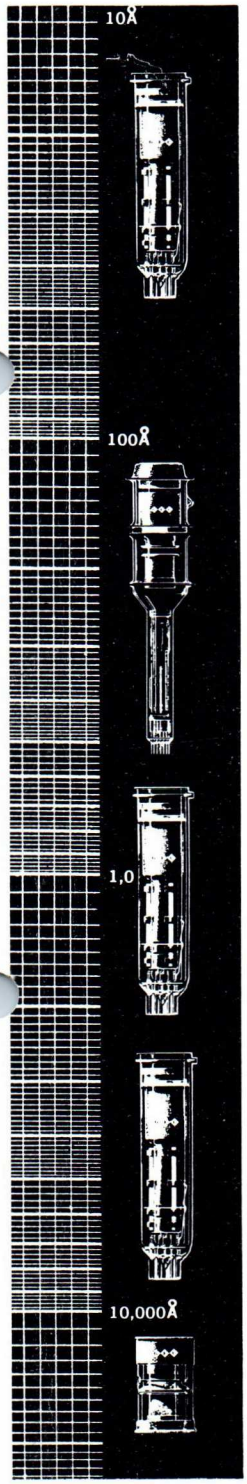
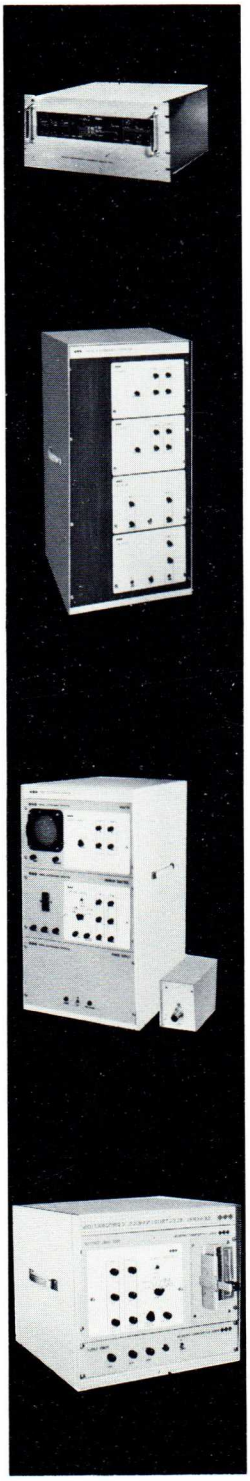
GENERAL ELECTRODYNAMICS CORPORATION

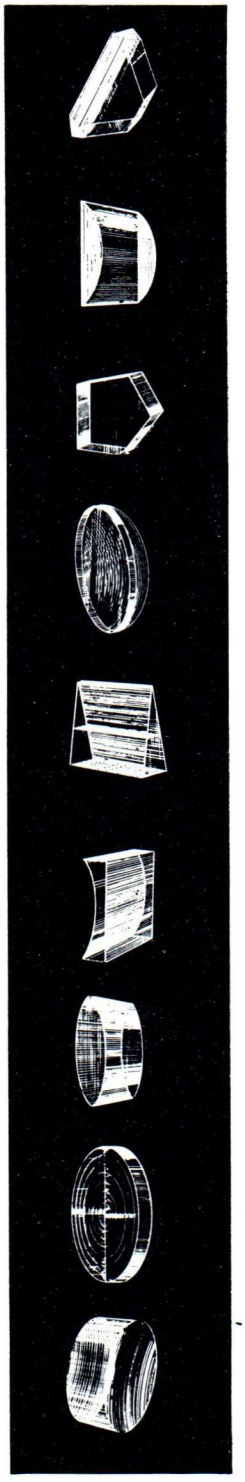
4430 FOREST LANE • GARLAND, TEXAS • BROADWAY 6-1161



Vidicons and Special Purpose Tubes



Electronic Equipment and Systems



Custom Optical Systems and Components

QUICK REFERENCE CATALOG

GENERAL ELECTRODYNAMICS CORPORATION maintains complete facilities in Garland, a suburb of Dallas, Texas. Two air-conditioned buildings designed and built to meet environmental requirements are used for engineering and manufacture of special purpose tubes, electronic equipment and optics. Ultra-clean assembly rooms, precision machine shop, automatic vacuum equipment and a 166 foot long infrared tunnel are a few features of this facility.

ELECTRONIC TUBE DIVISION produces the most sensitive and precisely manufactured vidicon available and the largest variety of vidicons developed to meet a wide range of specific requirements. New approaches to tube construction, development and evaluation of photoconductive materials, quality control and manufacturing techniques has enabled General Electrodynamics Corporation to become a major supplier of vidicons and special purpose tubes.

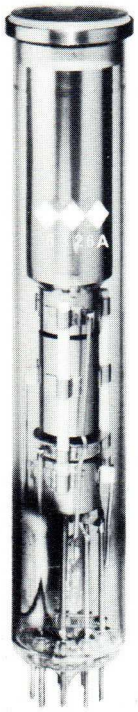
ELECTRONICS DIVISION experience is in the design of precision transistorized video systems and electronic equipment. This unique technical knowledge and overall experience led to contracts from the Government and other organizations having requirements for special imaging systems. These developments led to its present product line which enabled this division to become one of the major suppliers of specialized video systems including: scan converters, slow scan TV systems, and variable scan video signal generators.

ASTRON ▮ OPTICS DIVISION's unique capability is available to design, develop and manufacture precision optics covering the spectrum from vacuum ultraviolet to the far infra-red. This division supplies high quality specialized optical components to meet the stringent requirements demanded by precision imaging tubes and electro-optical equipment. It also has equipment capable of handling optical flats up to 24″ diameter.

THE components and systems described in this publication are provided for quick reference to determine the products that best meet your requirements. For detailed technical data, prices and delivery information, please write, wire or phone . . .

Attention: Marketing Manager,
General Electrodynamics Corporation
4430 Forest Lane
Garland, Texas BRoadway 6-1161

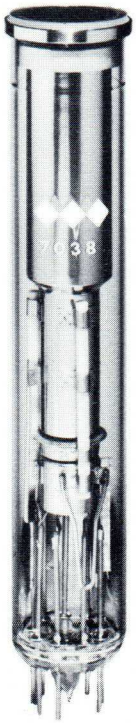
VIDICONS AND SPECIAL PURPOSE TUBES



TD 6326A

BROADCAST QUALITY FILM PICKUP VIDICON. This tube has characteristics which are controlled for optimum film pickup. It has a provision for dynamic focus.

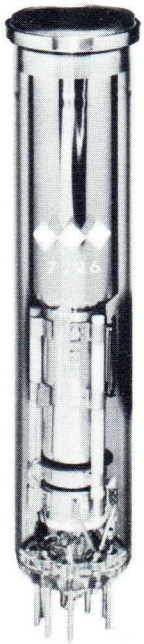
Application: TV film pickup in broadcast studios.



TD 7038

INDUSTRIAL VIDICON. This tube is resistant to image burn-in from stationary scenes, and has low lag.

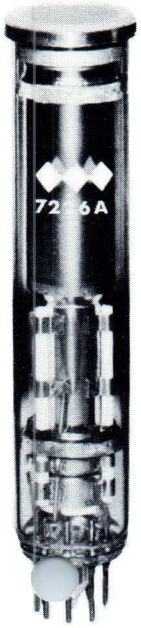
Application: TV film pickup for cameras adjusted for this type, and live pickup where maximum sensitivity is not required.



TD 7226

SHORT LENGTH VIDICON. This tube uses a low power heater (0.150A) to reduce power requirements and heat dissipation, and is only 5⅛″ long. Otherwise it is electrically and optically identical to the 7325.

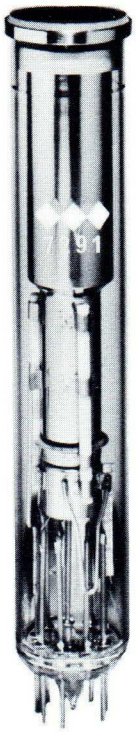
Application: Transistorized, compact cameras.



TD 7226A

RUGGEDIZED VIDICON. This tube has all the features of the 7226 but is ruggedized to meet MIL-E-5272A environmental conditions.

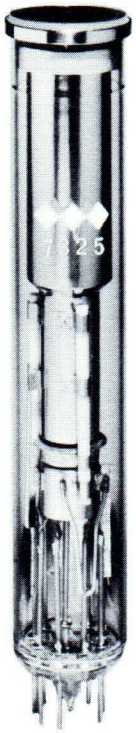
Application: Military and industrial cameras subject to severe shock and vibration.



TD 7291

BROADCAST QUALITY FILM PICKUP VIDICON. This tube is identical to the 6326A except that it does not have provision for dynamic focus.

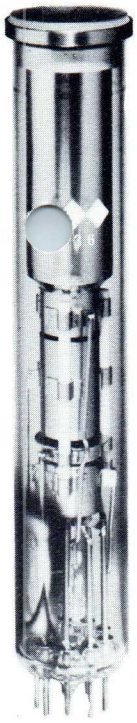
Application: TV film Pickup where dynamic focus is not required.



TD 7325

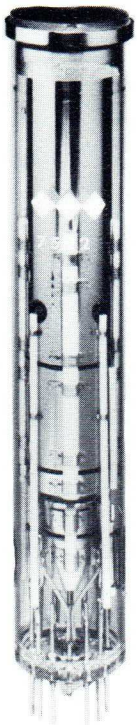
HIGH SENSITIVITY VIDICON. This is the most sensitive low lag vidicon available. This tube will produce high quality pictures with as little as 0.2 foot-candles of illumination on the faceplate.

Application: Televising live scenes, most generally used in industrial television cameras.



TD 7336

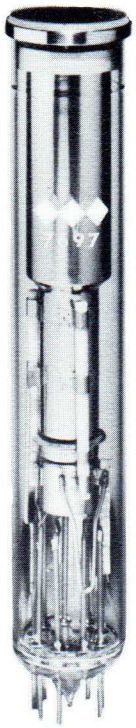
BROADCAST VIDICON. This tube combines the high sensitivity of the 7325 with a provision for dynamic focus. *Application: TV Broadcast of live scenes.*



TD 7522

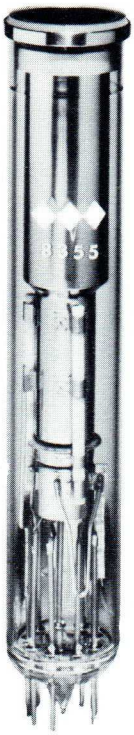
ELECTROSTATIC FOCUS AND DEFLECTION VIDICON. This tube has the same high sensitivity photo-conductive surface as the 7325 but provides both electrostatic focus and deflection. The resolution obtainable is approximately 600 TV lines in the center and 350 TV lines in the corner areas. A ruggedized version of this vidicon tube to resist severe shock and vibration is referred to as the 1343.

Application: Camera requiring smallest possible dimensions. Also for digital or random scan read-out.



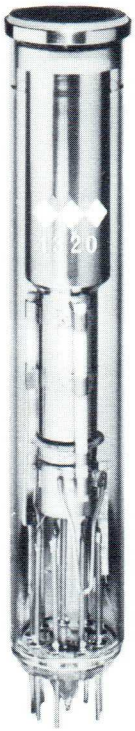
TD 7697

VIDICON FOR CAMERAS WITH AUTOMATIC LIGHT CONTROL. This tube has the target voltage held to low values and close limits, as is required by some TV cameras having an automatic sensitivity control. All other characteristics are the same as the 7325.



TD 8355

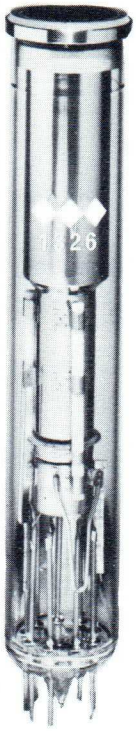
MAGNETIC FOCUS AND DEFLECTION VIDICON. This tube is identical in all respects to the 7325 except the required heater current is only 300 m A against 600 m A for the 7325.



TD 1320

INDUSTRIAL VIDICON. This tube has very low lag and high resistance to burn-in of stationary scenes. Especially suited for pickup of high contrast information where maximum sensitivity is not required.

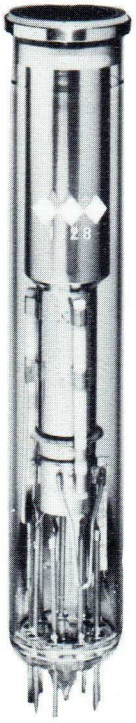
Applications: Televising live scenes . . hot steel billets . . furnace interiors . . and all objects radiating large amounts of infrared radiation.



TD 1326

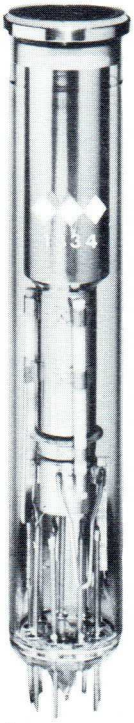
RADAR PICKUP VIDICON. This tube has a slow decay, normally adjusted in manufacturing to give optimum presentation with radars rotating at 6-10 RPM. The rate of decay may be changed somewhat by varying operating parameters.

Application: Presenting PPI information in TV format.



TD 1328

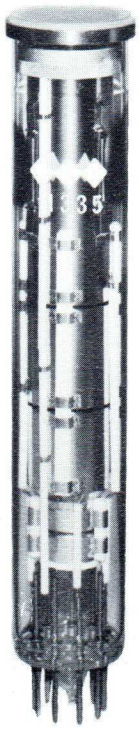
RADIATION RESISTANT VIDICON. This tube provides magnetic focus and deflection, and features a faceplate of non-browning quartz which permits the tube to absorb a total radiated flux in excess of 109 R. All other optical and electrical characteristics are identical to the 7325. By special order, any of the GEC vidicons can be supplied with a non-browning quartz face-plate.



TD 1334

X-RAY SENSITIVE VIDICON. This tube is sensitive to X-rays available from industrial X-ray equipment. It may be supplied with a Beryllium faceplate and is then referred to as the 1334-1.

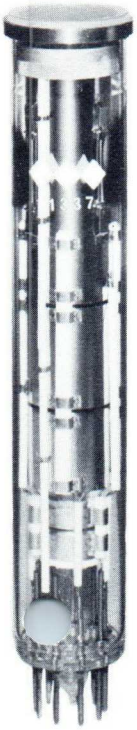
Application: X-ray inspection of transistors, microcircuits, continuous weld inspection, or potted modules.



TD 1335

SLOW SCAN VIDICON. This tube has electrostatic focus and magnetic deflection to red[illegible] the required deflection pow[illegible] It has a special photoconductive surface with storage properties to permit exposure and readout to take place sequentially. The 1335 is suitable for frame rates up to 10 sec./frame. The tube will withstand sterilization at 125°C for 24 hours as required for space-borne TV systems.

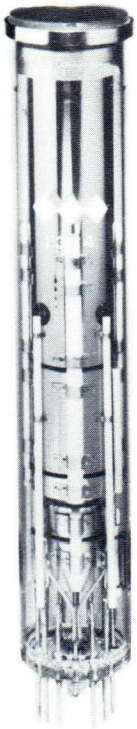
Application: Narrow bandwidth TV systems.



TD 1337

HYBRID INDUSTRIAL VIDICON. This tube has electrostatic focus and magnetic deflection. It features the same high sensitivity photoconductive surface as the 7325 and center resolution in excess of 700 lines.

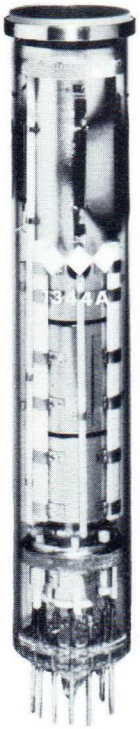
Application: Compact, transistorized industrial cameras.



TD 1344

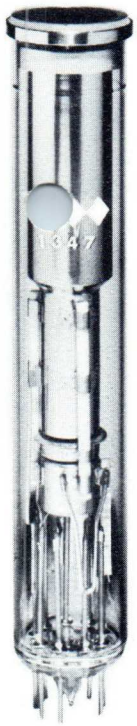
SLOW SCAN VIDICON WITH ELECTROSTATIC FOCUS AND DEFLECTION. This tube has the same storage photoconductive surface as the 1335 and the same electron gun as the 7522.

Application: Narrow bandwidth TV systems requiring an all-electrostatic vidicon such in equipment requiring low power consumption or digital readout.



TD 1344A

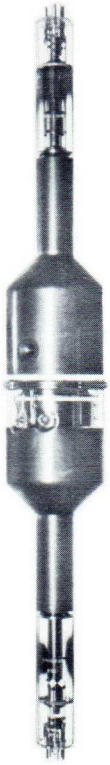
RUGGEDIZED SLOW SCAN VIDICON WITH ELECTROSTATIC FOCUS AND DEFLECTION. This tube has a low power (150 mA) filament but is otherwise electrically identical to the 1344. It is ruggedized to environments of severe shock and vibration. It will also withstand sterilization at 125°C for 24 hours as required for certain space-borne TV systems.



TD 1347

ULTRAVIOLET VIDICON. This tube has a quartz faceplate and a photoconductive surface which is sensitive to ultraviolet radiation.

Application: Astronomy, tracking, UV microscopy, etc.



TD 1364

SCAN CONVERSION TUBE

A dual gun storage tube capable of simultaneous reading and writing. A precision molded hard glass envelope permits extremely accurate alignment of both guns. The tube is designed so that read and write signals are easily separated with simple cancellation circuits without the necessity for RF separation methods.

APPLICATION:

For use in systems where conversion from one scanning mode or frequency to another is desired; slow scan narrow band TV or radar P.P.I. to TV conversion.

GENERAL DATA:

Operating position — any except reading gun up
Focusing method — Magnetic/electrostatic
Deflection — magnetic
Deflection angle — 20°
Useful target diameter — 2 inches
Bases — 8 pin JEDEC E8-11
Length (max.) — 26.330 inches
Diameter (max.) — 3.93 inches
Input Power — 115-200 vac, ±10%

ED 6014
MONOSCOPE VIDEO SIGNAL GENERATOR

This completely transistorized test set is designed to provide a standard "Indian Head" test pattern over a wide range of slow scan frequencies with a rectilinear format. A 2F21 monoscope tube is used as the source of the video signal. Driving the DC coupled sweep amplifiers externally, any desired scanning program can be obtained. Sweep and blanking outputs are supplied with the video signal.

APPLICATION: Variable Slow Scan Video Signal Source

SPECIFICATIONS:

Mechanical:
- *Height — 19 inches*
- *Width — 10.5 inches*
- *Depth — 17 inches*

Electrical:
- *Input Power — 105-125 vac, 55-65 cps, 1 amp*
- *Output Signals —*
  - *Video — 1.0 volts (white positive)*
  - *Sync — 4 volts negative*
  - *Blanking — 4 volts negative*
- *Resolution — 500 lines*
- *Grey Scale — Five*

ED 6021
UNIVERSAL SCAN CONVERTER

This completely transistorized system is capable of converting between various scan formats. Typical conversions include: Radar PPI Scan to TV for bright display on ordinary television monitors; Slow Scan to TV and any special scan formats to meet customer's requirements. All modules are completely transistorized for maximum reliability. The system is designed around the 1364 dual gun scan converter tube, with variable storage of input signals and simultaneous reading and writing by independent electron guns.

AVAILABLE MODULES:
- *a. TV Control*
- *b. PPI Control*
- *c. Slow Scan Control*
- *d. High Voltage Power Supply (std.)*
- *e. Low Voltage Power Supply (std.)*

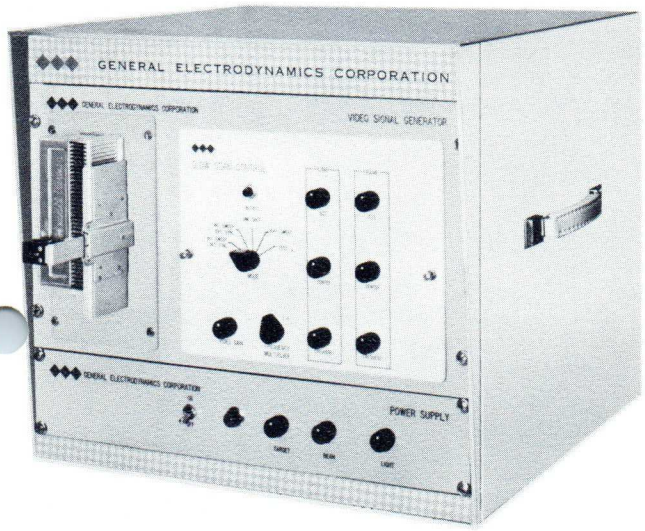
APPLICATION:
- *a. Change scanning formats*
- *b. Slow Scan Video Display*
- *c. Radar Bright Display*
- *d. Sonar Bright Display*
- *e. Bandwidth compression or expansion*
- *f. Intermediate storage of video type data*

SPECIFICATIONS: (system)

Mechanical:
- *Height — 36¾ inches*
- *Width — 19 inches*
- *Depth — 18 inches*
- *Weight — 106 pounds*

Electrical:
- *Input Power — 105-125 vac, 55-400 cps, 1.5 amp*
- *Video Sensitivity — 1 volt (white positive)*
- *Resolution — 800 lines*
- *Image Storage — Controllable to 60 sec*
- *Grey Scale — Eight*

ED 6025
SLIDE
VIDEO
GENERATOR



This completely transistorized system is designed to provide video signals by scanning 35 mm slides. The unit contains a vidicon camera, lens system, light source, 35 mm magazine, and a plug-in control module. The control module contains the sweep generator and camera control circuits. Various scanning formats can be obtained by selecting the appropriate plug-in module.

AVAILABLE MODULES:

Slow Scan, Radar PPI and TV

APPLICATION:

Test Signal Generator, Overlay Generator or Simulator

SPECIFICATIONS:

Mechanical:
- *Height — 17⅝ inches*
- *Width — 19½ inches*
- *Depth — 20¾ inches*

Electrical:
- *Input — 105-125 vac, 50/60 cps*
- *Output —*
  - *Video — 1 volt p/p (white positive)*
  - *Sync — 4 volts negative*
  - *Blanking — ±10 volts*
  - *Bandwidth — 1 cps to 1 mc, 10 cps to 10 mc (depends on mode of operation)*
- *Resolution —*
  - *600 lines minimum (depends on mode of operation)*
- *Grey Scale —*
  - *Nine (depends on mode of operation)*

ED 6028
SLOW SCAN
MONITOR

The heart of this equipment is the high resolution flat face cathode ray tube which can be supplied in most standard phosphors. The unit consists of the 5 CK CRT assembly and plug-in control module. This module provides simplified panel mounted controls for the monitor driving circuits and amplifier.

The high level DC coupled video amplifier provides sufficient gain to fully modulate the CRT.

The flat face CRT is protected from stray fields by a magnetic shield. Provisions are made to mount a polaroid camera. A shutter control circuit provides contact closure during the frame sweep period for external camera synchronization.

The unit may be provided with a swing-away camera and interchangeable backs.

APPLICATION:

a. For direct viewing of slow scan video signals

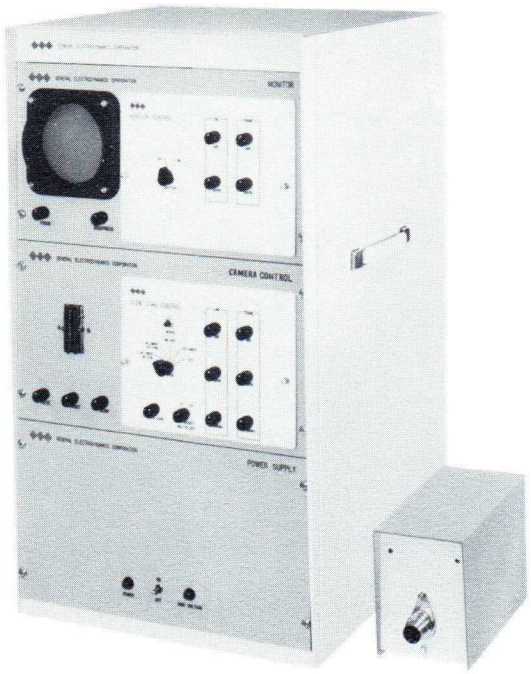
b. High quality photography of slow scan video pictures

SPECIFICATIONS:

Mechanical:
- *Height — 10½ inches*
- *Width — 19 inches*
- *Depth — 18 inches*

Electrical:
- *Input Power — 105-125 vac, 60 cps, 1.5 amp*
- *Video Input Sensitivity — 1 volt p/p*
- *Bandwidth — DC to 220 KC*
- *CRT — 5CK*
- *Spot Size — .001 inch at 25ua*
- *Shutter Control — 10 amp DC, Maximum current*

ED 6030
SLOW SCAN
TV SYSTEM



This completely transistorized TV system consists of camera head, camera control, monitor and power supply. The system provides continuously variable control of the scanning frequencies over a range of 100:1. It is capable of being modified to any specific slow scan or standard TV requirements. When used with the ED 6021 Scan Converter, the system provides complete slow scan operation for narrow band transmission.

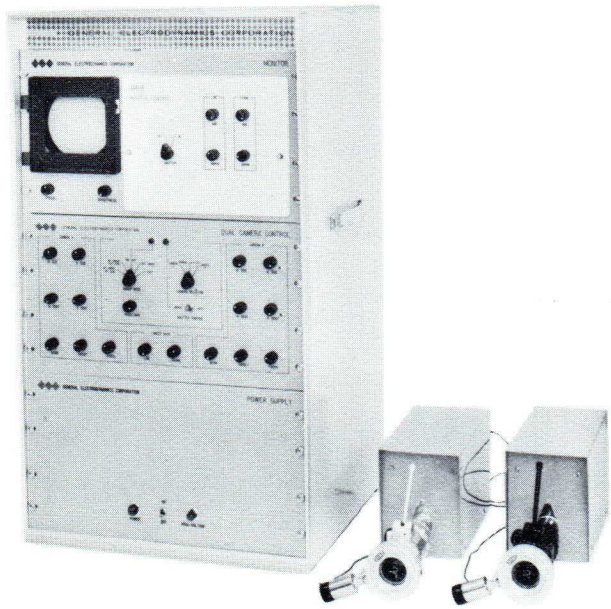
APPLICATION: Industrial TV system requiring slow scan operation and narrow band transmission.

SPECIFICATIONS:

Mechanical:
- *Height — 35 inches*
- *Width — 19 inches*
- *Depth — 20 inches*
- *Weight — 100 pounds*

Electrical:
- *Input Power — 105-125 vac, 60 cps at 150 watts*
- *Video Out — 1 volt p/p (white positive)*
- *Resolution — 600 lines*
- *Grey Scale — Nine*
- *CRT — 5CK*
- *Line Frequency — 10 to 1000 cps (typical)*
- *Frame Frequency — .02 to 2 frames/second (typical)*

ED 6033
DUAL
SLOW SCAN
TV SYSTEM



This completely transistorized TV system consists of dual camera heads, a camera control unit, power supply and monitor.

Provisions are made for the mounting of a polaroid camera on the monitor.

Controls for the cameras are mounted on the front panel with the automatic and manual shutter controls.

The cameras are shuttered and supplied with 4:1 zoom lens. Excellent linearity is assured by negative current feedback around the sweep amplifiers. Temperature stabilization is incorporated.

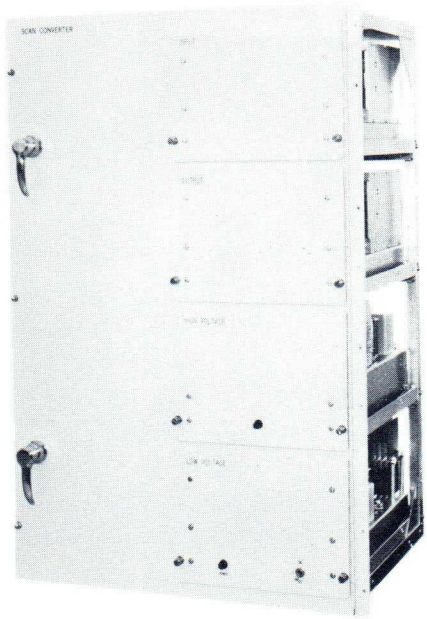
APPLICATION:
- *a. Stereo Slow Scan*
- *b. Evaluation by comparison techniques*

SPECIFICATIONS:

Mechanical:
- *Height — 45 inches*
- *Width — 20 inches*
- *Depth — 20 inches*

Electrical:
- *Input Power — 115 vac, 60 cps*
- *Video Out — 1 volt p/p (white positive)*
- *Resolution — 600 lines*
- *Bandwidth — DC to 500 KC*
- *Grey Scale — Nine*
- *Line Frequency — 60-600 cps*
- *Frame Frequency — 1 to 10 frames/sec*
- *Shutter — Electro mechanical sychronized to the frame sweep*

ED 6035
RADAR
SIMULATOR



This completely transistorized scan converter converts x-y coordinates to PPI polar coordinates with a high degree of precision. The simulator accepts computer data and radar information and generates a simulated PPI scan.

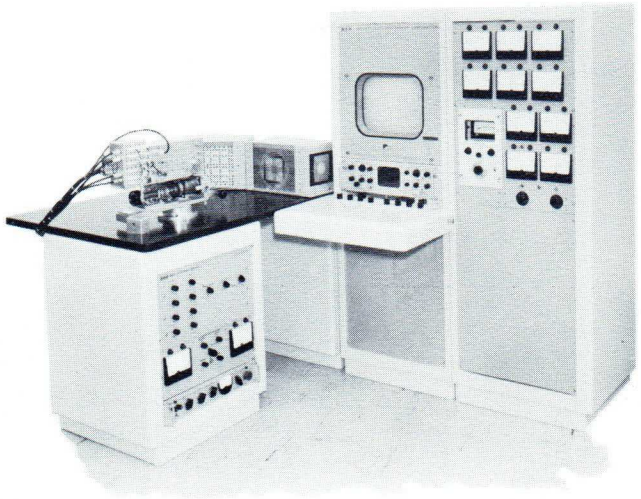
APPLICATION: Simulates Radar PPI Scan

SPECIFICATIONS:

Mechanical:
- *Height — 40 inches*
- *Width — 24 inches*
- *Depth — 18 inches*
- *Weight — 160 pounds*

Electrical:
- *Input Power — 115-200 vac, ± %10*
  400 cps ±5%
- *Resolution — 800 lines*
- *S/N Ratio — 10:1*
- *Grey Scale — Five*
- *Total Center Position Error — 0.25% of tube diameter*
- *Video — 1 volt p/p (white positive)*

ED 6036
UNIVERSAL
CAMERA TUBE
TEST SET



This equipment has been designed for rapid, complete, and accurate testings of vidicon tubes. Provisions can be included for automatic measurement of spectral response.
An oscilloscope is provided for checking video signal voltage. The monitor presents the selected test pattern or actual picture. The voltmeter and ammeters indicate all electrode voltages independently.
This unit can be modified to meet any specific requirements.

APPLICATION: Vidicon Tube Testing

SPECIFICATIONS:

Mechanical:
- *Overall Height — 60 inches*
- *4 racks, including camera pedestal, approximately 96 inches wide*

Electrical:
- *Input Voltage — 115 vac, 60 cps*
- *Meter Function —*
  - *Filament*
  - *G1*
  - *Target Voltage*
  - *Target Current*
  - *G2*
  - *G3*
  - *G4*
  - *Alignment*
  - *Focus*
- *Power Supplies — Regulated*

CUSTOM OPTICAL SYSTEMS AND COMPONENTS

The ASTRON ▮ OPTICS Division was originally formed to supply the in-house optical requirements of the Electronic Tube Division and the Electronics Division of General Electrodynamics Corporation. Specifically, the necessity to have a reliable source of supply which could assure on-time delivery of complex optical shapes of high precision made it advisable to establish a precision optics facility.

As the in-house optical requirements expanded to include optical components for vacuum ultraviolet and far infrared, making it necessary to develop techniques to convert materials such as Lithium Fluoride and Germanium into precision optical components, the decision was made to expand the optical shop into a fully staffed division.

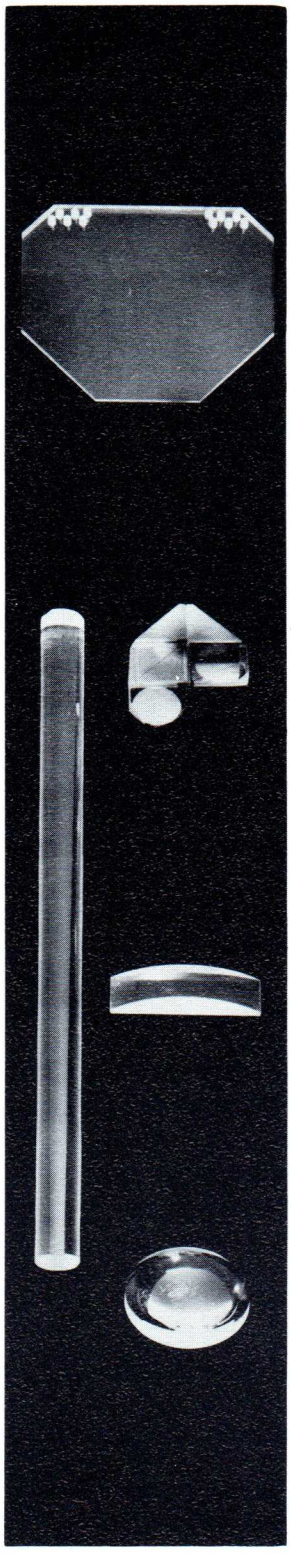
The Astron ▮ Optics Division is now located in a temperature and humidity-controlled 12,500 square foot building. The most modern equipment for efficient production of precision optical components and assemblies is available here to meet the requirements of a fast-growing number of satisfied customers.

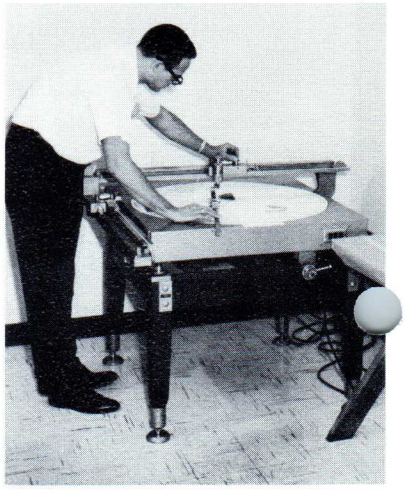
Some of the materials Astron ▮ Optics has converted into precision optical components are: Lithium Fluoride for vacuum ultraviolet, Quartz for UV optics and for applications requiring resistance to high gamma radiation environments, Beryllium metal for X-ray transparent windows, Germanium, Silicon, Magnesium Fluoride, Rock Salt and Zinc Sulfide for near and far infrared windows and optics and, of course, every available optical glass.

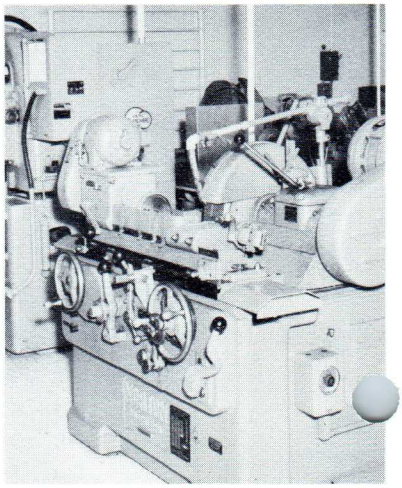
The configurations produced include mainly spherical lenses, cylindrical lenses, aspherical lenses up to 4½-inch diameter, flats to a fraction of a wavelength flatness, prisms in many sizes and any conceivable configuration. Cemented assemblies, such as achromats and special configurations are regularly on the production schedule. Facilities for production of complete electro-optical or mechano-optical assemblies in clean-room environment are available.

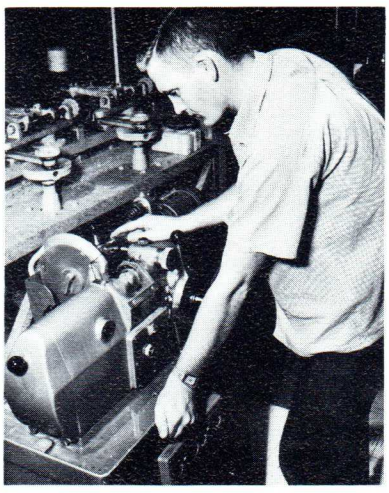
Your problem may be the development of a prototype, a total production of three units or a long production run of thousands of optical components with strict adherence to delivery schedules — you will find the solution to your problem at the Astron ▮ Optics Division.

Currently we do not stock optical components, but we can readily make them to your specifications. If you don't know how to express what you need in optical terms, please call or write, we will be pleased to assist you.

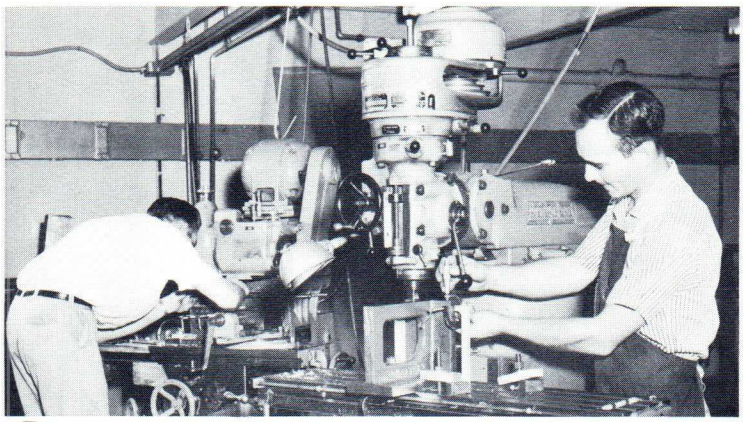


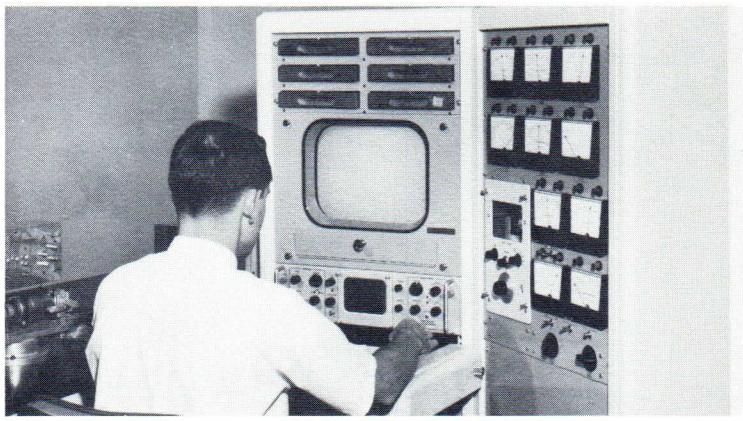


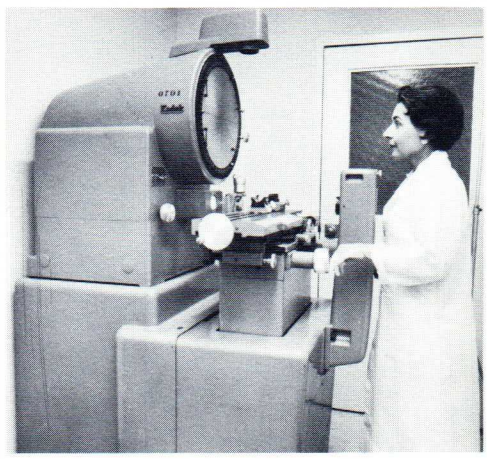


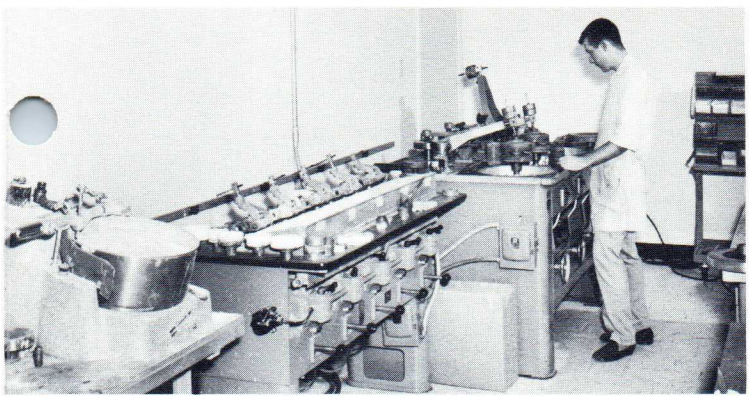


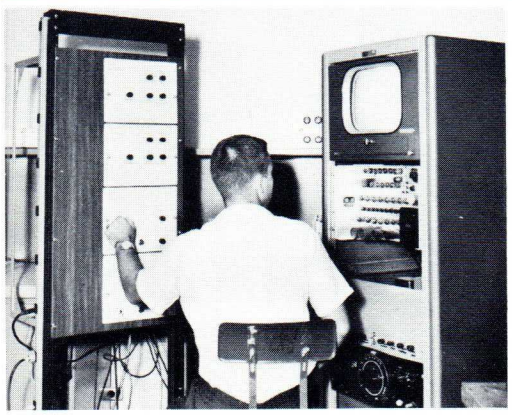
ENGINEERING AND PRODUCTION FACILITIES

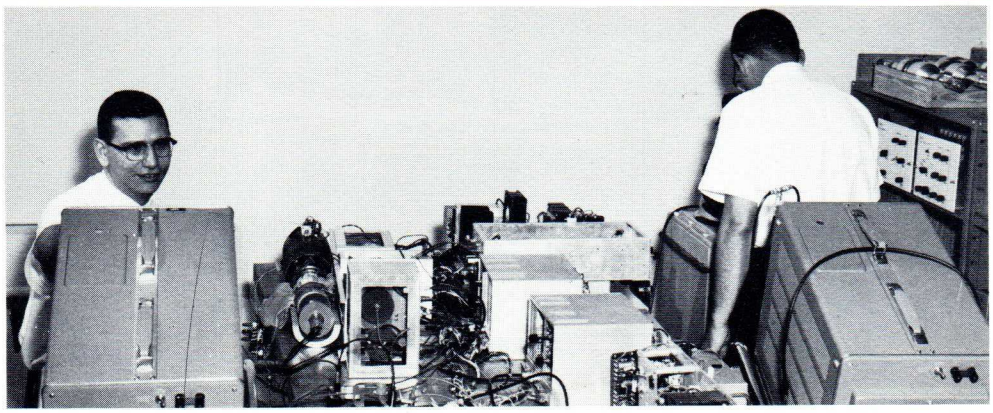












QUICK REFERENCE CATALOG

LITHO IN U.S.A.

GENERAL ELECTRODYNAMICS CORPORATION, GARLAND, TEXAS

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