HIGH SPEED RECEIVER SETS (BRPE)

DESCRIPTION

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1. GENERAL

1.01 The High Speed Receiver Set (BRPE) (Figure 1) is an electromechanical device that rapidly punches information into paper tape at speeds to 110 characters per second (1100 wpm). This information is received from external control circuits in the form of multiwire electrical pulses and transformed into mechanical motions to feed tape, and punch feed and code holes. The set serves mainly as a self-contained unit in a high speed telegraph system, and is adaptable for table top or shelf mounting (with or without shock mounts).

2. COMPONENTS

2.01 The basic set components (Figure 2) include a base unit, a motor unit, and a tape punch unit. The motor unit and tape punch units are mounted on the base and connected by a set of drive parts. The tape unwinds off a reel mounted on the side of the base and is fed and punched at the front by the punch unit.

2.02 The tape punch unit is synchronous and has a magnetic pickup that produces clock pulses to trigger the control circuits. Set variations permit operation from either transistorized or vacuum tube circuits. These circuits produce fully-punched, standard teletypewriter, paper tape of five, six, seven, or eight levels. Optional features include drive parts to obtain different speeds, and a protective cover to house the motor unit and part of the base.

2.03 See Section 570-220-100TC for motor unit information and Section 592-802-100TC for tape punch unit information.

BASE UNIT

2.04 The base unit provides a foundation along with certain other accessories for the receiver set. It includes the following:

(a) Brackets for mounting the tape punch unit.

(b) Motor mounting holes.

(c) Power circuits that include a four-point terminal board, a motor switch, and mating input connectors.

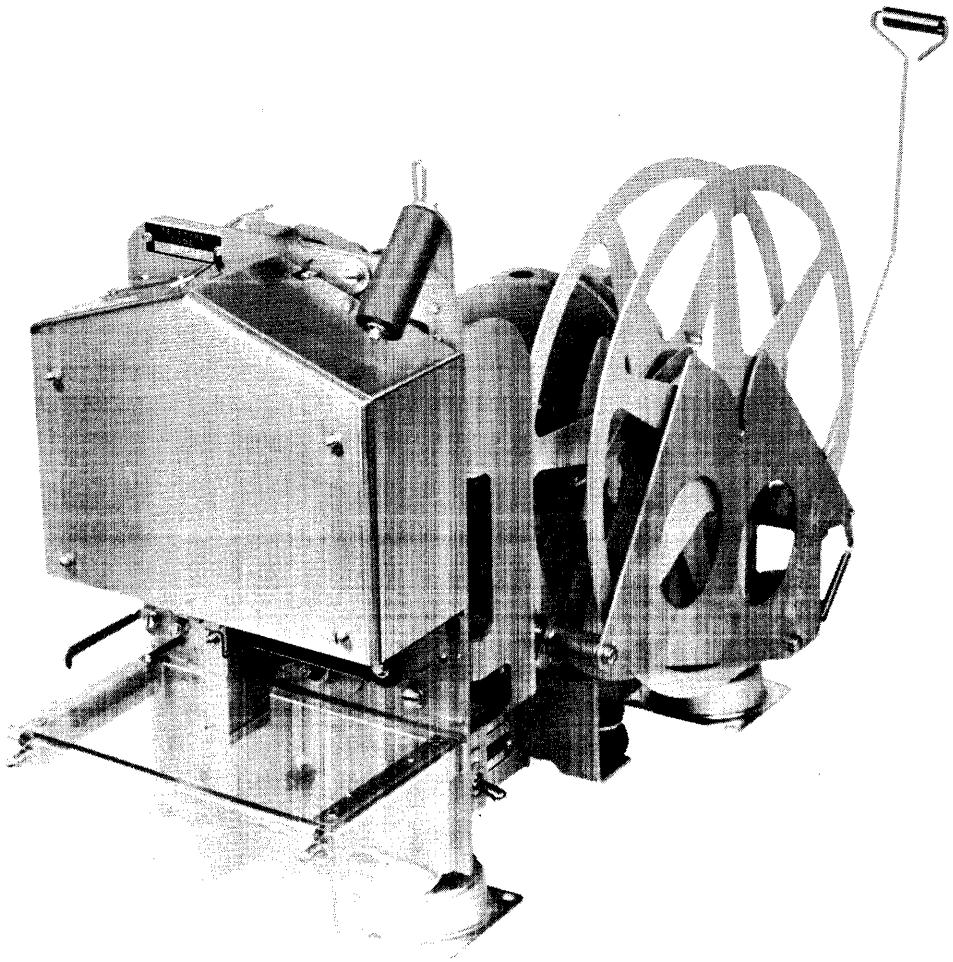
(d) Control circuits that include 24-point mating input connectors and a similar connector for interconnecting the base unit and tape punch units.

(e) Provisions for mounting electrical components.

(f) A reel and brake assembly to accommodate the tape roll and to provide smooth acceleration and deceleration during starting and stopping.

(g) A low-tape mechanism to actuate an external visual or audible alarm.

(h) Vibration mounts, and rubber grommets to support the cover.



(Right Front View)

Figure 1 - High Speed Receiver Set (BRPE)

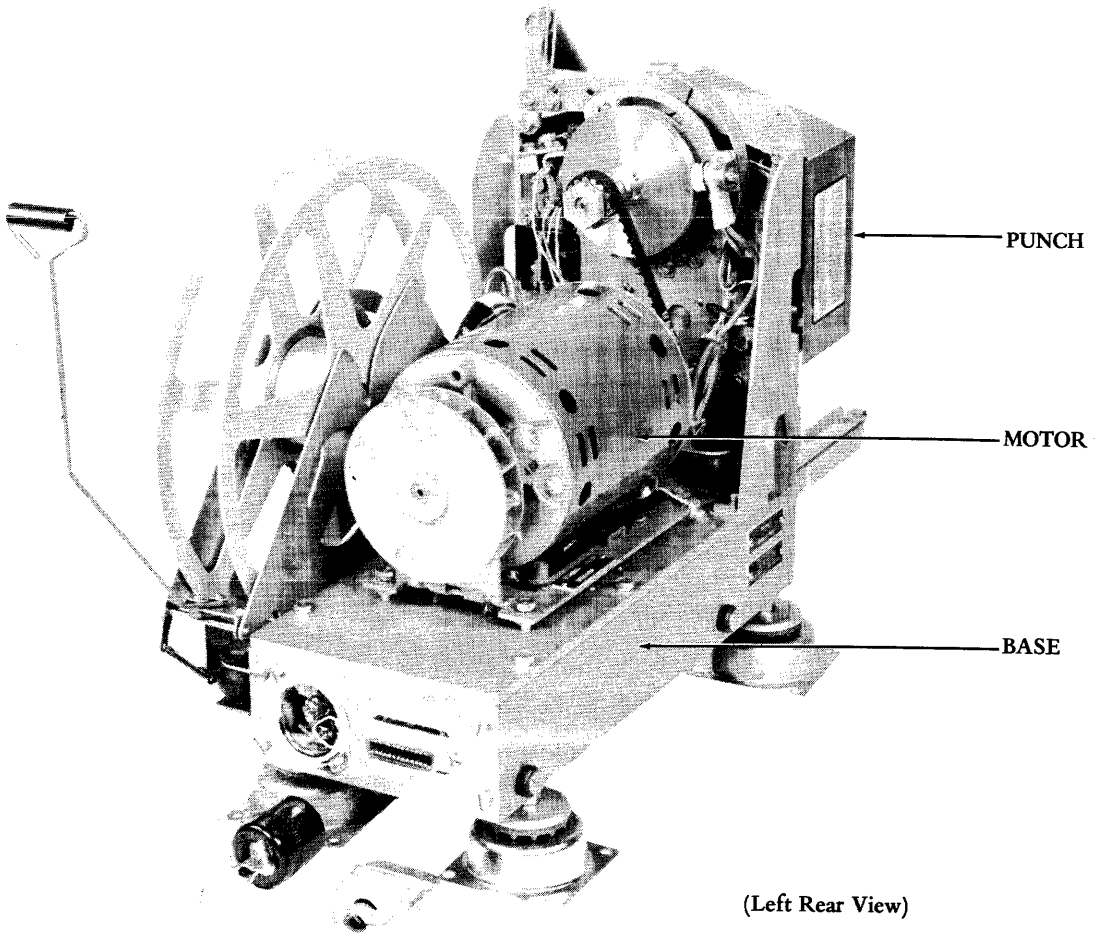


Figure 2 - Basic Set Components (BRPE)

MOTOR MOUNTING AND DRIVE PARTS

2.05 The high speed tape punch unit can be either belt driven or gear driven. A description of each follows:

A. Belt Driven

2.06 The drive parts consist of two sprockets and a timing belt. These drive parts transfer motion from the motor unit to the tape punch unit to establish the operating speed. The motor is mounted on four spacers. Timing belt tension is set by adding or removing shims between the spacers and motor mounting bracket (Section 592-802-700TC). Standard motor mounting and drive parts are available for speeds to 633 or 1100 wpm.

B. Gear Driven

2.07 The drive parts consist of two gears. These gears transfer motion from the motor unit to the tape punch unit to establish the operating speed. The motor mounts on two spacers and an adjustable "T" plate. An adjustment screw, below the "T" plate, is provided to allow adjustments between the gears.

3. TECHNICAL DATA

3.01 The data given here is for typical receiver sets and may vary for individual coded units. Standard speeds are 110 characters per second (1100 wpm), 105 characters per second (1050 wpm), and 63.3 characters per second (633 wpm). The following data, Tables A and B, give magnet specifications, and code and feed pulse requirements for transistor and vacuum tube operation.

CAUTION: IF CURRENT THROUGH THE 25 OHM RESISTORS ON THE BASE EXCEED 5 MILLI-SECONDS FOR ONE CHARACTER OPERATION, REMOVE THEM AND MOUNT THEM EXTERNALLY OR PROVIDE A BLOWER TO DISSIPATE THE HEAT.

Note 1: Because magnet operation is largely dependent on control circuits, these values can be varied experimentally for specific applications.

Note 2: Tape punch units are adjusted to a standard optimum input signal of 4.5 milliseconds with an expected operational tolerance requirement of ±5% margin without readjustment of armature gap and/or spring tension.

TABLE A

MAGNET SPECIFICATIONS

MAGNET	TRANSISTOR OPERATION	VACUUM TUBE OPERATION
Attract Time	3 to 4 ms	4 to 5 ms
Release Time	6 to 8 ms	6 to 8 ms
Coil Resistance	2.9 ohms	74 to 82 ohms
Coil Inductance	8 MH	100 MH
Current Limiting Resistance	25 ohms	6000 ohms

TABLE B

CODE AND FEED PULSE REQUIREMENTS

CODE AND FEED PULSE	TRANSISTOR OPERATION	VACUUM TUBE OPERATION
Current	1 amp	0.15 amp
Voltage	28 v dc	115 v dc
Time	4.5 ms	4.5 ms

MAGNETIC PICKUP SPECIFICATIONS

A. Early Design

3.02 The magnetic pickup generates a timing pulse once during each revolution of the flywheel. At 63.3 characters per second, the timing pulse is 4 volts peak-to-peak with a maximum pulse width of 450 microseconds. At 110 characters per second, the timing pulse is 6 volts peak-to-peak with a maximum pulse width of 250 microseconds. The above values are obtained with a clearance of 0.010 inch between the magnetic pickup and the flywheel and the pickup connected across a parallel circuit of 0.01 microfarad and a 1000 ohm resistor.

B. Late Design

3.03 The magnetic pickup generates a timing pulse once during each revolution of the flywheel. At 63.3 characters per second, the timing pulse is 30 volts peak-to-

peak with a maximum pulse width of 450 microseconds. At a 110 characters per second, the timing pulse is 40 volts peak-to-peak with a maximum pulse width of 250 microseconds. The above values are obtained with a clearance of 0.010 inch between the magnetic pickup and the flywheel and with the pickup connected across a parallel circuit of 0.01 microfarad and a 1000 ohm resistor.

TAPE

3.04 After selection and installation of the appropriate punch block assembly and associated parts, the tape punch unit is capable of punching either 11/16 inch, 7/8 inch, or 1 inch tape. Tape guide channels can be provided to align any of these tape widths.

CODE LEVELS

3.05 The punch will perforate, depending on the unit and punch block selected, either 5-, 6-, 7-, or 8-level tapes according to the code level arrangement.

CODE LEVEL ARRANGEMENT

5 Levels	6 Levels	7 Levels	8 Levels
	0 1	0 1	0 1
0 1	0 2	0 2	0 2
0 2	0 3	0 3	0 3
0 F	*0 0 F	0 F	0 F
0 3	0 4	0 4	0 4
0 4	0 5	0 5	0 5
0 5	0 6	0 6	0 6
		0 7	0 7
			0 8

0 = Code Hole
F = Feed Hole
*0 = Advance Feed Hole (if so equipped)

WEIGHTS AND DIMENSIONS

3.06 Table C contains the approximate overall weights and dimensions for the various components which makeup a complete receiver set. These weights and dimensions include drive parts but not those of the variable features, mounting facilities, and covers.

TABLE C

WEIGHTS AND DIMENSIONS

COMPONENT	DEPTH (Inches)	WIDTH (Inches)	HEIGHT (Inches)	WEIGHT (Pounds)
Tape Punch Unit	6 1/2	6 1/2	10 1/2	8 1/2
Base Unit	13 1/2	8	10	7 1/2
Motor Unit	8	4	4 1/2	8 1/2
Receiver Set	16 1/2	8	12	24 1/2