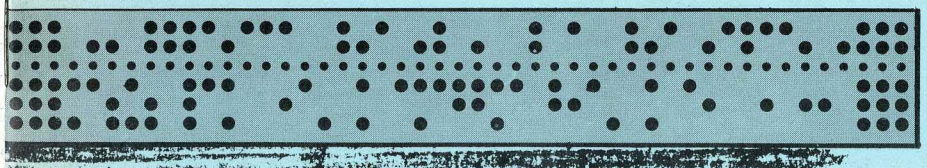
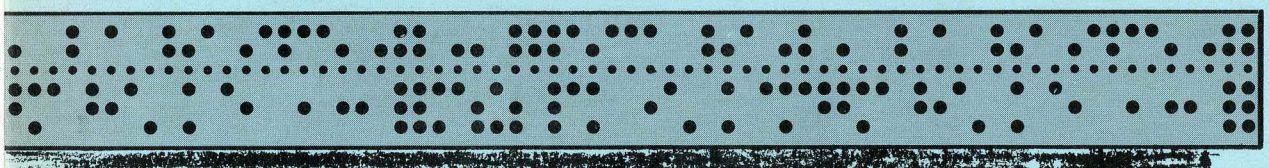
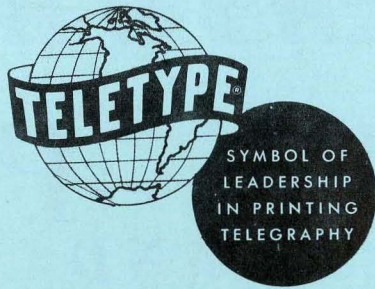


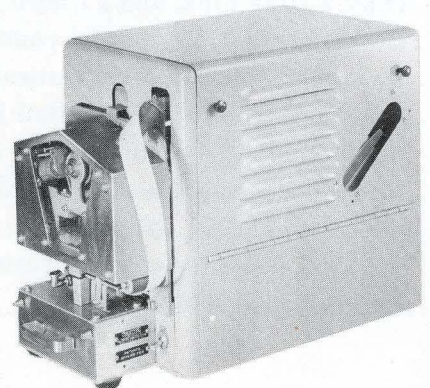
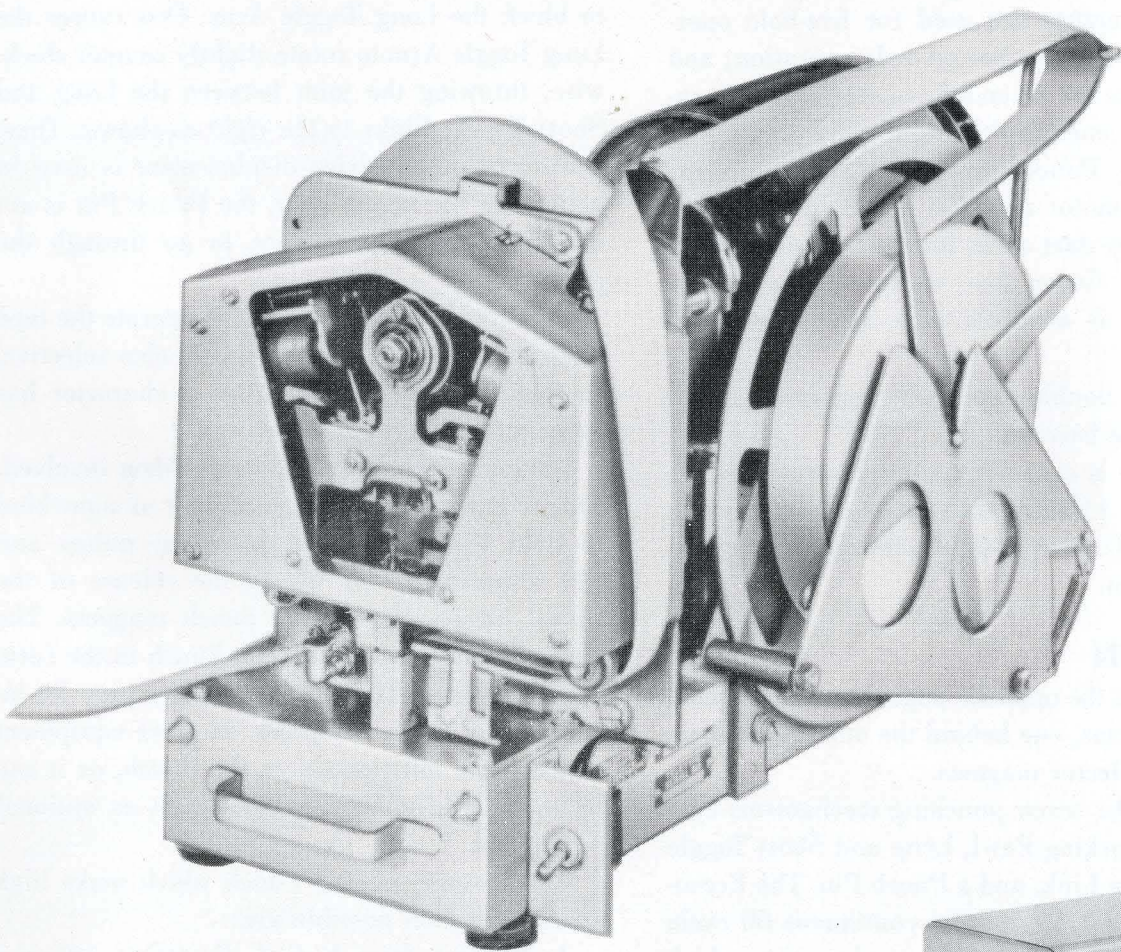
**HIGH SPEED**  
TAPE PUNCH  
AND  
TAPE READER



TELETYPE  
CORPORATION  
*Chicago, Illinois*



# TELETYPE HIGH SPEED TAPE PUNCH



Tape Punch with Cover

# TELETYPE HIGH SPEED TAPE PUNCH

## DESCRIPTION

*The Teletype High Speed Tape Punch* is designed to record, in punched tape, data from high speed systems such as computers, calculators, business machines, and telegraph systems. It punches tape at speeds up to 60 characters per second.

The Punch can be supplied for 5, 6, or 7 hole codes. It will perforate a single tape, or two tapes simultaneously.

Each code hole has an associated code punch controlled by its own magnet. An additional magnet is used to govern the tape feed-out mechanism. Thus, six magnets are used for five-hole operation; seven magnets for six-hole operation; and eight magnets for seven-hole operation. All magnets must be energized simultaneously.

The Tape Punch consists of the punching mechanism, motor and base. Optional equipment is a protective dust cover for the motor and drive mechanism. Cover has window for checking tape supply, is available in a variety of color finishes.

Single or double tape reels can be supplied as part of the base unit.

The motor is a standard synchronous type, for operation on 110-120 volt, single phase 60 cycle regulated A.C. power supply. Its operating speed is 3600 r.p.m.

## OPERATION

The figure on the opposite page shows two punching mechanisms, one behind the other, with their respective selector magnets.

Each of the seven punching mechanisms consists of a Blocking Pawl, Long and Short Toggle Arms, a Drag Link, and a Punch Pin. The Eccentric Main Shaft generates a continuous 60 cycle per second reciprocating vertical motion which is transmitted to the Punch Bail by means of the Punch Bail Drive Link. This motion is then transmitted from the Bail to all seven Toggle Arms, Drag Links, and finally to the Punch Pins. The total peak-to-peak displacement of the vertical motion is .090".

The Eccentric Main Shaft is shown in the lowermost position. Note that the Long Toggle Arm of the outer mechanism has cleared its Blocking Pawl as a result of its Selector Magnet Spring being energized, and that the Long and Short Toggle Arms behave as one stiff member, transferring the complete displacement of the eccentric to the Punch Pin. This complete displacement is sufficient to drive the Punch Pin through the paper tape.

The Selector Magnet for the other mechanism is shown de-energized, causing its Blocking Pawl to block the Long Toggle Arm. This causes the Long Toggle Arm to rotate slightly counter clockwise, throwing the joint between the Long and Short Toggle Links to the right as shown. Thus, since part of the drive displacement is used in collapsing the toggle joint, the Punch Pin is not driven a sufficient distance to go through the paper tape.

Identical linkages are used to operate the tape feed mechanism. Tape feeding is also selective, so that tape is fed only when a character has been perforated.

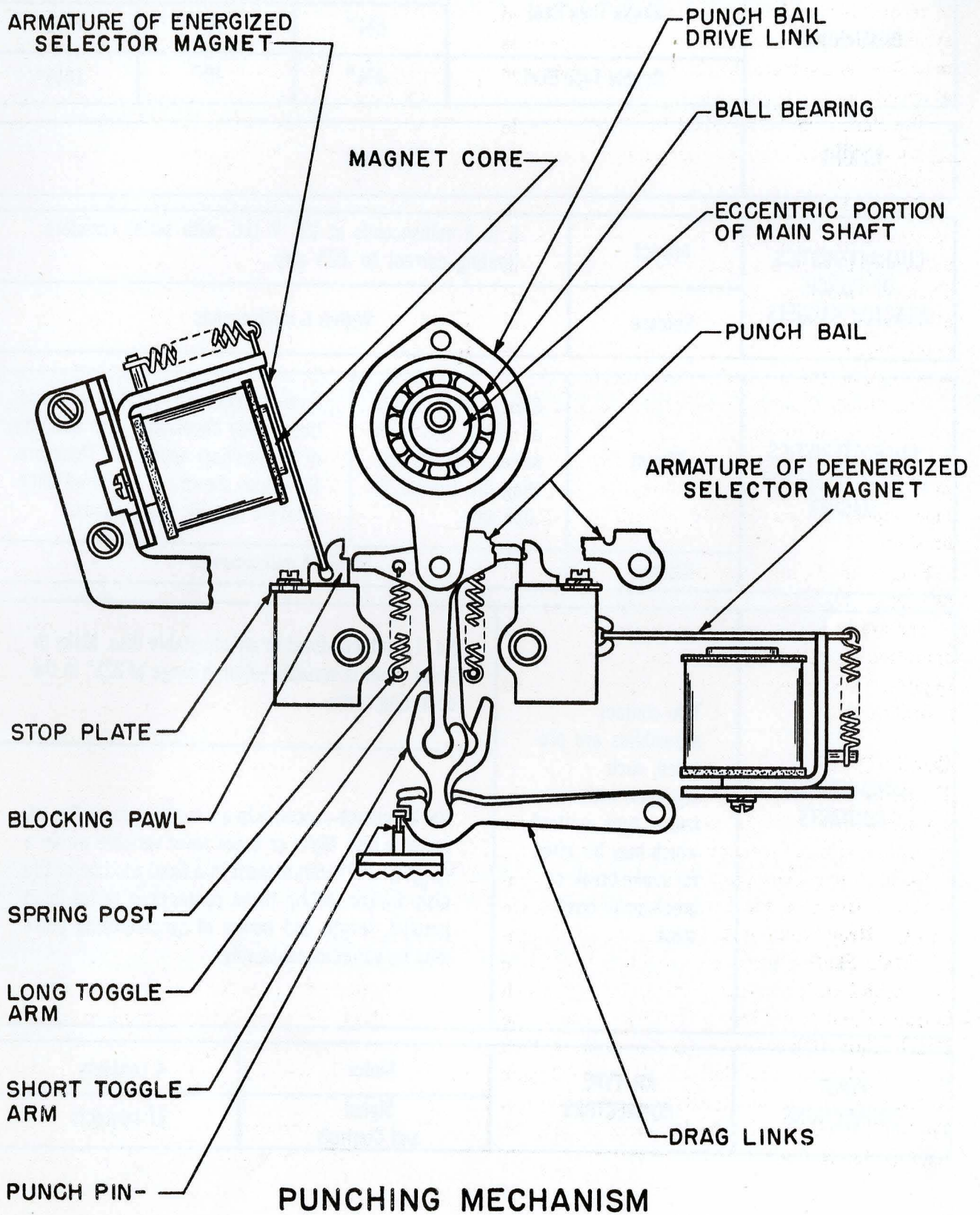
Obviously there is a timing problem involved. This requires (1) a storage register of some kind to hold temporarily the incoming pulses and (2) a provision for timing the release of the stored information to the punch magnets. The latter feature is built into the Punch in the form of a contactor. The storage register may be incorporated in the computer or other equipment which feeds information to the Punch, or it can be made available with the Punch as optional equipment.

The features of this Punch which make high speed operation possible are:

1. *Positive drive in both directions*, into and out of the tape. This provides controlled motion throughout the complete cycle and does not depend on spring-loaded mechanisms.
2. *Simple harmonic motion*. Selection and punching are performed near the peaks of

the sinusoidal motion where velocities are low. The tape is also accelerated and decelerated smoothly.

3. *Continuous action.* The punching and feeding mechanisms are coupled to the motor continuously, rather than through clutches.



**TECHNICAL DATA  
FOR  
TELETYPE HIGH SPEED PUNCH**

DIMENSIONS	Single Tape Reel	Width	Height	Depth
		6¾"	10"	14½"
	Double Tape Reel	8¾"	10"	14½"

WEIGHT	25 pounds
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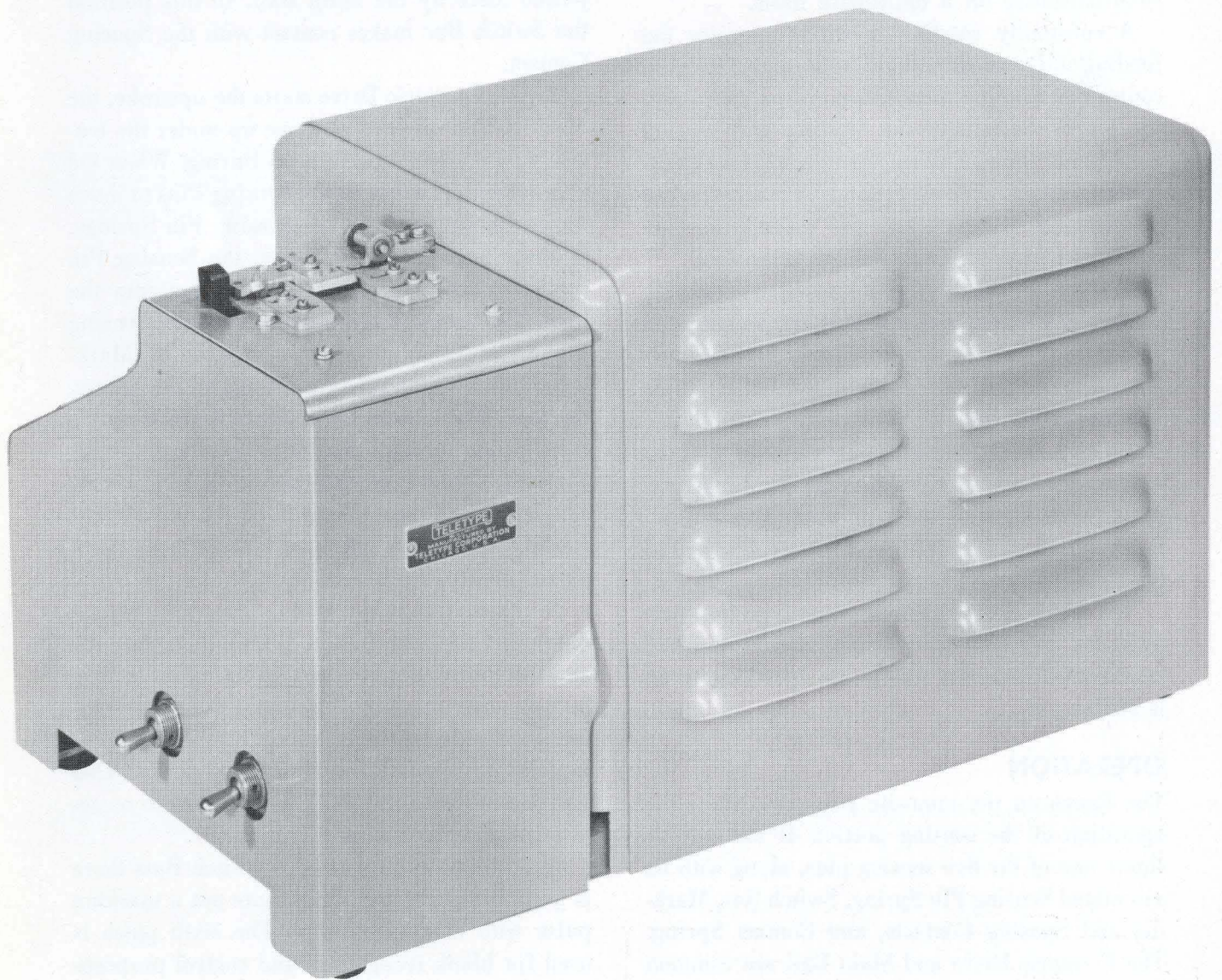
CHARACTERISTICS OF PUNCH SELECTOR MAGNETS	Attract	6 to 8 milliseconds at 120 V. D.C. with series resistors limiting current to .025 amp.
	Release	Within 6 milliseconds

CHARACTERISTICS OF FEED SELECTOR MAGNET	Attract	8 to 10 milliseconds at 120 V. D.C. with series resistors limiting the current to .025 amp.	Note: Magnet operating characteristics largely dependent upon circuitry of the auxiliary apparatus. Therefore, the values shown can be varied somewhat for specific applications.
	Release	Within 4 milliseconds	

SYNCHRONIZING CONTACTS	Two contact assemblies are provided, each equipped with a rocker type contact which may be wired for make-break or break-make operation.	<b>No. 1 Contact</b> —fixed to an adjustable disc. Make or break point is variable within a range of 225° in the operating cycle.
		<b>No. 2 Contact</b> —secured to a movable arm on the adjustable disc. Make or break point variable within a range of 170° with respect to a fixed position of the disc. By connecting these contacts in series or in parallel, length and timing of synchronizing pulse may be varied considerably.

INPUT CONNECTIONS	AN TYPE CONNECTORS	Motor	4 contacts
		Signal and Controls	17 contacts

# TELETYPE HIGH SPEED TAPE READER



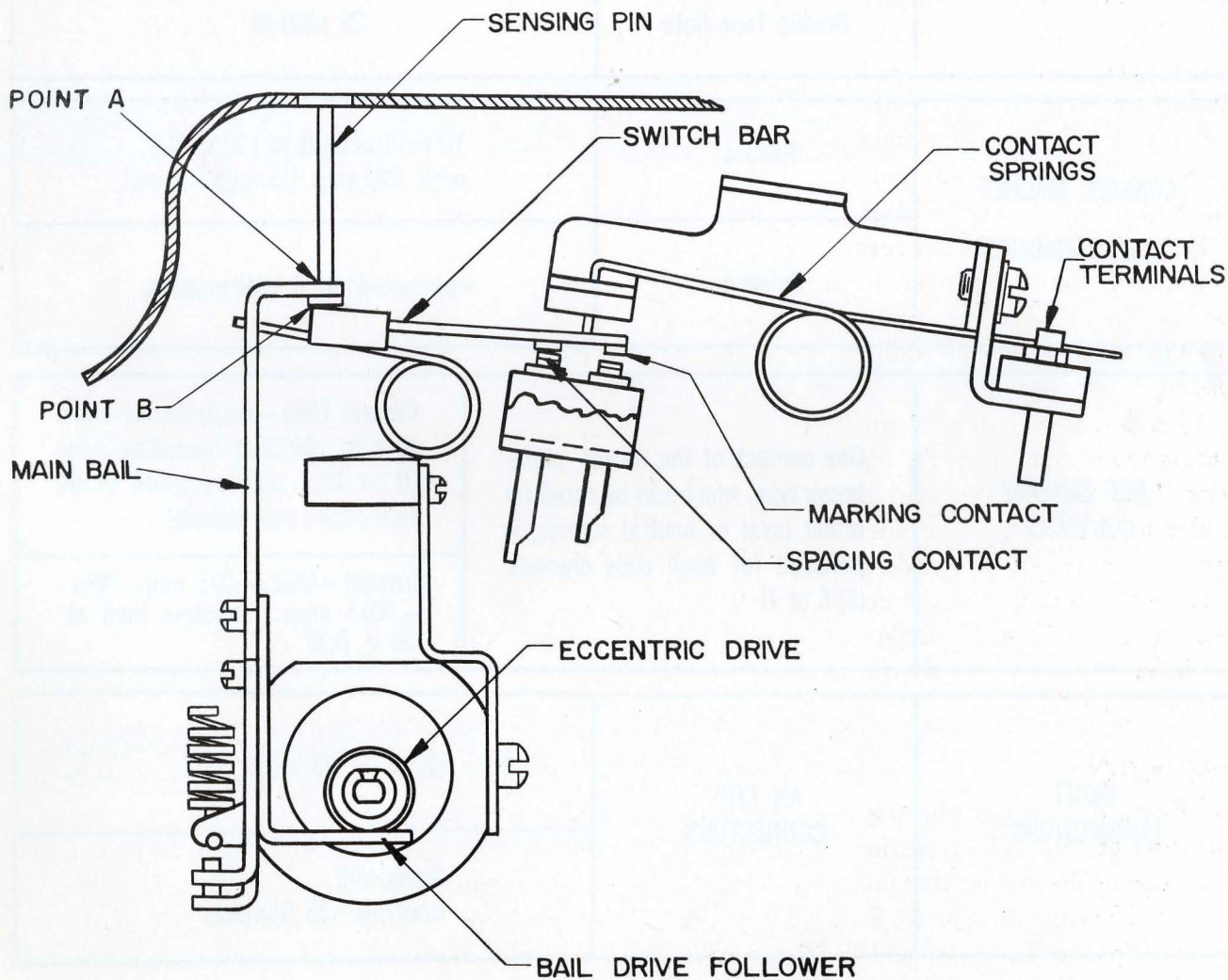
*Model illustrated is equipped for handling a single tape. A unit for alternate feeding of two tapes also can be provided.*

spacing position and advances the tape. The tape feed mechanism is basically a pawl and ratchet arrangement, lightened and refined to stabilize operation at high speeds.

An interesting feature of the feeding operation is that the Sensing Pins are still projecting through the holes at the beginning of the tape advance. The Sensing Pins yield to the forward motion of the tape until they are withdrawn from the holes, at which time they snap back to their normal position, ready to sense the next character. Thus a larger portion of the cycle is available for tape feed.

The features of this Reader which make high speed operation possible are:

1. *Small, lightweight parts.* Required force is reduced.
2. *Rocking motion of contact mechanism.* Contact bounce is eliminated.
3. *Tape wraps around 90° of tape feed sprocket.* A large number of teeth are engaged with the feed holes; hence more pulling power can be transmitted to the tape.
4. *Tape can be advanced while sensing pins are still in the tape.* This allocates almost half the cycle to tape feed.

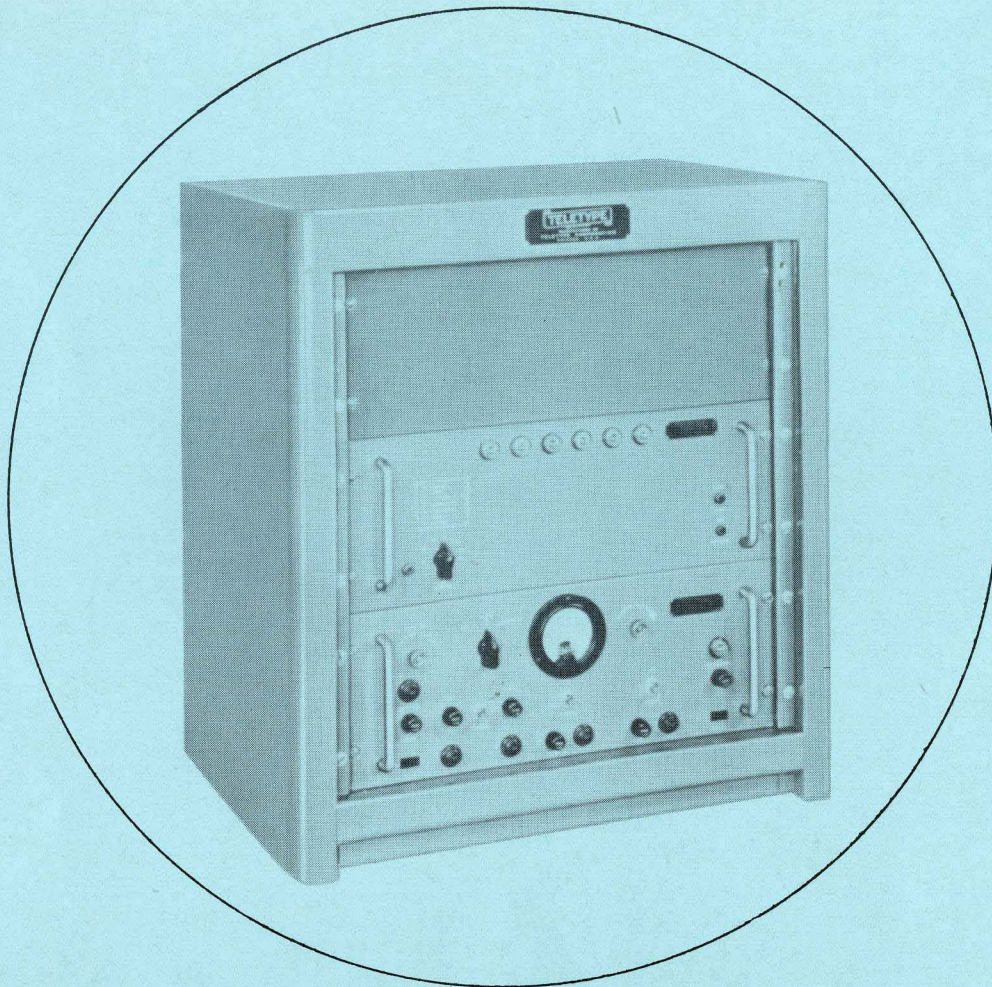


**TAPE SENSING MECHANISM**



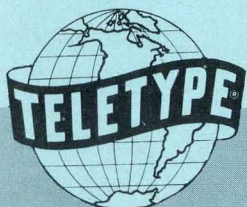
**TECHNICAL DATA  
FOR  
TELETYPE HIGH SPEED TAPE READER**

DIMENSIONS	Single Tape Gate	Width 13½"	Height 7¾"	Depth 7¼"
	Double Tape Gate	17"	7¾"	7¼"
WEIGHT	Single Tape Gate	22 pounds		
	Double Tape Gate	26 pounds		
CONTROL MAGNET CHARACTERISTICS	Attract	10 milliseconds at 120 V. D.C. with .090 amp. through the coil.		
	Release	Approximately 6 milliseconds		
TAPE SENSING CONTACTS	One contact of the rocker, make-break type, which can be wired for either polar or neutral signals, is provided for each code element. (5, 6 or 7)	<b>Contact Time</b> —Adjustable from zero to 100% of operating cycle (0 to 16.7 milliseconds at 60 characters per second)		
		<b>Current</b> —Max.—.015 amp., Min.—.0015 amp.; resistive load at 120 V. D.C.		
INPUT CONNECTIONS	AN TYPE CONNECTORS	Motor—4 Contacts		
		Signal and Controls—35 Contacts		



### **EQUIPMENT FOR LONG DISTANCE TRANSMISSION**

Electronic converters are available for converting the parallel impulses from the Tape Reader to sequential electrical impulses for transmission, and, at the distant point, reconvert the impulses to parallel form prior to their being fed into the electronic storage register and then the Tape Punch



**TELETYPE  
CORPORATION**

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