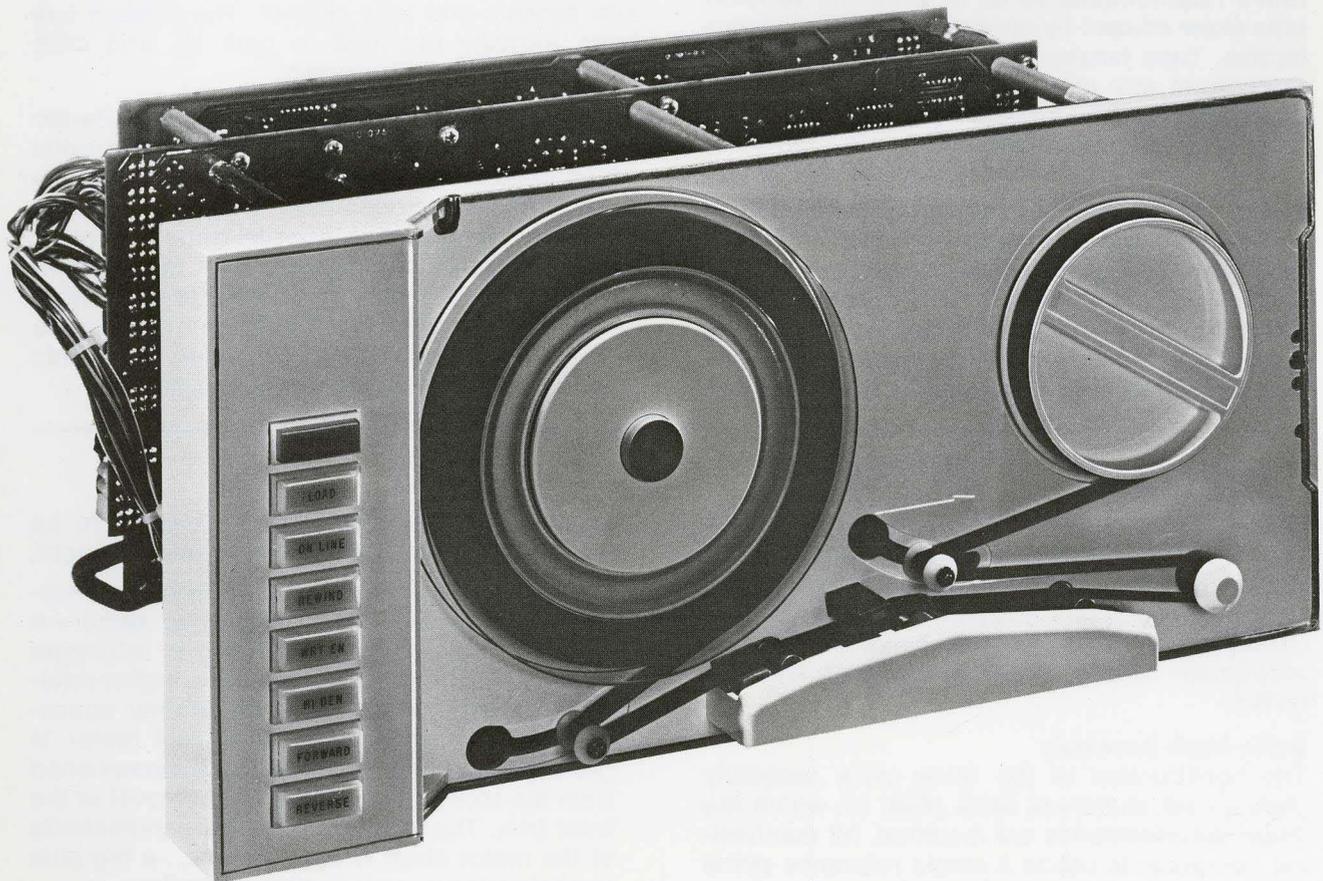


JAN 8 1974

FEATURES

- Tape velocity to 25 ips
- IBM and ANSI compatible
- Phase encoded 1600cpi 9-track
- Multi-density 7-track NRZI — 800, 556, or 200cpi; or 9-track 800cpi
- Tape cleaner
- Forward and reverse read
- Capstan speed disk
- Pressure sensitized take-up reel
- Read-after-write dual gap or read/write single gap heads
- Buffer arm, photo-translator
- Exclusive "Edit" capability
- Transfer rates to 40,000 characters per second
- Dynamic electrical braking



LOW COST, HIGH PERFORMANCE 7 INCH REEL TRANSPORTS

The Pertec 7-inch reel tape transport provides exceptional performance and reliability in the reading or writing of 7 or 9-track NRZI or phase encoded tapes. Engineered and designed to reduce operator and maintenance costs, these IBM and ANSI compatible tape transports are the front-runners of their class. Available in read-after-write and read/write models, they offer tape speeds to 25ips and data transfer rates up to 40,000 characters per second.

The Pertec 7000-Series offers the user superior reliability and ease of operation required by the following application areas:

- Key-to-Tape
- Optical Character Recognition
- Data Acquisition
- Point-of-Sale Devices
- Data Terminals
- Data Communications

FUNCTIONAL DESCRIPTION

The Pertec pressure sensitized take-up reel assures operator convenience and easy loading on all 7000-Series machines. The tape unit is designed to ensure IBM and ANSI tape interchangeability, whether the application requires read/write single gap head models, or read-after-write dual gap head versions. Head and guide geometry is configured to be compatible with IBM's requirements so as to eliminate dynamic tape skew caused by normal tape slitting irregularities. Tape tension is also carefully regulated to conform with IBM standards in order to minimize potential interchange hazards arising from excessive tape stretching or cinching.

Pertec 7000-Series transports are available in 9-track versions with data densities of 800cpi (NRZI) or 1600cpi (phase encoded) or in 7-track NRZI versions with any two standard data densities (800, 556, and 200cpi). All models incorporate Pertec's industry standard interface which provides plug compatibility with the entire

family of Pertec synchronous transports.

The simple single capstan and tape path of the 7000-Series provide the ultimate in tape handling, requiring only 8¾" of rack height. The unit includes data electronics, load point logic, tape motion control electronics, and a number of high performance features such as single potentiometer electronic deskewing, photo-electric buffer arm sensors and tape cleaner. The product has been formally qualified to both UL and CSA standards for operator safety.

In support of its tape drive customers, Pertec offers interface compatible data formatter units which contain the data timing and control functions normally provided in an external tape control unit. Through the simple data formatter interface, a user can transfer data to and from phase encoded and/or NRZI transports without having to concern himself with any of the tape related housekeeping or data recovery logic. This is all done within the Pertec data formatter.

EQUIPMENT DESCRIPTION

Electronics for the 7000-Series are divided into only two major subassemblies — tape control logic and data electronics. For simplified trouble shooting and repair procedures, both printed circuit board assemblies are hinged to provide convenient access to all components and test points.

Basic Deck Assembly

The construction of the basic deck assembly uses a cast aluminum deck plate on which the major subassemblies are mounted. All mechanical components utilize a single reference plane for precise location of critical tape path guides and the head itself. In addition, the precision frame serves as the base plate for the following major subassemblies:

- **Head and guide assembly.** These important elements are precisely aligned to allow both forward and reverse reading without troublesome and unreliable single shot adjustments.
- **Single capstan drive.** Tape motion is controlled by a single capstan drive using a low inertia, dc servomotor. Velocity feedback from a dc tachometer provides the stable speed characteristic required to generate IBM and ANSI compatible tapes. For ease of service and preventative maintenance, the capstan has a built-

in strobe disk allowing speed checks to be made with either 50 or 60 Hertz ambient light.

- **Reel servo system.** All Pertec 7000-Series transports feature an indirect reel drive servo — a field proven principle resulting in minimum power consumption and, therefore, higher reliability for servo electronics. As another consequence, the replacement of a reel motor is greatly simplified and can be accomplished from the rear of the unit without removal of the front trim. The alignment and perpendicularity of the motor shaft is not critical . . . a big plus in minimizing overall system down time.

Tension arm position information is provided through a special Pertec innovated photo-translator. This photosensor device generates a reference voltage proportional to the angular position of the tension arm. Its signal activates the reel servo amplifier to maintain proper tape tension and reel servo speed.

- **Power supply.** A modular power supply is mounted on the rear of the deck providing easily changeable transformer taps.
- **Control logic.** All motion control logic, reel servo amplifiers, and power supply regulators are contained on a single printed circuit board assembly.

- **Power and servo control.** The reel servo amplifier and power supply regulator are contained on one printed circuit board assembly. Connections to and from the printed circuit board assembly are through inter-connect plugs enhancing serviceability and ease of replacement. Multi-board spares are virtually eliminated in addition to the numerous connectors required when using smaller printed circuit board assemblies.

The Pertec objective is to minimize interconnections with their inherent unreliability by laying out critical signal paths and coupling functional circuitry on a large printed circuit board.

Pertec's exclusive "Edit" capability is now a standard feature on all 7000-Series transports.

The write current, tape motion, and positioning is controlled by this feature enabling the rewriting of selective records. This is a basic requirement in many data entry applications for achieving record update or correction without leaving extraneous noise in the inter-record gap.

- **Data electronics.** Nine or Seven full channels of read/write electronics are provided on one printed circuit board. For NRZI transports, write data is presented to the transport as nine or seven data lines plus a clock and likewise, the transport presents the equivalent read channels plus a clock to the controller interface (excludes Model 7X30 which presents the peak detected pulses directly as they are read from the tape). In phase encoded versions, write data is presented to the transport via nine data lines with a double frequency clock line, and the read signals presented to the interface are nine distinct phase encoded waveforms. All input and output lines are TTL and DTL compatible incorporating ground true levels.

For single gap head transports (Models 7X20 and 7X30), the emphasis in deskewing is placed on the precise alignment of the guides with relations to the head, therefore, eliminating the use of adjustable single shots providing an ideal transport from a service and tape interchangeability criteria.

In read after write, dual gap head versions of the transport (Model 7X40), electronic write deskew is provided through Pertec's unique digital deskewing technique where only one potentiometer adjustment is required at very infrequent intervals. When reading IBM com-

patible tapes, the emphasis in read deskew remains in the precise positioning of the head guides providing minimal skew in both forward and reverse directions. However, in the write mode, the write head is deskewed using delayed digital techniques.

Another innovation introduced by Pertec is "SKEW-SCAN" designed to reduce preventative maintenance and service time. With this feature, the serviceman can adjust the total channel skew while observing a single test point.

• Front Panel Switches/Indicators:

POWER	Turns on and indicates AC power
LOAD	Energizes servo and advances tape to load point.
ON-LINE	Following load operation, sets transport to respond to external commands. (Note 1)
REWIND	Off-line function which causes reverse tape motion at nominal rewind speed.
WRT EN	Indicates when write enable rings in on supply reel. (Note 2)
HI DEN	Optional. Sets 7-track transport to read high-density data. (Note 1)
FORWARD	Off-line function which causes forward tape motion at synchronous speed. (Note 1)
REVERSE	Off-line function which causes reverse tape motion at synchronous speed. (Note 1)

Note 1. Not included on Model 7830

Note 2. Optional on Model 7830

AVAILABLE MODELS

The Pertec 7000-Series transports are available in three basic models — 7X20, 7X30, and 7X40. A number of options are provided with each to meet any industry standard requirements. Table 1 outlines the basic model numbers and specific capabilities regarding speed, densities, and the number of tracks. Following Table 1 is a listing of optional features. All units are shipped with a set of input/output connectors and a comprehensive maintenance manual.

Model 7X20 Read/Write

Model 7X20-Series is a single gap head unit available in 7 or 9 track, NRZI or phase encoded versions. This model provides select capability and has appropriate input/output gating for multi-transport daisy-chain operation. Output data from a deskew register in the transport is clocked with the read data strobe providing simultaneous pulses for most customer controllers. Available speeds are 6.25, 12.5, 18.75, and 25ips. The transport includes motion and control electronics, read/write electronics, read/write head, power supply, and dust-sealed cover door.

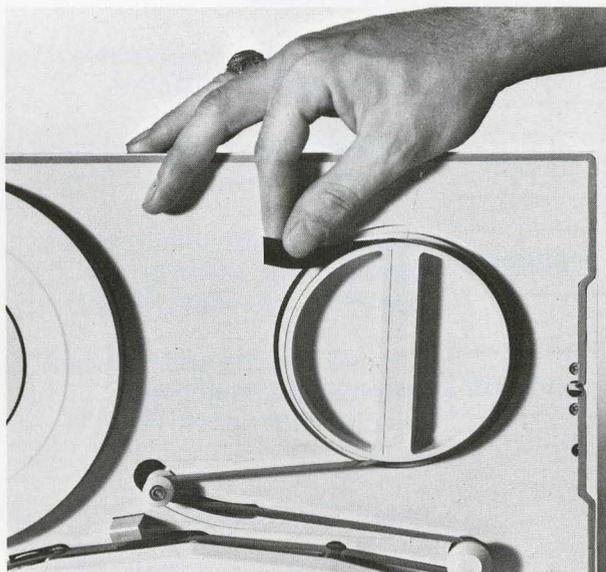
Model 7X30 Read/Write

A special low cost, single gap head model is now

available in 7 or 9 track, NRZI or phase encoded versions. Designed specifically for data terminal applications providing minimal operator control panel features and a special read data electronics interface allowing the customer to package the data deskew register stage in his own controller. Adapted for single transport operation, all selected input/output gating is eliminated providing an ideal configuration for cost conscious applications. Tape speeds of 6.25, 12.5, 18.75, and 25ips are available. The basic transport includes motion and control electronics, read/write electronics, read/write head, power supply, and dust-sealed cover door.

Model 7X40 Read-After-Write

For read-after-write applications requiring 7 or 9 track NRZI or phase encoded capability, the Model 7X40 is available in speeds between 12.5 and 25ips. The model uses a dual gap head with automatic multi-level read thresholds and has select capability and input/output gating for multi-transport daisy-chain operation. The basic transport includes motion and control electronics, read/write electronics, dual gap read-after-write head, power supply, and dust-sealed cover door.



All Pertec 7000-Series transports have a unique tape loading feature. Since these models will often be used by unskilled operators, Pertec has devised a unique design which eliminates the take-up reel, making tape loading and tape handling extremely fast and simple.

TABLE 1

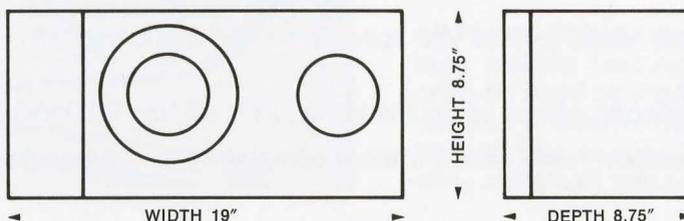
	Model Number	Number of Tracks	Data Density CPI	Data Transfer Rate (KHz)			
				6.25ips	12.5ips	18.75ips	25ips
Write/Read	7X30-9	9	800	5	10	15	20
	7X30-7	7	200-800	1.25-5	2.5-10	3.75-15	5-20
	7620-9	9	1600	10	20	30	40
	7820-9	9	800	5	10	15	20
	7820-75	7	800/556	5/3.48	10/6.95	15/10.43	20/13.9
	7820-72	7	800/200	5/1.25	10/2.5	15/3.75	20/5
	7520-72	7	556/200	3.48/1.25	6.95/2.5	10.43/3.75	13.9/5
Read-Aft-Wrt	7640-9	9	1600		20	30	40
	7840-9	9	800		10	15	20
	7840-75	7	800/556		10/6.95	15/10.43	20/13.9
	7840-72	7	800/200		10/2.5	15/3.75	20/5
	7540-72	7	556/200		6.95/2.5	10.43/3.75	13.9/5

OPTIONAL FEATURES which must be defined at the time of order:

- **color coordination panel.** An add-on, adhesive backed switch panel providing the customer with the capability to coordinate the transport to his own color scheme. Standard panel insert is pearl white.
- **swing-out hinge.** An optional hinge is provided for installations not using shrouded or removable panels.
- **special speeds.** For speeds other than the standard 6.25, 12.5, 18.75 and 25ips, consult with factory.
- **custom logo.**
- **220 vac operation.** Normally wired for 115 vac operation — the customer may specify 220 vac for European operation.
- **status gating.** Provides transport status when the transport is off-line (all models except 7X30-7/9).
- **transport ready.** Forces transport ready status without completing load sequence (all models except 7X30-7/9).

SPECIFICATIONS

Data Density	1600cpi Phase Encoded 800, 556, 200 cpi NRZI
Tape Velocity	25, 18.75, or 12.5ips Read-After-Write 25, 18.75, 12.5 or 6.25ips Read/Write
Instantaneous Speed Variation	±3%
Long Term Speed Variation	±1%
Start/Stop Displacement	0.19 inch ±0.02 (4.83 mm ±0.51)
Start/Stop Time	30.0 ms ±2.0 at 12.5ips inversely proportional to tape speed
Number of Tracks	7 or 9 IBM compatible (Models 2400, 729, and others)
Recording Mode	NRZI IBM compatible Phase Encoded IBM and ANSI compatible
Inter-Channel Displacement Error	150 microinches (3.8 microns) (max) at 800cpi and 1600cpi 200 microinches (5.08 microns) (max) at 556cpi
Tape Specifications	0.5 inch (12.7 mm) wide. 1.5 mil (38.1 microns) thick. Computer grade.
Tape Tension	7±1 ounce (198.5 grams)
Electronics	Silicon Solid State and 930-Series DTL Logic
Tape Unit Interface	DTL Logic (low true)
Rewind Speed	50ips (nominal) (for 6.25 or 12.5ips) 100ips (nominal) (for 18.75 or 25ips)
Reel Size	7 inch
Weight	25 lbs. (11.4 kg)
Mounting	Standard EIA Rack Mount
Power	117/230 vac 48 to 400Hz 70 watts
Operating Temperature	35° to 113°F (2° to 45°C)
Altitude	0 to 20,000 feet
Dimensions	
Height	8.75 inches
Width	19 inches
Depth (behind panel)	8.75 inches



INTERFACE DESCRIPTION

The connection to all Pertec synchronous transports is through three (3) interface connectors. The interface has been designed to allow multi-transport daisy-chain condition operation and, therefore, the true logic condition is set at ground level and false condition at 3 vdc. See interface circuits for appropriate drivers, receivers, and terminating resistors.

The input/output lines and their description is categorized into four (4) functional groups as follows:

1. TRANSPORT CONTROL INPUTS.

SELECT (SLT). LEVEL, when true, remotely conditions transport and enables all input/output signals (not available in 7X30 versions).

SYNCHRONOUS FORWARD COMMAND (SFC). LEVEL, when true, causes forward tape motion.

SYNCHRONOUS REVERSE COMMAND (SRC). LEVEL, when true, causes reverse tape motion.

REWIND COMMAND (RWC). PULSE, when true, causes reverse tape motion at rewind speed.

OFF-LINE COMMAND (OFFC). PULSE, when true, causes tape transport to be placed under manual control (not available in 7X30 versions).

SET WRITE STATUS (SWS). LEVEL, when true, 20 μ s after SFC conditions write current.

DATA DENSITY SELECT (DDS). LEVEL, when true, remotely selects high density — 7 tracks units only (not available in Models 7X30, 7620, and 7640).

OVERWRITE (OVW). Level, when true, controls write and erase current turn on or turn off for selective record updating.

2. TRANSPORT STATUS SIGNALS.

READY (RDY). LEVEL, when true, indicates transport is on-line and not rewinding.

ON-LINE (ONLINE). LEVEL, when true, indicates tape unit is ready for on-line operation (not available in 7X30).

REWINDING (RWD). LEVEL, when true, indicates unit is in rewind cycle (not available in 7X30).

END OF TAPE (EOT). LEVEL, when true, indicates end of tape photo tab is being detected.

LOAD POINT (LDP). LEVEL, when true, indicates tape unit is at load point.

FILE PROTECT (FPT). LEVEL, when true, indicates a reel of tape with its write enable ring removed is loaded on tape unit.

DATA DENSITY INDICATOR (DDI). LEVEL, when true, indicates the selection of high density (not available on Models 7X30, 7620, and 7640).

3. TRANSPORT DATA INPUTS.

WRITE DATA STROBE (WDS). PULSE, when true, causes data on input lines to be recorded on tape. In phase encoded transports, two clocks are required per character to copy the waveform on tape.

WRITE AMPLIFIER RESET (WARS). PULSE, when true, generates LRC character on NRZI tape. In addition, it is used to signal current turnoff when in the edit mode.

DATA INPUTS (WDP, WDO-7/8). LEVELS, one input line for each track on tape. Used in conjunction with write clock to record data.

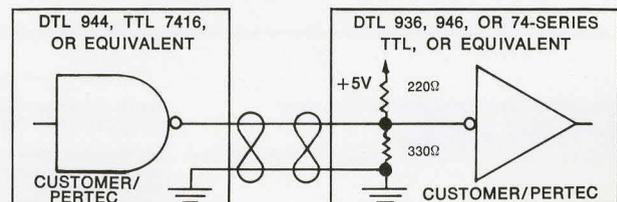
4. TRANSPORT DATA OUTPUTS.

READ DATA STROBE (RDS). PULSE, when true, is used for clocking data lines out of transport (not available on Models 7X30, 7620, and 7640).

READ DATA OUTPUT (RDP, RDO-7/8). LEVELS, one line for each track of data on tape. Data is assembled in parallel form and clocked out of tape unit with read clock. In phase encoded, the output signal is a replica of the data input. In Model 7x30, the output signal is the peak detected signal non-staticised.

LEVELS: True = Low = 0 to 0.4V
False = High = 3 VDC

PULSES: Amplitudes as above, 1 μ sec. typical width edge transmission delay over 20 feet of twisted cable in less than 200 nsec.



NOTES

PERTEC
PERIPHERAL EQUIPMENT

Policy Note:

Pertec reserves the right to change specifications at any time. It is Pertec policy to improve products as new techniques and components become available.

Regional Sales Offices:

Los Angeles: 9600 Irondale Avenue, Chatsworth, California 91311, (213) 882-0030 TWX (910) 494-2093
Chicago: 6300 North River Road, Suite 102, Rosemont, Illinois 60018, (312) 696-2460
Boston: 235 Bear Hill Road, Waltham, Massachusetts 02154, (617) 890-6230, 890-0126
London: 21 London Street, Reading, Berkshire RG1 4PR, England, Reading 582-115/6/7