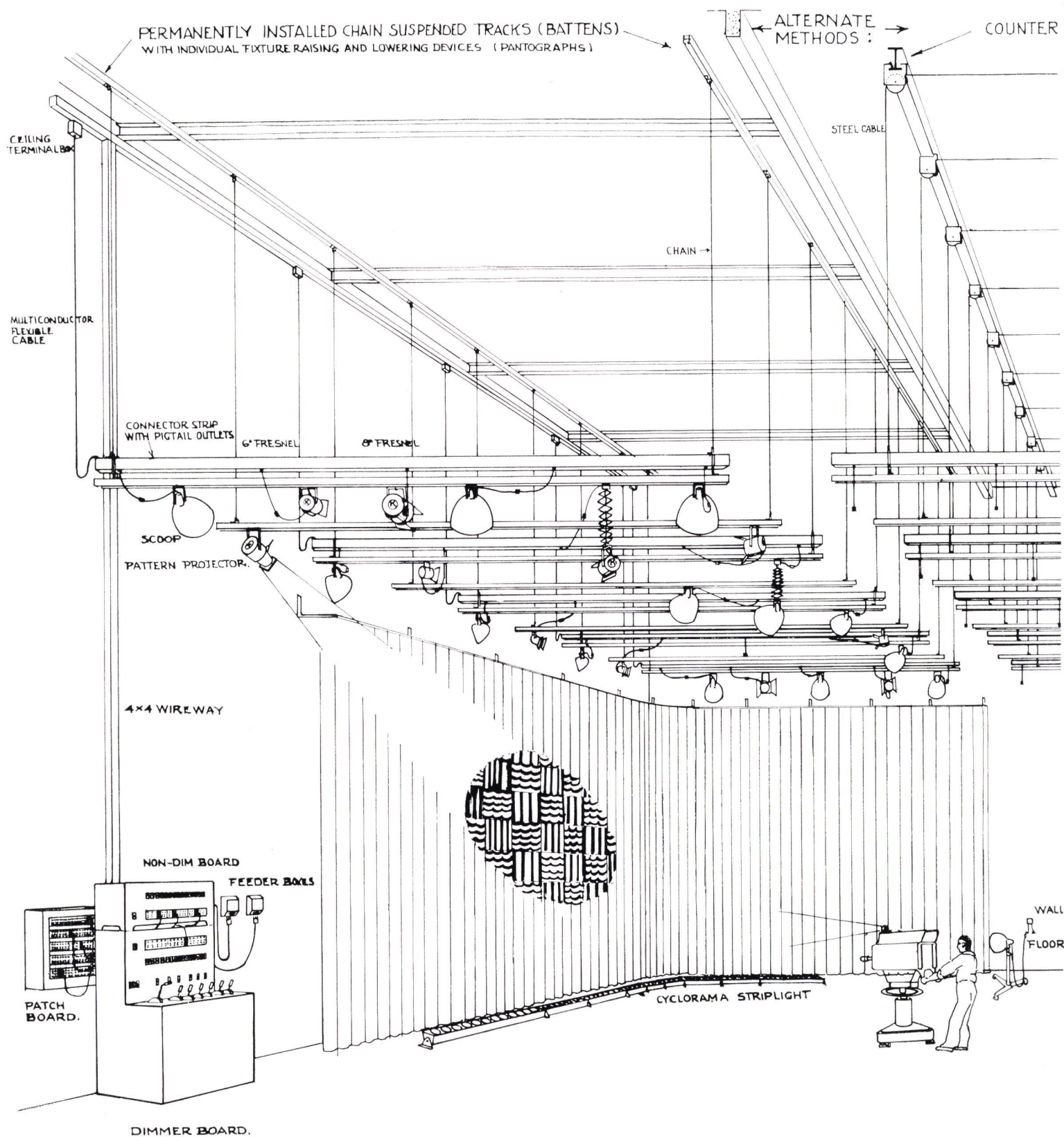


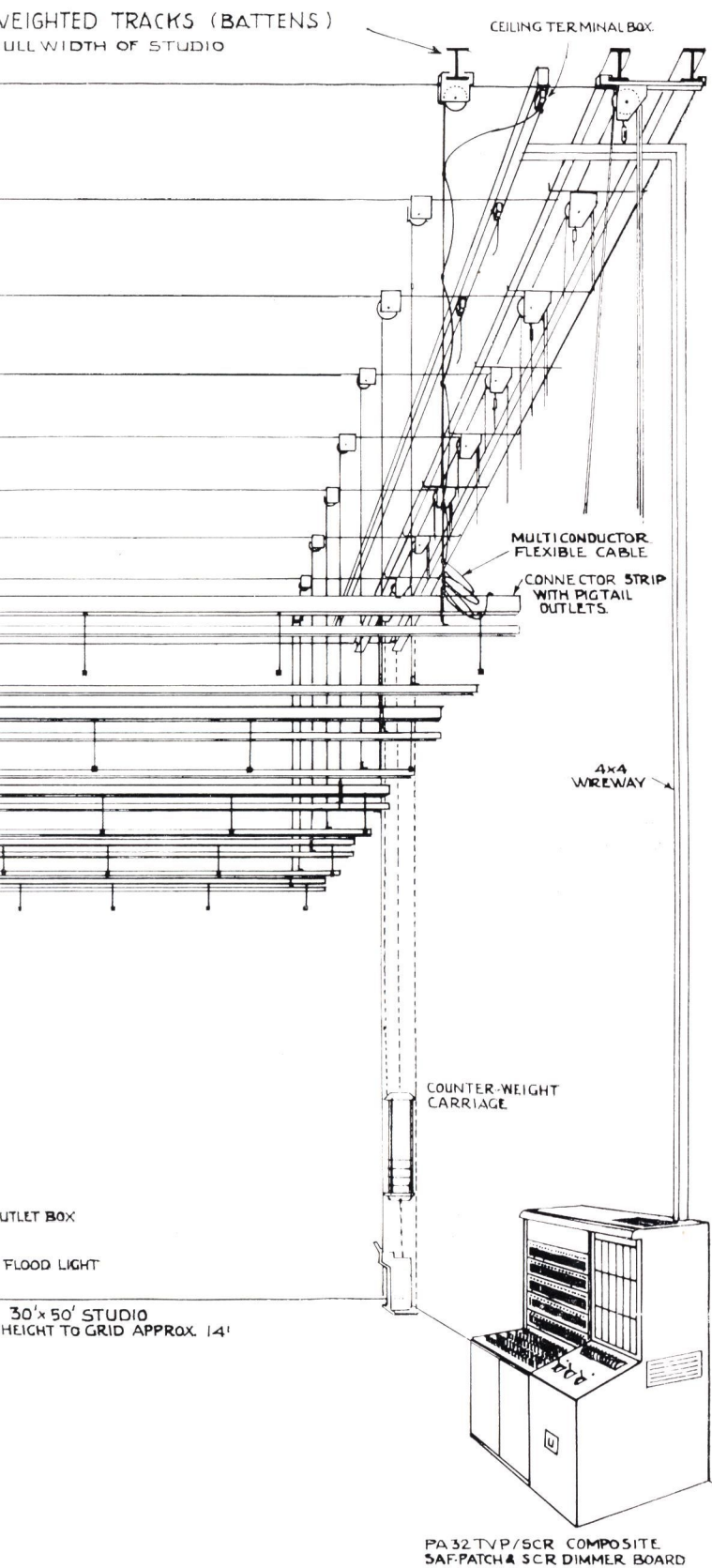
THE PATTERN PROJECTOR: This specialized unit is a controlled beam hard edge spotlight employing an ellipsoidal reflector and stepped or plano convex lens system. Available are 6-inch—750 watt, 8-inch—750 watt, 8-inch—2,000 watt, 8-inch—3,000 watt, 12-inch—5,000 watt units. They provide a clearly defined hard-edge beam. Gobos produce varied patterns on backgrounds. They can also be used with slash lights. The projectors include, yoke, C-clamp and pin-connector. Also available are patterns, variable lenses and iris.



THE STRIP LIGHT: A series of lamps are set in designed reflectors in an approved wire-way for efficient easy handling. Lamps, 6, 8 or 12 inches on center can be specified. These are used for background lighting, eye lighting, etc. Included are reflectors, trunions, leads and connectors. Color filters, roundels, cinemoid and clamps are useful accessories.

THE REAR SCREEN PROJECTOR: The rear screen projector has a one-to-one beam spread ratio and units of 2,000 watt, 2,100 watt 60 volt, 3,000 and 5,000 watt are available. They can be used as front or rear screen projectors. Each unit includes a stand and standard lens. Accessories available are automatic slide changers and super wide angle lens system.





Three Practical Equipment Plans

Obviously, each TV studio must be considered on the basis of its own size and the programming to be accomplished. However, included here are floor plans and equipment lists for three station plans. These plans will perhaps cover a majority of the applications met in actual practice.

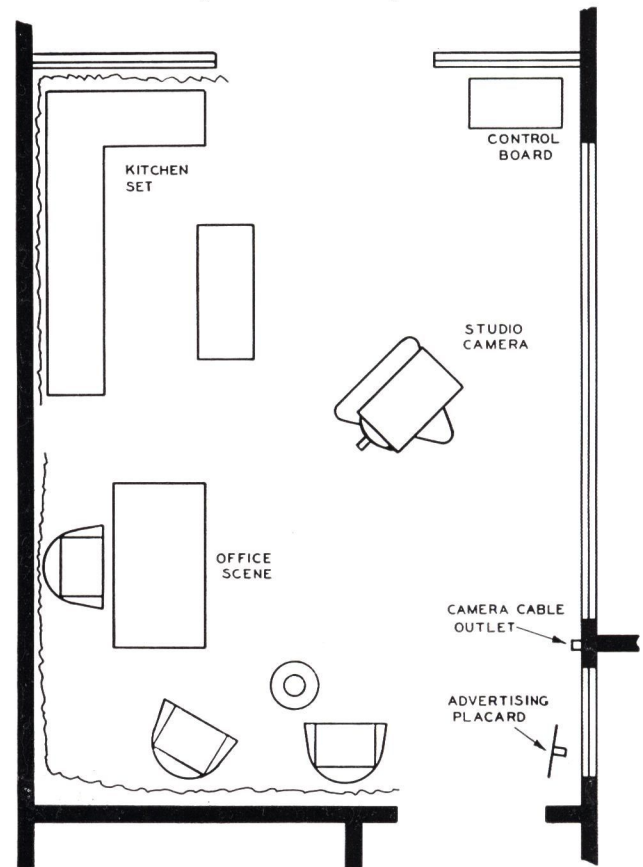
Plan #1

Portable Lighting Equipment Complement for a Semi-Permanent Studio (18' x 25', Two Scene)

In this plan, the studio will undoubtedly be used for repetitive type of programming. Local, unrehearsed shows such as panel discussions, interviews, local spots, kitchen shows or demonstrations will be predominant. Although the studio is a small 18 by 25-foot unit, it can accommodate a permanent kitchen set and an office scene. Space is also available for displaying the sponsor's products and advertising placards.

The lighting system for such a studio has previously been described from the standpoint of application tools, wiring and control devices, and sources. The equipment required for TV Studio Plan #1 is listed below.

Sketch showing studio scenic arrangement for Plan #1.



EQUIPMENT REQUIRED FOR PLAN #1

Qty.	Description	Stock Reference	
		Century	Kliegl
	FIXTURES (each with 3-wire, 3-pole connectors)		
4	Baby Scoop, 300-500 w.	1312G	1122TVG
4	Scoop, 750-2000 w.	1318G	1155TVG
2	3-Inch Fresnel Spotlight, 75-150 w.	523G	44N3TVG
4	6-Inch Fresnel Spotlight, 250-750 w.	520G	44N6TVG
4	8-Inch Fresnel Spotlight, 1000-2000 w.	570G	44N8TVG
1	Follow Spotlight with Iris, 250-750 w.	1567G	1365TVG/ Iris
1	Pattern Projector, 250-750 w.	1591TVG	1365PTVG
	ACCESSORIES		
4	Diffuser Frame, Baby Scoop	3225	1078C
4	Diffuser Frame, Scoop	3226	1078X
1	Roll of Spun Glass Diffuser	SGD	S-85
1	4-Way Barn Door for 3-Inch Fresnel	2579	10803A
2	2-Way Barn Door for 6-Inch Fresnel	2570	1080
1	4-Way Barn Door for 6-Inch Fresnel	2580	1080A
2	2-Way Barn Door for 8-Inch Fresnel	2571	1081
1	Set of Patterns for Pattern Projector	2085/2071	1097TV
3	Roller Caster Floor Stands	3216	1421
5	Lightweight Pantograph Hangers	3281	111TV
5	Short Extension Cables	18RCCG	10E955G
3	Medium Extension Cables	25RCCG	25E955G
	WIRING AND CONTROL DEVICES (3-Wire System)		
2	Portable Connector Strip, with 25 ft. Cable and 5 outlets and load end boxes	6315/5-20	2440TVG/ 25
2	Portable Connector Strip, with 35 ft. Cable and 5 outlets and load end boxes	6320/5-20	2440TVG/ 35
1	Portable Switch, Dimmer, and Distribution Panel with a minimum of 18-20 amp outlets	2803-18/ 2311P	2417TVG

Plan #2

TV Lighting Equipment Complement for a Permanent Studio (approx. 22' x 34' x 14' Ceiling)

The studio of Plan #2 might be classified as a general utility or "workshop" type of studio. Unlike the Plan #1 studio, it is capable of handling somewhat more complex programming involving more frequent setup changes. Dramatic, planned, or restricted sequence programs will originate from this (22 by 34 by 14 to 18-foot high) studio.

To fulfill the requirements of present and future programming, the lighting arrangement for this studio must be as flexible as possible. A criss-cross pipe grid on 6-foot centers and spaced 12 to 14 feet from the floor is used. With such a network and spacing, it is always easy to relocate a fixture on a desired point in a scene. Besides the fixtures themselves, the grid also supports the connector strips and pantograph hangers. Since the latter brings the fixtures within arm's reach, they facilitate the adjustment of fixtures with a minimum amount of time and effort on the part of electricians or other production personnel.

Safety and flexibility in the studio wiring system is assured by the use of six connector strips. Each has five pigtail female outlets and is fed from a terminal box on a 4-inch duct through rubber cable. Spaced uniformly on the secondary pipes, they provide 30 ceiling outlets or approximately one outlet for every 30 square feet of studio space. Five other double outlet circuits are provided 1 to 2 feet from the floor on the walls. The adequate branch circuits available at the switchboard make it possible to always find a convenient outlet in the studio. A uniform type of connector throughout the lighting system is suggested to permit interchangeability.

All ceiling and floor outlets are wired to the switchboard where they are switchable or dimmable either collectively or individually, by a patchboard where each outlet is provided with a counterbalanced, retractable cord and male plug. They are patched into the desired bank of grouped female jacks, and, in turn, can be energized by breaker switches. The patching feature makes it possible to group all the fixtures associated with a particular scene to one

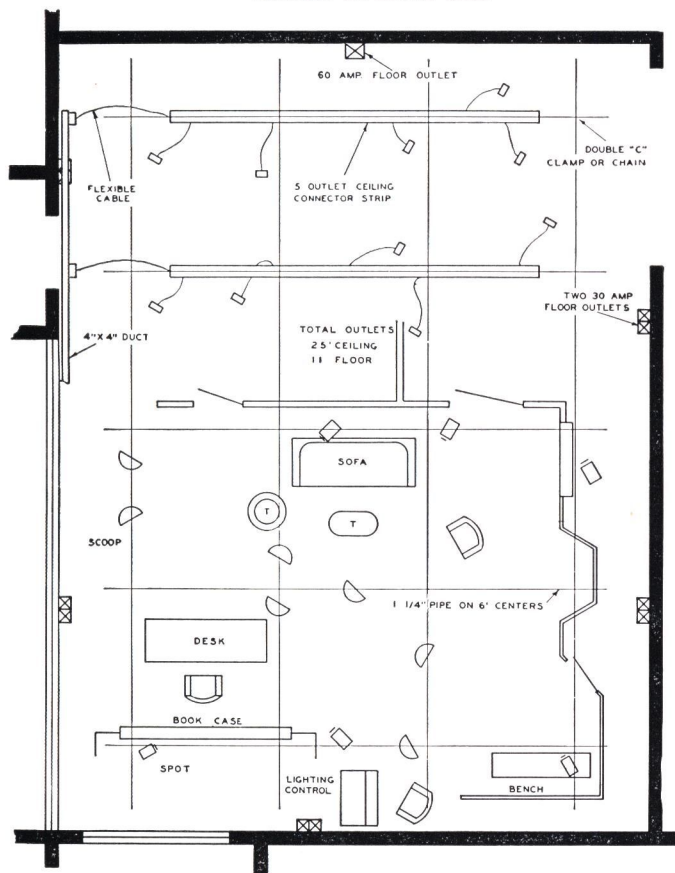
EQUIPMENT REQUIRED FOR PLAN #2

Qty.	Description	Stock Reference	
		Century	Kliegl
	FIXTURES (each with 3-wire, 3-pole connectors)		
6	Baby Scoop, 300-500 w.	1312G	1122TVG
6	Scoop, 750-2000 w.	1318G	1155TVG
3	3-Inch Fresnel Spotlight, 75-150 w.	523G	44N3TVG
12	6-Inch Fresnel Spotlight, 250-750 w.	520G	44N6TVG
5	8-Inch Fresnel Spotlight, 1000-2000 w.	570G	44N8TVG
2	Follow Spotlight with Iris, 250-750 w.	998G	1365TVG/ Iris
2	Pattern Projector, 250-750 w.	1591TVG	1365PTVG
	ACCESSORIES		
6	Diffuser Frame, Baby Scoop	3225	1078C
6	Diffuser Frame, Scoop	3226	1078X
1	Roll of Spun Glass Diffuser	SGD	S-85
1	4-Way Barn Door for 3-Inch Fresnel	2579	10803A
4	2-Way Barn Door for 6-Inch Fresnel	2570	1080
2	4-Way Barn Door for 6-Inch Fresnel	2580	1080A
2	2-Way Barn Door for 8-Inch Fresnel	2571	1081
2	Set of Patterns for Pattern Projector	2085/2071	1097TV
5	Roller Caster Floor Stands	3216	1421
8	Lightweight Pantograph Hangers	3281	111TV
2	Heavyweight Pantograph Hangers	3283	112TV
10	Short Extension Cables	18RCCG	10E955G
6	Medium Extension Cables	25RCCG	25E955G
	WIRING CONTROL DEVICES (3-Wire System)		
6	Connector Strips, with 5 outlets and 20 ft. cables	6315-5/20	2432G/20
2	Wall Outlet, 2 Way, 20 amp.	3047	2433G/2
1	Wall Outlet, 1-way, 60 amp., 3 phase	3049	2405TVG/ 60
1	Switch, Dimmer, and Load Selection Control Board with a minimum of 30-20 amp. outlets	2P11M/ PS22	2409TVG/ 2416TVG/

master and dimmer. Lastly, the studio light control must be capable of supplying 25 KW of fused power or almost 30 watts per square foot of studio floor space.

From an engineering standpoint, the lighting sources must provide the proper quality and quantity of light needed to produce a good TV picture. Practically, it has been found that incandescents or a combination of fluorescents and incandescents can provide the quality of light to insure proper tonal rendition for monochrome cameras. Fluorescents cannot be mixed with incandescents for color cameras because of their wide difference in effective color temperature. The quantity of light reflected from the TV scene must be sufficient to allow the camera to produce a picture of acceptable signal-to-noise ratio. The average lighting level is 100 foot-candles for monochrome, but it is recommended that sufficient sources be available to produce about 400 foot-candles of incident light in order that there be proper flexibility in control and lens stops for future color productions.

NOTE: LAYOUT IS SYMMETRICAL, UPPER HALF PLAN BEING CEILING ARRANGEMENT AND LOWER HALF SCENIC



Sketch showing the studio lighting arrangement for Plan #2.

Plan #2 (Alternate)

TV Lighting Equipment Complement for a Permanent Studio (approx. 30' x 50' x 27' Ceiling)

The television studio of "Plan #2 Alternate" is similar to Plan #2, except that this plan can accommodate two more scenes. In using a higher ceiling in a larger studio, a counterweighted batten is employed as shown in the sketch at left. "Plan #2 Alternate" studio is 30 by 50 feet and can also be classified as a workshop type of studio. Lighting equipment is listed below.

EQUIPMENT REQUIRED FOR ALTERNATE PLAN #2

Qty.	Description	Stock Reference	
		Century	Kliegl
	FIXTURE (each with 3-wire, 3-pole connectors)		
10	Baby Scoop, 300-500 w.	1312G	1122TVG
10	Scoop, 750-2000 w.	1318G	1155TVG
4	3-Inch Fresnel Spotlight, 75-150 w.	523G	44N3TVG
16	6-Inch Fresnel Spotlight, 250-750 w.	520G	44N6TVG
8	8-Inch Fresnel Spotlight, 1000-2000 w.	570G	44N8TVG
2	Fresnel Senior Spotlight, 2000 w.	572G	44N12TVG
2	Striplight	431TVG	606TVG/8
3	Follow Spotlight with Iris, 250-750 w.	1592G	1365TVG/Iris
3	Pattern Projector, 250-750 w.	1591TVG	1365PTVG
1	Follow Spotlight with Iris, 1000 w.	988G	1336TVG/Iris
ACCESSORIES			
10	Diffuser Frame, Baby Scoop	3225	1078C
10	Diffuser Frame, Scoop	3226	1078X
1	Roll of Spun Glass Diffuser	SGD	S-85
2	4-Way Barn Door for 3-Inch Fresnel	2579	10803A
6	2-Way Barn Door for 6-Inch Fresnel	2570	1080
2	4-Way Barn Door for 6-Inch Fresnel	2580	1080A
4	2-Way Barn Door for 8-Inch Fresnel	2571	1081
1	2-Way Barn Door for Senior Fresnel	2573	1082
2	Set of Patterns for Pattern Projector	2085/2071	1097TV
6	Roller Caster Floor Stands	3216	1421
8	Lightweight Pantograph Hanger	3281	111TV
4	Heavyweight Pantograph Hanger	3283	112TV
16	Short Extension Cable	18RCCG	10E955G
6	Medium Extension Cable	25RCCG	25E955G
WIRING AND CONTROL DEVICES			
14	12-ft. Connector strip with 5 outlets & 20-ft. of Cable	6312/5-20	2431G/20
4	Wall Outlet, 2-way, 20 amp.	3047	2433G/2
1	Wall Outlet, 1-way, 60 amp., 3 phase	3049	2405TVG/20
1	Switch, Dimmer,, and Load Selection Control Board with a minimum of 70-20 amp. outlets, 6-6 kw dims, 6-6 kv: non-dims, 1-200 amp. main switch	2811M/2884	PA32TVP/SCR

Plan #3

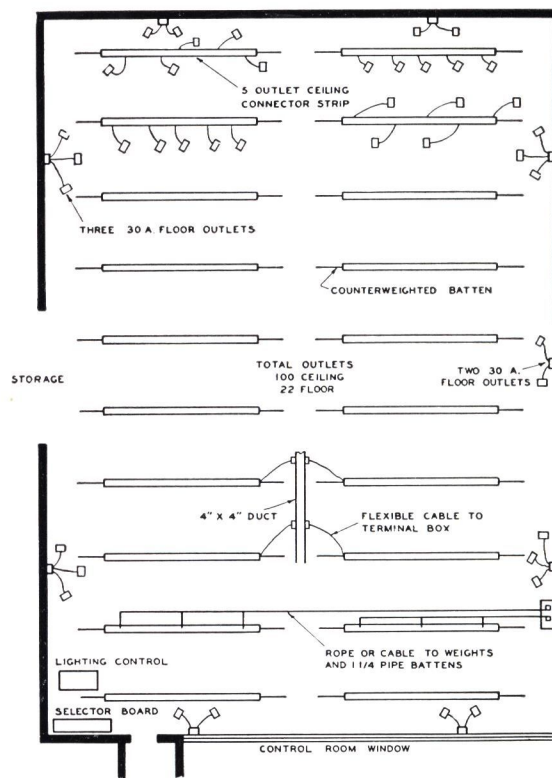
TV Lighting Equipment Complement for a Permanent Studio (approx. 40' x 60' x 27' Ceiling)

The studio of Plan #3 offers greater versatility than that of the previous plans described. It will originate a variety of dramatic shows and commercial sequences. Having a 40 by 60 foot working space, it requires approximately 100 branch circuits. Branch circuits may be grouped as scenery requires by means of a patch or rotary selector board. They, in turn, are switched and dimmed at the control board.

EQUIPMENT REQUIRED FOR PLAN #3

Qty.	Description	Stock Reference	
		Century	Kliegl
FIXTURES (each with 3-way, 3-pole connectors)			
15	Baby Scoop, 300-500 w.	1312G	1122TVG
15	Scoop, 750-2000 w.	1318G	1155TVG
4	3-Inch Fresnel Spotlight, 75-150 w.	523G	44N3TVG
20	6-Inch Fresnel Spotlight, 250-750 w.	520G	44N6TVG
15	8-Inch Fresnel Spotlight, 1000-1500 w.	570G	44N8TVG
3	12-Inch Fresnel Senior Spotlight, 2000 w.	572G	44N12TVG
4	Striplight	431TVG	606TVG/8
3	Follow Spotlight with Iris, 250-750 w.	1592G	1365TVG/ Iris
4	Pattern Projector, 250-750 w.	1581G	1365PTVG
2	Follow Spotlight with Iris, 1000 w.	998G	1366TVG/ Iris
ACCESSORIES			
15	Diffuser Frame, Baby Scoop	3225	1078C
15	Diffuser Frame, Scoop	3226	1078X
2	Roll of Spun Glass Diffuser	SGD	S-85
2	4-Way Barn Door for 3-Inch Fresnel	2579	10803A
8	2-Way Barn Door for 6-Inch Fresnel	2570	1080
3	4-Way Barn Door for 6-Inch Fresnel	2580	1080A
8	2-Way Barn Door for 8-Inch Fresnel	2571	1081
1	2-Way Barn Door for Senior Fresnel	2573	1082
2	Set of Patterns for Pattern Projector	2085/2071	1097TV
8	Roller Caster Floor Stands	3216	1421
12	Lightweight Pantograph Hanger	3281	111TV
6	Heavyweight Pantograph Hanger	3283	112TV
20	Short Extension Cable	18RCCG	10E955G
10	Medium Extension Cable	25RCCG	25E955G
WIRING AND CONTROL DEVICES			
20	15 ft. Connector Strip with 5 outlets	6315-5/20	619G/15/5
5	Wall Outlet, 2-way	3047	2433G/2
2	Wall Outlet, 1-way, 50 amp., 3 phase	3049	2405TVG/ 60
1	Switch, Dimmer, and Load Selection Control Board with a minimum of 100-20 amp. Circuits, 12-6000 w. dimmers and 1-200 amp. main switch	2872/2836/ 2882-2	PA33TVP/ 12/110

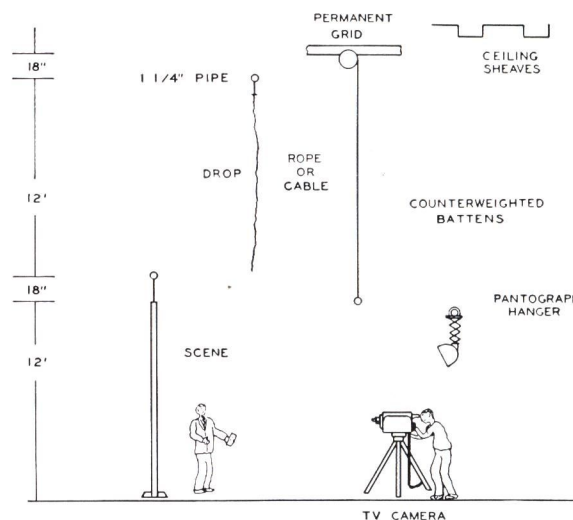
Sketch of Plan #3 studio (40 x 60) showing lighting arrangement.



Summary of Lighting Plans

Type	Size		Area (sq. ft.)	Outlets		Scenes
	Diam.	Ht.		Ceiling	Floor	
1 Camera Temporary	18x25	14	450	20	0	2
1 Camera Permanent	22x34	14	750	30	5	4
2 Camera Permanent	30x50	27	1500	60	9	6
3 Camera Permanent	40x60	27	2400	100	12	8

MINIMUM 27' CEILING



Studio arrangement for proper ceiling height to permit varying scenery set heights.

ORDERING INFORMATION

The following Kliegl Brothers Lighting Equipment is available from RCA

DESCRIPTION	TYPE	DESCRIPTION	TYPE
Scoop (less lamps) with Connectors & "C" Clamp		Equipment Extension Cables (Continued)	
750/2000 W. 18" Scoop.....	1155TVG	25 Ft. #12-3 with 955G Connector.....	25E955G
300/500 W. 15" Scoop.....	1122TVG	25 Ft. #10-3 with 956G Connector.....	25E956G
1000/1500 W. 15" Kliegsun.....	1143TVG	25 Ft. #6-3 with 957G Connector.....	25E957G
750/1000 W. Long Range Scoop.....	1158TVG	25 Ft. #2-3 with 958G Connector.....	25E958G
Slimline Fixtures (less lamps) with Separate or In-Built Ballasts		25 Ft. #1-3 with 958G Connector.....	25E958XG
4-42" Tubes with Separate Ballasts.....	4SB42TVG	25 Ft. #6-4 with 3957G Connector.....	25E3957G
4-64" Tubes with Separate Ballasts.....	4SB64TVG	25 Ft. #6-5 with 4957G Connector.....	25E4957G
6-42" Tubes with Separate Ballasts.....	6SB42TVG	Connectors	
6-64" Tubes with Separate Ballasts.....	6SB64TVG	20 A., 2 Wire, Plus Ground.....	955G
4-42" Tubes with In-Built Ballasts.....	4WB42TVG	30 A., 2 Wire, Plus Ground.....	956G
4-64" Tubes with In-Built Ballasts.....	4WB64TVG	60 A., 2 Wire, Plus Ground.....	957G
6-42" Tubes with In-Built Ballasts.....	6WB42TVG	100 A., 2 Wire, Plus Ground.....	958G
6-64" Tubes with In-Built Ballasts.....	6WB64TVG	20 A., 3 Wire.....	3955
Fluorescent Fixtures (less lamps) with In-Built Ballasts		30 A., 3 Wire.....	3956
4-48" Tubes with In-Built Ballasts.....	4WBS48TVG	60 A., 3 Wire.....	3957
6-48" Tubes with In-Built Ballasts.....	6WBS48TVG	100 A., 3 Wire.....	3958
Fresnel Lens Spotlight (less lamps) with Connectors & "C" Clamp		100 A., 3 Wire, Plus Ground.....	3958G
100/150 W. 3" Lens.....	44N3TVG	30 A., 4 Wire.....	4956
500/750 W. 6" Lens.....	44N6TVG	60 A., 4 Wire.....	4957
500/750 W. 6" Oval Beam Lens.....	44NO6TVG	60 A., 4 Wire, Plus Ground.....	4957G
500/750 W. Medium Bi-Post 6" Lens.....	44P6TVG	100 A., 4 Wire.....	4958
500/750 W. Medium Bi-Post 6" Oval Beam Lens.....	44PO6TVG	Multi-Conductor Flexible Cable	
3-Section Pole for Pole/Op Units.....	44 Pole	12 Conductors of #12 Wire.....	12/12
6" Fresnel for Pole Operation.....	44N6TVG/Pole-Op	6 Conductors of #6 Wire.....	12/6
6" Oval Beam for Pole Operation.....	44NO6TVG/Pole-Op	4 Conductors of #6 Wire with 4 Grounds.....	6/4G
6" Medium Bi-Post for Pole Operation.....	44P6TVG/Pole-Op	Hanging Devices	
6" Medium Bi-Post Oval Beam for Pole Operation.....	44P6TVG/Pole-Op	Counterbalanced Hanger for Scoops, 6" Fresnel.....	111TV
1000/2000 W. 8" Lens.....	44N8TVG	Same as above for 8" Fresnel.....	112TV
Same as above with Oval Beam Lens.....	44NO8TVG	Same as above for 12" Fresnel of Slimlines.....	113TV
1000/2000 Watt with Medium Bi-Post Socket 8".....	44P8TVG	Double C-Clamp for Supporting Secondary Grids.....	119TV
Same as above with Oval Beam Lens.....	44PO8TVG	Adjustable Lighting Fixture Support (5 Ft.).....	120TV
8" Fresnel for Pole Operation.....	44N8TVG/Pole-Op	Adjustable Light Batten Support (5 Ft.).....	121TV
8" Oval Beam Fresnel for Pole Operation.....	44NO8TVG/Pole-Op	Non-adjustable Light Batten Support (4 Ft.).....	122TV
8" Medium Bi-Post Fresnel for Pole Operation.....	44P8TVG/Pole-Op	Scenery Clamp to Hold Fixture Directly on Scenery.....	1867
Same as above with Oval Beam Lens		Roller Caster Stands	
for Pole Operation.....	44PO8TVG/Pole-Op	Portable Light Boom with Side Arms.....	1414A
2000 W. 12" Fresnel.....	44N12TVG	19" Roller Caster Adjustable from 36"-64".....	1420
Same as above for Pole Operation.....	44N12TVG/Pole-Op	Same as above with 25" Roller Caster.....	1421
5000 W. 16" Fresnel.....	44N16TVG	Same as above Adjustable from 54"-94".....	1421XH
Same as above for Pole Operation.....	44N16TVG/Pole-Op	30" Roller Caster Adjustable from 36"-64".....	1422
10,000 W. 20" Fresnel.....	44N20TVG	Same as above Adjustable from 66"-156".....	1422/3
Klieglights (less lamps) with Connector & "C" Clamp		30" Roller Caster Adjustable from 24"-40".....	1427
500 W. 6" Lens Pattern Projector.....	1365PTVG	Background Projection	
Same as above with Wide Angle Lens.....	1365PWTVG	Achromatic Lens Unit, 2100 W.....	1674ATVG
500 W. 6" Lens with Iris Shutters.....	1365TVG/Iris	Same as above, 5000 W. Lamp.....	1676ATVG
500 W. 6" Lens Klieglight.....	1365TVG	Slide Changer for 1674, Holds 7 Slides.....	1677TVG
Same as above with Wide Angle Lens.....	1365WTVG	Slide Changer for 1676, Holds 7 Slides.....	1678TVG
2000 W. 6" Lens Pattern Projector.....	1366PTVG	Special Purpose Units (less lamps)	
Same as above with Wide Angle Lens.....	1366PWTVG	Striplight 4 Ft. Long for 150-300 Watt Lamps.....	600TVG
2000 W. 6" Lens with Iris Shutters.....	1366TVG/Iris	Striplight 4 Ft. Long with 6 Alzak Reflectors.....	602TVG
2000 W. 6" Lens Klieglight.....	1366TVG	Striplight 2 Ft. Long for 4 Lamps.....	606TVG/2
1000/2000 W. with 8" Narrow Beam Lens.....	1368TVG	Same as above, 4 Ft. Long for 7 Lamps.....	606TVG/4
Same as above for Pattern Projecting.....	1368PTVG	Same as above, 8 Ft. Long for 14 Lamps.....	606TVG/8
3000 W. 6" Lens Pattern Projector.....	1374PTVG	Color Frame for #600TVG & 602TVG.....	802
Same as above with Wide Angle Lens.....	1374PWTVG	Adapter to Hold #802 Color Frame.....	802A
3000 W. 6" Lens Klieglight.....	1374TVG	Connector Strips	
Same as above with 8" Narrow Beam Lens.....	1375TVG	Any Length Strip with Pigta. is from 20A-100A.....	619G
Same as above for Pattern Projecting.....	1375PTVG	12 Ft. Connector Strip without Feed Cable.....	2431G
Set of 16 Patterns for All Projectors.....	1097TVG	Same as above with 10 Ft. #12/12 Feed Cable.....	2431G/10
Follow Spotlights (less lamps)		Same as above with 15 Ft. of Cable.....	2431G/15
2000 W. 12" Lens.....	1174TVG	Same as above with 20 Ft. of Cable.....	2431G/20
Same as above with Four Color Boomerang.....	1175TVG	Same as above with 25 Ft. of Cable.....	2431G/25
3000 W. 12" Lens.....	1178TVG	8 Ft. Connector Strip without Feed Cable.....	2432G
Same as above with Wide Beam Lens.....	1178WTVG	Same as above with 10 Ft. #12/12 Feed Cable.....	2432G/10
3000 W. 12" Lens, Color Box (5 color).....	1179TVG	Same as above with 15 Ft. of Feed Cable.....	2432G/15
Same as above with Wide Beam Lens.....	1179WTVG	Same as above with 20 Ft. of Feed Cable.....	2432G/20
Equipment Extension Cables		Same as above with 25 Ft. of Feed Cable.....	2432G/25
10 Ft. #12-3 with 955G Connector.....	10E955G	Wall Boxes	
10 Ft. #10-3 with 956G Connector.....	10E956G	Wall Box with 2 Grounded Pigta. is Each 18".....	2433G/2
10 Ft. #6-3 with 957G Connector.....	10E957G	Same as above with 3 Grounded Pigta. is Each 18".....	2433G/3
10 Ft. #2-3 with 958G Connector.....	10E958G	Same as above with 4 Grounded Pigta. is Each 18".....	2433G/4

Ordering Information—Kliegl Brothers Lighting Equipment (Continued)

DESCRIPTION	TYPE	DESCRIPTION	TYPE
Switch Sets		Portable Plugging Boxes	
20 A. with #955G Connector.....	525/20G	Portable Plugging Box with 6, 20 Amp Outlets for Two Wire Plus Ground Main.....	456TVG-2
30 A. with #956G Connector.....	525/30G	Same as above with 3 Ft. Feeder Cable and Male Connector.....	456TVG-2/3
60 A. with #957G Connector.....	526/60G	Same as above with 25 Ft. Feeder Cable and Lugs.....	456TVG-2/25
100 A. with #958G Connector.....	527/100G	Portable Plugging Box with 6, 20 Amp Outlets for 3 Wire Plus Ground Main.....	456TVG-3
Barn Doors		Same as above with 3 Ft. Feeder Cable and Male Connector.....	456TVG-3/3
4 Way for 3" Fresnel.....	10803A	Same as above with 25 Ft. Feeder Cable and Lugs.....	456TVG-3/25
2 Way for 6" Fresnel.....	1080	Portable Plugging Box with 6, 20 Amp Outlets for 4 Wire Plus Ground Main.....	456TVG-4
4 Way for 6" Fresnel.....	1080A	Same as above with 3 Ft. Feeder Cable and Male Connector.....	456TVG-4/3
2 Way for 8" Fresnel.....	1081	Same as above with 25 Ft. Feeder Cable and Lugs.....	456TVG-4/25
4 Way for 8" Fresnel.....	1081A	Portable Plugging Box with 6, 30 Amp Outlets for Two Wire Plus Ground Main.....	457TVG-2
2 Way for 12" Fresnel.....	1082	Same as above for 3 Wire Plus Ground Main.....	457TVG-3
4 Way for 12" Fresnel.....	1082A	Same as above for 4 Wire Plus Ground Main.....	457TVG-4
2 Way for 16" Fresnel.....	1083	Portable Plugging Box with 6, 60 Amp Outlets for 3 Wire Plus Ground Main.....	458TVG-3
4 Way for 16" Fresnel.....	1083A	Same as above for 4 Wire Plus Ground Main.....	458TVG-4
2 Way for 15" Scoop.....	1084	Portable Wiring and Control Systems	
4 Way for 15" Scoop.....	1084A	Portable Patch Plug Set with #2432TVG Connector Strip, #2435C Load End Patch Box, and 20 Ft. #12/12 Cable.....	2440TVG/20
2 Way for 18" Scoop.....	1091	Same as above with 25 Ft. #12/12 Cable.....	2440TVG/25
4 Way for 18" Scoop.....	1091A	Same as above with 35 Ft. #12/12 Cable.....	2440TVG/35
2 Way for Long Range Scoop.....	1092	Portable Patch Plug Set but Ungrounded (2 Wire) with 20 Ft. Cable (Otherwise same as #2440TVG/20).....	2141TV/20
4 Way for Long Range Scoop.....	1092A	Same as above with 25 Ft. Cable.....	2141TV/25
2 Way for 20" Fresnel.....	1093	Same as above with 35 Ft. Cable.....	2141TV/35
4 Way for 20" Fresnel.....	1093A	Location Feeder Box, for 4 Pole Plus Ground, 60 Amp.....	2405TVG60
Diffuser Frames and Mediums		Location Feeder Box, for 4 Pole Plus Ground, 100 Amp.....	2405TVG100
Diffuser Frame for 3" Fresnel.....	1032	Double Location Feeder Box.....	2405TVG100/2
Diffuser Frame for 6" Fresnel and 6" Klieglight.....	1036	Junction Box for use with #2432G Connector Strip.....	2406G
Diffuser Frame for 12" Fresnel and Follow Spots.....	1039	Patch Box (Surface Type) for 100 Circuits.....	2407TVG
Diffuser Frame for 20" Fresnel.....	1040	Portable Non-dim Board with 15 Non-dim Outlets (20A).....	2409TVG
Diffuser Frame for 18" Scoop.....	1078	Portable Dimmer Switchboard with 5, 6000 Watt Auto-Transformer Dimmers, each with 3, 20 Amp Outlets.....	2416TVG
Diffuser Frame for Long Range Scoop.....	1078B	Same as above with 6, 6000 Watt Dimmers.....	2417TVG
Diffuser Frame for 15" Scoop.....	1078C	Roller Caster Stand for #2409TVG Non-dim Board.....	2418TV
Diffuser Frame for 18" Scoop (Quick Change).....	1078X	Side Arms and Pipe Clamps	
Frames for 8" Spots, 1366 Klieglights.....	570	Pipe Clamp Tapped for 1/2-inch—13 Threaded Screw.....	1850
Diffuser Frames for 1376.....	581	Tapped for 1/2-inch Pipe Connection.....	1850A
Diffuser Frames for 16" Fresnel.....	585A	(Standard) Tapped for 3/8—16 Threaded Screw.....	1850B
20" by 24" Sheets Color Filters.....	Cinemoid	Tapped for 1/4-inch 20 Threaded Screw.....	1850C
12 Ft. Roll Spun Glass—3 Ft. Wide.....	S-85	Side Arm 12 Inches Long, 1/2-inch ID Pipe.....	1860
Fibre Glass (sold by the yard).....	F-86	Same as above 18 Inches Long, 1/2-inch ID Pipe.....	1860A
Infra Red Reflecting Filter for 6" Fresnel.....	IR-6	Side Arm 12 Inches Long, 1-inch ID Pipe.....	1860B
Infra Red Reflecting Filter for 8" Fresnel.....	IR-8	Same as above 18 Inches Long, 1-inch ID Pipe.....	1860C
Infra Red Reflecting Filter for 12" Fresnel.....	IR-12	Lighting Layout Packages	
Infra Red Reflecting Filter for 16" Fresnel.....	IR-16	Portable Field Package.....	25A
Infra Red Reflecting Filter for 18" Fresnel.....	IR-18	Studio Package with Non-dim Switchboard.....	25B
Electro-Mechanical Effects		Studio Package with Rotolector Switchboard.....	26A
Radium Paint.....	1180	Studio Package with Patch Type Switchboard.....	26B
Ultra-violet Filters.....	1183	Studio Package with Rotolector and SCR Dimmers.....	27A
Electric Smoke Box.....	209	Studio Package with Rotolectors and Auto-Transformers.....	27B
Electric Smoke Powder for #209.....	209A	Studio Package with Saf-Patch and SCR Dimmers.....	27C
Flash or Explosion Boxes.....	215	Studio Package with Saf-Patch and Auto-Transformers.....	27D
Flash Powder for #215.....	215A	Studio Package with Rotolectors and SCR Dimmers.....	28A
Mephisto Spark Effect.....	224	Studio Package with Rotolectors and Auto-transformers.....	28B
Twinkling Stars (24) with Keyboard.....	228G	Studio Package with Saf-Patch and SCR Dimmers.....	28C
Automatic Lightning Striker.....	233	Studio Package with Saf-Patch and Auto-Transformers Dimmers.....	28D
Crystal Shower (18").....	244A	Switch Boards	
Crystal Shower (22").....	244B	Switch, SCR Dimmer and Load Selection Control Board with 6—6 kw Dimmers and 6—6 kw Non-dims and a minimum of 70—200 Amp Outlets and a 200 Amp 3 Pole Main Switch.....	PA32TVP/SCR
Crystal Shower (30").....	244C	Switch, Dimmer and Load Selection Control Board with 12—6 kw Dimmers and a minimum of 110—200 Amp 3 Pole Main Switch.....	PA33TVP/12/110
Scenic Effects			
Falling Flowers.....	98		
Moonlight Water Ripple.....	129		
Moving Clouds with Rising or Setting Moon.....	132		
Moving Fleecy Clouds.....	135		
Moving Storm Clouds.....	138		
Ocean Waves.....	151		
Rising Fire and Smoke.....	164		

ORDERING INFORMATION

The following Century Lighting Equipment is available from RCA

Fixtures Less Lamps (Grounded and with "C" Clamp and Pin Connectors)		
DESCRIPTION		TYPE
Fresnelites		
3" 75-100-125-150 W. Fresnelite Camera Light.....	523G	
2 Way Barn Door for #523.....	2569	
4 Way Barn Door for #523.....	2579	
Diffuser Frame for #523.....	3220	
6" 250-500-750 W. Fresnelite.....	520G	
2 Way Barn Door for #520.....	2570	
4 Way Barn Door for #520.....	2580	
Diffuser Frame for #520.....	3221	
8" 1000-2000 W. Fresnelite.....	570G	
2 Way Barn Door for #570.....	2571	
4 Way Barn Door for #570.....	2581	
Diffuser Frame for #570.....	3222	
8" 1000-2000 W. Fresnelite, Pole Op, Rear Access, Rapid Screw Feed.....	570POG	
2 Way Barn Door for #570G.....	2571	
4 Way Barn Door for #570G.....	2581	
Diffuser Frame for #570G.....	3222	
12" 1000-2000 W. Fresnelite, Pole Op, Rear Access, Rapid Screw Feed.....	572G	
2 Way Barn Door for #572.....	2573	
4 Way Barn Door for #572.....	2587	
Diffuser Frame for #572.....	3242	
16" 3000-5000 W. Fresnelite, Pole Op. Rear Access, Rapid Screw Feed.....	576G	
2 Way Barn Door for #576.....	2559	
4 Way Barn Door for #576.....	2586	
Diffuser Frame for #576.....	3246	
20" 10 KW. Featherlite.....	560G	
2 Way Barn Door for #560.....	2595	
4 Way Barn Door for #560.....	2695	
Scoops		
10" 250-400 W. Scoop.....	1327G	
Diffuser Frame for #1327.....	3224	
14" 300-500 W. Baby Scoop.....	1312G	
Diffuser Frame for #1312.....	3225	
16" 750-1000-1500-2000 W. Scoop.....	1315G	
Diffuser and Frame for #1315.....	3226	
18" 750-1000-1500-2000 W. Scoop.....	1318G	
Diffuser Frame for #1318.....	3236	
16" Punch Scoop 750-1000 W.....	1320G	
Diffuser Frame for 1320.....	3238	
Lekos		
4 1/2" 250-500-750 W. Shutter Lekolite.....	1581G	
4 1/2" 250-500-750 W. Lekolite W/Iris.....	1582G	
4 1/2" 250-500-750 W. Pattern Projector W/Shutters and Gobo Slot.....	1581TVG	
Gobo Holders for Above.....	2071	
Gobo Slides for Above—Six/Set.....	2085	
6" 250-500-750 W. Pattern Projector W/Shutters and Gobo Slot.....	1591TVG	
Gobo Holder for Above.....	2071	
Gobo Slide for Above—Six/Set.....	2085	
8" 1000-1500-2000 W. Pattern Projector W/Shutters and Gobo Slot.....	1557TVG	
Gobo Holder for Above.....	2055	
Gobo Slide for Above—Six/Set.....	2065	
6" 1500 W. Follow Spot.....	998G	
6" 2100 W. 60 Volt Follow Spot.....	999G	
12" 3000 W. Follow Spot.....	1542G	
12" 5000 W. Follow Spot.....	1545G	
Front Operated Color Boomerang for #15426 and 1545G.....	2012	
Rear Operated Boomerang (Factory Installed Only) for #1542G and 1545G.....	2014	
10" 250-500-750 W. Beam Light.....	1514G	
Diffuser Frame for 1514.....	3237	

DESCRIPTION

TYPE

Striplites	
6' Portable Striplites, 12 outlets, 3 circuits, in and out.....	392
6' Portable Striplites, 12 outlets, 3 circuits, in and out.....	391
6' Portable Striplites, 12 outlets, 3 circuits, in and out.....	431G
4' Portable Striplites, 200-300 W., 6 outlets, 2 ckts, in and out.....	440
Special Unitized Frame for #440.....	440UF
1 3/8" 75-100-125-150 Watt Fresnelite Compact with Stand, 28" Beam Spread.....	1213
1 7/8" 100-250-400 Picture Spot, 340 Beam Spread.....	1672

Slide and Scene Projectors

200 W. Scene Projector, Slide or Disc.....	1172
500 W. Scene Projectorams.....	1175

Litelifts

7' Extension Lite-Lift Support 12-15 lbs.....	3280
12' Extension Lite-Lift Support 12-15 lbs.....	3286
7' Extension Lite-Lift Support 18-22 lbs.....	3281
12' Extension Lite-Lift Support 18-22 lbs.....	3287
7' Extension Lite-Lift Support 26-30 lbs.....	3283
12' Extension Lite-Lift Support 26-30 lbs.....	3289
12' Extension Lite-Lift Support 0-24 lbs.....	3532
12' Extension Lite-Lift Support 0-60 lbs.....	3534
Single Slider, Wired.....	3520

Stands

Telescoping Stand with Folding Legs.....	3570
24" 3 Legged Caster Stand with Switch.....	3218
16" 3 Legged Caster Stand 4' to 7' Extension.....	3217
24" 3 Legged Caster Stand 5' to 8' Extension.....	3216

Hangers

Single 3 Ft. Cross Arm for Use with 3532 and 3534.....	3541
Double 4 Ft. Cross Arms.....	3542
Double 6 Ft. Cross Arms.....	3543
3 Ft. Cross Bars.....	3531

Connector Strips

Connector Strip, 2 Wire, 18', Four 20 Amp and One 50 Amp. 3' Pigtailes.....	6218-4/20-1/50
Connector Strip, 3 Wire, 18', Four 20 Amp. and One 50 Amp. 3' Pigtailes.....	6318-4/20-1/50
Connector Strip, 2 Wire, 24', Eight 20 Amp. 3' Pigtailes.....	6224-8/20
Connector Strip, 3 Wire, 24', Eight 20 Amp. 3' Pigtailes.....	6324-8/20
Connector Strip, 2 Wire, 24' Seven 20 Amp. and One 50 Amp. 3' Pigtailes.....	6224-7/20-1/50
Connector Strip, 3 Wire, 24', Seven 20 Amp. and One 50 Amp. 3' Pigtailes.....	6324-7/20-1/50
Connector Strip, 2 Wire, 7', Five 20 Amp. 3' Pigtailes.....	6207-5/20
Connector Strip, 3 Wire, 7', Five 20 Amp. 3' Pigtailes.....	6307-5/20
Connector Strip, 2 Wire, 10', Five 20 Amp. 3' Pigtailes.....	6210-4/20
Connector Strip, 3 Wire, 10', Four 20 Amp. 3' Pigtailes.....	6310-4/20
Connector Strip, 2 Wire, 15', Five 20 Amp. 3' Pigtailes.....	6215-5/20
Connector Strip, 3 Wire, 15', Five 20 Amp. 3' Pigtailes.....	6315-5/20
Connector Strip, 2 Wire, 15', Six 20 Amp. 3' Pigtailes.....	6215-6/20
Connector Strip, 3 Wire, 15', Six 20 Amp. 3' Pigtailes.....	6315-6/20
Connector Strip, 2 Wire, 15', Five 20 Amp. and One 50 Amp. 3' Pigtailes.....	6215-5/20-1/50
Connector Strip, 3 Wire, 15', Five 20 Amp. and One 50 Amp. 3' Pigtailes.....	6315-5/20-1/50
Connector Strip, 2 Wire, 18', Five 20 Amp. 3' Pigtailes.....	6218-5/20
Connector Strip, 3 Wire, 18', Five 20 Amp. 3' Pigtailes.....	6318-5/20
Connector Strip, 2 Wire, 20', Six 20 Amp. 3' Pigtailes.....	6220-6/20
Connector Strip, 3 Wire, 20', Six 20 Amp. 3' Pigtailes.....	6320-6/20
Connector Strip, 2 Wire, 20', Seven 20 Amp. 3' Pigtailes.....	6220-7/20
Connector Strip, 3 Wire, 20', Seven 20 Amp. 3' Pigtailes.....	6320-7/20
Connector Strip, 2 Wire, 20', Six 20 Amp. and One 50 Amp. 3' Pigtailes.....	6220-6/20-1/50
Connector Strip, 3 Wire, 20', Six 20 Amp. and One 50 Amp. 3' Pigtailes.....	6320-6/20-1/50

Ordering Information—Century Lighting Equipment (Continued)

DESCRIPTION	TYPE
Multi-Conductor Feed Cable	
4 Conductors of #6 Wire.....	6/4
5 Conductors of #6 Wire.....	6/5
8 Conductors of #12 Wire.....	12/8
10 Conductors of #12 Wire.....	12/10
12 Conductors of #12 Wire.....	12/12
14 Conductors of #12 Wire.....	12/14
16 Conductors of #12 Wire.....	12/16
Pin Connectors	
Pin Connectors, 20 Amp. 3 Pole Male and Female.....	3141
Pin Connectors, 20 Amp. 2 Pole Male and Female.....	3154
Pin Connectors, 30 Amp. 2 Pole Male and Female.....	3156
Pin Connectors, 30 Amp. 3 Pole Male and Female.....	3142
Pin Connectors, 60 Amp. 2 Pole Male and Female.....	3161
Pin Connectors, 60 Amp. 3 Pole Male and Female.....	3143
Pin Connectors, 100 Amp. 2 Pole Male and Female.....	3163
Pin Connectors, 100 Amp. 3 Pole Male and Female.....	3163G
Rubber Covered Jumpers	
Jumper, 18', 12/3 Cable, 20 Amp., Male & Female Plugs.....	18RCCG
Jumper, 18', 12/2 Cable, 20 Amp., Male & Female Plugs.....	18RCC
Jumper, 25', 12/3 Cable, 20 Amp., Male & Female Plugs.....	25RCCG
Jumper, 25', 12/2 Cable, 20 Amp., Male & Female Plugs.....	25RCC
Jumper, 50', 12/3 Cable, 20 Amp., Male & Female Plugs.....	50RCCG
Wall Receptacle-Pin Connector	
Double 20 Amp. 2 Pole.....	3046
Double 20 Amp. 3 Pole.....	3047
Single 50 Amp. 2 Pole.....	3048
Single 50 Amp. 3 Pole.....	3049
Switch Boards	
Complete with 6—6 KW Dimmers, 6—50 Amp. Non Dim Circuits, and Patch Panel with 54 Load Plugs and 54 Jacks.....	2806
Complete with 12—6 KW Dimmers, 12—50 Amp. Non Dim Circuits, and 108 Load Plugs and 108 Jacks.....	2812
Complete with 36 + 20 Amp. Load Cords, 21—20 Amp. Control Jacks, 3 Group Master Preset Switches, 1—50 Amp. Floor Pocket Breaker Switch.....	2836
Complete with 144—20 Amp. Load Cords, 78—20 Amp. Control Jacks 12 Group Master Preset Switches, 2—20 Amp. Floor Pocket Breaker Switch.....	2844
Complete with 72—20 Amp. Load Cords, 39—20 Amp. Control Jacks, 6 Group Master Preset Switches, 1—50 Amp. Floor Pocket Breaker Switch.....	2872
Complete with 83—20 Amp. Load Plugs, 72 Control Jacks, 6—3 Position Preset Selector Switches each with 3—20 Amp. Breaker Switches, 3 Submaster Relay Switches, 18 Pilots.....	2873
Complete with 153 + 20 Amp. Load Plugs, 144 Control Jacks, 12—3 Position Preset Selector Switches each with 3—5 Amp. Breaker Switches, 3 Submaster Relay Switches, 36 Pilots.....	2874
Complete with 42—20 Amp. Load Plugs, 72 Jacks, 6—3 Position Preset Selector Switches, 3 Submaster Switches, 18 Pilots.....	2876
Complete with 55—20 Amp. Load Plugs, 72 Control Jacks, 6—3 Position Preset Selector Switches Each with 3—50 Amp. Breaker Switches, 3 Submaster Relay Switches, 18 Pilots.....	2877
Same as #2882.....	2880-6
Two #2883 Dimmer Banks.....	2881
Dimmer Bank Complete with 6—6 KW Transformer Interlocking Dimmer, 1 Master Interlocking Handle, 6—50 Amp. Primary Breaker Switch.....	2882
Same as #2882 but with 12 Dimmers.....	2882-2
Same as #2882 but with 3 Dimmers.....	2883
All-Electronic Control Boards	
C-Core two scene, six sub scene with 30, 2,000 watt dimmers, 6, 5,000 watt non dim circuits. Patch panel with 98 load cords, 120 jacks.....	57264-5C
C-Core five scene, six sub scene with pile-on, with 24, 5,000 watt dimmers 6, 5,000 watt non dim circuits. Patch panel with 153 load cords, 180 jacks.....	57264-7C

DESCRIPTION	TYPE
All-Electronic Control Boards (Continued)	
C-Core five scene, six sub scene with pile-on, with 30, 6,000 watt dimmers 10, 5,000 watt non dim circuits. Patch panel with 220 load cords, 240 jacks.....	57264-11C
Portable Distribution and Switching Panels	
Complete with 12 Breakers, 2 Pole Pin Connector, 50' Cable.....	2802
Complete with 12 Breakers, 3 Pole Pin Connector, 50' Cable.....	2803
Complete with 3 Breakers, 3 Pole Pin Connector, 25' Cable.....	2823
Complete with 6 Breakers, 3 Pole Pin Connector, 25' Cable.....	2824
Complete with 9 Breakers, 3 Pole Pin Connector, 25' Cable.....	2825
Complete with 12 Breakers, 3 Pole Pin Connector, 25' Cable.....	2826
Mobilrail	
Mobilrail (Fixed or Transverse Standard 8', 10', 12', 20' 24' Lengths).....	5075
Stop Pins (one Req'd at each Rail Termination).....	5084
Joint Strap (One Pr. Req'd at each #5075 Joint).....	5087
2" Suspension Strap—(Spacing 6' O.C.).....	5090
90° Suspension Strap Adaptor for #5090 (Used when fixed Rail is Parallel to Principal Support).....	5091
Pipe Hanger Clamp for Suspending #5075 from 1 1/4" to 2" Pipe (Used with #5090 and 5085).....	5083
Hanger Clamp for Attaching #5075 to #5090.....	5085
Flush Hanger Clamp for Attaching #5075 Directly to Ceiling Structure.....	5086
Light Beam Clamp for Attaching #5090 to "I"—Beams (1000 lb. Test).....	5088
Heavy Beam Clamp (1500 lb. Test).....	5089
Double Carrier (Transverse to Fixed Rail Coupling—2 per Transverse Rail).....	5076
Single Carrier (Light or Lite-Lift to Transverse Rail Coupling).....	5077
3-Way Junction Box, Equipped with Three, 5—Circuit Female Receptacles to Receive Looking Plugs on Cable from 3 Distribution Boxes (Wall Mtg.—Specify 2 or 3-Wire.....	5080
Distribution Box (Mounted to top of Transverse Rail) Complete.....	5081
Same as #5081 except 3 Wire and 12/12 Cable.....	5092
Triple Cable Rail (3 Rails Tied Together—Length Req'd Equal to #5075).....	5105/3
NOTE: Set of Suspension Straps and Clamps Required for suspending cable rails from ceiling running in between and parallel to main rail. If 2 Rails Specify 5105/2 if single Rail #5105/1	
Cable Carrier Rides on #5105 Cable Rails for Harnessing of Slack Distribution Cable to Junction Box.....	5140
Hooked Cable Carrier (Alternate, for Harnessing of Slack Distribution to Junction Box Cable—Rides on #5075 Main Rail).....	5079
Leg Carrier (Attached to main rail for carrying screen, etc.).....	5082
Cyclorama Rail	
Curtain Rail (Standard Lengths 10', 15', 20', 30'.....	5105
Joint Strap (One Pair Required at each #5105 Joint).....	5106
1 1/2" Suspension Strap—(Spacing 6' O.C.).....	5108
90° Suspension Strap Adaptor for #5108 (Use When Curtain Rail is Parallel to Principal Support).....	5109
Hanger Clamp for Attaching #5105 to #5108.....	5107
Flush Hanger Clamp for Attaching #5105 Directly to Ceiling.....	5110
Track Dividing Clamp (Used only with Rope Operation of Curtain—Spaces Rail for Overlapping Curtain—2 Req'd per Curtain Section).....	5111
Curtain Carrier—Nylon (Spacing 12" O.C.).....	5112
Curtain Carrier—Steel (Spacing 12" O.C.).....	5113
Curtain Carrier—3 Wheel, for Rope Operation (for going around corners).....	5114
Master Carrier for Rope Operation (2 Req'd per Curtain—Rope System—Rope Secured to this Carrier).....	5115
Live End Pulley for Rope Operation (1 Req'd per Curtain Section).....	5116
Dead End Pulley for Rope Operation (1 Req'd per Curtain Section).....	5117
Adjustable Floor Pulley.....	5118
Eye Bolt (2 per Rope System).....	5119
Corner Rope Idler (for Curved Track—1 Req'd per Corner).....	5120
Backlite Carrier, 3—Wheel (for attaching lights to #5105).....	5130

Television Mobile Unit

TYPE TJ-56 — FOR TK-31 CAMERAS



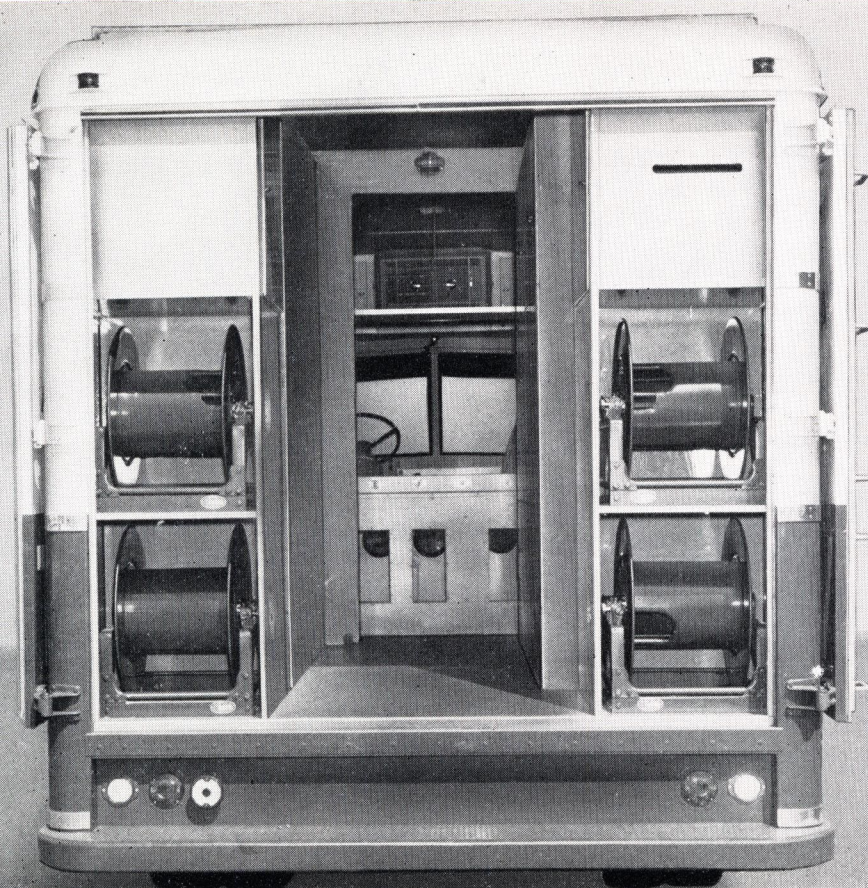
FEATURES

- Designed to carry four monochrome field camera chains and accessories
- Complete air conditioning of control room
- Standard cab over engine
- Separate control room
- Seating facilities for director and four operating personnel
- Sliding door access to rear of control room
- Cable reels at rear of truck
- Five foot storage compartment in skirt line
- Cable entrances from either side
- Access steps to roof
- Outside loading doors for cameras

USES

The RCA Monochrome Television Mobile Unit is a custom built vehicle designed to carry the television equipment needed to pick up local and remote programs which may originate at locations other than the main studio, and relay this information to the studio or transmitter for re-broadcasting. The TJ-56 Mobile Unit provides the space necessary for a complete complement of audio and video

equipment for remote programming. Use of the Mobile Unit simplifies the work of transporting equipment required for such "remotes" and saves setup time, as well as wear and tear on studio equipment. When not in use for "remotes" it is a simple matter to employ the same equipment for studio programs.



Rear view of the RCA TJ-56 Mobile Unit showing easy access to cable reels and compartment storage areas. A complete line of TV field equipment for use with the TJ-56 Mobile Unit is available from RCA. Note convenient steps leading to roof area.

DESCRIPTION

The RCA Monochrome Mobile Unit consists essentially of a standard 1½-ton chassis on which is constructed a custom body, attractively styled and well engineered for practical application of remote television pickups. This Mobile Unit serves as a studio always ready to move when needed and ready for operation in a minimum of time. Space is provided for all the essential equipment needed for the pickup of a remote television program. Such equipment includes cameras, synchronizing generator, switching facilities, power supplies, and a means for relaying the picture and sound information back to the station.

Those items normally operated from the control room of the unit, such as the camera controls, are transported in their operating position. Other items such as cameras, tripods, dollies, cable reels, and microwave transmitter have storage space allotted inside the vehicle for transportation.

The inside of the Mobile Unit is divided into two separate and distinct compartments: i.e., an operating compartment and a storage compartment. The entire front section is the operating or control room and is separated from the stor-

age section in the rear by a partition fitted with a sliding door. Entrance to the control room is through the front side doors. The door windows and windshield may be covered by a curtain secured with snap fasteners to exclude outside light. Forward in this compartment are two cushioned chairs, one located in the driver's position and the other on the curb-side. The curb-side chair is rotatable and may be used to provide a seat for the program director. Next, toward the rear, are three cushioned chairs directly in front of an operating control desk. This operating section of the control room has three levels for operating equipment. This layout provides space at floor level for five field power supplies and the field synchronizing generator. These suitcase-styled units normally do not require adjustments during operation and are, therefore, placed under the operating table.

The power supplies ride on slides, and are slid into position through doors in the front. These doors have small windows through which the meters on the power supplies may be read. At the left side of the power supply compartment, an exhaust fan is installed. This fan draws outside air into the compartment through a large filter. The air flow adequately cools equipment mounted within the compartment. The heat from the power supplies may also

be diverted into the operating section if it is so desired for heating purposes in cold weather.

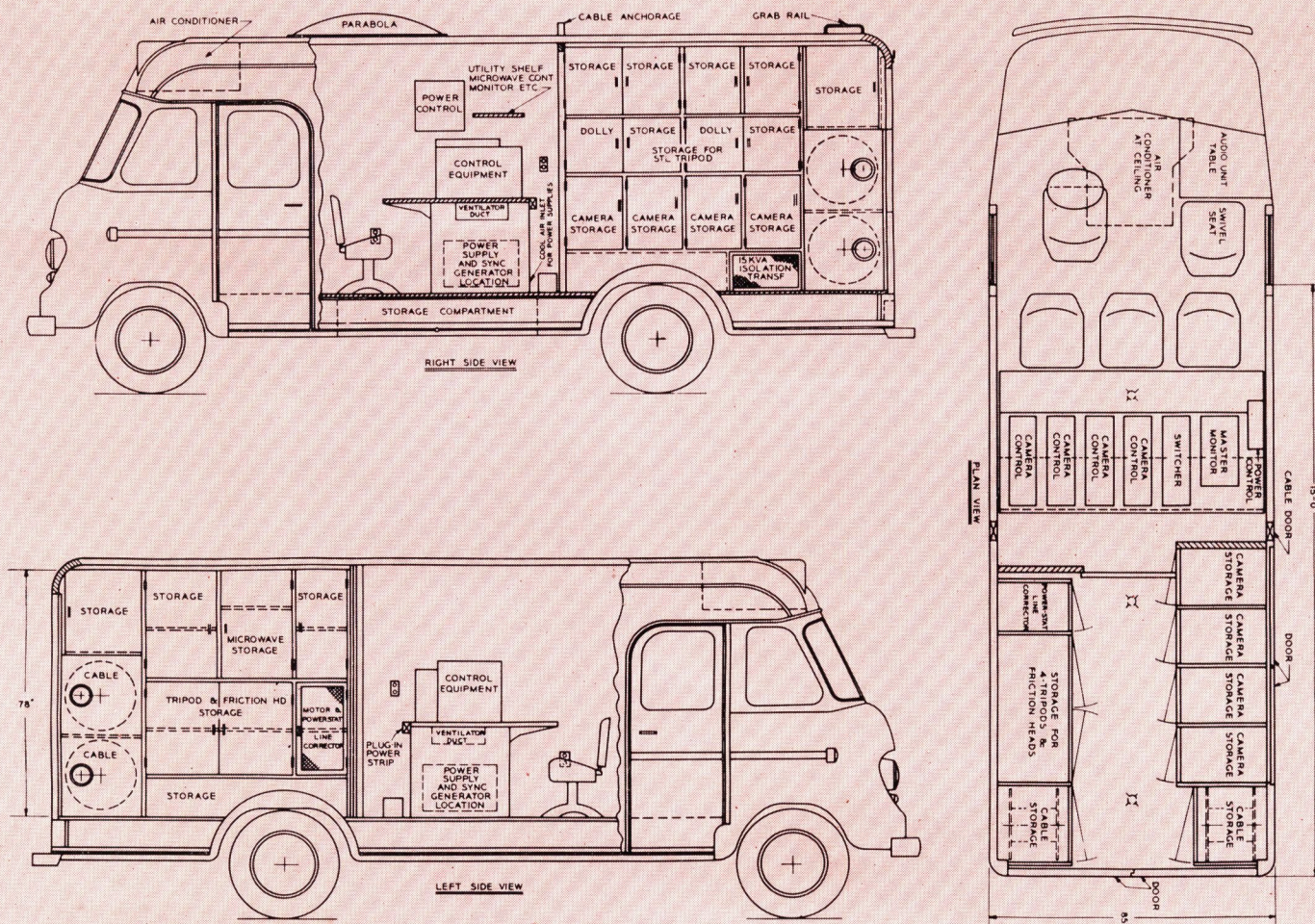
The second level for equipment is the actual table operating position. The front or operating portion of the table has a Formica surface, while the rear is of wood and suitable for fastening shock mountings to accommodate the operating equipment. The rear area of the table has space for as many as four field camera controls, a field master monitor and a field switcher. These items are located directly over the field power supplies and sync generator. All of these equipments are within easy reach of the operators seated at the control desk.

The third level consists of a power control panel and a reinforced shelf which is mounted directly over the camera controls. The shelf provides space to mount microwave control equipment, monitors, and rack equipment. Vertical supports which can be installed between the shelf and roof will provide approximately 21 inches of rack space.

The power control panel is the distribution and control center for a-c power within the mobile unit.

The panel distributes and provides overload protection for ac power to utility, video, air conditioner, and blower motor outlets through pre-wired conduits. Recommended accessories are a 15 KVA isolation transformer and a 15 KVA powerstat line corrector. These accessories are mounted in locations provided in the rear section of the truck. The accessories used in conjunction with the power control panel will distribute unregulated 220 volts to the air conditioner, unregulated 110 volts to the utility and blower outlets, and regulated 110 volts to the video outlets. The accessories and TJ-56 wiring will provide isolation and regulation of four field cameras and associated video and audio equipment.

There is ample room between the rear of the control table and the partition with the sliding door so that the various equipments may be interconnected with the standard cables provided with all units. A 1½-ton air-conditioning



Cutaway view of the TJ-56A Mobile Unit showing provisions made for accommodating complete TV "Remote" Programming Equipment.

system is provided for comfort and efficiency of operating personnel.

The rear section beyond the sliding doors is partitioned into various sizes of cabinets. The heavier equipment stored in the curb side compartments may be reached from the inside of the rear section through the cabinet doors, and through doors which permit direct side loading.

Access to the rear compartment is through two full length doors which comprise the rear panel of the Mobile Unit's body. The rear bumper is fabricated to form a step to this compartment. At the extreme rear, four large cable reels are installed, two on either side of the center aisle and one above the other. These reels are crank-operated and can be reached from the street level.

All vehicle lights may be switched from battery to external a-c power by means of a switch on the dashboard when external power is available. All entrance and outside storage doors have handles with key locks of the recessed type, minimizing damage to the handles. There are side openings for cable entrances to the operating area. Permanent steps are mounted on the inside of the curb-side rear door, permitting ready access to the roof.

The roof is reinforced to support the weight of personnel and operating equipment such as cameras and tripods. It is insulated as are the side walls of the operating or control section of the Mobile Unit. The roof surface is made of steel Diamondette floor plate. Anchor loops are welded in the roof along the edges for lashing down the operating equipment. A parabolic reflector for a microwave system may be clamped to the roof for transporting. A metal pipe

receptacle welded to the roof plate on the curb side will permit insertion of a 1½-inch pipe to provide a cable anchorage to clear the sidewalk by at least 10 feet. A small handrail on the roof at the rear provides easy access to the roof when using the built in type steps on the rear door.

SPECIFICATIONS

Length (bumper to bumper).....	265"
Width	93"
Height	120"
Inside Dimensions:	
Width	85"
Height	78"
Height (at operator's table).....	29"
Tire Size.....	7.50-20 8 ply
Chassis.....	Standard 1½ ton 154" wheelbase
Finish: Outside.....	Two-tone umber gray or to customer specifications

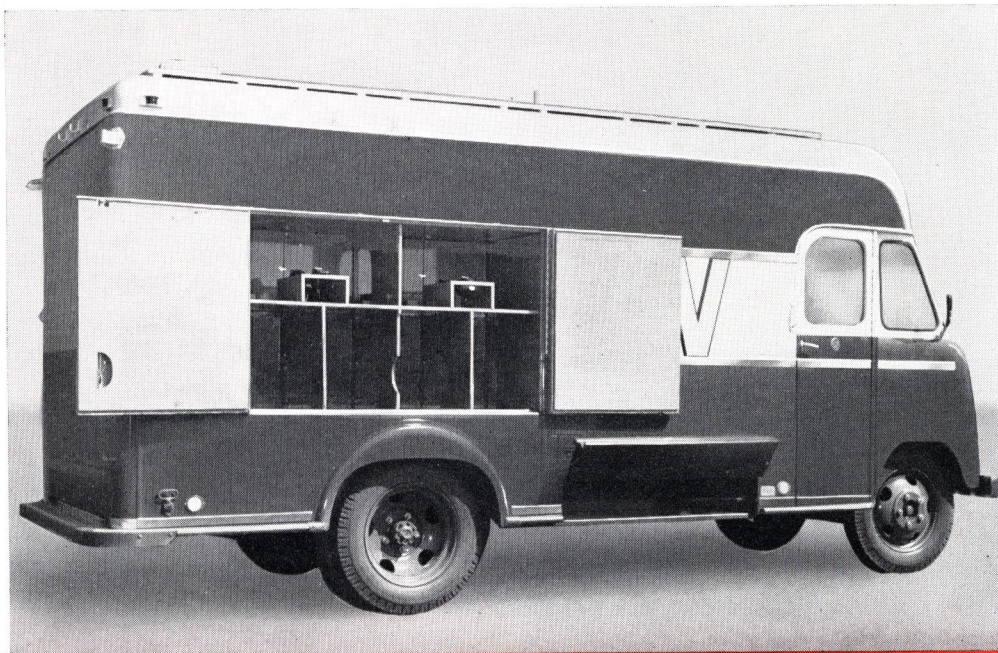
Equipment Supplied

1 TJ-56 Mobile TV Unit.....	MI-26292
which includes:	
1 Power Control Panel	
1 Installed conduit with cabling for Power Control Panel	
1 RCA Air Conditioner.....	1½ ton capacity
4 Cable Reels	
1 Operator's Table	
1 Blower and forced air cooling system for power supplies	
6 Slide assemblies for servicing Power Supplies and Sync Generator	
3 Operator's Chairs	
1 Lighting Transformer (110V-12V)	
1 Cab Heater	
1 Fire Extinguisher	
1 Gray Twill Curtain	

Accessories

Power Transformer, single phase 15 KVA.....	MI-26262
Power-Stat/Line Corrector, single phase 15KVA.....	MI-26263

Side view of the RCA Mobile Unit with outside access doors opened to illustrate storage area for TV camera and dollies. Special clamps are provided on the steel plate roof for storing a microwave reflector during transit.



Television Mobile Unit

FOR TK-12 CAMERAS



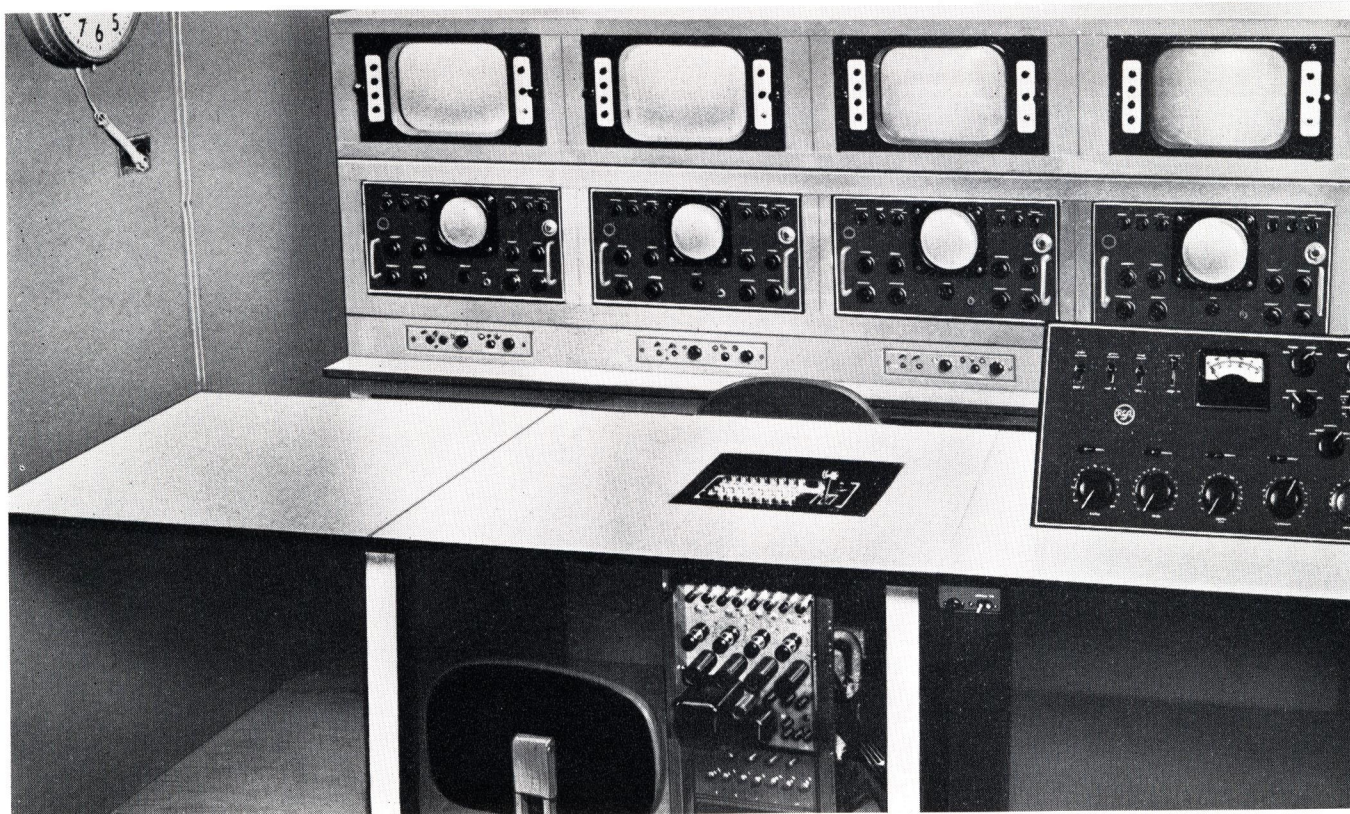
FEATURES

- Accommodates four type TK-12 Image Orthicon Cameras plus complete audio and video control facilities
- Heavy duty 1½-ton chassis
- Carefully engineered for operating ease and personnel comfort
- Liberal equipment storage space
- Completely air conditioned
- Room to transport a TVM-1B Microwave Transmitter System
- Complete audio facilities for seven simultaneous microphone inputs
- Versatile video switching system with optional special effects

DESCRIPTION

The RCA Television Mobile Unit for TK-12 4½-inch Image Orthicon Cameras is a custom-built mobile control room including all equipments needed for origination of local pickup or remote programs for transmission to main studio or transmitter locations or for use as a companion unit to a tape mobile unit for recording. This mobile unit is designed to accommodate up to four TK-12 monochrome cameras and provides space for transportation and operation of all necessary audio and video equipments required to originate a television remote pickup.

The body of the vehicle, built on a standard 1½-ton chassis is custom-built and styled to provide an attractive, practical and compact unit. A short wheelbase permits maneuvering around sharp turns in narrow streets; large, full-view shatterproof windows facilitate safe driving in heavy traffic; and a 130-horsepower engine provides speed on open roads as well as a reserve of pulling power on grades. A 2¼-ton air conditioner unit keeps the mobile unit at a comfortable operating temperature.

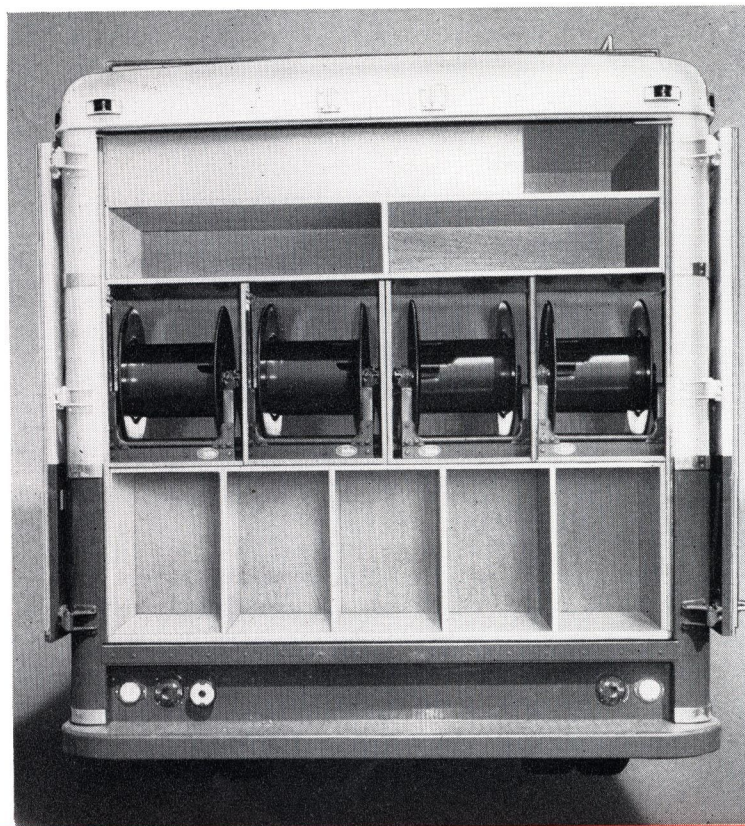


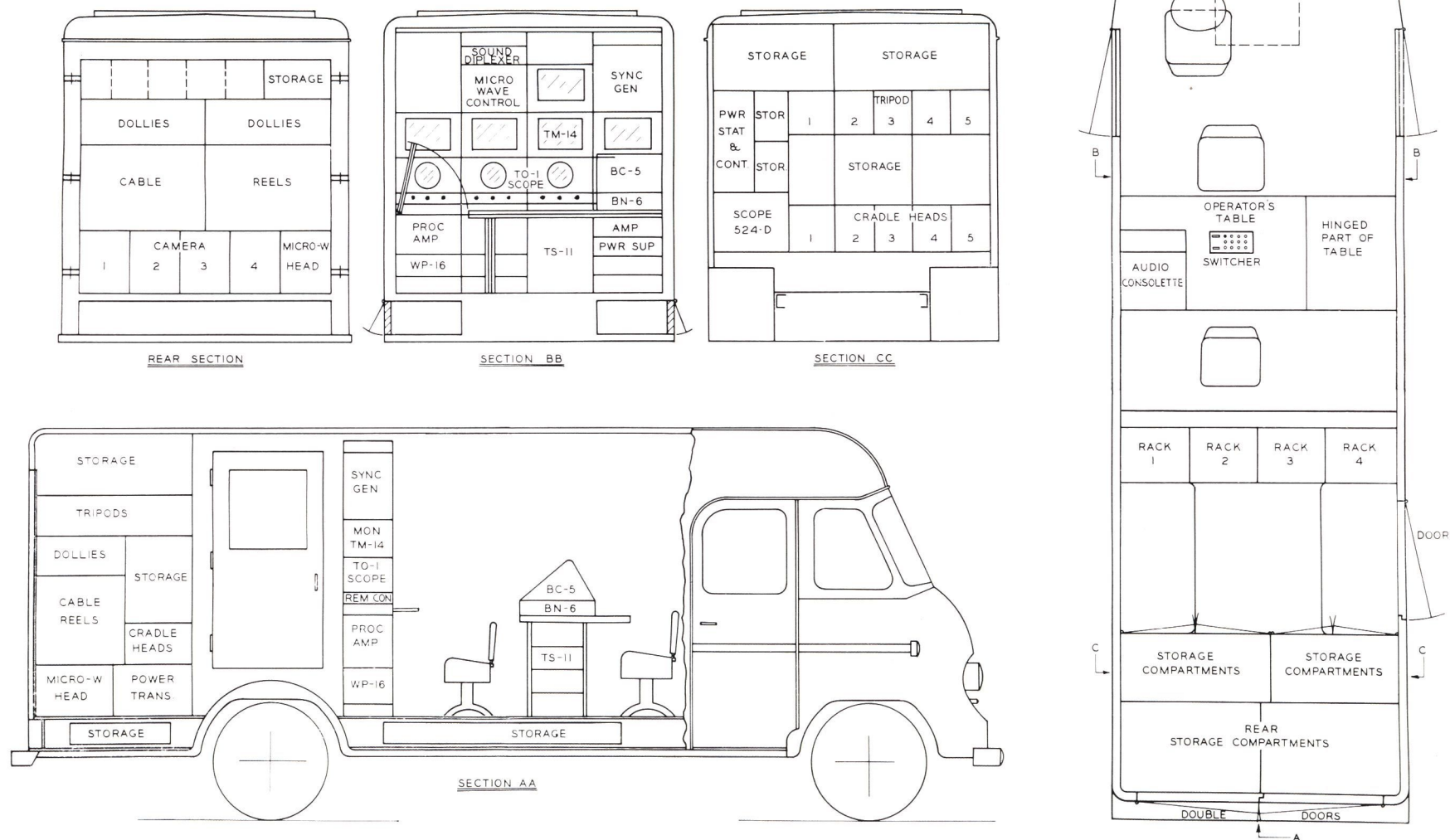
Interior view showing operator's table with BC-5 Audio Console, switching equipment, monitors and oscilloscopes for four TK-12 Camera Chains.

The interior arrangement as shown in the outline drawings, provides adequate storage and operating space. The four cameras and their dollies, cable reels and other items can be stored in the rear of the truck. Rear doors provide easy access to all units of equipment. A side door provides access in the truck to further storage compartments housing a power isolation transformer, power-stat/line corrector, 524-D Oscilloscope, five tripods and five cradle heads and to other storage cubicles for additional equipment. The door also provides access to the rear of the four racks of operating and control equipment.

In the forward part of the mobile unit are the video control position and four equipment racks. This arrangement conserves space and results in a considerable reduction in truck size. The rack equipment includes the camera control equipment, video switching facilities with provision for installation of a special effects system if desired, and synchronizing equipment with space for a second sync generator and changeover switch. Audio facilities are more than adequate. A BC-5B Audio Console and a Type BN-6B Transistor Portable Remote Amplifier are used in conjunction to supply facilities for seven simultaneous microphone inputs. Rack space is also available for mounting the TVM-1B transmitter control and sound diplexer.

Rear view of mobile unit showing housing facilities for two dollies, four cable reels, up to four TK-12 Cameras and microwave head.





Outline drawing of Television Mobile Unit for TK-12 Cameras showing floor plan and cross-sectional details.



Interior view of mobile unit showing driver's position with built-in air conditioning facilities.

SPECIFICATIONS

Mechanical

Outside Dimensions:

Length (bumper to bumper).....	24' 6"
Width	94"
Height	129"

Inside Dimensions (tentative):

Width	89"
Height	86"
Height (at operator's table).....	30"

Gross Weight.....21,500 max.

Tire Size.....8.25 x 20—10 ply

Chassis.....1½-ton, 160" wheelbase

Finish.....Two-tone umber gray or per customer specification

Power Transformer.....15KVA, 60 cycles, single phase, primary
120/240 volts, secondary 120/240 volts

Power-Stat/Line Corrector.....Manually controlled, motor driven,
6 seconds for full range travel, 50/60 cycles,
single phase. Input range 95-135 volts. Output
115 volts, max. 130 amps, 15KVA

Equipment Supplied

- 1 Television Mobile Truck for TK-12 Camera Transport consisting of:
 - 1 International Harvester Co. AM-164 1½-ton cab over engine chassis with custom-built body
 - 1 2¼-ton air conditioner
 - 1 110/120 volt lighting transformer
 - 1 Power transformer, 15KVA, 60 cycles, single phase, Primary 120/240 volts, Secondary 120/240 volts
 - 1 Power-Stat/Line Corrector, manually controlled, motor driven, 6 seconds for field range travel, 50/60 cycles, single phase. Input range 95-135 volts. Output 115 volts, max. 130 amps., 15KVA

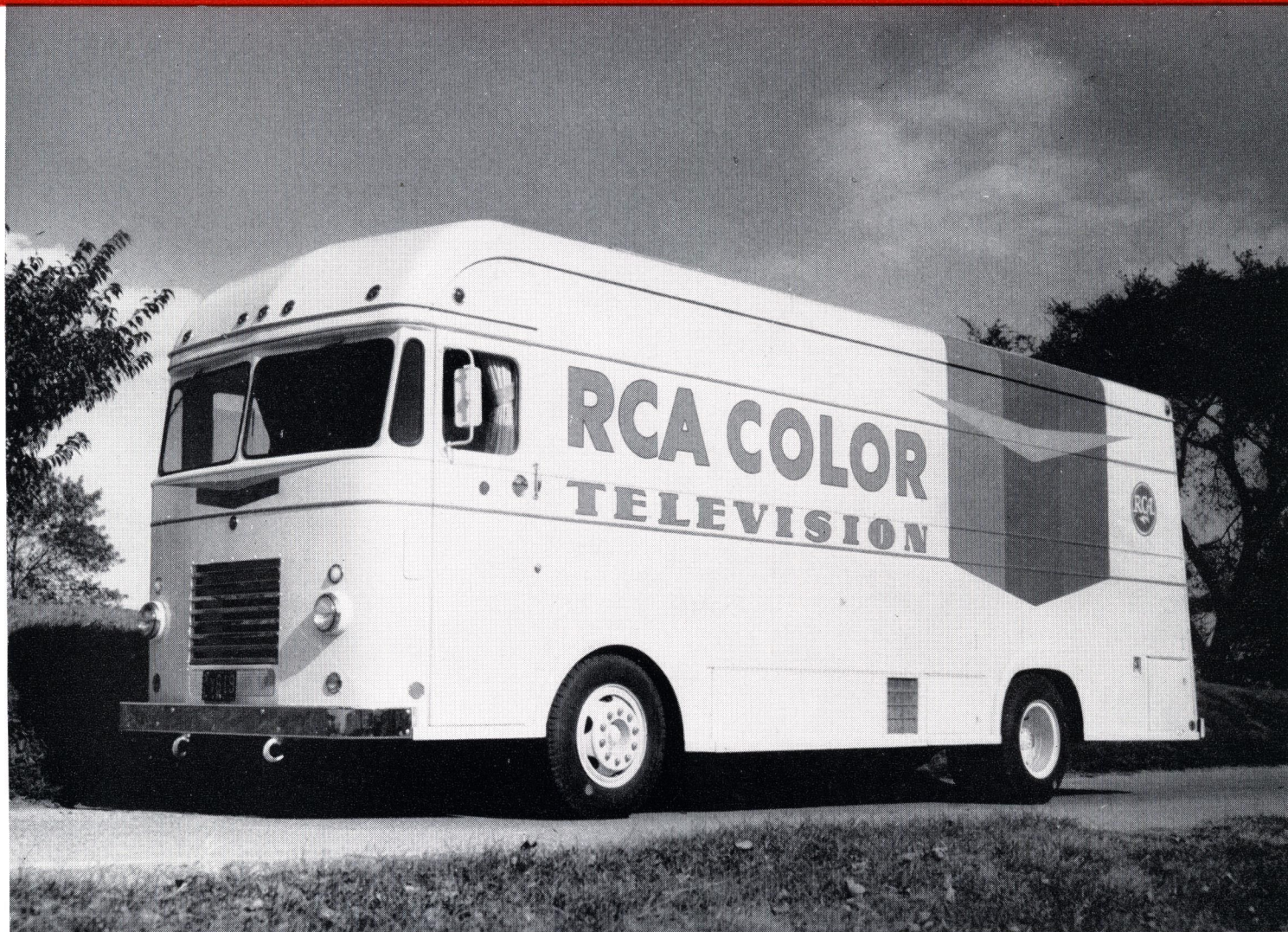
- 1 Video and Audio equipment for mobile television truck, installed and system tested, complete with system drawings, to include:

- 4 TK-12 Camera chains, each to include:

Camera with viewfinder
Remote Control Panel
TM-14R Picture Monitor
TO-1 Waveform Monitor
50, 75 and 135mm Lens
WP-16B Power Supply
100' camera cable
Cradle head
TD-11A Tripod
TD-15A Dolly

- 1 TG-2A Sync Generator
- 1 TS-11A Video Switcher
- 1 BC-5B Audio Console
- 1 BN-6 Remote Audio Amplifier
- 3 BK-6B Microphones
- 3 BK-1A Microphones
- 1 Transistor Intercom System with headsets
- 1 Program Audio Monitor Facility
- 1 524-AD Oscilloscope
- 1 TO-500 Scope-mobile
- 1 WV-98-B Senior VoltOhmyst
- 1 WV-38-A VoltOhmMillimeter
- 2 MI-21200-C1 Test Meters

Color Television Mobile Coach



FEATURES

- Compact, versatile mobile unit offers new avenues of programming
- Serves as remote color pickup facility—or auxiliary studio control
- Custom designed and equipped to station requirements
- Mobile control for five color cameras
- Efficient space utilization—comfortably seats nine operating personnel
- Equipment room designed for ease of maintenance
- Centralized automatic power control
- Roof reinforced for use as camera operating platform
- Air conditioned control room—fully insulated body
- Power steering—air brakes—rugged 501 cubic inch engine
- Custom power and audio-video connection panels

USES

RCA Color Television Mobile Coaches are custom built vehicles designed to meet specific customer requirements. These units embody complete facilities for originating live color programs and are designed to simplify and expedite the set-up of remote, local and closed circuit shows. RCA Color Mobile Units may also be used in conjunction with studio facilities thereby permitting color origination of live shows from existing facilities. In this manner the mobile coach serves a dual purpose since it becomes a "mobile control room" that can be readily transported to any desired location. The units can be designed to accommodate one to five color cameras or many other variations of equipments which could include color film facilities and low power transmitting facilities.

RCA Color TV Mobile Coaches have been widely used for broadcast television remote pickup of sporting events, parades and other special events of a broad variety. Closed circuit educational applications include surgical and dental demonstrations and observation of military field maneuvers. Commercial closed circuit uses include the tele-

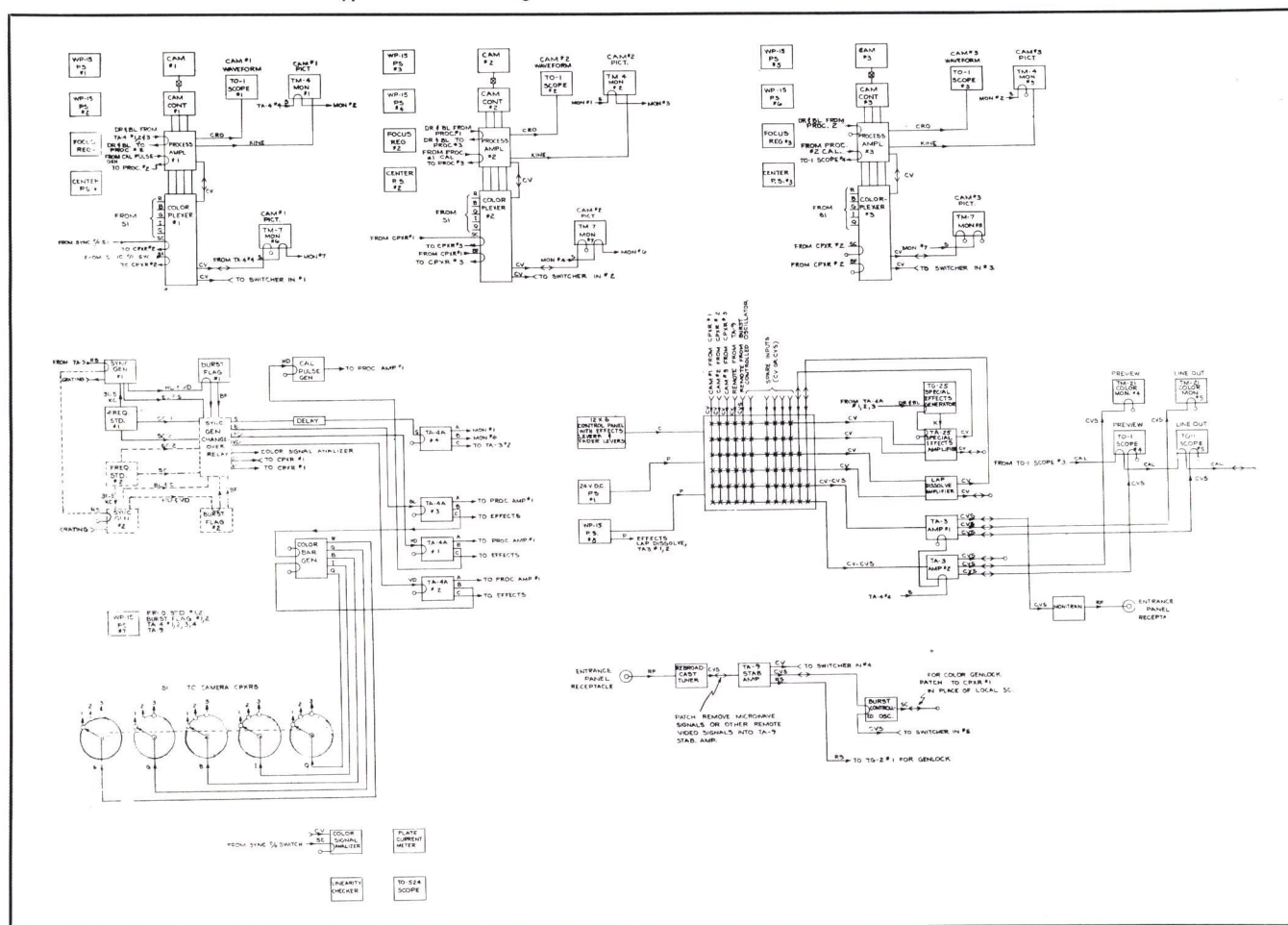
vising of style shows by department stores and live color television demonstrations for television set sales promotion. In effect, RCA Color Television Mobile Coaches make available complete television production facilities for virtually any programming application at any location which is physically accessible for setup and operation.

DESCRIPTION

Years of experience in the design and construction of color and monochrome television mobile equipment are reflected in RCA Color Mobile Television Coaches. Patterned after a control room layout, it has been designed to handle up to five color camera chains with complete production control facilities. When equipped with three cameras, sufficient space has been provided for transportation of the cameras including mounting equipment and cables. When equipped to handle four or five color camera chains, a second carrier is required to provide transportation for the cameras and mounting equipment.

The RCA Color Mobile Coach comprises a 35-foot truck divided into two sections and accommodating color camera

Typical Functional Diagram of a 3-camera Color Television Mobile Coach.



chains, terminal equipment and operating personnel. The operating area located in the front section of the coach provides room to comfortably accommodate up to nine operating personnel. A three-ton air conditioner maintains a comfortable temperature in the operating area at all times. The storage and rack area located in the rear section is separated from the operating area by a sliding door. The rear section is adequately ventilated by two, heavy-duty, two-speed exhaust fans, which draw filtered air through the equipment area from the outside.

A typical three-camera mobile unit with a full complement of equipment includes three TK-41 Live Color Cameras, a TS-11A Switcher, BC-5A Audio Console, TVM-1A Portable Microwave System, color sync and test equipment, power supplies, audio, video, camera and power cables.

Power

The video equipment obtains 60-cycle, a-c power from a 25-kva isolation transformer and an automatically controlled line voltage corrector located beneath the floor

of the rear section. A power control panel is conveniently located in the operating section of the coach. Power distribution equipment is mounted on blank panels located in the rack area.

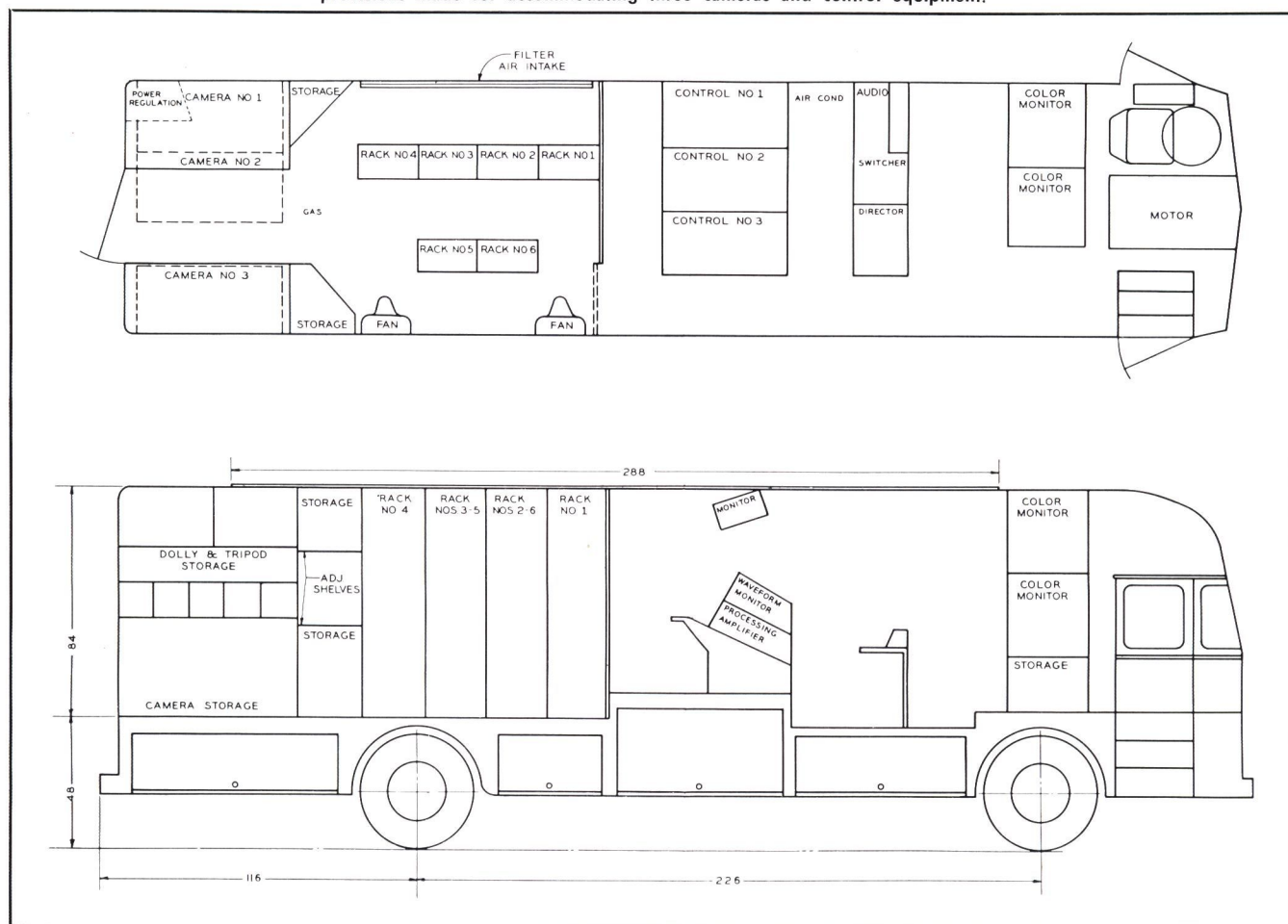
Test Equipment

Racks located in the rear portion of the coach house the colorplexers, color sync equipment, test equipment, and power supplies. The test equipment includes a bar generator for alignment of colorplexers and color monitors, calibration pulse generator permitting calibration of all signal displaying devices against a common source, linearity checker, color signal analyzer, oscilloscope, and multimeter.

Wiring and Terminations

Interconnection of all equipment located throughout the coach is accomplished by wiring through ducts installed underneath the floor. All incoming and outgoing lines terminate at an audio-video panel and a power entrance panel located on the right side of the coach. The audio-

Outline drawings of a typical custom-built Color Television Mobile Coach showing provisions made for accommodating three cameras and control equipment.



video panel provides connection for the camera inputs, microphones, remote audio inputs, video inputs, microwave control output, video and audio outputs. The power entrance panel contains the a-c output receptacles and the main input power connection. The external source of power required to operate the color mobile coach is single-phase or three-phase, 220 volts.

Provision for Microwave

To facilitate the setup and use of microwave link equipment, an area of the roof has been reinforced with aluminum plating. Provision has also been made for storage of parabolic reflectors. Installed on the right side of the coach is a 3-inch vertical pipe which extends from the floor to approximately 3-inches above the roof. A smaller telescoping pipe can be extended to a maximum of five feet above the roof. This pipe may be used as an anchorage in locations where it is necessary to run cables overhead or as a gin pole for lifting equipment to the roof of the coach.

Coach Specifications

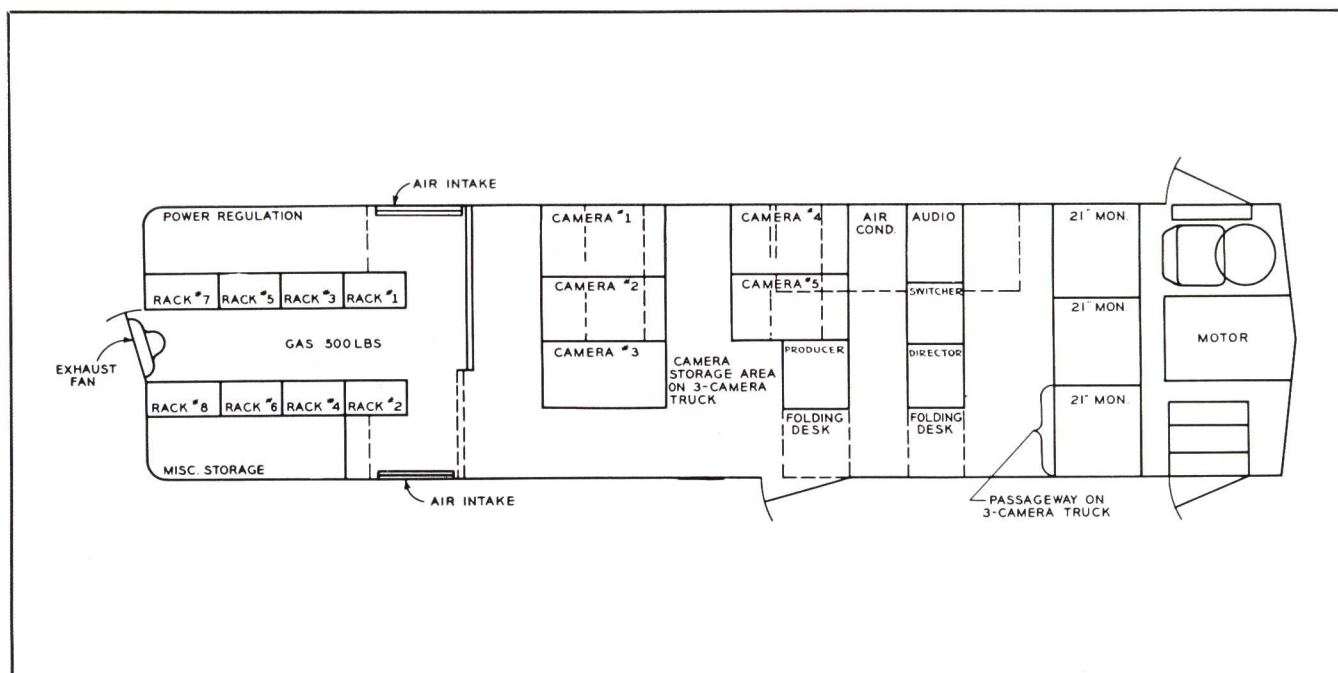
The custom-built body is 35 feet over-all in length and 96 inches wide. Thirty feet of interior length and 89 inches of interior width has been allotted to electronic equipment. The gross vehicle rating is 32,000 pounds, including a liberal safety factor. The weight distribution of all equipment installed and stored in the coach is carefully arranged to assure proper axle loading and riding com-

fort. Special emphasis has been placed on the design of the chassis to provide adequate shock mounting for the equipment facilities. Storage compartments for camera cables, power cables, tripods, dollies and cradle heads are located in the skirt line of the coach. The air conditioner and power regulating equipment are also located in this area.

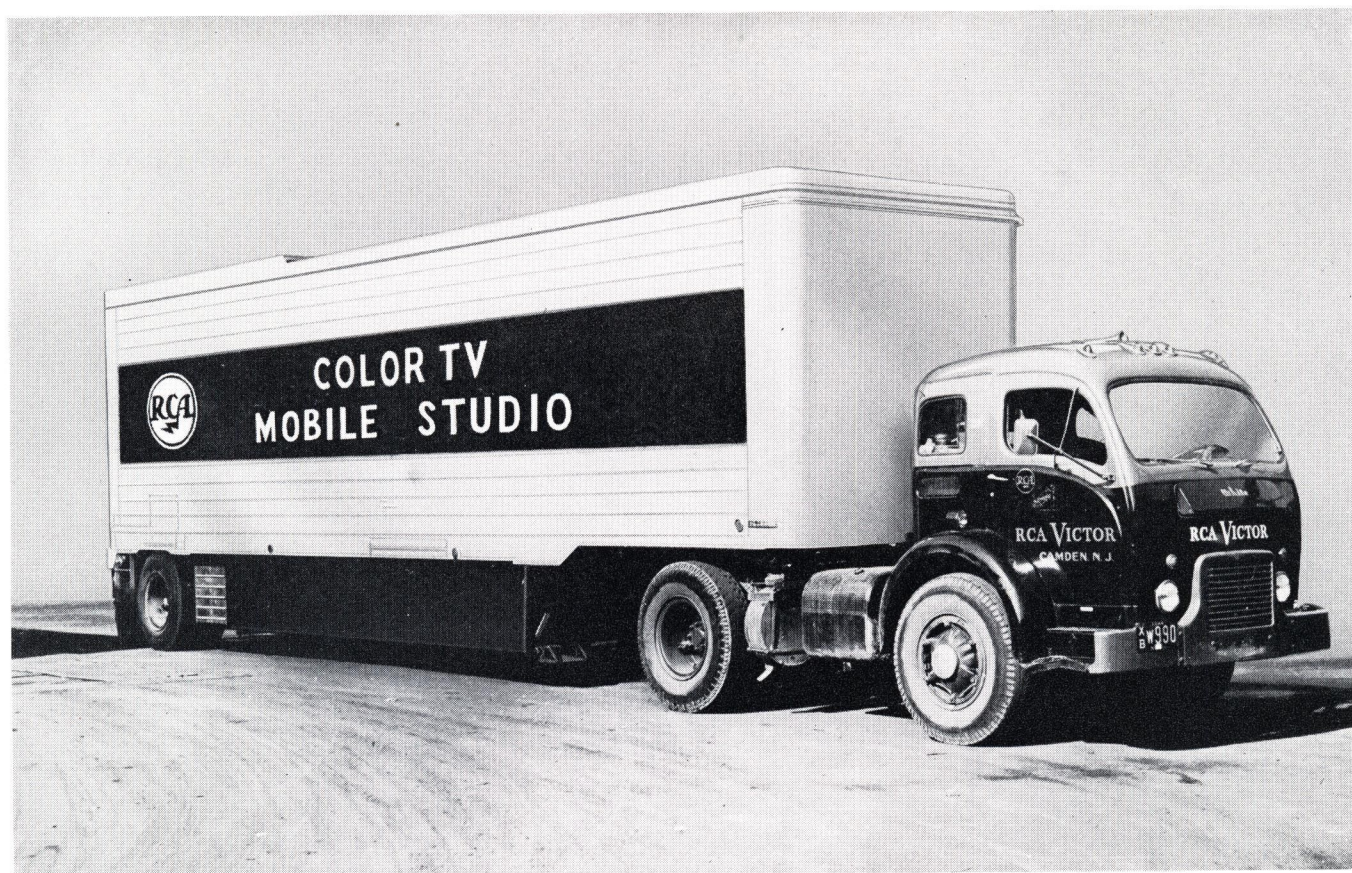
The heavy duty custom-built chassis handles the maximum gross vehicle weight with safety. A 220-horsepower truck type gasoline engine provides adequate power to propel the fully loaded coach at nominal highway speeds. Convenient access to the engine for maintenance and repairs has been facilitated by a removable motor hood. A five-speed syncromesh transmission and dual plate friction clutch permit ease of handling by the driver. Design safety measures which serve to simplify the operation of the coach and reduce driver fatigue are air brakes, power steering and tinted glass. Twelve volt d-c power is supplied to the electrical system by a heavy duty battery and 50 ampere generator. The air conditioner is mounted below the floor level and is readily accessible for ease of maintenance and servicing.

Fold-out steps built into the outside of the rear door provide access to the roof. An aluminum ladder is also provided for access to the roof and for use as a loading ramp for the color cameras. Aluminum walk-up steps, which are used for entry to the rear and side of the coach, are attached to the inside surface of the doors when not in use.

Outline drawing of Color Mobile Coach showing plans for accommodating five color camera chains.

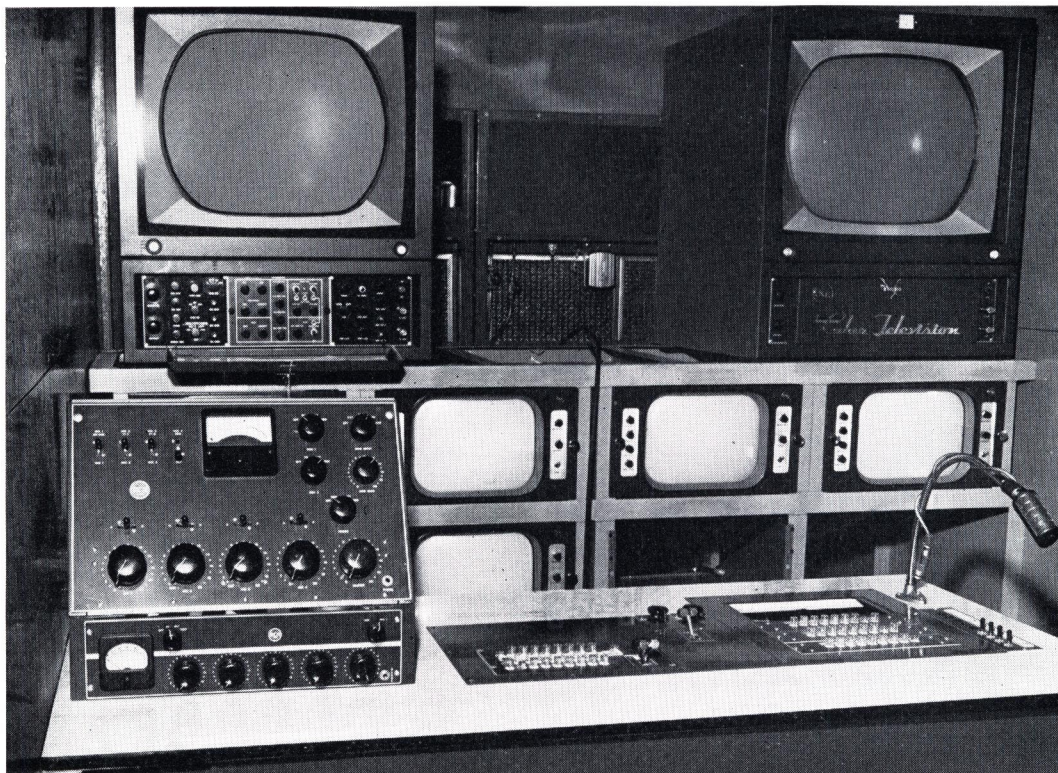


Color Television Mobile Trailer



FEATURES

- Complete mobile Color Television System for live telecasts, closed-circuit TV or feed to TV tape recorder
- Handles four color camera chains including transportation space for all equipment
- Can be moved quickly and easily to scene of special events
- Completely air conditioned
- Carefully engineered for efficient space utilization, operator comfort, easy access to equipment
- Reinforced trailer roof to support cameras and operators
- All equipment installed and system tested, ready for use



Director's control position showing audio input console on left and video switching and special effects controls in desk. Color monitors for program preview in addition to monochrome continuity monitors appear in background.

DESCRIPTION

The RCA Color Mobile Trailer is expressly designed as a "studio-on-wheels" for live color television origination. It accommodates up to four complete color camera chains as well as all necessary audio and video equipments required to originate a television remote pickup in color.

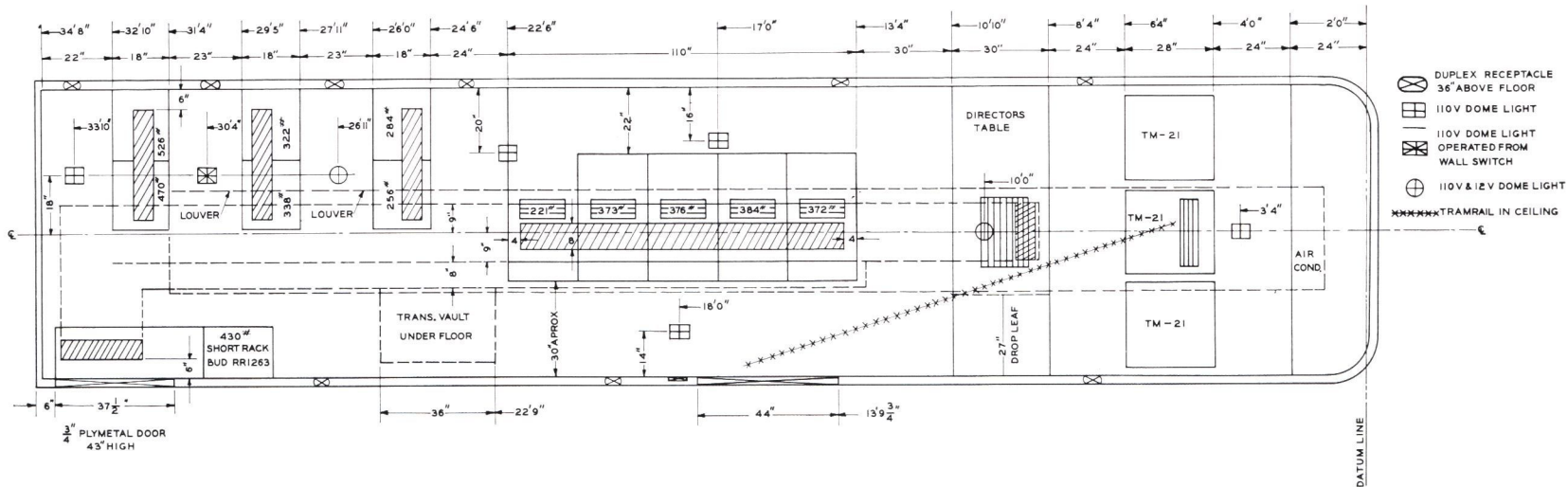
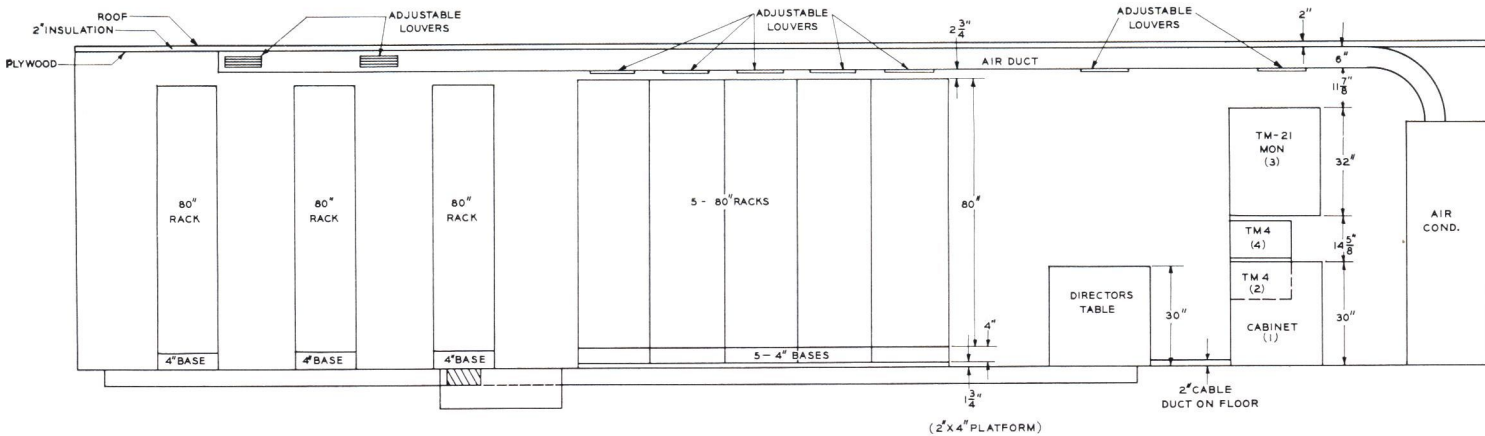
The trailer mobile unit affords ample room for all equipment and operating personnel. Control facilities for four color cameras are rack mounted at the center of the floor area. A director's table including video switching and special effects control and the audio control BC-5 and BN-6B positions are located immediately forward of the camera control racks. A BC-5B Audio Console and BN-6B Remote Amplifier provide a high quality audio system with input facilities to handle eight microphones simultaneously. Three TM-21C color monitors for on-air, preview and camera control are mounted forward of the director's desk at a convenient viewing height. Six TM-4 fourteen-inch monochrome continuity monitors are located beneath the color monitor within full view of personnel at the director's table.

Six additional equipment racks located in the rear of the truck provide mounting space for the video switching, special effects, sync generating and other terminal and

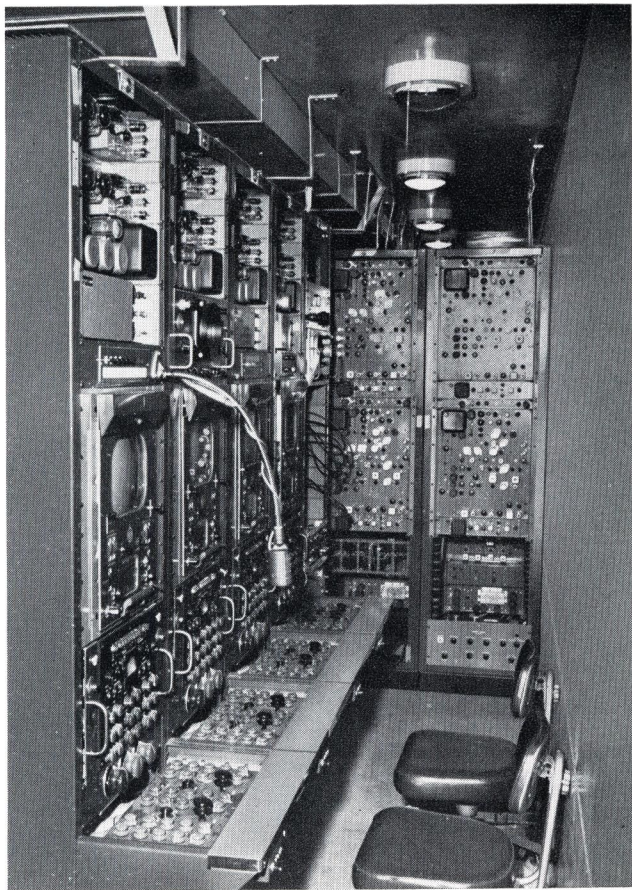
audio equipment. Built-in test facilities make it easy to keep the trailer studio system in top operating condition and expedites running routine service tests. A complete TVM-1B Microwave Relay System is included.

In common with other RCA mobile units, the studio trailer is designed from the chassis up specifically for color television mobile use. The trailer consists of a standard 35-foot chassis with custom body built to be structurally sound and equipped for TV production requirements. The diamond steel roof is reinforced to permit its use as a camera mounting platform when on location. The outside walls are smooth, there are no wheel pockets, and the front is square with rounded corners. Facilities include king pin trailer hitch, air brakes, wire trench flush with floor, ceiling tie bars for equipment support, heavy-duty linoleum floor, insulated walls and ceiling, installed interior lighting system, special access doors, curb-side door ladder, built-in power supply, compartmentalized construction to house each unit of TV equipment.

The Mobile Trailer is completely air conditioned by means of two 4-ton conditioning units, one of which includes a 9-KW heater. Three heavy-duty 10KVA power transformers and three automatically controlled motor driven stabline



Floor plan and elevation drawing of typical custom trailer designed to house four complete camera chains.



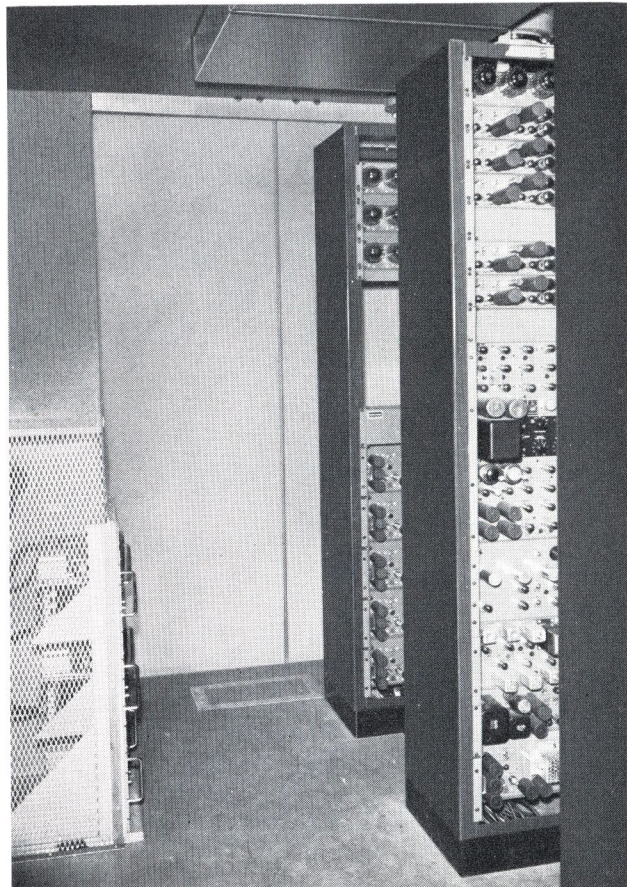
Camera control area showing rack mounted control facilities for four TK-41C Color Cameras. The racks in background control colorplexers and sync generator controls.

voltage regulators are provided. Recessed, covered power connectors are provided for connection of the trailer to commercial power sources.

The trailer has an overall length of 35 feet and is 96 inches wide by 153½ inches high with 14 inches of road clearance. The interior dimensions are 34 feet 4 inches long, 91½ inches wide and 87½ inches high. Air suspension of the trailer body provides efficient isolation from shock for maximum protection of the equipment while traveling.

SPECIFICATIONS

Outside Dimensions (overall):	
Length	35 ft.
Width	96"
Height	153½"
Inside Dimensions:	
Length	34 ft.
Width	90"
Height	89"
Road Clearance	14"
Finish.....	Two tone umber gray or to customer's specification
Power Transformer.....	Three transformers, each 10KVA, 60 cycles, single phase, primary 120/240 volts, secondary 120/240 volts
Power-Stat/Line Corrector.....	Three auto control, motor driven, 60 cycle, single phase, input range 105-125 volts, output 110-120 volts, max 104 amps, 12KVA



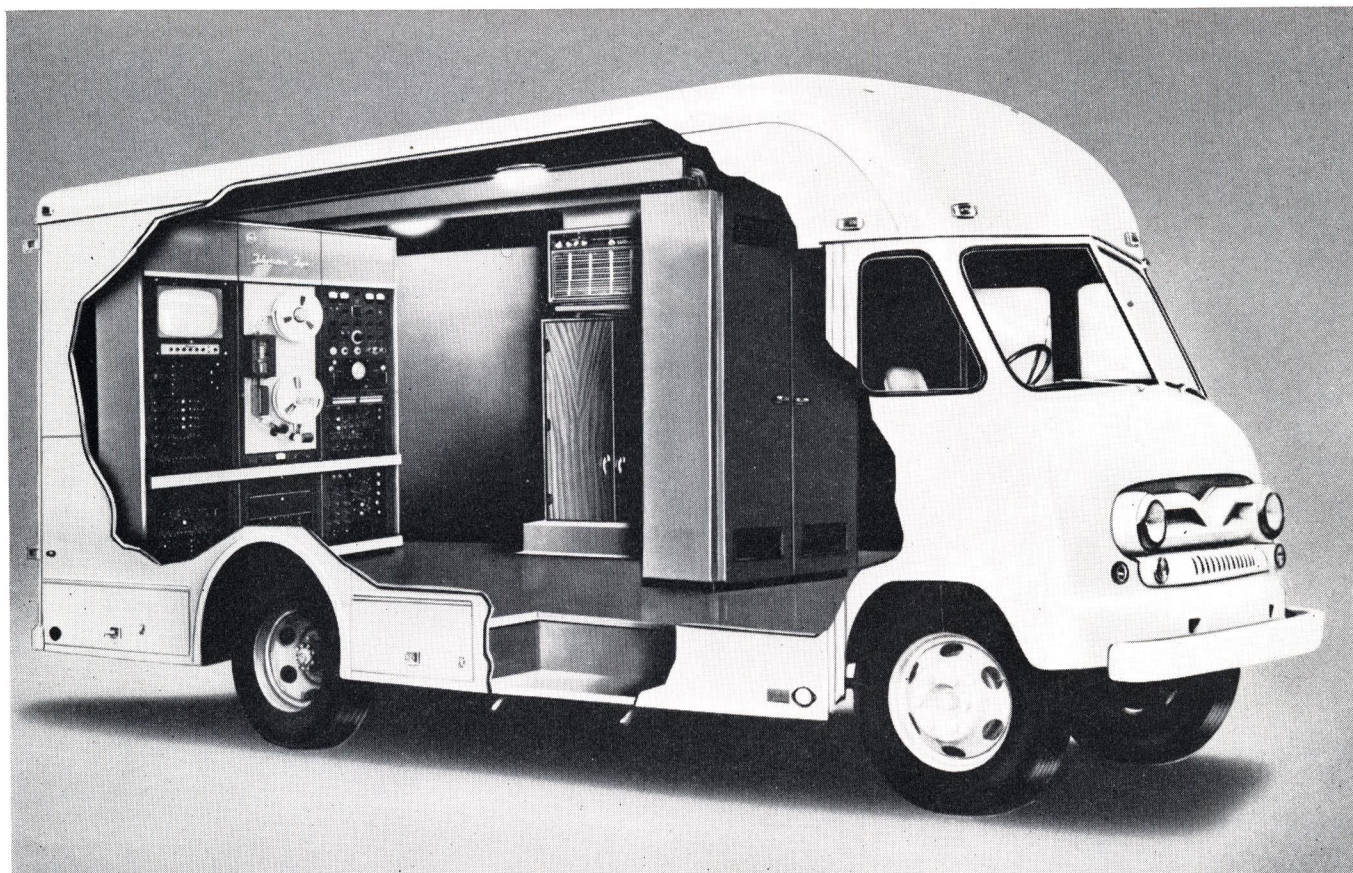
Auxiliary racks at rear of trailer containing power supplies, distribution amplifiers, and miscellaneous terminal equipment.

Equipment Supplied:

- 1 Color Mobile Trailer for transport of up to four Color Camera Chains, consisting of:
 - 1 35-foot custom trailer with air suspension and reinforced roof
 - 2 4-ton air conditioning units, one with 9-KW heater
 - 3 Power Transformers, 10-KVA, 60 cycles, single phase, Primary 120/240 volts, Secondary 120/240 volts
 - 3 Power-Stat/Line Correctors, auto controlled, motor driven, 60 cycle, single phase, Input range 105-125 volts, Output 110-120 volts, max 104 amps, 12KVA
- 1 Video and audio equipment for Color Mobile Trailer, installed and system tested, complete with system drawings, including the following items:
 - TK-41C Color Cameras, with field mounting equipment
 - TS-11 Video Switching System
 - Special Effects System
 - Dual Color Sync Equipment with changeover switch
 - Off-air Monitor Receiver
 - TM-4R Video Monitor
 - Transistorized Intercom System
 - BC-5 Console
 - BN-6 Remote Amplifier
 - TVM-1B Portable Microwave System with 4 foot Reflectors
 - TSD-2B Sound Duplexing System
- Test Equipment, including:
 - Calibration Pulse Generator
 - Vectorscope, Model 526
 - Linearity Checker
 - Oscilloscope Model 524-AD
 - Color Bar Generator

NOTE: Since RCA Color Mobile Trailers are manufactured on a custom basis, modifications of the vehicle or equipment list can be arranged to accommodate individual customer requirements.

Television Tape Mobile Unit



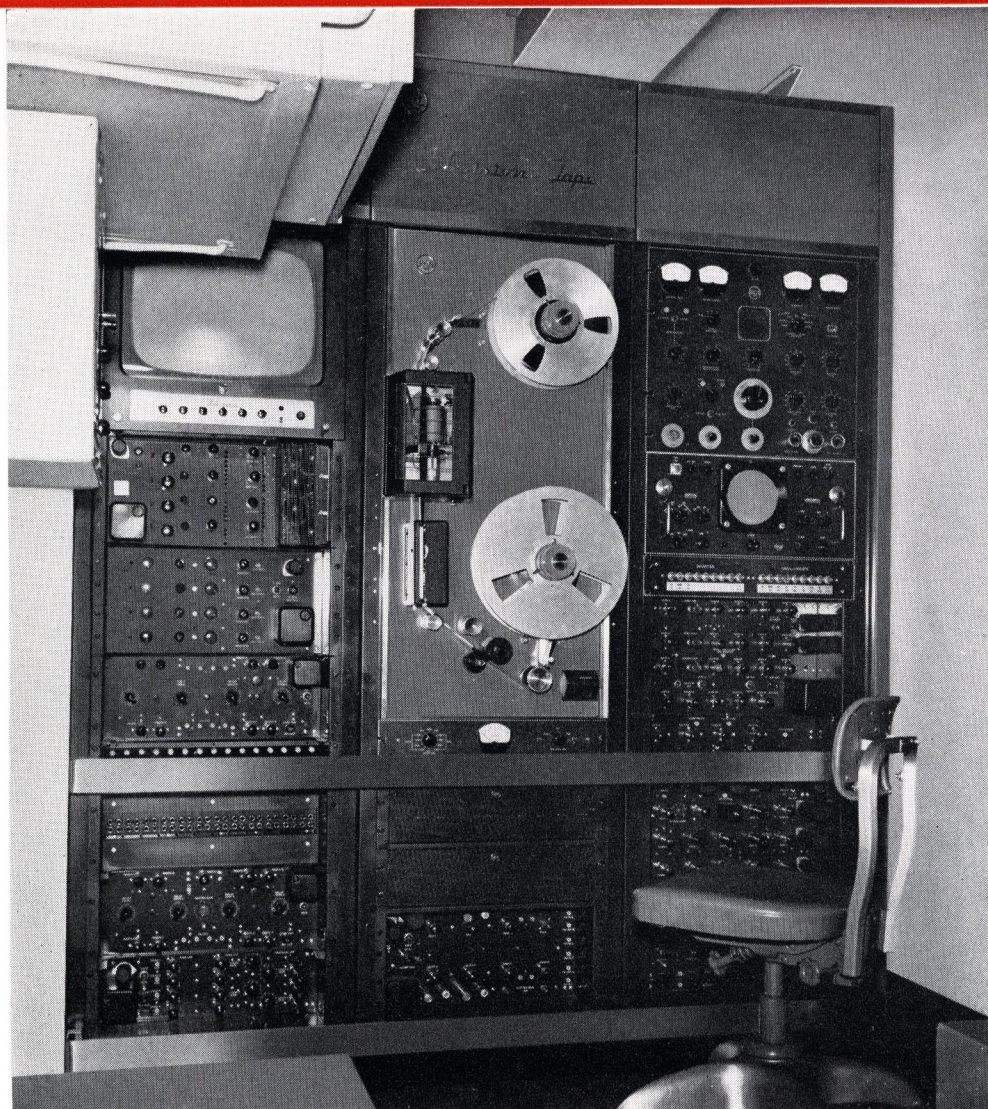
FEATURES

- **Completely self-contained mobile television tape recording facility**
- **Available with either monochrome or color television tape recorder**
- **Completely air-conditioned for comfort and convenience**
- **Balanced weight distribution**
- **Ample operating area for personnel**
- **Supplied with equipment installed and ready for use**

DESCRIPTION

The RCA Television Tape Mobile Unit is designed to serve as a complete mobile television recording facility including ample space for operation, maintenance, tape editing and tape storage. Designed for on-location recording of remote pickup events, the mobile tape unit is supplied completely equipped with either a monochrome or color tape recorder as desired. The mobile unit greatly simplifies the problem of transporting tape recording facilities required for field pickups. In addition, permanently installed mobile tape recording equipment substantially reduces the time required in setting up for operation.

The body of the vehicle, built on a standard 1½-ton chassis, has been carefully engineered and styled to provide an attractive, practical and compact unit. The exterior of the unit is normally finished in two-tone umber gray. Op-



View showing the three operating racks of the TRT-1B Tape Recorder installed in TV Tape Mobile Unit. The mobile unit is ideal for spot pickups at widely separated points. Pickups are increasingly incorporated into station programs or into closed circuit TV recordings.

tional colors as well as station call letters or other insignia are available on a custom basis. The truck is designed for complete maneuverability, and a 130-horsepower engine provides ample speed on open roads as well as a reserve of pulling power on grades. The truck has a four-speed synchro transmission and is equipped with heavy duty springs and shock mounts. Two 2¼-ton air-conditioning units provide sufficient cooling for both the equipment and personnel operating area.

The mobile unit layout is planned to achieve a balanced load distribution in addition to efficiency of operation and maintenance. The roomy interior of the tape mobile unit provides 16 feet of operating room behind the driver.

The body interior measures 7 feet and 5 inches wide by 7 feet and 4 inches high. The equipment space is ample for a full complement of monochrome tape facilities with space provided for an additional rack for the color tape recorder units and other items as desired. Power control, air-conditioning, storage and work areas are located for maximum operating efficiency and space utilization.

Racks are provided to house all necessary test facilities including such items as a oscilloscope, audio oscillator, sweep generator, test meter, etc. Audio facilities including jack panels, plugs and mats are provided. There is also ample room for tape storage and tape editing as well as such miscellaneous items as the Type TO-500 Scopemobile, spare tape headwheel panel assembly and television tape splicer.



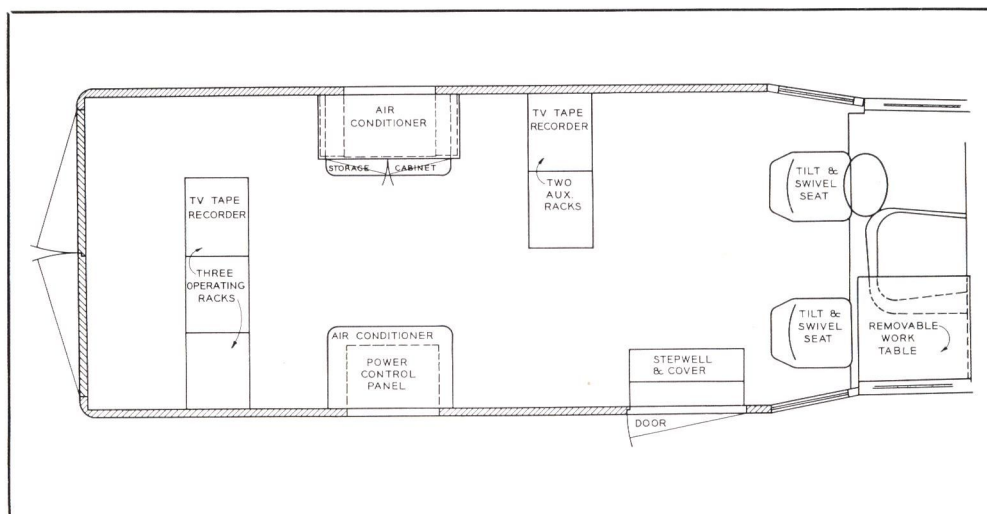
Tape control center offers ample space for operation, maintenance, editing and storage.

Power

A-c power for the tape recorder is supplied from a 60 cycle, 15 KVA isolation transformer. A motor driven manually controlled line voltage corrector is located beneath the floor of the rear section of the truck. A power control panel is conveniently located in the operating section, and power distribution equipment is located on a wall-mounted panel adjacent to the equipment racks.

One and a half ton sturdy mobile unit provides ample space for television tape recording operations, as well as maintenance, editing and storage of facilities. (See cut-away view on front page.) Permanently installed mobile tape recording equipment substantially reduces set-up time.





Layout of typical TV Tape Mobile Unit. Note air conditioners, power control, and storage facilities. Ample operating area is included. Power is external—coming from any 110-volt source.

SPECIFICATIONS

Overall Dimensions:

Length (bumper to bumper).....	23 ft.
Width	96"
Height	129"

Inside Dimensions:

Length behind driver's seat.....	16 ft.
Width	89"
Height	88"

Chassis1 1/2-ton

Wheelbase154"

Construction.....Cab over engine truck chassis with custom body and heavy duty springs and shocks

Cylinders6

Horsepower130 max gross

Transmission.....Forward control four-speed synchro

Tire Size.....8.25 by 20 ten ply

Air Conditioner.....Two 2 1/4-ton units

Power-Stat/Line Corrector.....Manually controlled, motor driven, 6 seconds for full range travel, 50/60 cycles, single phase

Input Voltage Range.....95-135 volts

Output.....115 volts max. 130 amps, 15KVA

Finish.....Two-tone umber gray or to customer specifications

Equipment Supplied

Television Tape Mobile Unit including 2 air conditioning units, 15KVA Power Transformer, Power-Stat/Line Corrector, Video and Audio Equipment, installed and system tested, complete with system drawings. Equipment to include:

- 1 TRT-1B Monochrome Television Tape Recorder to include:
 - 1 Tape Transport and control rack assembly
 - 1 Servo and Power equipment rack assembly

- 2 End Panels for TV Tape Recorder

- 1 Headwheel assembly

- 1 Test tape

- 1 Kit of tape recorder accessories to include: BK-6B Microphone Headwheel demagnetizer, Set of springs (to adjust brake tension), Dial indicator for pole tip projection, one-half hour reel of TV tape, 12 1/2-inch take-up reel, kit of lubricants, adjusting tools, brake release switch, test module for processing amplifier and test cable for CRO

- 1 Television Tape Splicer and Shelf

- 2 Headwheel Panel Assembly

- 1 Tektronix 535-A Scope

- 1 Type 53-54b wide band plug-in amplifier

- 1 Type 53-54c dual trace plug-in amplifier

- 1 Type 500/53a Scopemobile

- 1 Hewlett Packard Oscillator, Model 650-A

- 1 Hewlett Packard VTVM Model 400D

- 1 Test Meter, MI-21200-C1

- 1 Video Sweep Generator TIC 1105

- 1 Double Jack Panel, Audio

- 1 BA-24A Monitoring Amplifier

- 1 BR-22A Mounting Shelf

- 1 Jack Mat

- 1 TA-3B Video Distribution Amplifier

- 1 580-D Power Supply

- 1 Video Jack Panel

- 3 Video Patch Plugs

- 2 Audio Patch Cords

- 1 BR-84 Rack

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4½-INCH IMAGE ORTHICON CAMERA CHAINS

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10	7295-A	4½-inch Image Orthicon Tube	26877
12	Remote Control Panel (TM-35 Mounting)	26217
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13	Processor (Rack Mounting)	26072
13	WP-16B	Power Supply	26084-B
13	Centering Current Sub-chassis Unit (for WP-16B Power Supply)	26083-A
13	Unregulated Voltage Sub-chassis Unit (for WP-16B Power Supply)	26082-A
14	Field Processor	26073
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14	TK-32	4½-inch Image Orthicon Field Camera Chain (For complete list of equipment supplied see Page 16)	
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COLOR CAMERA CHAINS

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17-28	TK-41C	Color Camera Chain with Rack Mounted Controls (For complete list of equipment supplied see Page 28)	
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28	EIA Linear Gray Scale	26822-4
28	EIA Logarithmic Gray Scale Chart	26822-5

3-INCH IMAGE ORTHICON CAMERA CHAINS

29-36	TK-11B	3-Inch Image Orthicon Studio Camera Chain (For complete list of equipment supplied see Page 36)	
31	.....	3-inch Image Orthicon Camera	26011-C
34	.....	Electronic Viewfinder	26016-B
35	.....	Studio Camera Control	26056-B
36	.....	Spare Video Pre-Amplifier	26153
37-40	TK-31B	3-Inch Image Orthicon Field Camera Chain (For complete list of equipment supplied see Page 40)	
37	.....	3-inch Image Orthicon Camera	26011-C
37	.....	Electronic Viewfinder	26016-B
38	Field Camera Control	26066-A
39	TY-31A	Field Power Supply	26091
40	Spare Yoke Assembly	26747-2

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41-44	TK-15A	Studio Vidicon Camera Equipment with TM-6C Master Monitor	
41-44	TK-15A	Studio Vidicon Camera Equipment with TM-35 Master Monitor	
41-44	TK-35A	Field Vidicon Camera Equipment with TM-35 Master Monitor (For complete list of equipment supplied see Page 44)	
42	.....	Vidicon Viewfinder Camera	26023-B
43	.....	Output Amplifier	26063-A
44	.....	Adjustable Viewfinder Hood	26843
44	.....	Remote Control Panel for TM-35 Mounting	26161

VIDICON CAMERA CHAINS (Continued)

Page	Type Number	Description	MI Number
44	.....	Remote Control Panel, Console Mounting.....	26213-A
44	TG-2A	Studio Sync Generator.....	26102-A
44	TG-12A	Field Sync Generator.....	26112-A
44	TG-21	Simplified Studio Sync Generator.....	ES-26986
44	TG-31	Simplified Field Sync Generator.....	ES-26987

MONOSCOPE CAMERA

45-46	TK-1C	Monoscope Camera including 2F21 Tube.....	ES-26960-B
45-46	TK-1C	Monoscope Camera (less tube).....	26030-B
46	2F21	Monoscope Tube	26657
46	1699	Special Monoscope Tube	
46	Spare Set of Tubes for Monoscope Camera.....	28679-A

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47-50	Ortal Fixed Focus Lenses (For 4½-inch I.O. Cameras)	
48	1.38-inch Ortal Lens.....	26882-2
48	2-inch Ortal Lens.....	26882-3
48-49	3-inch Ortal Lens.....	26882-4
48-49	5-inch Ortal Lens.....	26882-5
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48-50	12½-inch Ortal Lens.....	26882-7
48-50	16-inch Ortal Lens.....	26882-8
48-50	22-inch Ortal Lens.....	26882-9
51	.....	Fixed Focus Lenses (For 3-inch I.O. Cameras)	
51	.....	Fixed Focus Lens, 35mm.....	826159
51	Fixed Focus Lens, 50mm.....	826160
51	Fixed Focus Lens, 85mm.....	826161
51	Fixed Focus Lens, 135mm.....	826162
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53	Studio Camera Lens, 35mm.....	26550-9
53	Studio Camera Lens, 50mm.....	26550-1
53	Studio Camera Lens, 90mm.....	26550-2
54	.....	Studio Camera Lens, 135mm.....	26550-3
54	.....	Studio and Field Camera Lens, 8½-inch.....	26550-4
54	.....	Field Camera Lens, 13-inch.....	26590-14
54	.....	Field Camera Lens, 17-inch.....	26590-15
55	.....	Field Camera Lens, 25-inch.....	26550-8
55	.....	Field Lenses for Color Studio Cameras.....	40802-A Series
56-57	.....	Varotal Lenses	
57	.....	Varotal II Indoor Lens for TK-10/30 or TK-11/31 Cameras	
57	.....	Varotal II Indoor Lens for TK-12/32 4½-inch Cameras	
57	.....	Varotal II Indoor Lens for TK-40/41 Color Cameras	
57	.....	Varotal III Outdoor Lens for TK-10/30 or TK-11/31 Cameras	
57	Varotal III Outdoor Lens for TK-12/32 4½-inch Cameras	
57	Varotal III Outdoor Lens for TK-40/41 Color Cameras	
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59	Super Universal Zoomar	
59	Super Universal Model B Zoomar	
59	Super Studio Zoomar	
59	.....	Super Studio Model B Zoomar	
59	.....	Converter, 12-inch to 72-inch, for Super Universal Zoomar	
59	.....	Close-up Adaptor, 2½" to 16" for the Super Universal Zoomar	
59	Converter, 5-inch to 15-inch for Super Studio Zoomar	
59	Color Field Lens for Super Universal Zoomar	

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60-61	TD-3A	Counterbalanced Camera Pedestal.....	26036
62-63	TD-9C	Motor Driven Camera Pedestal (For Color TV Camera).....	40861
62-63	TD-9M	Motor Driven Camera Pedestal (For Monochrome Camera).....	26038
63	.....	34-inch Diameter Steering Wheel for TD-9C.....	40862
63	.....	25-inch Diameter Steering Wheel for TD-9M.....	26039
64	TD-7AO	Lightweight Camera Pedestal (For TK-11, TK-12 Cameras).....	26044-A
64	TD-7AV	Lightweight Camera Pedestal (For TK-15 Camera).....	26054
65	TD-10	Lightweight Hydraulic Pedestal.....	26053
66	PN6-29	Standard Pneumatic-Balance Pedestals	
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67	TD-11A	Metal Tripod	26046
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72	Shock Mount for TM-35 Portable Master Monitor.....	26511-A3
72	Shock Mount for TG-31 Portable Sync Generator.....	26511-A4
72	Shock Mount for WP-16 Portable Power Supply in Field Case.....	26511-A5
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73-74	Electro-Magnetic Orbiter Coil for TK-10/30 Series Monochrome Cameras	26851-A
73-74	Electro-Magnetic Orbiter Coil for TK-10/30 Series Monochrome Cameras modified by RCA Service Company.....	26852
73-74	Electro-Magnetic Orbiter Generator.....	26853
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74	Immobilizer Coil Kit (For use with MI-26850/26853).....	26854
74	Immobilizer Coil Kit (For use with MI-26851/26853).....	26855
75	Neutral Density Filter Slide Mechanism for TK-40A/41 Color Cameras	40528
76	Neutral Density Filter Holders for TK-11/31 Series Monochrome Cameras	26847
76	Plastic Cover for TK-11B/TK-31B Camera and Viewfinder with Hood	26862-1
76	Plastic Cover for TK-11B/TK-31B Camera and Viewfinder with Zippered End.....	26862-2
76	Plastic Cover for TK-40A/41 Cameras.....	26862-3
77	Luminometer	40869
78	Video Preamplifier for TK-11/31 Series Monochrome Cameras.....	26153
78	Video Preamplifier for TK-40/41 Color Cameras.....	40800-A
79	Current Regulator (for TK-11B Camera).....	26090-A
80	TY-31A	Field Power Supply.....	26091
80	Plate Current Meter.....	21200-C1
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86	Set of Interconnecting Cables, Camera to Camera Auxiliary.....	40835
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86	Straight Female Connector, 24-contact.....	26759-48
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86	Straight Jones Type Connector with Plug Button, 18-contact.....	40856
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87	Power Cable (10-foot length, 2-conductor, male and female Cannon Type Connectors).....	26759-2
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87	Interphone Cable (10-foot length, 9-conductor, with Cannon type male and female connectors and dustcaps).....	26759-61
87	Set of Interconnecting Cables for TK-32 Field Camera Chain.....	26359
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87	Set of Interconnecting Cables for TG-12A Field Sync Generator.....	26736
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88	RG-8/U	Coaxial Cable	74B
88	RG-59A/U	Coaxial Cable	75
88	RG-11A/U	Coaxial Cable	83A
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88	Microphone Cable, 2-conductor.....	13307
88	RG-58C/U	Coaxial Cable	13318-A
88	Power Cable, 18-conductor.....	13319
88	3-V Film Camera Cable, 33-conductor.....	13320
88	RG-65/U	Delay Cable	13321
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88	Orbiter Power Cable, 7-conductor.....	13333
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88	Power Cable, 26-conductor.....	13341
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88	Power Cable, 6-conductor.....	13380-6
88	Power Cable, 8-conductor.....	13380-8
88	Power Cable, 12-conductor.....	13380-12
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88	Crimping Tool for use with MI-13325 Cable.....	40422-A
88	Fittings for Adapting MI-13325 Cable to PL-259 Connector.....	40423
89	Single Cable and Adaptors for TK-40A/41 Color Cameras	
89	Single Cable (50-foot length, with connectors).....	40868-2
89	Single Cable (100-foot length, with connectors).....	40868-3
90	Single Camera Cable (200-foot length, with connectors).....	40868-4
90	Adaptor for TK-40A/41 Camera.....	40531-1
90	Adaptor for TK-40A/41 Camera Control.....	40531-2
90	Set of 10 Male Connector Pins.....	#221210
90	Set of 10 Female Connector Pins.....	#221209

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115-118	Color Television Mobile Coach	
119-122	Color Television Mobile Trailer	
123-126	Television Tape Mobile Unit for Monochrome	
125-126	Television Tape Mobile Unit for Color	

RCA BROADCAST SALES OFFICES

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504 Charlottetown Mall 333-3996

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Seattle 4, Wash.

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THE MOST TRUSTED NAME IN TELEVISION

Radio Corporation of America • Broadcast & Television Division

Camden, New Jersey

PRICE LIST

FOR

Television Camera Equipment



PRICES EFFECTIVE OCTOBER 1, 1964



Broadcast and Communications Products Division

Radio Corporation of America

Camden 2, N. J.

ORDERING INFORMATION

RCA broadcast equipment is sold directly to broadcast stations through the Broadcast Sales Representatives operating out of the convenient sales offices listed below. These Broadcast specialists are available to assist you in discussing the application of broadcast equipment.

In ordering equipment, please indicate the Master Item (MI) number for each equipment. This will help us to speed the shipment to you. You will find the Master Item (MI) numbers are used to identify the equipment on the invoices and packing slips.

The Purchaser shall be responsible for all transportation charges, and shipments will normally be forwarded with shipping charges "collect." However, shipping charges can be prepaid and added to the billing invoice if your purchase order authorizes this method. We suggest that you consider the latter procedure since it eliminates the necessity of having petty cash on hand at the time of delivery. Your purchase order should specify the method of transportation desired, otherwise RCA will use its best judgment. The cheapest method of transportation is not always used as this may not always result in the most rapid delivery. Certain items, such as vacuum tubes, are usually shipped by Express because of the design of carrying container, insurance, etc.

Sales Offices

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Woodlawn 3-8000**

**1121 Rhodes-Haverty Building
ATLANTA 3, GEORGIA
524-7703**

**4605 Laurel Canyon Drive
AUSTIN, TEXAS
Glendale 3-8233**

**2700 W. Olive Street
BURBANK, CALIFORNIA
849-6741**

**504 Charlottetown Mall
CHARLOTTE 4, NORTH CAROLINA
333-3996**

**2000 Merchandise Mart Plaza
CHICAGO 54, ILLINOIS
467-5900**

**1600 Keith Building
CLEVELAND 15, OHIO
Cherry 1-3450**

**7901 Carpenter Freeway
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Melrose 1-3050**

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Davis 6-8850**

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324-4434**

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929-3033**

**36 West 49th Street
NEW YORK 20, NEW YORK
MU 9-7200**

**420 Taylor Street
SAN FRANCISCO 2, CALIFORNIA
Ordway 3-8027**

**2246 First Avenue, South
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Main 2-8350**

**Rm. A3-300, Southfield Office Plaza
SOUTHFIELD, MICHIGAN
357-0080**

**1725 K Street, N.W.
WASHINGTON 6, D. C.
Federal 7-8500**

**1645 S. Military Trail
WEST PALM BEACH, FLORIDA
683-2219**

Price List for Television Camera Equipment Catalog

(Fifth Edition)

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NOTE: This is a U.S. Domestic Price List including prices of items designed for 115 volt, 60 cycle operation and for U.S. television scanning standards. Prices on equipment for foreign power and scanning standards are available upon request.

TV CAMERA EQUIPMENT

4½-INCH IMAGE ORTHICON CAMERAS

Catalog Page	MI Number	Type Number	Description	Price
3-14	—	TK-60A	4½-Inch Image Orthicon TV Studio Camera Chain.....	\$22,500.00
3-14	—	TK-60A	4½-Inch Image Orthicon TV Field Camera Chain.....	24,440.00
(For complete list of equipment supplied see Page 14)				
5	26002-A	—	Camera and Viewfinder for TK-60A Camera.....	13,000.00
10	26008	—	Remote Control Panel, Console Mounting.....	350.00
10	26007	—	Remote Control Panel, TM-35 Mounting.....	350.00
11	26003-B	—	Processor, Rack Mounting.....	3,114.50
11	26009-B	—	Field Processor	3,379.50
11	26084-B	WP-16B	Power Supply	865.00
12	26216	—	Field Case for WP-16B.....	265.00
12	26884-A	—	Wedge Mount	100.00
12	26154	TM-35	Portable Master Monitor.....	1,375.00
14	ES-26957-A	TM-6C	Master Monitor	1,785.00
14	26579-B	—	Blower for TM-6C.....	110.00
14	26083-A	—	Centering Current Subchassis.....	100.00
14	26082-A	—	Unregulated High Voltage Subchassis.....	37.50
14	26373	—	Viewfinder Hood	150.00
14	26252	—	Console Well Adaptor for MI-26008 Remote Control Panel.....	38.50
14	26254	—	Rack Adaptor for MI-26008 Remote Control Panel.....	25.00
14	26006-A	—	Spare Video Preamplifier for TK-60A.....	390.00
14	26019	—	Spare Remote Iris Drive Assembly for TK-60A.....	770.00
14	26004-A	—	Spare I.O. Yoke Assembly for TK-60A.....	1,300.00

COLOR CAMERAS

15-26	—	TK-41C	Color Camera Chain with Console Mounted Controls.....	59,900.00
15-26	—	TK-41C	Color Camera Chain with Rack Mounted Controls.....	68,690.00
(For complete list of equipment supplied see Page 26)				
23	40871	—	Video Level Control Panel.....	300.00
23	40872	—	Table Assembly for MI-40871 (Rack Mounted)	70.00
26	40833-1	—	Gamma Corrector (0.7).....	75.00
26	40833-2	—	Gamma Corrector (1.0).....	30.00
26	40226-D	TM-21D	Color Control Monitor.....	3,390.00
26	40873	—	Field Lens Test Pattern.....	85.00
26	40800-A	—	Spare Video Preamplifier for TK-41C.....	440.00
26	26886	—	Pulse Delay Line.....	125.00
26	34001-F	WA-1E	Color Bar Generator.....	1,490.00
26	26070-A	WA-9A	Calibration Pulse Generator.....	410.00
26	34017-B	WA-7C	Linearity Checker	Discontinued

3-INCH IMAGE ORTHICON CAMERAS

27-34	—	TK-14	Studio Camera Equipment.....	16,900.00
27-34	—	TK-14	Field Camera Equipment.....	17,900.00
(For complete list of equipment supplied see Page 34)				
28	26014	—	3-Inch Image Orthicon Camera, 115 volts, 60 cycles.....	5,200.00
31	26024	—	Camera Viewfinder	2,500.00
31	26074	—	Studio Camera Control Chassis.....	2,782.50
31	26093	—	Focus Current Regulated Supply.....	550.00
32	26064	—	Field Camera Control.....	3,562.30
33	26091	TY-31	Field Power Supply.....	1,200.00
33	26294	—	Auxiliary Field Case.....	250.00
34	26153	—	Spare Video Preamplifier.....	355.00
34	26747-A	—	Spare I.O. Yoke Assembly.....	810.00

VIDICON CAMERAS

Catalog Page	MI Number	Type Number	Description	Price
35-38	—	TK-15B	Studio Vidicon TV Camera with TM-6C Master Monitor.....	\$ 8,750.00
35-38	—	TK-15B	Studio Vidicon Camera Chain with TM-35 Master Monitor..... (For complete list of equipment supplied see Page 38)	8,370.00
36	26023-C	TK-15B	Vidicon Camera Head.....	3,600.00
38	26063-A	—	Output Amplifier, 115 volts, 60 cycles.....	1,030.00
38	26213-A	—	Remote Control Panel, Console Mounting.....	127.00
38	26212	—	Console Well Adaptor for MI-26213-A.....	25.00
38	26161-A	—	Remote Control Panel (TM-35 Mounting).....	127.00
38	26842	—	Viewfinder Shade	25.00
38	26843	—	Adjustable Viewfinder Hood.....	175.00
38	26191-A	—	Automatic Sensitivity Control Chassis.....	295.00

MONOSCOPE CAMERA

39-40	26030-B	TK-1C	Monoscope Camera (Less Monoscope Tube).....	3,775.00
39-40	26657	2F21	Monoscope Tube	275.00
39-40	—	1699	Special Monoscope Tube.....	On Request
39-40	21523-C	580-D	Power Supply	400.00

CAMERA LENSES

41-44	—	—	Ortal Fixed Focus Lenses (For 4½-Inch Image Orthicon Cameras)	
42	26882-A2	—	1.38-Inch Ortal Lens.....	327.00
42	26882-A3	—	2-Inch Ortal Lens.....	302.00
42	26882-A4	—	3-Inch Ortal Lens.....	347.00
43	26882-A5	—	5-Inch Ortal Lens.....	324.00
43	26882-A6	—	8-Inch Ortal Lens.....	382.00
43	26882-A7	—	12½-Inch Ortal Lens.....	600.00
44	26882-8	—	16-Inch Ortal Lens.....	840.00
44	26882-9	—	22-Inch Ortal Lens.....	1,042.00
45	—	—	Fixed Focus Lenses (For 3-Inch Image Orthicon Cameras)	
45	826159	—	35mm Fixed Focus Lens.....	175.00
45	826160	—	50mm Fixed Focus Lens.....	175.00
45	826161	—	85mm Fixed Focus Lens.....	175.00
45	826162	—	135mm Fixed Focus Lens.....	175.00
46-49	—	—	Standard and Telephoto Lenses (For 3-Inch Image Orthicon Cameras)	
47	26550-9	—	35mm Studio Camera Lens.....	Discontinued
47	26550-1	—	50mm Studio Camera Lens.....	275.00
47	26550-2	—	90mm Studio Camera Lens.....	275.00
48	26550-3	—	135mm Studio Camera Lens.....	275.00
48	26550-4	—	8½-Inch Studio and Field Camera Lens.....	350.00
48	26590-14	—	13-Inch Field Camera Lens.....	520.00
48	26590-15	—	17-Inch Field Camera Lens.....	Discontinued
49	26550-8	—	25-Inch Field Camera Lens.....	Discontinued
49	—	—	Field Lenses for Color Studio Cameras	
49	40802-A1	—	Color Field Lens, 20.0 Diopter, for 50mm.....	150.00
49	40802-A2	—	Color Field Lens, 13.5 Diopter, for 90 & 135mm.....	150.00
49	40802-A3	—	Color Field Lens, 7.0 Diopter, for 8½-Inch.....	150.00
49	40802-A4	—	Color Field Lens, 5.75 Diopter, for 13-Inch, 15-Inch, 17-Inch, Berthiot B-4 & Studio Zoomar.....	150.00
49	40802-A5	—	Color Field Lens, 4.5 Diopter, for 25-Inch.....	150.00
49	40802-A6	—	Color Field Lens, 16.5 Diopter, for 75mm.....	150.00
49	40802-A7	—	Color Field Lens, 24.7 Diopter, for 35mm.....	150.00
50-51	—	—	Vidicon Camera Lenses	
51	36316-12	—	Lens, 12mm, f/1.2.....	140.00
51	36316-13	—	Lens, 13mm, f/1.5.....	Discontinued

CAMERA LENSES (Continued)

Catalog Page	MI Number	Type Number	Description	Price
51	36316-25	—	Lens, 25mm, f/1.5.....	\$ 100.00
51	36316-50	—	Lens, 50mm, f/1.5.....	145.00
51	36316-75	—	Lens, 75mm, f/1.9.....	169.00
51	36316-102	—	Lens, 102mm, f/2.7.....	100.00
52-53	—	—	Varotal Lenses	
53	—	—	Varotal III, Manual Operate, Dual Range	
53	—	—	For TK-40/41 Color Camera.....	9,000.00
53	—	—	For TK-10/30, TK-11/31 or TK-14 Monochrome Cameras....	8,950.00
53	—	—	For TK-60A Monochrome Camera.....	8,950.00
53	—	—	Close-up Adapter	165.00
53	—	—	Varotal V, Manual Operate	
53	—	—	For TK-40/41 Color Cameras.....	6,650.00
53	—	—	For TK-10/30, TK-11/31, or TK-14 Monochrome Cameras....	6,650.00
53	—	—	For TK-60A Monochrome Camera.....	6,550.00
53	—	—	Accessories for Varotal V Lens	
53	—	—	Range Extender #1, 2.4 to 24 inches.....	250.00
53	—	—	Range Extender #2, 3.2 to 32 inches.....	275.00
53	—	—	Range Extender #3, 4.8 to 48 inches.....	300.00
53	—	—	Close-up Adapter	370.00
53	40802-A3	—	Field Lens for TK-41 Camera.....	150.00
54	—	L-20	Vidicon Studio Zoom Lens (for TK-15 Camera)	950.00
55-56	—	—	Zoomar Lenses	
56	—	—	Angenieux-Zoomar, Model 10-2-1B.....	6,250.00
56	—	—	Hyper Universal Zoomar with Close-up Adapter.....	6,000.00
56	—	—	Range Converter #1.....	250.00
56	—	—	Range Converter #2.....	275.00
56	—	—	Range Converter #3.....	300.00
55-56	—	—	Interchangeable Adapter	200.00

CAMERA MOUNTING EQUIPMENT

57-58	26036-A	TD-3B	Counterbalanced Camera Pedestal.....	2,300.00
58	26391	—	Counterweights for TD-3A (Required for TK-60 Cameras)	25.00
59	40861-A	TD-9AC	Motor Driven Pedestal (For Color TV Cameras)	2,995.00
59	26038-A	TD-9AM	Motor Driven Pedestal (For Monochrome TV Cameras)	2,995.00
59	40862	—	34-Inch Diameter Steering Wheel (Supplied with TD-9AC)	100.00
59	26039	—	25-Inch Diameter Steering Wheel (Supplied with TD-9AM)	100.00
60	26044-A	TD-7AO	Lightweight Camera Pedestal (For TK-14, TK-60 Cameras)	1,250.00
60	26054	TD-7AV	Lightweight Camera Pedestal (For TK-15 Cameras)	1,250.00
61	26053-A	TD-10A	Hydraulic Camera Pedestal.....	625.00
62	—	PN6-29	Standard Pneumatic-Balance Pedestal.....	2,000.00
62	—	PN6-29B	Pneumatic Pedestal with Brake.....	2,100.00
62	—	PN6-33B	Pneumatic Color Pedestal with Brake.....	2,400.00
62	—	PN-100	Air Compressor	275.00
63	26046-A	TD-11B	Metal Tripod	285.00
64	26042-B	TD-15B	Tripod Dolly	425.00
65-66	26201	TDC-20	Vidicon Camera Mounting Tripod.....	Discontinued
65-66	26200	TDC-10	Dolly	120.00
65-66	26202	TDC-30	Balanced Pan and Tilt Head.....	260.00
67-68	26203-A	—	TV Camera Cradle Head (Monochrome)	495.00
67-68	40824	—	TV Camera Cradle Head (Color).....	1,675.00
69	—	—	Shock Mounts (For Field Television Equipment)	
69	26511-3	—	For TK-14 Field Camera.....	90.00
69	26511-A1	—	For TK-14 Field Camera Control, TY-31 Field Power Supply and TG-12 Sync Generator.....	90.00
69	26511-A3	—	For TM-35 Portable Master Monitor.....	90.00
69	26511-A5	—	For WP-16 Portable Power Supply in Field Case.....	90.00
69	26511-A6	—	For TK-60 Field Processor.....	90.00

CAMERA ACCESSORIES

<i>Catalog Page</i>	<i>MI Number</i>	<i>Type Number</i>	<i>Description</i>	<i>Price</i>
70-71	26850-A	—	Electro-Magnetic Orbiter Coil for TK-11/31 Series Monochrome Cameras	\$ 110.00
70-71	26851-A	—	Electro-Magnetic Orbiter Coil for TK-10/30 Series Monochrome Cameras	110.00
70-71	26853	—	Electro-Magnetic Orbiter Generator.....	675.00
70-71	26857	—	Modification Kit for Camera Controls.....	20.00
72	40528	—	Neutral Density Filter Slide Mechanism (For Type TK-40A/41 Color Cameras).....	Discontinued
73	26847	—	Neutral Density Filter Holders (For TK-11/31 and TK-14 Series Cameras).....	30.00
73	21200-C1	—	Plate Current Meter.....	99.50
74-75	—	—	Television Test Charts	
74	26822-1	—	EIA Linearity Chart.....	5.00
74	26822-2	—	EIA Resolution Chart.....	11.00
74-75	26822-3	—	EIA Registration Chart.....	6.00
75	IB-31605	—	RCA Burst Chart.....	6.00
75	26822-4	—	EIA Linear Reflectance Chart.....	11.00
75	26822-5	—	EIA Logarithmic Reflectance Chart.....	11.00
76	—	Model 251	Television Diascope	438.00
77-80	—	—	Interphone Equipment	
77-80	11784-A	—	Transistor Interphone Connection.....	97.50
77-80	11734	—	Interphone Connection	33.50
77-80	11737	—	Retardation Coil	8.00
77-80	11735	—	Shelf for Mounting 11734.....	7.90
77-80	11736-A	—	Panel (Accommodating 14 Retardation Coils).....	7.00
77-80	11743	—	Single Headband Assembly.....	42.00
77-80	11744	—	Double Headband Assembly.....	87.00
77-80	11316	—	Regulated Power Supply, 3 amps., 110 volts, a-c.....	157.50
77-80	11318-A	—	Regulated Power Supply, 6 amps., 110 volts, a-c.....	288.75
77-80	11757	—	Transistor Amplifier	37.80

CAMERA CABLES, PLUGS AND CONNECTORS

81-84	—	—	TV Cables, Plugs, Connectors—See Price List to Terminal Catalog
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TELEVISION LIGHTING EQUIPMENT

85-96	—	—	Television Lighting Equipment..... On Request
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CUSTOM MOBILE EQUIPMENT

97-108	—	—	Custom TV Mobile Units.....	On Request
100-102	—	TJ-70	Mobile Truck	On Request
103-104	—	TJ-72	Television Tape Truck.....	On Request
105-106	—	TJ-82	Camera Bus	On Request
107-108	—	TJ-92	Color Mobile Trailer.....	On Request

BROADCAST EQUIPMENT SALES POLICY

FOREWORD

The present statement sets forth basic conditions under which RCA sells broadcast equipment as described in our catalog, and notes certain supplemental information. This statement does not apply to the sale of tubes or sound film recording equipment, for which separate standard sales and lease policies are in effect.

RCA broadcast equipment is sold directly through RCA Sales representatives, who are familiar with broadcast equipment.

CONTRACT PROCEDURE

All sales based on orders for transmitters, antennas and custom built or special apparatus and on orders over \$5,000 are made in accordance with the conditions of the RCA Standard Proposal Form for the sale of broadcast equipment and with any agreement stipulated thereon for individual customers.

PRICES

RCA broadcast equipment domestic prices are net f.o.b. factory or warehouse, which is Camden, New Jersey, for most items. These prices do not include any federal, state or local taxes based upon use or measured by sale or use and unless otherwise noted do not include federal excise tax. Any such taxes in effect at the time of shipment will be billed separately or will be included in the prices when required and will be due and payable upon delivery.

RCA's prices do not include installation or installation supervision unless specifically mentioned in a written condition or proposal. Purchaser assumes responsibility for installation and operation of the equipment as well as for obtaining all necessary licenses, permits, etc.

NOTE: The service of factory trained personnel who are specialists in the supervision of the installation of broadcast equipment and its maintenance and repair may be obtained through an order placed with the RCA Service Company, Inc. It is recommended that the advantages of this service be considered at the time of purchase of any major broadcast equipment.

In the case of orders under the Standard Proposal Form the billing prices are based on those prices effective at the date of the order to the extent indicated in the final contract. In the case of orders not under the Standard Proposal Form the billing prices are those prices in effect on the date of shipment.

RCA endeavors to keep its published prices current; however, all published prices are subject to change without notice.

Prices for items marked with a symbol (e) are estimates only and are subject to adjustment to those in effect on the date of shipment.

In the event the estimated prices quoted herein are exceeded by more than 10% and the billing price cannot be established by mutual agreement prior to shipment, such items may be cancelled without liability to RCA or Purchaser by either party giving written notice to the other.

PAYMENT

Terms of payment are subject to approval of RCA's Credit Department at Camden, New Jersey.

DELIVERY

RCA's delivery of broadcast equipment will be f.o.b. factory or warehouse, which is Camden, New Jersey for most items. The Purchaser shall be responsible for all transportation charges, and shipments will normally be forwarded with shipping charges "collect." As an accommodation, when specifically requested to do so by the Purchaser's order, RCA will prepay transportation charges and invoice them to the Purchaser as a separate item.

Delivery will be made to a carrier specified by the Purchaser, unless none is specified, in which event it will be to a common carrier selected by RCA. In the absence of specific

routing instructions from the purchaser, RCA's judgment with respect to the selection of a route will be final.

As a special service with respect to shipments overland, by inland waterways or by air we carry All Risk Transportation Insurance for the benefit of our Broadcast Equipment customers, and your interests will be amply protected in all shipments of equipment while in transit by the methods indicated above, at no additional expense to you, provided that you inspect all shipments within 15 days after receipt and report within that time in writing any shortages or damages to the carrier and to RCA.

RCA will endeavor to meet delivery schedules but it assumes no liability for damages of whatever kind for delays in delivery. No delays in delivery shall relieve the purchaser of his obligation of performance.

PATENT LICENSES

RCA broadcast equipment is licensed for radio telephone or television broadcast transmission under United States patents owned by RCA or under United States patents under which RCA is licensed.

PATENT PROTECTION

RCA, at its own expense, will defend any suit which may be brought against purchaser for infringement of United States patents by the equipment furnished when sold or used for radio telephone or television broadcast transmission, and in any such suit will satisfy any final award for such infringement. This is upon the condition that purchaser gives RCA prompt notice of such suit and full right and opportunity to conduct the defense thereof, together with full information and all reasonable cooperation, and upon the further condition that the claimed infringement does not result from the combination of the equipment furnished with other equipment, apparatus, or devices not furnished by RCA. No costs or expenses shall be incurred for the account of RCA without its written consent. If purchaser's sale or use of such equipment for radio telephone or television broadcast transmission shall be prevented by permanent injunction, RCA shall substitute for the infringing equipment or parts other equally suitable equipment or parts, or at RCA's option obtain for purchaser the right to sell or continue the use of such equipment, or at RCA's option take back such equipment and refund any sums purchaser has paid RCA therefor, less a reasonable amount for use, damage and obsolescence.

WARRANTY

Except for electronic tubes, which bear their own warranty which accompanies them at the time of their sale, RCA warrants its broadcast equipment to be free from defects in material and workmanship under normal use and service for a period of one year from the date of delivery. RCA's obligations under this warranty are limited to the repair or replacement of defective parts and the shipment of such repaired or replacement parts to the purchaser f.o.b. factory. Equipment furnished by RCA but listed as manufactured by another bears only the warranty given by such other manufacturer. No warranties other than those set forth herein are given or are to be implied with respect to broadcast equipment. In no event is RCA liable for consequential damages.

REPAIRED AND RETURNED APPARATUS

Before an apparatus is returned to RCA for repairs or adjustments, shipping instructions and an identifying number should be obtained from the nearest RCA Sales Office. RCA assumes no responsibility for unauthorized returns.

EQUIPMENT MODIFICATIONS AND WITHDRAWALS

RCA reserves the right to make, without notice, modifications of the equipment described in this catalog without affecting its right to sell such equipment under orders based on the catalog description, provided, however, that the modifications shall not materially affect performance. These modifications of equipment may be made by RCA or its suppliers from time to time for reasons such as improvement in performance, simplification in design, or availability of material. RCA also reserves the right to withdraw from sale, without notice, any equipment described in our catalog.

ACCEPTANCE OF ORDER

No order shall be binding upon RCA until accepted by it in writing at Camden, New Jersey, and the banking, negotiation or other use of the down payment shall not constitute an acceptance by RCA. Orders received by Sales Offices will be forwarded promptly to RCA's Camden Office.