A: Functional Description of the Card Reader

1. Specification

Card Reading: Two rows of 12 photodiodes read and check punched cards column by column.

Gating diodes initiate light and dark detecting capability of read diodes prior to reading each card.

Read check is performed by comparing output from the two rows of reading diodes. Automatic card rejection if comparison error exist.

Rate is 1200 - 80 column cards per minute corresponding to 2510 columns per second at output lines.

Card Feeding: Input Tray capacity is 4000 cards.
Card Picking is asynchronous i.e. no waiting period between card selections. Card speed at read station is 218 ips.

Primary receiving tray capacity is 4000 cards. Secondary receiving tray capacity is 240 cards.

2. Principle of Operation

Only a short description of the principles is given here, for further details refer to Control Data, high speed Card Reader, Reference Manual.
Fig. 1 shows the card travel, and components involved.

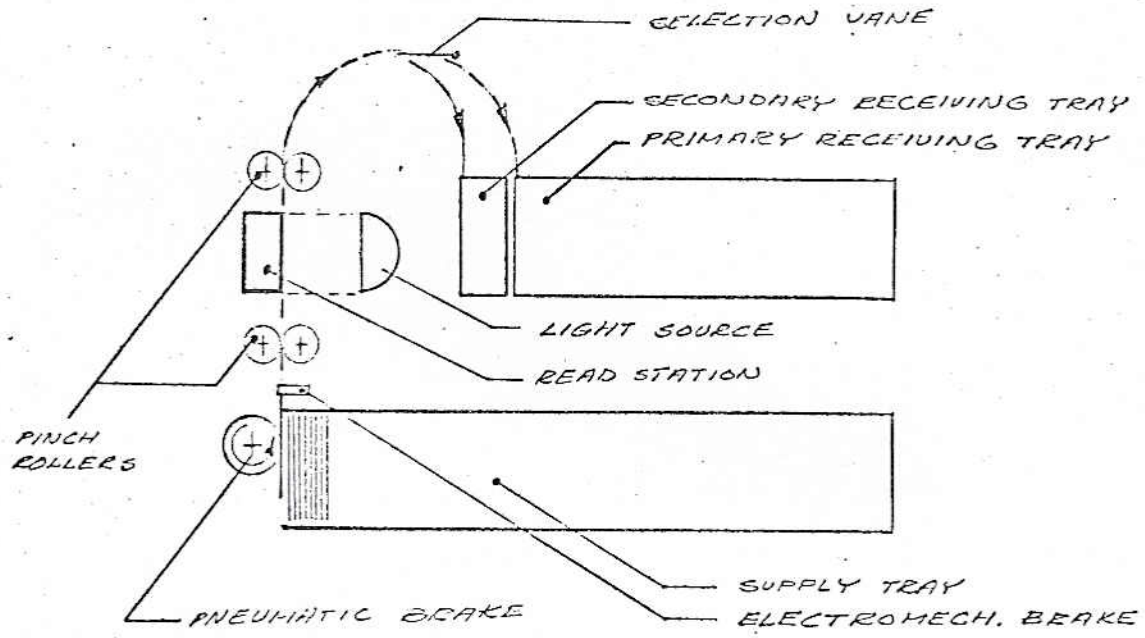


FIG. 1

Punched cards are propelled from the supply tray past the read station to the receiving trays by a pneumatic capstan and a series of pinch rollers. The perforated capstan rotates continually. When vacuum is applied to the inner core of the capstan, one card is pulled against the capstan, and moved through the card transfer channel. Pinch rollers then move the card past the read station to the receiving trays.

An electromechanical brake assembly, when released by a feed command, initiates the card movement.

The dual read station consists of two vertical columns of 12 photodiodes each, which sense information holes in the punched cards. The column is read by the first row of photodiodes, and stored. The same column is then read by the second row of photodiodes and compared with the first reading. If the two read operations do not correspond, the card is routed to a small secondary receiving tray, and a COMPARE ERROR is sent to the adapter.

If no error was detected during the read and compare operations, the card is gated to the primary receiving tray. Photoelectric gating elements are located at each side of the dual read station and sense the presence or absence of a punched card.

These diodes initiate preread inspections to insure proper operation of all read diodes and associated electronics.

B: Users Instructions

The Card Reader is connected to GIER via the RC 2000 Paper tape reader. When the card reader is on-line the tape reader is blocked and reading of paper is inhibited.

The Card Reader is selected from GIER as peripherial device No. 7, i.e. reading without stop on parity error.

When the buffer store in RC 2000 is empty and none of the following conditions exist, a feed command is sent to the card reader, and the next card is read.

Conditions:
- Compare error
- Pre read error
- Fail to feed
- Input tray empty
- Man. or motor power off.

The card is read column by column. Each column is divided into two characters in the buffer store of RC 2000.

The column is divided, according the following scheme:

| GIER POS.: | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|
| 1. Char.: | X | R12 | R11 | R0 | R1 | R2 | R3 |
| 2. Char.: | 0 | R4 | R5 | R6 | R7 | R8 | R9 |

X = 1 for 1. column in card else X = 0

R means row No.

C: Operators Instructions

Application of Power

1. Open the left front cabinet door
2. Push the MAIN POWER circuit breaker to up position
3. Push the remaining circuit breakers to up position
4. Press MAIN POWER on operators panel
5. Close the front cabinet door

Load Card Procedure

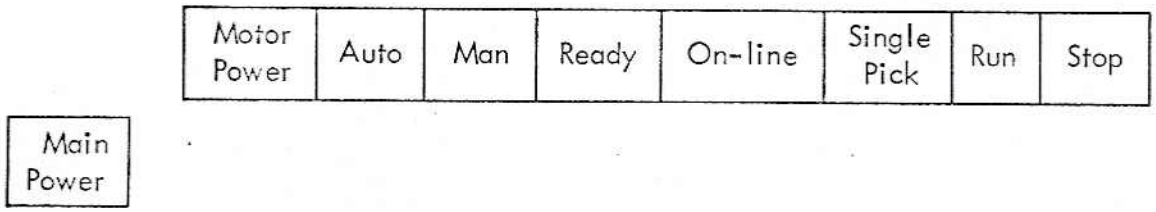


FIG. 2 OPERATORS PANEL

1. Load cards into supply tray placing column one at right as cards face entrance of read station.
2. Place equipment in manual mode of operation, by pressing AUTO/MAN switch (MAN indicator on).
3. STOP indicator should be on, if not, press RUN/STOP switch. Press MOTOR POWER switch, light should turn on.
4. Press READY switch.
5. Press SINGLE PICK switch to initiate transport of single card from supply tray. If any difficulties, notify maintenance.
6. Remove card from output tray and replace in supply tray.
7. Press AUTO/MAN to return unit to AUTO mode.
8. Press ON-LINE switch.

The card reader is now under control from GIER.

D: Summary of Controls and Indicators

| NAME | S/I | FUNCTION |
|---|---|---|
| MAIN POWER | S | Applies power to cabinet fans and d-c power supplies |
| | I | Lighted while power is on |
| MOTOR POWER | S | Applies power to the capstan motor, card transport motor, card tray vibrator units and rotary pump motor |
| | I | Lighted while power is on |
| AUTO-MAN | S | Toggles the mode of equipment operation between automatic and manual |
| | I | When AUTO is lighted, equipment is under external control.<br>When MAN is lighted, equipment is under manual control. |
| ON-LINE | S | Turns the equipment to external control |
| | I | Equipment under external control |
| READY | S | Places card reader in ready-to-operate state |
| | I | Turned on only when all of the following conditions are met:<br>Card supply tray is not empty<br>No error conditions exist throughout the unit<br>Receiving tray is not full<br>Secondary tray is not full<br>Primary power is applied to unit<br>If any of the conditions occur during operation of card reader, indicator will be turned off. Condition must be corrected and switch pressed to reestablish ready state. In auto mode, a clear signal must be received from adapter or Ready switch pressed before operation may be resumed. |
| SINGLE PICK | S | Momentarily releases card brake and permits a single card to be read. One card is read each time switch is pressed. |
| RUN-STOP | S | In manual mode of operation, this switch starts or stops the card transport operation. |
| S = Switch<br>I = Indicator | I | Corresponding half of this switch is lighted when card reader is in run or stop state. In auto mode neither half is lighted. |