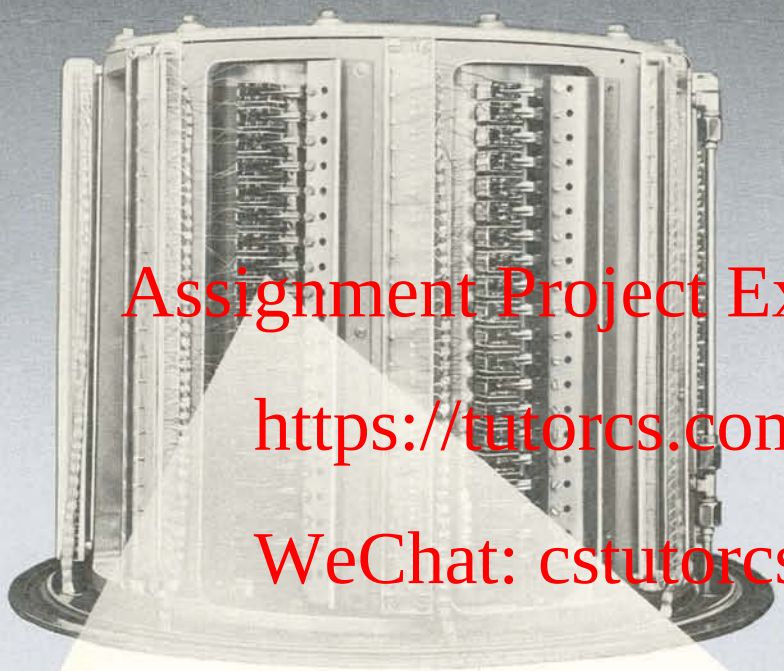
BULLETIN HD-1

HD

MAGNETIC FILE DRUM



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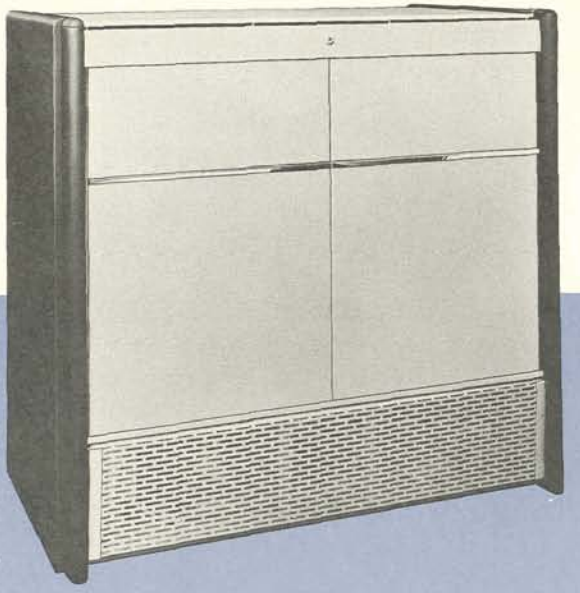

HD . . . the file drum for wide application to data processing systems . . . solves vital needs of business, industry and the military — gives reliable, rapid access to an enormous volume of stored data.

HD file drums are small . . . only 15 inches diameter by 14 inches tall . . . yet each file drum accommodates 15 million bits. For greater storage capacity, add identical file drums; no need to increase read/write electronic system.

HD file drums: optical precision without corresponding cost . . . . . production-tested reliability . . . 1040 bits per inch, over five times greater than any other file drum . . . 49,000 bits per track and 300 tracks per file drum . . . compact storage reduces storage cost 10 times . . . average random access time of 180 milliseconds . . . self-clocked reading eliminates need for track-to-track mechanical stability. Compact storage of binary, alphanumeric, or numeric data at this new low cost per bit opens entirely new areas of application.

HD File Drum Unit Including Head Selector and Amplifiers. (One access panel removed)

HD- a new horizon in data processing

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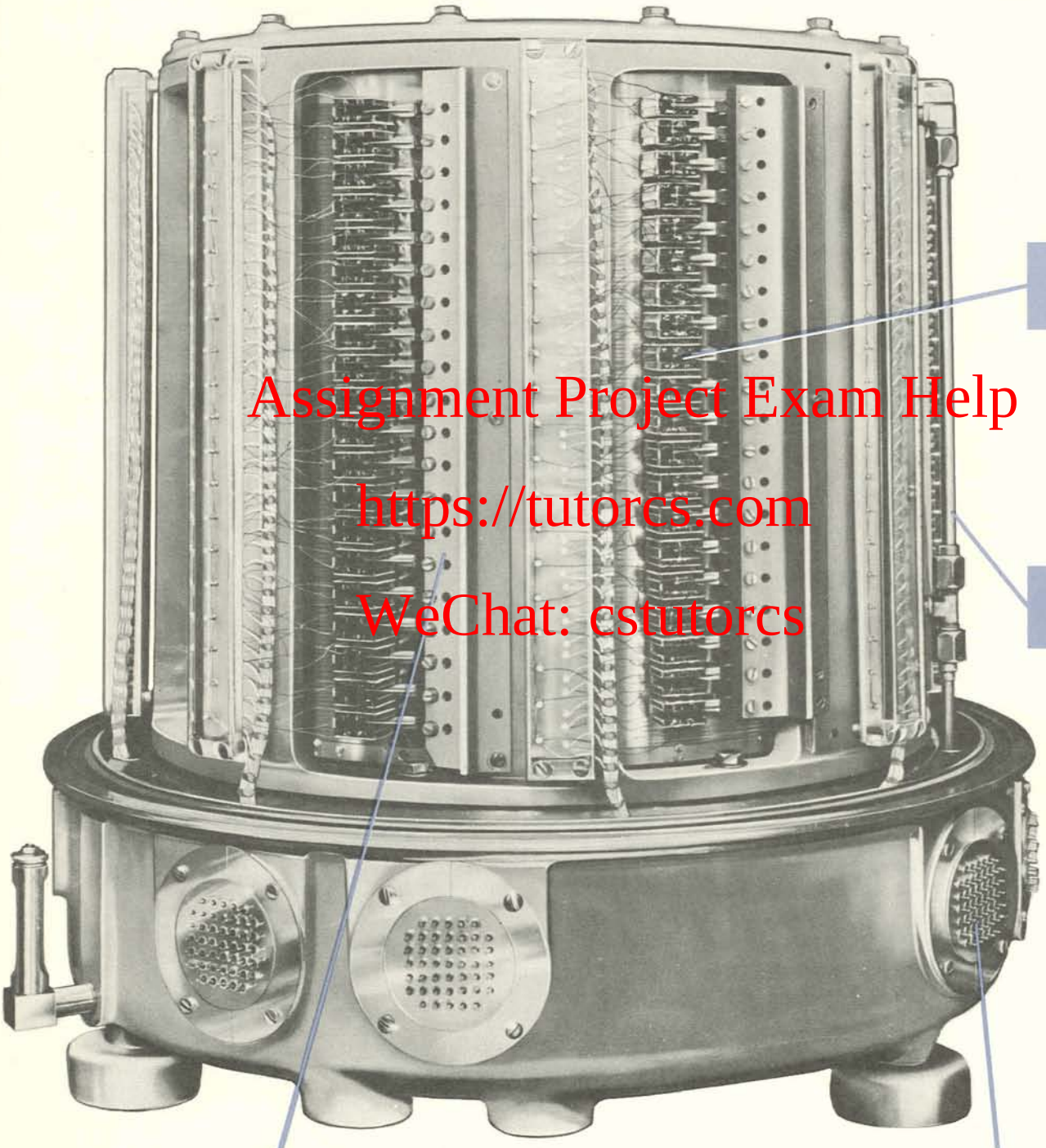
Donald B. McBrier

HD . . . the File Drum for Reliable, Low-Cost, High-Density Storage



File Drum Assembly

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Specifications

The HD File Drum Unit consists of the file drum, the drive and lubrication systems, a 3 by 10 by 10 track-selection mercury relay matrix, a linear read-out preamplifier, and a final writing amplifier. The file drum, 15 inches in diameter and 14 inches tall, is completely enclosed and sealed. Filtered oil is sprayed continuously on the drum for lubrication and to obtain the head-to-drum separation. The fluid motion and action of the oil film obtains a very small and constant head-to-drum separation independent of temperature variations without complicated adjustment mechanics and independent of casting dimensional stability. Any head pair can be removed and replaced without adjustment or loss of information.

All components approach telephone quality, all are designed for maximum trouble-free life. For example, the drum itself, dynamically balanced at 1200 rpm, is ground and lapped by optical techniques to a surface finish better than one microinch rms. The operating faces of each double head are optically ground and hand lapped so that the two surfaces are flat and coplanar to one wavelength of light. This attention to detail extends to all components to achieve the high performance and reliability of the file drum.

PACKING DENSITY	1040 bits per inch (nominal)
RECORDING TECHNIQUE	Double-pulse RZ (Williams' phase modulation)
NUMBER OF TRACKS	300 plus 20 spares
BITS PER TRACK	49000 (maximum)
TRACK WIDTH	0.020 inches
TOTAL STORAGE CAPACITY	15,000,000 bits (approximate)
*RANDOM ACCESS TIME	180 ms (average)
*RECORDING GAP	0.0003 inches
HEAD TO DRUM SEPARATION	0.00018 inches, self-aligning
*HEAD INDUCTANCE	100 μh
HEAD OUTPUT	3 mv peak-to-peak for alternate 0-1 pattern
READING PREAMPLIFIER OUTPUT	9 volts peak-to-peak
WRITING AMPLIFIER INPUT	28 volts peak
TRACK SELECTION RELAYS	mercury wetted contacts
STORAGE MEDIUM	Cunife
*FILE DRUM SPEED	1200 rpm
POWER	117 volts AC, 1ϕ, 60 cps, 10 amperes, peak +250 volts DC at 150 ma. +150 volts DC at 50 ma. −150 volts DC at 200 ma. +100 volts DC at 50 ma. +50 volts DC at 250 ma.
SAFETY DEVICES	Motor overload cutout, high- and low-pressure oil cutouts, and interlocked to assure oil flow before motor starting.
REMOTE CONTROL	Provision for remote start-stop
SIZE (INCHES)	48 long by 29 wide by 45 high
WEIGHT	700 lb (approximate)
FINISH	Black and clear anodize

*These as well as other items are based on a specific application. Other than the application assumed could call for different parameters.

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