THE CMP 80 UTILITY PUBLISHING SYSTEM

The COMp 80 Publication System

The COMp 80 Publication System has made the updating and republication of utility publications such as directories, price and parts lists, business reports and technical manuals significantly easier, faster and more economical. COMp 80 Publication Systems are now being utilized in business, industry and government, to eliminate many conventional manual operations and as a means to significantly shorten the entire pre-press portion of the publication cycle.

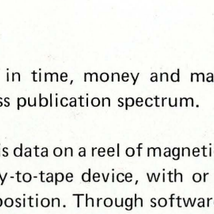
Since the COMp 80 Publication System operates directly from existing tape formats, with or without composition instructions, composition and typesetting time is drastically cut, and a host computer need not be tied up to perform composition tasks. The system can generate not only characters but complex forms. This means that time-consuming hand-drawing and stripping are eliminated. Other manual operations such as cutting and pasting to arrange text or position illustrations are also unnecessary. Compositorial features like proportionally spaced type and multi-column pages can save huge amounts of paper and printing time. Savings in time, money and material range over the whole pre-press publication spectrum.

Input to the COMp 80 is data on a reel of magnetic tape, from a computer or any key-to-tape device, with or without instructions for its composition. Through software, and without further dependence on the computer, the COMp 80 turns out fully composed and typeset pages that are justified, numbered and indexed. Pages are set in the desired typeface and format — in single or multiple columns, including running heads and folios. Line drawings that formerly had to be manually stripped in can be recorded in facsimile, vector generated or optically merged with the text during composition.

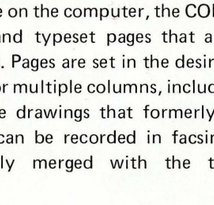
Inside the COMp 80, data on a computer magnetic tape is combined with the COMp 80's extensive page composition software, COMpose, to cause typefaces, forms and graphics to be electronically drawn on the face of a high-resolution cathode-ray tube. The image on the face of the tube is then recorded on film.

Output is a roll of 35mm, 16mm, 70mm, 105mm, 5-inch film, microfiche or 8½ x 11-inch copy that, when developed, provides a clean, crisp image for microform production, or direct conversion through an automatic platemaker for hardcopy printing.

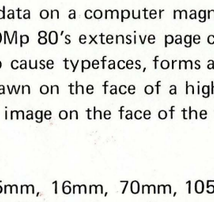
COM and UTILITY FONTS are stroke-generated characters. They are drawn on the face of the CRT by the electron beam with the minimal number of multi-directional vectors necessary to form a character, and can be written at speeds up to 40,000 characters per second. Included in the Utility fonts are both serif and san serif typefaces.

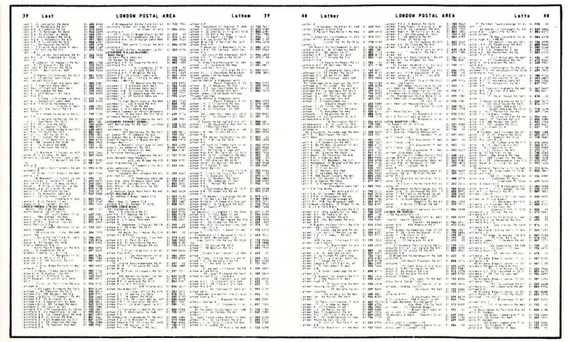


GRAPHIC ARTS FONTS are "painted" characters — the electron beam makes a series of closely spaced vertical strokes to build true Graphic Arts Characters on the face of the CRT. There are currently over 300 fonts in various sizes available.



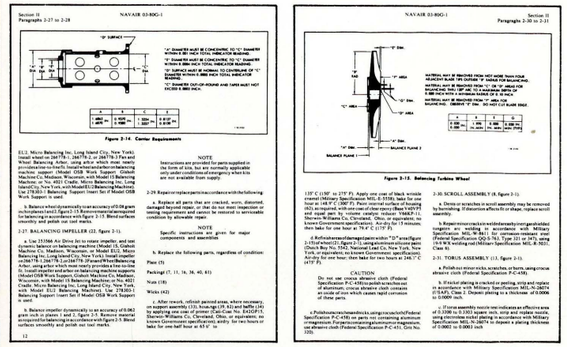
GRAPHS, DRAWINGS AND CHARTS may be generated directly by any of three COMp 80 recording techniques. *Facsimile mode* illustrations are drawn on the CRT in TV "line" fashion from magnetic tape files created by digital scanning techniques. *Vector mode* illustrations are drawn on the CRT with point to point lines from digital files created by automated drafting techniques. *Optical merge* illustrations are recorded from roll film or slide files created by planetary camera. For each method, the COMp 80 will automatically combine both text and graphics on the same output page.





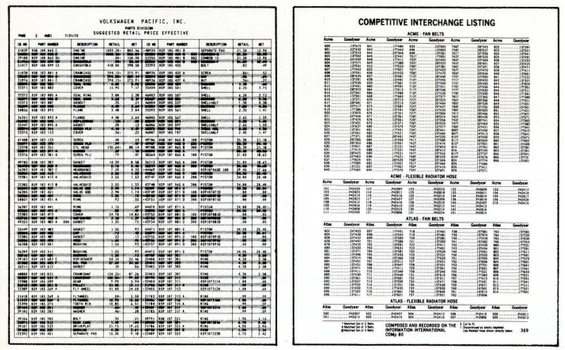
Directories

The COMp 80 is currently being used to generate daily telephone addenda, monthly reprints and in-plant user books where high print density, automated retrieval coding and maximum legibility is required. At one installation, the COMp 80 composes, sets and records up to 1500 multi-column pages of telephone listings on a daily basis, performing all necessary capitalization and formatting. Pages are recorded 2 per frame in press-ready imposition for printing. At another installation, retrieval marks are automatically generated and recorded below each frame for directory assistance microfilm retrieval units. The COMp 80 can record in Bell Gothic or 300 other user-specified fonts.



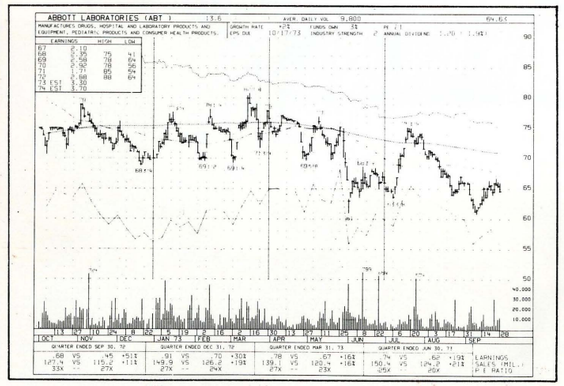
Illustrated Technical Documentation

A unique Information International feature significantly simplifies pre-press operations of technical manual production, update and republication by automatically recording line drawings in addition to text. Illustrations can be recorded by any of three COMp 80 methods: facsimile, vector or optical merge. The COMp 80 will accurately position the illustration in the designated area, and record text as required on the same frame. Pages are set in the desired typeface and format — in single or multiple columns with running heads and folios.



Lists, Catalogs, Business Reports

The COMp 80 can turn raw business data files into fully composed, reproduction-ready copy. Input data tapes do not necessarily have to be prepared with composition purposes in mind. In many cases, a file format designed for accounting, inventory, or other general data processing applications will serve adequately. Page headings, rules and even shading can be generated automatically. Output film is then ready for projection platemaking or for microfilm duplication and distribution.



Business Graphics

With the FR 80 Line Drawing and Plotter Expansion option, the user can easily concert volumes of computer-generated data into sophisticated management graphics. The system can produce a wide variety of graphic constructs, including lines, circles, and present standard tabular data as pie charts, bar charts or range charts on virtually any linear or logarithmic grid. Headings and graph labels can be recorded in any of eight rotations at any of 64 character sizes. Graphic software packages are available for both mainframe computer formatting and for graphic formatting directly on the COMp 80.

COMp 80 Software

All basic Model 9001 COMp 80 Publication Systems are available with a comprehensive set of applications and systems programs that are provided on magnetic tape. Any or all of these programs may be requested as needs dictate. All standard software is provided in operating binary form, with full operating instructions, subject to Information International's standard software license.

COMpose is the basic language used for page composition and formatting, character string manipulation, line justification, point plots, vector drawing, single-and double-precision arithmetic operations, optical merge of illustrations and color recording. An extremely powerful programming language, COMpose commands are easily learned and designed specifically in terms that relate directly to established composition and typesetting terminology. COMpose is used for development of specific applications by the customer, and requires 16K words of memory plus disc, and may select from over 300 type fonts in various sizes.

COMpTEXT permits the user to record data prepared in IBM ATS archival format on the COMp 80 for the initial generation and periodic updating of technical documents and business reports, using proportionally spaced type, which allows for substantial savings in space and paper. The user selects output font, point size and body leading. COMpTEXT automatically generates typeset outputs as specified by standard ATS formatting commands. The commands provide for tables or justified pages of text complete with page headings and footnotes. A special feature (16K version) permits the user to switch to a more legible italic or boldface type where a passage has been underlined.

COMpPRINT permits composition formatting of standard print image tapes. The user may selectively change font and point size for any field within the print page. Fields may be printed or not, at the user's option. Full microfiche titling, indexing and software forms capabilities can be provided. Various editions of COMpPRINT will accept most line printer formats in common use, including IBM, Univac, CDC, NCR, Burroughs and Honeywell.

COMp 80 Displayer program processes magnetic tape containing COMp 80 Standard Data Format commands. The binary Format permits utilization of the full COMp 80 display capabilities, including character size selection and rotation, spot size and intensity selection, rule generation, camera pulldown and CRT beam positioning. The Format allows the user to create custom graphics or justified text output via a host computer system.

COMpEDIT is a highly flexible text editor used to input and alter either COMp 80 application programs or production data. Basic functions include replacement, insertion, deletion and file merging.

Forms Design Compiler enables the COMp 80 to draw forms. Forms are designed directly from the console through use of the Forms Design Language and Compiler. Drawing the form on the CRT permits accurate placement of lines between adjacent characters without touching characters or losing print positions. Simple design commands permit the drawing of horizontal or vertical rules, automatic scaling of character header information, and even the creation of company logotypes. In addition to these programs, the following Application and System Programs may also be specified:

Print Programs

These accept most standard print tape formats including:

- BCD Print
- EBCDIC Print
- 7-Track Convert-on-Print
- 4360/4400/4440 Print
- GE Print (Honeywell)
- NCR Century Print
- NCR 315 Print
- UNIVAC 1108 (EXEC 8) Print
- Burroughs Backup Print
- CDC 6000 Print

System Programs

- Assembler
- Debug
- Mag Tape Copy
- Mag Tape Displayer

Systems configured with a disc will be provided with the following Utility programs:

- Assembler
- Debug
- COMpEdit (enhanced text editor)
- Disc Audit
- Disc Reload (from Mag Tape)
- Disc Dump (onto Mag Tape)
- Mag Tape Copy
- Mag Tape Displayer

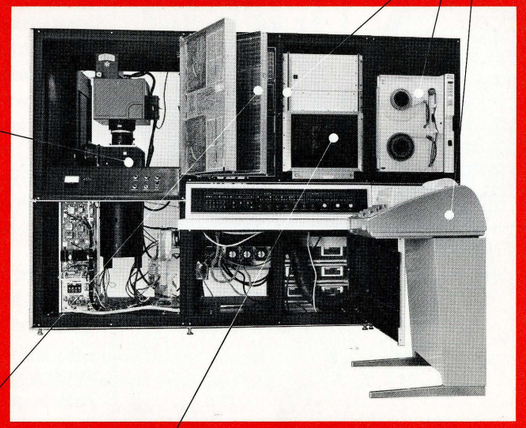
COMp 80 Functional Components

2 Control Unit

Under stored program control, accepts the input data and composition instructions. The memory (16K byte or 32K byte) stores several fonts as well as the operating program. Additional fonts and programs can be stored on an optional 2.4 million byte disc. There are over 250 Graphic Arts fonts available in addition to the standard high-quality, optimized Utility fonts, including Roman, Gothic and Italic.

1 Input Section

A powerful programmable controller that manages the flow of data to the processor and provides the operator complete control over all composition and typesetting functions. A 7 or 9-track NRZ tape drive is standard. Up to four 7 or 9-track NRZ and/or 1600 bpi phase-encoded drives can be included. The standard ASR 33 Teletype with paper tape reader and punch is used for operator control of processing functions.



3 Recording Unit

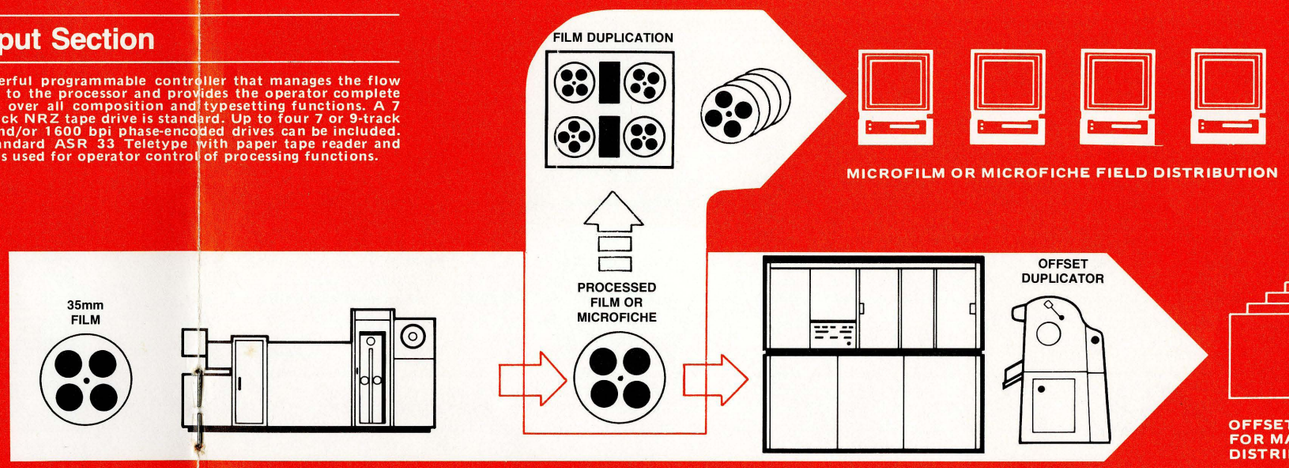
Contains the high-resolution, precision CRT and the standard 35mm aperture card camera for recording the CRT image. A universal camera base permits interchangeable recording on 16mm roll, 105mm and/or 8½- x 11-inch film for microform or hardcopy publication.

4 Data Translator

Consists of form and line generator, character generator, and control logic for the precision recording CRT and display monitor.

5 Display Monitor

Provides the operator visual access to the actual recording of composed pages as they are being generated on the precision recording CRT. A view-only mode permits viewing without exposing film. Also provides monitoring for Debug, text editing and mag tape display.



5010 FILM PROCESSOR

Accepts 16mm, 35mm, or 105mm roll film from the COMp 80 and automatically processes it. The 5010 can process either reversal or negative process film at rates up to 35 feet per minute in a normally lighted room. Operation is extremely simple.

800 PROJECTION PLATEMAKER

Produces press-ready offset masters at rates from 18 to 36 masters per minute. Makes possible rapid conversion from either 16mm or 35mm microfilm to multiple full-size paper copies for mass distribution. The 800 automatically searches for desired frames by reading image count marks on the film. Copy size ranges from 8½ x 11" to 12 x 18". A viewing screen allows the operator to set exact size of copy to be produced.

Full Graphic Recording Options

The COMp 80 Publication System with the Full Graphic Recording Options is an expanded system that includes both hardware and software features, allowing greatly enhanced graphic capabilities.

HARDWARE:

9020 Line Drawing and Plotter Expansion includes a multi-speed hardware vector generator which records point to point vectors at speeds up to 1000 full image-width lines per second, plus random or incremental point plotting at rates up to 50,000 points per second.

8050/51 Gray-Level Recording provides program-controlled CRT intensity levels. The Model 8050 and 8051 intensity level recording features permit 64 and 256 levels respectively.

8029 Color Recording Option permits the COMp 80 user to automatically create full color images on standard color film emulsions such as Kodak Ektachrome EF.

COMp 80 GRAPHIC RECORDING SOFTWARE:

GERBER Interpreter simulates most features of the Gerber automatic drafting machine, particularly as used in printed circuit board applications.

CALCOMP Interpreter interprets tapes formatted for series 500, 600 and 700 plotters and for the CALCOMP 900 series controller, at speeds up to ten times faster than mechanical plotter speeds.

4020 Interpreter interprets tapes formatted for the Stromberg DatagraphiX 4020 microfilm plotter.

META Interpreter interprets tapes created by IGS (Integrated Graphics System) subroutines for both graphic and alphanumeric data.

FR 80 Displayer is an extended version of the COMp 80 Displayer that allows the customer to use the full range of FR 80 display capabilities including point plotting and Vector recording. The Displayer's FR 80 Standard Data Format commands include 16,384 x 16,384 x-y point plotting, vector drawing between selected end-points, selection of solid, dotted or dashed vectors, and the drawing of arcs and circles of given arc length and radius.

HOST COMPUTER DISPLAY SOFTWARE

A variety of programs are available, either from Information International, or other sources to support the graphic capabilities of the COMp 80 with Full Graphic Recording Options.

IGS (Integrated Graphics System)

Developed by the RAND Corporation, and available from Information International, IGS is a collection of Fortran subroutines which generate commonly used graphic constructs (lines, circles, display characters) and can be used to draw, label and title graphs. These subroutines produce output in META format which can be recorded on the COMp 80 through use of the COMp 80/FR 80 META Interpreter.

FRESCO

FRESCO, an acronym for FR 80 Extensions to SC 4020 Operations, was developed by the North American Aviation division of Rockwell International to take advantage of the advanced graphic features of the COMp 80/FR 80. Written in Fortran with some 360 assembly language, it is implemented under OS/MUT. The output of FRESCO is in FR 80 Standard Data Format. (Available from Information International through courtesy of Rockwell International.)

3D Plots

These Fortran routines can be used to produce 3D representations of engineering data plots. (Available from Information International through courtesy of Aerojet Nuclear Company, Aerojet-General Corporation.)

DISSPLA

A versatile and highly flexible software system capable of virtually any type of data display including linear, semi-log, log-log, polar and map axis systems, 3D projections with or without hidden line removal, and a series of displays for business graphics. DISSPLA can be implemented on most mainframe computers and produces magnetic tape in many display device formats including FR 80 data format. (Marketed by Integrated Software Systems Corporation, P.O. Box 9906, San Diego, CA 92109.)

EZPERT

A complete software package for the formatting and display of PERT networks. EZPERT operates on most mainframe computers and generates output for previous hardware plotters and for the FR 80. (Marketed by Systonetics Incorporated, 600 N. Euclid St., Anaheim, CA 92801.)

GUIDE TO COMp 80 CAMERAS, IMAGES AND FORMATS

(For more complete information, see Product Specification sheets)

Operator–Interchangeable Cameras	Model 8020 35mm Sprocketed	Model 8021 16mm Sprocketed	[a]Model 8022 16mm Unsprocketed	[a]Model 8023 35mm Unsprocketed	Model 8024 16mm Unsprocketed	Model 8025 105mm Unsprocketed
Typical Application	Movies and Repro Masters	Movie	Retrieval	Aperture Card	Strip Fiche	24X and 42X Reduction Microfiche
Maximum Image Area	19.0mm x 24.9mm (0.748" x 0.980")	7.6mm x 10.3mm (0.300" x 0.404")	17.0mm x 14.0mm (0.669" x 0.550")	36.4mm x 28.8mm (1.433" x 1.133")	25.4mm x 14.0mm (1.000" x 0.550")	20.0mm x 16.5mm (0.787" x 0.650")
Addressable Points	12,507 x 16,384	7,344 x 9,889	16,384 x 13,467	16,384 x 12,950	16,384 x 9,011	16,384 x 13,517
Addressable Points Per mm and Per Inch on Film	658/mm (16,718/")	964/mm (24,480/")	964/mm (24,480/")	450/mm (11,430/")	645/mm (16,384/")	819/mm (20,808/")
Advance Increment	[d]4 Perfs 19.00 ± 0.07mm (0.748" ± 0.0025")	[d]1 Perf 7.62 ± 0.03mm (0.300" ± 0.001")	3.00 ± 0.05mm (0.1175" ± 0.002")	8.60 ± 0.05mm (0.3385" ± 0.002")	[e]3.00 ± 0.05mm (0.1175" ± 0.002")	[f]Various
Frame Advance			11.90 ± 0.13mm (0.470" ± 0.005")	34.4 ± 0.2mm (1.354" ± 0.008")	[e]Various	

[b]Model 8026 35mm Unsprocketed	Model 8028 127mm (5"), 105mm, 70mm Sprocketed or Unsprocketed	Model 8032 105mm Unsprocketed	Model 8060 310mm (12.2") Unsprocketed
High-Resolution Aperture Card	Large Format Recording	42X and 48X Reduction Microfiche	Full Size Film and Hardcopy Recording
36.4mm x 28.8mm (1.433" x 1.133")	[c]93.8mm x 114.3mm (3.694" x 4.500")	9.0mm x 7.4mm (0.354" x 0.291")	215.9mm x 298.5mm (8.50" x 11.75")
16,384 x 12,950	[c]13,450 x 16,384	16,384 x 13,470	11,850 x 16,384
450/mm (11,430/")	143/mm (3,641/")	1,820/mm (46,282/")	54.9/mm (1,394/")
8.60 ± 0.05mm (0.3385" ± 0.002")	0.051mm (0.002")	[f]Various	0.071 ± 0.06mm (0.0028" ± 0.0025")
34.4 ± 0.2mm (1.354" ± 0.008")	[g]25 perforations		215.9 ± 0.15mm (8.50" ± 0.006")

[a] Model 8022 and 8023 are basic cameras. Customer may select either with Basic FR 80 at no extra cost.

[b] Similar to Model 8023, but with increased light efficiency at higher resolution. Compatible with high-resolution, slower-speed films. Capable of up to 80 line pairs per millimeter resolution on reversed AHU-type film.

[c] This is the maximum complete image; it may be extended to 114.5mm x 114.5mm (4.5" x 4.5") with 16,384 x 16,384 addressable points, but image quality will be somewhat degraded in the corners (the Model 8028 camera handles 105mm and 70mm film with a reduced number of addressable points in the image).

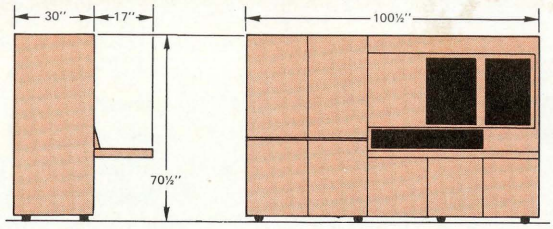
[d] Pin-registered film advance.

[e] Operator may select any "effective frame advance" from 0.0mm to 20mm. Film advance speed is equivalent to that of Model 8022.

[f] Operator may select "frame index" (X) or "frame advance" (Y) to generate standard microfiche image spacings on 105mm film.

[g] 118.7mm ± 0.025mm (4.675" ± 0.001"); the tolerance is relative to the perforations and does not include film manufacturing tolerances.

Allow 4-foot clearance on all sides for maintenance access



COMp 80 Specifications

	BASIC MODEL 9001
Control Input	ASR33 Teletypewriter, paper tape reader and punch
Data Input	Magnetic Tape Unit: 9-track, 45 ips, 800 bpi
Central Processing Unit	Programmable computer with an 8192 18-bit word core memory, control logic, digital data buffer and stored program control.
Recording Unit	Character stroke generator; horizontal and vertical rule generator Precision, high-resolution cathode-ray tube and assembly for recording Camera Mount: Precision, universal mount to accept all Information International cameras Camera - 8022 - 16mm unsprocketed for retrieval or 8023 - 35mm unsprocketed for aperture card
	OPTIONAL COMp 80 FEATURES
Full Graphic Recording Options	FR 80 Line Drawing and Plotter Expansion (9020), Gray Level Recording (8050 & 8051) Color Recording 8029/1 (available only with Model 8028 camera) and 8029 (with 8020 camera)
Display Monitor	CRT operator monitor – 10" x 13" (9010)
Control Input	ASR 35 Teletypewriter, paper tape reader and punch (8015) in lieu of ASR 33
Cameras	Model 8020 – 35mm pin-registered for movies or repro masters Model 8020/1 - replaceable 16mm film movement for Model 8020 camera Model 8021 – 16mm pin-registered for movies Model 8024 – 16mm unsprocketed for strip fiche Model 8025 – 105mm unsprocketed for microfiche (24 and 42x) Model 8026 – 35mm unsprocketed for high-resolution aperture card Model 8028 – 127mm (5-inch), 105mm and 70mm unsprocketed for large format recording Model 8031 – 16mm conversion kit for Model 8025 and 8032 cameras Model 8032 – 105mm unsprocketed for microfiche (42 and 48x) Model 8060 – 215.9mm x 298.5mm (8-1/2 x 11 inch) unsprocketed for full-size film and paper
Core Memory	Core memory extension – 8,192 18-bit words (9015)
Disc Memory	2.4 Million bytes, removeable disc pack–8014 (Requires 9015 Core Memory feature)
Film Processor	Model 5010 – for 16mm, 35mm and 105mm film, positive and reversal Model 5020 – Thermostatic Control Valve Assembly
Throughput	High-throughput feature (9014) includes high-speed character access and multiple writing rates
Character Generator	High-speed Graphic Arts character generator (9013) (Requires High-Throughput feature – 9014)
Magnetic Tape Units	7-track, 37.5 ips, 556 and 800 bpi (1017/7) 9-track, 60KC, 1600 bpi (1019/9) 7-track, 75 ips, 556 and 800 bpi (1021/7) 9-track, 75 ips, 800 bpi (1021/9)
Illustration Merge	Optical merge illustration feature (9012)

INSTALLATION SPECIFICATIONS

	Recorder and Translator	Processor and Magnetic Tape Control	Magnetic Tape Unit
Weight	385 kilograms (850 pounds)	725 kilograms (1600 pounds)	90 kilograms (200 pounds)
Recommended Service	30A, 115V Single phase	30A, 115V Single phase	
Power Cable Connector Required	Hubbell Type 2610	Hubbell Type 2610	
Power Cable Supplied	7.6 meters (25 feet) No. 10-3 Type SO rubber-covered with Hubbell No. 2611 caps	7.6 meters (25 feet) No. 10-3 Type SO rubber-covered with Hubbell No. 2611 caps	
BTU Output	680kg-calories (2700 BTU)	1740kg-calories (6900 BTU)	

	ENVIRONMENTAL REQUIREMENTS
Temperature	20°C to 22.7°C (68° to 73°F) at the console. (Max. not to exceed 25.5°C (78°F).
Relative Humidity	45% to 55% for optimum performance – max. limits 40% to 60%.
Magnetic Interference	External fluctuating field shall not exceed 0.01 gauss.
Vibration	Shall not exceed 10 hertz and a double amplitude of 0.01 inch.

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