UNIVAC
DATA PROCESSING DIVISION

1005

SYSTEM
GENERAL DESCRIPTION

UP-4052 Rev. 1

PREFACE

The UNIVAC® 1005 System is a versatile, small scale data processing system. Unique features include:

- Internal or external programming.
- Compatibility with UNIVAC 1004 card systems.
- Capability for local or remote online operation with large scale systems.
- Advanced software; easy to use for routine programming, and powerful enough for complex, special purpose applications.

The various portions of this document provide an introduction to these features of the UNIVAC 1005 data processing system.

Printed in U. S. A.

1. CONTENTS

2. INTRODUCTION

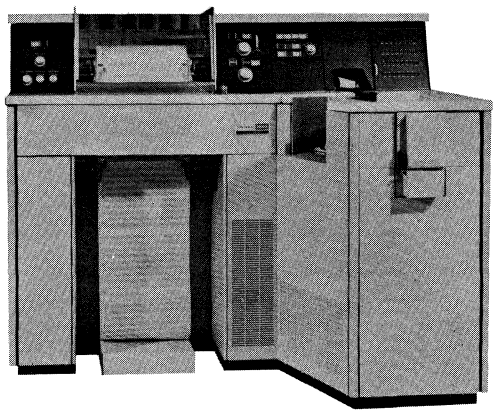


Figure 2-1. UNIVAC 1005 System

The UNIVAC 1005 System (Fig. 2-1) is a low cost, high performance, consolidated data processing system.

The system introduces a central processor which is uniquely capable of being both internally and externally programmed. Existing UNIVAC 1004 connection panels are compatible with the UNIVAC 1005 System. The system contains an Electronic Program Module which can be installed on existing UNIVAC 1004 Systems.

The UNIVAC 1005 System utilizes core storage of either 2048 or 4096 storage locations, with access times of 8 microseconds or 6.5 microseconds, depending on model.

Software available with the system includes an assembler, and a report generator, both described in Section 5, PROGRAMMING.

A. SYSTEM MODELS

The UNIVAC 1005 System is available in three models. The models differ in processing and I/O speeds, and model III includes magnetic tape storage. Characteristics of the three models are summarized below.

UNIVAC 1005 MODEL I

BASIC SYSTEM	SPEEDS
PROCESSOR	8 MICROSECOND CORE ACCESS TIME
READER	400 CARDS PER MINUTE
PRINTER	400 LINES PER MINUTE
PUNCH	200 CARDS PER MINUTE

UNIVAC 1005 MODEL II

BASIC SYSTEM	SPEEDS
PROCESSOR	6.5 MICROSECOND CORE ACCESS TIME
READER	615 CARDS PER MINUTE
PRINTER	600 LINES PER MINUTE
PUNCH	200 CARDS PER MINUTE

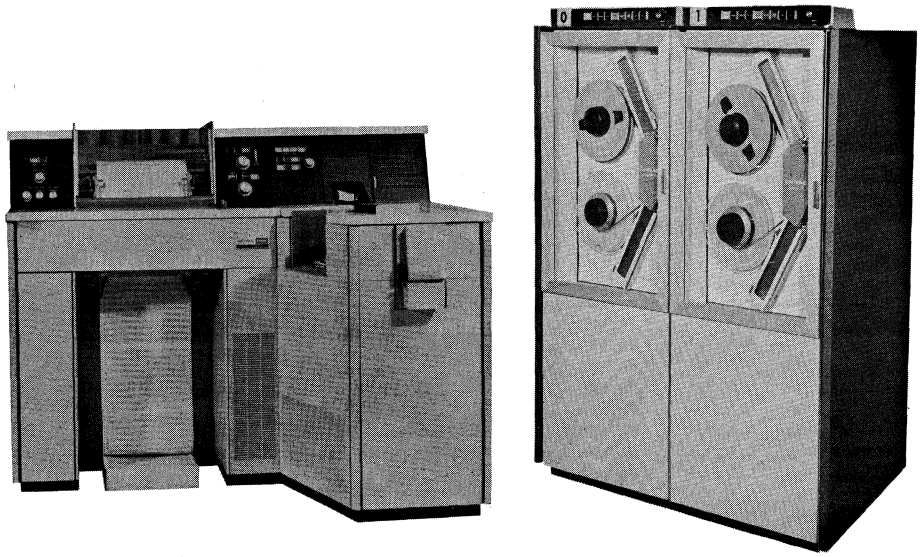


Figure 2-2. UNIVAC 1005 System Model III

UNIVAC 1005 MODEL III

BASIC SYSTEM	SPEEDS
PROCESSOR	6.5 MICROSECOND CORE ACCESS TIME
READER	615 CARDS PER MINUTE
PRINTER	600 LINES PER MINUTE
PUNCH	200 CARDS PER MINUTE
MAGNETIC TAPE UNITS	UP TO 34,160 CHARACTERS PER SECOND

The UNIVAC 1005 III System includes magnetic tape storage by the incorporation of UNISERVO* VI C Magnetic Tape Units.

Each of the above models is program compatible with its predecessors, and can be expanded with a wide range of peripheral equipment.

**Trademark of Sperry Rand Corporation*

B. SYSTEM CONFIGURATION

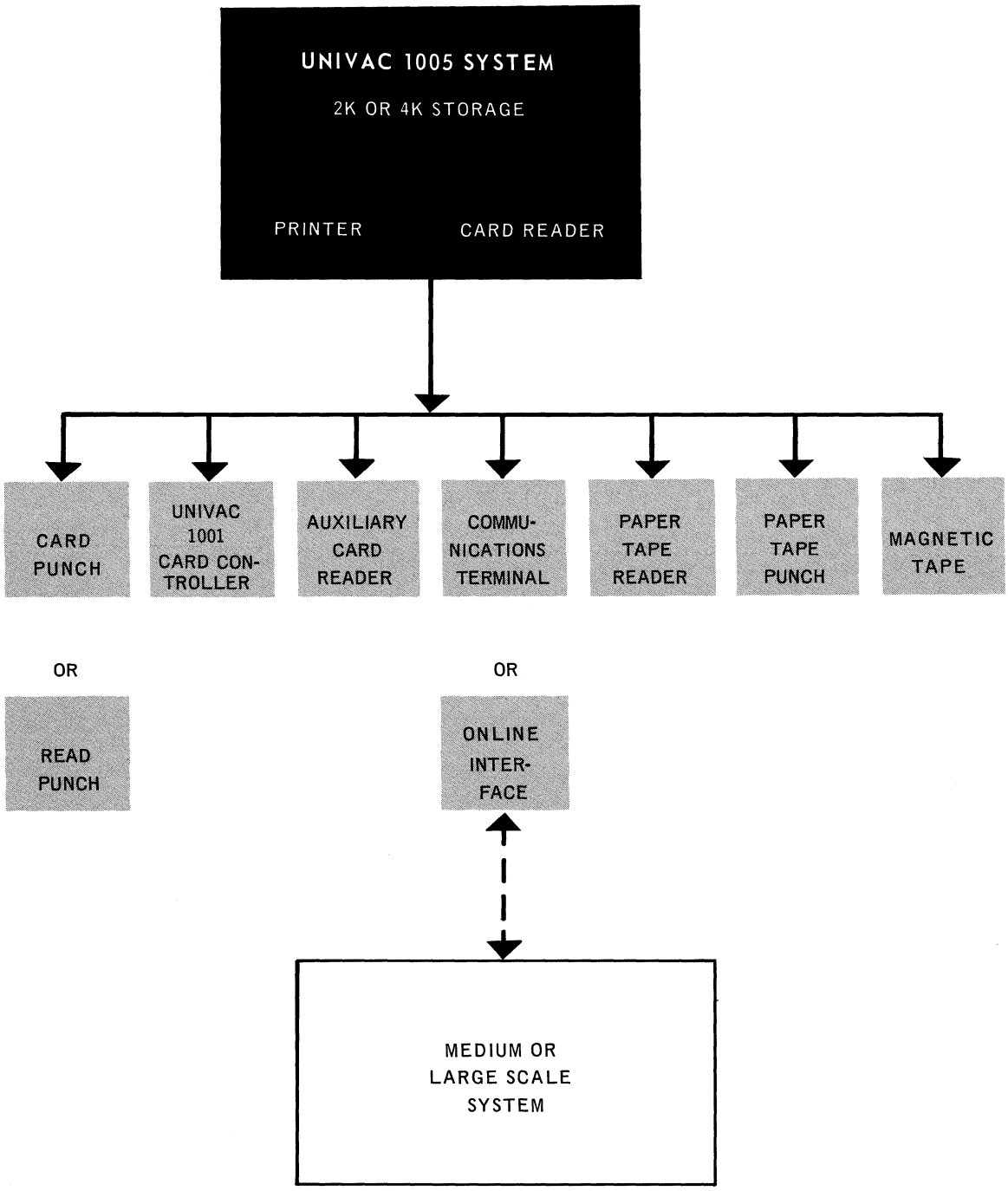


Figure 2-3. Maximum System Configuration

The UNIVAC 1005 System is capable of a virtually unlimited variety of system configurations. Individual input/output equipment available as part of the system is described in Section 4, I/O and Communications equipment. The diagram of a maximum system configuration (Figure 2-3) shows the equipment presently available as part of the UNIVAC 1005 System. Any subset of the above system can be expanded by the addition of any available equipment. Such expansion requires no reprogramming of previous applications.

3. CENTRAL PROCESSOR

The UNIVAC 1005 Central Processor performs all logical, arithmetic, and special functions; controls the flow of data through the system, and coordinates the operation of all input/output equipment. The processor contains a magnetic core store which provides storage for all constant, transient, and instruction data during processing. The processor functions under the control of programs, delivered to the machine either as a set of instructions read into core storage, or as a user-wired connection panel.

Logically, the central processor consists of six basic elements, as shown in Figure 3-1, Functional Block Diagram. These elements are:

- CORE STORAGE
- CONTROL SECTION
- DATA AND STORAGE CONTROL
- ARITHMETIC SECTION
- I/O CONTROL
- OPERATOR CONTROLS AND INDICATORS

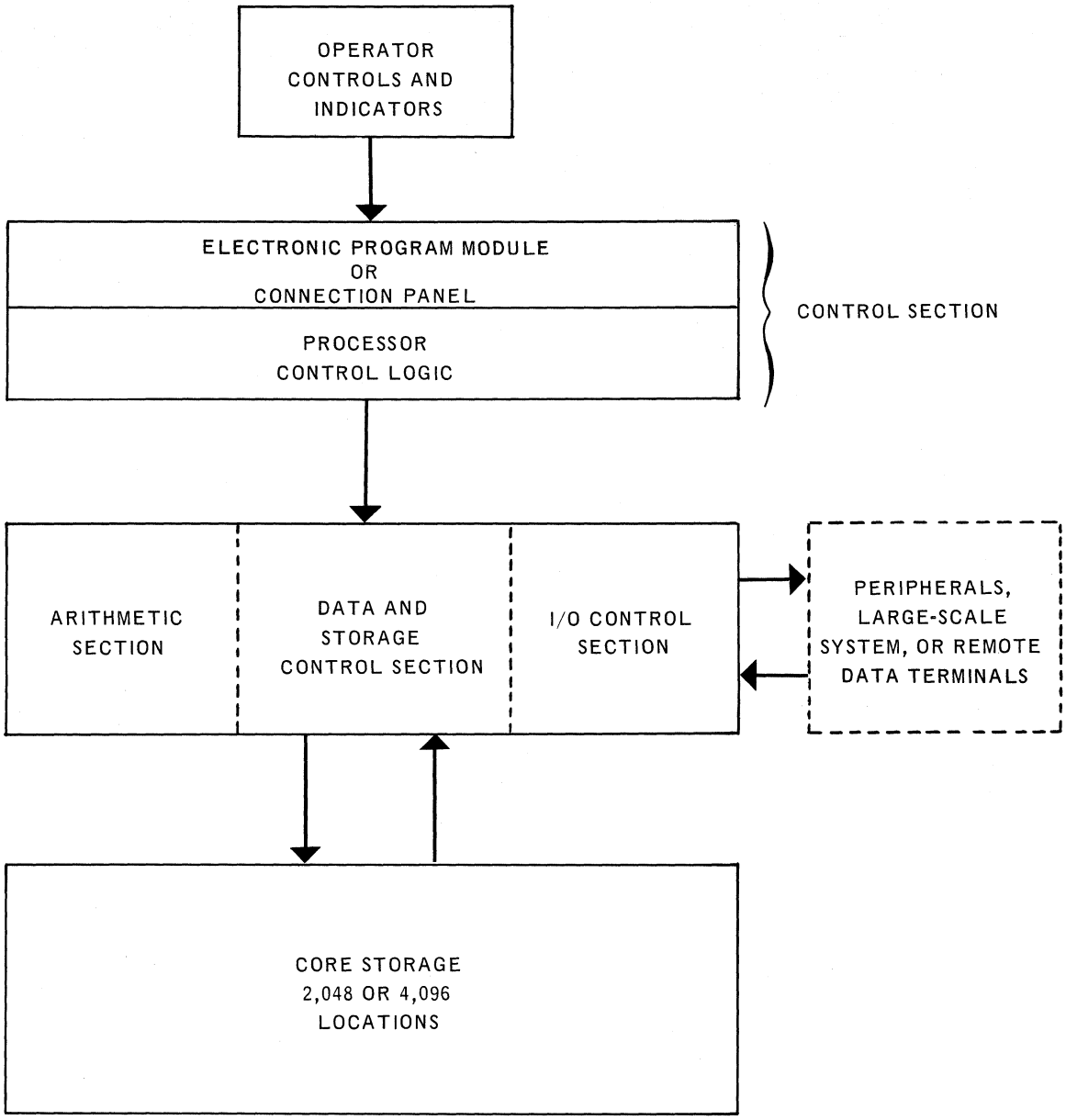


Figure 3-1. UNIVAC 1005 Central Processor – Functional Block Diagram

After initiation from the operator control panels, data is read into core storage via the I/O control circuits. The data is then processed according to program instructions, which are interpreted by the control section. During processing, data moves through the data and storage control section, the arithmetic unit, and core storage as required by the application. Output data is then delivered to the desired output equipment under program command.

A. CORE STORAGE

The UNIVAC 1005 Central Processor is character oriented. Data is stored in the form of six-bit characters. There are 2,048 6-bit locations in each module of core storage. The basic system is expandable to 4,096 characters of core storage. There are 126 locations reserved for Register and controls in the 2K System and 252 in the 4K System. Storage cycle time is 6.5 or 8 microseconds per character. The magnetic core memory provides storage for instructions and data during the performance of programs. There are reserved input/output areas in storage. However, the programmer can modify the sizes of such areas to meet the needs of any program. This allows both a high degree of programming flexibility, and economical usage of storage.

Information is stored in variable length areas called fields. A field is defined as a group of consecutive storage locations whose contents are treated as a unit. Each location within a field can store a six-bit decimal, special, or alphanumeric character. Since fields can be of any length, information units of varying lengths can be stored with equal efficiency.

B. CONTROL SECTION

The main function of the control section is the selection, interpretation and execution of instructions in a program run. In effect, the control unit interprets the programmer's instructions and initiates machine sub-commands necessary to execute each instruction. In performing this task, the control section directs the sequence and type of all operations of the arithmetic, storage, and I/O control elements.

The processor logic control circuits carry out the following cycle of actions as directed by the control module:

1. *The Data and Storage Control Section is directed to read a program instruction from locations in core storage designated by a Program Address Counter. The instruction is delivered to an Instruction Address Register, also in core storage.*

2. *The Program Address Counter is incremented by an amount equal to the number of characters in the instruction. The Address Counter is now conditioned to specify the address of the next instruction.*

3. *The instruction in the Instruction Address Register is interpreted by the Control Module, which then directs all required processor elements in the execution of the instruction.*

4. *The above cycle is repeated.*

If the connection panel is in use rather than the Electronic Program Module, instructions are not read from core storage, but are ordered directly by connection panel wiring.

There is one programmable 31-character register available. The register is located in storage. It may be used for storage transfers, editing, and arithmetic operations.

One level of indirect addressing can be specified for many processor instructions. When this is done, the instruction read into the Instruction Address Register specifies the address of storage locations containing the absolute address of the desired operands. The instruction is automatically executed on the specified operands.

C. DATA AND STORAGE CONTROL

The Data and Storage Control Section consists of a six-bit Data Register, through which all data passes going to and from core storage, and of two operand address registers which determine what storage areas will be accessed. The operand address registers are loaded with the specified addresses at the beginning of each operation cycle.

D. ARITHMETIC SECTION

The Arithmetic Section consists of two 6-bit transient registers, an adder, control circuits, and a set of indicators. The unit performs all arithmetic and logical operations, including multiplication and division. The indicators, whose status can be interrogated by the program, include:

- Comparison Indicators – less than, equal to, greater than.
- Sign Indicators – positive, negative, or zero.
- Arithmetic Overflow Indicator
- Zero digit indicator (for any program specified digit).

E. INPUT/OUTPUT CONTROL SECTION

The Input/Output Control circuits coordinate program demands for I/O operations with the currect status of the processor and of the requested I/O equipment. Card and paper tape punching are initiated immediately upon program demand, and no interlock of the Processor or other equipment occurs. Assigned areas in core storage receive input data and accumulate data. These areas are released for other uses when not needed for I/O operations.

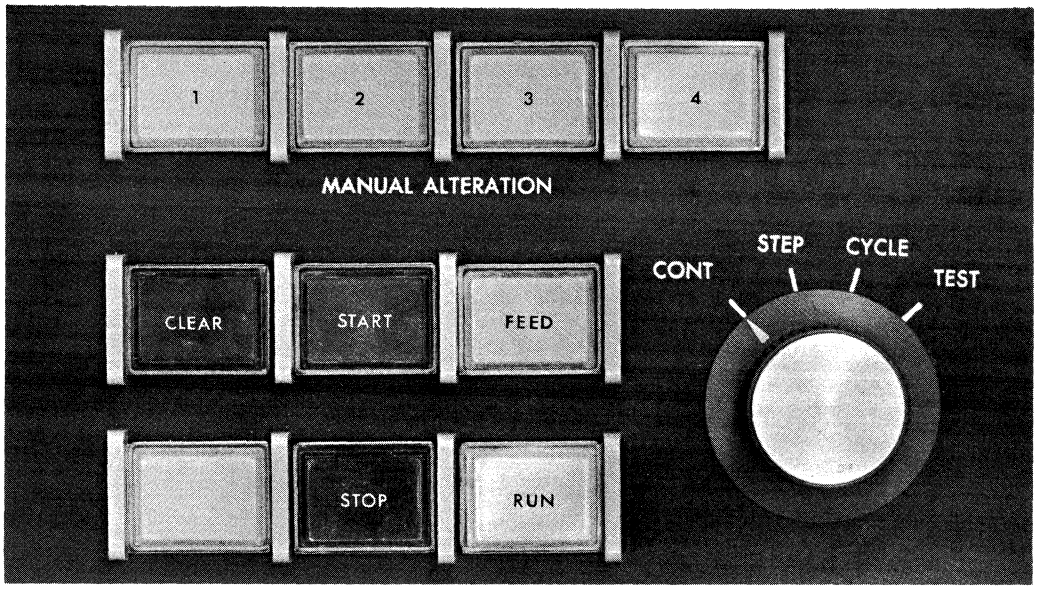
F. OPERATOR CONTROLS AND INDICATORS

Processing controls and indicators appear on the Central Control Panel and Display Panel.

Controls on the Central Control Panel provide for the initiation, interruption and termination of a program run. Four buttons on the Central Control Panel are directly associated with the control section of the processor. Two provide a means for manual alteration of a program in progress.

The Display Panel provides facilities for program testing and monitoring. The Display Panel, located above the card reader, contains indicators relevant to abnormal equipment conditions and provides detailed information concerning central processor operation.

Access panels are provided for all internal areas of the processor which must be reached for operating or maintenance purposes. All operator panels are electronically interlocked for safety reasons, and must be closed during operations.



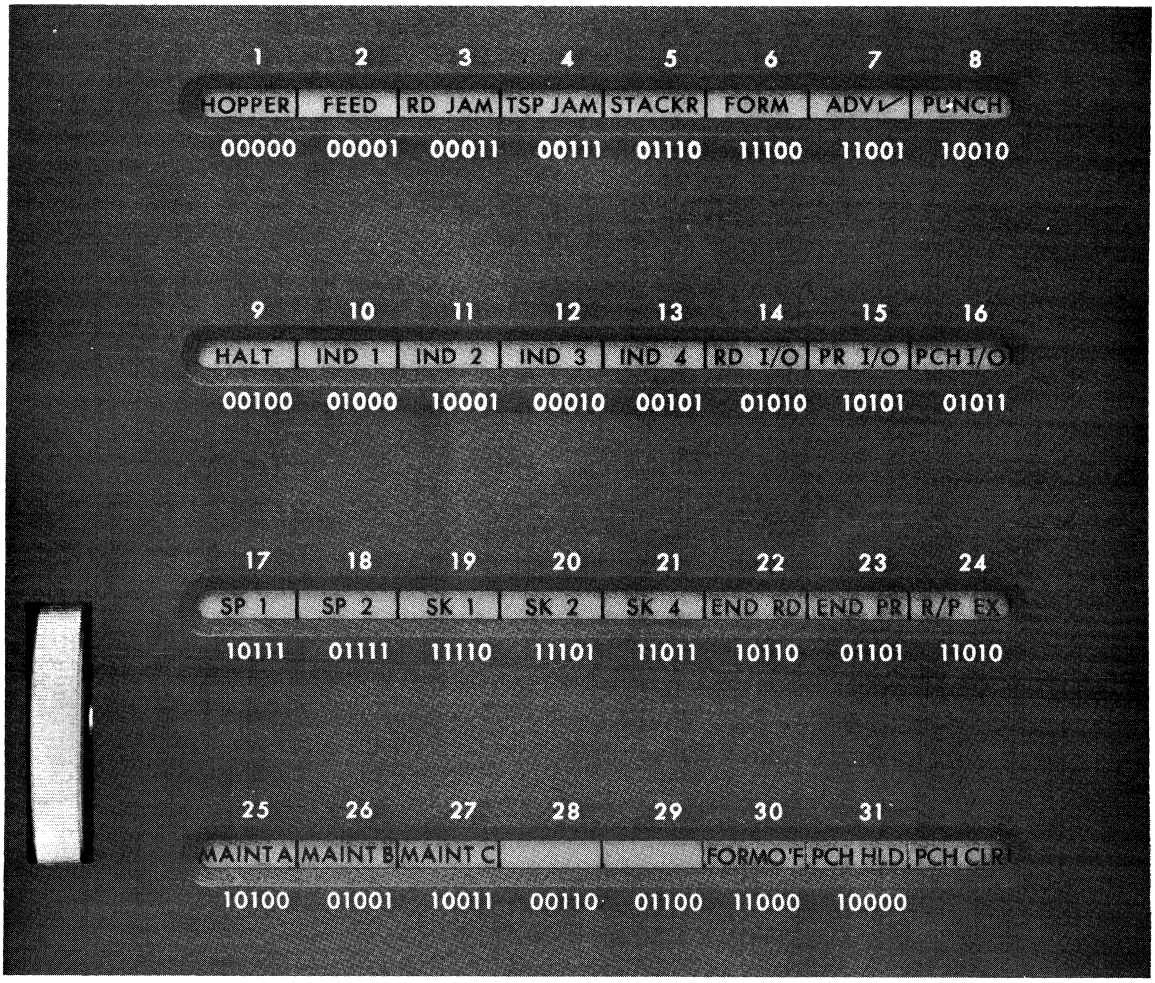


Figure 3-2. Central Control Panel; and Display Panel

4. INPUT/OUTPUT AND COMMUNICATIONS EQUIPMENT

Any UNIVAC 1005 System can be expanded through the use of a wide variety of peripheral equipment. The card reader and printer, supplied with all UNIVAC 1005 Systems, are described in the first portion of this section. The magnetic tape and other facilities available are discussed in subsequent subsections. All peripheral equipment is under direct control of the user program.

A. STANDARD I/O EQUIPMENT

1. Card Reader

The card reader is located at the right front of the processor (Figure 4-1). Cards are read serially at the rate of 400 or 615 cpm on a demand basis. The cards are read as they pass the read station made up of 12 photo cells. During reading, the card image is transferred to a section of the core storage assigned to card reading. This area of storage is referred to as read storage.

The input magazine at the front of the read section has a capacity of approximately 1200 cards and is angled toward the centrally located operator controls for easy access. The card stacker, located above and to the rear of the input magazine, holds approximately 1,500 cards. A card is fed to the wait section where the direction of travel is altered to allow the cards to pass under the photo cells serially. After the card is read it is deposited "on end" in the card stacker.

80 Column, 90 Column or code image cards may be read.

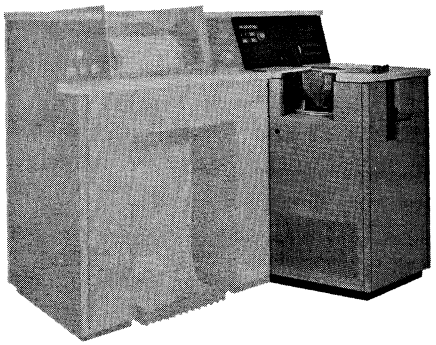


Figure 4-1. Card Reader

CHARACTERISTICS

CARDS	80 Column, 90 Column, or code image cards (optional).
PROGRAMMED OPERATIONS	EXTERNAL PROGRAMMING Cards are read serially and transferred into storage until program specified column is read. Data is available as it is entering storage and may be tested for control. INTERNAL PROGRAMMING Cards are read serially and transferred into storage.
SPEED	Up to 615 cards per minute.
READ SYSTEM	Photoelectric reading. Demand basis; always a card at wait station to be read.
SIMULTANEITY	Reading, printing and punching may occur simultaneously.
INPUT AREA	Assigned area in core storage.
INPUT MAGAZINE	1200 card capacity.
STACKER	1500 card capacity.

2. Printer

The printer is attached to the left of the processor (Figure 4-2). Printing speeds up to 600 lines per minute may be obtained, with a maximum of 132 print positions per line. Character spacing is ten to the inch horizontally, with an option to the operator of six or eight lines to the inch vertically. Any one of sixty-three characters may be printed at each of the 132 print locations.

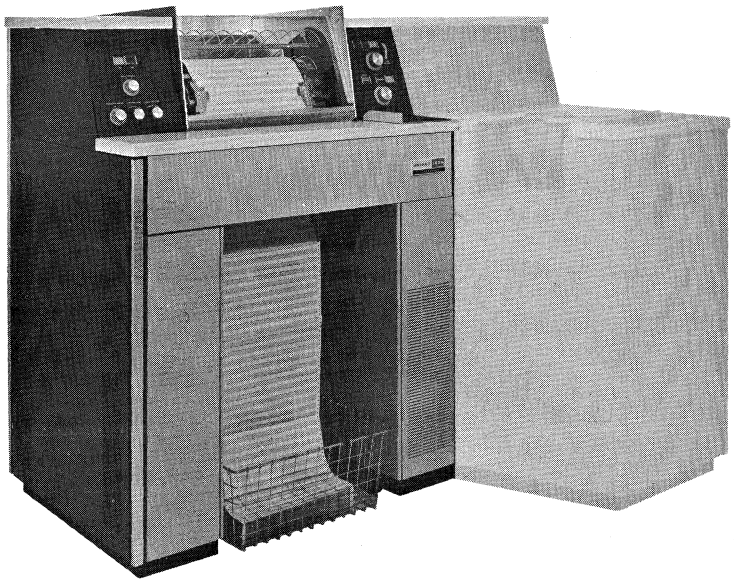


Figure 4-2. Printer

CHARACTERISTICS			
PAPER STOCK	Forms from 4 to 22 inches wide may be accommodated by the carriage.	SPEED	Up to 600 lines per minute.
PROGRAMMED OPERATIONS	Print, print and space; page ejections.	SIMULTANEITY	Printing, punching and reading may all occur simultaneously.
PRINTABLE CHARACTERS	10 numeric; 26 alphabetic, and 28 special characters including space.	OUTPUT AREA	Assigned area in core storage.
DATA FORMAT	132 print positions per line, 10 characters per inch. Standard vertical spacing is 6 or 8 lines per inch with operator option.	REPRODUCTION SYSTEM	Hammer stroke against an etched drum.
		MAXIMUM NUMBER PER SYSTEM	One

B. MAGNETIC TAPE

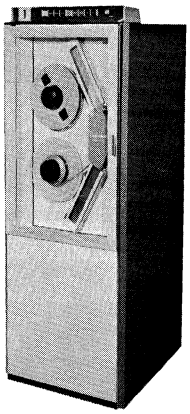


Figure 4–3. UNISERVO VI C Magnetic Tape Unit

The UNISERVO VI C Magnetic Tape Unit (Figure 4–3) provides the capability of reading and writing magnetic tape at densities of 200, 556, or 800 characters per inch, with no intermediate conversion steps required.

CHARACTERISTICS

TAPE	Plastic tape in reels up 2400 feet.	
TAPE SPEEDS	Read/Write Speed	42.7 inches per sec.
	Rewind Speed	Less than 3 min.
START/STOP TIMES	Read Start	15.1
	Read Start after Backspace	10.9
	Read Stop	10.9
	Write Start	9.3
	Write Check	5.8
	Write Stop	10.9
	Backspace Start after Read or Write	10.9 ms.
	Backspace Stop	10.9 ms. *
	Transport Selection	6.0 ms. *

DATA TRANSFER SPEEDS	200 CPI	8,540 chars. per sec.
	556 CPI	23,741 chars. per sec.
	800 CPI	34,160 chars. per sec.
DATA FORMAT	Variable blocks of 6 bit characters, Interblock gap of 3/4".	
PROGRAMMED OPERATIONS	Read forward, write forward, backspace one block, erase before write, transport select, and rewind.	
DATA CHECKING	Character parity, longitudinal parity, read after write.	
I/O AREA	Any area of storage designated by programmer.	

* Processor not Interlocked

C. PERIPHERAL CARD EQUIPMENT

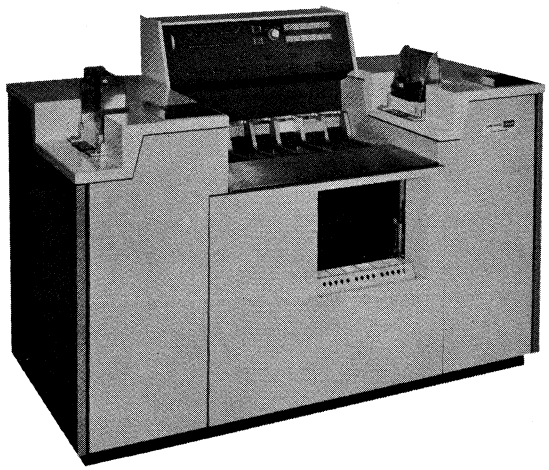


Figure 4-4. UNIVAC 1001 Card Controller

1. UNIVAC 1001 Card Controller

The UNIVAC 1001 Card Controller (Figure 4-4) is a high-speed, multi-purpose machine whose principal function is to arrange card files into groups or sequences required for subsequent processing. It is equipped with two card-input magazines, each capable of feeding cards at speeds up to 1000 cpm. Seven output stackers permit a wide selection as well as matching, merging, and other common collating operations.

The Card Controller includes 256 characters of core storage and a variable sequence of program steps. At the option of the user, any or all information in any card may be selectively stored for one or more cycles and compared as required by the specific application. Thus, the user is not restricted to an arbitrary number of available comparing positions nor to a fixed sequence of operations.

In addition to comparing, the Card Controller provides such processes as adding, subtracting, and transferring of the data entered. Thus the input data can be processed and manipulated into the form desired for output.

All operations of the Card Controller – card feeding, comparison, information storage, data processing, and stacker selection – are directed by the user through wiring of a removable connection panel.

With a UNIVAC 1001 Card Controller included in the UNIVAC 1005 System, the unique abilities of each unit can be shared by the other units toward enhancing the efficiency of a common program. On the other hand, independent programs can be performed by the UNIVAC 1005 Processor and the Card Controller.

- The Processor, while executing a program not related to that being performed by the Card Controller can call in the Card Controller for a routine or function to supplement the Processor program.

- The Card Controller, while performing a program not related to that being executed by the Processor, can call in the Processor or any of its peripheral functions or equipment for a routine or function to supplement the Card Controller program.

CHARACTERISTICS

MODELS	80 Column, 90 Column, and 80 Column-UNIVAC XS-3, 24, 36 and 48 Program Steps
CARDS	80 Column, 90 Column, code image.
CHARACTERS COMPARED	64 Codes: blanks, 27 special characters, A-Z, 0-9
CORE STORAGE	256 locations. Each location can store any one of 64 characters. Full storage available for input, output, constants, intermediate results. No storage capacity required for instructions.
CARD FEEDING	Two feeds – primary and secondary - 1200 card capacity each. Individual or simultaneous feed.
CARD RECEIVING	Seven stackers: three for primary selection, three for secondary selection, one for merging. Capacity 1200 cards each.
PROGRAMMED OPERATIONS	Card feed, stacker selection, comparing, sequence checking, adding, subtracting, transferring.
ADDRESSING	Any number of adjacent locations, one location to entire storage, is addressable as a single data unit.
PROGRAMMING	Programming performed by connection panel wiring. Both processing and I/O operations can be performed on one program step.
MULTI-PROGRAM PANEL	Provides standard collating functions without programming.
SPEEDS	Card feeding: 1000 cpm per feed. 2000 cpm simultaneous feed. Storage cycle time: 12 microseconds. Add/Subtract: 24 microseconds per digit. Compare: 24 microseconds per character. Transfer: 24 microseconds per character.

2. Auxiliary Card Reader

The auxiliary card reader is a free-standing unit which can be cable-connected to a UNIVAC 1005 processor (Figure 4-5).

The maximum card feeding rate is 400 cards per minute, reading 80 or 90 column cards serially. The auxiliary card reader has an input magazine capacity of 1000 cards and three program selectable output stackers, each with a capacity of 1000 cards.

CHARACTERISTICS			
CARDS	80 column, 90 column or code image cards (optional).	INPUT AREA	Assigned area in core stoage.
PROGRAMMED OPERATIONS	Card reading. Data is entered into core storage. Three program selectable stackers.	TYPE OF CHECK	Light-dark test.
		INPUT MAGAZINE	1000 card capacity.
SPEED	400 cards per minute.	STACKERS	Three, each with 1000 card capacity.
SIMULTANEITY	Reading, punching and printing may occur simultaneously.	MAXIMUM NUMBER PER SYSTEM	One.

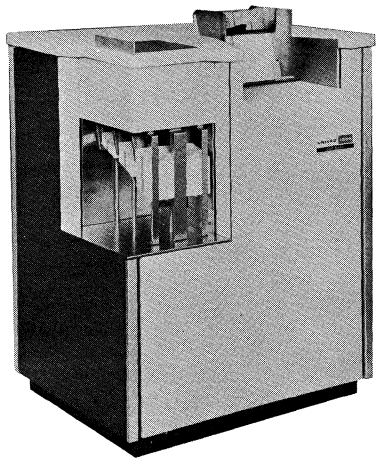


Figure 4-5. Auxiliary Card Reader

3. Read/Punch or Card Punch

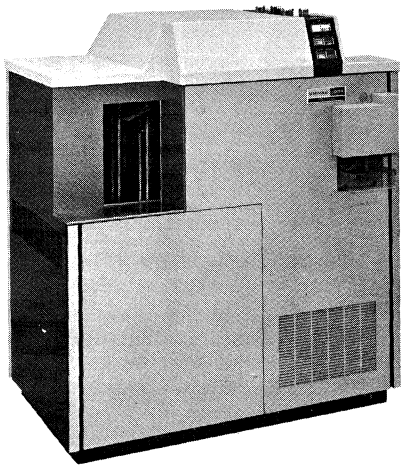


Figure 4-6. Read/Punch

The read/punch unit (Figure 4-6) reads input data from 80 or 90 column cards at a speed of 200 cards per minute, and punches output data into the same cards.

Reading and punching are verified by a weighted hole-count check feature.

The card punch is identical with the read/punch except that no card reading is performed.

CHARACTERISTICS			
CARDS	80 column, 90 column or code image cards (optional) depending on model.	INPUT/OUTPUT AREAS	Assigned areas in core storage, which may be used as working storage when not in use for input/output operations.
PROGRAMMED OPERATIONS	Read input data from, and punch output data into the same cards. Select output stacker.	TYPE OF CHECK	Reading and punching are verified by weighted hole count at the post punch station.
SPEED	200 cards per minute while reading and punching.	INPUT MAGAZINE	1000 card capacity.
SIMULTANEITY	Read/Punch functions do not interlock processor; both reading and punching can overlap printing, processing and reading by the processor.	STACKERS	Two, each with 1000 card capacity.
		MAXIMUM NUMBER PER SYSTEM	One.

D. PAPER TAPE EQUIPMENT

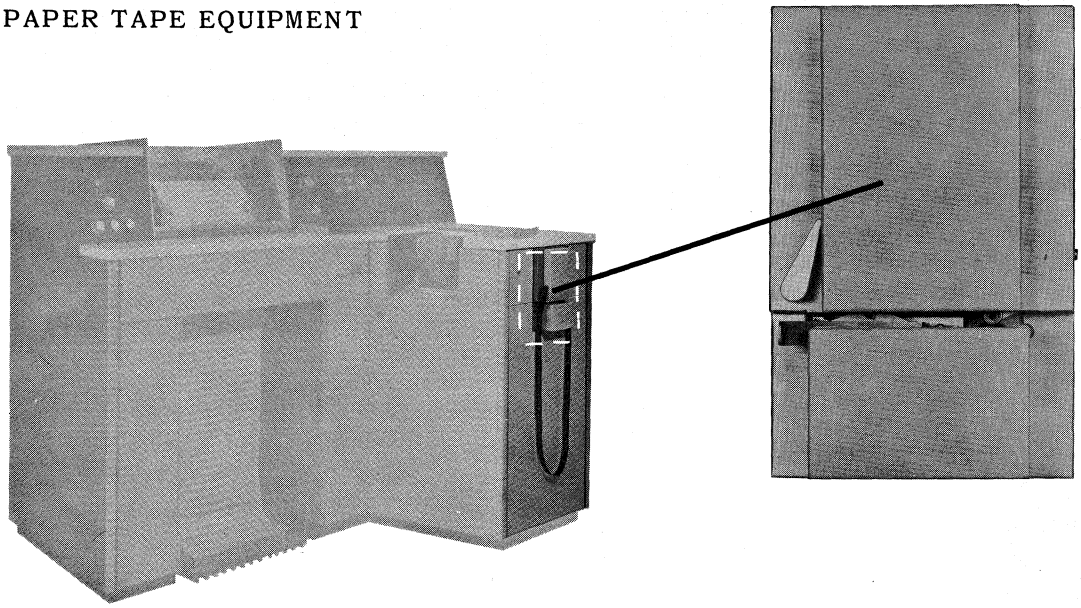


Figure 4-7. Paper Tape Reader – Mounted on Card Reader

1. Paper Tape Reader

The paper tape reader is available as an optional unit (Figure 4-7). It is located adjacent to and in front of the card reader. The unit utilizes a photo-electric read process and read 5, 6, 7 or 8 channel paper or Mylar* tape. It reads blocks of tape into magnetic core storage at the rate of 400 characters per second while checking odd parity.

CHARACTERISTICS

TAPE	11/16", 7/8" or 1" Mylar * or paper chad tape.	READ SYSTEM	Photoelectric.
DATA FORMAT	5,6,7, and 8 level codes. 10 frames to the inch.	INPUT AREA	Assigned area in core storage which may be expanded by programmer.
PROGRAMMED OPERATION	Read data into core storage.	DATA PROTECTION	Parity check.
SPEED	400 frames per second.	MAXIMUM NUMBER PER SYSTEM	One.
SIMULTANEITY	Paper Tape reading, Card punching, and printing may occur simultaneously.		

* *Trademark of the DuPont Company*

2. Paper Tape Punch

The paper tape punch (Figure 4-8) is available as an optional unit. It is located on the right front of the card punch or read/punch. 5, 6, 7 or 8 level tape can be punched at a speed of 110 characters per second.

CHARACTERISTICS			
TAPE	11/16" or 1" paper or Mylar* tape.	SIMULTANEITY	Paper Tape punching overlaps card reading, printing and processing.
DATA FORMAT	5, 6, 7 and 8 level codes. 10 frames to the inch.	PUNCH SYSTEM	Die punch, produces chad tape.
PROGRAMMED OPERATIONS	Punches blocks of data into tape.	OUTPUT AREA	Assigned area in core storage. Area may be used as working storage when not in use for output.
SPEED	110 characters per second.	MAXIMUM NUMBER PER SYSTEM	One.

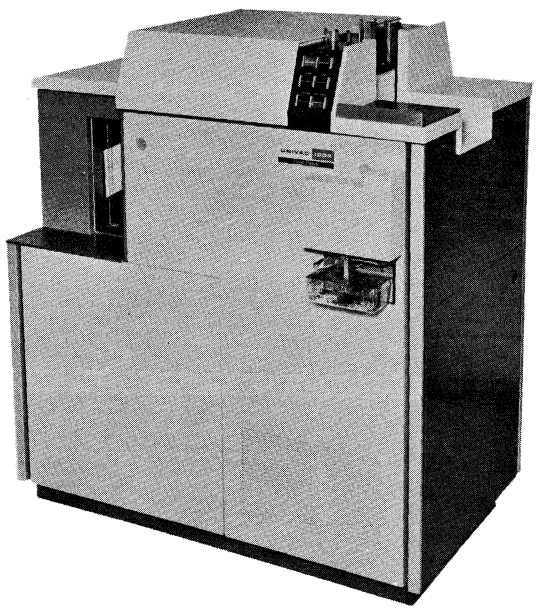


Figure 4-8. Paper Tape Punch

E. COMMUNICATIONS

The Data Line Terminal available with the UNIVAC 1005 System gives the user complete freedom in selection of transmission codes and formats. Remote terminals can be:

- Other UNIVAC 1005 Systems
- Large scale systems such as the UNIVAC 490 Series or 1107/1108 systems.

Communications are via leased or exchange facilities. Interface with telephone systems is via Bell Data-Phone data sets.

When programmed externally, the Univac 1005 System can provide these additional capabilities:

- Transmission rates up to 40,800 bits per second, using Telpak, Type C* facility.
- Communication with Digitronics Dial-o-verter** Terminals.

**Trademark of American Telephone and Telegraph Company.*

***Trademark of Digitronics Corporation.*

5. PROGRAMMING

The UNIVAC 1005 System is a stored program processor. Program instructions are delivered to the machine as coding punched into cards. The instructions on the cards are read into core storage, and the processor examines, interprets, and executes these instructions (Figure 5-1).

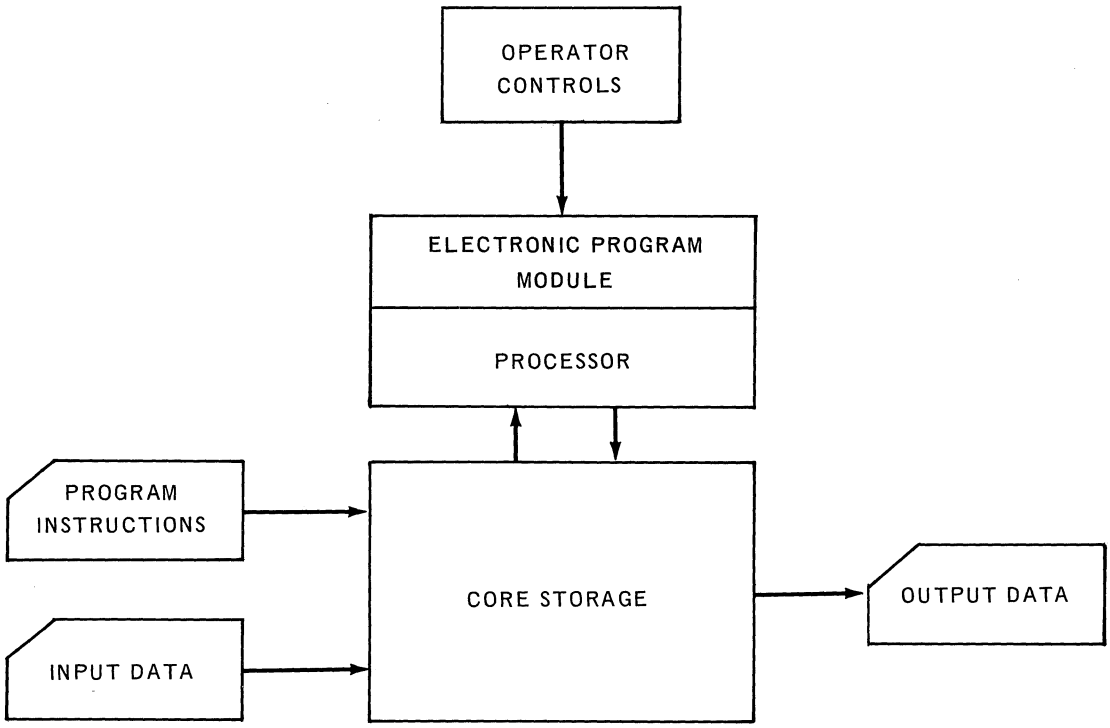


Figure 5-1. Stored Program

In order to be interpreted and executed by the processor, instructions must be coded in machine language form. Instructions in machine language consist of a series of alphanumeric characters which specify the operation to be performed, and the required operands.

A UNIVAC 1005 instruction occupies either five or seven locations in core storage. The first character is the operation code, and specifies the type of operation to be performed. The remaining characters designate the addresses of the operands, or, in the case of I/O operations, the exact nature of the operation being performed.

Since programming in machine language requires constant reference to tables of operation codes, address codes, and absolute addresses, it is highly desirable that these tasks be performed by the processor rather than the programmer. The UNIVAC 1005 System is provided with two programs which perform the above and many other programming functions. These are the UNIVAC 1005 Assembly Program and the UNIVAC 1005 Report Program Generator.

A. UNIVAC 1005 ASSEMBLY PROGRAM

The UNIVAC 1005 Assembly Program, designed to operate with any UNIVAC 1005 configuration, is a powerful programming tool, easy to learn and to use. The assembly program accepts, as input, symbolic coding written in UNIVAC 1005 Assembly Language. The program produces as output a directly loadable object program, a listing of the source program, and a parallel listing of the resulting object code.

Instructions in UNIVAC 1005 Assembly language are written in the form of mnemonics; that is, two-character codes which suggest the name of the operation ordered. These names parallel those used in UNIVAC 1004 programming, making it unnecessary for the programmer to learn a large number of new terms. The basic instruction repertoire includes:

10 Transfer and Compare instructions
8 Arithmetic instructions, including multiply and divide
4 Editing instructions
7 Jump instructions
7 Basic, and over 30 functional Input/Output Instructions
3 Control instructions

The UNIVAC 1005 Assembler permits the use of labels, freeing the programmer from the need for constant reference to absolute addresses. Labels can be incremented, and the programmer can order left or right justification of data entered in the label field.

The assembly directives available with the UNIVAC 1005 Assembler Program allow the user to direct the way in which the actual assembly is performed. These directives are summarized below.

Define Location Counter – permits the user to start at any storage location when assigning instructions. The assembler determines the starting location if not defined by the user.

Define Area – 1) reserves working storage.
2) provides a base on which labels may be defined.

Define Subfield – permits definition and labeling of subfields.

Define Indirect Address – provides a means of developing and referencing indirect addresses.

Define Constant – permits the definition and labeling of masks, constants, and tabular information.

Define Entry Point – permits control of entry to and return from overlaid program segments.

End – permits orderly termination of assembly.

During assembly, the assembler indicates with the program listing any of the following errors which may have occurred:

- Illegal mnemonics
- Duplicate labels
- Undefined labels

B. REPORT PROGRAM GENERATOR

The report program generator for the UNIVAC 1005 System is designed to allow the user to concentrate his efforts on the problem rather than the system processing his problem.

Essentially, the user describes his problem in terms that are familiar to him. For example, he describes the card in terms of the *field on the card*, he *compares* these fields to cause *Major, Intermediate* or *Minor* breaks.

The user describes his *counters* and totals or cross foots them during these control breaks. If he wishes to punch or print, he does not have to redescribe what is required in the punch or print area. He describes the output format once, when he wants to output it, he merely says PUT. The Report Program Generator will form the record for him.

The 1005 Report Program Generator allows the user another facility. It allows him to use the same name for a field when describing input, work area, or output. Only a prefix must be added; for example: I-Rate, W-Rate or O-Rate are all the same except that one is for input, one for the work area, and one for the output. (The hyphen is not employed, it is only used for clarity).

Programs written in Report Program Generator Language are converted to Univac 1005 Assembly Language by a single pass through the 1005 System prior to Assembly. Univac 1005 Assembly Language instructions may be used in Report Program Generator routines.

6. INSTRUCTION REPERTOIRE

MNEMONIC CODE	INDICATOR SENSITIVE	INDIRECT ADDRESSING	LENGTH (CHARS)	OPERATION	DESCRIPTION
TA	NO	YES	7	(OP1)→OP2	Transfer Ascending
TD	NO	YES	7	(OP1)→OP2	Transfer Descending
TC	NO	YES	7	(OP1)→OP2	Transfer Clear
TK	NO	YES	7	KK →OP2	Transfer Constant
TN	NO	YES	7	(OP1)→OP2	Transfer Numeric
TR	NO	YES	7	T (OP1)→OP2	Translate (optional feature)
TX	NO	NO	5	(OP1)→xReg	Transfer to Reg. X
CA	YES	YES	7	(OP1) : (OP2)	Compare Alphanumeric
CM	YES	YES	7	$(\overline{OP1}) : (\overline{OP2})$	Compare Magnitude
CN	YES	YES	7	(OP1) : (OP2)	Compare Numeric
CK	YES	YES	7	KK : (OP2)	Compare Constant
AD	YES	YES	7	(OP1)+(OP2)→OP2	Add Algebraic
AM	YES	YES	7	$(\overline{OP1})+(\overline{OP2})$→OP2	Add Magnitude
DV	YES	NO	7	(OP1)÷(OP2)→OP3	Divide
ML	YES	NO	7	(OP1)×(OP2)→X	Multiply Long
MU	YES	NO	7	(OP1)×(OP2)→X	Multiply
SM	YES	YES	7	$(\overline{OP2})-(\overline{OP1})$→OP2	Subtract Magnitude
SU	YES	YES	7	(OP2)−(OP1)→OP2	Subtract Algebraic
AK	YES	YES	7	K+(OP2)→OP2	Add Constant
CC	YES	NO	5*	KK+(OP2)→OP2	Count
EL	YES	NO	7	$[K_2 \vee OP2;\ K, \wedge OP2]$ →OP2	Edit Logical
ES	YES	NO	7	K∨(OP2)→OP2	Edit Superimpose
EE	YES	NO	7	K∧(OP2)→OP2	Edit Erase
ED	NO	YES	7	(X-Mask) (OP1)→OP2	Edit Mask
SC	YES	NO	5		Set Conditions
JC	YES	NO	5	IF I=OP1, OP2 MSL→CC	Jump Condition
JK	YES	NO	7	IF K=(OP2 LSL), OP2 MSL→CC	Jump Compare
JL	NO	NO	7	IF DD=−1≠0, OP2 MSL→CC IF DD=+ or 0, NI	Jump Loop
JR	NO	NO	7	OP1→OP2 LSL, OP2 MSL→CC	Jump Return
JT	YES	NO	5	IF C<, OP1 →CC IF C=, OP2 →CC IF C>, NI	Jump Test (Compare <, =, >)
J	NO	NO	5	OP1→CC	Jump
JI	YES	YES	7	(OP1)→CC	Jump Indirect
GC	NO	NO	7		General Commands
RT	NO	NO	7		Write Magnetic Tape
WT	NO	NO	7		Read Magnetic Tape
RD	NO	NO	7		Receive DLT
SD	NO	NO	7		Send DLT
RF	NO	NO	7		Receive Interface
SF	NO	NO	7		Send Interface

**7 characters for 90 column models.*

GENERAL I/O INSTRUCTION: AVAILABLE SUBINSTRUCTIONS	
READ CARD	PUNCH TEST
READ CARD (AUXILIARY READER)	PUNCH STACKER SELECT
SELECT READ STACKER	PUNCH PAPER TAPE
READ CODE IMAGE	PUNCH CODE IMAGE
READ PAPER TAPE	SET ERASE MAGNETIC TAPE
PRINT	BACKSPACE MAGNETIC TAPE
SPACE 1 OR 2	REWIND MAGNETIC TAPE
SKIP 1, 2, or 4	SET REQUEST TO TRANSMIT
PUNCH HOLD OR CLEAR	READ/PUNCH UNIT

JUMP CONDITION INDICATORS
FORM OVERFLOW
ARITHMETIC OVERFLOW
SENSE INDICATORS 1 AND 2
ALTERNATE HOLDS 1 AND 2
INTERRUPT
UNIT ALERT
PARITY ERROR
POSITIVE RESULT
ZERO RESULT
NEGATIVE RESULT
END OF TAPE
INVALID CODE CHECK

SET INDICATORS
ODD PARITY
EVEN PARITY
SENSE INDICATORS 1 AND 2
SENSE INDICATORS 1 AND 2 (RESET)
SERVO 1, 2
INDICATOR 1 AND HALT
INDICATOR 2 AND HALT

CHARACTER SET

PRINTABLE CHAR.	ZONE BITS XY	NUMERIC BITS 8421	CARD CODE	PRINTABLE CHAR.	ZONE BITS XY	NUMERIC BITS 8421	CARD CODE	PRINTABLE CHAR.	ZONE BITS XY	NUMERIC BITS 8421	CARD CODE	PRINTABLE CHAR.	ZONE BITS XY	NUMERIC BITS 8421	CARD CODE
Space	00	0000	–	&	01	0000	Y	'	10	0000	7–8	≠	11	0000	0–2–8
]	00	0001	X–5–8	:	01	0001	5–8	*	10	0001	X–4–8	%	11	0001	0–4–8
–	00	0010	X	.	01	0010	Y–3–8	$	10	0010	X–3–8	,	11	0010	0–3–8
0	00	0011	0	?	01	0011	Y–0	!	10	0011	X–0	+	11	0011	2–8
1	00	0100	1	A	01	0100	Y–1	J	10	0100	X–1	/	11	0100	0–1
2	00	0101	2	B	01	0101	Y–2	K	10	0101	X–2	S	11	0101	0–2
3	00	0110	3	C	01	0110	Y–3	L	10	0110	X–3	T	11	0110	0–3
4	00	0111	4	D	01	0111	Y–4	M	10	0111	X–4	U	11	0111	0–4
5	00	1000	5	E	01	1000	Y–5	N	10	1000	X–5	V	11	1000	0–5
6	00	1001	6	F	01	1001	Y–6	O	10	1001	X–6	W	11	1001	0–6
7	00	1010	7	G	01	1010	Y–7	P	10	1010	X–7	X	11	1010	0–7
8	00	1011	8	H	01	1011	Y–8	Q	10	1011	X–8	Y	11	1011	0–8
9	00	1100	9	I	01	1100	Y–9	R	10	1100	X–9	Z	11	1100	0–9
\	00	1101	0–6–8	#	01	1101	3–8	(	10	1101	0–5–8	¤	11	1101	Y–4–8
;	00	1110	X–6–8	<	01	1110	Y–6–8	@	10	1110	4–8	>	11	1110	6–8
[	00	1111	Y–5–8	=	01	1111	Y–7–8	Δ	10	1111	X–7–8	)	11	1111	0–7–8

UNIVAC 1005 CHARACTER CODES

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UNIVAC

DIVISION OF SPERRY RAND CORPORATION

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