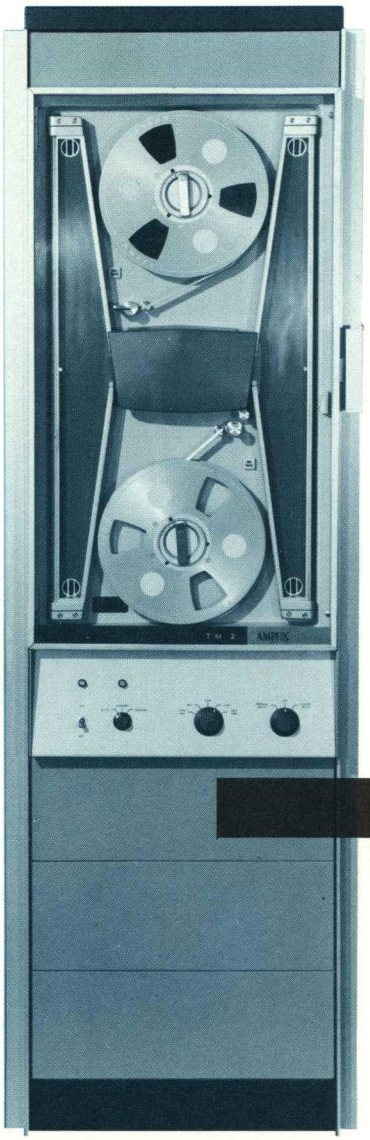


TM-2

DIGITAL TAPE HANDLER

150 INCH-PER-SECOND TAPE SPEED
VACUUM-COLUMN TAPE-TENSION SYSTEM
AUTOMATIC END-OF-TAPE SENSING
POWER INTERLOCKED FOR COMPLETE SAFETY
GENTLE TAPE HANDLING

TM-2 AMPEX

The Ampex TM-2 is an "on-line" or auxiliary tape handler for input/output or internal memory use with today's high-speed digital computers. Fast tape speed, high packing densities, unprecedented freedom from programming restrictions make this machine one of the fastest, most versatile available, providing maximum utilization of expensive computer time. Yet the TM-2 protects precious taped records and handles them with utmost gentleness!

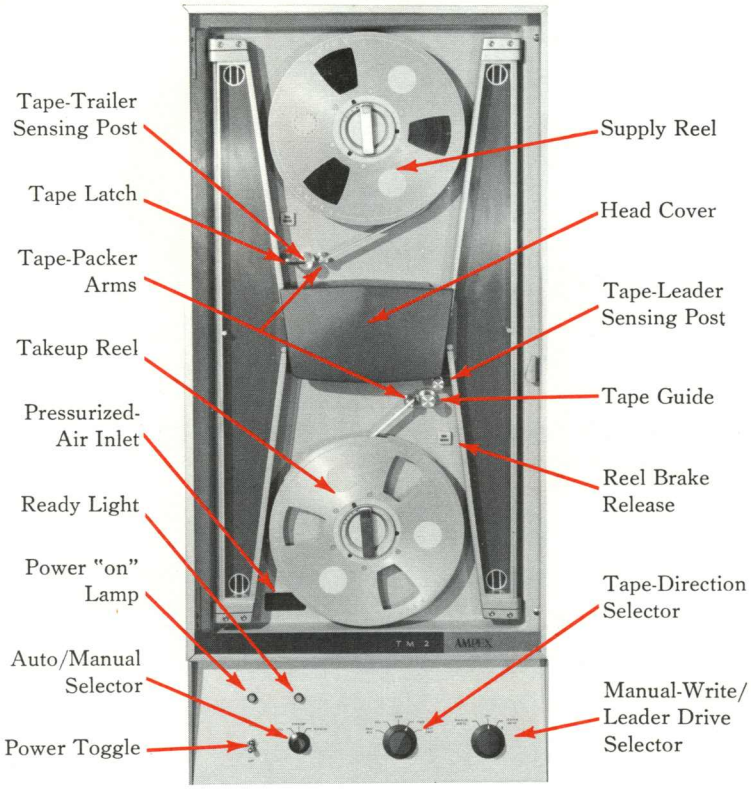
With Ampex's new TM-2
you get these dollar, time and trouble-saving benefits:

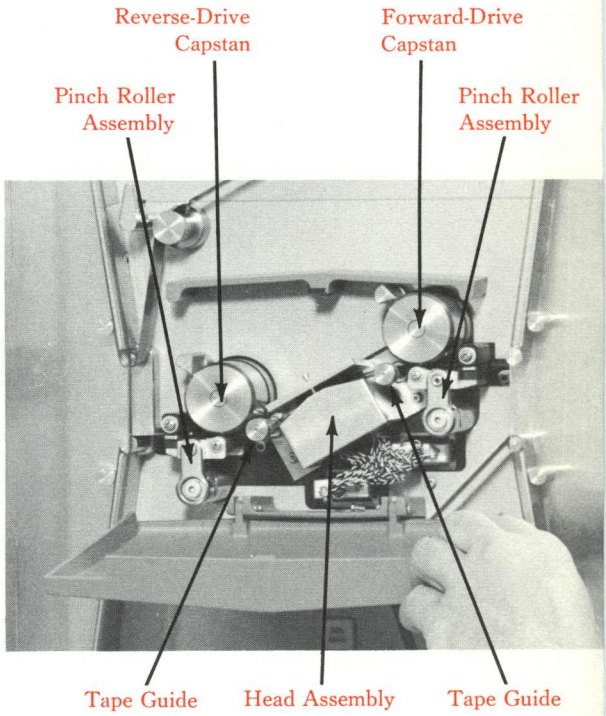
Easy adaptation to any system

Response to computer commands is automatic, with two voltage-level control inputs, one for forward and the other for reverse directions: "start" in either direction responds to a voltage rise; "stop" responds to voltage drop. Manual control is available through an accessory local-control panel.

Compactness.

Tape Handler and all associated equipment can be placed in a single 19-inch equipment rack, with room to spare. Dimensions of the TM-2 are about 50% less than any comparable "high-performance" tape handler.



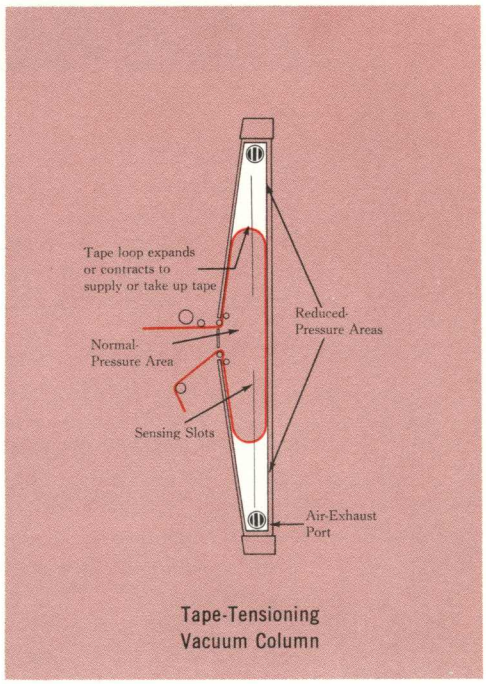


Non-technical operation with complete safety

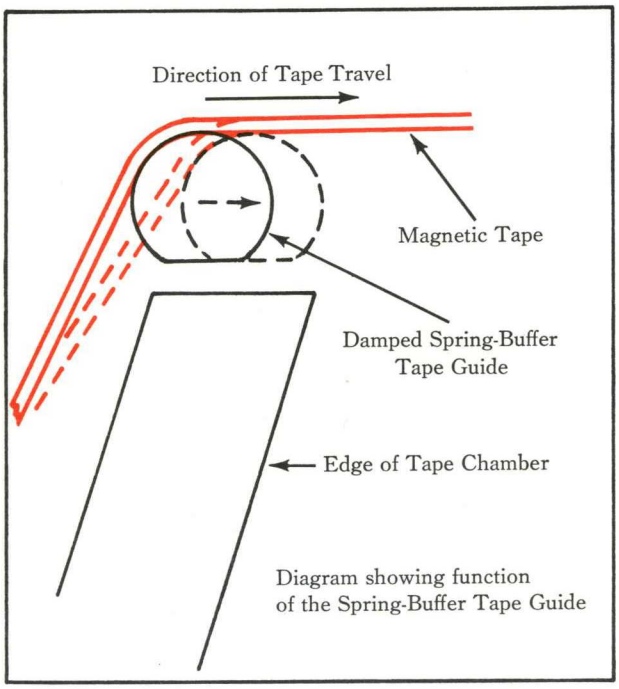
Designed with the operator in mind, the TM-2 is simple and safe. Tape threading is made an easy, rapid operation by a permanent leader on the takeup reel which attaches to the tape and automatically threads it through the tape-tensioning column. Power interlocks prevent the tape transport from being started when its cover door is open. The Tape Latch locks tape against the tape guide for loading and unloading, and automatically releases the tape-packer arms at the same time it turns off reel-drive power and applies the reel brake, insuring that the operator's fingers cannot accidentally be injured.

Most efficient utilization of the tape

Handlers are available for use with ½, ¾, or 1-inch tape, providing from 7 to 32 information channels. Faster transfer rates, quicker start times and minimum program restrictions give higher packing densities with shorter inter-record gaps. You get better tape economy plus faster information flow into your computer.



Tape-Tensioning Vacuum Column



As the tape is pulled forward at the initiation of a "start" command, the Spring-Buffer Tape Guide moves too, supplying a minute length of tape just at the proper instant. This greatly decreases the effects of static friction, air-pressure resistance and tape inertia, allowing much quicker, gentler start times.

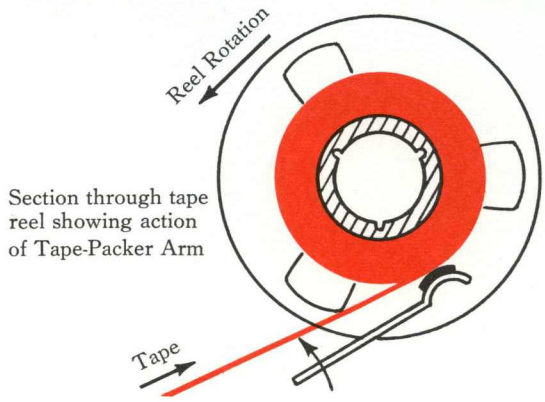
Reduced buffer storage

Start, stop and reverse times are predictably constant throughout the TM-2's operating life. This, plus faster transfer rates, allows the computer designer to reduce the buffering between tape and computer, providing space and cost savings.

Gentle, protective tape handling

The TM-2's air-column tape-tensioning system uses only air pressure to maintain a tape reservoir (see illustration). Thus, at stop or start command, the air columns instantly supply or take up properly tensioned tape until the reels can accelerate to proper speed. This allows extremely fast start/stop times with gentle tape handling. Ampex's unique spring buffer allows an added margin of safety at the critical moment of initiation of the "start" command.

Tapes are protected, too, by the TM-2's positive-pressure transport, which uses clean filtered air to maintain the whole tape-handling area at a higher-than-atmospheric pressure, keeping dust and grit-laden air out. Tape-packer arms for each reel press out inter-layer air which would normally be whipped into the tape pack at high tape speeds. The resulting firm, solid tape pack prevents lateral or longitudinal slipping, for better tape performance during operation and protection in storage. Tape is driven from both sides, minimizing wear from high accelerations. And electronic interlocks prevent simultaneous energizing of tape actuators, which could cause tape breakage.



Tape-Packer Arm presses incoming tape against pack, forcing out inter-layer air which would otherwise be whipped into the pack.

Accuracy, reliability, versatility are assured by these mechanical features—

Ruggedness

Portions of the tape handler subject to greatest stresses have been engineered to maintain rigidity under all conditions. Special three-inch stiffener webs within the frame run the width and length of the transport. Vacuum chambers are machined out of sturdy precision jig plate (material for back of the vacuum chamber is ½-inch thick).

Quick-response power

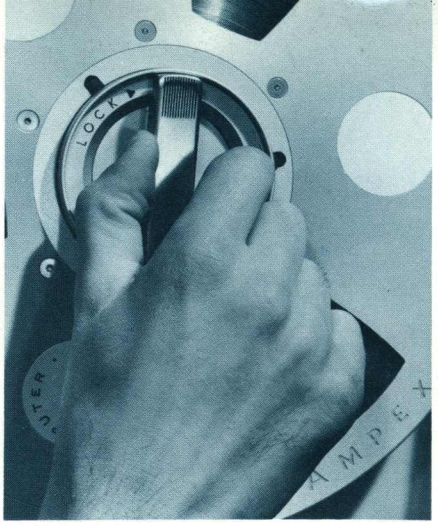
Individual reel motors have high power and high starting torque, and are driven by a stabilized differential DC amplifier. This motor-drive amplifier responds almost instantaneously to tape-rate changes as detected at the proportional sensing slots at the rear of the air chambers. Quicker response to tape-rate changes means better lead-time characteristics in the tape drive circuit, therefore better program capabilities. The amplifier is quite insensitive to temperature changes, which means extremely stable servo operation.

Accessibility

Just as simplicity is stressed at the front of the TM-2, the key to its internal design is accessibility. Layout of the transport is open and uncluttered, with all adjustment points instantly available. Control circuitry is constructed to save time and trouble for the maintenance mechanic, by putting everything where he can reach and recognize it.

Low Maintenance Costs

The TM-2 is a tape system which sets entirely new standards for low maintenance costs and long-term reliability. Well-stabilized circuitry places demands on long-life components far below their specified performance ratings. Mechanical elements are ruggedized throughout for consistent, dependable service.



New Ampex expanding reel holddowns provide quick, positive locking and release with a quarter turn. These devices automatically center the tape reel and position it properly and accurately on the turntable with respect to the tape transport and all tape-guiding surfaces.

PRELIMINARY SPECIFICATIONS

Standard tape speed — 150 ips, lower speeds available on special order.

Fast-rewind time — 4 minutes for 3600-ft tapes.

Start time — 2.0 ms to within ±10% of nominal tape speed.

Start distance — 0.165±0.035 inch.

Stop time — 1.5 ms.

Stop distance

½-inch tape	1-inch tape
0.145±0.065 inch	0.160±0.065 inch

Dynamic skew

Tape Size		
½-inch	¾-inch	1-inch
2 μs	3 μs	4 μs

Program restrictions — Actuator in operational mode: commands 2.5 ms apart (min.) at a maximum rate of 100 cps.
Servo unidirectional: none.
Servo bidirectional: minimal.

Inter-record gap — 0.560±0.105 inch.

Operating environment — 50 to 100°F at 30 to 90% RH.

Positive transport pressure — 0.03 inches water, supplied by internal blower.

Air-column vacuum — 15 inches water nominal, supplied by internal blower.

Manual controls

Drive forward
Drive reverse
Fast forward
Fast reverse
Manual write
Stop
Power on/off
Leader drive.

Rack space required

Tape handler, width: 19 inches—height: 35 inches—depth: 18 inches.
Cover door, width: 19 inches—height: 35 inches—depth: 2½ inches.
Control power supply, width: 19 inches—height: 7 inches—depth: 18 inches.
Control panel, width: 19 inches—height: 7 inches—depth: 2½ inches.

Power requirements — 117 volts AC, ±10%; 60 or 50 cps (specify which); 6 amps standby current, 17 amps fully programmed.

Sensing — Conductive leader for end-of-tape or beginning-of-tape sensing; photoelectric (hole or reflective) for end-of-tape, beginning-of-tape or beginning-of-record sensing.

AMPEX

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