COMPUTER CONTROL PANEL

The LGP-21 computer is operated through switches which are located on the control panel. These switches are clearly identified by function or related action. Figure A. 1 illustrates the control switches.
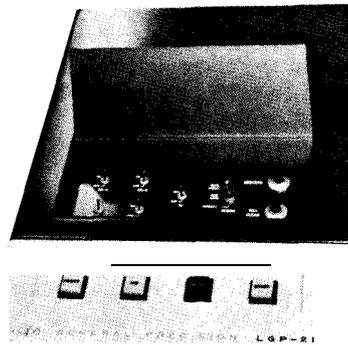
FIGURE A.1 LGP-21 Control Panel

MODE

This is a three-position toggle switch.

NORMAL – When the MODE switch is set to this position, the computer executes instructions at high speed. When the START switch is depressed, the execution of instructions will begin with the instruction whose address is in the Counter.

ONE OPERATION – If the computer is operating in Normal mode and the MODE switch is moved to ONE OPERATION, the computer will stop after the next Phase 4, the execute phase. If the computer is stopped in One Operation mode, depressing the START switch will start the computer cycling through the instruction whose address is in the Counter Register, and computation will stop after the execute phase for that instruction. The EXECUTE switch is operative only in One Operation mode. Changing from Manual Input to One Operation mode will deselect the tape typewriter.

MANUAL INPUT – This position sets the Accumulator to receive input. It also selects the typewriter for 4-bit input, but does not deselect other devices. If other devices are selected, the I/O switch should be depressed to deselect them or information may not enter correctly. When the computer is in Manual Input mode, all typed characters, except nonentering characters, enter the Accumulator. No instruction can be executed in Manual Input mode, since the START switch is inoperative.

FILL CLEAR

FILL CLEAR is a momentary switch. In Manual Input mode it transfers the contents of the Accumulator to the Instruction Register and resets the Counter Register to zero; in One Operation mode it only sets the Counter Register to zero. This switch is inoperative in Normal mode.

EXECUTE

This momentary switch causes the instruction in the Instruction Register to be executed. It is operative only in One Operation mode.

TRANSFERCONTROL

The TC switch can be set ON or OFF. This switch is used in conjunction with the negative T (Conditional Transfer) command. A negative T instruction will cause the computer to get the next instruction from the location designated by the operand address if the TC switch is ON, or if the contents of the Accumulator is negative. If the contents of the Accumulator is positive and the TC switch is OFF, the computer will continue to the next instruction in sequence.

BRANCH SWITCHES

The four branch switches are labeled BS-32, BS-16, BS-8, and BS-4. Each is a two-position switch which can be set ON or OFF. These switches are used in conjunction with the Z (Sense and Transfer) command. A Z instruction whose track-address corresponds to one or more of the branch switches will cause the computer to skip the next instruction if any designated switches are OFF, or to execute the next instruction if all designated switches are ON.

POWER

This switch turns power ON or OFF. Power for all units in the system is in series with this switch. Any units previously set ON will have their power turned ON as the switch is depressed. About thirty seconds after power is turned ON, the POWER switch lights to indicate the machine has attained full speed.

I/O

I/O is a momentary switchwhich clears the Accumulator and deselects all input/output devices. If the computer is in Manual Input mode, depressing I/O will not deselect the typewriter. The switch is lighted and operative during input and output and when the computer is in Manual Input mode.

STOP

This indicator lamp lights immediately when the computer is turned ON and is lit whenever the computer is not executing instructions.

START

START is a momentary switch which causes the computer to execute the instruction specified by the Counter Register. In Normal mode this will begin the full-speed execution of instructions. In One Operation mode only one instruction will be executed. The switch is not operative in Manual Input mode. The light beneath the switch is ON whenever the computer is operating.

In addition to the control panel switches, there are two toggle switches on the back of the computer:

INTERLOCK

The LGP-21 has a circuit breaker to interrupt operation if the air-flow from the fan becomes blocked. This interruption stops computer operation to pre-

vent overheating. Following such an operation, the condition that caused it should be corrected; then the circuit may be reset by moving the INTERLOCK switch from the up position down and up again. It should be noted that, depending upon the operation in effect when the interruption occurred, information stored in memory may have been destroyed and may have to be re-entered.

RECORD ENABLE

This switch may be set ON or OFF. When it is ON, reading from and recording in all sectors of all tracks may occur. When it is OFF, 1024 words—specifically Tracks 00 through 15-are protected. That is, information may be transferred from any word within this area to the Instruction Register (to be executed as an instruction) or to the Accumulator (to be acted upon), but no information can be recorded in any word in this area. This feature allows the operator to lock a program in memory so that it cannot be destroyed inadvertently.