

USER'S MANUAL
FOR

RC 2500
PAPER TAPE READER

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1. SPECIFICATIONS AND FUNCTIONAL DESCRIPTION

1.1 Introduction

The RC 2500 is a photoelectric Paper Tape Reader. By means of a semiconductor buffer storing 256 characters the Reader carries out the function of a Stop On A Character Reader without actually stopping the paper tape. Basically the Reader consists of two main parts,

PAPER FEED MECHANISM

BUFFER STORE

1.2 Tape Formats

The Reader handles 5, 7, and 8 track tape as well as the square-hole 6 track Olivetti tape. Switching between the different tape widths is accomplished by means of a turnable knob on the Front Panel.

1.3 Reading Speed

The normal operating paper speed is between 0 and at least 2500 characters per second for 8 track tape and between 0 and at least 2000 characters per second for Olivetti tape. The speed is controlled by the number of unprocessed characters stored in the buffer as seen from fig. 1.

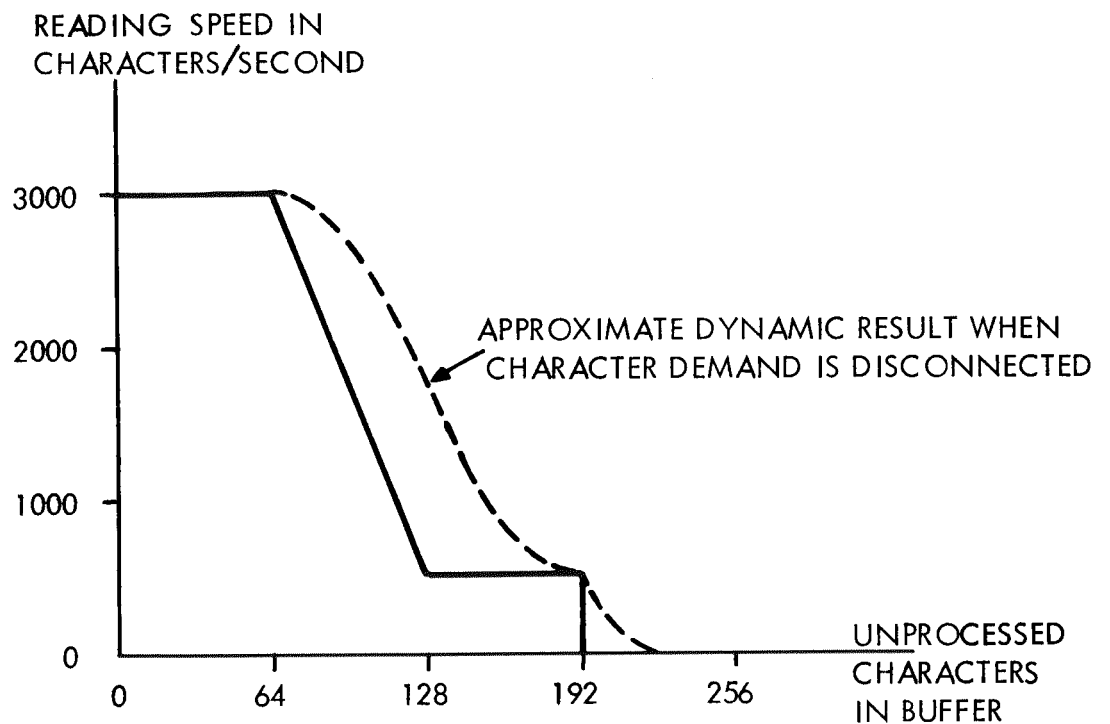


Fig. 1

Absolute maximum paper speed is app. 7 meters per second corresponding to 3000 characters per second for normal paper tape and 2500 characters for Olivetti tape.

2. OPERATOR CONTROLS

All parts and controls necessary to operate the RC 2500 are located on the front of the Reader (except the power switch) and may be divided into four main parts,

Tape Guide with Tape Width Selector

Tape Door

Pressure Lid

Switch Unit

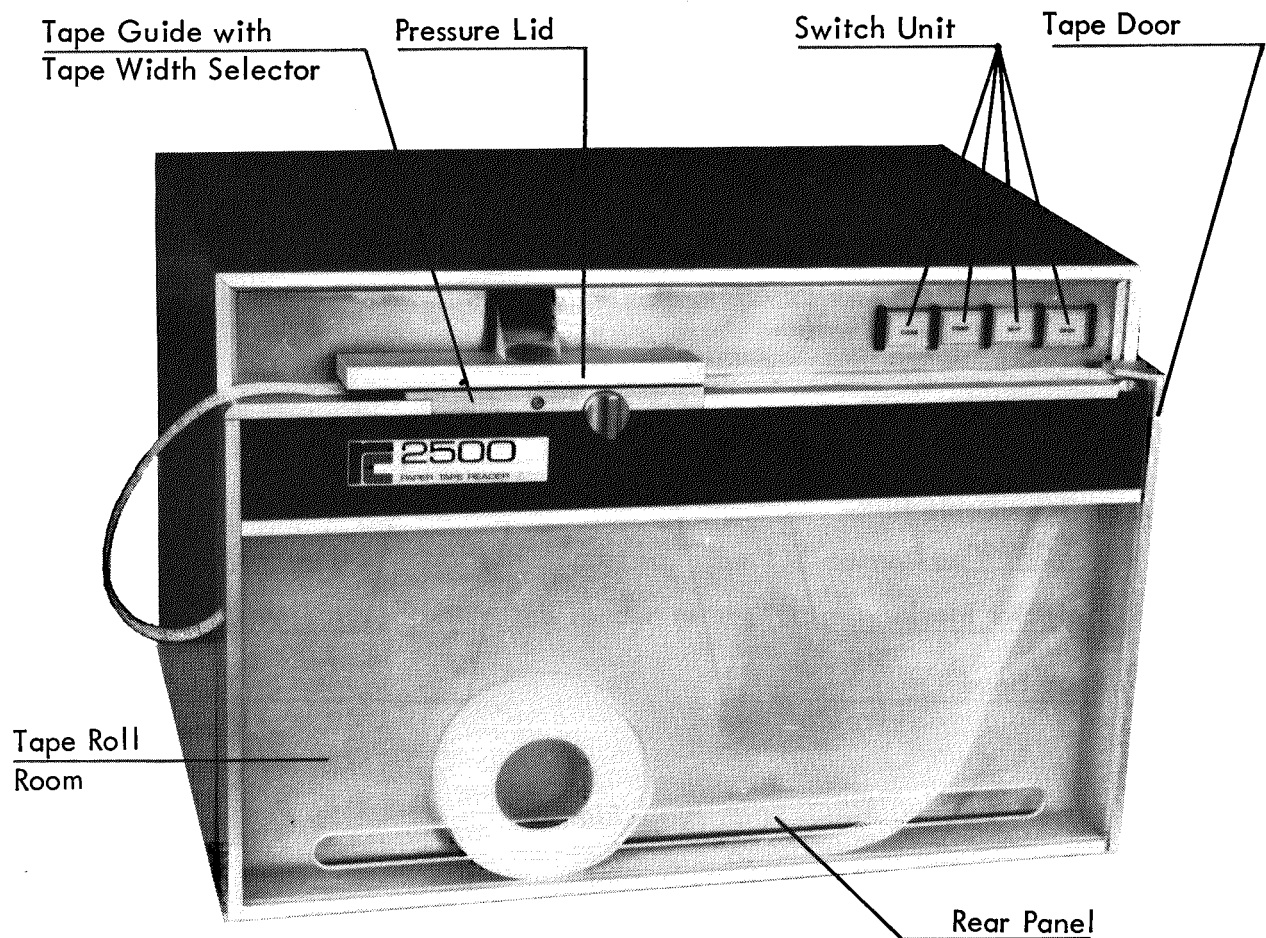


Fig. 2

2.1 Tape Guide with Tape Width Selector (Fig. 3)

The Tape Guide contains the Tape Drive Capstan, the two Tape Width Selector Blocks, and the Read Head with Photosensors. A screw for side alignment of the Read Head is situated on the face of the Tape Guide.

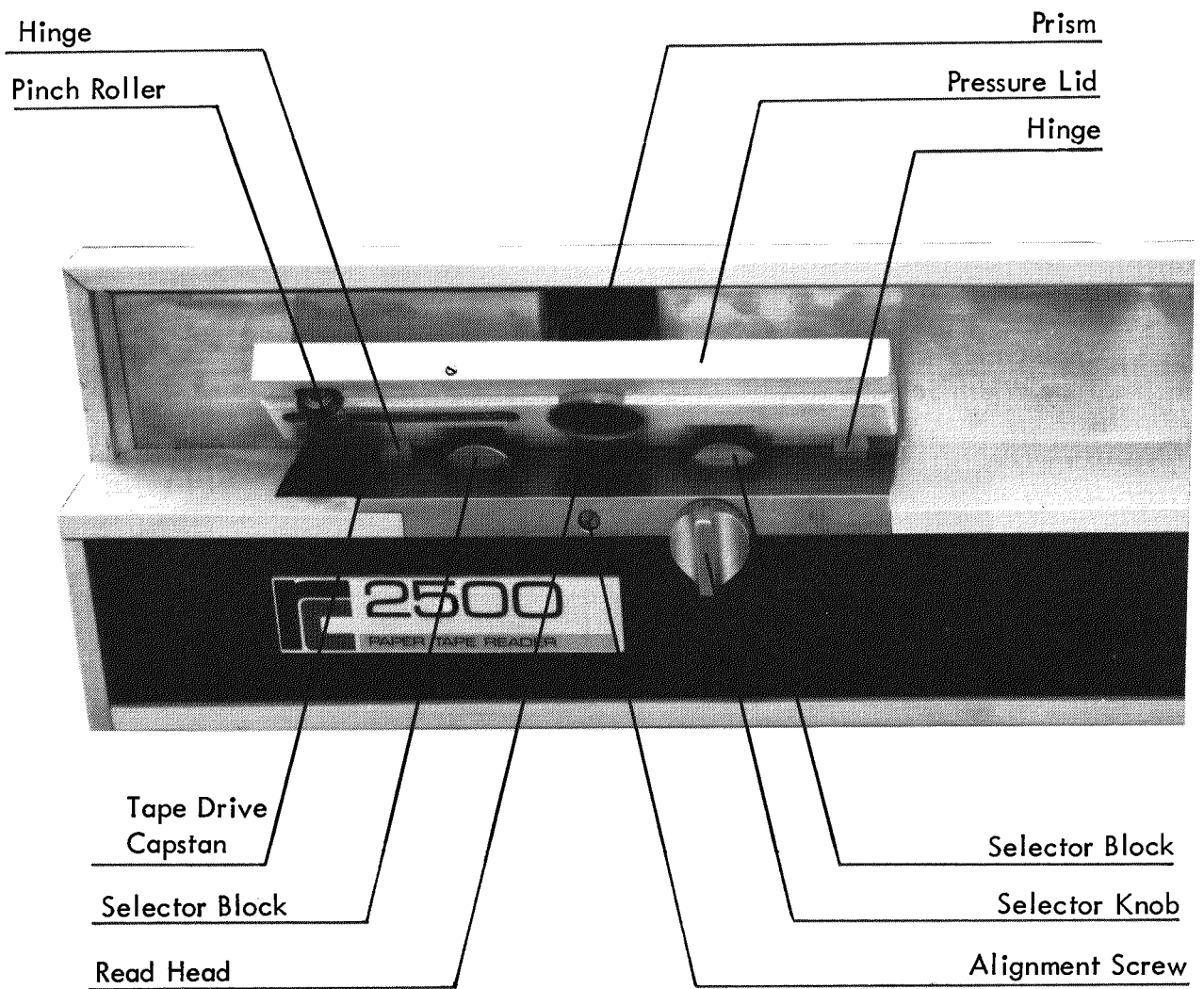


Fig. 3

Turning the Tape Width Selector Knob causes the two selector blocks to rotate. According to the setting of the blocks the width of the Tape Guide will correspond to one of the possible tape formats. The knob can be turned in either direction, snapping successively into the four positions indicated by markings on the knob.

To prevent the tape from wobbling the Rear Panel will automatically be set to a width of the Tape Roll Room suitable for the selected tape.

2.2 Tape Door (Fig. 2)

The Tape Door gives access to the Tape Roll Room, in which the roll of paper to be read will be positioned. Reading cannot take place while the Tape Door is open.

2.3 Pressure Lid (Fig. 3)

The Pressure Lid which is hinged on the Tape Guide holds the tape in position in the Tape Guide. A prism, through which the Photosensors are illuminated, is housed in the Lid. The Tape Lid will open automatically when the paper is exhausted or the Open-button has been depressed. The Lid cannot be closed if there is no paper in the reader or the Door is open.

2.4 Switch Unit

This Switch Unit contains 4 switches the function of which is described below.

2.4.1 CLEAR

The CLEAR-button is used to reset the electronic circuit including the buffer, prior to the initial loading.

2.4.2 CONT.

When depressed the CONTInuous-button enables the continuous reading of an additional tape roll succeeding the initially loaded one.

2.4.3 SKIP

When the SKIP-button is depressed, the paper feed mechanism, i.e. the Capstan Motor, will skip the remaining amount of tape out of the Reader at full motor speed. During this operation no characters are transferred to the buffer-store, but already stored characters are still available.

2.4.4 OPEN

When activated the OPEN-button will open the Pressure Lid and the Tape Door simultaneously.

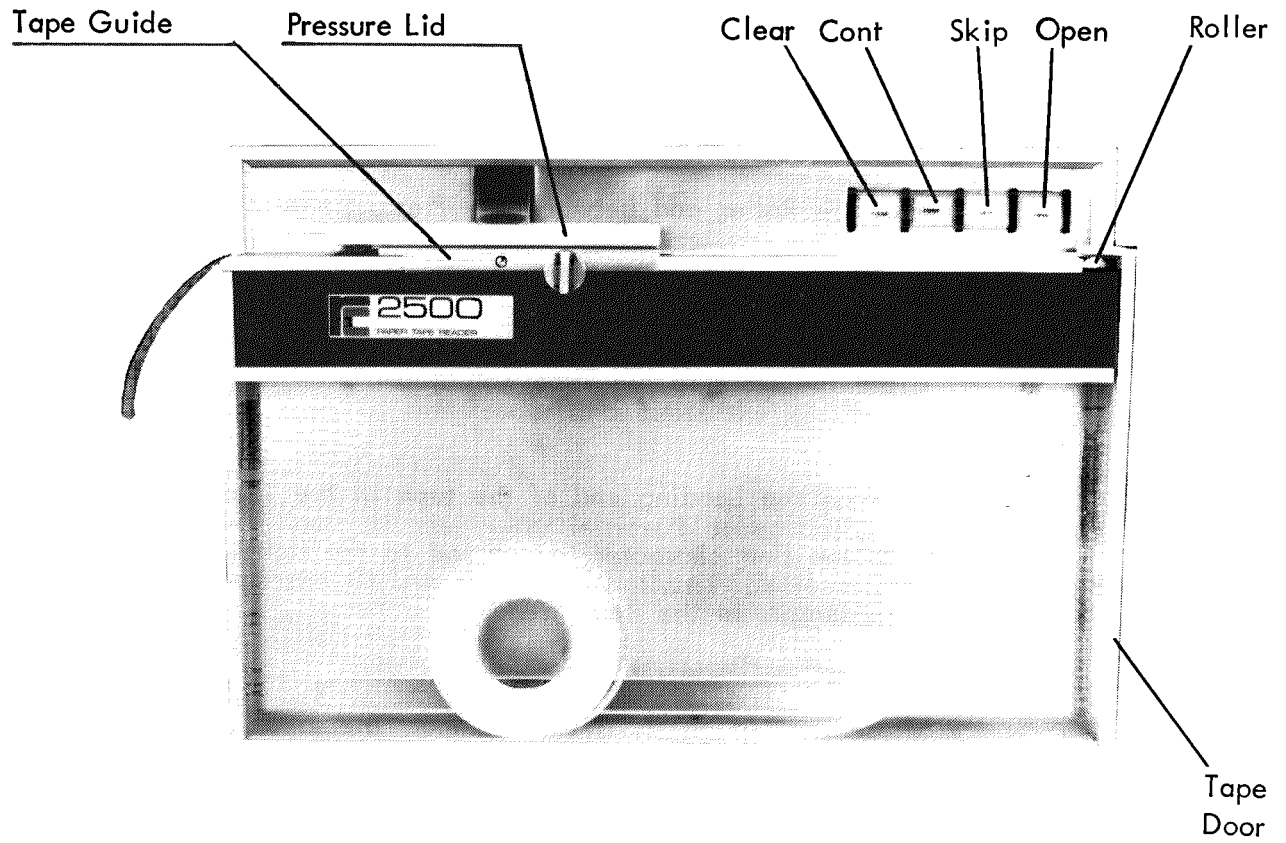


Fig. 4

3. OPERATION (see fig. 4)

3.1 Loading of Tape

1. Push the OPEN-button. This opens the Door to the Tape Roll Room and simultaneously the Pressure Lid.
2. Place a Roll of tape in the Room and draw the free end over the Roller and between the Pressure Lid and the Tape Guide.
3. Close the Door to the Tape Roll Room.
4. Position the Leading end of the tape in the Tape Guide with the first character to be read to the right of the Photosensors in the Read Head.
5. Close the Lid gently over the tape. The tape is now ready for input to the Buffer.

3.2 Input to the Buffer.

3.2.1 Initializing the Buffer

Push the CLEAR-button. This clears the electronic circuit in the Reader including the buffer, after which about 200 characters are read in.

3.2.2 Replenishing the Buffer.

Push CONTInuous-button. This allows characters to be read in from tape to the buffer in continuation of those already read in. This function is used if reading of a new Tape Roll is desired while the buffer is still not emptied.

3.3 End of Tape

"Paper Out" photosensors in the Read Head will sense the absence of paper in the Reader and cause the Lid to open. This is used to sense END OF TAPE.

All input to the buffer is now blocked until a new tape is installed and the CLEAR or CONT-button is depressed.

3.4 Unloading the Tape

The Tape can be removed from the Reader in two ways,

1. Push the OPEN-button and remove the remainder of the Tape from the Reader.
2. Push the SKIP-button. This activates the motor circuits directly and the rest of the Tape will run out of the Reader at full motor speed. At the end of the tape, the "Paper Out" situation is obtained and the Lid released.

4. READ HEAD

4.1 Photosensors

The Read Head is a Standard Head containing the Photosensors for reading the different tapes and for sensing the Paper Out situation.

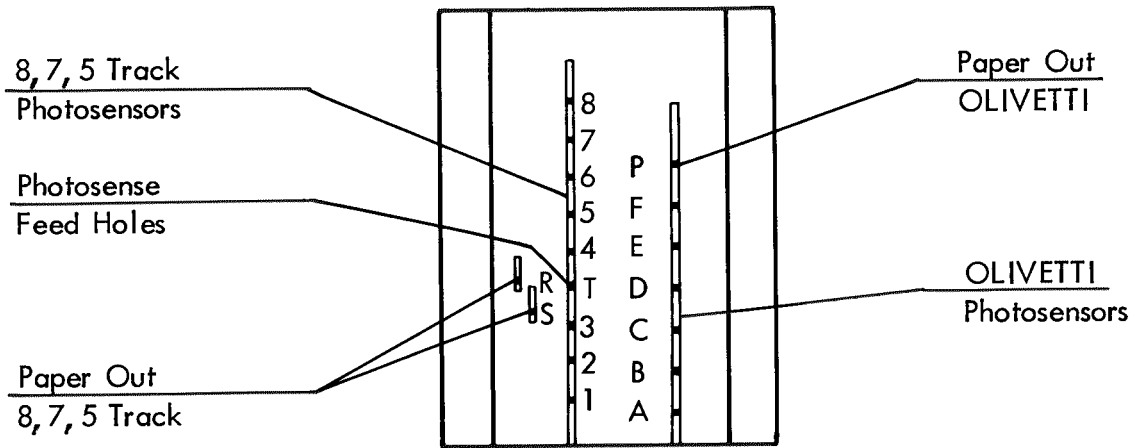


Fig. 5

The Photosensors in the right-hand column are used exclusively for reading Olivetti tape. The Paper Out sensor P is the uppermost one. Track 1 is closest to the operator.

The Photosensors in the left-hand column are used when reading 8, 7, and 5-track tapes.

Phototransistor T is for reading of feed holes.

Reading of feed holes is controlled by the interface.

The two Photosensors R, S at the extreme left are used to sense Paper Out when reading 8, 7, and 5-track tape, and are located on each side of the Phototransistor T.

The table below shows the correspondence between Data Lines and activated Photosensors.

DATA LINES	8 Track	7 Track	5 Track	OLIVETTI
1	Photosensor 1	Photosensor 1	Photosensor 1	Photosensor A
2	" 2	" 2	" 2	" B
3	" 3	" 3	" 3	" C
4	" 4	" 4	" 4	" D
5	" 5	" 5	" 5	" E
6	" 6	" 6		" F
7	" 7	" 7		
8	" 8			

Table 1

4.2 Read Head alignment

The side alignment of the Read Head may be checked by an all-holes correctly punched tape (see section 7.6). The photo-transistors must be seen in the center of the punched holes. Adjustments should normally be performed by a trained service engineer.

5. TAPE SPECIFICATIONS.

5.1 Types

The Reader handles all kinds of non-transparent Paper Tape corresponding to standards as, DIN, ECMA, ISO, BS, USAS, Olivetti. Further information about Tape specifications is found in section 7.6.

5.2 Spliced Tapes

Reading of spliced tape is possible but care should be taken that the thickness of the tape does not exceed 3 times the nominal tape-thickness equal to max. 0.3 mm.

Further information about splicing of tape is found in section 7.4.

6. MAINTENANCE

The maintenance described here is to be performed by the operator. All other maintenance must be performed by a specially trained service engineer. (See Technical Manual).

Every Day

To prevent erroneous readings, clean the tape guide area with a soft brush at least once a day. Should the tape create much dust, clean more often. Clean the Paper Chamber with a soft cloth wet in alcohol.

Every Month

Clean the air filter in one of the following ways,

1. Wash the filter in lukewarm water (up to 40° C), adding detergent if desired. Gently spray the smooth side of the filter. The filter will not tolerate a hard jet of water. Hang the filter up to drip dry. Do not wring it.
2. Blow compressed air through the filter from the smooth side.
3. Vacuum-clean the filter.

Reinsert the filter so that air enters from the coarse side and leaves from the smooth side.

Every Six Months

Replace the air filter.

7. STANDARD ACCESSORIES

For the RC 2500 the following standard accessories are available,

MINIPUNCH 6

MINIPUNCH 8

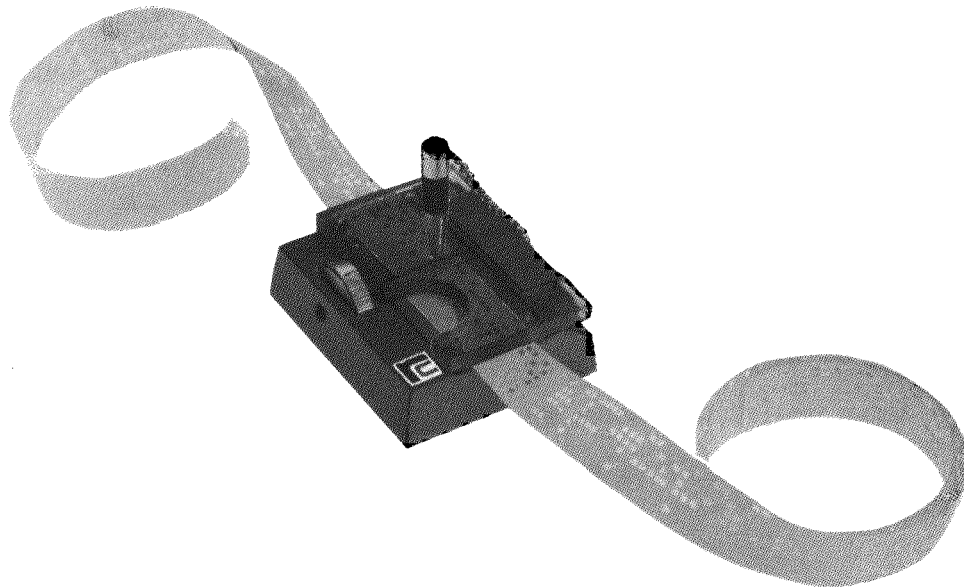
MECHANICAL PUNCH

TAPE SPLICER

ELECTRIC WINDER

TAPE GAUGE

7.1 RC Minipunch 6



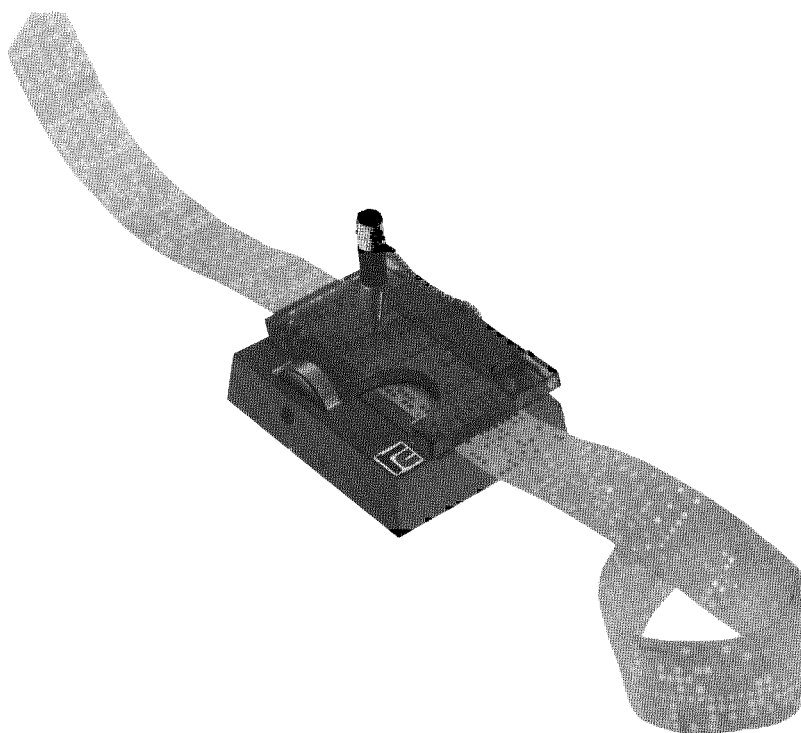
RC Minipunch 6 permits accurate and convenient manual punching of 6 track paper tape in accordance with the Olivetti standard.

Tracks can be punched individually, making it possible to create any existing code. Each character is visible through the transparent lid that holds the tape. The tape is advanced by turning a feed knob. Engraved lines indicate the minimum spacing between characters in accordance with the Olivetti standard.

The tape can be inserted sideways, enabling codes to be punched anywhere on the tape roll.

Size: 65 x 82 x 26 mm Weight: 200 g. Color: bluish gray.

7.2 RC Minipunch 8



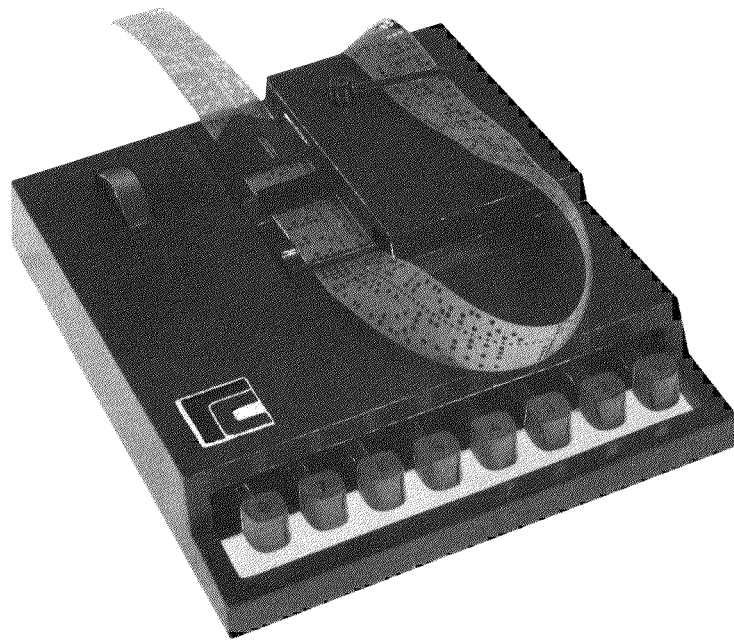
RC Minipunch 8 permits accurate and convenient manual punching of 5, 7, and 8 track paper tapes in accordance with ISO, DIN, ECMA, USAS, BS, and similar standards.

Tracks can be punched individually, making it possible to create any existing code. Each character is visible through the transparent lid that holds the tape. A feed knob advances the tape in steps of one character by means of a cog wheel, and gives modulo 16 indication of the numbers of characters punched. The cog wheel is aligned with the eight punching holes in the lid, so that displacement between the feed hole and the code holes to be punched is eliminated.

The tape employed must have prepunched feed holes. It can be inserted sideways, enabling codes to be punched anywhere on the tape roll.

Size: 65 x 82 x 26 mm. Weight: 200 g. Color: bluish gray.

7.3 The RC Mechanical Punch



The RC Mechanical Punch provides accurate and convenient punching of 5 and 8 track paper tapes. The keys of the punch correspond to tape tracks, beginning with the least significant bit at the right. As each track can be punched individually, it is possible to create any existing code.

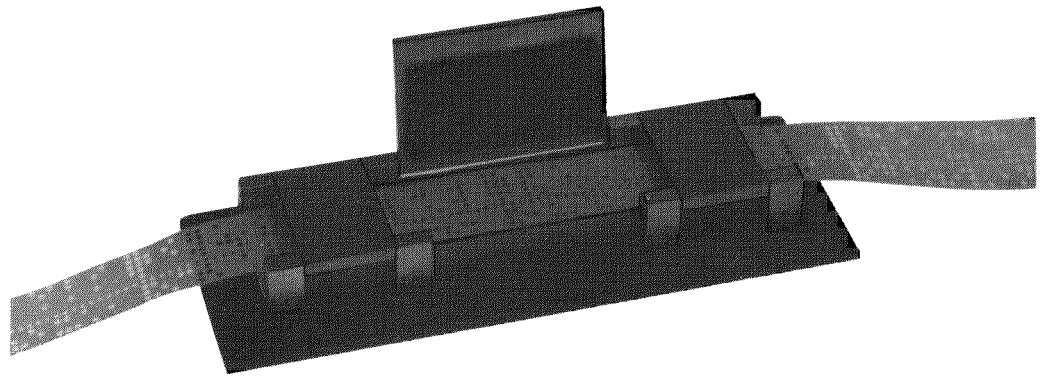
The tape employed must have pre-punched feed holes. It can be inserted either from the leading end or sideways, so that codes can be punched anywhere on the tape roll. The beginning and end of tape are indicated by an arrow-shaped tear-off.

Punching RC 3000 Catalog Tapes.

Since the tape is advanced manually by turning a knob, the operator himself can determine how many stages he will use to punch a given bit-pattern. The knob also serves to indicate whether multiples of 32 characters have been punched, for use in preparing catalog tapes for the RC 3000 Converter.

Dimensions: 19 x 22 x 6 cm Weight: 2.1 kg. Color: bluish gray.

7.4 The RC Paper Tape Splicer



The RC Paper Tape Splicer provides perfect splicing of 5, 7, and 8 track tapes. No characters can be lost despite possible variations in the distance between individual characters.

The part of the tape to be spliced is simply placed in the middle of the splicing block, while the rest is positioned with the feed holes over the guide pins and the engraved line on the block. The outer plates are shut to hold the tape in position.

A piece of splicing tape (pre-punched gummed paper tape or self-adhesive tape) is then placed over the part to be spliced. Shutting the middle plate affixes it.

Dimensions: 18 x 7 x 3 cm.

Weight: 0.7 kg.

7.5 The RC Electric Tape Winder



The RC Electric Tape Winder provides high-speed winding of 5, 6, 7, and 8 track paper tapes on cardboard cores. Its specially constructed motor has maximum torque when started, and its winding speed can be varied from 0 to 2400 revolutions/minute by manual braking.

The winder disc, which can accommodate rolls of tape up to 20 cm in diameter, is mounted at an angle so that the operator easily can observe the tape during winding.

The hub on the winder disc is fitted with three ball-locks; besides holding the core in place, they enable it to slide round to prevent tape damage should the tape become too taut.

The winder can stand securely on a table or shelf without being clamped.

Dimensions: 24 x 22 x 11 cm

Color: bluish gray

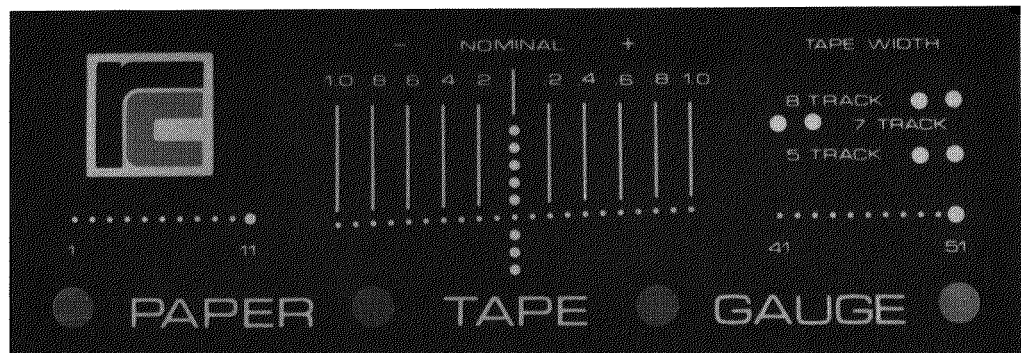
Hub Diameters: 45 or 51 mm

Weight: 5.3 kg.

Disc Diameter: 20 cm

Power: 50 Hz, 220V AC, 24W.

7.6 The RC Paper Tape Gauge



The RC Paper Tape Gauge provides quick, easy, and accurate checking of 5, 7, and 8 track paper tapes. Checks include tape width, transversal position and alignment, and longitudinal spacing. The gauge conforms to such standards as DIN, ISO, ECMA, USAS, and BS.

Tape Width.

The gauge checks whether tape width is within the tolerances allowed.

Longitudinal Spacing.

The gauge checks whether longitudinal deviation for 10 and 50 spaces is within the tolerances allowed.

Transversal Position and Alignment.

The gauge checks the relation of feed holes to code holes and reference edge, indicating deviations of incorrect tapes in tenths of a millimeter.

Size: 52 x 148 x 2 mm

Weight: 25 gr.

How to use the RC Paper Tape Gauge.

Tape Width.

This check indicates whether the width of a 5 track tape is within 17.40 ± 0.08 mm, a 7 track tape within 22.22 ± 0.08 mm, and an 8 track tape within 25.40 ± 0.08 mm.

Press the reference edge of the tape gently against the four tape guides.

A correct tape must touch one of the tolerance spots for 5, 7, or 8 track tape but not the other.

If the tape touches neither spot, it is too narrow, i.e. outside the minus tolerance.

Transversal Position of Feed Holes.

This check indicates the position of the feed holes in accordance with the reference edge (9.96 ± 0.10 mm).

Press the reference edge gently against the four tape guides.

By moving the tape sideways, find the spot in the line from -1.0 via NOMINAL to +1.0 that is in the center of a feed hole.

The selected spot indicates the position of the feed holes in accordance with the reference edge. Deviations from the nominal distance (9.96 mm) are indicated for each tenth of a millimeter.

A correct tape must correspond to one of the three spots marked -0.1 mm, NOMINAL, or +0.1 mm.

Transversal Alignment.

This check is possible only if the Transversal Position of Feed Holes is correct.

One can check whether the angle of the reference edge and the row of code holes is a right angle, whether the distance between code holes and feed holes is $n \times 2.54$ mm, and whether the alignment of the row is correct.

Press the reference edge gently against the four tape guides.

By moving the tape sideways, place the NOMINAL spot in the center of a feed hole. The row of code hole spots should now be in the center of the code holes, if the tape is correctly punched. No tolerances are indicated on the gauge.

Longitudinal Spacing.

This check indicates the spacing between feed holes (2.54 mm) and cumulative spacing error tolerances after 10 spaces (± 0.25 mm) and after 50 spaces (± 0.65 mm).

Place the tape with spot 1 in the center of a feed hole. Align the tape in accordance with spots 1-10, NOMINAL, and spots 42-51. These spots should now be in the center of the feed holes. A slight deviation is allowed, but neither feed hole 11 nor feed hole 51 may exceed the limits of the corresponding tolerance spots.

If one of these two feed holes exceeds the left-hand side of the spot, the spacing is too short, i.e. outside the minus tolerance.

If the right-hand side of the spot is exceeded, the spacing is too long, i.e. outside the plus tolerance.

Specifications for 5, 7, and 8 Track Paper Tapes.

- A tape width (8 track)
- A1 tape width (7 track)
- A2 tape width (5 track)
- B distance from reference edge to center of feed holes (7 and 8 track)
- B1 distance from reference edge to center of feed holes (5 track)
- C spacing from center to center of adjacent feed holes
- C1 cumulative spacing error for 10 spaces
- D distance from center of feed holes to code holes

All dimensions are in mm.

1 inch = 25.40 mm.

	RC GAUGE	DIN 66016 (VORNORM)	ISO 1671 (DRAFT)	ECMA (DRAFT)	USAS X 3.18 USAS X 3.19	BS 3880
A	25.40 ± 0.08	25.40 ± 0.08	25.40 ± 0.08	25.40 ± 0.05	25.40 ± 0.08	25.40 ± 0.05
A1	22.22 ± 0.08	—	—	—	—	22.22 ± 0.05
A2	17.40 ± 0.08	17.40 ± 0.08	—	17.46 ± 0.05	17.42 ± 0.08	17.45 ± 0.05
B	Nominal 9.96	9.96 ± 0.10	9.96 ± 0.10	9.96 ± 0.10	9.96 ± 0.10	9.96 ± 0.08
B1	Nominal 9.96	9.96 ± 0.25	—	9.96 ± 0.10	9.96 ± 0.07	9.96 ± 0.08
C	2.54	2.54 ± 0.05	2.54 ± 0.075	2.54 ± 0.075	2.54 ± 0.08	2.54 ± 0.08
C1	± 0.25	± 0.25	± 0.25	± 0.25	± 0.25	± 0.25
C2	± 0.65	± 0.90	± 0.63	—	± 0.63	—
D	nx2.54	nx2.54 ± 0.05	nx2.54 ± 0.05	nx2.54 ± 0.05	nx2.54 ± 0.05	nx2.54 ± 0.05