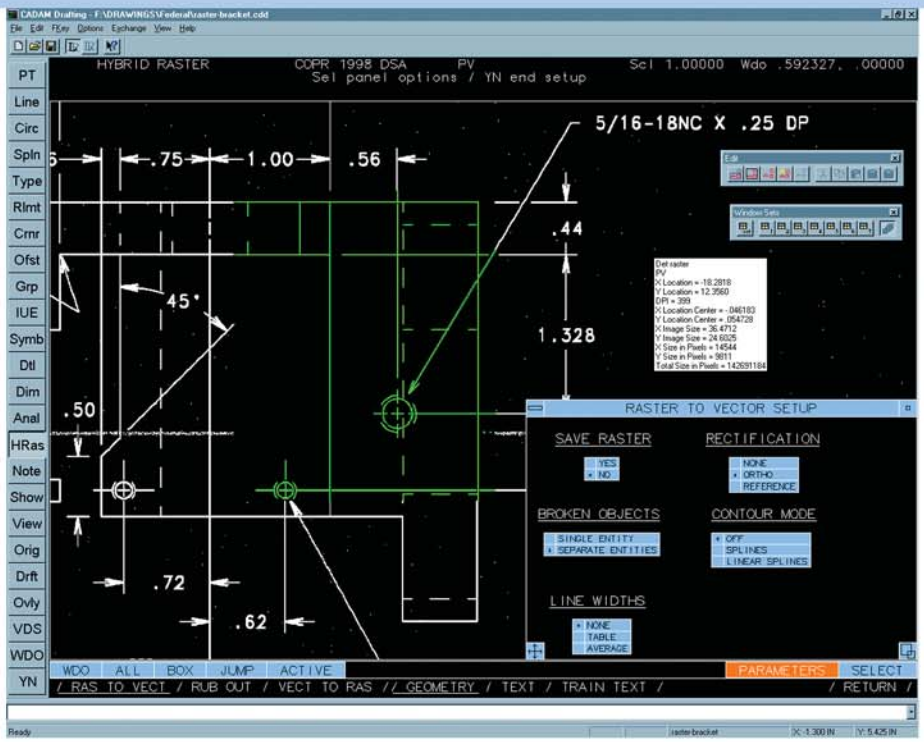
CATIA CADAM Drafting Version 4
Hybrid Raster

CCD Hybrid Raster

Hybrid Raster enables users to clean up, edit, and convert scanned engineering drawings using world-class raster processing tools that include the following capabilities:

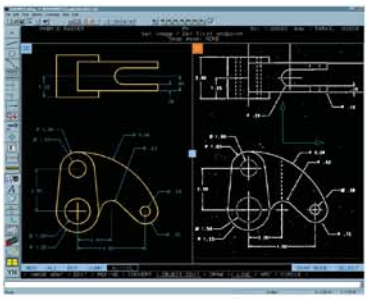
- View, modify, store, and manage both raster and vector data on the same drawing
- Despeckle, deskew, smooth, crop, and perform other commonly required raster cleanup operations
- Selectively convert portions of, or entire, raster images to vector elements, including splines and handwritten text
- Store multiple images in one drawing
- Create parametric relationships between converted vector geometry automatically
- Import and export multiple raster formats
- Modify raster data with advanced raster editing and drawing tools, while using the familiar and productive CADAM interface



Why Hybrid Raster?

The benefits of CAD are many and well known. CCD's Hybrid Raster provides a practical, effective, and innovative solution for bringing your paper drawings into the CAD environment. Several flexible options are available:

- Keep drawings in raster format and easily manage them with your CAD data as "electronic blueprints"
- Clean and edit raster data without having to convert to vector format
- Convert only a portion of the raster data to vector elements, while keeping all the data in one hybrid model. If only a small portion of a drawing needs to be revised, why vectorize the entire drawing?
- Completely convert your typically imprecise paper drawings to precise vector data using the fastest and most accurate tools available today



CCD's hybrid model format lets you choose the best approach for each drawing: If a drawing requires no engineering changes, keep it in raster format. For minor changes, update the raster image using the raster editing tools, while for more complex changes you can convert the appropriate section of the drawing from raster to vector. If a true CAD model is desired, convert the entire drawing to vector.

Hybrid Raster brings immediate and tangible payoffs. All scanned drawings become instantly accessible from any CCD terminal, and hardcopies of the drawings can be easily produced with the assurance that they are the latest versions. Equipment, rooms, and personnel devoted to the maintenance of paper drawings can now be applied to other activities. The cost and cycle time for engineering changes to your paper legacy will be reduced from day-one.

How do I Start?

CCD accepts almost all common monochrome raster images. Practically any scanner will produce a format that is suitable for import into Hybrid Raster. Many service bureaus will scan drawings for you as well, thereby eliminating the need to purchase a scanner for a one-time operation. Once in readable electronic format, it is simple to import images into CCD and enjoy all of the benefits of CCD's powerful functions. Since any number of images can be added to a CCD drawing, associated paper drawings can be consolidated into a single file.

Cleaning the Image

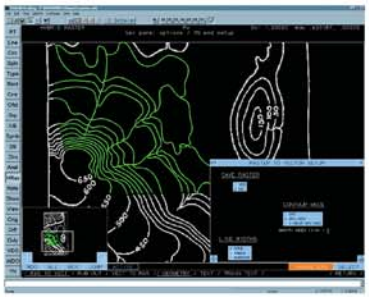
Paper drawings are rarely clean. Specks and smudges, fold lines, stretched or torn paper, coffee cup stains — all contribute to an imperfect image. Hybrid Raster's many cleanup functions allow you to quickly handle these imperfections. Even lines and arcs that are uneven or slightly misdrawn can be made uniform, straightened, or smoothed. Hybrid Raster's intelligent methods for selecting raster elements and numerous editing tools make cleanup a snap.

Editing Raster Data

Hybrid Raster's editing tools are made more powerful by the Intelligent Object Picker (IOP), which allows users to select raster elements as though they were vector entities. Groups of pixels can be selected as arcs, lines, circles, or text. These raster "objects" can be quickly identified for processing and refinement. Operations such as move, cut, copy, erase, rotate, scale, and mirror can be applied, making quick changes to raster data possible.

Raster to Vector Conversion

You have total control over the raster-to-vector conversion process. You can choose a specific group of raster elements to convert using the IOP, and various conversion parameters can be set to control the end results. Intersecting lines and overlapping objects pose no problems for the system! Useful features allow you to map raster line thicknesses to predefined vector line widths, while the rectification option allows converted lines to be snapped to user-defined angles. Underlying raster data can be conveniently erased during conversion, or kept as a backdrop to verify the quality of the conversion process. Even complex curves can be converted to true CCD splines, while raster text can be recognized by a fully trainable, neural-network-based character recognition system that includes customizable dictionary lookup features.



PC NO.	NAME	MAT.	QU
101	BRACKET	C.I.	
102	GEAR	C.I.	
103	SHAFT	STEEL	
104	GLAND	C.I.	
105	PULLEY	A.I.	
106	BUSHING	BRO.	

Vector to Precise CAD Models

Converting even the best raster images to vector data rarely yields perfect results. Hand-drawn paper drawing geometry is typically, at best, accurate to only 1/32". Further, variables such as humidity, air pressure, and temperature affect the quality of the original paper drawings. Using the Variational Design System (VDS) features included in CATIA-CADAM Drafting, vectorized raster data can be parameterized and dimensioned with point-and-click ease. Updating the dimension values yields a precise, CAD-accurate model. If needed, the precise data can then be transferred to other CATIA products for the generation of a solid model, analysis, assembly verification, or a host of other digital simulation applications. This complete solution path from paper drawings to accurate digital mock-up is truly an industry exclusive!

Vector to Raster Conversion

Hybrid Raster allows you to convert, or "burn in", vector data to raster format. The resolution, in dots per inch (DPI), is user-definable. This capability can be very useful to exchange data between other applications that accept only raster formats, or to produce hardcopy output from devices that require raster data.

Input and Output Formats

Hybrid Raster supports the following popular raster formats for input and output:

Input: TIFF CCITT Groups 3 and 4, TIFF Uncompressed, TIFF Version 6 Tiled, TIFF Packbits, CALS Group 4, PCX, RLC, IMG Groups 3 and 4 Tiled, IMG Groups 3 and 4 Banded, DSI Group 4, and Versatec VDS.

Output: TIFF Groups 3 and 4, TIFF Strip, TIFF Uncompressed, CALS Group 4, RLC, RLE, PCX, HP RTL, HP PCL, HPGL/2, PostScript, JDL, JDL4, VBF, GRAPHTEC, FileNET Tiled, CCRF, OCE, CGM, and USN.

Technical Requirements

Hybrid Raster requires CATIA-CADAM Drafting, and 64 to 128 MB of real memory (RAM) is recommended, along with enough hard disk space to accommodate the number of raster images you plan to scan. Raw raster images from a scanner typically consume a great deal of disk space, but Hybrid Raster's superior compression technology significantly reduces the size of these same images once they are imported into a CCD drawing.

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Phone: +1 818 999-2500
Fax: +1 818 999-3535

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