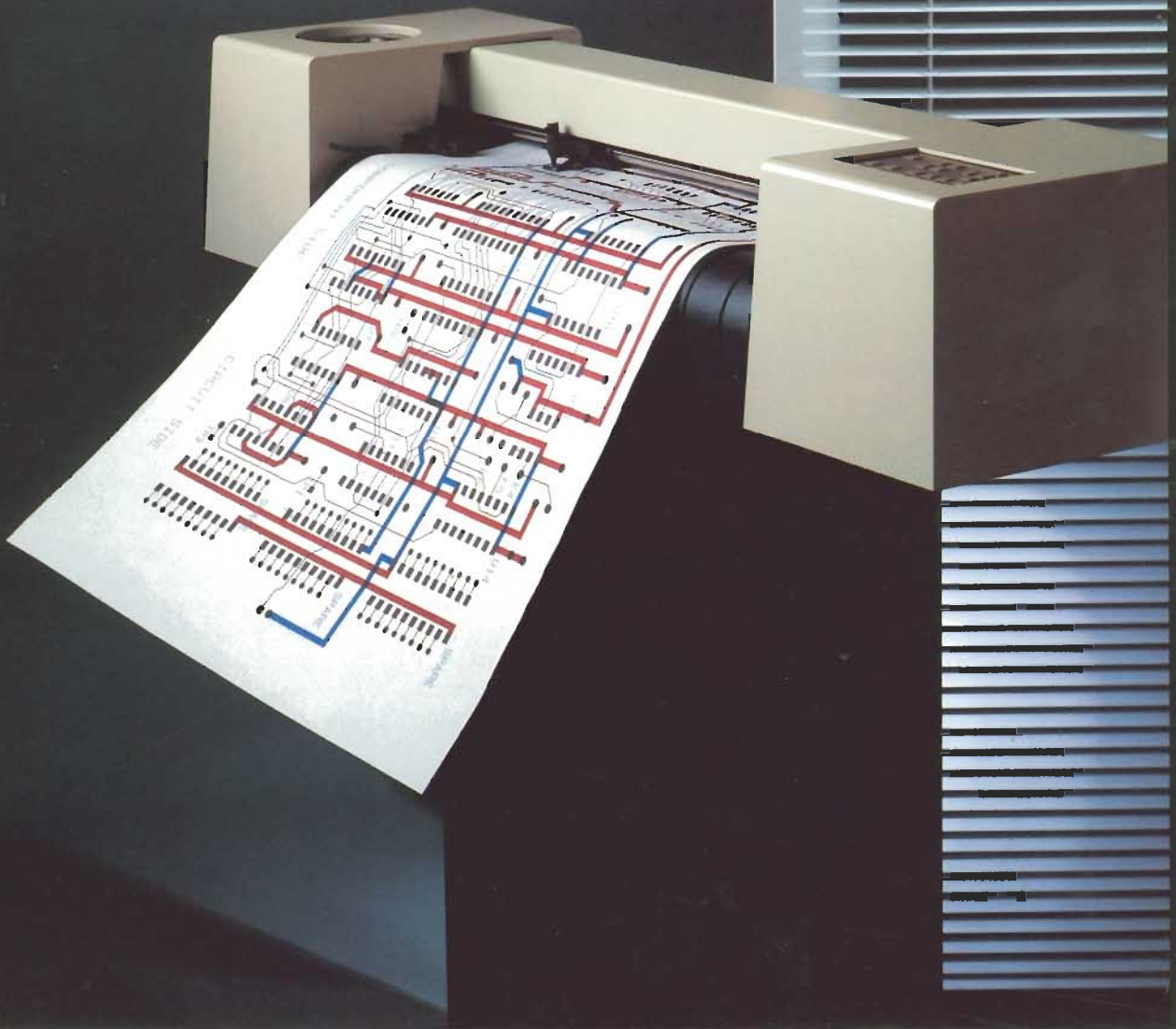


HEWLETT-PACKARD

The HP DraftPro Plotter

TECHNICAL DATA, JUNE 1986

Quality Graphics
for Your
Personal CAD System



HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

An Introduction



What is the HP DraftPro Plotter?

The HP DraftPro is an 8-pen drafting plotter that's been designed especially for you and your personal CAD system.

Our goal was simple: make a reliable machine that produces quality output, avoid non-essential frills without cutting corners.

What Can It Do?

The HP DraftPro plotter handles all your full-size drafting demands.

So whether you need an electrical schematic for this morning's meeting, a mechanical drawing to send to a vendor, or an architectural design for a client presentation, your new HP DraftPro will get the job done quickly, easily, and professionally.

How Will the HP DraftPro Plotter Fit into My System?

Perfectly. Because you already *have* the pieces you need.

The HP DraftPro connects easily to your personal computer or workstation, and it's most likely supported by the design software you use in your daily professional routine.

What Makes this Plotter Stand Apart from the Rest?

Our new drafting plotter outshines its competitors by offering you *traditional Hewlett-Packard quality, reliability, and service at an untraditional low price* — a combination we think you'll find hard to beat.

The Premium Product in Its Class



Designed for Quality

When designing any new product, there are always choices to be made — choices like “should we save a few cents here and there?” or “should we insure that our customers get the quality they deserve?”

The HP DraftPro was designed with the latter philosophy in mind. For example, our grit drive system optimizes contact with the plotting media. This firm grasp means your paper remains aligned and your drawing remains accurate.



Built for Reliability

The HP DraftPro plotter was designed to operate in freezing cold temperatures and extreme heat and humidity.

Once in manufacturing, life doesn't get much easier. There are more than 200 checks of the building process to insure that the HP DraftPro meets its original design specifications.

All this guarantees the very best of performances under your routine operating conditions.



Backed by HP Service and Support

Hewlett-Packard has been building plotters for more than sixteen years, so we've had lots of time to perfect our craft and to learn the meaning of customer satisfaction.

Each HP DraftPro plotter comes with a 90-day on-site parts and labor warranty. Support may be extended beyond this period by purchasing a monthly service contract (at a very reasonable rate).

We also guarantee the availability of service, support, and parts for at least 10 years after purchase. That's comforting in a world of high-technology turnover.

Finally, if you have questions or problems, HP has more than 330 sales and service offices worldwide, ready and able to help.



A Closer Look at Features



Media and Pens for Every Application

Whether you need a quick preliminary plot or a final-quality drawing for reproduction, the HP DraftPro provides the winning combination of media and pens.

It plots on full-size* sheets of paper, vellum, or double-matte polyester film.

And it draws with fiber-tip pens (in lots of colors), disposable liquid-ink pens (very convenient), and refillable liquid-ink pens (many point sizes to choose from).

*Media widths from 550 mm to 640 mm, and media lengths from 400 mm to 1000 mm. These measurements include A2/C/Architectural C- and A1/D/Architectural D-size media.



Quality Output

When the design session is complete, the only thing you have to show for your effort is the drawing you hold in your hand — and that drawing must reflect the quality of your work.

With the HP DraftPro plotter, you'll get smooth circles, consistent line widths, and crisp characters — output quality that will impress even the most trained professional eye.

Hardware Compatibility

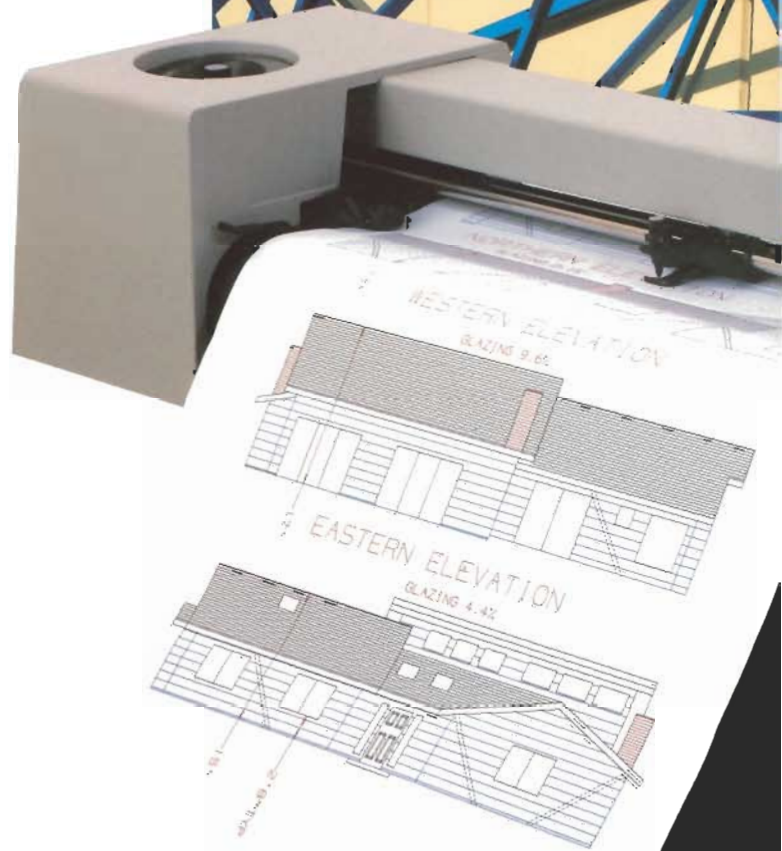
Chances are excellent that whatever your computer — from the HP Vectra to the Apple Macintosh, the DEC VAX to the IBM AT — the HP DraftPro will fit neatly with your CAD workstation.

An RS-232-C/CCITT V.24 interface comes standard; HP-IB (IEEE 488-1978) can be ordered as an accessory.

The IBM AT is a product of International Business Machines Corp.

The Apple Macintosh is a product of Apple Computer, Inc.

The DEC VAX is a product of Digital Equipment Corp.





Easy to Use

We've taken steps to insure that your working relationship with the HP DraftPro plotter will be productive, pleasant, and trouble free.

The paper and pen loading procedures are simple, the front-panel controls can be mastered in minutes, and the User's Guide is well written and easy to follow.

Also, a *Hewlett-Packard Drafting Supplies Catalog* is shipped with every plotter. This handy guide provides complete information about HP media, pens, and accessories as well as simple instructions for placing phone orders.

Small and Portable

These days, office space is a real premium, and you'll be happy to know that the HP DraftPro plotter doesn't need much room to work. It fits just about anywhere.

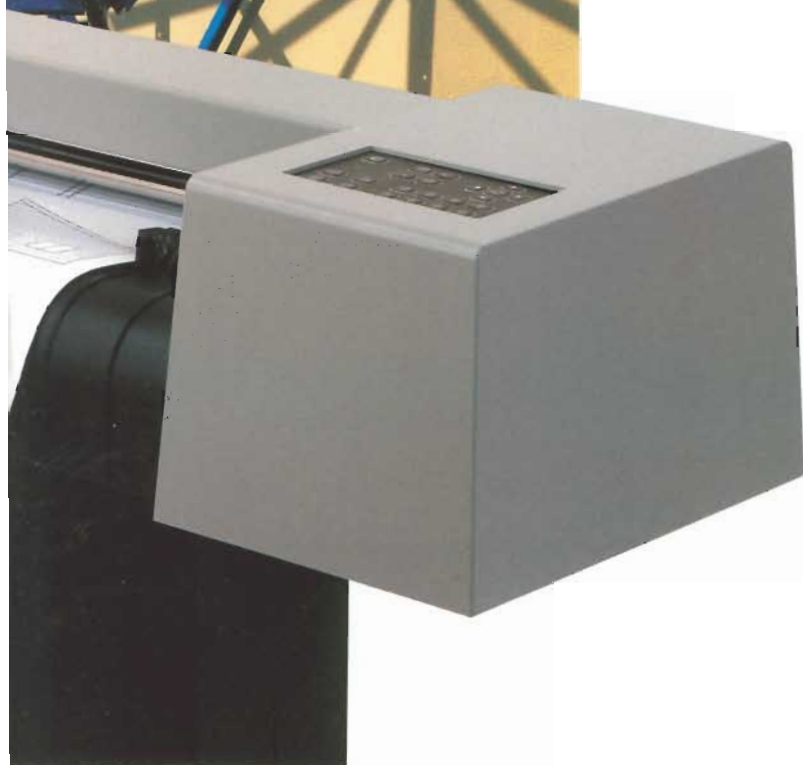
The HP DraftPro also has wheels, making it easy to move and easy to share.



Lots of Software

The HP DraftPro offers the same wide variety of software support as our other HP drafting plotters, which includes popular packages such as AutoCAD and VersaCAD. For the most up-to-date software information, be sure to contact your local HP Sales Representative.

If you write your own code, the HP DraftPro supports more than 80 HP-GL (Hewlett-Packard Graphics Language) instructions to simplify graphics programming. With just a few commands, you can label; draw lines, arcs, and circles; or select one of 20 international character sets.



Technical Specifications:

What They Are and What They Mean to You

What will the HP DraftPro Draw On?

Different types of media are appropriate for different applications. Paper, for example, is perfect for everyday use. Polyester film, however, is best for final drawings.

- **Types of media:** paper, vellum, and double-matte polyester film.
- **Media size:** single sheets; widths from 550 mm to 640 mm, lengths from 400 mm to 1000 mm. These measurements include A2/C/Architectural C- and A1/D/Architectural D-size media.

What About Margins?

The HP DraftPro offers two margin settings: normal mode and expanded mode. Normal mode is appropriate for most all your applications. Expanded mode allows you to draw closer to the media's edge. (It may not be suitable, however, when using liquid-ink pens on polyester film or vellum).

- **Expanded mode:** three margins of approximately 5 mm (0.2 in.), fourth margin is approximately 31 mm (1.2 in.).
- **Normal mode:** three margins of approximately 15 mm (0.59 in.), fourth margin is approximately 39 mm (1.5 in.).

What Will the HP DraftPro Draw With?

For the best results, it's important to choose pens that are compatible with your media. For example, fiber-tip pens are appropriate for paper; refillable liquid-ink pens make a great combination with vellum or polyester film; and disposable liquid-ink pens work best with vellum.

- **Types of pens:** fiber-tip, disposable liquid-ink, and refillable liquid-ink drafting pens.
- **Number:** 8-pen carousel, automatic pen changing and pen capping.

What About Line Quality?

How good the lines look is a function of three things: addressable resolution, mechanical resolution, and repeatability.

Addressable resolution is the smallest distance *you* can program the pen to move. Left to its own devices, the *machine's* mechanical resolution is even more precise, equivalent to about 1/6th the width of a human hair. The smaller the resolution specifications, the better the line quality. For example, the HP DraftPro makes smooth curves, not stair-step approximations.

Repeatability refers to the plotter's ability to return a pen to a precise point. Excellent repeatability assures that new lines join smoothly with previously plotted lines and that circles close properly.

- **Addressable resolution:** 0.025 mm (0.001 in.)
- **Mechanical resolution:** 0.013 mm (0.0005 in.)
- **Repeatability:** for the same pen, 0.10 mm (0.004 in.); pen to pen, 0.20 mm (0.008 in.)

Note: the repeatability specification is for 0.08 mm (0.003 in.) polyester film.

What Does Accuracy Really Mean?

Accuracy refers to the difference in length between the distance the plotter is *instructed* to draw and the distance it *actually* draws. This specification is especially important for applications that require precision plotting.

- **Accuracy:** 0.5 mm (0.02 in.) or 0.2% of the specified line length, whichever is greater.

Note: this specification is for 0.08 mm (0.003 in.) polyester film.

How Fast Will It Plot?

The answer to this question depends on several things. Plotting time is commonly measured by pen acceleration and velocity. But these specifications don't tell the whole story.

The HP DraftPro has strong communication abilities that enhance plotting speed. It raises and lowers pens quickly. And it minimizes the number of pen picks by grouping lines of the same color together and drawing them at the same time. This is called "pen sorting."

The bottom line? You get your drawing faster.

- **Acceleration:** 2 g
- **Velocity:** pen down equals 40 cm/s (15.7 in./s); pen up equals 50 cm/s (19.7 in./s).
- **Pen cycle time:** 100 ms
- **Pen sorting capability**
- **Buffer size:** 7448 bytes (to be shared between user-definable I/O, polygon, and pen sort buffers)

How Much Energy Does It Take to Run the HP DraftPro?

Less energy than it takes to power an average household light bulb.

- **Source:** 100, 120, 220, 240 V ~ ±10%
- **Frequency:** 47.5–66 Hz
- **Consumption:** less than 80 W maximum

What About Environment?

No air conditioning? No heat? No cause to worry. The HP DraftPro plotter will work comfortably even when you can't.

- **Operating temperature:** 0°C to 55°C
- **Nonoperating temperature:** -40°C to 75°C
- **Relative humidity:** 5% to 95% (in 0°C to 40°C)

Note: media size may vary with temperature and humidity.

How Does It Measure Up?

As you've seen, good things come in this relatively small package.

- **Height:** 1030 mm (40.6 in.)
- **Width:** 1140 mm (44.9 in.)
- **Depth:** 520 mm (20.5 in.)
- **Weight:** 30 kg (66 lb)

What Interfaces are Available?

To insure compatibility with most popular CAD systems, RS-232-C comes standard on the HP DraftPro. An easy-to-install, plug-in HP-IB interface may be ordered as an accessory (and you can use RS-232-C even with the HP-IB cartridge plugged in).

- **Standard:** RS-232-C/CCITT V.24
- **Option:** HP-IB (IEEE 488-1978)

What Comes in the Box?

Here are all the accessories and supplies you'll find when you unpack your new HP DraftPro plotter.

- User's Guide
- Power Cord
- Media Sampler Kit
5 sheets of architectural D-size paper
- Fiber-tip pens (0.3 mm)
Pkg of 5 (black, blue, green, red, and yellow)
- Carousels
Fiber-tip pen carousel
Liquid-ink drafting pen carousel
- Grit Wheel Brush
- Hewlett-Packard Drafting Supplies Catalog



And Finally, the Price?

One of our objectives for this brochure was to prove to you what we've believed all along . . . that when you buy the HP DraftPro, you're getting *the most value for your money.*

- **U.S.A. suggested list price:** \$5400

Specifications at a Glance

<p align="center">Media</p> <p>Paper, vellum, and double-matte polyester film.</p> <p>Widths from 550 mm to 640 mm, lengths from 400 mm to 1000 mm. These measurements include A2/C/Architectural C- and A1/D/Architectural D-size media.</p>	<p align="center">Velocity</p> <p>Pen down: 40 cm/s (15.7 in./s) Pen up: 50 cm/s (19.7 in./s)</p> <p align="center">Pen Cycle Time</p> <p>100 ms</p>
<p align="center">Margins</p> <p>Expanded mode: 5 mm (0.2 in.) on three edges, 31 mm (1.2 in.) on the fourth.</p> <p>Normal mode: 15 mm (0.59 in.) on three edges, 39 mm (1.5 in.) on the fourth.</p>	<p align="center">Buffer Size</p> <p>7448 bytes (to be shared between user-definable I/O, polygon, and pen sort buffers)</p> <p align="center">Power Requirements</p> <p>Source: 100, 120, 220, 240 V ~ ±10% Frequency: 47.5-66 Hz Consumption: less than 80 W maximum</p>
<p align="center">Pens</p> <p>Fiber-tip, disposable liquid-ink, and refillable liquid-ink drafting pens. 8-pen carousel, automatic pen changing and pen capping.</p>	<p align="center">Environmental Range (limited by media)</p> <p>Operating temperature: 0°C to 55°C Nonoperating temperature: -40°C to 75°C Relative humidity: 5% to 95% (in 0°C to 40°C)</p>
<p align="center">Resolution</p> <p>Addressable: 0.025 mm (0.001 in.) Mechanical: 0.013 mm (0.0005 in.)</p>	<p align="center">Size</p> <p>Height: 1030 mm (40.6 in.) Depth: 520 mm (20.5 in.) Width: 1140 mm (44.9 in.) Weight: 30 kg (66 lb)</p>
<p align="center">Repeatability*</p> <p>For the same pen: 0.10 mm (0.004 in.) Pen to pen: 0.20 mm (0.008 in.)</p>	<p align="center">Interfaces</p> <p>RS-232-C/CCITT V.24; HP-IB (IEEE 488-1978) available as an accessory</p>
<p align="center">Accuracy*</p> <p>0.5 mm (0.02 in.) or 0.2% of the specified line length, whichever is greater.</p>	<p align="center">U.S.A. Suggested List Price</p> <p>\$5400</p>
<p align="center">Acceleration</p> <p>2 g</p>	

*These specifications are for 0.08 mm (0.003 in.) polyester film.



From our design team to yours!

Ordering Information

DraftPro Plotter

Description	Part Number
RS-232-C/CCITT V.24 interface	HP 7570A

Accessories

Description	Part Number
HP-IB Cartridge	HP 17570A
HP-IB Installation Instructions	07570-90014
Programmer's Reference (available in English only)	07570-90001
Programmer's Pocket Guide (available in English only)	07570-90003
Hardware Support Manual	07570-90000

Cables (must be ordered separately)

Description	Part Number
Male-to-male, RS-232-C/CCITT V.24, straight-through cable (3 metres). For use with Apple IIe, Apple III*, and other DCE devices.	HP 17355M
Male-to-female, RS-232-C/CCITT V.24, straight-through cable (3 metres). For use with DCE devices requiring a female connector.	HP 17355D
Male-to-female, RS-232-C/CCITT V.24, modem eliminator type (1.5 metres). For use with IBM PC, PC-XT, plug compatibles, and other DTE devices.	HP 17255D
Male-to-male, RS-232-C/CCITT V.24, modem eliminator type (HP 17255M is 1.5 metres, HP 13242G is 5 metres). For use with HP Touchscreen computers and other DTE devices.	HP 17255M or HP 13242G
Male-to-female (25-pin to 9-pin), RS-232-C/CCITT V.24, modem eliminator type (3 metres). For use with IBM AT, HP Vectra, plug compatibles, and other DTE devices.	HP 24542G
Male-to-male (25-pin to 9-pin), RS-232-C/CCITT V.24 (1.5 metres). For use with Apple Macintosh computers.	HP 92219M**
RS-232-C/CCITT V.24, Eavesdrop Y-cable	HP 17455A
HP-IB (IEEE 488-1978) cable, RFI shielded. Cables HP 31389 and HP 45529 are equivalent to HP 10833. A is 1 metre, B is 2 metres, C is 4 metres.	HP 10833A/B/C

*Additional cable required from computer manufacturer.

**Similar to Imagewriter cable. Please verify with software supplier before purchase.



For more information, call your local HP sales office listed in the telephone directory white pages. Or write to Hewlett-Packard: **U.S.A.** — P.O. Box 10301, Palo Alto, CA 94303-0890. **Europe** — P.O. Box 999, 1180 AZ Amstelveen, The Netherlands. **Canada** — 6877 Goreway Drive, Mississauga, L4V 1M8, Ontario. **Japan** — Yokogawa-Hewlett-Packard Ltd., 3-29-21, Takaide-Higashi, Suginami-ku, Tokyo 168. **Elsewhere** in the world, write to Hewlett-Packard Intercontinental, 3495 Deer Creek Road, Palo Alto, CA 94304.