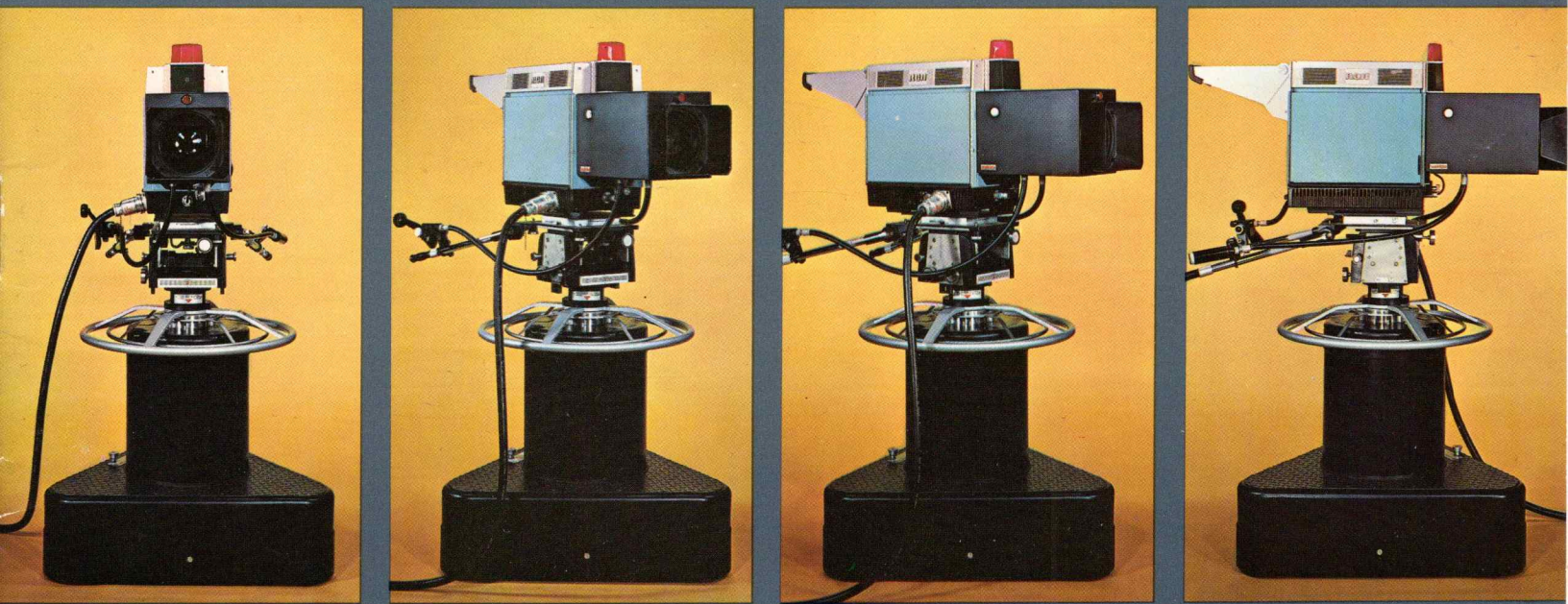
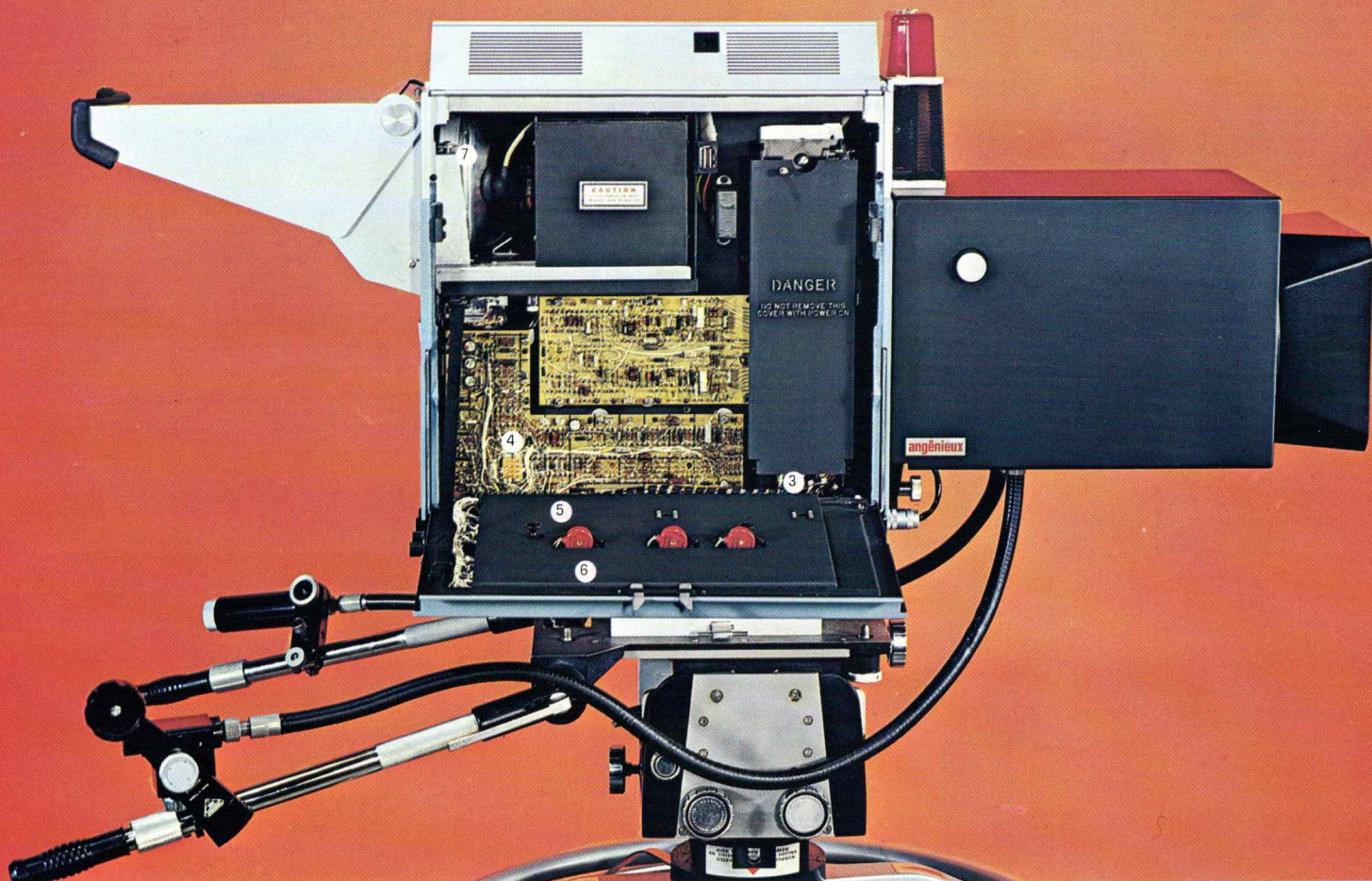




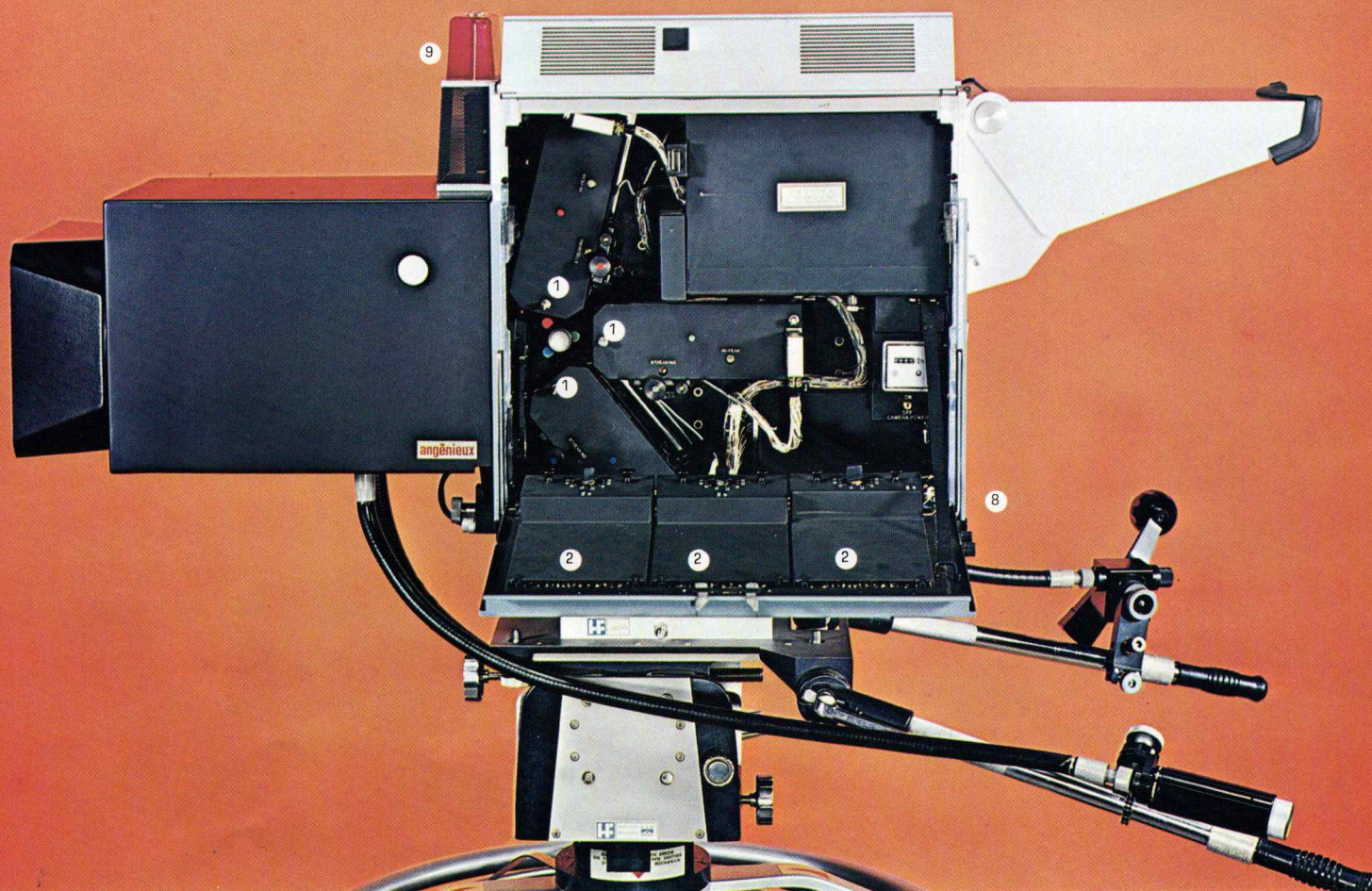
RCA TK-44A COLOR TV CAMERA • The high performance color camera . . .

RCA





Functional Camera Head



1 MAJOR DESIGN FEATURES

- High quality color
- Accurate color tracking
- Superior sensitivity
- Good specular response
- Independent black level
- Production versatility
- Lightweight, precision design
- Removable viewfinder
- Investment economy

High Quality Color . . .

The TK-44A employs two major engineering improvements to offer a new level of color picture quality.

The first of these features is "contours-with-a-comb," an aperture-correction technique that enhances image edges without significantly increasing background noise. This method of contour enhancement is combined with RCA's special "core" filter to ensure that the TK-44A produces a consistent, high definition picture.

Accurate color control in the TK-44A is accomplished with "Chromacomp," an exclusive RCA advantage that permits the precise variation of chroma saturation and hue required for faithful color rendition. It also enables the TK-44A to match the colorimetry of other broadcast color cameras you may have.

Accurate Color Tracking

Good color tracking is simply the camera's ability to maintain the same color tones in shadow as in light without a shift in hue. It is especially required when dramatic or mood lighting scenes are to be televised. The TK-44A can cope with many different lighting conditions, because the circuits affecting black level and white level are completely independent of each other, to prevent the interaction that causes poor color tracking.

Superior Sensitivity

The final image delivered to the color or black and white receiver depends a great deal on the sensitivity of the camera. With cameras being used both in the studio and for remote broadcast, under widely varying light conditions, stations need a camera that performs to its peak video specification at minimum light levels.



Faithful Color Rendition

The TK-44A combines three basic attributes to provide measurably superior sensitivity: high-efficiency optics, extremely low-noise, transistorized preamplifiers and the unique "comb" filter. As a result, the TK-44A develops *full* video levels when the incident light of a scene is as low as 15 footcandles. Consequently, for indoor programs or outdoor events, lighting conditions become far less important—more of your time and budget can be expended on the production itself.

Good Specular Response

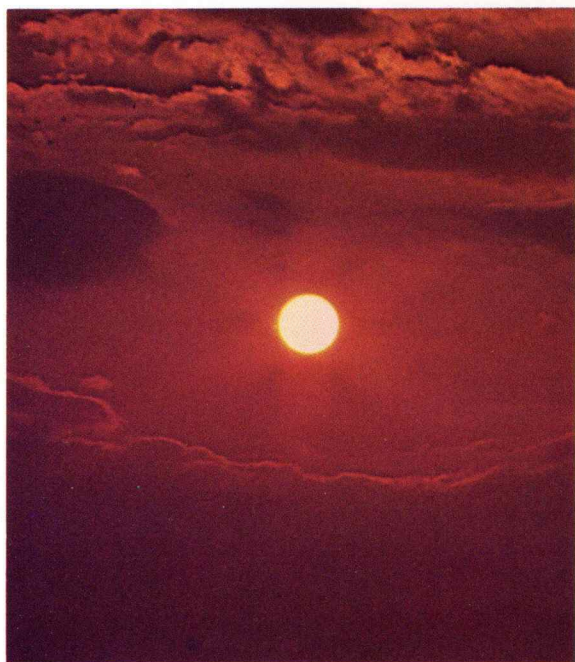
Ability to handle specular highlights is another superior characteristic of the TK-44A. The camera design provides for ample beam-current reserve to the separate-mesh pickup tubes to handle peak picture highlight areas. In addition, the entire optical path functions to eliminate secondary reflections. The photograph below of a monitor being fed by a TK-44A provides an example of its highlight handling excellence.

Independent Black Level

The TK-44A black level control adjusts only the black level; white level (video gain) of the camera is completely unaffected by changes in black level. As a result, the video operator can vary black level without fear of overmodulation or white clipping.

A Versatile Production Tool

The TK-44A incorporates many features to ensure that it fulfills a dual role—studio and outside broadcasting—with great distinction. For example, the quick-change lens system permits rapid lens removal when the camera has to be moved to a different location and then fast and easy remounting of a different type of lens for the new pick-up—with no need for optical realignment. Its big, bright viewfinder provides a good image even at the end of 3000 feet (915 m) of cable, so your cameramen can always provide the video operator with the best view of the scene. Its extra sensitivity delivers usable pictures under low light levels and its lightweight and self-balancing handles make it easy to carry from one location to another.



Low Light Level Performance



Good Specular Response

A Lightweight, Structurally Rigid Camera

A modern color camera must be lightweight, for maximum mobility and operational flexibility. At the same time, its basic structure must be extremely rigid in order to preserve optical alignment.

The TK-44A uses aluminum-alloy castings in order to offer a good strength-to-weight ratio. Two castings form the main structural members: The optical bedplate and the camera base and front.

The optical bedplate is a rather unique example of the versatile, weight-saving design of the TK-44A. It is cast in the form of a "webbed" T to form the front of the camera at the same time that it supports the lens, beam-splitting optics, and the three pickup tube assemblies. Thus, it is both the optical bedplate and the camera's main structural member in a single casting.

Removable Viewfinder

Should a viewfinder fail in the TK-44A, it may be removed and

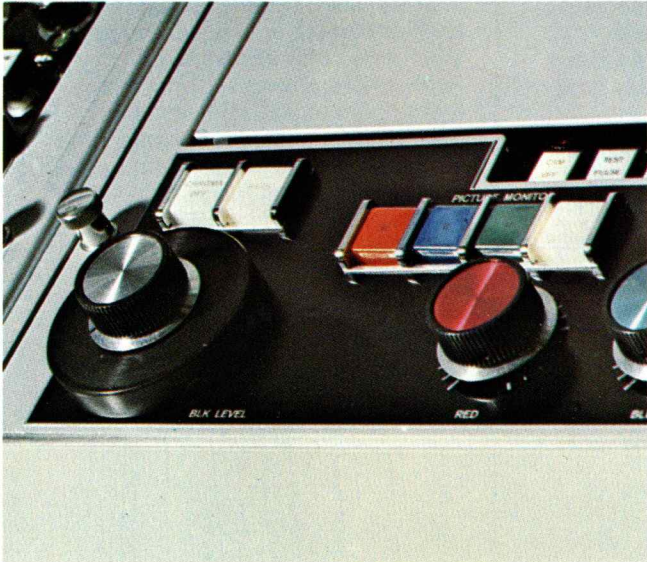
served independent of the camera. It's simply a matter of unplugging the viewfinder and working on it by itself. There are no knobs to remove, no hinges to swing out, and no screws to loosen.

An Economical Investment

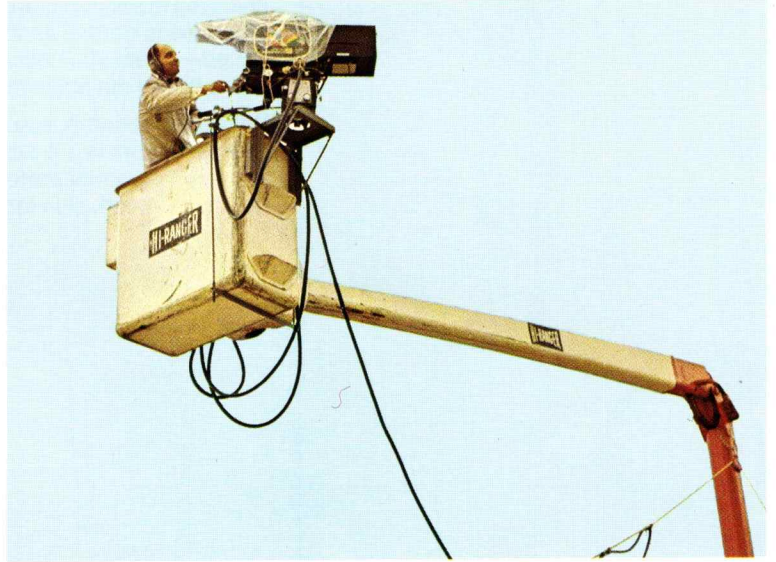
Return on investment should be an important consideration in selecting a color camera—and the TK-44A offers many advantages to verify its purchase. Cameramen and video operators require premium training and salaries: the operational format of the TK-44A allows one video man to operate up to four cameras with ease.

Solid-state electronics with integrated circuits keep picture performance at peak levels for long periods of time.

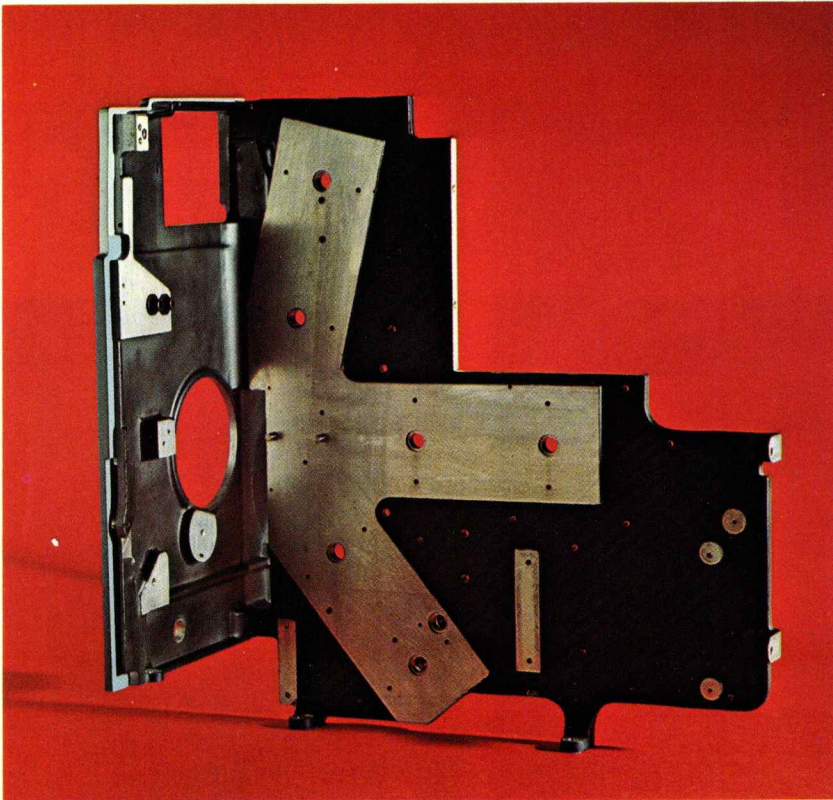
Maintenance and downtime are equally costly: sealed optics in the TK-44A minimize mirror cleaning—stable performance means less set-up time and more production time. And finally, superb color performance allows your station to expand programming by producing high quality video tapes to supplement your live broadcasts.



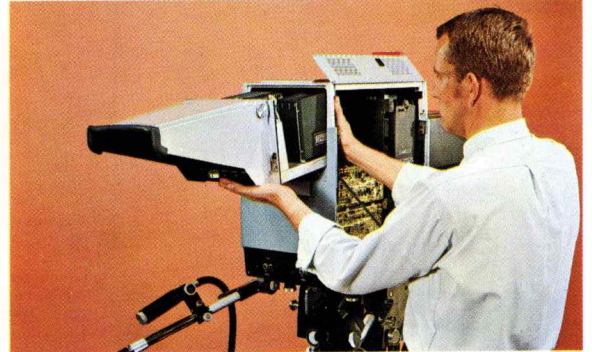
Independent Black Level



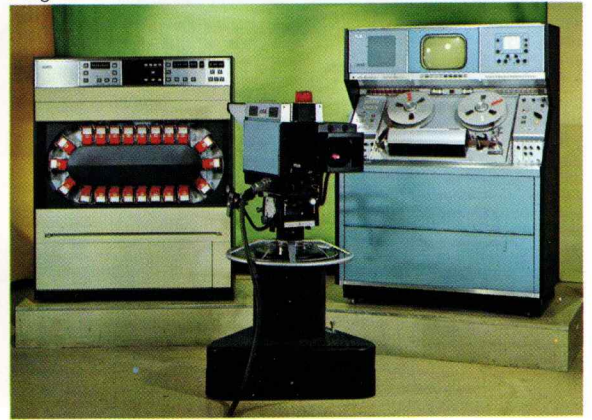
Production Versatility



Unique Optical Bedplate



Plug-In Viewfinder



Investment Economy

2 COMPLETE COLOR PERFORMANCE

- Chromacomp
- Calibrated video balance controls
- Noise-free contour enhancement
- Pick-up tube shading controls

Chromacomp

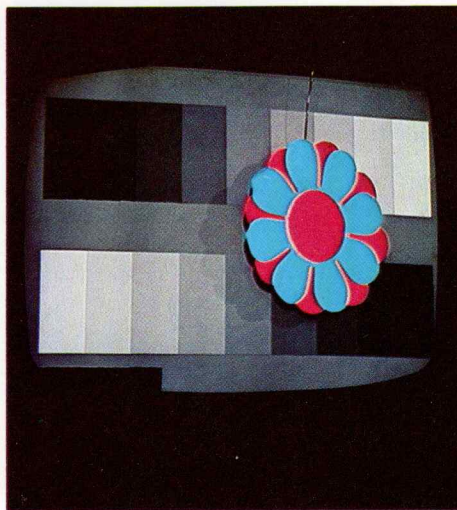
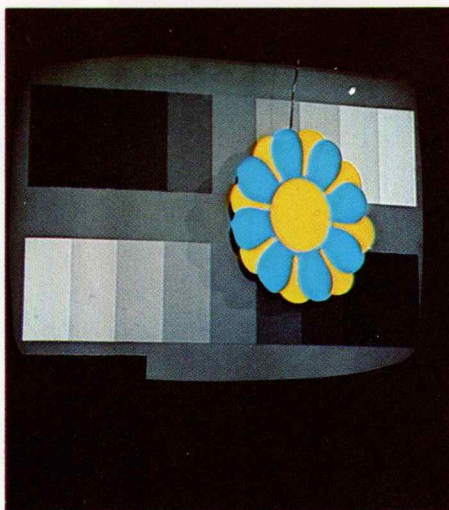
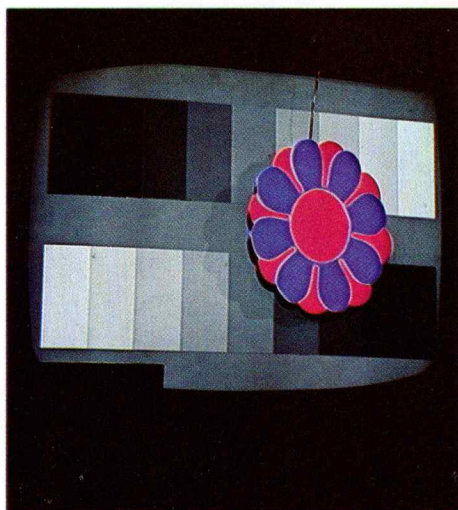
The TK-44A introduces Chromacomp, a new electronic system that provides a wide range of color flexibility—you can even remove response to any of the primary colors or their complements—without upsetting grey scale balance.

These three illustrations demonstrate Chromacomp capability: picture one is a normal monitor display with good grey scale and color rendition. In picture two, Chromacomp is used to remove red response—the flower changed color, but note that grey scale balance was not changed at all. In picture three, red response is normal and blue is varied—again you notice the change in the flower but not in the grey scale.

With Chromacomp, you can creatively arrange colors in any scene, to suit your own personal preference in color saturation, skin tones and other

color qualities your station may desire. Once these specifications are determined, they can become your standards, because any setup can be recorded with a vectorscope and duplicated whenever you want to produce the same scene.

In operation, the Chromacomp feature derives color-correction signals from the three primary colors (red, green, blue) and the three complementary colors (cyan, yellow and magenta) and provides individual control of the saturation and hue of each. These twelve Chromacomp controls may be used to adjust the spectral response of the camera to match the color characteristics of another camera or to accommodate a personal color preference. Furthermore, when used with other types of broadcast color cameras, the TK-44A's exclusive Chromacomp facility allows you to adjust saturation and hue of each primary color—and its complement—to match the output of the other camera.



Chromacomp—Creative Color Capability

Calibrated Video Balance Controls

Separate from the Chromacomp module are three video balance controls. These are calibrated, 20-position switches that provide as much as 2.0 dB variation in the red, blue, or green video channels—in 0.1 dB steps. This permits momentary changes of color balance in a given scene, and, since the controls are calibrated, the camera's original color balance is always quickly and easily restored after the special color effects have been accomplished.

"Combed" and "Cored" Edge Enhancement

The TK-44A uses combed and cored edge enhancement to bring you a new degree of picture resolution. Since this new technique employs a special filter to minimize the background noise that usually develops when contour enhancement is used, more edge enhancement (it's a continuously variable adjustment) can be used to resolve the smallest detail in scenes. The photograph shown here is just an example of the TK-44A's resolution capability.

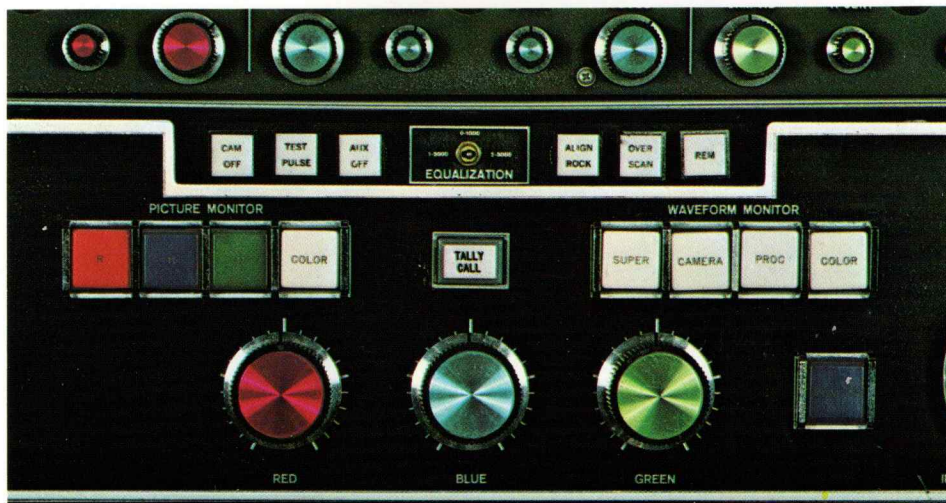
These unique "combing" and "coring" circuits eliminate virtually all noise that results from aperture correction so that more contour enhancement can be applied to the video without a significant increase in picture noise. The result, of course, is the TK-44A picture with excellent color and high resolution.

Functionally, "combing" is a method of selective filtering of the processed video signal to eliminate "beats" from the color sub-carrier; "coring" acts to minimize system response to background noise or low amplitude video transitions.

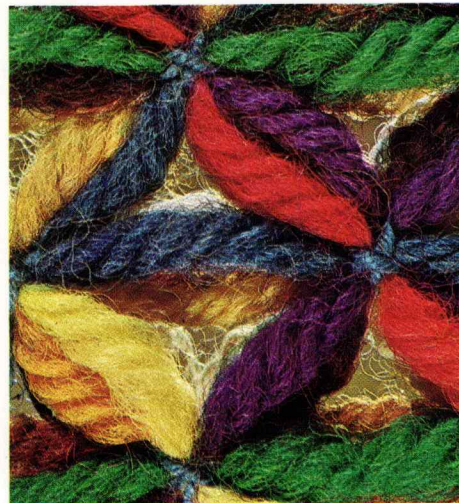
The low-noise characteristics of "combed" and "cored" enhancement are particularly useful under low light conditions, because contours may be enhanced without sacrifice of signal-to-noise ratio in the final picture.

Pick-Up Tube Shading Controls

Color pick-up tubes must provide uniform color response throughout the picture area. The TK-44A employs special shading circuitry to eliminate incremental amounts of differential shading which might be present in the tubes.



Calibrated Color Control



Noise-Free Contour Enhancement

3

RELIABLE ELECTRONICS

- Solid-state components
- Many integrated circuits
- FET preamplifiers
- Easy component access

Solid-State Components

The TK-44A camera delivers the constant, dependable, operating performance necessary to produce your studio and remote programs.

This important, day-to-day reliability is provided by the camera's fully solid-state electronics—except for the three pickup tubes and the viewfinder cathode-ray tube.

Many Integrated Circuits

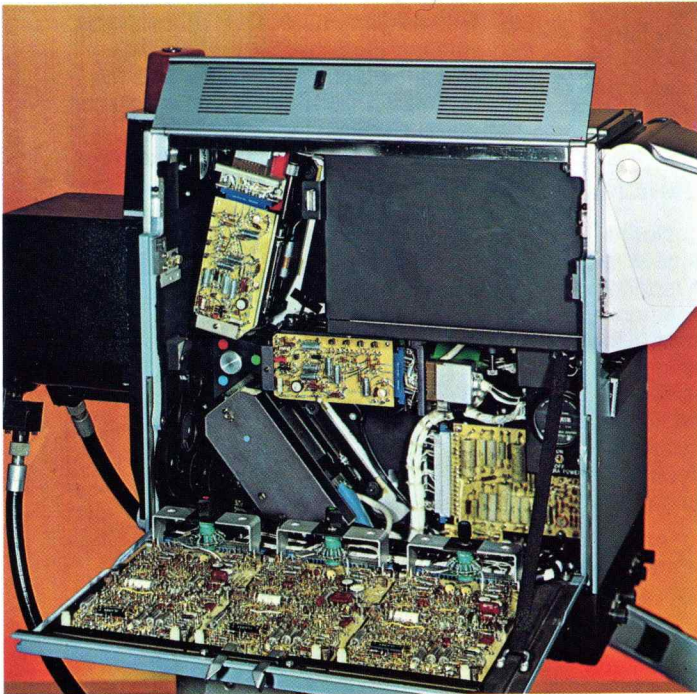
Wherever practical, integrated circuits have been incorporated into the TK-44A design to offer camera users the same reliability that modern digital computers have. These electronic innovations—usually referred to as "IC's" or "chips" often enclose 30 or more electronic functions in a capsule the size of a small coin. The use of more than 50 integrated circuits has eliminated many transistors and diodes. Integrated circuits and supporting components are all mounted on etched-circuit boards, which then become plug-in modules.

Low-Noise Preamplifiers

The field-effect transistor (FET), with its high input impedance and low thermal noise characteristics, is ideally suited for the input stage of color-video preamplifiers. TK-44A preamplifier inputs each use two junction-type FET devices operating in parallel and connected directly to the pickup tube target. This arrangement achieves the high conductance-to-capacitance ratio essential for a low noise figure.

Easy Component Access

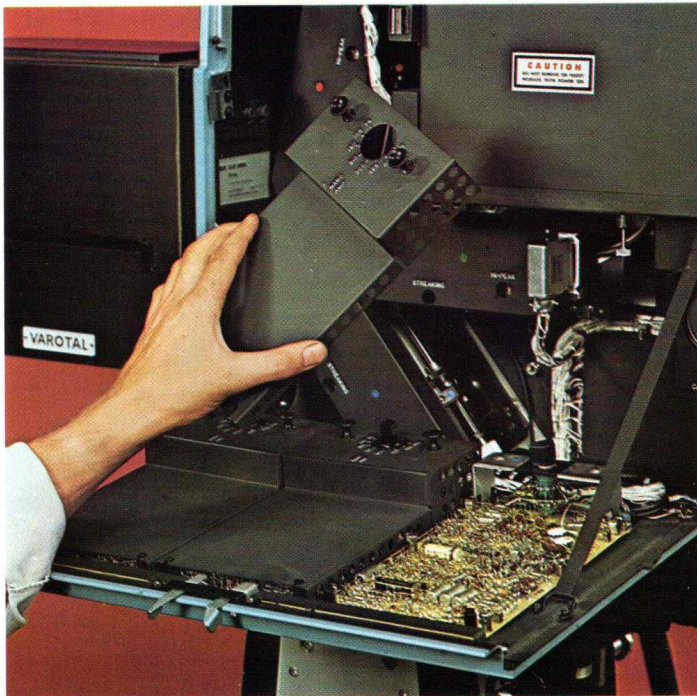
The TK-44A electronics are arranged so that components and interconnections are easily accessible in the camera head—individual modules do not have to be removed. Most of the components are on the outward-facing side of the boards. In the few instances where this is not practical—the intercom assemblies for example—the circuits are modularized for easy removal and reinsertion.



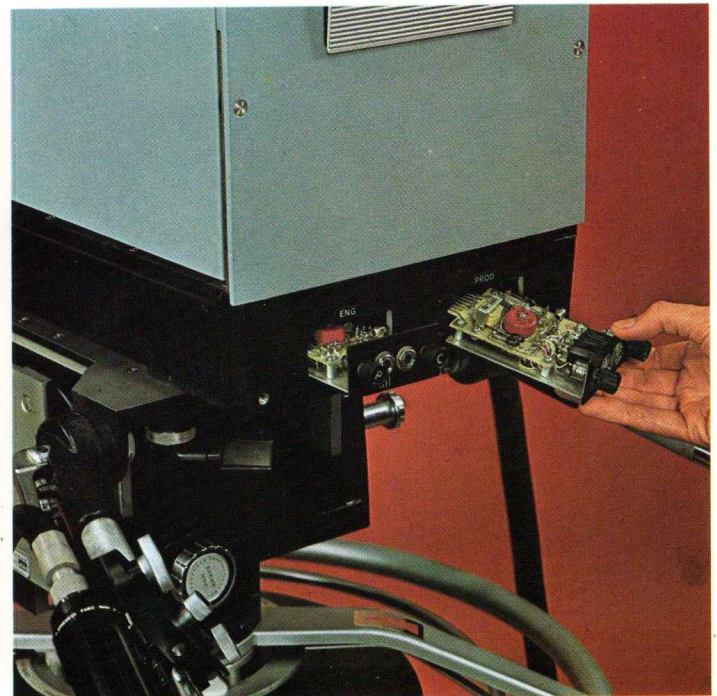
Solid-State Electronics



Service Accessibility



Plug-in Video Amplifiers



Modular Construction

- Flexible camera control
- Studio and field use
- Pushbutton monitor switching
- Versatile optical system
- Integral servo amplifier

Flexible Camera Control

Packaged for flexibility in installation planning, the TK-44A camera control unit permits a choice of mounting arrangements.

The CCU consists of four sub-assemblies: setup-control panel, auxiliary I, auxiliary II and power supply, plus waveform and picture monitors. An optional remote control panel is available should camera control be separate from camera setup. Under this option, a single, double-turret console can accommodate the control functions for two cameras, while the setup-control panel, the auxiliary units and the power supply for each camera may be installed separately in racks.

Pushbutton Monitor Switching

The setup-control panel includes pushbuttons for input selection to the picture and waveform monitors, the camera lens cap and camera-test signals. In the recessed area in the center of the panel are the camera On/Off switch, a camera cable equalizer range switch and two test signal switches. At the far right of the recess is a pushbutton which energizes the optional remote control panel.

Beneath the hinged cover are camera setup controls—one set for each pickup tube. These controls are used to register the primary images and adjust the electrical focus, beam current and alignment of each pickup tube.

Efficient Optics

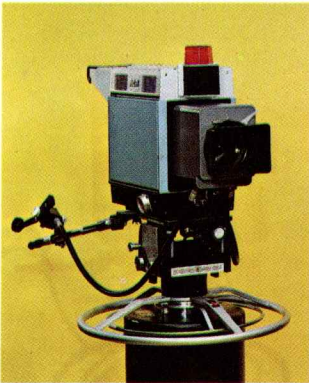
Camera sensitivity depends largely on the amount of light transmitted through the camera's optics, so any increase in optical efficiency can be seen in better pictures. The TK-44A optical system will deliver full video levels under incident light conditions of as low as 15 footcandles.

Integral Servo Amplifiers

TK-44A lenses—you may choose the brand, focal length and type—are complete, separate assemblies. This simplifies lens changes and eliminates the need for any internal adjustments. Another advantage is the fact that since the lens housing contains the servo amplifiers, accidental separation of the amplifiers from the lens is virtually impossible. This makes your field pickup scheduling easier, since you need not contend with situations whereby a camera has the proper lens but the wrong servo amplifiers, or vice versa.



Pushbutton Monitor Selection



Choice of Lenses Available



Studio and Field Use



Designed for Operator Convenience

5 COMPLETE OPERATIONAL FACILITIES

- Built for remote broadcasts
- Simplified setup
- Cameraman conveniences

Easier Remote Pickups

TK-44A design versatility makes it an ideal camera for outside broadcast requirements. Besides being of light weight, compact construction, it includes operational features to simplify setup and operation, as well as to minimize the amount of supporting electronics necessary for these remote pickups.

Three factors contribute to the ease with which the TK-44A may be quickly moved from one location to another: its light weight, 105 pounds without lens—even less without the easily removed viewfinder; full length, self-balancing handles that retract into the camera cabinet; and, a design approach that makes lens and lens-servo amplifiers an integral unit.

The rain resistant cabinet of the TK-44A serves to protect it during rain showers, while its built-in exhaust fan provides cooling during hot weather use.

The TK-44A self-compensates for camera cable lengths up to 3000 feet (915 m)—thus eliminating the need to change the pulse timing every time the camera is moved. Built-in sensing circuitry computes cable length in terms of signal delay and automatically compensates for it. Video pre-emphasis with relation to cable length is determined by switch-controlled equalizers calibrated in steps of 100 feet (30 m) of cable.

Since the TK-44A generates its own horizontal and vertical drive pulses and its own burst flag, only sync, blanking and color subcarrier must be supplied by a sync generator. This eliminates the need for any cable runs to carry sweep drive pulses, and, since the drive signals are timed automatically, cable delay compensation is not required.

Camera filters are readily accessible in the TK-44A. An 8-place filter wheel is mounted in the camera head. A thumbwheel at the side of the camera allows filter change from outside of the camera.

The TK-44A system power supply operates on power line voltages between 90 and 130 V (or 180 and 260 V) and frequencies between 47 and 63 Hz. Therefore, full performance can be consistently achieved when a portable engine or motor-generator is the power source.

Ideal for Remote Pickups



One Man Set-Up



Setup Convenience

SIMPLE SET-UP PROCEDURE

One man can normally prepare the TK-44A for operation, since the camera's stability and built-in set-up and instrumentation reduce adjustments to a minimum. Usually, a brief control check is all that is required before full operation can begin.

Special color encoder circuitry, in combination with the camera's built-in color bar generator, uses a simple peaking and nulling procedure to initially set up the encoder. This eliminates the need for a vectorscope at the same time that it simplifies encoder alignment.

The TK-44A has a push-button camera test pulse that helps expedite setup. The test pulse is inserted into the signal path at the input of each video preamplifier and functions to evaluate clipping levels, pickup tube output level and overall system gain.

It also provides an instantaneous and accurate analysis of video signal-path performance.

Designed to prevent exposure of the pickup tubes when the camera is not operating, the electro-mechanical lens cap also provides an accurate

"black" reference, because it is actually an opaque shutter in the light path between the lens and the prism optics. This shutter closes automatically when the camera is shut down. The cap is closed manually at either the camera or the control position, via pushbutton switches.

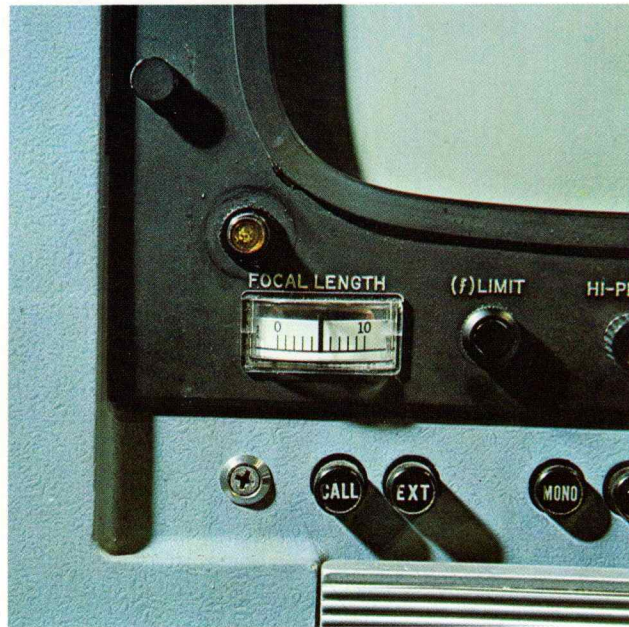
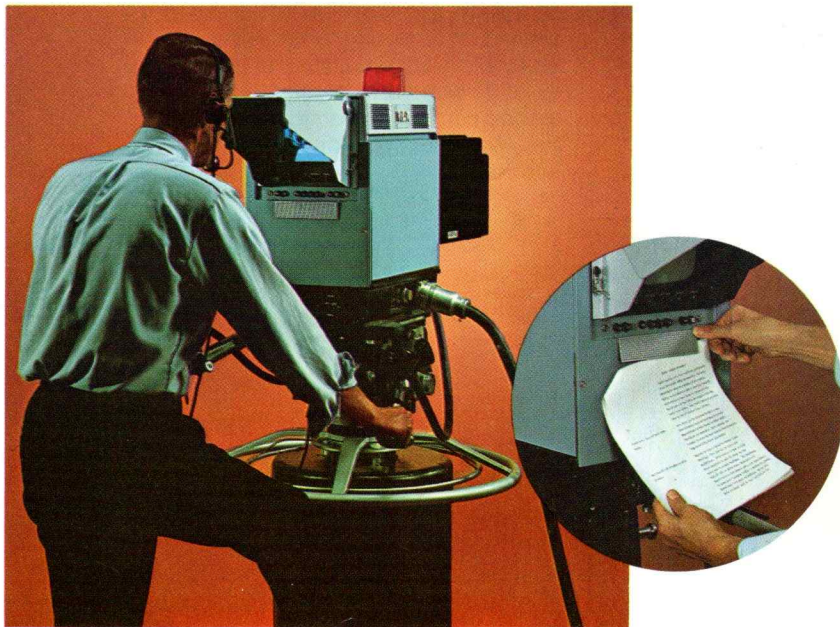
Cameraman Conveniences

Using an 8-inch (200 mm) rectangular kinescope, the TK-44A viewfinder displays a picture having 150 footlamberts brightness, with ample reserve contrast. Peak luminescence is obtained with cable lengths up to 3000 feet (915 m). In addition to the normal brightness, focus and contrast controls, the TK-44A viewfinder includes a video high-frequency peaking circuit to enable precise optical focus. Pushbutton switches allow the viewfinder to display a variety of video signals: Red, blue, green, monochrome or a video feed from the control room. This source

could be used for several functions—for example, a split screen display fed to the viewfinder from a special effects facility to aid in framing the picture "half" the camera provides.

A focal-length meter is located under the viewfinder hood of the TK-44A so that focal lengths in the zoom range of the lens may be pre-determined. A warning light that displays f-stop limit is also provided. This indicator is particularly desirable for use with zoom lenses which cannot maintain maximum iris settings over the entire range, since it provides advance knowledge of under-exposure. A spring-loaded clip to hold the cameraman's cue sheet and other instructions is mounted below the viewfinder control panel.

Cameraman Conveniences



6 AN INTEGRAL CAMERA CHAIN

- Camera head
- Setup-control panels
- Auxiliary electronics

System Description

The TK-44A uses three lead-oxide photocathode pickup tubes and is comprised of five major sub-assemblies: camera head, setup-control panel, auxiliary units (I and II) and power supply.

The following description deals with each of these units in order:

Camera Head

In addition to optics, there are nine functions housed in the camera head: (numbers refer to color photos on P. 21)

1. video preamplifiers
2. video amplifiers
3. dc filter and focus modulator
4. timing-pulse generator
5. deflection generator
6. deflection amplifier
7. viewfinder
8. intercom
9. tally and call systems

1—Video Preamplifiers

Each of the three pickup tubes has its video preamplifier mounted directly on its yoke assembly. Parallel field-effect transistors (FET's) in the input stage provide the extremely high signal-to-noise ratio that permits operations at very low light levels—as low as 15 footcandles. The overall gain of the preamplifier raises target-video level to 0.7 volts peak.

2—Video Amplifiers

The three video amplifiers are mounted on the inside of the left-hand cabinet door. They are eleven-function modules using seven integrated circuits and twelve transistors. The amplifiers include input step attenuators and output camera-cable video equalizers. Camera-cable level is 0.7 volts peak.

3—Filter and Focus Modulator

This module provides focus and pickup tube operating voltages and the focus-modulation waveform to assist alignment. The focus-modulator processes horizontal and vertical drive pulses and applies them to the focus element of the pickup tubes.

The filter provides two functions: it divides and filters the focus-element voltages received from the setup panel and it filters the focus-modulator dc power.

4—Timing-Pulse Generator

The timing-pulse generator occupies the L-shaped board mounted on the right side of the camera chassis and generates all timing, blanking and test pulses required for camera operation from the internal sync signal. It also compensates automatically for the timing delay in the camera cable.

5—Deflection Generator

Located on the inside of the right-hand door of the camera cabinet, the deflection generator converts horizontal and vertical pulses into waveforms necessary for pickup tube deflection. Deflection height, width, linearity, and horizontal skew, are remotely adjustable from the setup-control panel.

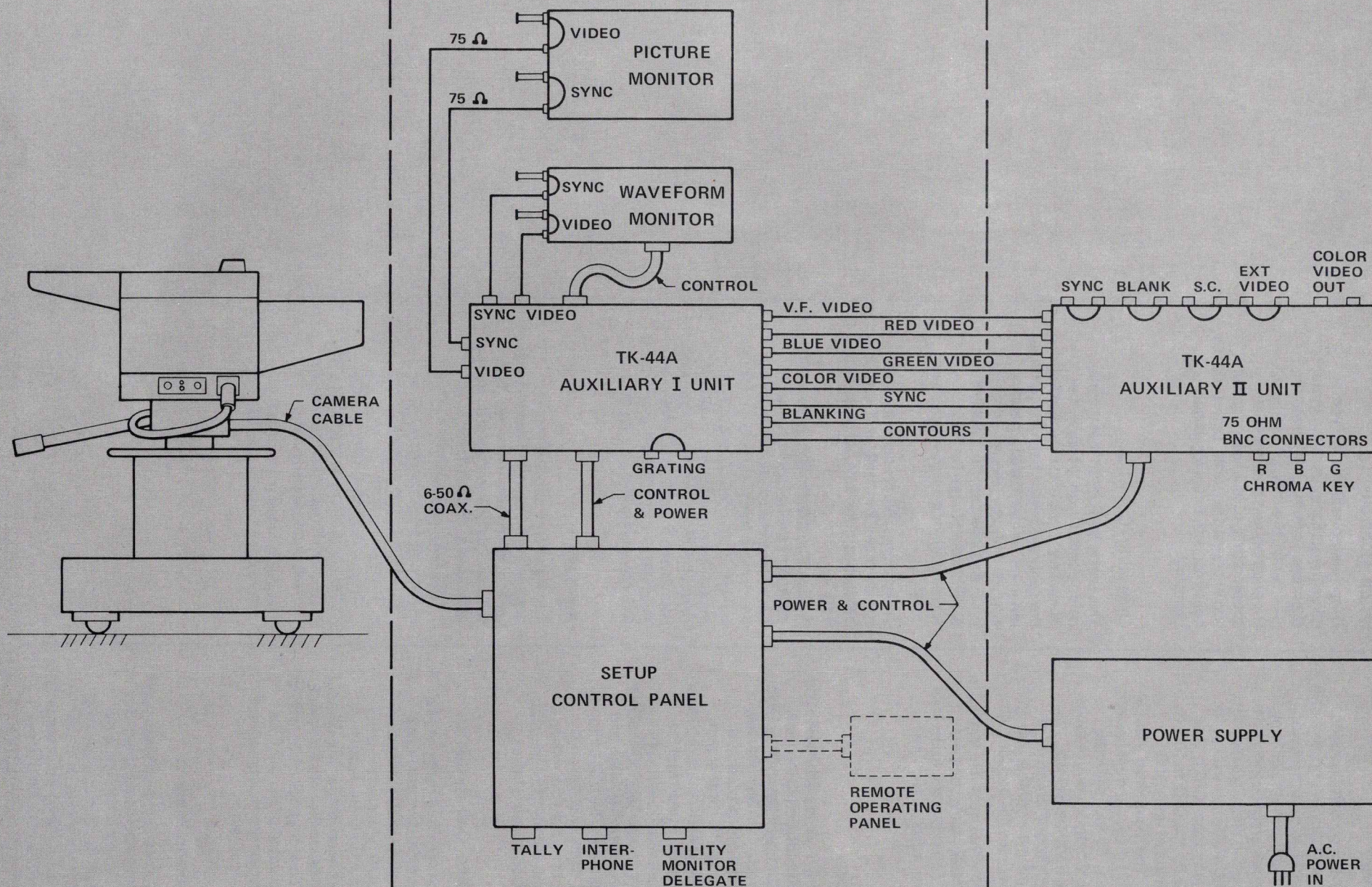
6—Deflection Amplifier

In addition to providing stairstep waveform amplification, this module contains circuitry for protection of the pickup tubes. It is located next to the deflection-generator board. Deflection centering for all three channels is accomplished in this module, with current-sampling techniques being used to maintain precise deflection amplitudes and waveforms.

STUDIO

SET-UP/OPERATE POSITION

RACK POSITION



TK-44A CAMERA CHAIN

7—Viewfinder

This self-contained unit operates from the TK-44A power supplies and generates all of its own deflection, acceleration and control voltages, as well as video amplification from the 0.7 volt video line. This monitor is entirely transistorized except for the cathode ray tube (CRT). The ultor voltage for the CRT is 10.5 Kv regulated to loads up to 500 microamps. The aluminized screen has an 8-inch diagonal dimension and provides 150 footlamberts illumination. Contrast control range exceeds 20:1 and deflection nonlinearity is less than $\pm 1\%$ of picture height in the vertical and $\pm 2\%$ of picture width in the horizontal.

A viewfinder-video output is available on the connector panel and may be used for either a crane operator's monitor or an additional picture monitor.

8—Intercom

The intercom modules are installed in slide-out trays located in the rear panel of the camera head. They have identical circuitry, so any one may be interchanged for any other in the case of a fault. The intercom system includes call-button facilities at both the camera head and the CCU and features separate lines for production and engineering headsets. Each line has its own volume and sidetone controls. The call-button at the camera controls a flashing indicator light on the CCU, while a similar switch on the CCU actuates the underhood, camera tallies.

9—Tally and Call Systems

TK-44A side tally light contains two high-output incandescent lamps connected in parallel to provide ample visibility. Viewfinder hood tallies—red and yellow—are long life 0.04 watt neon lamps. The camera head includes additional tally outputs in the lens connector for other lenses and in the connector panel on the right side for the tally light required for a crane operator.

Setup-Control Panel

This panel contains the controls used for both camera set-up and camera operation. Set-up controls are on the upper half of the panel and may be covered by a hinged lid after they have been used. Operations controls are on the lower half of the panel.

Setup Controls

These are potentiometer-type adjustments for each of the three channels, including: H-sawtooth, H-linearity, H-width, H-parabola, H-centering and their vertical counterparts, plus a skew control, two alignment controls, target voltage, beam current, beam focus and beam-off.

Operating Controls

This unit is laid out so that the iris servo control is on the right, the black level control is on the left and the calibrated color balance controls are in the center. Other operating controls include chroma-off, color bars, and lens cap. Pushbuttons are also installed for picture and waveform monitors plus tally/call control.

The optional remote control panel has switches for black level, iris, color balance control, lens cap and color bars.

A row of pushbuttons separates the setup and control panels. These switches provide: on-off control of the camera head, camera-test pulse, remote-local control, alignment, pickup tube overscan and remote control. A three-position toggle switch selects video equalization range for 1000, 2000 and 3000 feet (305, 610, 915 m) of camera cable lengths.

Auxiliary I

The Auxiliary I support system consists of 13 plug-in modules that perform 8 specific functions. They require only $5\frac{1}{4}$ inches (134 mm) of rack space. Included are:

- 1—video switcher
- 4—video equalizers
- 3—processing amplifiers
- 1—synchronizer
- 1—shading generator module
- 1—aperture delay module
- 1—aperture correction module
- 1—Chromacomp module

The basic functions of these 8 different modules are as follows:

Video Switcher

This unit provides the switching function required for full utilization of the waveform and picture monitors at the CCU and is a slave to the "monitor" pushbutton there. All solid-state switchers plus six relays select the appropriate input and feed it to the proper monitor.

The picture monitor can display five inputs: processed red, green and blue video, either separately or mixed, plus the contour enhancement signal and the encoded color video signal. The waveform monitor displays camera R, G and B video, processed R, G and B video and the encoded color signal. A separate pushbutton is available for superimposing the R, G and B signals on the 5-inch (127 mm) display

Video Equalizer

Three of the four equalizer modules are used to offset any frequency-sensitive attenuation of the RGB video from the camera head, so that a balanced input is fed to the processing amplifier. The fourth equalizer is in the viewfinder video line from the CCU. Equalization may be adjusted via a 10-step rotary switch on the front panel; two test points are available on the front panel for checking the video input and output lines of this module.

Processing Amplifier

This unit operates in the video chain between the Chromacomp module and the colorplexer. It establishes maximum black and white levels, corrects for pickup tube shading deficiencies and corrects video signal gamma. Its outputs feed the picture and waveform monitors, the colorplexer, and the aperture-correction modules.

"White-Pulse" Gain Stabilization

A special advantage of the TK-44A processing amplifier is the "white-pulse" gain stabilization system: at the input amplifier, a short-duration positive pulse is added to the end of each line in the blanking interval. Because the pulse accompanies the video through all processing stages within the module, it can provide gain sampling and control. Therefore, the output pulse can be sampled and used to control the gain of the input amplifier—independent of video amplitude—so that the processor output is constant regardless of changes in video.

Synchronizer

A sync line driver in the synchronizer module provides the power required to drive two 75 and one 50 ohm transmission lines. The 50 ohm output feeds the sync signal to the camera while the 75 ohm feeds are provided for picture monitor and waveform monitor synchronization.

Drive signals are derived from sync and fed to the shading and switcher modules which are also located in the Auxiliary I Frame.

Shading Generator

The shading generator derives shading waveforms (sawtooth and parabola) from sweep drive and mixes them with RGB video in the processor to compensate for differences in beam-positional sensitivity of the pickup tubes.

Aperture Delay Module

For vertical aperture equalization, it is required that the video signal be delayed one and two horizontal lines so that undelayed, delayed one line and delayed two lines signals can be matrixed to generate a detail signal corresponding to vertical transitions. The delays of one and two horizontal lines are accomplished by the Aperture Delay Module.

Aperture Control Module

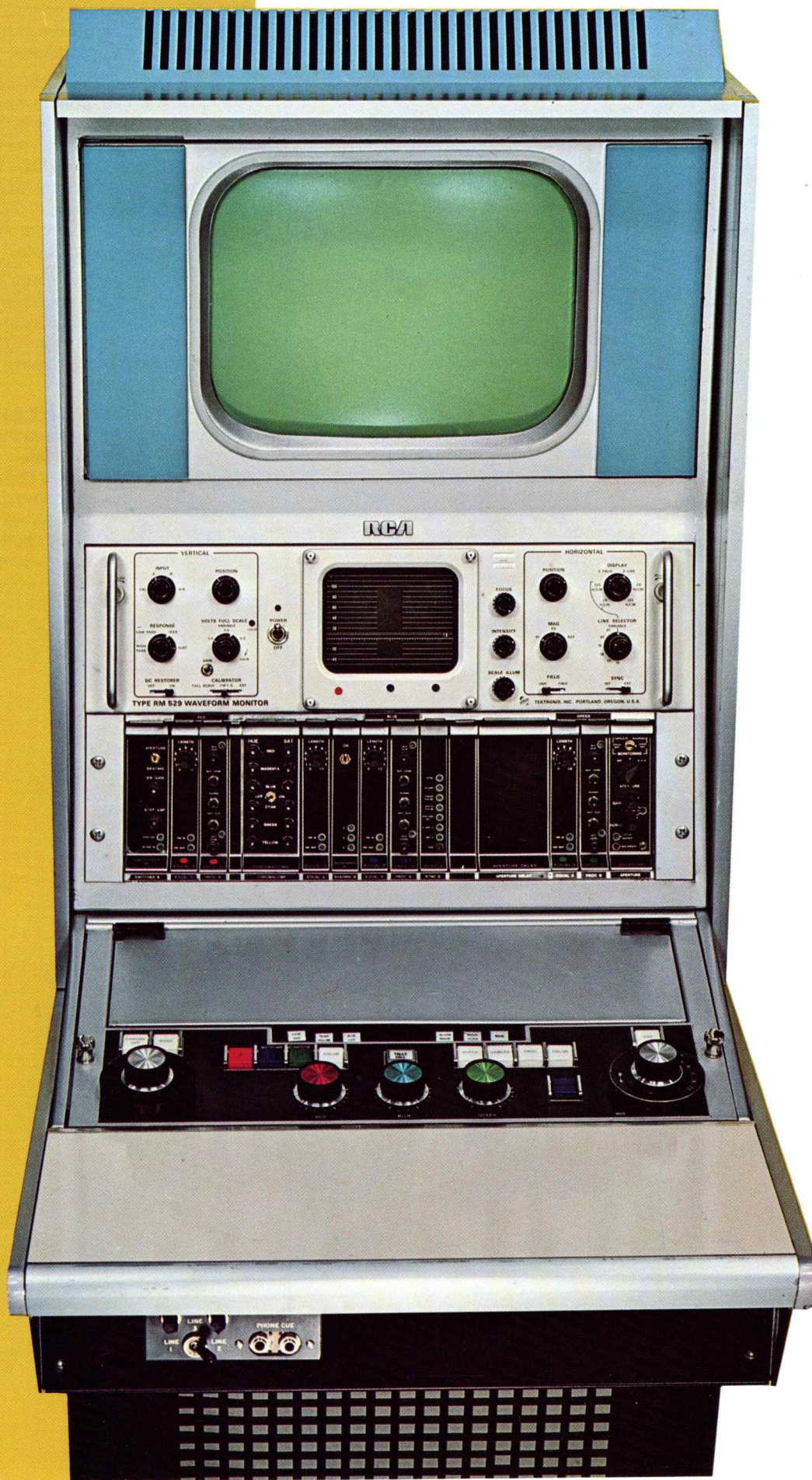
The aperture control module is used to provide the contour enhancing signal from the green channel—both signal differentiation and signal "coring" are used in generation of the contouring waveform: The "cored" contours signal is then combined with the video of all three channels to enhance image edges.

Aperture correction is adjustable via a front panel control, and as previously explained, contour enhancement is achieved without a significant increase in noise.

Chromacomp Module

The Chromacomp module is inserted in the signal path between the RGB processing amplifiers. Its function is to permit accurate adjustment of the camera's effective colorimetry so that selected color standards can be established and maintained. It also allows color match with other cameras.

In operation, Chromacomp separates the R, G and B video inputs into the six spectral components of the scene: Red, magenta, blue, cyan, green and yellow. The luminance component of the signal is passed through the module without change, so in effect, the camera's spectral response may be altered by adding varying amounts of the six color components to the original R, G and B video. Correction signal content is varied by means of the six hue and six saturation controls on the module's front panel; delay lines are inserted in each of the main color signal paths to maintain proper phase relationships.



Auxiliary II

The auxiliary II support system consists of the colorplexer, color bar generator, and regenerator:

Colorplexer

Encoding of the R, B and G signals from the processors is accomplished in the colorplexer module. Two different versions are available; one for PAL Color Standards and the other for NTSC.

The contour signal is added in the colorplexer prior to the encoding process. Blanking and sync pulses are also added in the colorplexer module.

Blue, red and green chroma key outputs are provided using separate circuit feedback amplifiers.

Bar Generator

Also built into the Auxiliary II unit is a color bar test signal generator that provides standard full raster bar signals of 0.7 or 1.0 volt levels. This permits adjustment of the colorplexer circuitry without the need for an external color bar generator. The Auxiliary II unit includes additional space for insertion of an optional accessory I and Q module to provide an EIA standard color bar test signal output for a test feed to a video tape recorder or for other test purposes. The same accessory module may be used with the PAL colorplexer to provide the U and V signal components for a PAL color bar test signal output.

Regenerator

The TK-44A color camera does not require either horizontal or vertical drive pulses from the system sync generator. Sync and blanking pulses are fed to the regenerator module where they are regenerated and distributed to the colorplexer module and also to the sync module in the Auxiliary I unit.

In the NTSC camera system, burst flag pulse is obtained from the sync signal. Burst flag delay is accomplished by increasing the rise time of the sync pulse that is applied to the burst flag generator.

In the PAL camera system, a PAL burst flag pulse feed is required from the sync generator.

Camera Power Supply

The power supply in the camera head is a d-c to d-c converter which accepts 150-volt, low-current input from the camera cable and converts it to low-voltage, high-current power. In all, it supplies ten functions, including 6-volt d-c heater current for the three pickup tubes and the viewfinder cathode-ray tube.

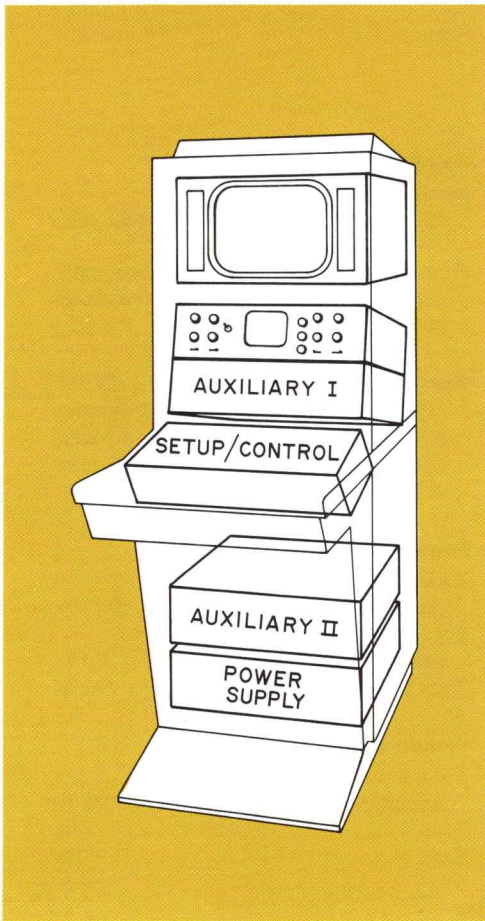
Configurations for Studio and Remote Use

The TK-44A camera chain is packaged for installation flexibility compatible with station needs. The three arrangements shown at the right fit a wide variety of conditions.

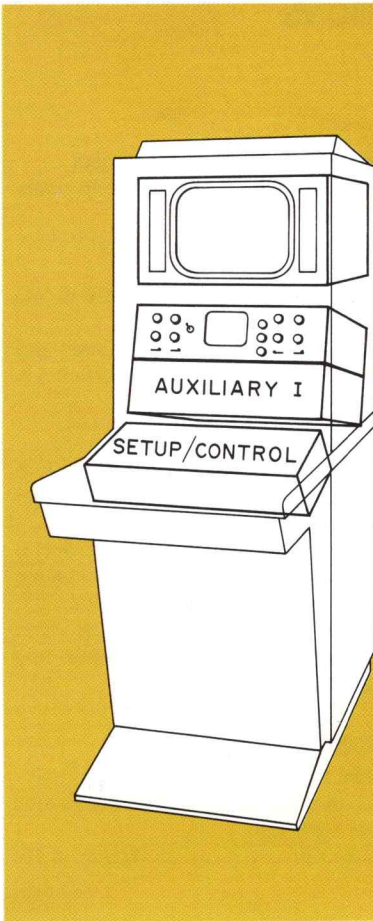
The entire camera chain may be installed in a single, double-turret console by using the space in the console below the desk top for the power supply and the auxiliary II unit. This compact arrangement facilitates installation of the console in OB vans or at remote locations where only a small space may be available.

Another alternative is to place the power supply and the auxiliary II unit in a separate rack instead of in the bottom of the console. Only 10½ inches (270 mm) of rack space is required.

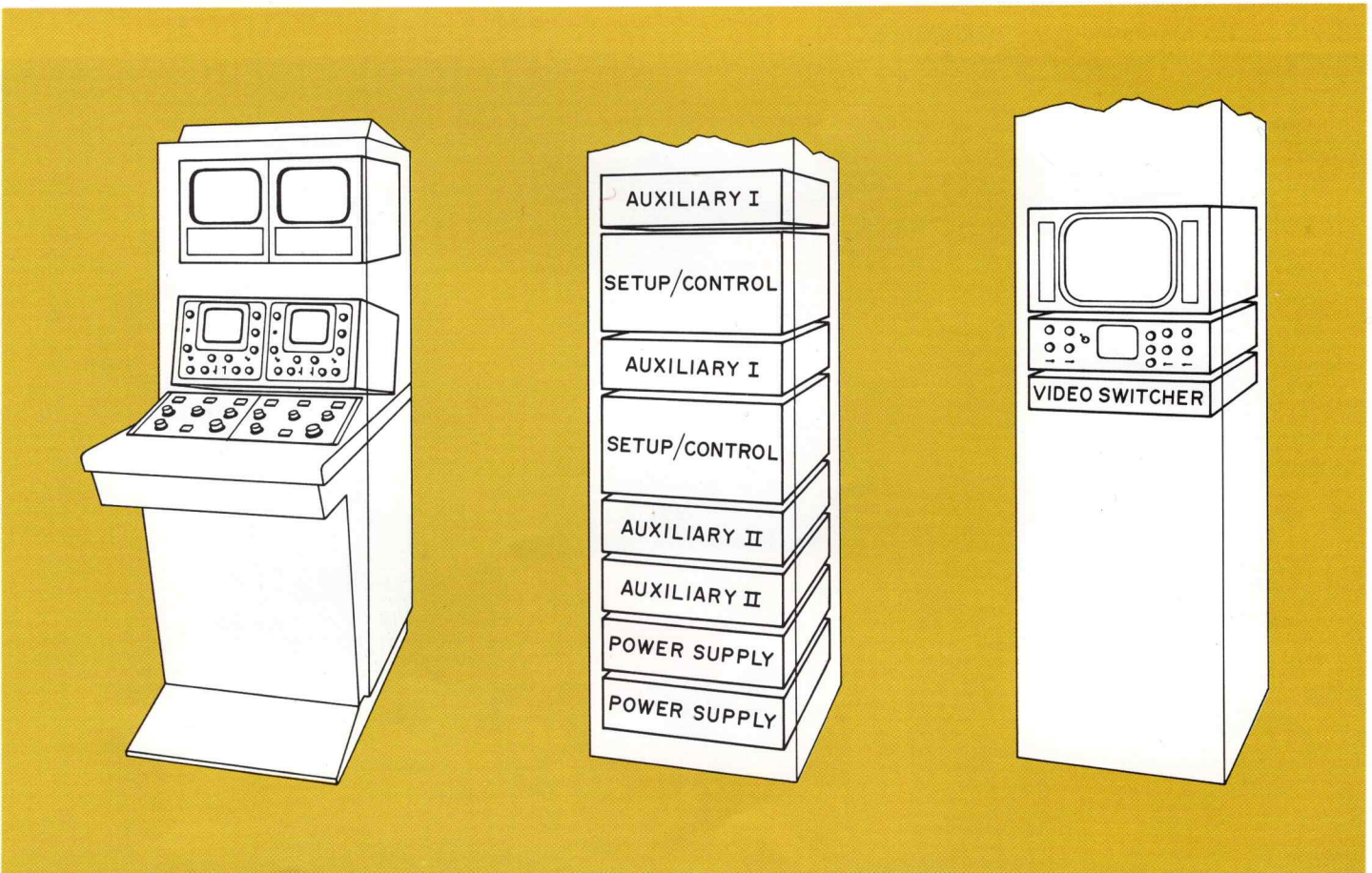
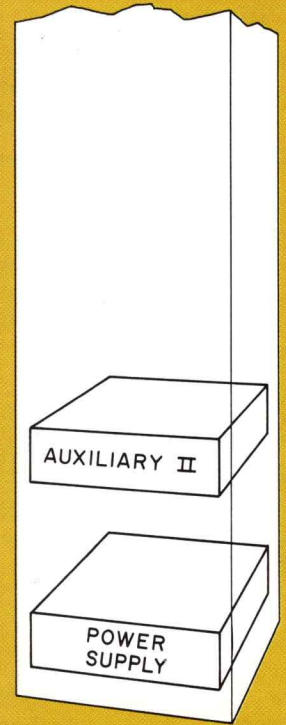
The optional remote control panel allows you to operate two cameras from a single console. In this configuration, the auxiliary units for both cameras can be located in separate racks. Picture and waveform monitors are provided for each camera at the CCU while a common set of monitors is available at the rack position, where a video switcher permits their use with two or more camera auxiliary units.



Single Console



Console with Rack-Mounted Auxiliary



Two-Camera Control Console with Rack-Mounted Auxiliaries

Adjustment Stability

Camera requires no readjustment following 30 min. warm-up for more than 8 hours provided ambient temperature change is ± 10 deg C or less and ambient temperature is between -20 and $+50$ deg C.

Contour Enhancement

Contour signal (H&V) out of Green; "combed" and "cored" for minimum noise. H-aperture correction provided.

Chromacomp

Individual control of hue and saturation of primary colors and their complements (R,G,B, Cyan, Magenta, Yellow).

Shading Adjustment

H & V Saw plus parabola modulation, each channel $\pm 10\%$

Lens Servo Amplifiers.....Integral with lens assemblies.

Camera Tube Types

Blue ChannelAmperex XQ1020B
Green ChannelAmperex XQ1020G
Red ChannelAmperex XQ1020R or XQ1023R (Extended Red Response)

Intercom

Production, Engineering and Cue at Camera; requires external 24 V d-c power. Call facility between Setup-Control and Camera.

Environmental

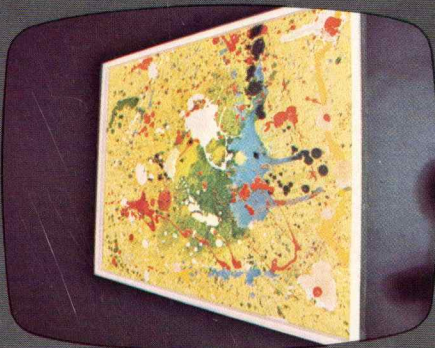
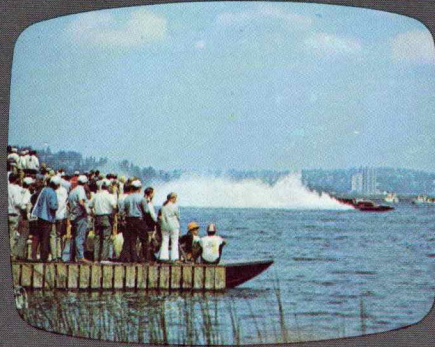
Ambient Temperature
Limits -20 to $+55$ deg C.
Ambient Relative
Humidity0 to 98% RH
Operational
Altitudeto 10,000 ft (3048m) ASL

Viewfinder

Screen Diagonal8 in. (203 mm)
Picture Brightness...0 to 150 footlamberts
EqualizationFor camera cables to 3000 ft. (915 m)
ControlContrast, Brightness
Video Peaking, Beam Focus
Resolution Capability600 lines

Mechanical

Camera Head (less lens)
Height18½ inches (470 mm)
Width11¾ inches (298 mm)
Depth20 inches (508 mm)
WeightApprox. 100 lbs. (45 kg)
Setup-Control Panel
Height10½ inches (267 mm)
Width19 inches (483 mm)
Depth8 inches (203 mm)
Weight29 pounds (13 kg)
Auxiliary Unit I
Height5¼ inches (133 mm)
Width19 inches (483 mm)
Depth16 inches (405 mm)
Weight40 pounds (17 kg)
Auxiliary Unit II
Height5¼ inches (133 mm)
Width19 inches (483 mm)
Depth15½ inches (394 mm)
Weight36 pounds (16 kg)
Power Supply
Height5¼ inches (133 mm)
Width19 inches (483 mm)
Depth18 inches (457 mm)
Weight72 pounds (33 kg)





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