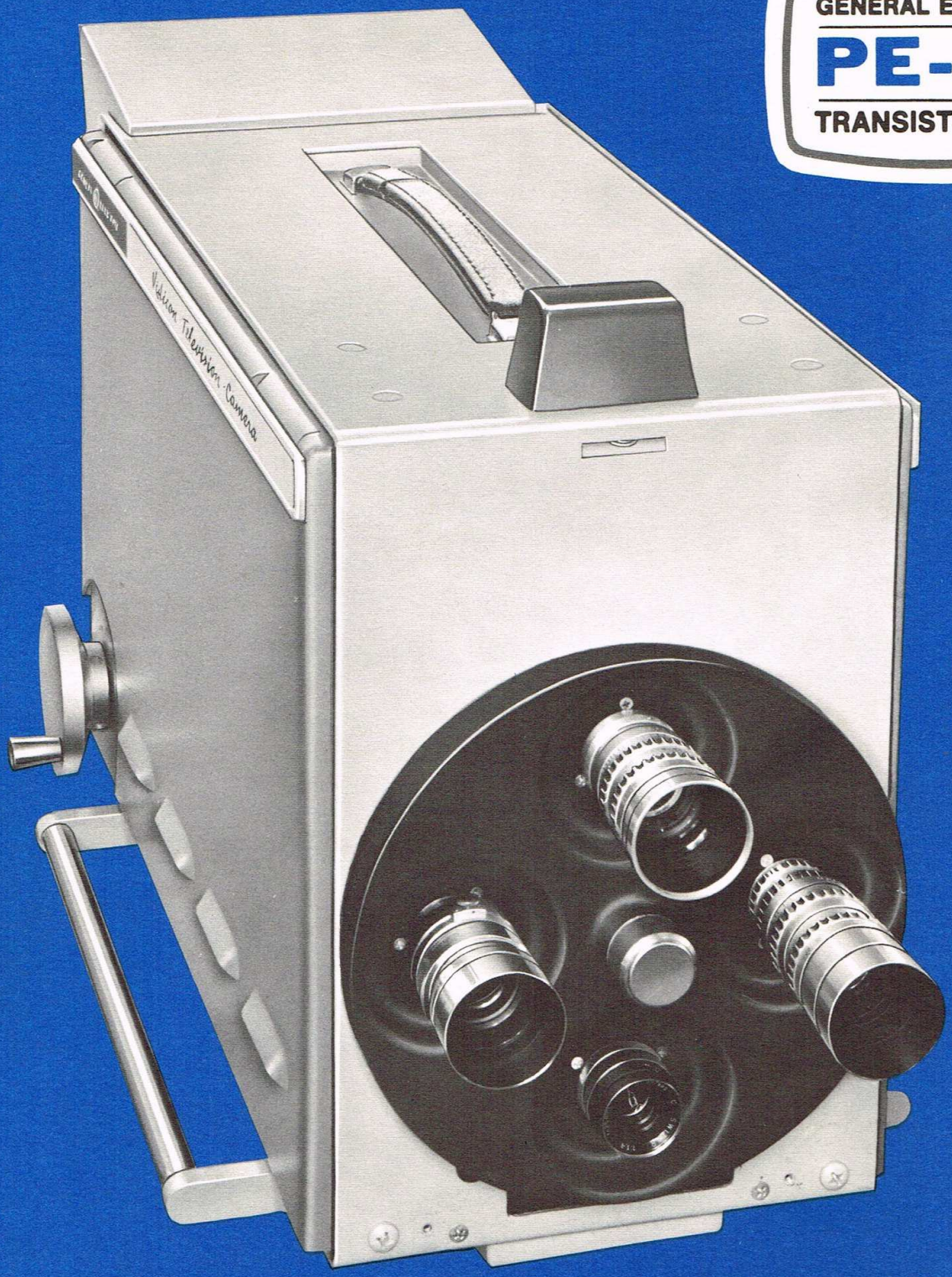
GENERAL ELECTRIC

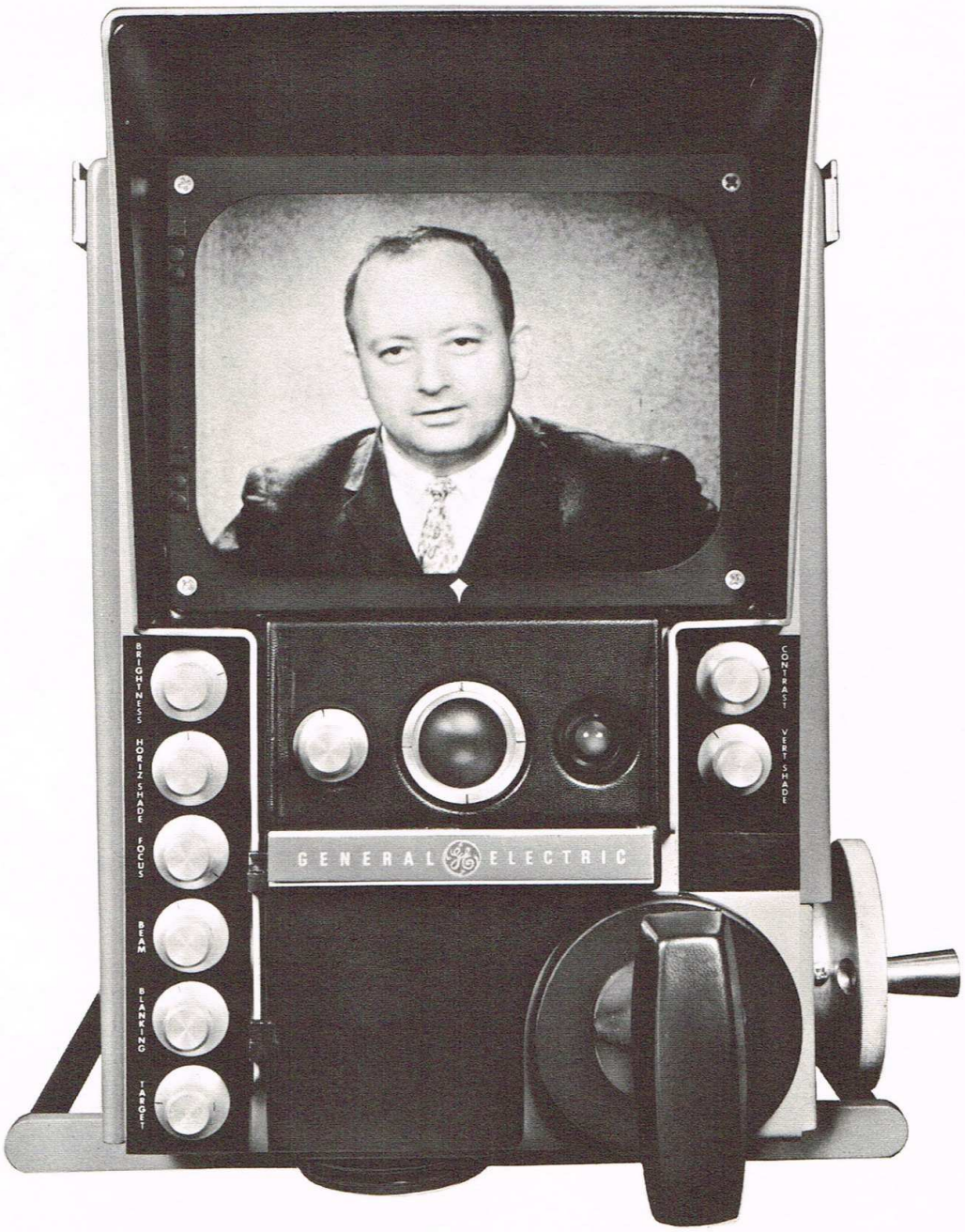
PE-23

TRANSISTORIZED



New professional Studio Vidicon Camera Channel can reduce camera operating cost / hour by 90%

GENERAL ELECTRIC



Photographic quality picture—Broadcast performance

(Monitor photo at ABC-TV News Center, Washington, D.C.)

General Electric now introduces the first *truly* professional transistorized* Studio Vidicon Camera Channel, designed specifically for commercial broadcasting and educational television.

The new Channel, Type PE-23, provides outstanding performance for the news, panel, and quiz shows which constitute up to 80% of today's live productions on both local stations and networks. It is ideally suited for educational programming–both broadcast and closed circuit.

The new PE-23 is based on General Electric's five years of extensive experience with transistorized video and audio products–and on the Company's experience with vidicon cameras for film chain and other applications. The PE-23 combines the most modern technology of both the vidicon tube and transistorized circuits. The results:

In performance, the PE-23 meets or exceeds EIA Standards. It offers 700-line horizontal resolution, 10 megacycle bandwidth, high signal/noise ratio, and 60-gauss focus field.

In economy, the PE-23's initial cost is about 50% of that for a comparable Image Orthicon Channel. Its operating cost/hour, based on the lower initial cost and much longer life of the vidicon tube, and the low power requirements of its transistorized circuits, can run as much as 90% less than an I.O. Channel.



The PE-23 in network news production.

In over-all stability, the PE-23 has virtually no day-to-day drift.

In operating simplicity, the PE-23 can be set up by one man at the camera. Once set up, the primary controls can be remoted for full positive remote adjustment.

In compactness, the PE-23 saves up to 14 cubic feet of rack space, since its power supply and video channel amplifier are built into the camera.

Three versions are available: the PE-23-A for console mounting, the PE-23-B for desk mounting, and the PE-23-C for rack mounting. Specific features are covered on the following pages.

PERFORMANCE

Lifelike, photographic quality picture from the vidicon's faithful gray scale rendition and long transfer characteristic (similar to a 4½-inch image orthicon tube). Horizontal resolution of 700 lines, 60 gauss focus field, high signal/noise ratio, 10 megacycle system bandwidth.

Interference susceptibility reduced, and longer cable runs made possible, by video channel amplifier built into camera. Video signal leaves camera at level of 0.7 V (full EIA output).

Quick, accurate setting of channel gain and video performance from built-in calibrated test signal at preamplifier.

Video processing features include continuously-variable delay-line type aperture correction, white clipper adjustable to desired level, gamma correction,** and bucking pedestal to hold black level with gain change.

Possible interaction eliminated by separate power supplies and separate sweep circuits for camera and viewfinder.

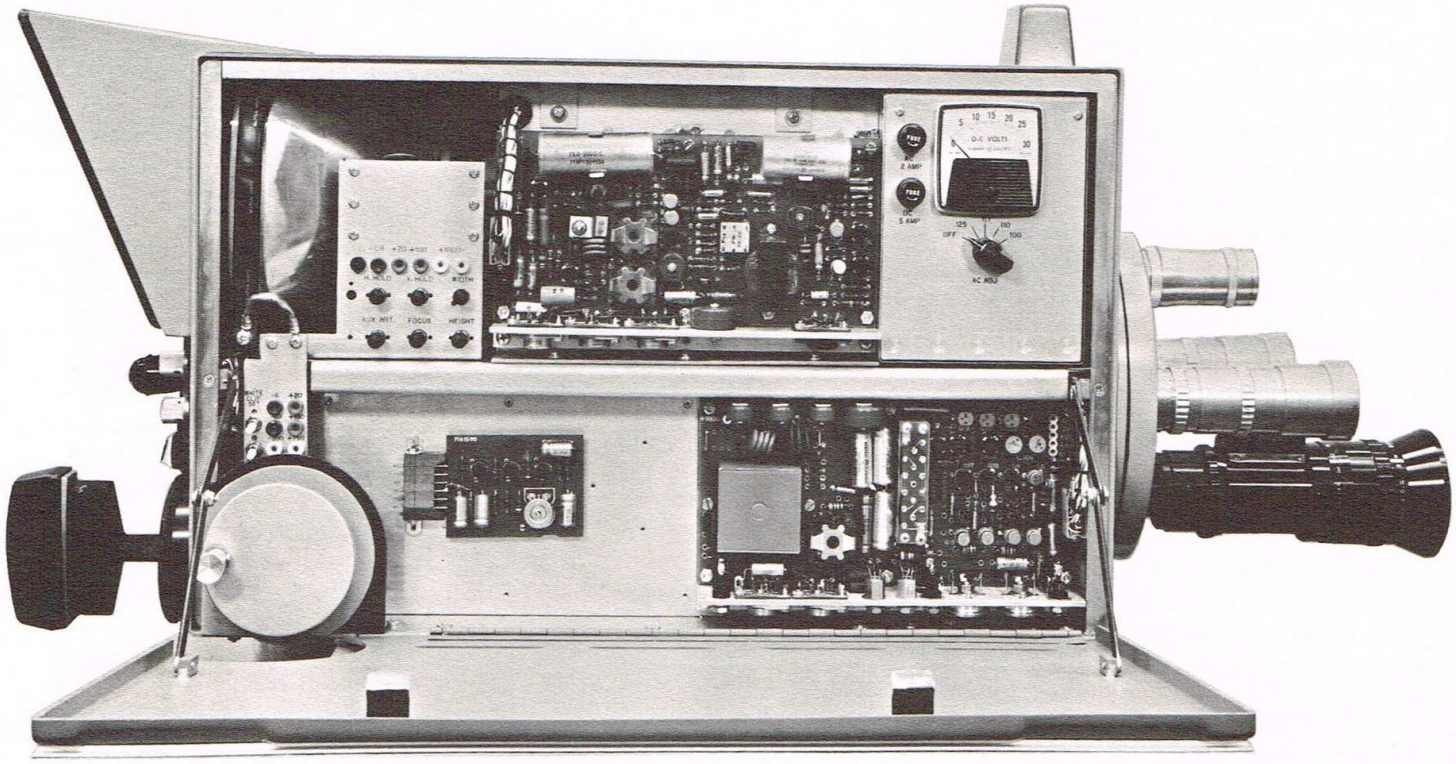
Channel over-all compactness and reliability enhanced by complete transistorization of control unit and accessory video distribution amplifier.



Transistorized control unit.

*All the camera circuits are completely transistorized, except for two 7586 triodes in the high-transconductance cascode circuit preamplifier, for best signal/noise ratio. The viewfinder circuits are completely transistorized except for three high voltage rectifiers in the power supply.

**Optional accessory



The first truly professional transistorized Studio Vidicon Camera Channel

Plug-in transistorized circuits make it compact and easy to maintain

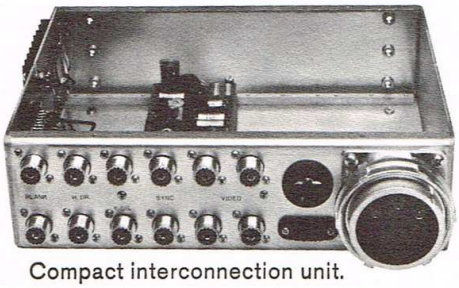
ECONOMY

Initial cost about 50% lower than a comparable image orthicon channel.

Pickup tube cost/hour reduced up to 90%, based on initial cost (vidicon approximately 25% of I.O.) and normal life expectancy (vidicon approximately 3-5 times that of I.O.)

Input power reduced 85% under that required for a comparable I.O. Channel (155 watts vs. 1165 watts, without monitoring).

Further economy from transistorized circuits, which user operation shows to be several times more reliable than comparable tube circuits.

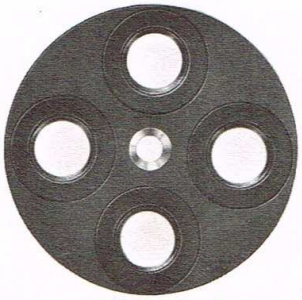


Compact interconnection unit.

Quick, simple maintenance from rugged, hand-wired plug-in circuit boards and plug-in transistors. Each circuit board removable by loosening no more than six screws. Easy, complete access to all components through side and rear panel doors, and turret opening.

Life of all components extended by cooler operation of transistorized circuits (blower required only for vidicon area to assure stable operation of the vidicon tube).

Up to 14 cubic feet of rack space saved by inclusion of power supply and video channel amplifier in the camera itself.



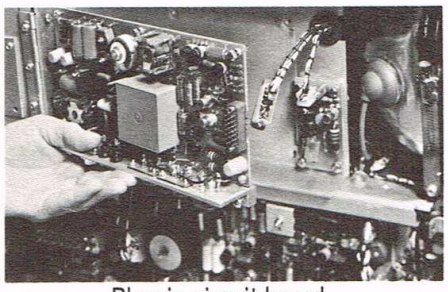
Accessory I.O. format lens turret.

STABILITY

Day-to-day drift virtually eliminated by inherent stability of transistorized circuits, and regulation of all voltages.

Further over-all stability results from careful design utilizing degeneration, feedback, and temperature-compensated components.

Warmup time minimized by transistorized circuits.



Plug-in circuit board.

OPERATION

One-man-set-up provided by complete operating controls on camera.

Full, positive remoting of primary adjustments from camera to control unit, by delegation switch on camera.

Adjustments minimized by camera's all-around stability and virtual elimination of day-to-day drift.

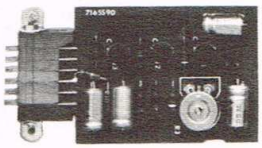
Picture framing and optical focusing simplified by 8-inch viewfinder. Aluminized picture tube provides clear, bright (70 ft.-lambert) picture.

Fine focus adjustment at close range provided by non-linear focus mechanism. Hardened steel spiroid gears prevent backlash.

Optical focusing simplified by location of control knob at rear of right panel.

Lens selection fast and accurate by positive-action squeeze-grip turret control.

Full operation of turret possible with center shaft control zoom lenses.



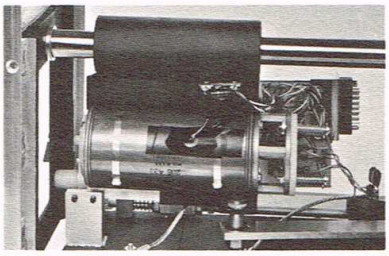
Transistorized intercom amplifier.

Parallel alignment assured between vidicon face and turret lenses by novel new "optical bench" mechanical linkage between turret shaft and vidicon assembly (see photo). The machined aluminum link has linear steel ball bearings in its hollow center, and rides smoothly on the hardened stainless steel turret shaft. The vidicon assembly is guided by a machined aluminum track below.

Camera handling facilitated by recessed handle on top and two stainless steel carrying bars on bottom sides.

Higher level communication available from compact, completely-transistorized intercom amplifier accessory (mounts in camera or in control unit).

Operating flexibility provided by accessory turret for four standard image orthicon (35 mm) format lenses.



New "optical bench" lens-vidicon alignment unit.



The only Vidicon Camera that meets all these specifications

SPECIFICATIONS

Electrical

Power input: 105 to 125 V, a-c, 50/60 cycles, 155 watts (not including monitoring).

Pulse inputs: Standard EIA (H drive, V drive, system blanking).

Signal outputs: Single 0.7 V, non-composite (up to 3 additional outputs available by use of video distribution amplifier accessory).

Focus field: 60 gauss.

Voltage regulations: All voltages regulated against line voltage change.

Meter: 24 V d-c meter on common power supply.

Fusing: For 24 V power supply overload.

Circuit boards: Preamplifier, video, camera power supply, camera sweep, viewfinder video amplifier, viewfinder sweep, viewfinder power supply.

Camera receptacles: For standard broadcast camera cable, 7771907-P3; for audio, dual plug.

Performance

Horizontal resolution: 700 lines, center; 500 lines, corners.

Geometric distortion: No point departs more than 2% of the picture height from its true position.

Bandwidth: 10 mc., +0 db., —3 db.

Environmental

Temperature (ambient external, continuous operating): —20°C (—4°F) to 45°C (113°F).

Humidity: Up to 95% through temperature range.

Vibration: .015 inch through 55 cps 45 min. each plane (meets Mil Spec. MIL-T-4007A P2, ground electronic equipment to withstand shock of vibration during transportation and hauling).

Control Unit Adjustments

Target • Beam • Electrostatic Focus • Blanking • Gain • Gain test (push-button) • H phase.

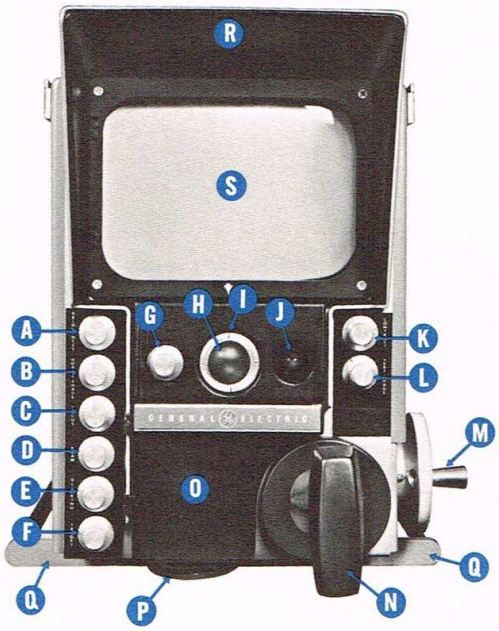
Mechanical

Unit	Height	Width	Depth	Weight
Camera, PC-14-A	13¾"*	9½"*	22⁵⁄₁₆"*	80 lb.
Control unit, TC-60-A	2⁵⁄₁₆"	8¾"	3½"	3 lb.
Vidicon control box, TC-61-A	3⁵⁄₁₆"	15"	20"	10 lb.*
Interconnection unit, 7672544-G1 (without connectors)	3¼"	11"	8"	5 lb.
Monitor console, PR-10-A (incl. TM-21-A monitor	48"	15¼"	36"	170 lb.
Monitor, TM-21-A	20¼"	15"	19½"	(see above)
Adapter plate, to mount TC-60-A in PR-10-A	5⅝"	15"	—	1 lb.
Monitor power supply, TP-23-A	8¾"	19"	4" front 3½" rear	40 lb.

*Case

Construction

Sturdy aluminum frame, base, and shell. Lower section incorporates dual extruded aluminum bracing members. Top section ruggedized for added strength in carrying handle area. Full-size side doors hinged and louvered at bottom. Turret easily removable for access to preamplifier section. Rear panel door access to vidicon connection, wiring, and focus mechanism. Finish is two-tone gray Armorhide. Two stainless steel carrying handles on bottom sides.



CAMERA OPERATING CONTROLS

- A Viewfinder brightness
- B H shading
- C Electrostatic focus*
- D Beam*
- E Blanking*
- F Target*
- G Local-remote control switch
- H Zoom lens control position
- I Turret lens position indicator
- J Rear tally light (also top)
- K Viewfinder contrast
- L V shading
- M Vidicon optical focus
- N Turret lens selector
- O Rear panel access
- P Camera cable receptacle
- Q Bottom carrying handles
- R Viewfinder hood
- S Viewfinder

Not shown: Intercom gain (when intercom amplifier accessory is used at camera).

*Full control transferable to control unit by local-remote switch on camera.

Note: All required set-up controls are on individual circuit boards in camera.

Mounting

Camera: Standard pan and tilt heads, tripods, dollies. Vinten wedge adapter available as accessory.

Control unit: The TC-60-A Control Unit mounts in the PR-10-A Console with 7496459-G1 adapter plate (PE-23-A System); in the TC-61-A Vidicon Control Box (PE-23-B); in a standard rack, with 7672541-G1 Rack Adapter Panel (PE-23-C), or in a custom console.

Interconnection unit: The 7672544-G1 Interconnection Unit mounts in the base of the PR-10-A Console (PE-23-A); in the rear of the TC-61-A Vidicon Control Box (PE-23-B); or in a standard rack, with 7779219-P1 Rack Adapter Panel (PE-23-C).

Lens accommodation: Standard turret accepts up to four standard C mount (vidicon or 16 mm. TV format) lenses, of focal lengths from ½ inch (12 mm.) to six inch (152 mm.) and some longer lenses. The turret design allows full rotation with center shaft control zoom lenses. An accessory turret is available for four standard I.O. (35 mm.) format lenses.

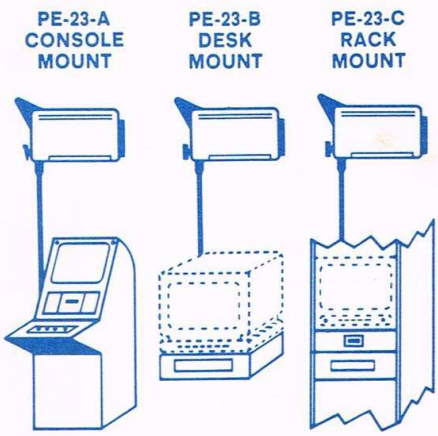
PICKUP TUBE CAPABILITY

The basic mechanical design and modular circuit design of this camera provide for convenient later updating to accept new types of pickup tubes as they become available.

SYSTEM MAKEUP

Unit	PE-23-A (Console)	PE-23-B (Desk)	PE-23-C (Rack)
Camera*	PC-14-A	PC-14-A	PC-14-A
Control unit	TC-60-A	—	TC-60-A
Adapter, mounts control unit in PR-10-A Console	7496459-G1	—	—
Wiring harness, control unit to interconnection unit	7779356-G1	—	7779356-G1
Interconnection unit	7672544-G1	—	7672544-G1
Mounting brackets for interconnection unit (2)	7496467-P1	—	—
Camera cable, 50 ft.	7666932-G7	PV-15-A	7666932-G7
Video and waveform monitor	TM-21-A	—	—
Monitor console	PR-10-A	—	—
Monitor power supply	TP-23-A	—	—
Vidicon control box (includes TC-60-A control unit, interconnection unit, and wiring harness)	—	TC-61-A	—
Control unit rack adapter	—	—	7672541-G1
Interconnection unit rack adapter	—	—	7779219-P1
Cover for interconnection unit	7779220-P1	—	7779220-P1
Single headset (2)	7141069-P3	7141069-P3	7141069-P3

*Not including lenses; including 7735A vidicon tube (one inch), or equivalent.



Specific Accessories

Vinten wedge adapter plate: 7496998-G1.

Transistorized intercom amplifier: (Amplifies one station; mounts in camera and/or on control unit): 7165590-G4.

Viewfinder daylight hood: 7779350-G1.

Transistorized video distribution amplifier (4 outputs; mounts in interconnection unit): 7672612-G1.

Lens turret (for 4 standard I.O. (35mm.) TV format lenses): 7495687-G1.

Tally light and power supply (for PE-23-C system; mounts in rack adapter panel for TC-60-A Control Panel): 7779257-1.

Transistorized tally light switch (replaces relay supplied with TM-21-A Monitor earlier models; incorporated in all new systems): 7496566-1.

Zoom Lens (15-150 mm., f/2.8, focal range 5′ to infinity, center shaft control): 7779996-1.

Gamma module: 7498145-G1

General accessories and lenses also available.

The General Electric Company manufactures a complete line of television equipment for broadcast and other applications. For further information, contact your General Electric Television Sales Representative, or: General Electric Company, Visual Communication Products, 212 West Division Street, Syracuse, New York 13204. (In Canada, Canadian General Electric Company, Ltd., Broadcast Sales, 830 Lansdowne Ave., Toronto 4, Ontario; Outside the U.S.A. and Canada, International General Electric Company, Electronic Sales, 159 Madison Avenue, New York 10016, N.Y., U.S.A.)

GENERAL ELECTRIC

GEA-7855
2/64 10M
(Broadcast Data Book: Section E 210, P 24)

Printed in U.S.A.