

POTTER

DD 4314-1 Disk Storage Systems

High Speed Access - Proven Reliability

MAR 7 1973

FEATURES

- Pack-to-pack interchangeable with IBM 2314 Systems
- Operable with IBM software
- Diagnostic routines and error print-outs are IBM-identical
- Low cost
- Field proven, voice coil actuator
- Track-to-track access time of 6 ms
- Single spindle
- Automatic disk pack cleaning
- Eddy-current brake provides a smooth, efficient disk stop within 15 seconds
- Degating switch permits off-line testing without affecting operation of other peripherals
- File Protect Switch and light



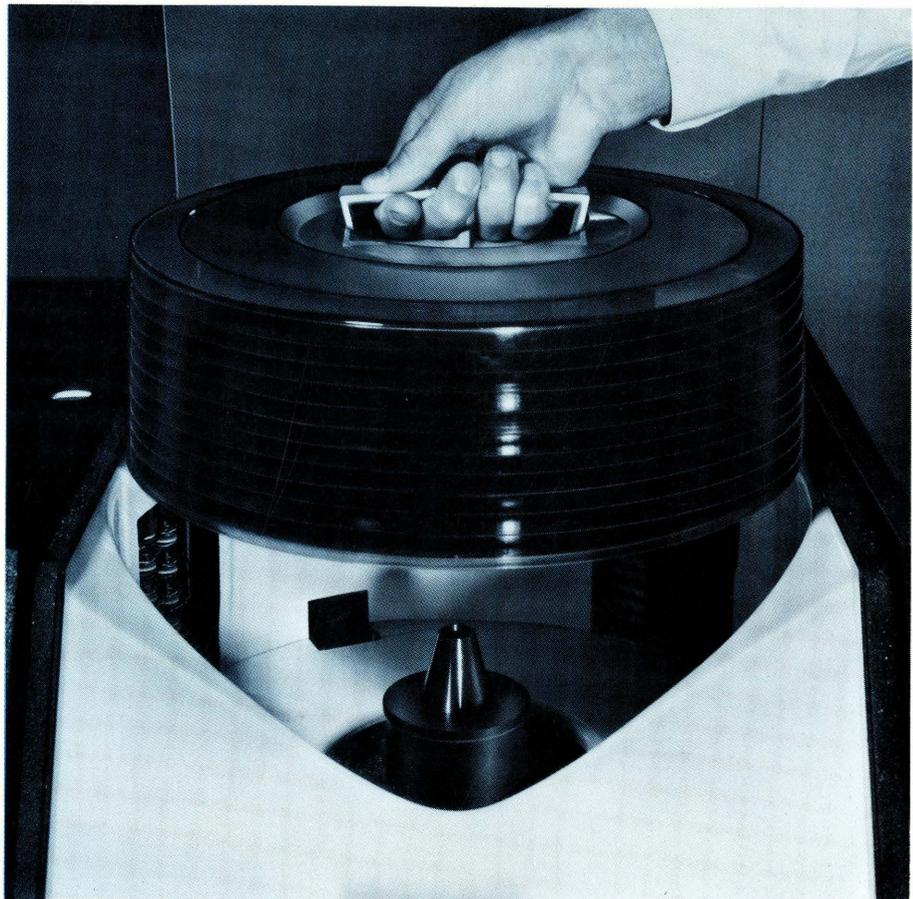
The Potter DD4314-1 Disk Storage Drive is a random access device which provides an "on-line" capacity of 233 million bits. The unit is capable of reading and writing on disk surfaces and utilizes the IBM 2316 Disk Pack or equivalent. Each disk pack can be removed and interchanged between disk drives in a simple and rapid operation.

The highly reliable, fast accessing DD4314-1 provides the user with a low cost, field-proven random access memory. Advanced fourth generation design and engineering techniques insure long life and maximum on-line availability.

The Potter DD4314-1 Disk Storage Drive coupled with the DC5314 Storage Control Unit is available as a plug-to-plug replacement for the IBM 2314 Disk Storage Drive System or can be customized to accommodate specific design and coding techniques.

DD4314-1 MECHANICAL DRIVE consists of four major components.

- The voice coil actuator consistently provides precise head positioning. In the event of a power failure, the actuator automatically withdraws the carriage from the disk pack, for complete protection of the heads and disk pack.
- The motor and single spindle, another precision assembly, drives and carries the disk packs at a speed of 2400 rpm. The spindle is cone-shaped to expedite loading and clamping of the disk pack. An automatic interlock insures that the disk pack is properly loaded with its dust cover door closed — before the unit can operate.
- The carriage carries all loading and unloading mechanisms. Its simple design, utilizing a minimum of moving parts, virtually eliminates carriage maintenance.
- Solid-state transducers generate the timing signals that give the DD4314-1 Disk Storage Drive accurate timing and control.



LOADING OF THE 11-DISK PACK

THE DATA AND CONTROL ELECTRONICS are contained in two chassis.

Data channel electronics are mounted on the disk drive's deck; logic electronics use plug-in PC boards and are contained within a hinged subassembly which swings out for fast servicing. A degating switch, provided on this subassembly, permits field maintenance on a DD4314-1 without requiring a power-down of the Storage Control Unit or other disk drives. Advanced techniques, such as wire wrapping and extensive integrated circuitry, provides the most advanced design and performance available in disk drives.

THE HIGH CAPACITY DISK DRIVE STORAGE utilizes IBM compatible disk packs on IBM compatible recording.

Each disk pack can be removed and interchanged between disk drives in a simple and rapid operation. For consistent data reliability, a disk pack cleaning cycle is initiated each time

the disk drive is started.

THE OPERATOR'S CONTROL PANEL

consists of a start/stop switch, select lock indicator, file protect switch indicator and a module identifier plug. When the file protect switch is illuminated, disk writing is inhibited. To enable writing the switch is depressed. An elapsed time meter, interior mounted Seek Counter, and AC Power On Meter are available options.

MINI EXERCISER, DISPLAY AND TERMINATOR MODULES are available for field testing and trouble shooting.

The Mini Exerciser simulates all significant input commands, and permits the service engineer to set up any single seek or repetitive seek operation. The Mini Display visually shows the contents of the cylinder, difference and head registers, and also the condition of the safety circuits associated with reading and writing. The Mini Terminator permits disk drives to be tested off-line.



CLOSE-UP OF CONTROL PANEL

DD 4314-1 SPECIFICATIONS

PERFORMANCE DATA

Storage Capacity	233 Million bits 29 million 8-bit bytes
Access Times	
Adjacent Tracks	6 ms
Average Overall	less than 30 ms
Maximum Overall	less than 60 ms
Disk Speed	2400 rpm $\pm 2\%$
Latency Time	
Maximum	25 ms
Average	12.5 ms
Number of Cylinders	203
Data Transfer Rate (IBM compatible)	312,000 8-bit bytes per second
Data Density (IBM compatible)	
Outer Track	1520 bpi
Inner Track	2200 bpi
Magnetic Transition Density	
Outer Track	3040 per inch (7722 per cm)
Inner Track	4400 per inch (11176 per cm)
Recording Modes	Double Frequency
Disk Pack	IBM 2316 or equivalent

POWER REQUIREMENTS

AC Power	208/230 VAC $\pm 10\%$ 50 or 60 Hz $\pm 1/2$ Hz 3 phase input (single phase line to line utilized) 4 amps steady running, 208V
DC Power (supplied by Storage Control Unit)	+6V $\pm 4\%$ 0.20 amps +3V $\pm 4\%$ 0.15 amps -3V $\pm 4\%$ 0.35 amps -36V $\pm 4\%$ 0.45 amps peak 0.3 amps average

ENVIRONMENTAL DATA

Operating Temperature	60° to 90°F (16° to 32°C)
Operating Atmosphere (Humidity)	8% to 80% RH
Thermal Output	2500 BTU/hr.
Storage and Transit Temperature	-40° to 150°F (-4° to 64°C)

PHYSICAL DATA

Weight	400 lbs. (182 kg.)
Dimensions	24"D (0,6 m) x 30"W (0,8 m) x 40"H (1,0 m)

OTHER CONFIGURATIONS of the Disk Storage Drive are available for high volume requirements which require different interface configurations. In such applications, the mechanical drive and data and control electronics remain the same and only the interface electronics are changed.

THE PACKAGING of the DD 4314-1 features functional cabinetry designed to offer both attractive styling and maximum serviceability. Snap-on cov-

ers provide both color styling flexibility and ease of servicing. Cable access can be made through either the rear or floor of the cabinet. A 115 VAC convenience outlet is provided to facilitate maintenance.

THE HIGH PERFORMANCE DC5314 CONTROL UNIT provides direct connection between the Potter DD 4314-1 Disk Drive and IBM System/360/370. It has a transfer rate of 312,000 bytes/sec. or 624,000 digits/sec. with packed

decimal data.

Among standard features are File Scan which permits an automatic search of all or part of Count, Key and Data areas of the Disk Packs; and, Record Overflow, which allows input data to overflow onto other tracks for greater packing efficiency. Included as an optional feature is the two channel switch which allows the controller to connect to two input/output channels.

DC5314 SPECIFICATIONS

Transfer Rate	312,000 bytes/sec. or 624,000 digits/sec. (packed decimal)
Number of Disk Drives Under Control	Up to 8 on-line, with provision for 1 off-line
Update Cycle Rates:	
Without overlapping of seektimes	7.0 references/sec.
With max. overlapping of seektimes	15.5 references/sec.
Note: These figures pertain to a complete random accessing cycle of one 150-character record which includes; reading, updating, rewriting and rereading for verification of recording accuracy.	
Read Only Reference Cycle Rates:	
Without overlapping of seektimes	11.1 references/sec.
With max. overlapping of seektimes	70.0 references/sec.
Note: These figures pertain to a complete accessing and reading cycle of one 150-character record, with no updating or rewriting.	
POWER REQUIREMENTS	
AC Power	208/230 VAC $\pm 10\%$ 50 or 60 Hz $\pm 1/2$ Hz 3 phase input 2.0 amps steady running, 208V
ENVIRONMENTAL DATA	
Operating Temperature	60° to 90°F (16° to 32°C)
Operating Atmosphere (Humidity)	8% to 80% RH
Thermal Output	1000 BTU/hr.
Storage and Transit Temperature	-40° to 150°F (-4° to 64°C)
PHYSICAL DATA	
Weight	400 lbs. (182 kg.)
Dimensions	20"D (0,5 m) x48"W (1,2 m) x60"H (1,5 m)



POTTER
INSTRUMENT CO., INC.

532 Broad Hollow Road • Melville, N. Y. 11746 • (516) 694-9000