OPERATING INSTRUCTIONS FOR PHOTOELECTRIC PAPER TAPE REPERFORATOR

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I. Photoelectric Reader

The principal parts of the photoelectric reader from the operational standpoint are the brake, reading position (the six holes) and the clutch. These are listed in order, from right to left, along the tape race in the direction of tape motion. The purpose of the brake is to stop the tape as soon as possible after the release of the clutch. The read holes are for sensing of all bits of a character in parallel. The clutch, when engaged, causes the motion of the tape.

All tapes used on any of the photoelectric readers should have at least a 4-inch leader at each end. This leader should be a series of non-significant characters, usually the (5th and 8th hole) double delay. This leader serves to span the gap between the reader holes and the clutch.

To place a tape on a reader:

1) make sure the clutch is not engaged;

2) depress the small latch on the brake and raise the brake to a vertical position (it should remain);

3) place the tape in the tape race ("1" hole edge to the front) so as to read from right to left. Be sure the leader is positioned between the two rollers of the clutch;

4) latch the brake firmly in place.

II. Reperforator (General)

The purpose of the high-speed reperforator is to make new tapes. These can be just duplications, new tapes incorporating corrections, or one large tape containing many small ones.

The device is operated through the use of two photoelectric readers, one teletype high-speed punch and the control panel (Figure 1). The readers and control panel are conveniently located for operation. The teletype
Figure 1
HIGH-SPEED
REPERFORATOR
high-speed punch is recessed in the left-hand side and can be pulled out for inspection. The photoelectric readers are the same as those used on Illiac.

NOTE: Before attempting to use the reperforator, pull out the punch, raise the top lid of the punch box, and make sure that there is enough tape for the reperforation desired. (If there is not, notify the teletype operator.)

III. Turn On

The red light on the control panel should be lighted at all times. (If it is not, notify the teletype operator.) To turn the unit on, switch S6 to on and push the red pushbutton (Figure 1); at this time the green light should be lighted. Before inserting tapes into the readers, be sure that run switch S4 is in the stop position, black switch S2 is in the obey position and set button S5 has been depressed.

IV. Description of Controls

There are two telephone switches (S4, S2); two rotary switches (S1, S3), one toggle switch (S6) and two pushbuttons. There are also two sets of neons; one containing five lights to indicate the last character read; the other, a single light to indicate when reading and punching (if called for) have taken place. The positions and names of the lights and switches are shown in Figure 1.

A. Selection Switch

This rotary switch has four positions; two in which readers operate along with the punch; two in which the punch works alone. The front reader position allows reading on the front reader only. The back reader position allows reading on the back reader only. The 2nd and 5th hole CR and LF position allows the punch to punch carriage returns and line feeds. The 5th and 8th hole delay position allows the punch to punch double delays. All of the operations on this switch are controlled through S4 and S2.
B. **Mode Switch**

The positions on this switch are under control of S4 and S2. There are four positions: two groups of two each. One group is for **bypassing**; the other group is for **punching**. The most used group is the **punching** group even though it is desirable at times to bypass sections of tape automatically rather than by manually moving the tape in the reader. The mode switch has reference only to the reading positions of the selection switch with the one exception, that when it is desired to punch one or more **CR** and **LF** or **5th and 8th holes**, the mode switch has to be in the **punching** group.

The **stop punching** on **CR and LF** position allows the operator to choose punching continuously or punching a single character with proper use of S4 and S2.

The bypassing positions of the mode switch are correspondingly the same as just described, except no punching will take place, only reading.

C. **Run Switch**

The run switch does two things when moved to **run** position. It enables the black switch in all operations; it enables the readers in the two mode positions having to do with **CR** and **LF**. The tape will move until the first **CR** and **LF** is read by a reader; at this point the control is turned over to the black switch. In the other mode positions the readers are enabled only by the black switch.

The **stop** position of the run switch stops all operations. The run switch should be in the **stop** position before changing either the mode switch or the selection switch.

D. **Black Switch**

The **obey** position causes the machine to do as instructed by the selection and mode switches after the switch has been moved to the **start** position and returned.
The start position (which, when released, returns to the obey position) allows one operation as described by the selection and mode switches.

The ignore position is an automatic position. No stopping will take place until the switch is moved back to obey.

E. Set Button

The set button should be depressed each time the run switch is moved from run to stop.

F. Neons

The last character group of neons shows the last sexadecimal character punched. In most cases this will be the last character read from tape.

The have read neon, when lighted, shows that the character directly over the holes in the reader has been read.

V. Some Examples of Operation

Three examples of possible operation for the reperforator are given here to aid in the understanding of the switch operation. These examples are not meant to cover all possibilities for the use of the switches.

A. Duplication

This will describe the necessary operations for making an identical copy of a single tape. Pull the punch from the side of the reperforator, open the top, and be sure there is enough tape for the reperforation desired. Follow the turn on procedure listed under part II. Set the selection switch to 5th and 8th hole delay (unless CR and LF's are desired), and set the mode switch to single character punching. A leader will be formed by the punch when the run switch is set to run and the black switch is set to ignore. At the end of two or three seconds set the black switch to obey and the run switch to stop. Press set button.
Place the tape to be duplicated in the front reader as described under reader operation. Set the selection switch to front reader position and the mode switch to single character punching position. Set the run switch to run and the black switch to ignore. The tape will be read and duplicated automatically. Stop the operation soon after the last significant character on the tape, by moving the black switch to obey and the run switch to stop. Set the selection switch to 5th and 8th holes, and set the run switch to run and the black switch to ignore. This will give a tail on the tape of non-significant characters for proper use of tape readers. After two or three seconds set the black switch to obey and the run switch to run and throw toggle S6 to off. The new copy of your tape will be by the high-speed punch. Tear it off by pulling directly up on the tape, not by pulling out which may damage the sprocket holes on the tape.

B. Reperforation with Corrections

This covers the case in which more than one tape is being used in the reperforation process. Follow the instructions of paragraph one, part V, A. Place the larger tape in the front reader and the correction tape in the back reader, as described under reader operation. The tape should have been marked where correction is to be inserted. Set the selection switch to front reader and the mode switch to stop punching on CR and LF. Set the run switch to run and the black switch to ignore. Watch the tape, and as the marked corrections approach the reader, move the black switch to obey. Approach can now be carried out more carefully by moving the black switch to start and allowing it to return to obey. Each time the tape will move from one CR and LF to the next. If the corrections are being made by whole words, this process will do all that is necessary. If the corrections are being made by only a few characters, it will be
necessary to move the run switch to stop and set the mode switch to single character punching in order to approach the exact point of correction.

When the point of corrections has been reached, move run switch to stop, press set button, set selection switch to back reader, set mode switch to stop punching on CR and LF if the corrections are as groups of words separated by CR and LF, or on single character punching if the corrections are as single characters. Set the run switch to run and move the black switch to start and allow it to return to obey. Each time the black switch is used, a group of characters will be read by the back reader if the mode switch is in the stop punching on CR and LF position; a single character will be read from the back reader if the mode switch is in the single character punching position.

After the correction tape is finished, set the run switch to stop, the selection switch to front reader, and the mode switch to single character bypass if the corrections were single characters, or to stop bypassing on CR and LF if the corrections were groups of characters separated by CR and LF. Set the run switch to run and the black switch to start. By allowing the black switch to return to obey, a single character will be bypassed on the front reader if the mode switch is in single character bypass, or a group of characters will be bypassed if the mode switch is in the stop bypassing on CR and LF. Each time the black switch is used, the front reader will bypass as described by the mode switch.

At the completion of the bypass operation, set the run switch to stop and the mode switch to stop punching on CR and LF. Continued reperforation of the front tape will take place when the run switch is moved to run and the black switch is set to ignore.
For each point of correction it is necessary that the process just described be carried out. When reperforation is finished, the new tape can be torn off the punch after a tail of 5th and 8th hole characters have been punched.

C. Combining Tapes

This section covers the operation in which one large tape is being made from a number of small ones. Follow the instructions of paragraph one, part V, A. Place the first tape in the front reader and the second tape in the back reader, as described under tape reader operation. Set the selection switch to front reader and the mode switch to single character punching. When the run switch is set to run and the black switch is set to ignore, the front tape will be read and a new one formed automatically. Just after the reading of the last significant character on the front tape, the operation should be stopped by setting the black switch to obey and the run switch to stop. Set the selection switch to back reader, the run switch to run and the black switch to ignore. While the back tape is being reperforated, the next tape can be placed in the front reader. The switching back and forth from front to back reader will continue until the operation is complete.

The new tape can be removed from the punch after a tail of 5th and 8th hole characters has been punched. Be careful to always tear the tape from the punch by pulling directly up.

VI. Report of Errors

The reperforator is not an error-free device. When it seems that there is a malfunction in the reperforator and the operator is reasonably sure that proper operational procedures are being followed, notify the teletype operator.