RCA

IMPROVED PERFORMANCE FOR THE 70's . . . A NEW COLOR TV TAPE RECORDER-THE AUTOMATIC

TR-70C

TR-70C

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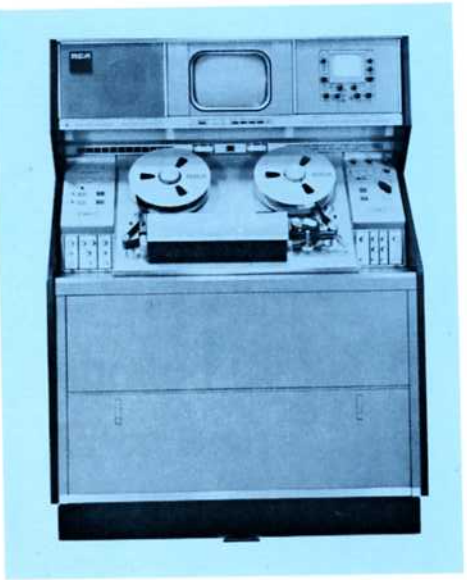
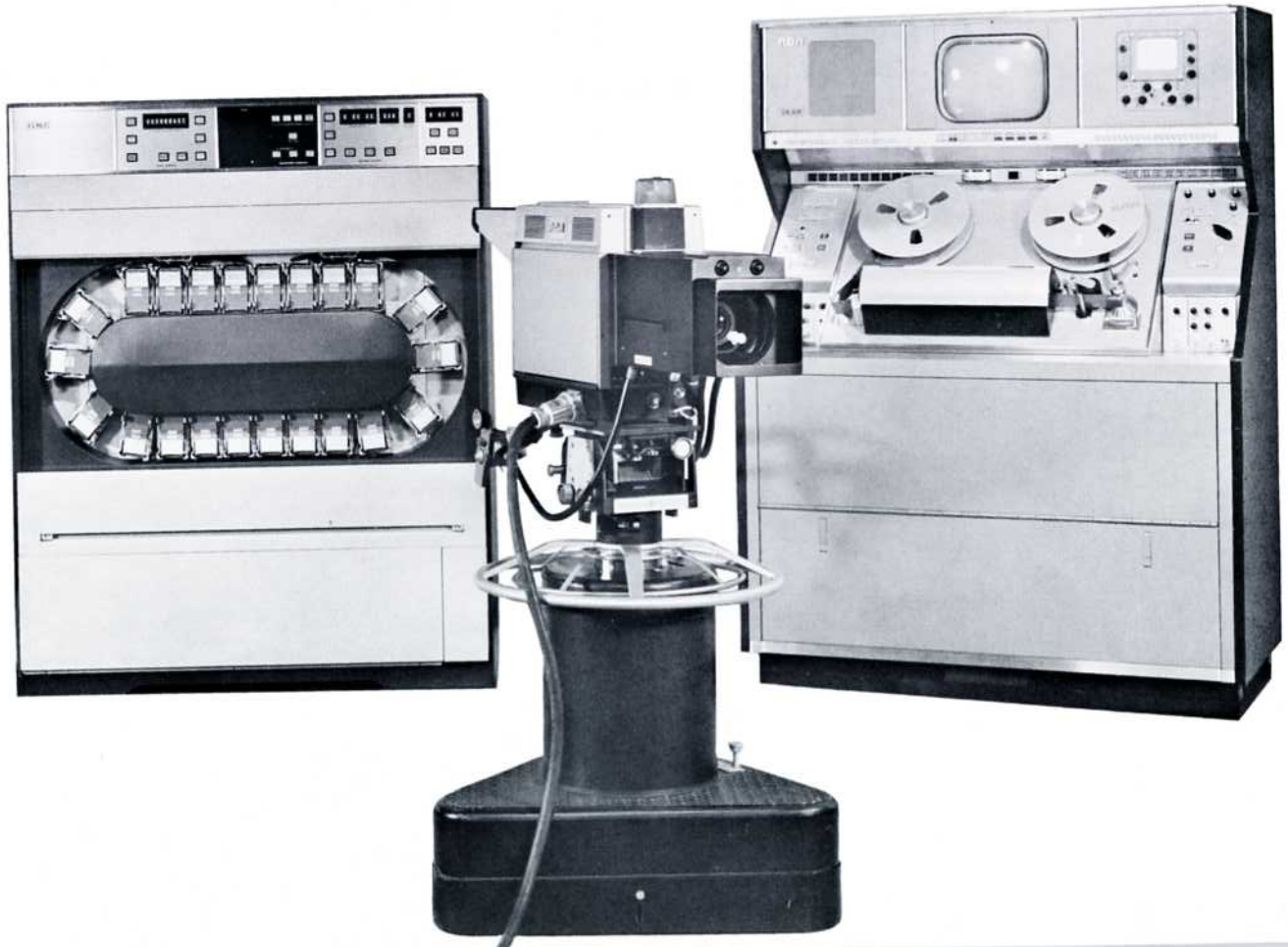


TR-70C The Automatic TV Tape Recorder for a New Dimension of Programming Capability

Video tape productions are increasingly becoming the major source of programming for the modern television station. To develop this programming, stations require sophisticated video tape recorders to complement their large investment in color cameras and terminal equipment. And, besides high-quality performance they need a VTR that automatically produces several generations from program tapes, with minimum adjustment and maximum reliability.

The new TR-70C offers automatic features, teleproduction capability and quality performance on PAL or NTSC standards.

The unique TCR-100 Tape Cartridge Recorder for automated station programming and the new RCA Programmed Editing System for precise electronic editing combine with the TR-70C to provide stations with the facility they need to handle computer-oriented programming, production and presentation techniques.



TR-70C
Improved Performance for the 70's with Advanced Standards of Engineering Excellence

Technical performance and operator-oriented instrumentation make the TR-70C the most automatic and dependable of all VTR's.

A newly designed integrated-circuit servo system provides faster lockup time, greater circuit stability and simpler operation. A new, long-life headwheel panel contributes to overall operational uniformity.

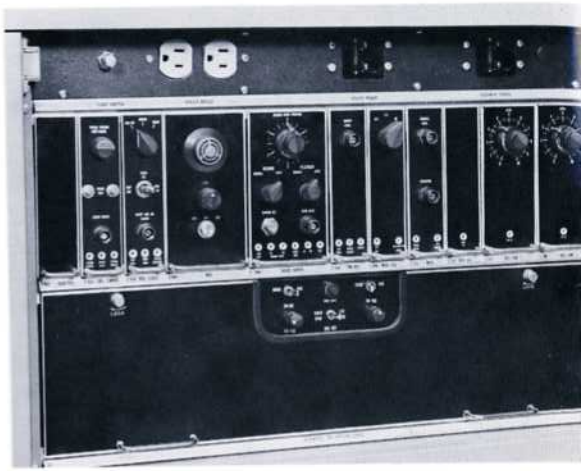
New Integrated Circuit Servo System

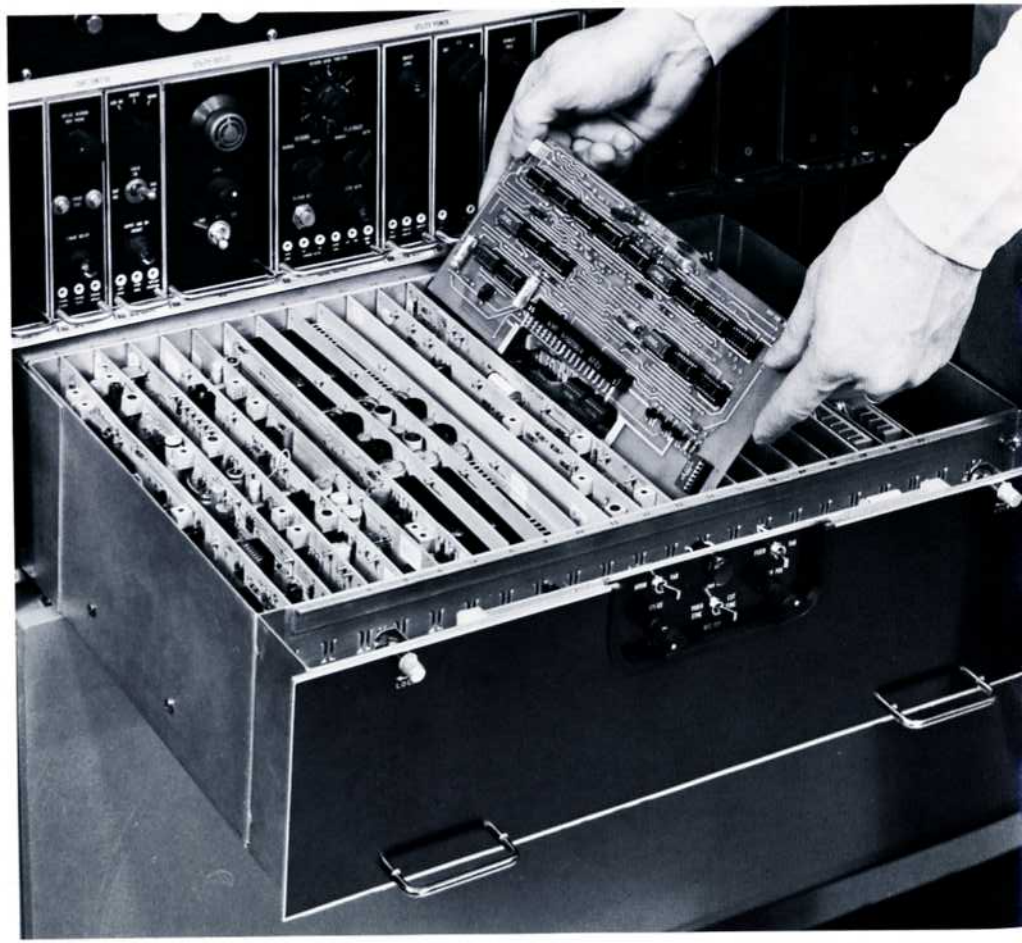
The advanced closed-loop servo system in the TR-70C increases production output and operational efficiency of video tape systems. Its quick stabilization means less pre-roll time is required for programming. Integrated circuits, along with digital control techniques insure long term stability and easy set up of the servo system.

The TR-70C capstan servo features a low inertia DC motor. Rapid start and rapid recovery from non-synchronous switches are achieved by this motor and by the high sampling rate of the servo system. The headwheel servo employs a pulse-width modulation technique for control of headwheel phase and velocity. During the initial lockup of the headwheel a two-frequency control is employed. Control of the headwheel motor is accomplished by applying forward and reverse torque, insuring complete and positive control of the headwheel under all conditions.

Important functions such as adjustable tonewheel phasing for precise electronic editing and rapid stop headwheel (reverse torque is applied to the headwheel motor when the stop mode is selected to eliminate headwheel spin) prevent tape and headwheel damage.

The servo system performs on either 625 PAL or 525 NTSC line standards.

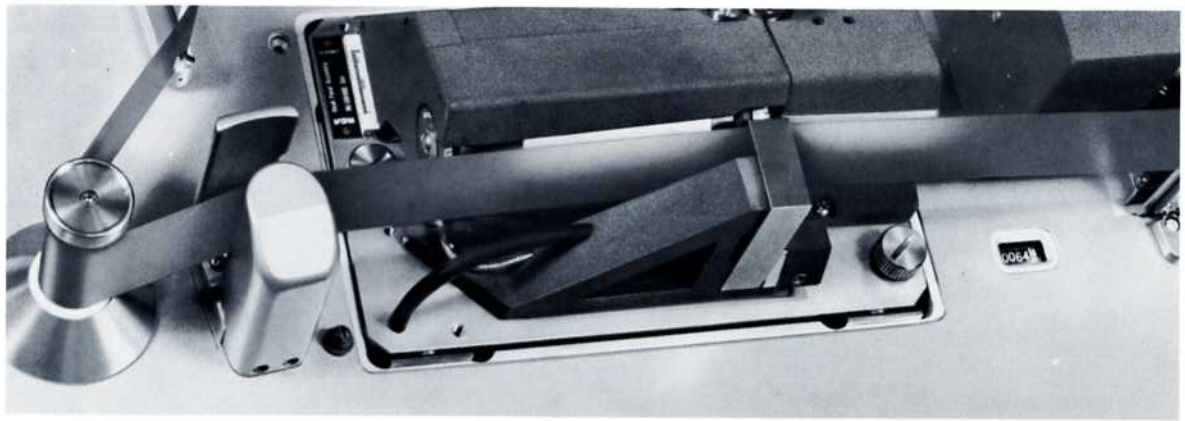




New "HTR" Headwheel Panels

The RCA series "HTR" headwheel panels offer a new degree of performance and durability. A specially developed material called "Alfecon II" increases both headwheel life and head-to-head uniformity, resulting in improved daily performance and lower operating costs. Furthermore the new HTR panel enables earlier model RCA highband VTR's to be upgraded to higher performance levels, since it is interchangeable with the headwheel panel currently being used.

Incorporated within the headwheel housing are a built-in FM sweep probe for test purposes and an elapsed time indicator to simplify "head-hour" log keeping. A mechanical guide stop is automatically activated each time the VTR enters the record mode, which assures that a standard record penetration will be realized. The new panel also includes a "tool post" for mounting an indicator for accurate measurement of tip protrusion.



TR 70-C
The Modern TV Tape Recorder for Consistent, High-Quality Performance

Record Current Optimizer

The time required to optimize video head record currents has been reduced to a few seconds by the TR-70C Record Current Optimizer (RCO). This new device provides an instantaneous visual display of the output of each head as the record currents are adjusted, so that it is now practical to optimize record currents before each recording, assuring the highest level of picture quality.

FM Test Facility

The RCO is only one of many functions of the FM test facility. This service bank is also used to adjust resonance of the video heads, to measure signal-to-noise and frequency response of the recorder, and to perform other tests for optimum machine operation.

Auto Stop Cue

The Auto Stop Cue feature is particularly useful for automatically cueing tapes consisting of many short program segments or a single program or segment which requires frequent replay.

Audio tones are recorded on the cue track and are sensed by the machine electronics to activate the stop mode. Tapes that have been cued electronically in this manner need only to be loaded on the VTR and placed in the play mode. The Auto Stop Cue senses the audio tone on the cue track and activates the stop mode automatically. The tape is now cued, ready to be started (either locally or remotely) without further attention.

CENTRAL DC METERING

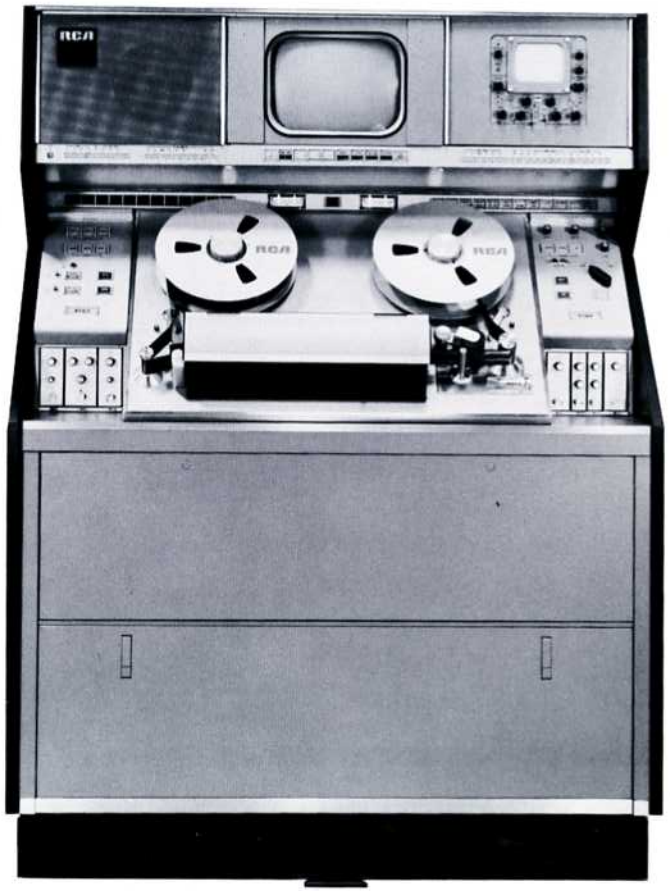
SOLID-STATE MONITORS

EAR-LEVEL AUDIO MONITORING
High Fidelity Audio

EYE-LEVEL VIDEO MONITORING
Picture Waveform

SLIDE-OUT MONITORS

PUSHBUTTON
STANDARDS SELECTOR
FM Standards
Line Standards
Tape Speed



AUTOMATIC INSTRUMENTATION
Automatic FM Standard Selection
Automatic Stop Cue
Central Alarm System

RECORD CURRENT
OPTIMIZER

INPUT/RECORD CONTROLS
Automatic Guide Positioner
2-Channel Input Selector
H-F Compensation Control
Channel Identification

SPOT ERASE

REARSIDE ERASE

STANDARD MODULES
All Plug-In
Pre-Wired for Accessories

HETERODYNE MODULATOR

OUTPUT/PLAY CONTROLS
Variable Speed Wind Control
Simultaneous Audio/CT Phase

NEW LONG-LIFE
HTR HEADWHEEL

ADVANCED CLOSED-LOOP
SERVO SYSTEM

AUTOMATIC WATER DRAIN

FOOT BRAKE RELEASE

UP-FRONT
ACCESS SERVICING
Pushbutton Monitoring Points
160 Test Points

4-MODE FM TEST FACILITY

CALIBRATION PULSE

Rearside Selective Erase

The rearside selective erase head is designed to erase either the full width of the tape or, on a selective basis, only the video portion, while leaving the audio and control track intact.

The erase head contacts the tape on the mylar side, resulting in less erase head and tape wear and less chance of scratching the tape.

Instrumentation

Comprehensive instrumentation is always an important design criterion of the TR-70 series equipment. An extensive array of red status indicators is complemented by an additional, centrally-located alarm system that produces an audible signal along with a flashing red light to alert the operator when he is not in the immediate vicinity of the machine. The white indicators on the right-hand side of the machine indicate any non-standard condition that the machine may be operating in.

Monitors

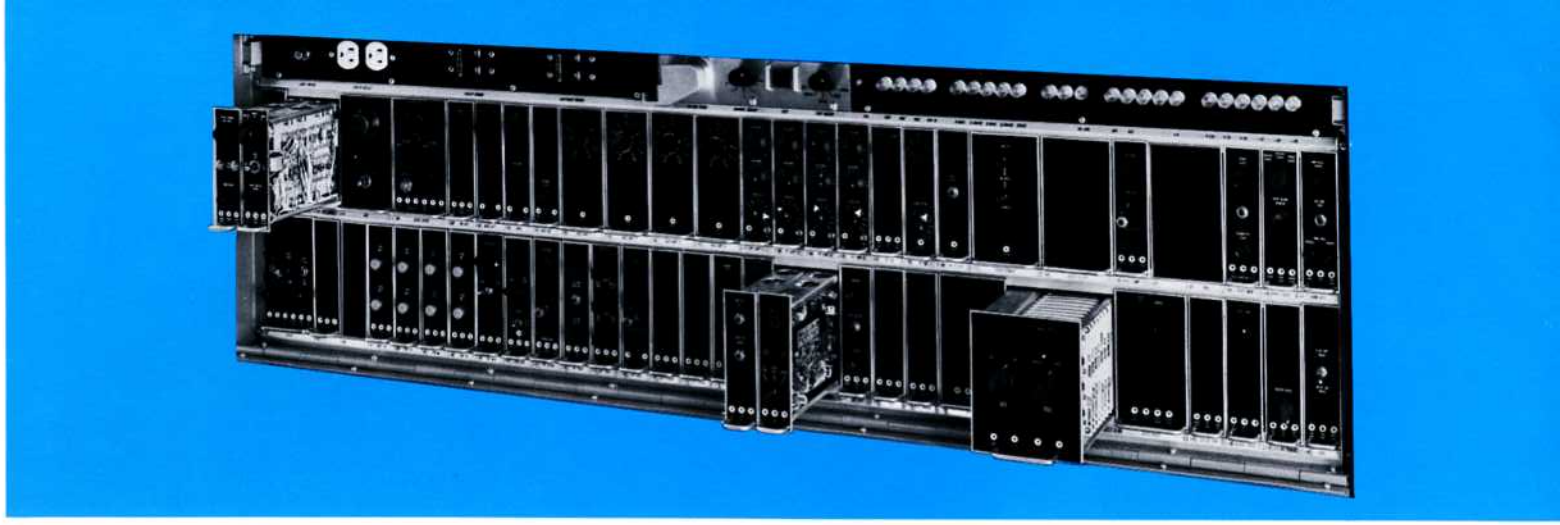
Monitoring facilities include audio, picture and waveform monitors conveniently located at ear and eye level. The extended range of the audio monitoring system permits detection of low frequency distortion (hum) in the audio signal. Pulse-cross display is featured in the high-quality solid-state picture monitor. The sensitivity of the waveform monitor is sufficient to enable monitoring of all important waveforms as well as the 2T and 20T pulses.

Automatic Standard Selection

The automatic FM standards selector in the TR-70C ensures that the appropriate playback standard is used. Circuitry in the TR-70C guarantees proper standards selection by detecting the frequency corresponding to blanking level and then switching the machine electronics to the proper deviation standard.

Compensation Networks for Record and Play

The High Frequency control enables the operator to manipulate the incoming signal by changing the response at the color subcarrier so that the proper level is recorded. Conversely, recorded tapes with abnormal chroma can be compensated for by a chroma control which adjusts only the chrominance components of the signal. The TR-70C also functions in a Unity mode, by-passing the above controls.



A Complete Teleproduction Center

Built-In Capability

Teleproduction is the process whereby a series of segments of programming, either pre-recorded on tape, or from telecine or live sources, are combined into one final, continuous video tape program. Production of this master tape usually entails dubbing of the tape and film segments and electronic editing of them to an accuracy of one frame, as they are recorded together into the final video tape. The TR-70C with its technical performance capability for multiple generation recording and the Programmed Editing System combine to provide the necessary facility demanded by Teleproduction.

Custom Accessories for Better Performance

A complete line of custom designed optional accessories is available to further extend the production capability of the TR-70C.

Color Dropout Compensator:

The new Color Dropout Compensator inserts correctly phased color on either PAL or NTSC color standards.

Correct color phase adjustment is electronically achieved through the use of a built-in dropout simulator, thus test tapes are not required for set-up purposes. Once properly set-up, no further operator attention is necessary. Dropouts are corrected automatically.

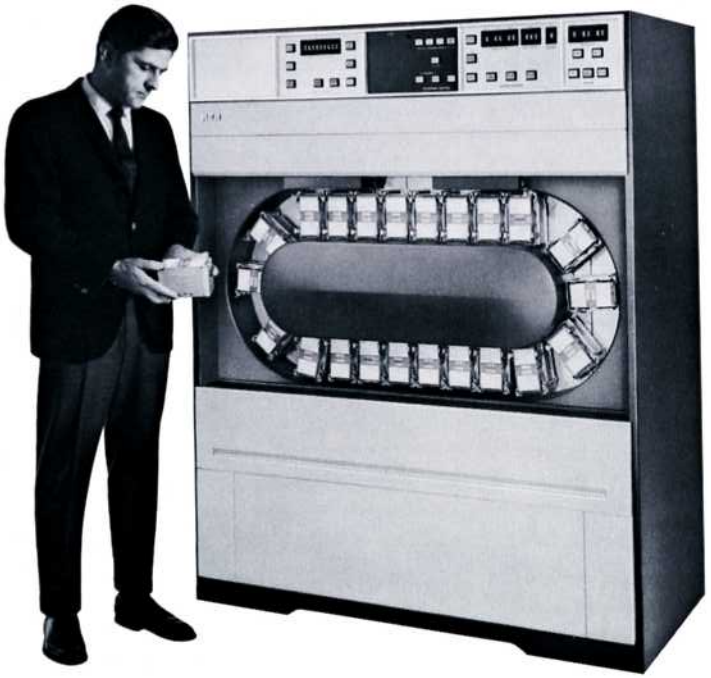
Chroma Amplitude and Velocity Error Corrector:

The Chroma Amplitude and Velocity Error Corrector (CAVEC) automatically eliminates "banding" effects caused by improper playback equalization or velocity errors. CAVEC employs line by line correction (both chroma and velocity) to insure the highest degree of picture compensation.

Electronic Splicing

Another valuable teleproduction accessory to the TR-70C is the electronic splicer which offers a fast, precise means of electronically adding or replacing recorded material, in color or monochrome. The TR-70C electronic splicer operates in two different modes: "add-on" and "insert". Set-up of the Electronic Splicer is accomplished by a unique electronic erase test feature which determines the activation of video erase.

For a New Dimension in Video Programming...



The Time Code Editor

The RCA Time Code Editing System is based on the utilization of time information in the form of a digital code which is generated by an electronic clock. The System extends the production capability of the TR-70C and is packaged in a building block concept so that custom tailoring an editing system is easily accomplished for present and future requirements.

The basic equipment consists of a Unit Programmer and a Time Code Generator, while the accessory equipment includes an Auxiliary Programmer, Auxiliary Time Display, and Transport Control.

A unique and exclusive feature of the Unit Programmer is its ability to provide a single button control for the operator to perform an entire edit sequence.

The TCR-100 Cartridge System

The TR-70C, when integrated with the TCR-100 Tape Cartridge Recorder, introduces new techniques in broadcast station TV programming. The TCR-100 records and plays video tape in a cartridge format. Two transport stations are included which can be programmed to replay up to 22 cartridges (3 minutes each) in a sequence or integrated with other program sources (TeleCine, live, video tape).

The TCR-100 is available in a configuration which time shares the TR-70C or TR-60 electronics. It can also be ordered with a companion signal processing system so that it may function as a self-contained Video Tape Cartridge System.

Specifications for Automatic Color

The TR-70C offers industry-accepted specifications for differential phase and gain, signal-to-noise, frequency response, K-factor, moire and other performance levels used to measure picture quality.

	625 Line Standard	525 Line Standard
Frequency Response (100 KHz ref.)	±0.5 dB 25 Hz −5.5 MHz −3.0 dB max. @ 5.9 MHz	±0.5 dB 30 Hz −4.1 MHz −3.0 dB max. @ 4.3 MHz
Signal-to-Noise (Normal Speed) (Peak-to-Peak Video/RMS Noise on an interchange basis)	43 dB	46 dB
Transient Response K-Factor		
2T sine² test signal	1%	1%
20T sine² test signal	1%	1%
Rise Time or Fall Time (20 ns or less on input)	80 ns max.	110 ns max.
Low Frequency Linearity	1% max.	1% max.
Differential Gain	3%	3%
Differential Phase	3° @ 4.43 MHz	3° @ 3.58 MHz
Moire (Color bars, 75% modulation)	34 dB	43 dB
Lock Up time: from stop	2.5	2.0
(seconds) from standby	1.5	1.0

(All above performance figures are for 39.7 cm/s highband operation)
For complete information, contact your local authorized RCA Distributor or the nearest RCA International Marketing Subsidiary

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Form 3J5634

Printed in U.S.A.