

BREAKTHROUGH
VERSATILITY AT BREAKTHROUGH COST

*automatic
drafting*

*machine
tool
tape
verification*

*data
plotting*

*coordinate
digitizing*

*oscillogram
reader*

lofting

*pattern
or
template
scribing*

*map
reading*

charting

*mapping
and
surveying*

*tactical
display*

GERBER

VP

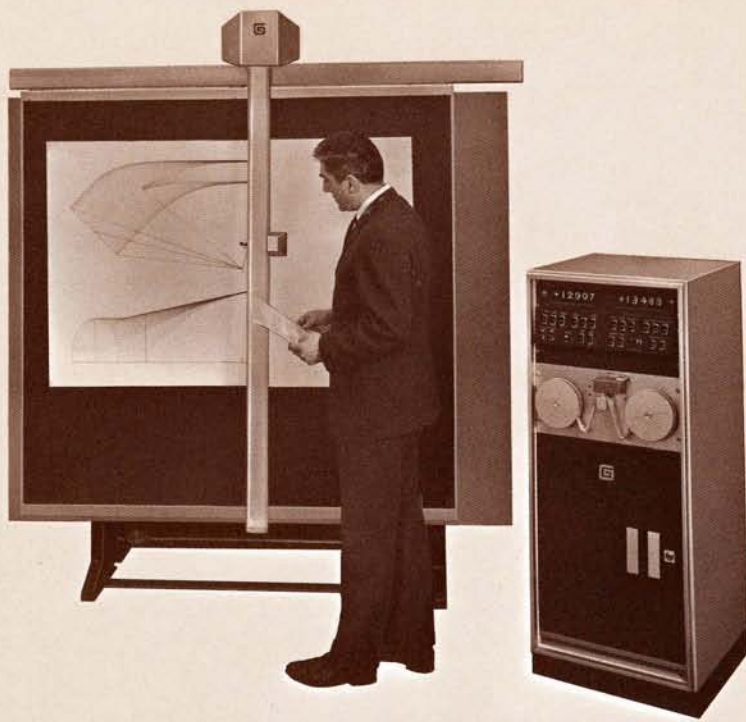
ERIFIER

LOTTER

600

ALL ARE NOW POSSIBLE ON THE VP 600 AT A FRACTION OF THE COST OF
COMPARABLE EQUIPMENT CAPABLE OF PERFORMING ONLY ONE OF THESE TASKS!

 **GERBER SCIENTIFIC INSTRUMENT CO.** HARTFORD, CONN.



VP BREAKTHROUGH 600



The new VP 600 is the result of many years of development toward providing an economical and versatile device for the automatic presentation of graphical displays. Completely designed, developed and constructed by the leading manufacturer of digital plotters, the VP 600 offers a major breakthrough in digitally controlled display systems. Revolutionary design techniques have been employed in a basic device which can satisfy a wide variety of graphical display and data reduction requirements. Furthermore, these techniques are based on simplicity of design which results in a low initial investment, minimum operating expenses and long service life.

The VP 600 is designed to meet many requirements of E.I.A. and N.A.S. specifications for N/C drafting machines. It is basically a continuous path automatic drafting machine capable of producing a high quality graphic display of digital information on drafting film, paper, vellum, cloth, Mylar, sensitized sheet metal or comparator screen material to a standard size of 50 x 60 inches. Other plotting areas are available. It can accurately draw a line of any length or slope by a single command within the limits of the plotting surface. Input data in the form of punched paper tape containing the incremental distance to be traversed between coordinate points is entered into the electronic control unit via the self-contained tape reader. The operator may select any two axes from three-axes tape for either the X or Y coordinate for plotting. Controls are provided for producing right and left hand drawings from a single tape. Drawing speeds up to 200 inches per minute are internally computed. Manual speed reduction is available for high precision applications. Full jog controls are provided to allow the operator to manually position each axis independently at a preselected speed. All these features are included as standard equipment.

The resulting graphic display is produced with an overall maximum accumulative accuracy of $\pm .010$ inch anywhere on the plotting surface. Repeatability is $\pm .004$ inch. A higher accuracy version is also available.

APPLICATIONS

MANUFACTURING GROUP—The GERBER VP 600 is the most economical device available today for the verification of cutter paths specified on tapes programmed for use on numerically controlled machine tools. Point-to-point or continuous path programs can be displayed rapidly and accurately. Due to its



VERSATILITY AT **BREAKTHROUGH** COST

SPECIFICATIONS

STANDARD FEATURES

ACTIVE PLOTTING AREA.....	50 (Y) by 60 (X) inches.
PLOTTING SURFACE POSITION.....	Adjustable from horizontal to vertical; plotting surface adjustable from 37 to 46 inches in the horizontal position.
ACCURACY.....	Positional $\pm .010$ inch overall maximum. Repeatability $\pm .004$ inch.
SPEED.....	Up to 200 inches per minute with manual override for 50 per cent reduction.
RESOLUTION.....	.002 inch (smallest increment of motion).
INPUT.....	Punched paper tape 8 channels.
INPUT FORMAT.....	Incremental distance: sign and four digits each axis. Other formats available.
MULTI-AXIS INPUT.....	Any two of three axes data.
MANUAL JOG CONTROL.....	Three preselected speeds.
MIRROR IMAGE.....	Right and left hand drawings from same tape.
DRAWING TOOL.....	Quick change wet ink or ball point pen, drafting pencil, cross hair reticle.

inherent versatility a wide variety of incremental and absolute tape formats to E.I.A. Standards or as specified can be accommodated such that different tapes can be verified on a single VP 600 without additional postprocessing. With the VP 600, the cutter path can be quickly reproduced allowing a visual comparison of the results with the program prior to actual production. Inspection departments can also benefit from the VP 600 through the production of templates and comparator screens.

DRAFTING-ENGINEERING GROUP—As an automatic drafting machine the GERBER VP 600 is ideal for the preparation of preliminary design and detailed drawings from numerical data. With electronic precision it does the work of many draftsmen and is the ideal output device for your computer-aided design efforts. The VP 600 can also be used for the reverse procedure whereby coordinate data can be obtained from engineering drawings and recorded on punched paper tape by use of the readout accessory.

For engineering applications it permits the accurate and high-speed production of graphic displays of design and test data at a fraction of the time required by hand methods. No longer does the engineer need to spend valuable time in manual layout and plotting.

DATA REDUCTION GROUP—The VP 600 can be utilized whenever graphic retrieval of data from digital devices is desired. Displays can be made in conjunction with telemetry records, oceanographic studies, statistical data, and various other applications. For the layout of maps, contour lines and physical characteristics can be plotted and drawn automatically. The all solid-state digital control assures no drift, long term stability, accuracy and reliability. With the addition of the readout accessory the GERBER VP 600 becomes a large-area coordinate digitizer. Coordinate data on maps, charts, oscillograms and other types of graphical displays can now be reduced to computer-readable form at a considerable saving over present hand methods.

COMPUTER GROUP—To rapidly display computer output directly, the GERBER VP 600 is the most advanced on-line device available today. Not only does it operate with linear interpola-

tion for the above applications, but it can also be operated in a pulse-driven mode for direct connection to any digital computer. All the above applications can be satisfied by a single VP 600 outfitted with the appropriate accessories. One low-cost machine will increase the productivity of your computer, data reduction, design, drafting, production and research departments.

DESIGN AND CONSTRUCTION

The VP 600 is composed of the electronic control unit and a plotting table. These units are connected by electrical cables only and may be located as desired.

PLOTTING TABLE: The plotting surface is mounted on a steel frame and is capable of accommodating plotting material in sheet or roll form. Standard plotting area is 50 x 60 inches. The plotting surface is readily adjustable to any desired angle from a horizontal to a vertical position. A foot control is included to raise the height of the plotting surface in any angular position. In the horizontal position the plotting surface can be adjusted from 37" to 46" from the floor. These variable positions allow the operator to work or observe all parts of the plotting surface comfortably. The drawing head is positioned by X and Y carriages which accurately execute the commands of the control system. The X carriage is an aluminum beam which spans the plotting surface from top to bottom and which offers exceptional rigidity in a simple design. This beam acts as the precision way for the Y carriage on which the drawing head is mounted. The top end of the X carriage is guided by an identical aluminum beam which extends the length of the table. Both ends of the X carriage are mechanically connected to insure carriage perpendicularity with the plotting surface at all times. This direct mechanical connection eliminates the problems encountered with systems which rely on other methods to maintain perpendicularity. Drive power to the carriages is provided by digital stepmotors. These motors are distinguished from more conventional actuators in that they accept digital drive pulses instead of analogue commands, and each step is made with instant stop, start, and reverse characteristics. Motor drive pulses are derived from the solid

state control logic. Following amplification the pulses are applied to the digital stepmotors which in turn provide positive high torque digital steps. The simplicity and ruggedness of the mechanical drive system assures minimum maintenance under all types of operating conditions.

ELECTRONIC CONTROL UNIT: The electronic control unit houses the digital control logic, the input tape reader and all operating controls and indicators. All command pulses to control the X and Y axes are generated by the control unit. The control logic is a special purpose digital computer constructed

to economically perform the linear interpolation function. The digital logic approach to plotter control assures long-term stability and accuracy. Solid state components are used throughout to take full advantage of the inherent reliability of properly designed printed circuit boards. The self-contained punched paper tape reader is front panel mounted and is capable of reading at 60 characters per second. Higher speed photoelectric readers are also available. All operating controls and indicators are front panel mounted and functionally arranged for ease of operation.

OPTIONAL FEATURES

HIGH SPEED (300 CPS) PHOTOELECTRIC PUNCHED PAPER TAPE READER AND HANDLER . . . VACUUM CHUCK . . . CONVERSION TO COORDINATE DIGITIZER BY INCORPORATION OF OUTPUT ACCESSORY . . . CARBIDE SCRIBING TOOL . . . MAGNIFYING RETICLE FOR ALIGNMENT OF PLOTTING MATERIAL . . . TWELVE SYMBOL PRINTING HEAD WITH AUTOMATIC CONTROL FROM INPUT TAPE PROGRAM . . . SCALING: 1/2, 2, 3, 4, 5, 6, 7, 8, 9 AND 10 TIMES NORMAL SIZE . . . INPUT: PUNCHED CARDS, MANUAL, MAGNETIC TAPE, AND ON LINE WITH DIGITAL COMPUTER . . . INPUT FORMAT: ABSOLUTE COORDINATES AND/OR A WIDE VARIETY OF INCREMENTAL FORMATS . . . COORDINATE DISPLAY: IN-LINE DIGITAL LAMP-BANKS FOR DISPLAYING X AND Y INPUT COMMANDS OR ACTUAL DRAWING TOOL POSITION, OR BOTH . . . SEQUENCE NUMBER DISPLAY: 3 DIGIT WITH OR WITHOUT AUTOMATIC SEARCH . . . DASH LINE . . . MULTI-AXIS INPUT: ANY TWO OF FIVE AXES DATA . . . BLOCK DELETE . . . AUXILIARY COMMAND DISPLAYS . . . PULSE DRIVEN FOR ON-LINE COMPUTER OPERATION . . . ROLL FEED FOR PLOTTING MATERIAL . . . OSCILLOGRAM RECORD DRIVES.

SALES REPRESENTATION

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