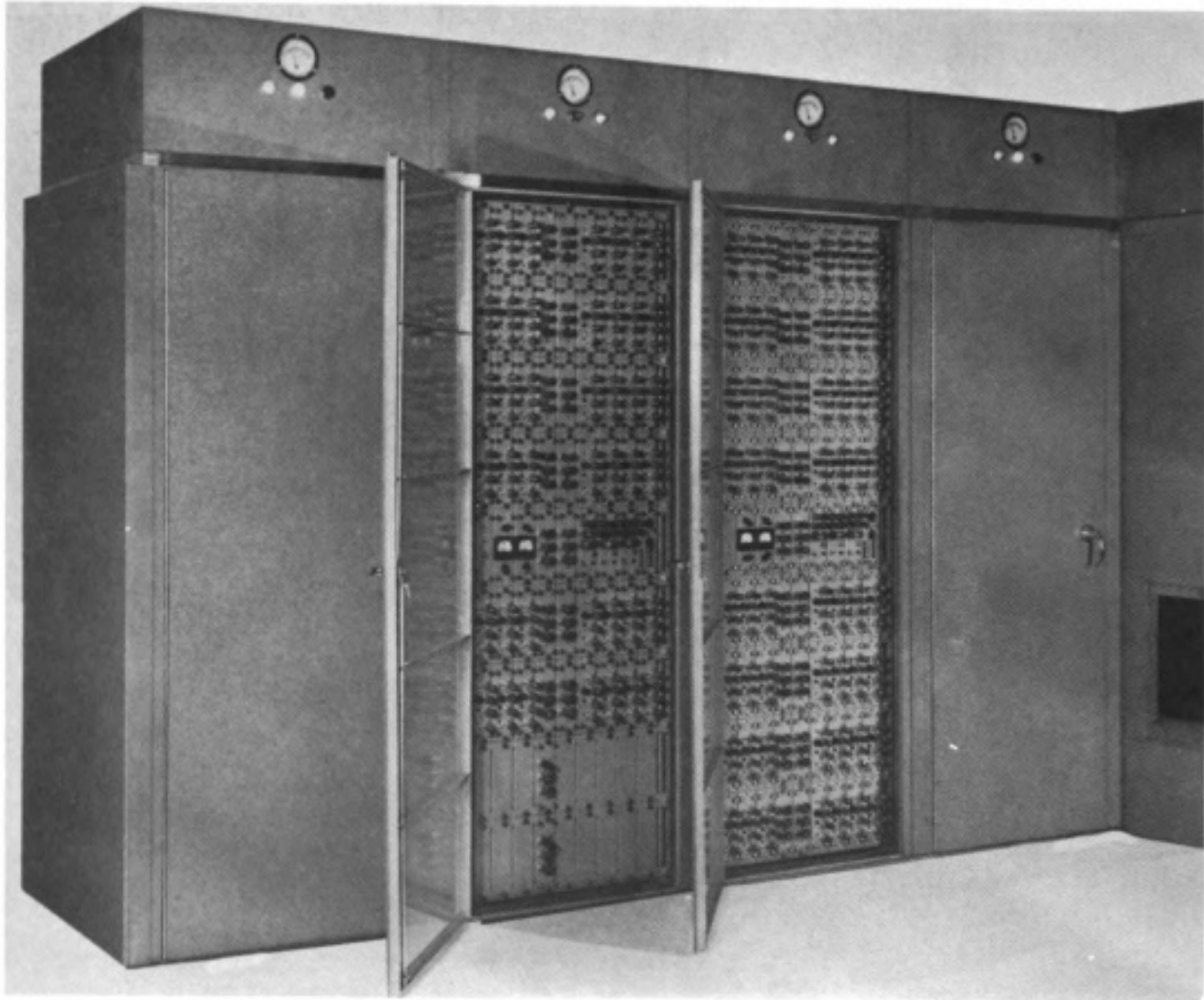


TECHNITROL 180

Technitrol General Purpose Computer Type 180

MANUFACTURER

Technitrol Engineering Company



Picture by Technitrol Engineering Company

APPLICATIONS

General purpose computation

NUMERICAL SYSTEM

Internal number system	Binary
Binary digits per word	48
Binary digits per instruction	48
Instructions per word	1
Instructions used	40
Arithmetic system	Fixed point
Instruction type	Four address
Number range	+2 ⁴⁴ to -2 ⁴⁴

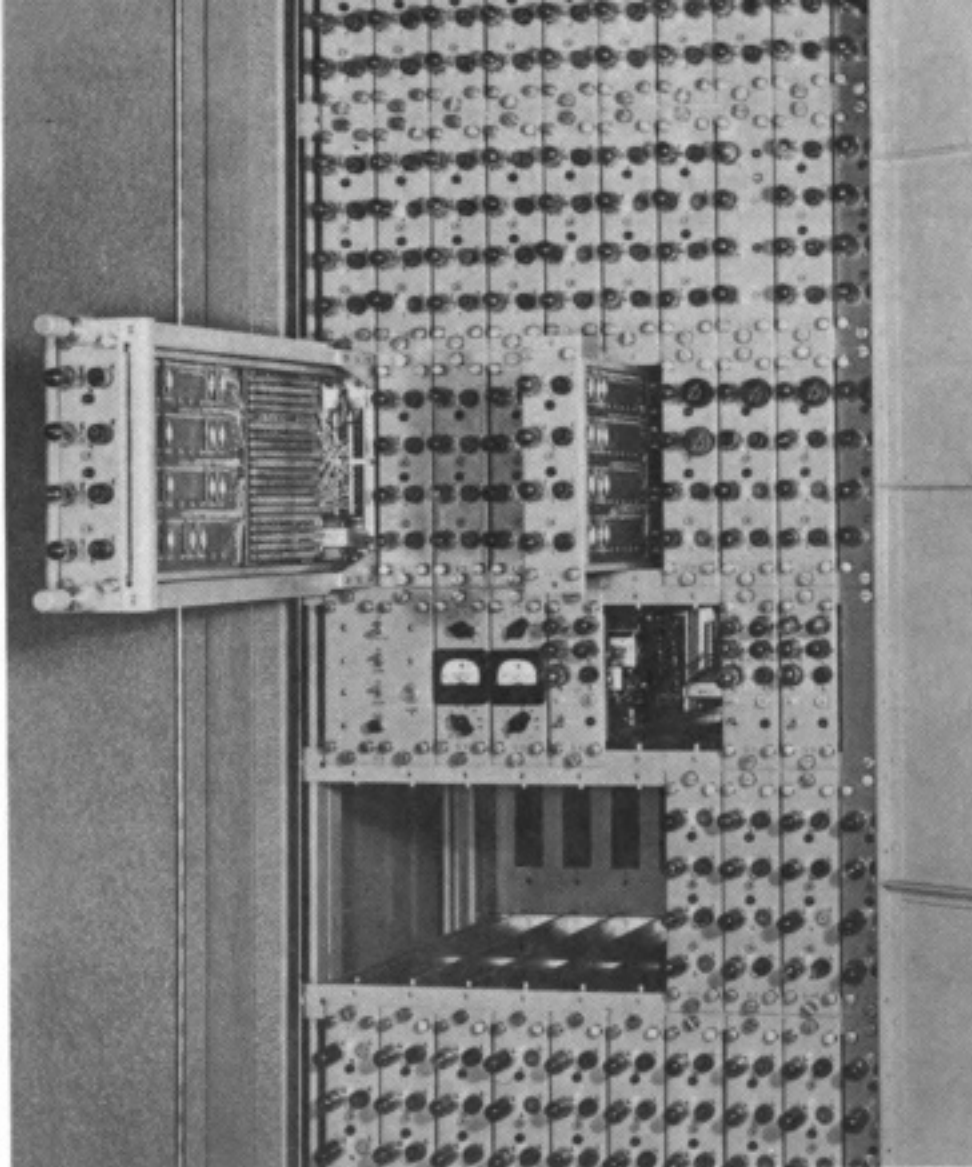
ARITHMETIC UNIT

Add time (exclud. stor. access)	Microsec 48
Mult time (exclud. stor. access)	3,160
Div time (exclud. stor. access)	3,160
Construction	Diode logic
Number of rapid access word registers	64
Basic pulse repetition rate	1 Mc/sec
Arithmetic mode	Serial
Timing	Synchronous
Operation	Sequential

STORAGE

Media	Words	Microsec Access
Acoustic Quartz	512	384 max
Magnetic Tapes		100

Acoustic quartz delay lines store 24,576 bits.
Magnetic tapes constitute intermediate speed storage.



Picture by Technitrol Engineering Company

Acoustic quartz has 448 words in 8-word loops and 64 words in one word loop.
Seven tape positions are available.

manually or automatically from the console.

INPUT

Media	Speed
Magnetic Tape	5,000 char/sec
Paper Tape (Ferranti)	200 char/sec
Keyboard	Manual

OUTPUT

Media	Speed
Page Printer (Anelex)	400 char/sec
Paper Tape (Ferranti)	200 char/sec
Typewriter (IBM)	8 char/sec
Magnetic Tape	5,000 char/sec

CIRCUIT ELEMENTS ENTIRE SYSTEM

Tubes	2,600
Tube types	4
Crystal diodes	30,000

CHECKING FEATURES

Fixed
Marginal checking of plug-in units may be controlled

POWER, SPACE AND WEIGHT

Power, computer	50 KW
Space, computer	600 cu ft 75 sq ft
Weight, computer	14,000 lbs
Power, air cond.	20 KW
Space, air cond.	350 cu ft 50 sq ft
Weight, air cond.	4,000 lbs
Capacity, air cond.	20 Tons

PRODUCTION RECORD

Unit described is a general purpose large scale digital computer made up of Technitrol standard computer blocks.

COST, PRICE AND RENTAL RATE

Approximate cost of basic system \$500,000

ADDITIONAL FEATURES AND REMARKS

Flexibility is achieved by block type of construction. Instruction code and number base are flexible. Capacity may be increased readily.

The first picture shows the memory cabinets.

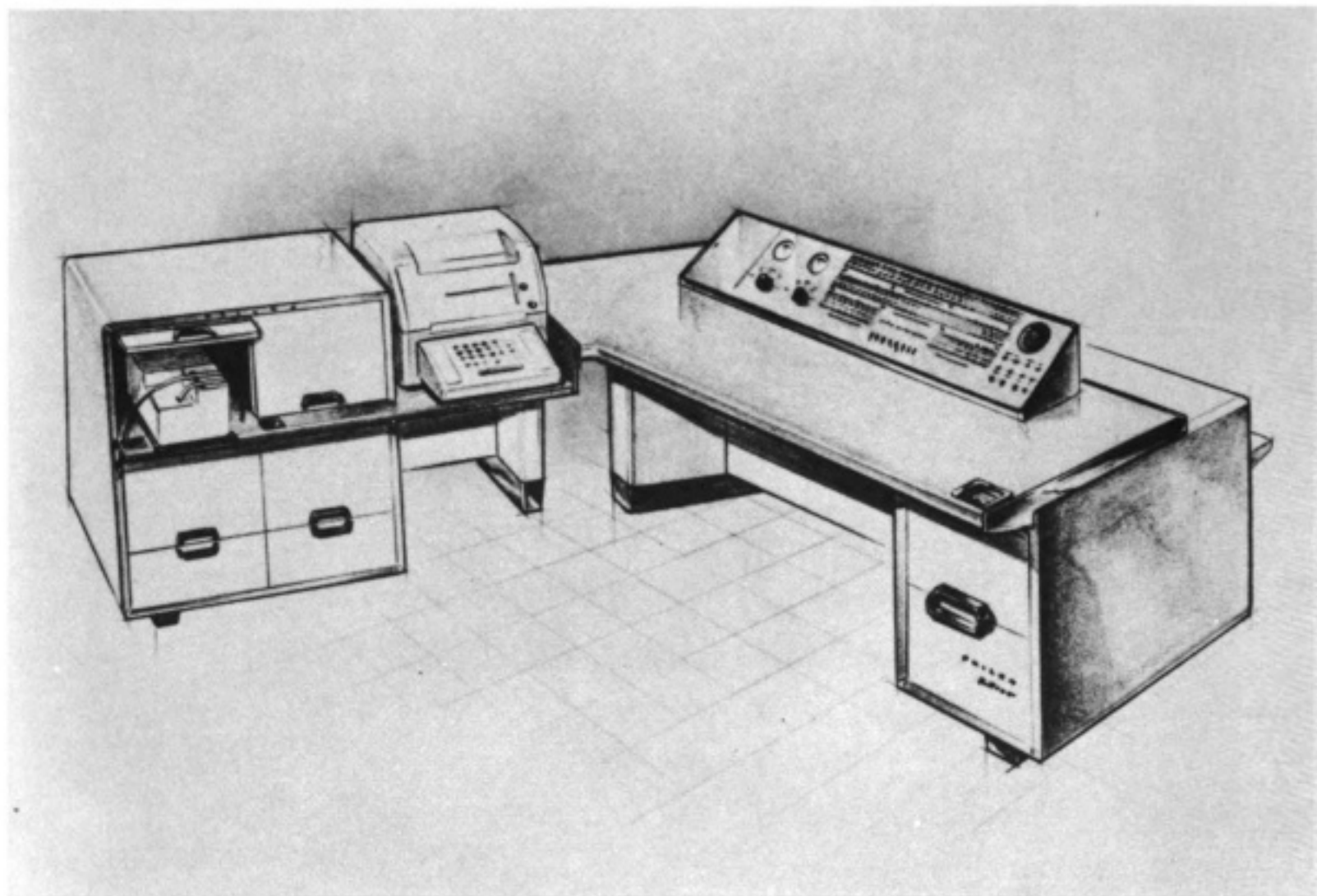
The second picture is a close-up of the control and arithmetic units, showing plug-in structure.

TRANSAC S 1000

MANUFACTURER

Philco Transistor Automatic
Computer S-1000
(Scientific Computer)

Philco Corporation



Picture by Philco Corporation

APPLICATIONS

Manufacturer

Primarily scientific applications, some commercial or industrial applications.

NUMERICAL SYSTEM

Internal number system Binary
Binary digits per word 36
Instructions per word 1
Instruction type Two address

Code will include two 12-binary digit addresses, two 3-binary digit address modifiers, and a 6-binary digit command.

ARITHMETIC UNIT

	Time	Microsec
Add (exclud. stor. access)		5.5
Mult (exclud. stor. access)		130 avg
Div (exclud. stor. access)		200
Construction	Transistors	
Arithmetic mode	Parallel	

Maximum multiply time excluding storage access is 200 microseconds. Ones complement binary arithmetic is used.

STORAGE

Media	Words	Digits
Magnetic Core	4,096	147,456

Cycle time is 12 microseconds

INPUT

Media	Speed
Perforated Tape Reader	60 char/sec
Teletype Model 28 Keyboard	Manual

OUTPUT

Media	Speed
Perforated Tape Punch	60 char/sec
Teletype Model 28 Page Printer	

Either 5 or 7 level tapes may be used. Punched card equipment, magnetic tape and magnetic drum may be added, if desired.

CIRCUIT ELEMENTS ENTIRE SYSTEM

All transistor circuits are used in arithmetic and storage units.

POWER, SPACE AND WEIGHT

System requires approximately 1.2 KW. The total volume occupied by the arithmetic section, storage section, power supplies, control panel and ventilating equipment is about 36 cubic feet.

INSTALLATIONS

Philco Corporation
Government and Industrial Division, Philadelphia 44,
Pennsylvania

ADDITIONAL FEATURES AND REMARKS

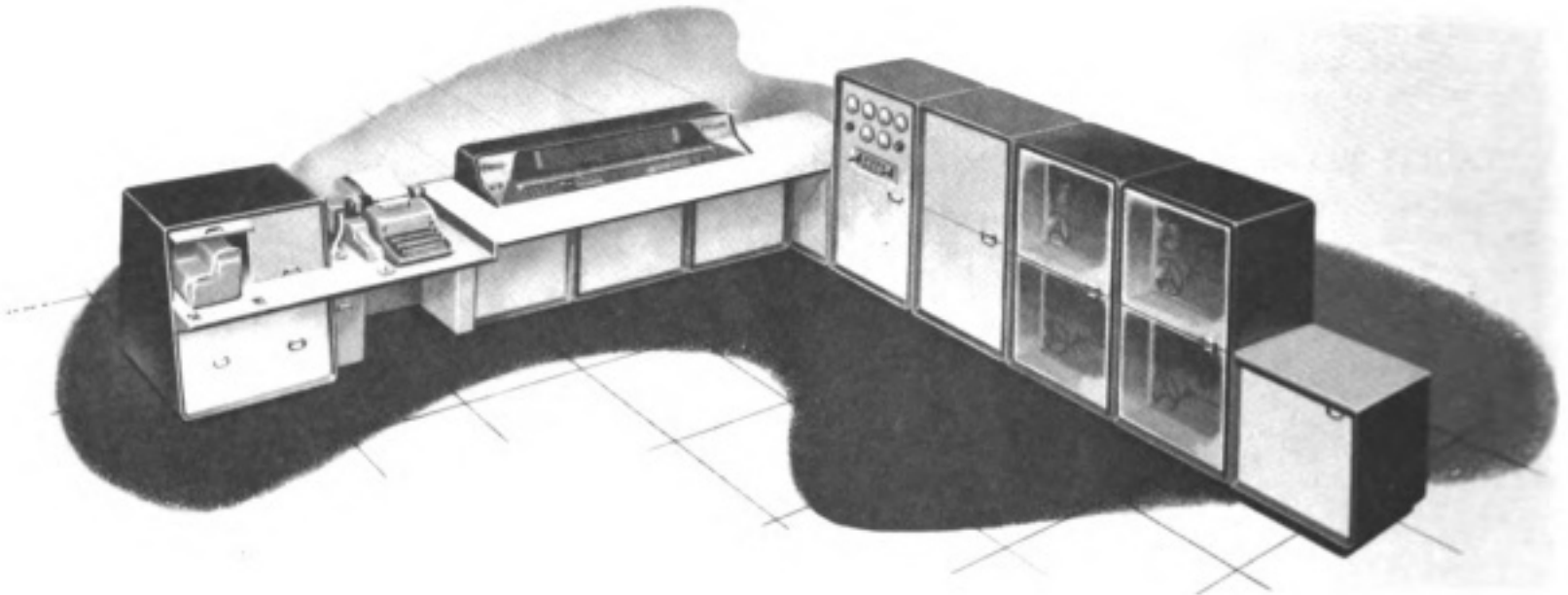
A cathode ray storage address reference indicator is included in the system.

TRANSAC S 2000

Philco Transistor Automatic
Computer S-2000

MANUFACTURER

Philco Corporation



Picture by Philco Corporation

APPLICATIONS

Electronic data processing and computing.

NUMERICAL SYSTEM

Internal number system Bin coded dec
Binary digits per word 48
Binary digits per instruction 24
Instructions per word 2
Instruction type One address

Of the 24 binary digits/instruction, 16 are for address and 8 are for command with two independent instructions per word.

ARITHMETIC UNIT

Time	Average Microsec	Minimum Microsec	Maximum Microsec
Add(exclud stor access)	1.5	0.5	6.3
Mult(exclud stor access)	60	45	300
Div(exclud stor access)	80	50	300
Construction	Transistors throughout		
Arithmetic mode	Parallel		
Timing	Asynchronous		
Operation	Concurrent		

STORAGE

Media	Words
Magnetic Core	4,096
Magnetic Drum	16,384 - 24,576

The magnetic core storage unit operates on a 5 microsec, destructive read cycle, 7 microsec write cycle, separately or together in sequence. The magnetic drum operates in parallel mode at 3600 RPM with 400 channels at 4000 BITS. Access time is 17 millisecc.

INPUT

Media	Speed
Punched Card	1,200 bin. words/min 300 dec. words/min
Perforated Tape	200 char/sec(5 or 7 level)
Magnetic Tape	750 words/sec

Magnetic tapes operate at a speed of 75 inches/sec, error corrections included. Other input media are available. Toggle Switch Register provides for human intervention and decision making during control cycles when the machine is used for real-time work.

OUTPUT

Media
Electric Typewriters
High Speed Printers

Card to drum, drum to card, perforated tape to drum, drum to perforated tape converters are available. Simultaneous operation of input - output devices and internal computations.

CIRCUIT ELEMENTS ENTIRE SYSTEM

Magnetic cores	200,000
Transistors	8,000
Separate cabinets	8

8 cabinets, comprising a single group, plus additional input/output units as required by special applications.

POWER, SPACE AND WEIGHT

Power, computer	1.5 KW
Space, computer	48 cu. ft.
Weight, computer	1,500 lbs.
Capacity, air cond.	Small ventilating fan.

PRODUCTION RECORD

In production	2
Delivery time	18 Months

One system is 80% complete.

COST, PRICE AND RENTAL RATE

Approximate cost of basic system \$ 1,000,000

INSTALLATIONS

Philco Corporation
Government and Industrial Division
4700 Wissahickon Avenue
Philadelphia 44, Pa.

ADDITIONAL FEATURES AND REMARKS

Manufacturer
System Advantages
Movable as any office appliance
Compact, light weight, reliable, fast, low power consumption, operates on conventional power outlets no periodical component replacements.

Magnetic Tape Central File System (MTCF)
This facility which may be obtained separately from TRANSAC, employs magnetic tape loops up to 600 feet in length, stored in bins. Up to 48 bins can be included in one unit, quite flexible in design to accommodate a variety of needs. A typical unit would consist of the following: One group of heads with pinch rollers mounted on a traverse mechanism to serve 32 bins; 16 groups of fixed heads on 16 bins. On 8 of these, mechanisms may be provided to permit the tapes to also accept information from keyboard or perforated tape readers of medium speed. The common set of drive shafts for the entire unit is designed for tape speeds of the order of 10 feet per second in forward and reverse directions. The tape width is 1" to accommodate 14 channels. The loops are removable, with rewind mechanism.

It is expected that this type of storage device can be made available within approximately 12 months. It looms as a likely competitor to the magnetic drum.