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## Transistorized Field Camera, Type TK-33

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- New 3-inch "Long Life Target" image orthicon
- Separate camera . . . detachable viewfinder . . . auxiliary equipment in two field cases
- Automatic operation . . . Standard plug-in interchangeable modules



# Transistorized Field Camera, Type TK-33

The RCA TK-33 is a revolutionary new television camera employing electronic and mechanical advances that set entirely new high standards in picture quality, attention-free performance and long term dependability. Never before was a camera capable of higher quality studio pictures or

more ideally suited to field operation portability. Complete transistorization and premium modular design place the TK-33 truly in a class by itself, with no equal for rugged construction, light weight, small size and low power consumption.

## Description

### Easy Portability and Setup

The basic TK-33 system consists of the camera and viewfinder, which can be separated into two units for maximum transportability. Furthermore, two field cases house the camera auxiliary and power supply.

An important feature is the detachable viewfinder. This permits a size and weight reduction for convenience in transporting. At setup, the viewfinder is easily plugged into the camera and locked in place by quick release fasteners. A self-aligning connector makes all connections between the two units. Accepting composite monitoring signals, the viewfinder employs an 8-inch, high brightness (150 footlambert) kinescope. It contains the plug-in modules for video, sync, high voltage and deflection.

During operation, the camera auxiliary remains in the two field cases. One of these contains the modules for the main DC power supply, while the other field case houses the following modules: auxiliary DC power supply; image orthicon focus supply, equalizers for line and viewfinder; video; video output; blanking; and the remote control panel.

The camera, remote control panel and viewfinder all contain on-air tally indicators. Those for the camera are mounted on the front and top. The viewfinder also contains a preview tally indicator. Tallies for the viewfinder are mounted so that they are all within any type hood that may be used as a light shield.

### New Long Life Camera Tube

The camera employs a new 3-inch image orthicon of exceptionally high sensitivity that permits focusing on bright, still scenes without the usual "burn in" or image retention found in today's image orthicon pickup

tubes. This feature, made possible by a unique target, completely eliminates any further need for an image orbiter or for continually moving the camera to prevent stationary scenes from "sticking" on the target. Other valuable features of the sturdy new pickup tube are longer life, constant gain and stable sensitivity throughout tube life.

### Advanced Solid State Circuits

The completely transistorized circuits of the TK-33 are unmatched for their low power consumption, low heat dissipation and greater reliability. These solid state circuits are stable and free from microphonics. They also make possible plug-in modules that are more compact, have fewer components and are easier to service and repair. Some of the modules are interchangeable, increasing circuit familiarity and reducing spare requirements. All have built-in test jacks and are operable right in the frames, further simplifying maintenance.

### One-Man Alignment and Test

Camera circuits are now arranged so that one man instead of two can set up and adjust the camera using pulse techniques. By simply depressing a switch, internally generated test pulses are sent through the system so that the operator can determine that the pickup tube and amplifiers are operating at proper levels. These pulses greatly simplify and speed up camera adjustment. Test pulses can be inserted at any time from the control panel for checks of stability.

### Automatic Operation

New circuitry in the TK-33 provides many automatic features not found in previous live pickup cameras—features which reduce manual operation of the TK-33 camera to

basically one control: sensitivity, or lens iris control. Included are automatic controls for white level and black level, self-adjusting cable timing delay, and automatic DC power regulation.

### Automatic Cable Compensation

The TK-33 camera automatically detects and compensates for any camera cable timing delays by advancing the horizontal pulses, assuring accurate timing regardless of the length of cable used. In other self-operating circuits of the TK-33, precise DC voltages are maintained in the camera by circuits that sense voltage changes and compensate for them by regulating the power supply output.

### Simplified System

Drive signals for the image orthicon pickup tube originate in the camera itself so that the unit requires only sync and blanking signals from the sync generator. This simplifies system cabling.

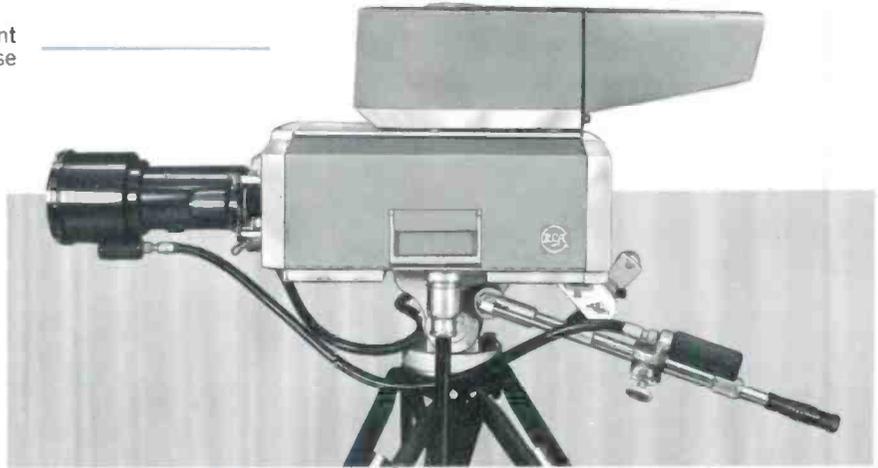
### Electronic Lens Cap

A feature of convenience to the operator when leaving the camera unattended is the electronic lens cap. As effective as a mechanical cap, the electronic cap may be applied either at the camera or at the control position. Tallies at both locations show when the camera has been capped. Capping is accomplished by a switch which cuts off the accelerating voltage in the image section of the pickup tube, and applies bias voltage to the target of the tube.

### Universal Operating Standards

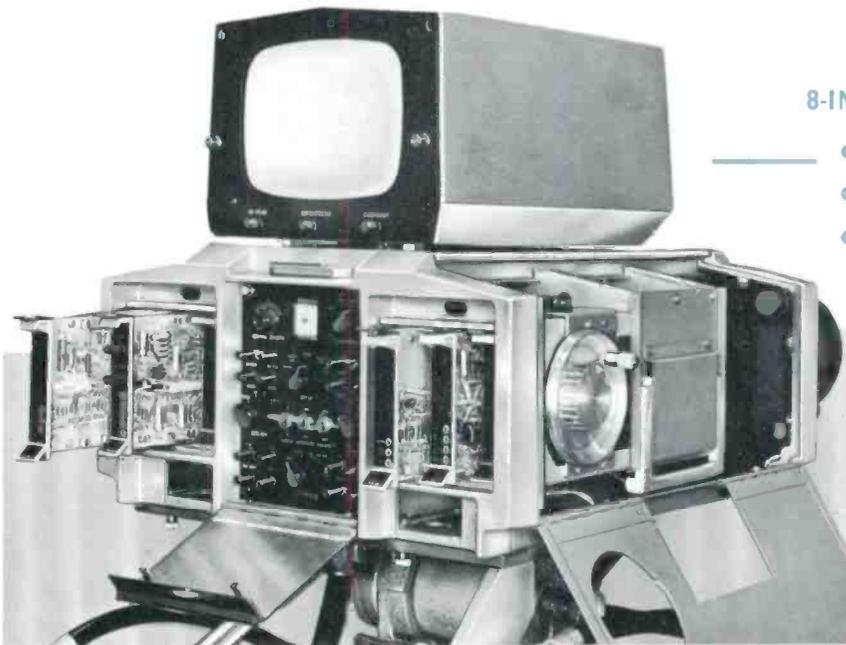
The TK-33 equipment is operable on both domestic and international TV and power line standards. Moreover, the camera is switchable between standards.

**DETACHABLE VIEWFINDER** with convenient carrying handle plugs into camera for ease of set-up.



Compactness  
Portability  
Accessibility

**SMALL SIZE CAMERA**—Easily Portable, removable lens, accepts all TV-88 Lens mounts. Recessed carrying handles.

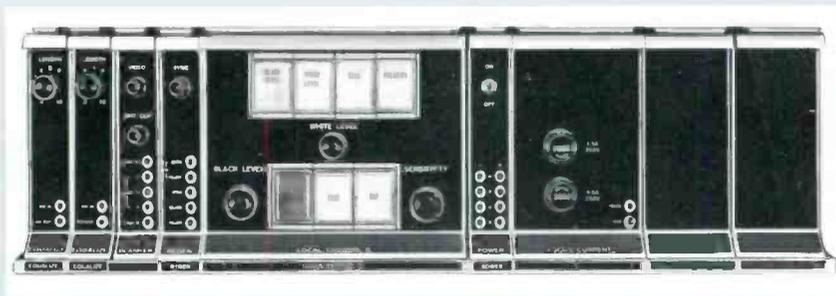


**8-INCH VIEWFINDER**

- High brightness kinescope
- On-Air and preview tally lights
- Removable viewfinder hood

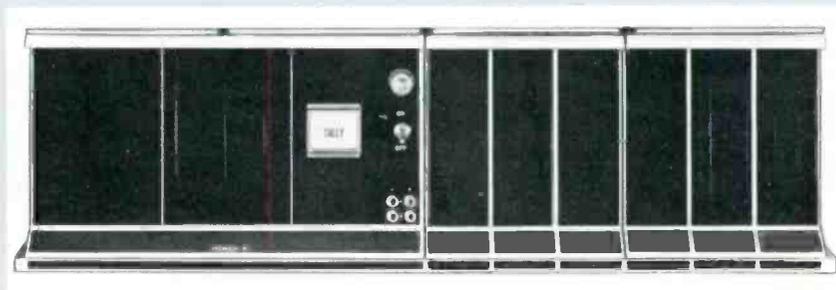
**FUNCTIONALLY STYLED CAMERA**

- Recessed yoke focus control
- Centrally located set up panel
- Transistorized interphones



Camera Auxiliary

Two Portable Field Cases



Camera Power Supply

# Specifications

## General

Type of Reproduction.....	Monochrome
Scanning Standards.....	Either 525 lines, 60 fields per sec. or 625 lines, 50 fields per sec.
Scanning Aspect Ratio.....	4:3
Lens Mounting.....	TV-88
Viewfinder Display Size.....	4½" x 6" (8" kinescope)
Viewfinder Brightness.....	150 footlamberts, maximum
Maximum Camera Cable Length.....	1,000 feet

## Picture Quality

Limiting Horizontal Resolution.....	700 TV lines minimum in center (image orthicon limiting)
Signal-to-Noise.....	Nominal 30-33 db peak-to-peak signal/RMS for bandwidth of 4.5 mc
Square Wave Tilt.....	Not in excess of 2%
Blanking Signal Overshoots.....	Not in excess of EIA specifications
Overall Frequency Response: With 50 ft. Camera Cable.....	±0.5 db to 8 mc down no more than 3 db at 10 mc
Geometric Distortion (including Linearity).....	Within 2% of picture height

## Operational

Remote Iris Control Elapsed Time to Cover Entire Range.....	2 seconds
Accuracy of Setting.....	Within ±0.25 lens stop
Black Level Control.....	Range: ±50% of video level

Electronic Lens Cap.....	Operated from either camera or remote control panel
Gamma Correction.....	Switchable to three preset positions; 0.5, 0.7 and 1.0. For negative video, two positions are pro- vided: 1.0 or 1.2
Aperture Correction.....	Peaked at 5.5 mc; amplitude adjustable continuously from 0 to +12 db
Cable Compensation.....	Manually adjustable video equal- ization in steps of 100 ft. to a maximum of 1000 ft. Auto- matic compensation of cable time delay and DC power to 1000 ft.

## Electrical

Input Signals:	
Synchronizing.....	2-8 volts peak-to-peak, negative, bridging or terminated
Blanking.....	2-8 volts peak-to-peak, negative, bridging or terminated
Effects Signal to Viewfinder.....	1.0 volt composite, black negative, bridging 3000 ohms, 6 pf
Audio Cue Signal.....	Balance into 600 ohms at 2 watts level (maximum)
Tally Light Control On/Air Preview.....	24 volts DC
Output Signals:	
Video Output A, B and C.....	Video A & B—Either 0.7 or 1.0 volt peak-to-peak composite/non-composite, switchable as a pair; Video C—Composite/non-composite switchable 0.7 volt to 1.0 volt peak-to-peak
Isolation Between Outputs.....	At least 45 db at 3.6 mc
Output Impedance.....	75 ohms, sending end terminated
A.C. Power Input:	
Line Voltage.....	90-130 volts, or 180-260 volts
Line Frequency.....	47-63 cycles per second
Power Consumption.....	180 watts approximately

## Mechanical

Dimensions (tentative)	Width	Height	Depth	Weight
Camera, less lens and viewfinder.....	18¾"	9¼"	24½"	60 lbs.
	46.3 cm	23.4 cm	62.2 cm	27.2 kg.
Viewfinder, less hood.....	10½"	8½"	15½"	22 lbs.
	26.6 cm	21.6 cm	39.4 cm	10.0 kg.
Auxiliary, without field case.....	19"	10½"	18½"	35 lbs.
	48.3 cm	26.6 cm	47.0 cm	15.9 kg.
Auxiliary, in field case.....	24"	15"	25"	50 lbs.
	61.0 cm	38.1 cm	63.5 cm	22.7 kg.
Power Supply, without case.....	19"	10½"	18½"	75 lbs.
	48.3 cm	26.6 cm	47.0 cm	34.0 kg.
Power Supply, with case.....	24"	15"	25"	90 lbs.
	61.0 cm	38.1 cm	63.5 cm	41.0 kg.

# Ordering Information

TK-33, 3-Inch I.O. Camera—Basic Camera Equip-  
ment and Accessories for Field and Studio Use.

MI Number	Description	Quantity	
		Field Camera	Studio Camera
557240-A1	TK-33 Camera, less Image Orthicon	1	1
557241-A1	Viewfinder, with kinescope.....	1	1
557242-A1	Auxiliary Unit.....	1	1
557243-A1	Power Supply.....	1	1
557797-B1	Local Control Panel.....	1	—
557796-B1	Local Indicator Panel.....	—	1
557203	Remote Control Panel.....	—	1
	Note: The above units comprise the basic camera equipment.		
557329	Image Orthicon, Type 7293A/L.....	1	1
557320	Viewfinder Hood, Adjustable.....	1	1
556523	TO-4 Waveform Monitor.....	1	1
556580	Field Case for Auxiliary.....	1	—
556580	Field Case for Power Supply.....	1	—

MI Number	Description	Quantity	
		Field Camera	Studio Camera
556581	Field Case for TO-4 Monitor.....	1	—
	TM-19/C Picture Monitor in fieldcase.....	1	—
557244	Set of Interconnect Cables.....	1	—
557331-1	Camera Cable, 50 ft.....	1	1
557331-2	Camera Cable, 100 ft.....	1	—
557331-3	Camera Cable, 200 ft.....	1	—
26205-C	Friction Head.....	1	—
26046-A	Tripod, TD-11B.....	1	—
557306	Mounting Frame for Control Panel	—	1
556524	Front Panel for TO-4.....	—	1
556525	Connector Assembly for TO-4.....	—	1
556526	Picture Monitor, TM-19N.....	—	1
556527	Front Panel for TM-19N.....	—	1
556528	Mounting Frame for TO-4/TM-19N	—	1
556531	Console Base Section, 20-inch.....	—	1
556534	Remote Control Section.....	—	1
556535	Single Height Turret.....	—	1
556544-1	Base Front Edge Trim, 22-inch.....	—	1
556546-1	Horizontal Turret Trim, 22-inch.....	—	1