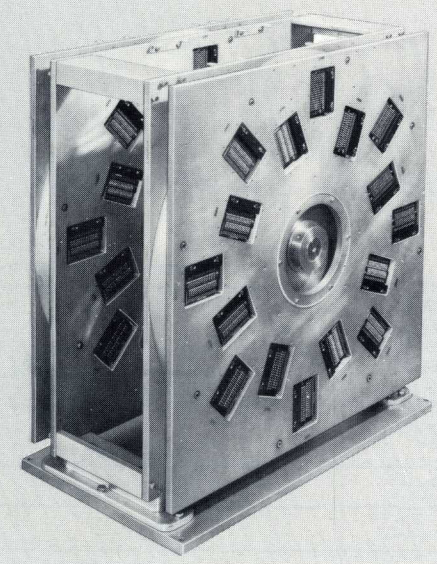
LIBRASCOPE engineering data



SERIES L-400

magnetic-disc memory systems

DESCRIPTION – Librascope's Series L-400 Magnetic-Disc Memory Systems are designed to provide data storage and transfer in computer systems, peripheral equipment, and other systems in which rapid-access memory is a requirement. Series L-400 consists of two models: the L-414, a single-disc memory file and the L-424, a two-disc memory file.

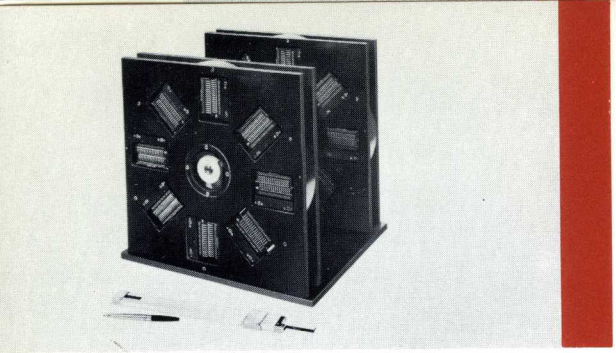
Both models feature a flying-head per track and a non-wearing, plated-cobalt recording surface. This provides outstanding magnetic performance under all operating conditions.

SPECIAL FEATURES – A disc is mounted on each end of a double-ended motor that contains precision, preloaded bearings. Thus, both sides of each disc are accessible for service and mounting of recording heads. Special construction of the disc assembly also permits individual discs to be replaced without readjusting head units. The recording disc surface, plated with a cobalt coating, is smooth and long-wearing. This enables the disc to perform perfectly, despite multiple starts and stops. The flying head is in contact with the metallic recording surface when the disc is not rotating. The inherent hardness of the cobalt plating provides high resistance to abrasive wear and relative insensitivity to accidental damage.

All materials, tolerances, and design proportions of the basic structure are selected to compensate for the temperature differentials that the disc assemblies may encounter in storage and during operation. The discs and supporting structures are made of aluminum to provide strength, rigidity, and lightness of weight.

The advanced, yet simplified, design of the disc and head results in more efficient packaging. This provides the user expanded, or "add on," memory capability at lower cost-per-unit volume.

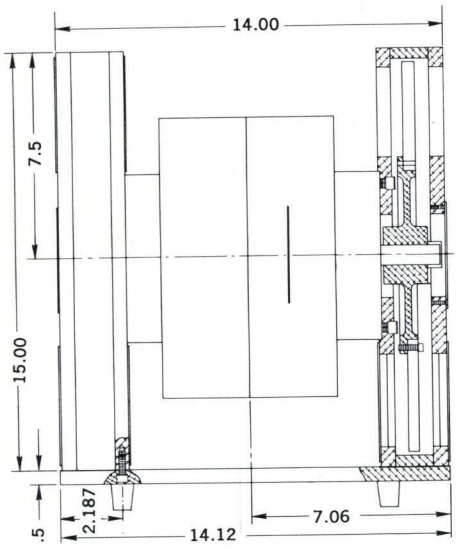
APPLICATIONS – Disc memories are used in computer systems and peripheral equipment as the main storage or buffer storage. Or, they supplement other memories. In a typical computer system, a magnetic disc memory provides inexpensive, rapid-access reliable storage with a capacity for many programs. In peripheral equipment, such as visual computer displays, they make possible a constant (no-flicker) variable-size display.



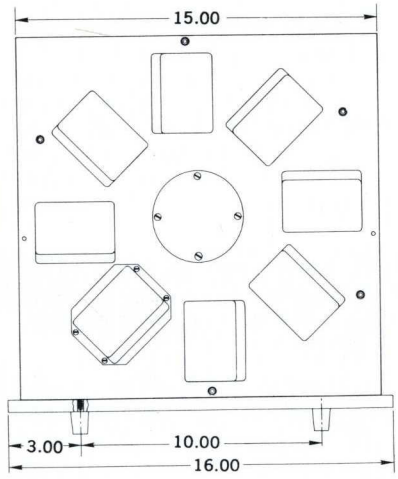
SERIES L-400

model L-414

MOTOR ASSEMBLY



TOP PLATE

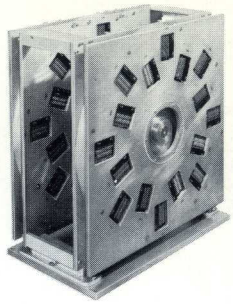


GENERAL CHARACTERISTICS

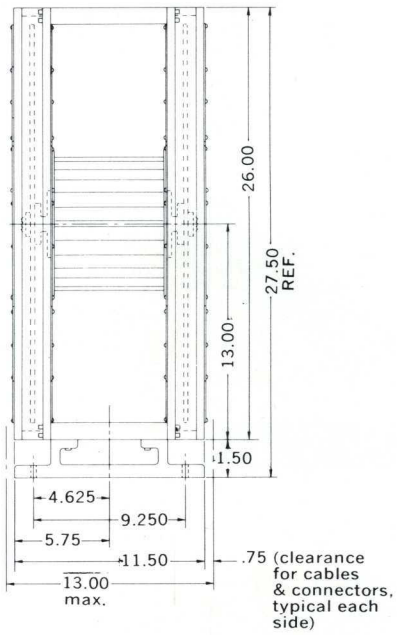
	Model L-414 Magnetic-Disc Memory System
Number of tracks (basic unit): (including timing as required)	512
Bits per track: (phase modulation, 2 flux changes per bit time)	Up to 16,384
Total storage capacity: (phase modulation recording)	8,388,608 bits
Recording diameters:	8.5" to 13.5"
Disc diameter:	9" to 14"
Disc speed:	1800 to 3600 RPM
Power requirements:	To be specified for specific requirements
Recording surface:	Proprietary plated cobalt
Head type:	Aerodynamic, 16 tracks per bar, center tapped bifilar winding
Head inductance:	Up to 60 microhenries per half winding, according to system requirements
Repetition rate:	Up to 983 KC @ 3600 RPM at 613 B. P. I.
Average bearing life:	10 years
File size:	15" wide 15" high 12" deep
Weight:	Approx. 80 pounds
Magnetic characteristics: Bit density (max.):	613 B. P. I.
Signal amplitude:	60 MV min. at 3600 RPM
Write current: (max. for saturation)	30 MA peak with 60 uh head Readback from all tracks are within a ratio of 4 to 1 with playback of 60 MV minimum with 60 uh head
Modulation:	Maximum modulation of any recorded track is 15% Modulation percentage is defined as: $\frac{2\ (\text{max. output} - \text{min. output}) \times 100}{(\text{max. output} + \text{min. output})}$

SERIES L-400

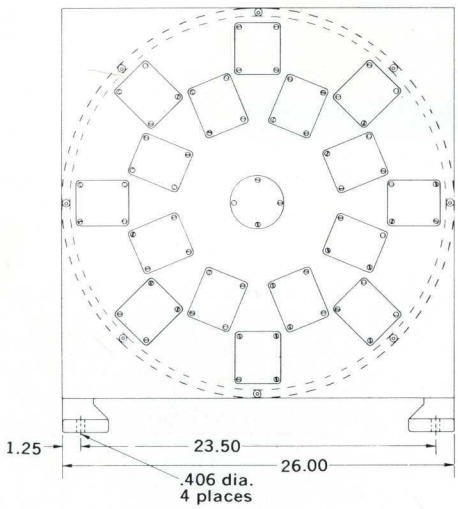
model L-424



MOTOR ASSEMBLY



TOP PLATE



GENERAL CHARACTERISTICS

	Model L-424 Magnetic-Disc Memory System
Number of tracks (basic unit): (including timing as required)	1024
Bits per track: (phase modulation, 2 flux changes per bit time)	Up to 26,400
Total storage capacity: (phase modulation recording)	27,033,600 bits
Recording diameters:	13.5" to 23.5"
Disc diameter:	14" to 24"
Disc speed:	900 to 1800 RPM
Power requirements:	To be specified for specific requirements
Recording surface:	Proprietary plated cobalt
Head type:	Aerodynamic, 16 tracks per bar, center tapped bifilar winding
Head inductance:	Up to 60 microhenries per half winding, according to system requirements
Repetition rate:	Up to 762 KC @ 1800 RPM at 600 B. P. I.
Average bearing life:	10 years
File size:	26" wide 27½" high 13" deep
Weight:	Approx. 280 pounds
Magnetic characteristics: Bit density (max.):	600 B. P. I.
Signal amplitude:	60 MV (min.) at 1800 RPM and highest packing density with 60 uh head
Write current: (max. for saturation)	Nominal 30 MA peak with 60 uh head Readback from all tracks are within a ratio of 4 to 1 with playback of 60 MV minimum
Modulation:	Maximum modulation of any recorded track is 15% Modulation percentage is defined as: $\frac{2\ (\text{max. output} - \text{min. output}) \times 100}{(\text{max. output} + \text{min. output})}$

SERIES L-400

magnetic-disc memory systems

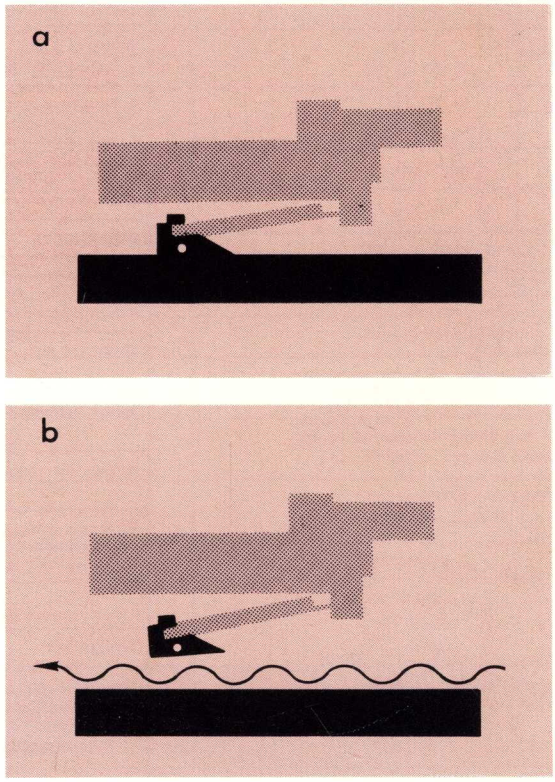
COMPATIBLE CIRCUITS – A range of standard compatible circuits are available for the L-424 and L-414 Magnetic-Disc Memory Systems. Example: Nand gate, nand gate expander, decode matrix, selection driver, write amplifier, data mixer, read amplifier, read amplifier feedback, flip flop, clock amplifier, read strobe delay, strobe output, line drivers, line receivers, circuit decoupler, and power delay. These circuits are organized and packaged according to customer interface requirements.

OPERATION

When a disc is not rotating (a), the heads are held in contact with the metallic recording surface by a reed spring whose tension, for each bar head, is preadjusted. In the contact position, the low-friction surface prevents the heads from damaging the disc tracks.

When the disc rotates (b), the heads "fly" over the track, riding on an air cushion approximately 0.0001-inch thick. The design of the heads and their adjustable mountings is such that the head-to-disc gap remains constant during operation; the flying action of the heads automatically compensates for inherent variations in the run-out of the disc and for any unbalanced temperature differentials between the head mounting plate and recording surface of the disc.

Track access is controlled by addressing from electronic switching circuits, control logic circuits, and buffers that are wired to the heads.



COMPONENTS DIVISION

GENERAL PRECISION INC.

LIBRASCOPE GROUP

1100 FRANCES COURT • GLENDALE, CALIFORNIA 91201

Telephone (Area Code 213) 245-8591 • TWX 213-240-2165

19 604 AP (L-400) ISSUED 8/65