GIER

ELECTRONICS

PAPER TAPE READER

RC2000
PAPER TAPE READER

RESET | READ | SKIP | UP
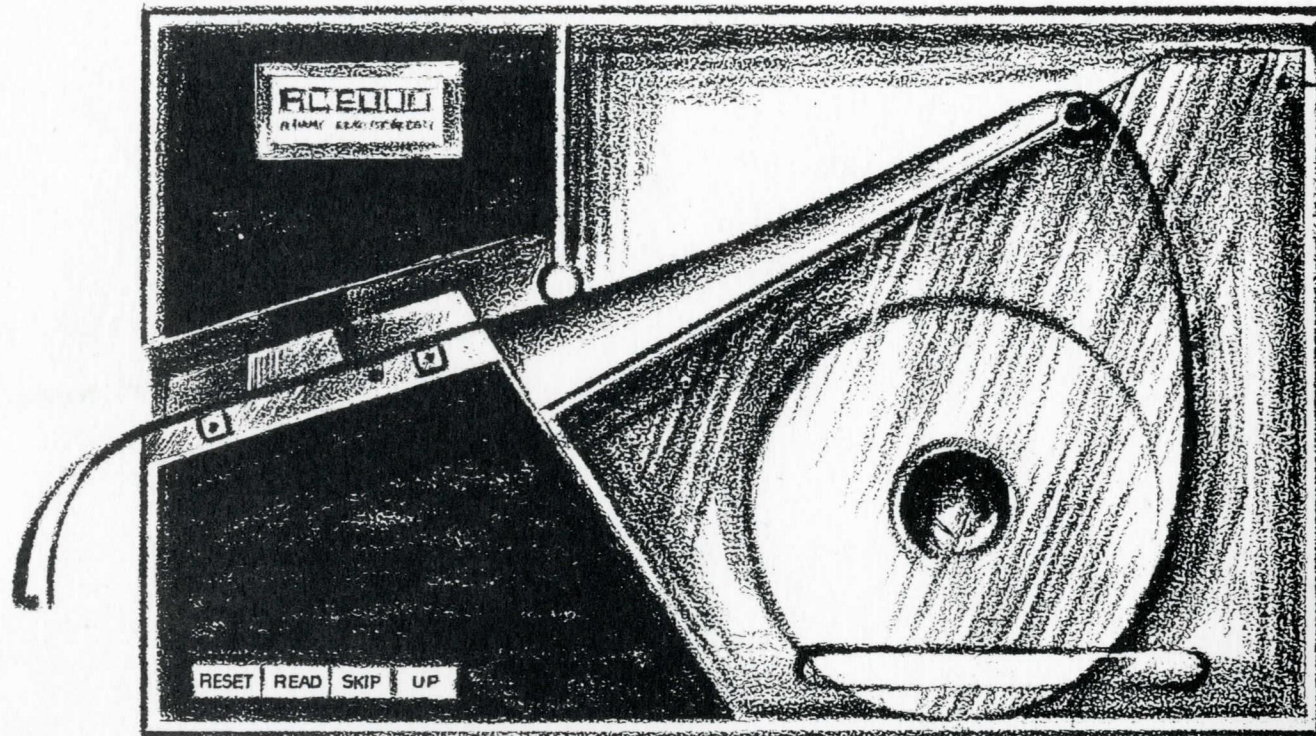
Speed, reliability, and flexibility, combined with quality at moderate price, are some of the features inherent in the new RC 200 Paper Tape Reader, developed to meet today's demand for high-speed paper tape input.

Designed for both on-line and off-line applications in modern EDP, the RC 2000 can be used for direct input of programs, data, etc. to electronic computers, or employed as a general purpose input device in conjunction with magnetic tape stations and/or other peripherals, e. g. for off-line data conversion with GIER Electronics' RC 3000 Converter.

With its advanced design, RC 2000 provides significant advantages not found in other paper tape readers. Carefully manufactured in accordance with rigorous standards of quality, the RC 2000 is a compact, well-designed, self-contained unit of rugged construction and modern appearance. In addition to being a fully transistorized, photo-electric reader, RC 2000 is **servo buffered**—an imposing new feature, typical of GIER Electronics' contributions to the development of peripheral devices.

The RC 2000 Paper Tape Reader is fast and fool-proof. It can read at 2000 characters/second, and is simple to operate: there are few controls, a minimum of moving parts, and everything pertinent to operation is readily visible and conveniently accessible on the front panel. Loading of tapes is accomplished quickly and easily. Tapes unwind freely, eliminating feed difficulties and the risk of tape breakage.

Designed, developed, and produced exclusively by GIER Electronics for use with advanced digital processing equipment, the reliability and efficiency of the RC 2000 has been field proven in numerous installations throughout Europe since its appearance in the Autumn of 1963.

The Servo Input Buffer System

RC 2000 incorporates a servo input buffer system whereby the number of unprocessed characters in a core store of 256 words regulates the reading speed.
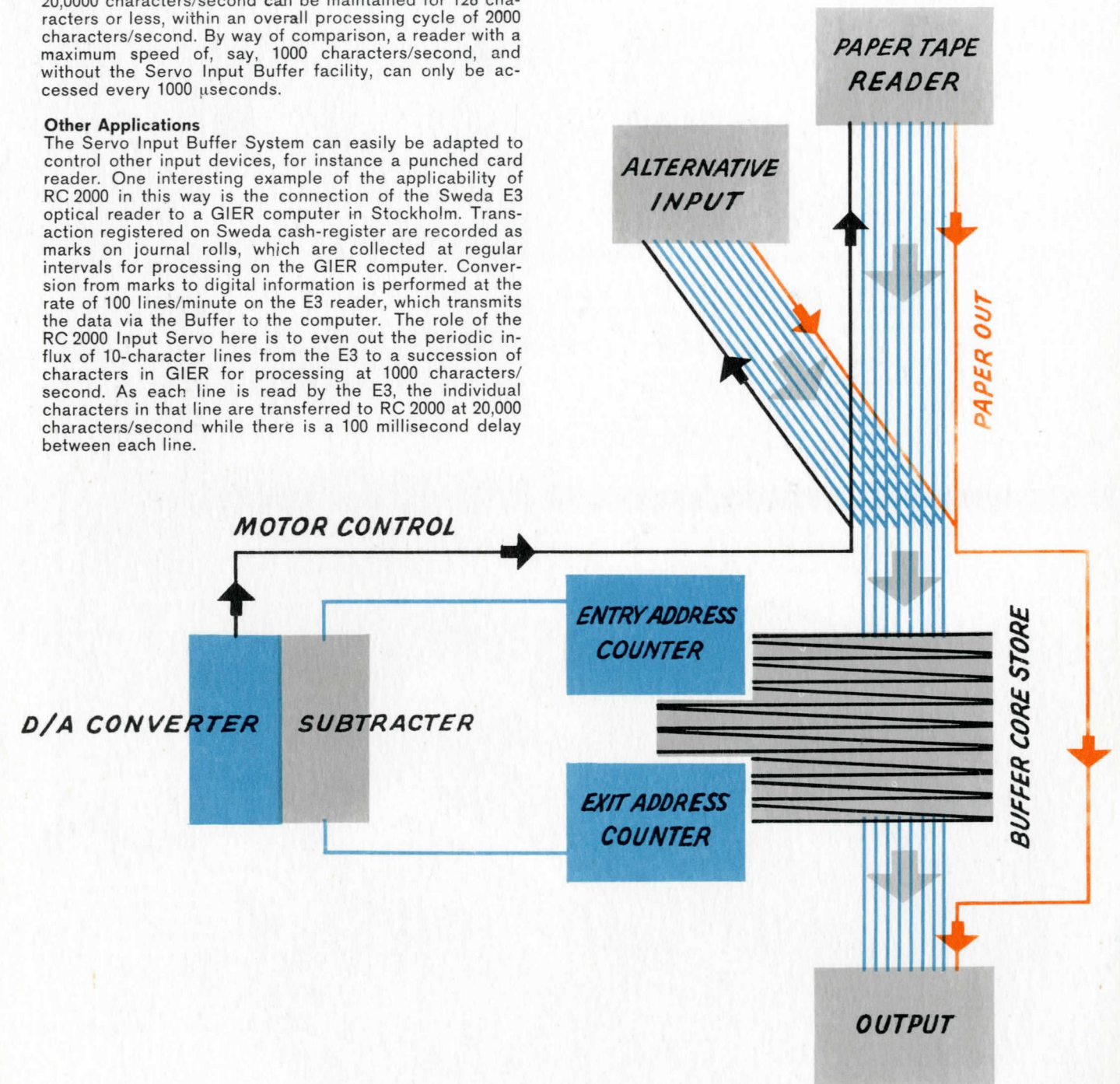
By employing this core store as a buffer between RC 2000 and the computer or other processing device, it has been possible to let the tape be driven by a simple servo motor, thus eliminating abrupt starting and stopping, and thereby avoiding undue stress and stretching and the resulting risk of tape breakage.

Apart from these advantages, characters in the Buffer can be accessed by the processing device at speeds greater than the actual reading speed. Since characters can be accessed every 100 μseconds, processing speeds of up to 20,0000 characters/second can be maintained for 128 characters or less, within an overall processing cycle of 2000 characters/second. By way of comparison, a reader with a maximum speed of, say, 1000 characters/second, and without the Servo Input Buffer facility, can only be accessed every 1000 μseconds.

Other Applications

The Servo Input Buffer System can easily be adapted to control other input devices, for instance a punched card reader. One interesting example of the applicability of RC 2000 in this way is the connection of the Sweda E3 optical reader to a GIER computer in Stockholm. Transaction registered on Sweda cash-register are recorded as marks on journal rolls, which are collected at regular intervals for processing on the GIER computer. Conversion from marks to digital information is performed at the rate of 100 lines/minute on the E3 reader, which transmits the data via the Buffer to the computer. The role of the RC 2000 Input Servo here is to even out the periodic influx of 10-character lines from the E3 to a succession of characters in GIER for processing at 1000 characters/second. As each line is read by the E3, the individual characters in that line are transferred to RC 2000 at 20,000 characters/second while there is a 100 millisecond delay between each line.

THE SERVO INPUT BUFFER SYSTEM

PAPER TAPE READER

ALTERNATIVE INPUT

PAPER OUT

MOTOR CONTROL

D/A CONVERTER | SUBTRACTER

ENTRY ADDRESS COUNTER

EXIT ADDRESS COUNTER

BUFFER CORE STORE

OUTPUT

FEATURES

RC 2000 can read paper tapes at 2000 characters/second, the actual reading speed being dependent on the number of unprocessed characters in the Input Buffer. For reliability and simplicity the number of mechanical parts has been reduced to an absolute minimum through the use of electronic functions.

Perfect Tape Feed – No Tape Breakage
Tapes unwind freely from the Tape Reel Room. Pinch rollers and mechanical clutches are non-existent, minimizing tape stretch and stress, and thereby extending tape life and resulting in smoother, more uniform tape feed.

Effortless Loading
Reels are placed in the Tape Reel Room. The leading end of the tape is simply drawn along the Tape Corridor and laid in the Tape Guide, whereupon the Pressure Lid is pushed down over the tape.

Types of Tape Accepted
RC 2000 reads tapes punched in any suitable medium, accepting the following standard types: One Inch (max. 8 tracks), Seven-Eights Inch (max. 7 tracks). Olivetti (6 track, rectangular holes), and Eleven-Sixteenths Inch (max. 5 tracks).

Adaptability
RC 2000 can be connected as an input device to any other data processing device, while the Servo Input Buffer System can be used to control other input devices.

The Paper Out Control ensures that RC 2000 stops automatically at the physical end of tape. All further input to the Buffer is blocked, and the Pressure Lid holding the tape in place in the Tape Guide springs up automatically to facilitate reloading.

Application in the RC 3000 Converter
Although the speed of the RC 2000 is outstanding for many purposes, increasing numbers of installations can only operate with the input/output speeds of 20,000 characters/second and upwards provided by the exclusive use of magnetic tape. In order to serve this end, the RC 3000 Converter has been developed, incorporating all the features of RC 2000, so that off-line conversion from paper tape to magnetic tape can be achieved in a minimum of time and with maximum effectiveness, and providing at the same time adequate facilities for conversion from magnetic tape to, for instance, a line printer

Other Advanced Design Features

Uniform light intensity at read head automatically ensured.

Construction of read head permits reading of spliced tapes; splicing easily accomplished using special adhesive tape.

Noiseless operation.

Recessed mounting—no awkward protrusions—everything included within housing and front panel area.

Rapid Switching of Tape Types
The Tape Guide, Pressure Lid, and Tape Width Selectors are conveniently accessible on the front panel. Switching from one type of tape to another is accomplished swiftly and simply. Removal of the read head unnecessary. Appropriate accomodation of the various tape widths made by turning the two Tape Width Selector knobs on the front panel.
When the desired tape width has been selected, the connections between the photocells in the read head and the Input Buffer are automatically switched to correspond to the type of tape in question.

Ease of Operation
Besides the two Tape Width Selector knobs, only four push-button controls are required for operation.
RESET clears the Input Buffer, whereupon the first 100–200 characters are read in.
READ allows characters to be read in from tape to the Input Buffer in continuation of those already read in.
SKIP activates the feed motor directly, enabling tape to be run out at full speed. No characters are read in to the Input Buffer.
UP raises the Pressure Lid.

CHARACTERISTICS

Tape Specifications
Media: RC 2000 accepts tapes punched in any suitable medium, e. g. paper, oiled paper, mylar, metallized mylar.

Types:	Number of Tracks	Nominal Width
1. One Inch	max. 8	25.4 mm (1″)
2. Seven-Eights	max. 7	22.2 mm (⅞″)
3. Olivetti	6	20.5 mm (rectangular)
4. Eleven-Sixteenths	5	17.5 mm (¹¹/₁₆″)

Spliced Tapes: RC 2000 also reads spliced tapes; splicing accomplished with special transparent, self-adhesive tape.
Thickness Tolerance: The distance between the Pressure Lid and the surface of the Tape Guide is adjustable, but is normally set to allow thicknesses of from two to three times that of normal tape to pass through the reader.
Standards: The specifications for Standard One Inch and Standard Eleven-Sixteenths Inch tapes are designed to comply with the RS-227 Standard of the American Electronic Industries Association.

Servo Input Buffer System
Buffer core store of 256 8-bit words.
Number of unprocessed characters in the Buffer regulates reading speed.
Adaptable to control alternative input devices.
Operating Speeds 0 to 2000 characters/second
Dimensions Width: 52 cm Height: 40 cm
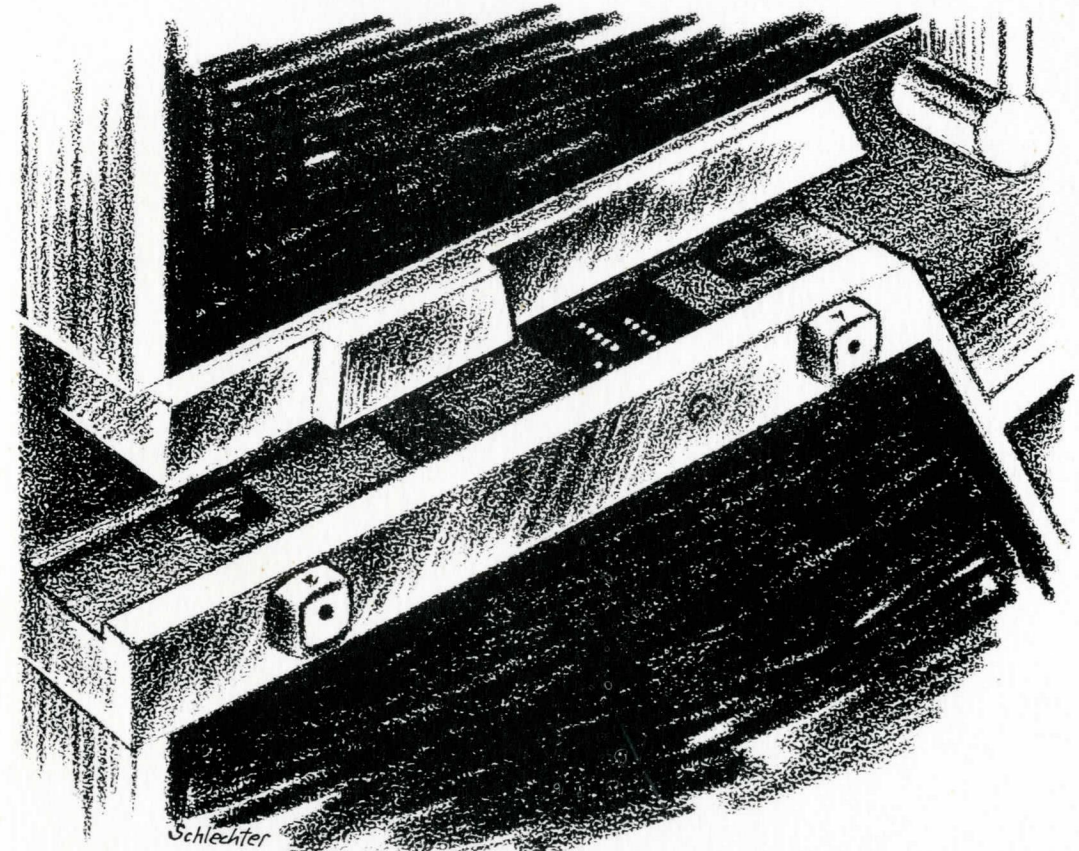Depth: 32 cm Weight: 32 kg

Environment
Ambient Air Temperature: 15–30° C.
Relative Humidity: 30–70 %.
Power Requirements
220 v (single phase, 50 Hz) at 200 W
(60 Hz, 115 V and 127 V catered for)

RC 2000 READ HEAD

Schlechter