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RECOMP II TECHNICAL BULLETIN NO. 26

TITLE:	CARD INPUT AND OUTPUT OPERATIONS FOR RECOMP II
PURPOSE:	This is a general description of card input and output operations which have been added to RECOMP II programming facilities.
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1.   INTRODUCTION

Card input and output operations are now possible with
RECOMP II as connections from IBM Card Punches 24 and 26
have been provided to the computer through the Consolette
described in Technical Bulletin No. 25. The card reading
and punching operations enable programs and data to be
stored in card decks.

2.   MODES

In order to make the IBM 24 and 26 compatible with
RECOMP II, two switches have been added in the back of
these card punch units by Industrial Products engineers.
They are the Punch/Non-Punch switch and the Local/Compute
switch. The modes are defined by the Local/Compute switch
as follows:

2.1   LOCAL MODE

The Local Mode is in operation when the Local/Compute switch
is turned to LOCAL. Reciprocal operations between RECOMP II
and the card punch units are not possible in this mode.
Only the normal functions of the card equipment will be
executed.

2.2   COMPUTE MODE

In the Compute Mode communication is established between
RECOMP II and the card unit. When using the Compute Mode:

(1)   The Local/Compute switch must be set on COMPUTE.
        (The manual punching operation will be inhibited by
        this setting).

(2)   For a punching operation the Punch/Non-Punch switch
        must be set on PUNCH.

        CAUTION: For the punching operation - when using the
                 IBM 24 - it is recommended to punch a
                 maximum of only four (4) rows in any column
                 per card.

                 When using the IBM 26, only standard
                 Hollerith code should be punched.

                 There are no similar restrictions for input.

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(3) Registering of Cards.

- For a punching operation, a card must be registered at the IBM punching station.

- For a reading operation, the card to be read must be registered at the reading station and a second card must be registered at the punching station.

(Instructions for registering cards are described in the Reference Manual for IBM 24 Card Punch and IBM 26 Card Punch.)

(4) The Master Card may be used to skip or duplicate columns in this mode. This operation will be performed if the IBM Program Control Lever is ON and the IBM Auto Skip - Auto Duplicate switch is also in the ON position. (See Reference Manual mentioned in step 3.)

During card punching or reading operations the column indicator located at the base of the program drum indicates to the operator the last column read or the next column to be punched. (The reading of Column 1 is an exceptional operation. The indicator will show 1. Column 1 will be read in but the card will not advance until Column 2 is read in.)

3.   INPUT

When calling for input from the IBM 24 or 26 units to the RECOMP II, the Input Bit Select switch on the Consolette is set on 12. The Input Device Select switch on the Consolette is set on the number (in the Character Mode row) of the jack connecting the IBM unit to the Consolette. *

The command, 71777X, is used, where X specifies the number of columns under the read head to be read into the A Register. After the reading operation the card will remain in the reading station.

* The cable between the IBM unit and the Consolette is connected as follows:

For Input	Input plug, IBM ⟶	Input jack, Consolette
For Output	Output plug, IBM ⟶	Output jack, Consolette

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4.   OUTPUT

When information is to be punched on cards, the Output Bit
Select switch on the Consolette is set on 12. The Output
Device Select switch on the Consolette is set on the number
(in the Character Mode row) of the jack connecting the
IBM unit.

The command, 74777X, must be used, where X is the number of
columns to be punched. After the punching operation the card
will remain in the card bed.
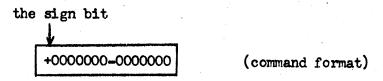
5.   RECIRCULATION OF CONTENTS OF A REGISTER

Transmission of information in or out of the computer is
made through the A Register. When output is made to a card
unit for a punching operation, the contents of the A Register
are shifted left 12 bits at a time through the sign position.

The sign bit will cause a hole to be punched in row 9 of
the column under the punch head, the most significant bit
will be punched in row 8, the following bit will be punched
in row 7, etc.

When information is read into the A Register, it is entered
in the least significant bit position at the right side of
the A Register and is shifted left 12 bits at a time through
the sign position. Information in row 9 is entered first,
information in row 8 follows, etc. The information in row 12
(the top row of the card) will be entered in bit 39 of the
accumulator.

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For example:

Before output if the contents of the A Register are:

the sign bit

↓

| +0000000-0000000 |

(command format)

If the A Register is cleared to 0, and this same
information is read in from the card, the contents
of the A Register will have this binary configuration
in command format:

| -0000000-0020000 |

↑

the bit