The process of locating errors in a program and correcting them is called "debugging".

The facilities in the computer that are used in "debugging" are:
The Register, CHANNEL and SECTOR selectors, in conjunction with the READOUT buttons, the OPERATION switch, and the PRESET STOP switch.

The 8-position rotary switch permits selection of the C, A, R or X register, or a word from main memory (M) or the L or V loop for visual checking on the display register. Depressing one of the READOUT buttons causes the display of the contents of the word or register selected in the desired format (i.e., COMMAND or OCTAL).

The OPERATION switch has two positions. When it is at CONTINUOUS, the computer executes the entire program sequentially. When the switch is at SINGLE COMMAND, only one instruction is executed in sequence each time the START button is depressed. Thus, the program can be checked, step by step.

The setting of the PRESET STOP switch permits the operator to stop the computer at a pre-determined half-word location, thereby providing a manual check-out of a program in sections. When this switch is set to 1st, the computer stops after executing the command located in the left half portion of the word whose address has been set on the CHANNEL and SECTOR selectors. When set to 2nd, the computer stops after executing the command located in the right half portion of the word whose address has been set on the selectors. The location counter will display one of two things: The HALF word indicator will be advanced by a "1", or, if the command just executed was a transfer command, the new location will appear.

Programs and Subroutines in the RECOMP II Library that provide debugging assistance are listed below.

"Memory Dump" refers to the output of information from the memory of the computer. "Listing" means the type-outs of the commands of a program in the order in which the commands would be executed, without their execution. "Tracing" means the execution of a program with a type-out of each command in the program and the result of its execution.

PROGRAM NO.	TITLE and DESCRIPTION
No. 25	Typewriter Memory Dump: Type parts or all of memory in command format.
No. 26	Punch Memory Dump: Punches parts or all of memory in a phanumeric format.
No. 38	Selective Memory Dump: Punches all available memory locations that are not equal to -00 0000 -00 0000.

PROGRAM NO.   TITLE AND DESCRIPTION

No. 56.A   Memory Dump: Punches contents of
                                               any selected portions of memory in
                                               alphanumeric format; types con-
                                               tents of any selected portions of
                                               memory in command format.

No. 56.B   Alphanumeric Memory Dump: Punches
                                               area of memory on tape in alphanu-
                                               meric format with location codes
                                               and a display of location being
                                               punched.

No. 56.C   Basic Command Format Dump: Punches
                                               area of memory on tape in command
                                               format for off-line listing or data-
                                               moving purposes.

No. 56.D   Basic Alphanumeric Format Dump:
                                               Punches area of memory on tape in
                                               alphanumeric format for data-mov-
                                               ing purposes.

No. 56.E   Memory Area Search: Searches all
                                               information between specified mem-
                                               ory locations for any instructions
                                               referring to a specified area of
                                               memory and lists the address as
                                               well as the contents of each loca-
                                               tion found.

No. 56.F   Basic Data Search: Searches areas
                                               of memory for a given word, part of
                                               a word, address, or instruction.

No. 56.G   Program Printer: Types a stored
                                               program in a form resembling cod-
                                               ing sheet format.

No. 56.N   RECOMP II Trace: Traces and types
                                               out information about all instruc-
                                               tions within selected limits.
                                               Floating point data is printed in
                                               decimal form.

No. An-069   Binary Search Subroutine, Fixed Point:
                                               Searches a table for a number equal
                                               to an argument in specified bit
                                               positions and leaves its address in
                                               the accumulator at binary 38.

In addition to these programs, the users have contributed many routines that assist the programmer in debugging. They are as follows:

PROGRAM NO.	FUNCTION OF ROUTINE
1001	Memory Dump (command or alpha-numeric format)
1002	CODE sheet type-out
1042	Memory Search for Occupied Loca-tions
1045	Memory Zero and Alpha Dump
1051	Relocatable Bit Dump
1062	Alpha Dump Routine, Relocat-able
1070	Instruction Format Tape Punch with Location (command format)
1077	Command Type-out (with its octal address)
1080	Memory Search
1083	Memory Print (command or float-ing point format)

After the errors in a program are discovered by use of the facilities described above, the correct information may be entered in the locations concerned by means of the typewriter or the control console keyboard.