**Serving worldwide OEM markets with a full range of quality equipment . . .**

CONTROL DATA CORPORATION

11/75

Peripheral Products Company

# OEM PRODUCTS CATALOG

**CONTROL DATA — a leader in OEM products because . . .**
- **. . . we have the most complete line of OEM computer peripherals available**
- **. . . we satisfy the needs of the minicomputer user as well as the large-scale computer user**
- **. . . we offer a broad performance range within product families**
- **. . . we have competitive prices**
- **. . . we possess the delivery capability**
- **. . . we move with technology**

When you, as an OEM customer, purchase Control Data peripherals you benefit from the experience and resultant engineering advances that Control Data gains from using its peripherals in its own computer systems. Your logo on a Control Data peripheral puts you into your market quickly and profitably with a product you'll be proud to call your own.

Advanced technology, the ability to deliver, and competitive pricing result from the production volumes and the resources ensured by CDC and its joint-venture partners. These cooperative enterprises — Computer Peripherals Incorporated (CPI), jointly owned by Control Data, National Cash Register and International Computers Limited of England; and Magnetic Peripherals Incorporated (MPI), jointly owned by Control Data and Honeywell Incorporated — are significant steps forward in the data processing industry, which have achieved the highest quality equipment for the OEM market.

The OEM market has been a major aspect of Control Data business since 1962. A balanced team of sales and support personnel exists especially for the OEM market, to ensure that every order receives careful attention and handling.

Many people in the data processing industry are aware that Control Data sells high-performance peripherals to most major mainframe manufacturers throughout the world. Less well known, is that Control Data also has the OEM miniperipherals for systems builders and minicomputer manufacturers. Also, to expedite small purchases we offer special short-form contracts and hardware support packages.

The following pages illustrate our OEM product line. If you desire more information concerning a particular product or if you have a special need, just fill in the reply card at the back of this catalog and mail it back to us.
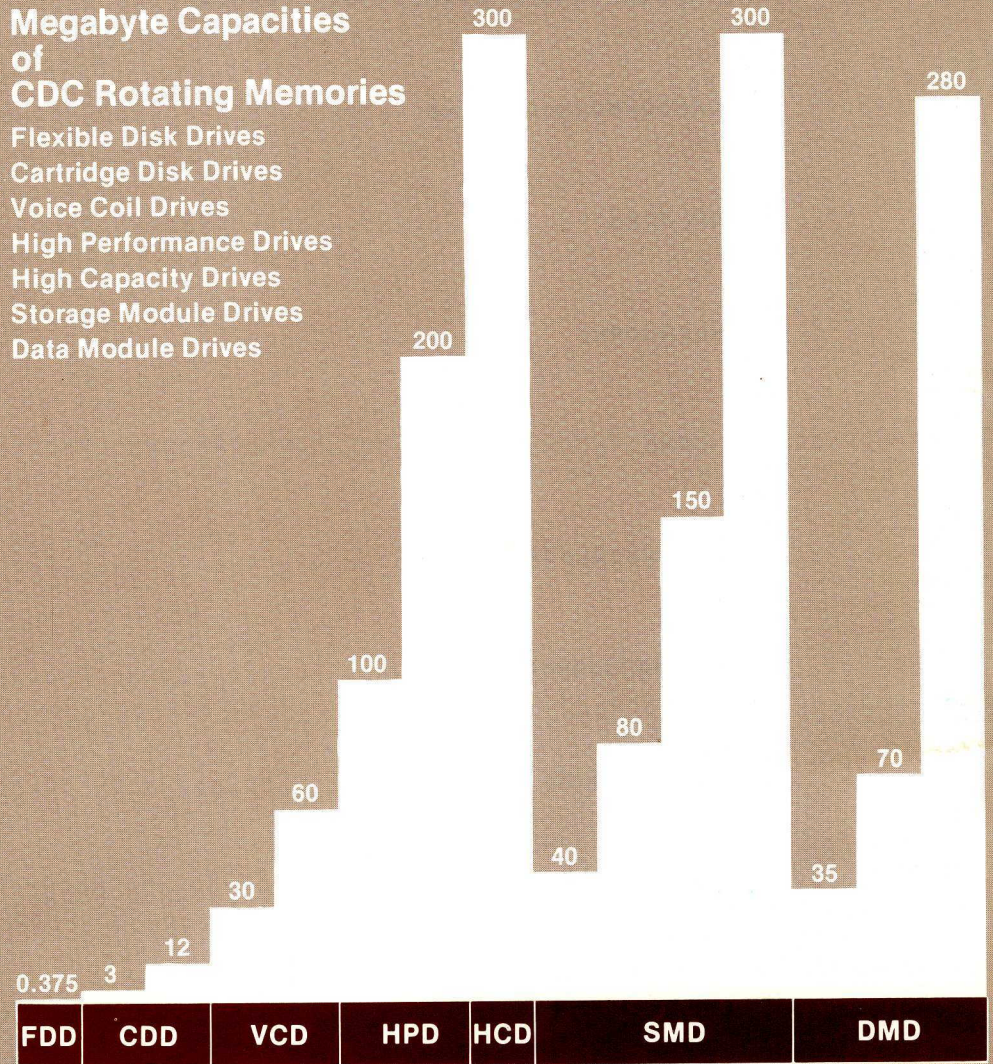
# Contents

Peripheral Products Company

# Rotating Memory Products

## Megabyte Capacities of CDC Rotating Memories

Flexible Disk Drives
Cartridge Disk Drives
Voice Coil Drives
High Performance Drives
High Capacity Drives
Storage Module Drives
Data Module Drives

| FDD | CDD | VCD | HPD | HCD | SMD | DMD |
|-----|-----|-----|-----|-----|-----|-----|

FDD: 0.375, 3
CDD: 12, 30, 60
VCD: 100, 200, 300
HPD: 300
HCD: 40, 80, 150, 300
SMD: 35, 70
DMD: 280

Years of experience in the design, development and manufacture of disk memory devices have made Control Data an established leader in the entire field of rotating magnetic memories with the capability to meet the demands of both large-scale and small-scale users. Specially developed production methods in each of the product families allow maximum flexibility and response to customer's specific needs.
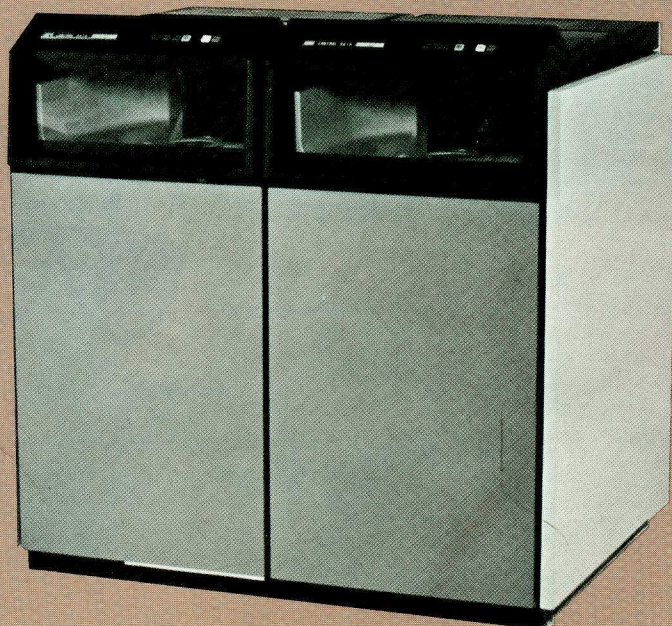
## Flexible Disk Drives — A highly reliable, low cost random access device using interchangeable diskettes (CDC 9878 or equivalent) to provide 3.2 megabit storage. Both offer read/write — media compatibility with IBM 3540/3740/3790 and 532 equipment (or their equivalent).

Capacity: .401 MB (unformatted)
Recording: 3268 bpi
Single Track Access Time: 20 milliseconds
Data Rate: 250K bits per second
Speed: 360 RPM

| Model | IBM Compatible | Unit Select | Unit Ready | Power Reduction | I/O Connector |
|-------|----------------|-------------|------------|-----------------|---------------|
| 9400 | Yes | No | No | No | CDC |
| 9404 | Yes | Yes | Yes | Yes | Ribbon |

### Features:
- Modular design
- Hard sector or soft sector format capability
- High reliability integrated circuitry
- Ceramic read/write head
- Write current switching at track 43 for true IBM compatibility
- Die cast aluminum deck
- Stepper shaft end support
- Expandable centering cone for positive disk registration
- Adaptability to all major international power and frequency standards
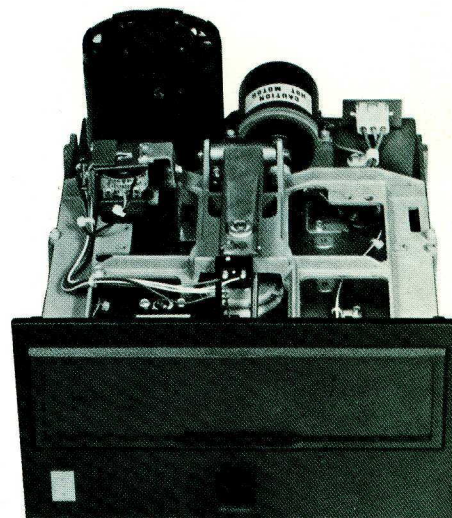


**Model 9400, 9404 Flexible Disk Drive**

## Cartridge Disk Drive — A high-performance, random access storage device using an industry-standard removable disk cartridge medium. 200 tracks per inch is standard; downgradeable to 100 tracks per inch with a head change and jumper change. Capacity can be doubled by adding a fixed disk and two additional read/write heads. Fits 19 inch standard rack.

Capacity: 12 MB standard; 3 and 6 MB optional
Recording: 1530 bpi outer track, 2220 bpi inner track
Average Access Time: 40 milliseconds
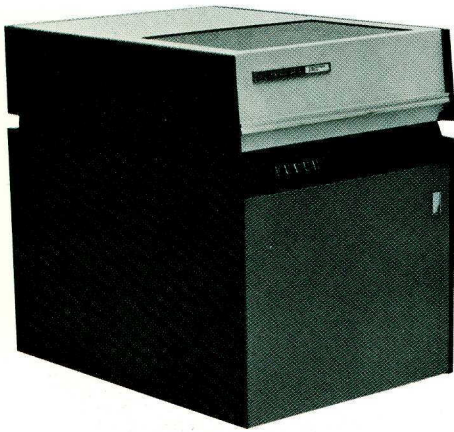Data Rate: 2.5M bits per second
Speed: 2400 rpm (1500 rpm optional)

| Capacity | Recording | Average Access Time | Cartridge |
|----------|-----------|---------------------|-----------|
| 3-6 MB | 100 TPI | 35 ms | CDC Model 9847 or equivalent (IBM 5440) |
| 6-12 MB | 200 TPI | 35 ms | CDC Model 9848 |

### Features:
- Proven 200 TPI technology
- Compact — 10.31 inch front panel height
- Universal 100-250 VAC (—15%, +10%), 50/60 Hz power supply
- Field upgradeable to increase capacity
- Simplified maintenance
- Independent blower
- .03 micron 99% air filtration
- Flexible interface



**Model 9427H Cartridge Disk Drive**

## Voice Coil Drives

**Voice Coil Drives** DISK STORAGE UNIT — Large-capacity, high-performance, random-access storage device which uses the CDC 9873 Disk Pack (or equivalent). The pack contains eleven disks, with information stored on twenty surfaces at 200 tracks per inch, 400 tracks per surface.

Capacity: 60 MB (30 MB, 2316 media compatible version also available)
Recording: 2220 bpi
Average Access Time: 35 milliseconds
Data Rate: 312K bytes per second
Speed: 2400 rpm
**Features:**
9747
■ 9427H compatible interface
■ Use of industry standard 20-surface disk pack (IBM2316)

9746
■ Absolute addressing
■ Use of simplified TTL interface, single-ended transmission system
■ Use of industry standard 20-surface disk pack (IBM 2316)
■ Significant cost-per-byte advantage of available 30M or 60M byte products

Voice Coil Drives Model 9746
Model 9747

## High Performance Drives

**High Performance Drives** — 100 MB large capacity, high performance, random-access storage units that use the CDC 9879 Disk Pack or equivalent (IBM 3336). Data is recorded on 19 surfaces at 192 tracks per inch, 404 tracks per surface.

Capacity: 100 MB bytes per spindle
Recording: 4040 bpi
Average Access Time: 30 milliseconds
Data Rate: 806K bytes per second
Speed: 3600 rpm
**Features:**
9756
■ IBM 3336 media compatible
■ IBM 3330 compatible interface
■ Carriage offset
■ Maintenance aids

9754-1
■ IBM 3336 media compatible
■ Absolute addressing
■ Phase-locked oscillator data separator
■ Sector sensing
■ Maintenance aids
■ Pre-wiring for dual channel
■ Dual channel card kit
■ Carriage offset

High Performance Drives Model 9754-1
Model 9756
Model 9780
Model 9784
Model 9786

200 MB high-performance, random-access storage devices with twice the capacity of the CDC 9756 or IBM 3330. Uses a removable disk pack with 19 data recording surfaces and one servo recording surface. Head positioning is achieved through use of a voice-coil linear actuator. The unit operates as a single-channel device with rotational position sensing and seek overlap to maximize throughput.

Capacity: 200 MB
Recording: 4040 bpi
Average Access Time: 30 milliseconds
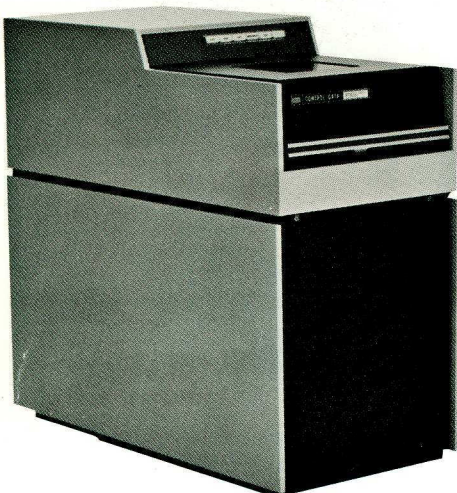Data Rate: 806K bytes per second
Speed: 3600 rpm
**Features:**
9780
■ Uses CDC 9883 Disk Pack, certified 400 tpi
■ Carriage offset
■ Maintenance aids

9784
■ IBM 3336-11 media compatible
■ 9754-1 interface
9786
■ IBM 3336-11 media compatible
■ IBM 3330-11 compatible interface

## High Capacity Drive

**High Capacity Drive** — a very-large-capacity, high-performance, random-access storage device. This device is a fixed-medium file for systems requiring large storage but not medium interchangeability. The medium consists of 22 oxide-coated disks, with 40 surfaces containing data and one surface containing servo information.

Capacity: 300 MB
Recording: 6000 bpi
Average Access Time: 50 milliseconds
Data Rate: 38.7M bits per second
Speed: 3600 rpm nominal

**Features:**
■ High performance-to-cost ratio
■ Phase-lock read recovery
■ Absolute addressing
■ Carriage and data strobe offset
■ Maintenance aids

High Capacity Drive Model 9790

## Storage Module Drives

**Storage Module Drives** — A family of high-performance, medium to large capacity, random-access storage devices. The Storage Module Drive family offers low cost, compact disk storage in addition to the flexibility, maintainability, and reliability demanded in the rapidly expanding small systems marketplace. The entire Storage Module Drive product family can be attached to the same disk controller and can utilize common software.

The 9760 uses the CDC 9876 Disk Pack and the 9762 uses the CDC 9877 Disk Pack as the recording medium. These removable packs consist of five disks; three for data and head carriage positioning information and two for data protection. The 9764 and 9766 drives use the CDC 9883-91 Disk Pack which consists of 12 disks; ten of which are for recording and two for data protection.

| MODEL | 9760 | 9762 | 9764 | 9766 |
|---|---|---|---|---|
| Capacity MBytes: | 40 | 80 | 150 | 300 |
| BPI: | 6000 | 6000 | 6000 | 6000 |
| TPI: | 200 | 400 | 200 | 400 |
| Access time Ms: | 30 | 30 | 30 | 30 |
| Data rate MHz: | 9.67 | 9.67 | 9.67 | 9.67 |
| Disks: | 5 | 5 | 12 | 12 |
| Data surfaces: | 5 | 5 | 19 | 19 |
| Servo surfaces: | 1 | 1 | 1 | 1 |

**Features:**
- Address mark detection
- Phase-locked oscillator data separator
- NRZ to MFM data encoder
- Daisy chaining
- Simplified interface
- Cabinet options
- Power options



**Model 9760 40MB**
**Model 9762 80MB**
**Rack Mount**

**Formatter Model 9033** — The 9033 formatter provides for all of the functional interfacing to the Storage Module Drives allowing for electrical and mechanical adaptation to any computer. The flexibility of this low cost formatter offers the system builder a short lead time from system conception to market.
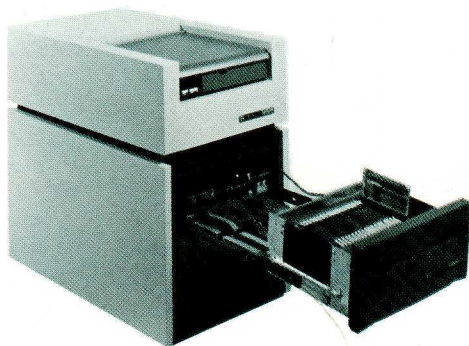


**Model 9764 150MB**
**Model 9766 300MB**

**Model 9760 40 MB**
**Model 9762 80 MB**



**Model 9033 Formatter for 9760 and 9762 SMD's.**

**Data Module Drive** — A family of random-access storage devices using the CDC 9778, IBM 3348 or equivalent data modules as the storage medium (9770), or a fixed storage medium (9774). The data module drive family represents the latest trends in disk technology and offers the growth, reliability, flexibility, and compatibility required in future high technology disk storage systems.

| | |
|---|---|
| Number of spindles per cabinet: | 2 |
| Data rate: | 7.1 MHZ |
| Access time: | 25 MS single track, 10 MS single track, 50 MS max. |
| Rotational speed: | 3000 rpm |
| Latency time: | 10.1 MS |
| Interface: | IBM 3340 Compatible |
| Diagnostics: | IBM 3340 Compatible |
| Start / Stop time: | 20 sec. including load / unload |

**Features:**

9770
- 35 and 70 MB removable data modules
- Daisy-chained signal and power input / output
- MFM data encoding
- Bolt-together subsystem configuration
- Optonal
- Fixed head per track
- Rotational position sensing
- String switch
- A / C power interface
- Input / output interface
- Read-only data security

9774
- 280 MB fixed media capacity
- 9770 interface and features
- I M B of fixed head / track



**Data Module Drives**
**Model 9770   35 or 70 MB**
**Model 9774   280 MB**

**Data Module** — A family of removable storage devices used on the CDC 9770 or IBM 3340 Data Module Drives. State-of-the-art data module technology insures excellent growth along with high reliability and system flexibility.

| Capacity: | 9778-35 | 9778-70 | 9778-70F |
|---|---|---|---|
| Disks: | 2 | 4 | 4 |
| Data Surfaces: | 3 | 6 | 6 |
| Recording Heads | | | |
|   Movable: | 6 | 12 | 12 |
|   Fixed: | — | — | 30 |
| Servo Heads: | 1 | 1 | 1 |
| Logical Tracks per | | | |
|   Physical Track: | 2 | 2 | 2 |
| Logical Cylinders per | | | |
|   Physical Cylinder: | 1 | 2 | 2 |
| Logical Cylinders per | | | |
|   Module | | | |
|     Data: | 348 | 696 | 696 |
|     Alternate: | 1 | 2 | 2 |
|     Customer Engineering: | 1 | 2 | 2 |
| Physical Tracks per | | | |
|   Physical Cylinder: | 6 | 12 | 12 |
| Byte Capacity per | | | |
|   Logical Track: | 8368 | 8368 | 8368 |
| Byte Capacity per Data | | | |
|   Module | | | |
|     Movable Heads: | 34,944,768 | 69,889,536 | 69,387,456 |
|     Fixed Heads: | — | — | 502,080 |



**Model 9778 Data Module**

# Disk Packs

Control Data's complete line of rotating mass memory media includes disk packs, cartridge disks, flexible disks and Customer Engineering alignment packs.

| | Flexible Disk | Disk Cartridges | | |
|---|---|---|---|---|
| **CDC Model Number** | 9878 | 9846 | 9847 | 9849 |
| IBM Model Number | 3740 | 2315 | 5440 | 1316 |
| IBM Drive Number | 3740 | 2310 | 5444 | 1311/2311 |
| | | | | |
| Tracks Per Inch (TPI) | 48 | 100 | 100 | 100 |
| Bits Per Inch (BPI) | 1836/3268 | 1100 | 2200 | 1100 |
| Capacity (MB) | .401 | 1.2 | 3.1 | 7.3 |
| No. of Data Surfaces | 1 | 2 | 2 | 10 |
| No. of Servo Surfaces | NA | 0 | 0 | 0 |
| Disk Diameter | 8" | 14" | 14" | 14" |
| Disk Thickness | .003" | .050" | .050" | .050" |
| Rotational Speed | 360 | 1500 | 2400 | 2400 |
| | | | | |
| **CDC CE Pack Model Number** | NA | 9846-51 | 9847-51 | 9850-52 |
| IBM Model Number | NA | 2315CE | 5440CE | 1316CE |
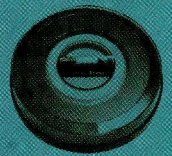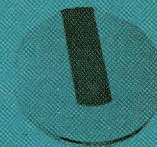
## Disk Packs

| 9876 | 9877 | 9869 | 9879 | 9882 | 9889 | 9892 |
|------|------|------|------|------|------|------|
| NA | NA | 2316 | 3336 | 3336-11 | 3348-35 | 3348-70 |
| NA | NA | 2314 | 3330 | 3330-11 | 3340-35 | 3340-70 |
| | | | | | | |
| 200 | 400 | 100 | 200 | 400 | 300 | 300 |
| 6000 | 6000 | 2200 | 4000 | 4000 | 5500 | 5500 |
| 40 | 80 | 29.1 | 100 | 200 | 35 | 70 |
| 5 | 5 | 20 | 19 | 19 | 3 | 6 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 14" | 14" | 14" | 14" | 14" | 14" | 14" |
| .075" | .075" | .050" | .075" | .075" | .075" | .075" |
| 2400/3600 | 2400/3600 | 2400 | 3600 | 3600 | 3000 | 3000 |
| | | | | | | |
| 9876-51 | 9877-51 | 9870-55 | 9880-52 | 9882-52 | — | — |
| NA | NA | 2316CE | 3336CE | 3336-11CE | — | — |

# Computer Memory Products

The same technology and expertise used to produce high-performance memories for many main frame computer systems is applied to memory products developed for the OEM market. Cores, core stacks, stack assemblies, core modules, core systems, and semiconductor modules make up the memory products spectrum. Grow with us into semiconduction memory.

**Family of Standard Core and Semiconductor Memory Modules, Optimized for Cost/Bit, Speed and Size:**

- **94200 Optimized for lowest Cost per bit**
- **94320 Unitemp Core Memory Optimized for speed**
- **94400 Unitemp Core Memory Module optimized for size**



UNITEMP CORE: The first industry compatible temperature independent core with UNIform drive over the entire MT TEMPerature range (0°-90° C).

CDC 2244 compatible with:
    CDC 750-18 MTA
    Ampex 1894
    Data Products 1821
    EM & M 18103
CDC 2230 compatible with:
    CDC 580-18 MTA
    Ampex 1801
    Data Products 1813
    EM & M 18102

Available **immediately** in stacks or as raw core.

**Enclosure options available for all 94200 systems:**
    256K Bytes — Rack Mounting
    512K Bytes — Rack Mounting
    Power Supply Module
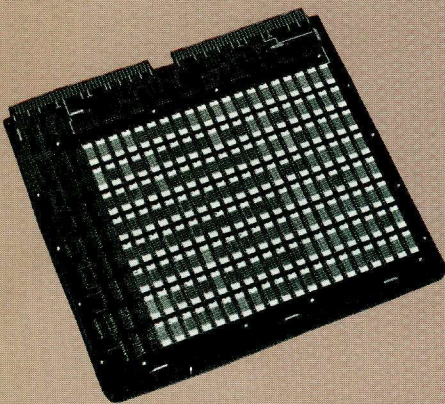


**94500 Semiconductor Memory 4K Ram Semiconductor**

## 94500 Semiconductor Memory

— CDC 94500 Semiconductor Memory consists of a storage array card and an interface/control card. Both storage array and interface/control cards measure 11.75 x 10.9 inches in size. The storage array card has a capacity of 32,768 x 20 bit words or 65,536 x 10 bit words. Each interface/control card can control up to eight storage array cards giving expandability up to either 256K x 20 bit words or 512K x 10 bit words.
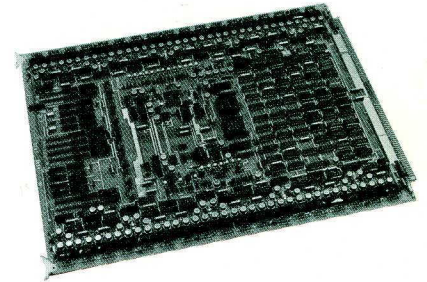
**Features:**

- Expandability from 32,768 x 20 bit words, in 32K elements controlled by a single interface/control card, to 256K words and from one memory package to multi-package memories of practically any desired size.
- Compact packaging as both interface/control and storage array cards can be mounted on 1/2" centers.
- Fast response and versatile operation. Full cycle operation(read); with 325 nsec access time and 450 nsec cycle time; (write on either one or both bytes), 450 nsec cycle time.
- Low power consumption: 32 watts for a 32K x 20 system; 112 watts for a 256K x 20 bit system.
- TTL interface.
- Air cooling.
- Off the shelf enclosures and power available.

## 94200 Core Memory

**94200 Core Memory** — CDC 94200 Core Memory is a 3-D, 3-wire magnetic-core module on a single card measuring just 13.85 x 17.74 x 1.0 inches (35.2 x 45 x 2.54 cm). Each magnetic core module provides storage of 16,384 18-bit words, 16,384 36-bit words, or 32,768 18-bit words with byte control up to 9 bits/byte.

**Features:**

- Expandability — One to eight memory cards may be used in a memory system to provide easy expansion from 16K by 36 bits to 128K by 36 bits, or 16K by 18 bits to 256K by 18 bits.
- Fast Response and Versatile Operation — Full-cycle operation (Read/restore): with 350-nsec access time and 850-nsec cycle time: (clear/write), 850-nsec cycle time.
- Split-cycle (read/modify/write) operation: 950-nsec cycle time minimum).
- Byte Control — up to 9 bits/byte.
- 3-D, 3-wire Construction with 18-mil Ferrite Cores.
- Lower Power-Consumption — 120 watts operating for 64K byte memory module.
- TTL Interface.
- Air Cooling.
- Interface available for semiconductor operation.



**Model 94200 Core Memory**

## 94320 Core Memory

**94320 Core Memory** — CDC 94320 Core Memory is a 3-D, 2 wire magnetic core module on a single card measuring 11.3 x 15.75 x .95 inches. Each module provides storage of 16,384 20-bit words, 16,384 18-bit words, or 16,384 16-bit words.

**Features:**

- Expandability — One to eight memory cards may be used in a memory system to provide easy expansion from 16K x 20 to 128K x 20-bit words.
- Fast, reliable and versatile operation — full cycle operation with 300 nsec. access time and 750 nsec. cycle time; split-cycle time is 850 nsec. with 300 nsec. access.
- Unitemp 18-mil. core.
- TTL Interface
- 0°C—55°C Operating Range
- Ampex 1620 Plug compatible
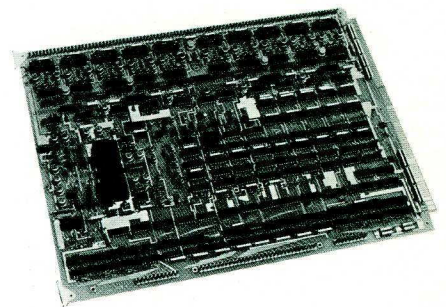


**Model 94320
Unitemp Core Memory
Model 94320 Unitemp Core Memory**

## 94400 Unitemp Core Memory

**94400 Unitemp Core Memory** — CDC 94400 Unitemp Memory is a 3-D, 3-wire magnetic core module on a single card. Measuring just 8.5 x 12.5 x 1.0 inches, each magnetic core module provides storage of up to 16,384 nine-bit words.

**Features:**

- Expandability — One to eight memory cards may be used in a memory system to provide easy expansion from 16K x 9 bits to 128K x 9 bits.
- Reliable and versatile operation — Full cycle operation (read/restore); with 330 nsec access time and 1.1 microsecond cycle time; (clear/write); 1.1 microsecond cycle time. Half-cycle (read/modify/write) operation: 660 nsec cycle time.
- Simple Air Cooling.
- Digital Interface (TTL).

**Special Features:**

Wide Operating Range — 0°C - 70° C made possible by use of Unitemp core.
Current regulation eliminated.
More stable operation with wider margins.
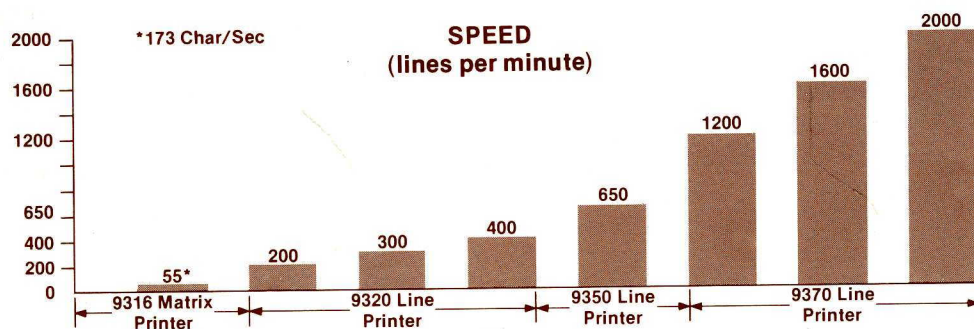Insensitive to temperature variations.
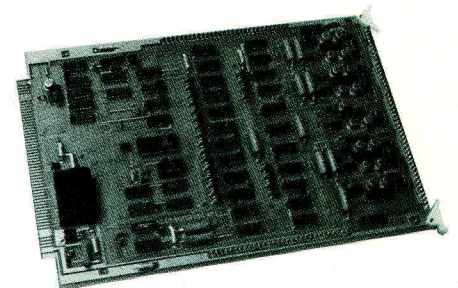


**Model 94400 Unitemp Memory**

# Printers



**Model 9316 Character Printer**

Ranging from a 15-column-per-second matrix printer to 200-, 300-, 400-, and 650-line-per-minute drum printers, and the "top of the line" 2000-line-per-minute train printer, CDC printers combine speed and economy to satisfy any OEM need.

CDC's family of high-speed line printers consist of numerous models, features, and a variety of options designed to satisfy almost any OEM requirement. Superb print quality, operator change-able cartridges, power stackers and sound-absorbing cabinets are among the many features found in CDC's distinguished line of OEM printers.

## SPEED
### (lines per minute)

*173 Char/Sec

| | |
|---|---|
| 2000 | |
| 1600 | |
| 1200 | |
| 650 | |
| 400 | |
| 200 | |
| 55* | |

9316 Matrix Printer · 9320 Line Printer · 9350 Line Printer · 9370 Line Printer

**Model Number 9316** PRINTER, MATRIX — An inexpensive, highly reliable printout device for terminals and minicomputers. Prints 173 characters per second; 10 per inch across 132 columns; 7 x 7 matrix; 64 character set; skips 7.5 ips, prints up to 5 parts; table or pedestal mounting. 3-channel VFU.

**Options:**
    96 or 128 character sets
    RS 232 I/O
    9-wire print head
    Foreign characters.



**Model Number 9320** LINE PRINTER, DRUM — A low to medium speed printout device in a quiet cabinet for terminals, minicomputers, and larger systems. Prints 200, 300 or 400 lines per minute; 64 character set; 15 ips slew; 80, 120, 132, or 136 columns per line; prints up to 6 parts; floor standing.

**Model options:**
    9320 Print Mechanism and Drive Electronics
    9322 Print Mechanism, Drive Electronics, and Controller with Character Request/Data Strobe Interlocked/Handshaking.
**Options:**
    96- or 128-character sets
    200 or 300 LPM
    80, 120 or 136 columns.

**Model 9320 Line Printer**

**Model Number 9350** LINE PRINTER, DRUM — A medium to high speed printout device in a quiet cabinet for terminals and medium to large computer systems. Prints 650 lines per minute; 20 ips slew; 80, 120, 132, or 136 columns per line; 64 character set; prints up to 6 parts.

**Model options:**
    9350 Print Mechanism and Drive Electronics.
    9352 Print Mechanism, Drive Electronics, and Controller with Character Request/Data Strobe Interlocked/Handshaking.
**Options:**
    96- or 128-character sets
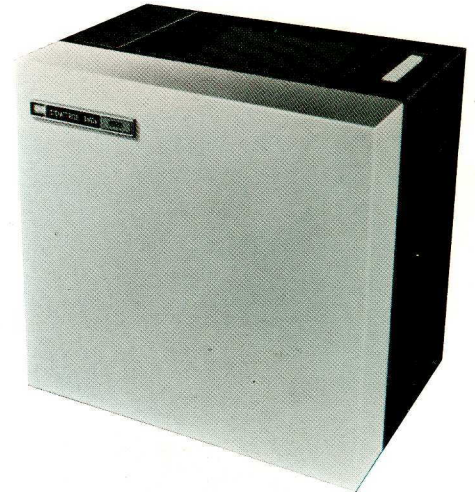    80, 120 or 136 columns.



**Model 9350 Line Printer**

**Model Number 9370** LINE PRINTER, TRAIN — A family of high speed printout devices in quiet cabinets operating at 1200, 1600, or 2000 lines per minute for large throughput, highest print quality requirements. 48 character set standard; 70 (1200 and 1600 lpm) to 90 (2000 lpm) ips slew; 132 or 136 columns per line; prints up to 5 parts. Operator changeable cartridge. Forms stacker.

**Model options:**
    9370 Print Mechanism and Drive Electronics.
    9372 Print Mechanism, Drive Electronics, and Controller with Character Request/Data Strobe Interlocked/Handshaking.
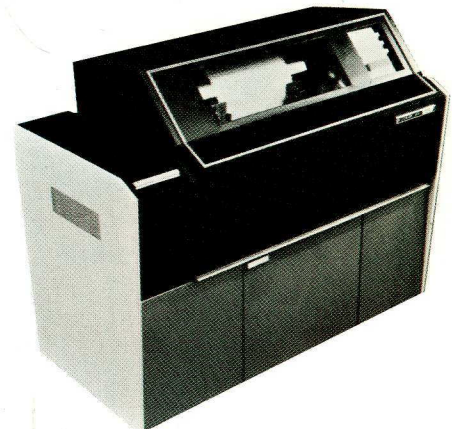**Options:**
    Character sets of 64, 96 or 128 characters, as required.
    136 columns.



**Model 9370 Line Printer**

# Magnetic Tape Transports

Control Data high- and low-speed, vacuum column OEM tape transports are built to the exacting quality and reliability standards that CDC specifies for equipment used with its own computer systems. At the same time, special attention is given to unique OEM requirements.

A detailed quality assurance program ensures transport compatibility and high reliability in the field. Each transport undergoes vigorous performance tests over a wide range of operational conditions. These include reading tapes which have been recorded on a competitive transport under "worst-case" ANSI specified conditions. These factory tests also use a wide range of tape qualities to ensure reliable performance under the most adverse field conditions.

CDC tape transports feature outstanding engineering design, superb performance in the field and unparalleled reliability.

SPEED
(Inches Per Second)

25 IPS · 50 IPS — 92000
100 IPS · 150 IPS · 200 IPS — 92200
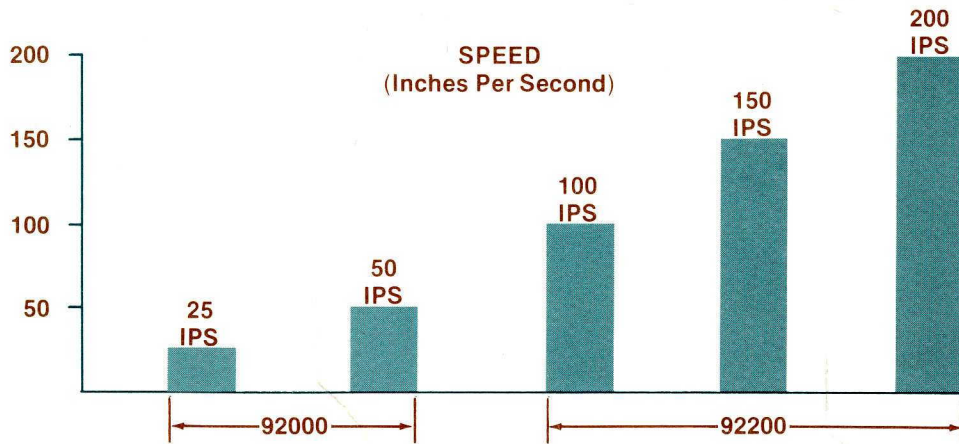
## Model Number 92200 Series MAGNETIC TAPE TRANSPORT — Control

Data's 92200 Magnetic Tape Transport Series is a high-performance line of single-capstan transports that are compatible with ANSI Standards. Each unit is designed for heavy-duty operation with the world's most powerful computers. The 92200 Transport Series offers tape speeds of 100, 150, and 200 ips with recording densities of 556 and 800 bpi NRZI, and 1600 bpi Phase Encoded.

Both circuit and component reliability are extremely high through use of integrated circuits and pluggable printed-circuit boards. Interface logic is accessible from the rear of the unit and is easily modified to meet specific needs. The series features a modular design concept that provides a high degree of parts commonality throughout the line. This permits tape transport performance to be upgraded in the field with minimal effort.

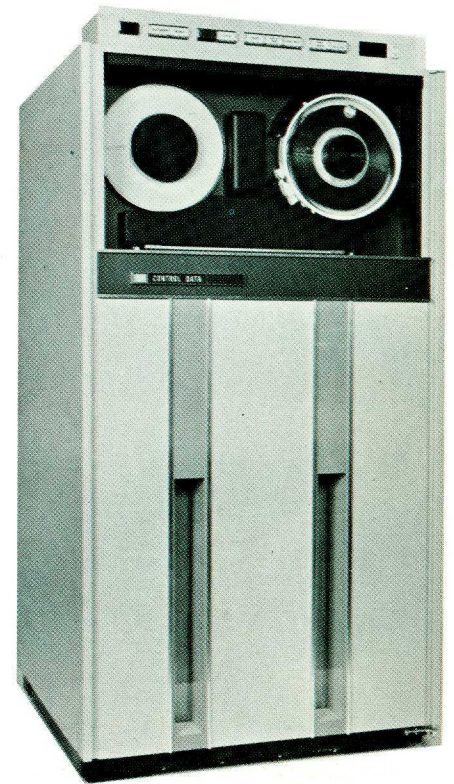### PERFORMANCE CHARACTERISTICS
**200 IPS Models**

| | |
|---|---|
| 92200 | 9-track PE |
| 92201 | 9-track PE / NRZI |
| 92203 | 7-track NRZI |

**150 IPS Models**

| | |
|---|---|
| 92150 | 9-track PE |
| 92151 | 9-track PE / NRZI |
| 92153 | 7-track NRZI |

**100 IPS Models**

| | |
|---|---|
| 92100 | 9-track PE |
| 92101 | 9-track PE / NRZI |
| 92103 | 7-track NRZI |

**Model 92200 Series Tape Transport**

## Model Number 92000 Series MAGNETIC TAPE TRANSPORT — The

CONTROL DATA 92000 Series Magnetic Tape Transports are a complete line of economical, single-capstan transports which are compatible with ANSI Standards. Recording densities include 200, 556, 800 bpi NRZI, and 1600 bpi Phase Encoded.

Extensive use of integrated circuits and pluggable printed-circuit boards provide outstanding performance and reliability. Modular design and component standardization also minimizes the number of unique spare parts required to support the various models of this transport series, and easy maintenance is facilitated through front access to all components.
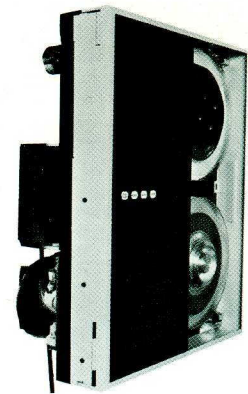
### PERFORMANCE CHARACTERISTICS
**25 IPS Models**

| | |
|---|---|
| 92025 | 9-track PE |
| 92026 | 9-track PE / NRZI |
| 92027 | 9-track NRZI |
| 92028 | 7-track NRZI |

**50 IPS Models**

| | |
|---|---|
| 92050 | 9-track PE |
| 92051 | 9-track PE / NRZI |

**Model 92000 Series Magnetic Tape Transport**

# Terminal Equipment



CDC's terminal subsystem and stand-alone display terminal are designed and manufactured specifically for OEM use.

Control Data's experience in the development and production of visual display equipment, graphics systems and terminals, is applicable to the OEM marketplace.

**Model Number 92450** TERMINAL SUBSYSTEM — The 92450 is a true sub-system, capable of concurrent operation of peripheral devices between the terminal operator and the communications lines.

The intelligence that gives the subsystem its flexibility comes from a powerful programmable microprocessor. Built into the 92451 display terminal, the microprocessor contains all the programs necessary to control the operations between the terminal operator, peripheral devices, and the communications line.

Designed for the OEM market, this subsystem can be configured and programmed by the OEM to meet end-user requirements.

**Model Number 92451** DISPLAY/KEYBOARD TERMINAL — This microprocessor controlled terminal is the heart of the 92450 subsystem. Highly sophisticated, easy-to-operate and versatile, this unit functions as a stand-alone input/output device.

Modular design permits expansion from a simple character-by-character mode display to a block mode display with full edit features. All features, switch functions, protocol, and options are under program control. A detached typewriter type keyboard, containing an 11-key numeric cluster and control keys, simplifies message composition and communication.

**Features:**
- Modular construction
- Microprocessor controlled
- Versatile operation
- 12-inch diagonal display screen
- 7 by 9 dot matrix
- 12 line, 80 character display
- 95-key keyboard, including 11-key numeric pad
- 64/96-character ASCII characters
- Asynchronous transmission 110 through 9600 bps
- Full/half duplex

**Options:**
  Full edit — provides tabbing, character/line insert and delete, protected data areas, partial page transmission, two forms of character highlighting and cursor addressing.
  Display/expansion — expands the display capability from 12 to 20 lines of 80 characters.
  Automatic answerback — 21 programmable characters.
  Polling — Teletype 85A1 protocol; provides addressing capability for up to 95 terminals on the same communications line.
  Current loop — provides 20 to 60 milliamp interface for TTY compatibility.
  Printer — provides RS232/CCITT compatible interface for most read only asynchronous printers. Works with CDC Model 9316 Matrix Printer and CDC Model 92453 Non-impact printer.
  Tape — provides interface for CDC 92454 single or dual tape cassette.

**92452 Conversational Display Terminal** — The 92452 is a basic keyboard/display terminal featuring a 1920 character display of 96 or 64 characters. Transmission of up to 128 ASCII codes in character mode is accomplished at speeds of 110 baud to 9600 baud. Communication interface conforms to EIA RS232-C and CCITT V.24. A built-in printer interface is also RS232-C and CCITT V.24 compatible. Switch selectable functions include page/scroll, half/full duplex, even/odd/no parity, 96/64 characters, on-line/local and a self-test feature. The 92452 also features X-Y cursor addressing.

An optional keyboard with a numeric cluster for high-speed data entry is available.



**Model 92452 Conversational Display Terminal**

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# OCR Equipment



**Model 92650 Terminal OCR Page Reader**

Control Data's OCR Division has pioneered in extensive research, development and manufacture of optical character recognition devices.

CDC's Terminal OCR Page Reader is compact, versatile, low-cost, and designed for applications of moderate complexity specifically to accommodate the OEM market.

**Model Number 92650** TERMINAL OCR PAGE READER — Adaptable to a variety of applications such as input to an intelligent terminal, remote input device to a central computer, multi-media (OCR/key-to-disk) system, standalone OCR data entry system, and as an input device to a communications system. Reader may be connected directly to standard communications modems. Specially designed output adapters can be developed which interface the reader to other computers to suit the exact requirements of the OEM customer.

OCR-A or OCR-B alphanumeric font is standard on the basic page reader. The page reader reads free-form pages by using a special line-search logic. This logic automatically locates each line and then reads the full line.

With the addition of the programmable formatter, the 92650 reads a page as designated by specific XY coordinates, increasing throughput capability in some cases up to 50%.

**Features:**
- Full page input — 8.5 by 11 inch (210 by 297 mm)
- Half page input — 8.5 by 5.5 inch (210 by 148 mm)
- ANSI OCR-A alphanumeric (Size I) font
- ECMA OCR-B (71) alphanumeric font
- Instantaneous read rate is 683 characters per second throughput; one full page every 12 seconds

**Options:**
- Output adapter
- Automatic feeder
- Two-pocket stacker
- Video display generator
- Programmable formatter

# Punched-Card Equipment

Economically priced and highly reliable, Control Data desk-top card readers are suitable for use on either central data processing systems or terminals.

The modular subassembly design philosophy — encompassing hopper and feeder, read station, stacker, power supply and logic — eliminates critical mechanical adjustments, providing trouble-free, low-cost operation.

**Model Number 9226 and 9228** CARD READERS — A family of desk-top card readers. Speed is 300 or 600 CPM (field changeable) for the 9226; 300, 400, 600 or 800 CPM (field changeable) for the 9228. Reads 80-column punched cards (51-column optional). An optional feature is optical mark-read (OMR) for 80-column cards, 40 characters per card density maximum.
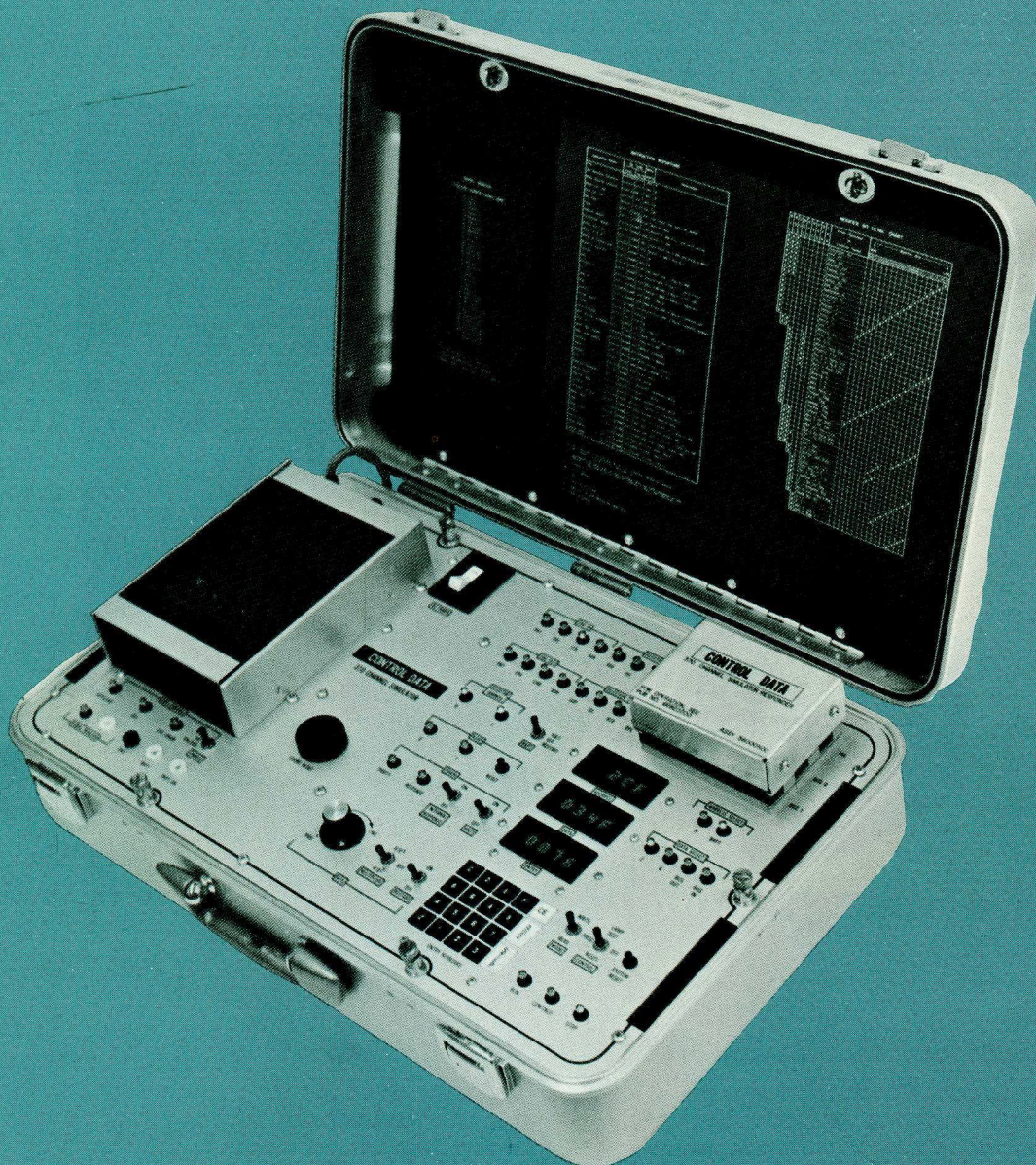
**Features:**
- Modular design
- Complete speed range capabilities
- Easy maintenance
- Photoelectric reading

**Options:**
    Optical Mark Reading
    51-column card stub reading

# Test Equipment



**Model 9921 Channel Simulator**

Control Data's OEM test equipment complements CDC's line of OEM products, and is designed to help maintain these products at their peak efficiency.

From first-level maintenance personnel on up to the most adept programmer or engineer, this test equipment provides the necessary capabilities to solve plug-compatible maintenance, checkout, and design debug problems.

**Model Number 9920** CHANNEL SIMULATOR — A suitcase-size, programmable controller. Provides off-line simulation of any selector channel I/O sequence with continuous response checking for factory check-out or on-site maintenance. The simulator will exercise any external device that operates within IBM selector channel parameters. All errors can be trapped and displayed.

A repertoire of only 24 instructions simplifies programming. Single instructions can manipulate several I/O lines, or contain branch routines predicated on specified responses from the device being tested. Two programs can be stored on a magnetic card to be read back repeatedly or changed at will by the operator. More than a hundred diagnostic programs can be carried in a shirt pocket.

**Model Number 9921** CHANNEL SIMULATOR — A suitcase-size, stand-alone off-line processor, capable of dynamic duplication of all sequences of the 2860, 2870 and 2880 I/O channels. Powerful but economical, this simulator can exercise the entire spectrum of plug-compatible peripherals.

An assembler program, similar in format to the 360/370 Assembler, enables the operator to bypass numerical machine language programming. Programs can be written using mnemonic codes thereby simplifying the programming task. In addition to the assembler, a cassette loader program enables binary decks to be copied to cassette tape for future use.

Optional accessories available for use with the simulator include Tag and Bus terminators, a Self-Diagnostic responder, 80-pin card extenders, and I/O cables.



**Model 9920 Channel Simulator**

**Model Number 9922** PROGRAMMABLE TERMINAL EXERCISER — A suitcase-size, programmable controller used to detect errors and solve problems in remote terminal and communications subsystems. In the active mode, the exerciser can be substituted for any system component, simulate its output, and react accordingly under dynamic program control. In the passive or window mode, the exerciser becomes a network monitor analyzing, but not interrupting, the data stream.

The exerciser has a program repertoire of 61 instructions. A 1K random-access memory and a mass storage cassette drive permit quick and easy access to a multitude of diagnostic routines.
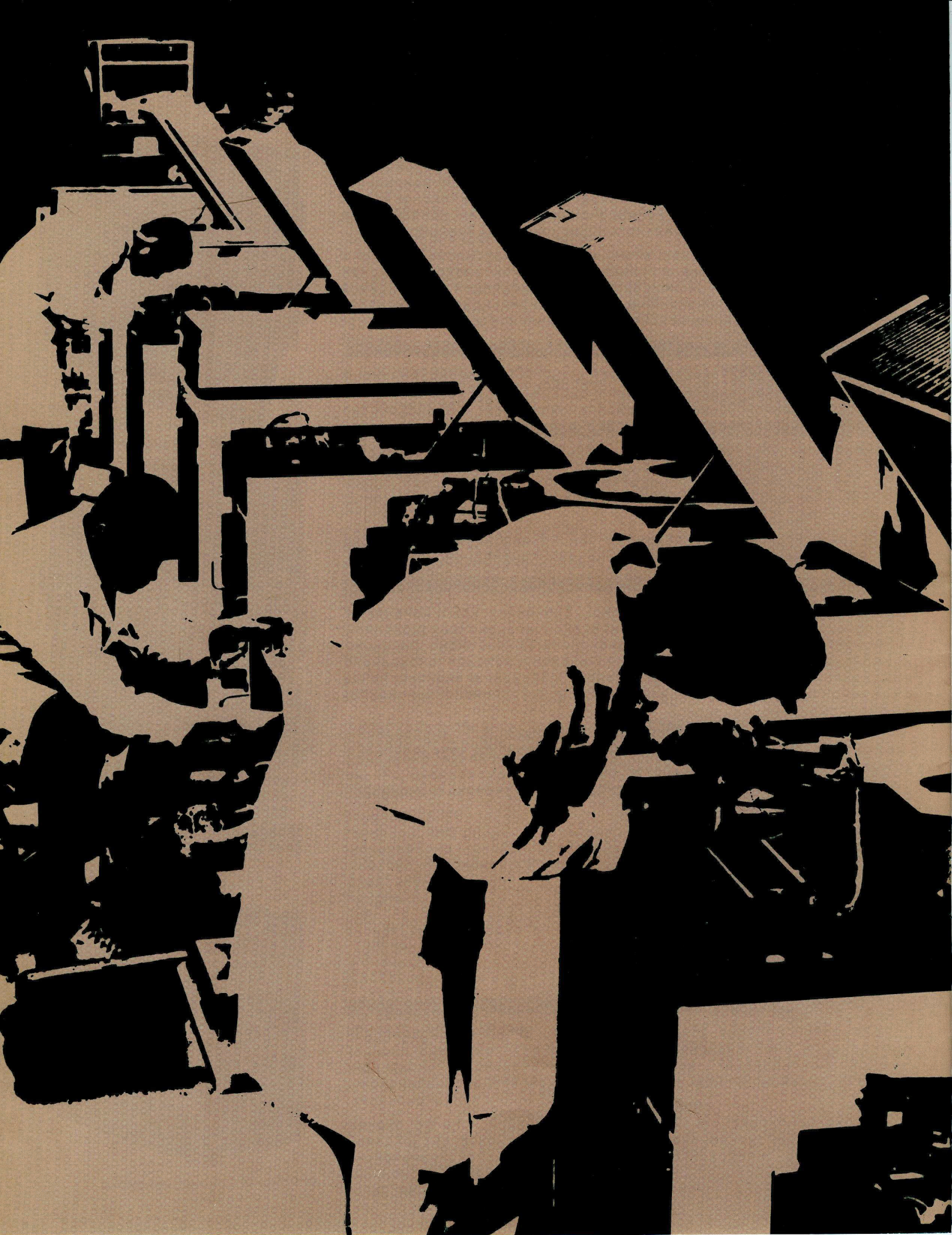
Optional accessories include an internal modem for asynchronous communications, and 80-pin card extenders.



**Model 9922 Programmable Terminal Exerciser**