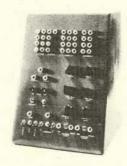




The circle computer fills the need for a low cost computer which is sufficiently flexible to solve most of the problems encountered in engineering and research organizations. Ease of maintenance and simplicity of operation eliminate the need for a specially trained staff to operate and service the computer.

## **EQUIPMENT**

The main unit is 3 x 4 x 6 feet and contains all computing components. It operates from a 60 cycle 110 volt single phase source, contains 700 vacuum tubes and consumes 3½ KW. The standard model has provision for FLEXOWRITER Input-Output. Input may be either typed in or read in from punched paper tape. Output operates either typewriter or tape punch.



CONTROLS



INPUT



OUTPUT

## LOGICAL CHARACTERISTICS OF THE CIRCLE COMPUTER

Word Structure Words are 40 binary digits plus two sign digits. This is equivalent in accuracy to a 12 decimal digit number with

sign. Two instructions may be stored in the space occupied by one word.

Memory Magnetic drum memory. Drum rotates at 3540 rpm. Standard model has 1024 word memory.

Arithmetic Binary; fixed binary point such that all numbers are one or

less in magnitude.

Instructions Single address instruction code; 27 instructions.

Four instructions for addition and subtraction.

Two instructions for multiplication (with and without round-

One instruction for division.

Nine instructions to transfer words' from place to place, including one which simultaneously converts from decimal to binary.

Three instructions to transfer the control; unconditional, conditional on sign, and conditional on overflow.

Two instructions for shifting, left and right an arbitrary number of binary places up to 64.

One instruction to read tape.

Two instructions to type and punch tape, one with conversion to decimal. Computer has complete control of typewriter, including tabulation, carriage return, etc. Three instructions leading to efficient use and assembly of subroutines and main routines.

Average Operating Speed

17 milliseconds for each of three instructions, 25 milliseconds for each of 14 others, 45 milliseconds each for another four (multiplication, division, and transfer with decimal to binary conversion) and 100 milliseconds per digit in reading tape or in printing.

Communication

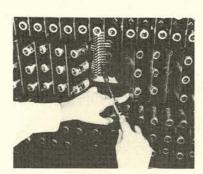
Display of instruction and its location on operator control panel. Continuous printing of all steps in a calculation is obtainable at operator's discretion (for code checking). Operator can type instructions or data into computer at will.

Optional Features

Twenty binary digit word operation. Special orders for unusual problems. Checking. 2048 or 4096 word memory.



**MEMORY STORAGE UNIT** A MAGNETIC DRUM OPERATING AT 59 RPS IS EMPLOYED FOR STORAGE OF NUMBERS AND INSTRUCTIONS AND FOR THE OPERATING REGISTERS.



**UNIT CHASSIS** NEARLY ALL OF THE ELECTRONICS CONSISTS OF STANDARD UNIT CHASSIS WHICH ARE ARRANGED FOR CONVENIENT CHECKING, AND RE-PLACEMENT WITH SCREW-DRIVER.



## SPECIAL SERVICES

An ever growing library of subroutines for the Circle Computer is maintained by The Circle Computer Division of NDA. These subroutines are prepared as punched tape ready to go on the tape reader and are accompanied by description of their use and logic. A coding service is also maintained, to obtain a maximum of

## CUSTOMER CONVENIENCE

Some Circle Computer owners will do all their own coding. Many will make extensive use of the subroutine library. Others will do almost no coding themselves, but will make extensive use of the Circle Computer coding service. In whichever group or groups a user finds himself, the Circle Computer offers a maximum of reliability, convenience, and flexibility.

The concept and logical design was reached by scientists (electronic and nuclear) for their own use in scientific and engineering problems.

Final design, manufacture and distribution is provided by

Hogan Laboratories, Inc., 155 Perry Street, New York 14, N. Y.

a firm with extensive experience in the manufacture of reliable multi-tube electronic apparatus.

Further Information available from

The Circle Computer Division

Nuclear Development Associates, Inc., 80 Grand Street, White Plains, N. Y.

or from the manufacturer.