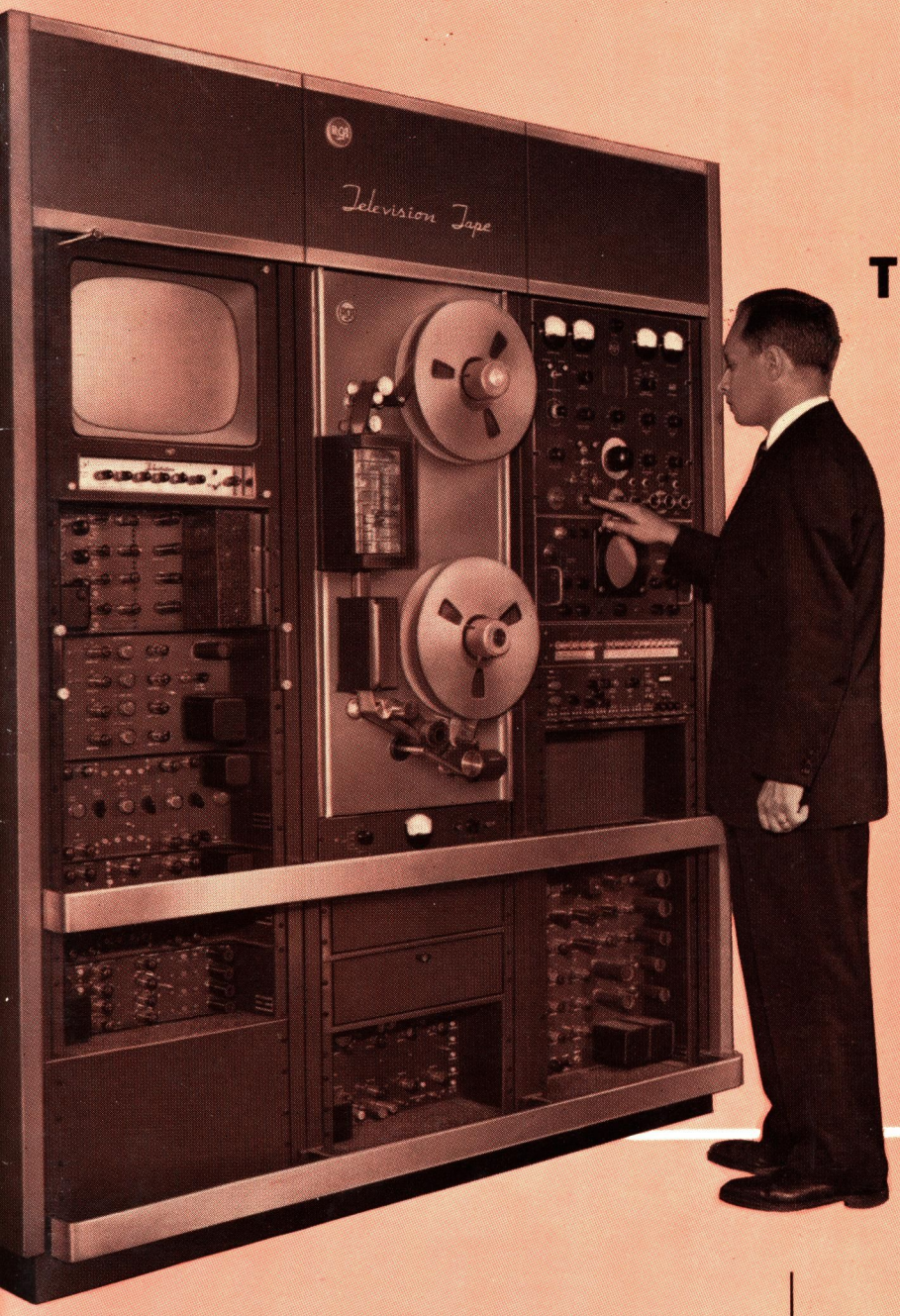
(First Edition)



TELEVISION TAPE AND FILM EQUIPMENT

TV TAPE RECORDERS

FILM CAMERAS

MULTIPLEXERS

TV TAPE ACCESSORIES

FILM PROJECTORS

SLIDE PROJECTORS

TELEVISION TAPE and FILM EQUIPMENT CATALOG

(First Edition)

PRICE $1.00

RADIO CORPORATION OF AMERICA

Broadcast and Television Division Camden 2, N. J.

ABOUT THIS CATALOG

This Catalog is devoted solely to information on RCA Television Tape and Film Equipment designed especially for television station and closed-circuit use. Other RCA Broadcast Equipment Catalogs contain similar information on audio, TV camera, terminal, microwave, and test and measuring equipment. Also on AM, FM and TV transmitters, antennas, transmission line equipment and accessories.

The information contained in this catalog is intended to serve as a buying guide for the user. Complete specifications and ordering information are supplied. Readers who desire more information or individual bulletins on particular equipment items are invited to write to the RCA Broadcast Representative in the RCA Sales Office nearest them (see opposite page).

OTHER RCA TECHNICAL PRODUCTS

The RCA equipment described in this catalog is specifically designed for broadcast station and closed circuit use. RCA also manufactures many other electronic products including: two-way radio and microwave radio communication equipment; optical and magnetic film recording equipment; sound systems of all types; 16mm projectors and magnetic recorders; industrial inspection and automation equipment; scientific instruments, such as the electron microscope; industrial television systems; intercoms; and many types of custom-built equipment for industry, the military, educational and medical services. Information describing these products may be obtained from RCA Sales Offices.

HOW TO ORDER

The RCA Television Tape and Film Equipment shown in this catalog is sold directly through RCA Broadcast Representatives, who are familiar with broadcast equipment and related problems. One or more of these RCA Representatives are located in each of the RCA Sales Offices listed below. Orders for equipment shown in this catalog, or requests for additional information, should be directed to the most convenient of these offices.

PRICES

The prices of the various equipment units shown in this catalog are given in a separate price list. Prices are listed in the order in which they are shown in the catalog. To determine the price of any equipment first note the page on which it is shown in the catalog, then consult the price list in accordance with this page number. Equipments are identified by type and MI (Master Item) numbers which are used to identify apparatus on invoices and packing slips.

YOU CAN LOCATE YOUR NEAREST RCA REPRESENTATIVE FROM THIS LIST

RCA SALES OFFICES

1121 Rhodes-Haverty Building
ATLANTA 3, GEORGIA
Jackson 4-7703

•

200 Berkeley Street, Room 2301
BOSTON 16, MASSACHUSETTS
Hubbard 2-5765

•

Front and Cooper Streets
CAMDEN 2, NEW JERSEY
Woodlawn 3-8000

•

504 Charlottetown Mall
CHARLOTTE 4, NORTH CAROLINA
333-3996

•

2000 Merchandise Mart Plaza
CHICAGO 54, ILLINOIS
467-5900

•

1600 Keith Building
CLEVELAND 15, OHIO
Cherry 1-3450

7901 Carpenter Freeway
DALLAS 35, TEXAS
Melrose 1-3050

•

12605 Arnold Street
DETROIT 39, MICHIGAN
Kenwood 4-5100

•

1560 North Vine Street
HOLLYWOOD 28, CALIFORNIA
Hollywood 9-2154

•

501 N. LaSalle Street
INDIANAPOLIS, INDIANA
Melrose 6-5321

•

7711 State Line Road
KANSAS CITY 14, MISSOURI
Emerson 1-6770

•

3189 Summer Avenue
MEMPHIS, TENNESSEE
Fairfax 4-4434

36 West 49th Street
NEW YORK 20, NEW YORK
Judson 6-3800

•

1841 N.E. Couch Street
PORTLAND 12, OREGON
Belmont 4-7297

•

420 Taylor Street
SAN FRANCISCO 2, CALIFORNIA
Ordway 3-8027

•

2250 1st Avenue, South
SEATTLE 4, WASHINGTON
Main 2-8350

•

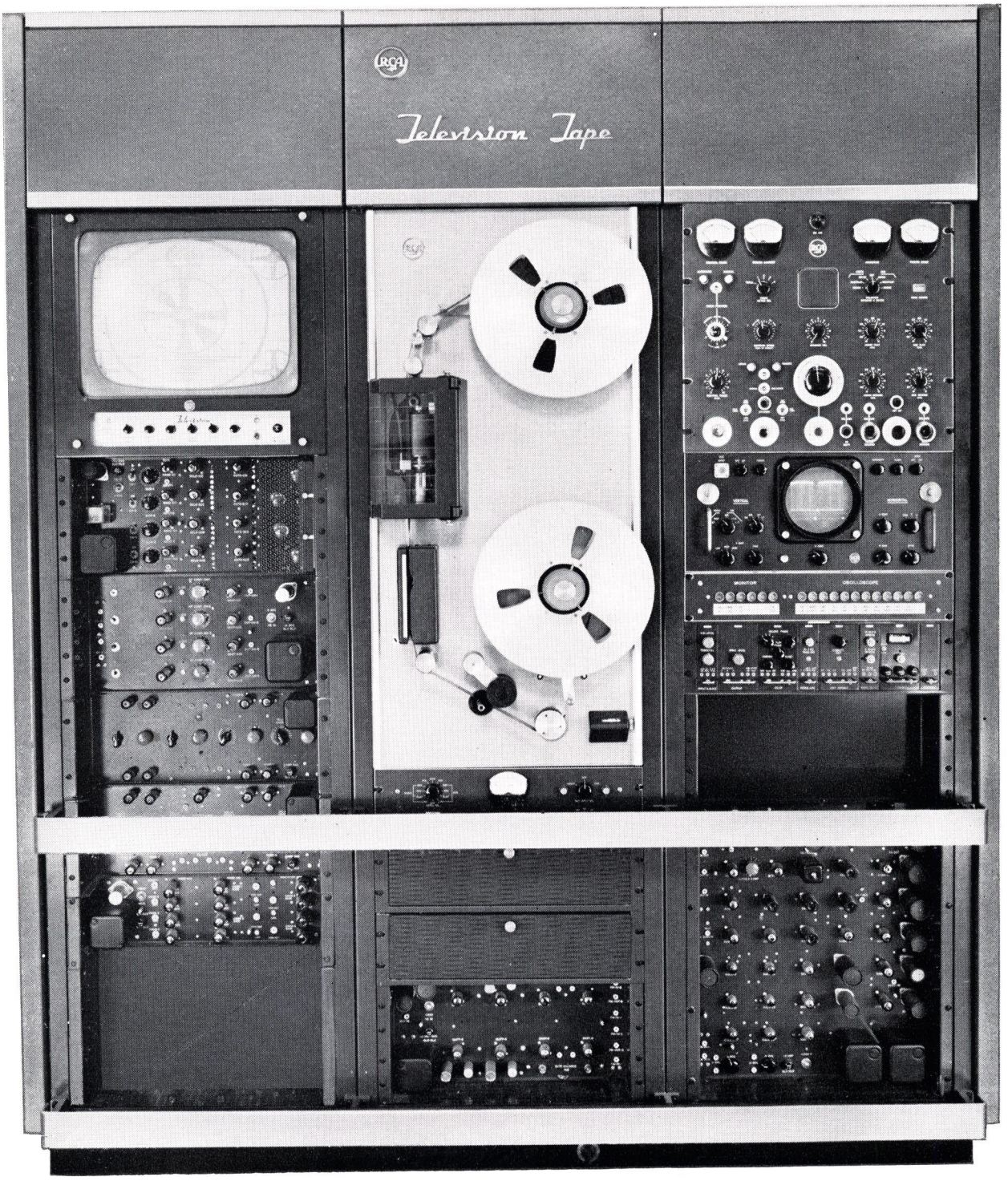
4502 Broadway
WEST PALM BEACH, FLORIDA
848-7639

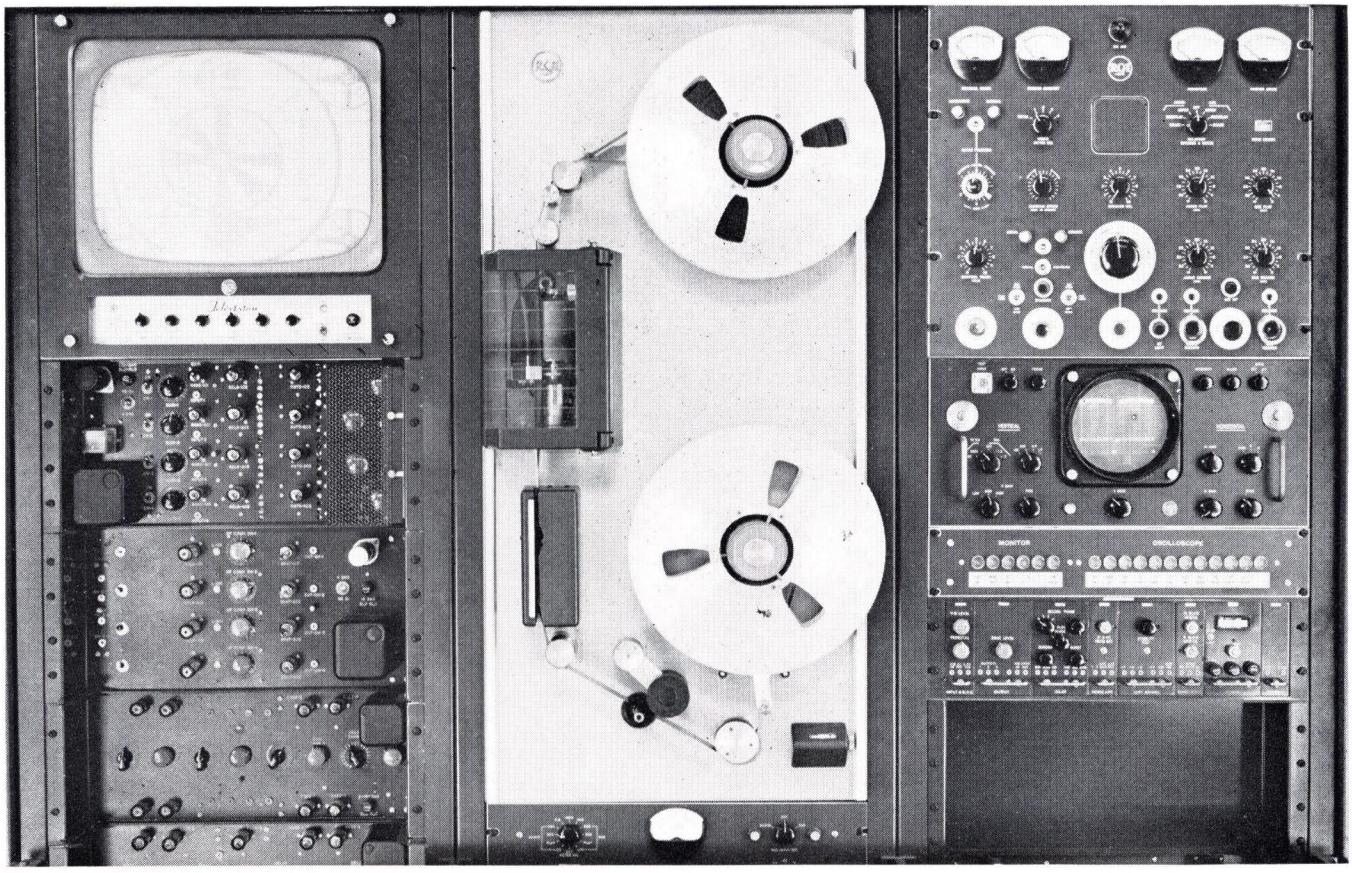
•

1725 K Street, N.W.
WASHINGTON 6, D. C.
Federal 7-8500

Standard TV Tape Recorder

TYPE TRT-1B

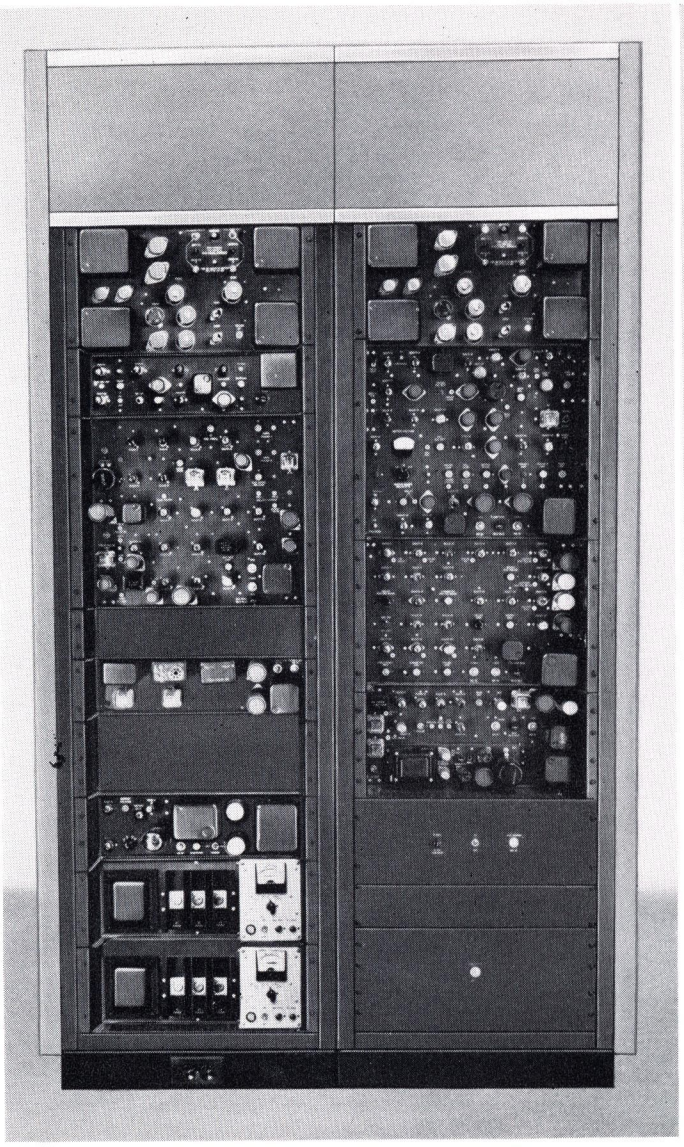




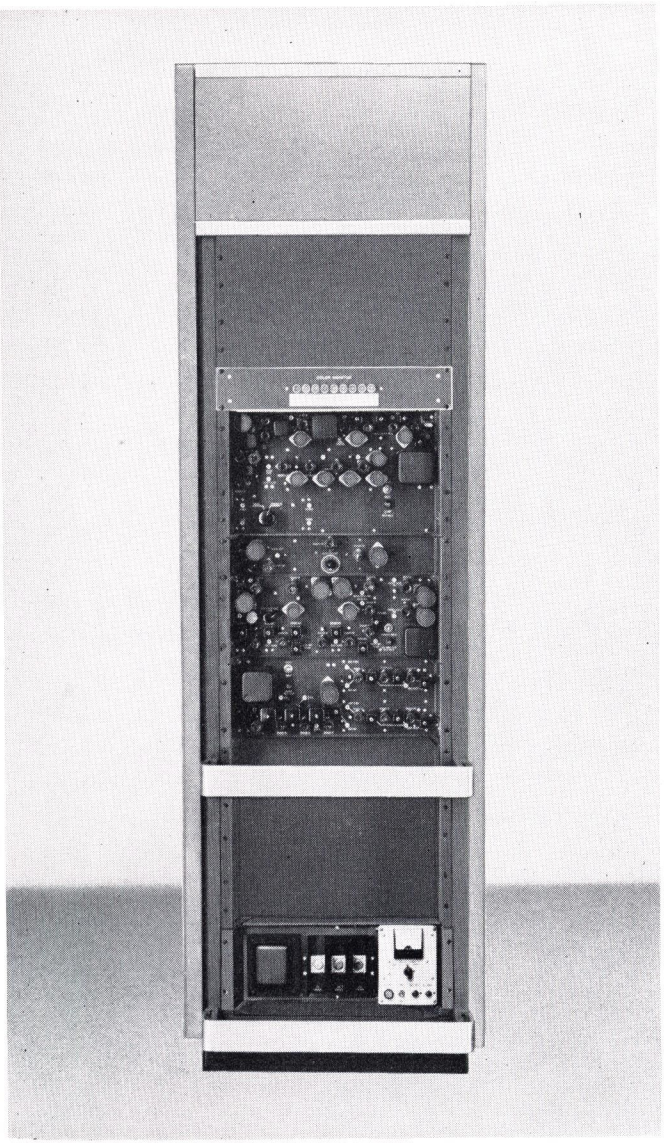
TRT-1B Television Tape Recorder tape transport and control positions.

FEATURES

- New transistor signal processor affords finger-tip control of picture quality
- Centralized operating controls
- Better than 38 db video signal-to-noise
- Continuously variable winding speed
- Foot release switch controls reel brakes for ease of tape handling and threading
- 4-track range of control track phase adjustment
- 55 db limiting in demodulator minimizes appearance of drop-outs
- Simultaneous playback of program audio and control-track during record
- Built-in picture and waveform monitors with pushbutton selection of signals
- FM carrier and deviation meter accurately determines proper deviation limits
- Solid state DC power supplies
- Playback tape speed control for sound synchronization of two or more machines
- Separate record/playback guide position controls . . . important aid to compatible recording
- Tape timer, magnetic tone wheel, master erase head
- Variable de-emphasis aids playback of non-standard tapes
- Color accessory rack available
- Selection of either direct video or RF copy



Servo Unit, MI-40767-B



Color Processing Rack, MI-40766-B

DESCRIPTION

The TV Tape Recorder consists of an Operations Center, MI-40768-B, and a Servo Unit, MI-40767-B. An accessory Color Processing Rack, MI-40766-B, may be added for color television programming. The Operations Center is comprised of a tape transport panel conveniently located between a 17-inch picture monitor on the left and a control panel and 5-inch oscilloscope on the right. Other units include the FM modulator, record and playback amplifiers, delay amplifiers, equalizer, demodulator, program audio and cue facilities, video facilities, erase oscillator, processing amplifier, and signal switching facilities. The Operations Center is housed in three standard cabinet racks, which are bolted and wired together at the factory. The Servo Unit consists primarily of three servo systems which control the headwheel speed during record and playback, tape speed and guide position during playback. The equipment along with its related power supplies are contained in a two rack assembly which may be located with the Operations Center or at a remote location, as desired. The accessory Color Processing Rack is usually located on either side of the Operations Center. The TRT-1B for monochrome use requires 16.5 square feet of floor space, 19.8 square feet with the addition of the color facilities.

USES

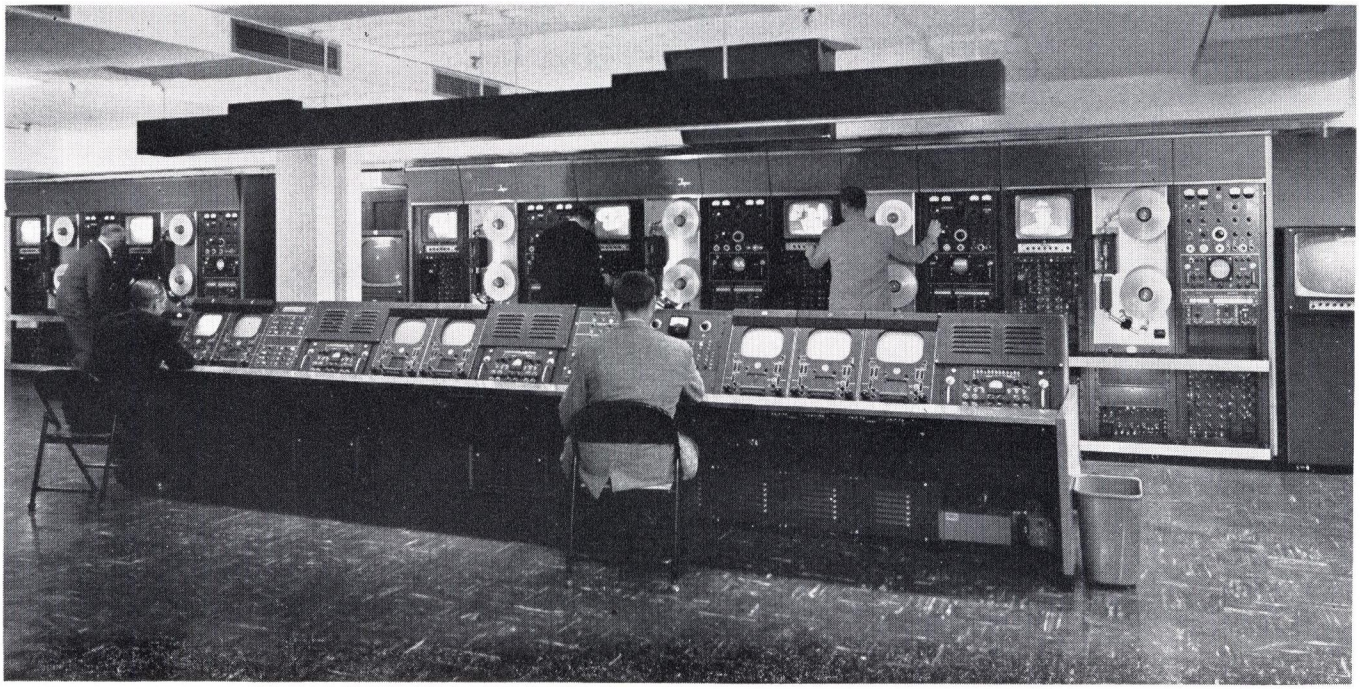
The Standard TV Tape Recorder, Type TRT-1B, designed for color and monochrome, provides a means of recording and playing back television signals simultaneously with program sound. The equipment reproduces both video and audio signals with a quality and fidelity that rival closely that of the original program material.

Tape recording opens new horizons for television since it combines the picture quality of live programs with the storage and rerun benefits of film. It provides economies, efficiency and flexibility in both television broadcasting and closed circuit operation.

The applications for RCA television tape record/playback equipment are many and varied. Broadcast stations, military and governmental agencies, colleges, schools and industrial firms can use the equipment to record information simply, inexpensively and quickly. For pre-programming, program rerun, special events coverage, test programs, program delay and reproducing local live commercials the tape recorder is proving indispensible in the TV broadcast industry. Government and military applications include the recording of statistical information, ground maneuvers, missile firings, and many types of training programs for subsequent playback on closed-circuit television systems, or recorded tapes shipped to distant locations for playback on other tape recording equipments. The economics and practicality of using television tape to record lectures for repeat use is recognized by educators. The recording of classroom discussion and regular instruction periods for playback at a later time is an excellent aid to instructors since they now have an opportunity to observe their own techniques and recognize areas requiring improvement. The number of applications for which television tape recording equipment can be used is increasing daily as the superior performance, recording and playback convenience, and ease of operation are gaining recognition.

RCA's TV Tape Recorder and Color Accessory Rack, MI-40766-B, are designed to conform with industry standards for recording color or monochrome video signals along with program sound on magnetic tape. The tape speed is 15 inches per second and a standard 12½-inch reel will provide 74 minutes of recording time. 14-inch reels with playing time up to 96 minutes and smaller reels are also accommodated.

Convenient rack-mounted design permits installation of tv tape recorders with minimum floor space and maximum accessibility.



At the master control panel the operator can delegate operating control to a remote control panel for added convenience in operation. Such functions as record, play, stop, rewind and fast forward are included. The circuits operate at 24 volts d-c with the necessary power being supplied through the master control panel.

The CRO-monitor switcher is a versatile device which allows the selection of a number of important signals for display of the scope and monitor. These switching circuits are arranged so that no transients are allowed to feed out on the program line as the switch occurs.

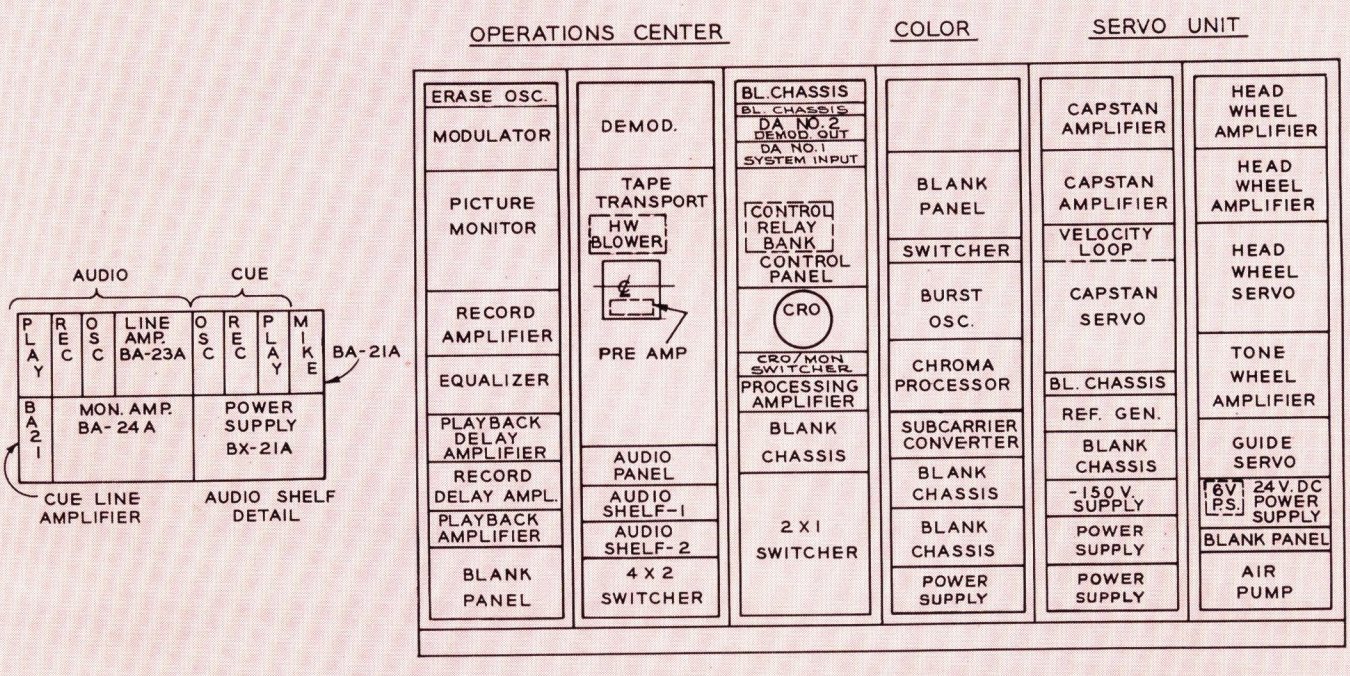
The centrally-located tape transport is designed for fast threading of the television tapes over the air guides, master erase head, vacuum shoe, the various recording heads, tape capstan, pinch roller and tension arm. The main tape guide posts do not rotate; they employ the technique of air flotation. Air is forced through tiny holes in the post so that the tape rides over the post, touching it only at the very edge, where flanges are used to guide the tape. This results in very accurate positioning of the tape. Also the tape edge is protected from damage because only a minute amount of guiding pressure is required.

Oscilloscope provides operator with quick check of machine performance. Has built in switching facilities.

Brake Release Switch

A foot operated reel hub brake release switch is provided for ease of tape handling and threading. This switch plugs into the center of the control rack assembly. The switch is inoperative while the machine is either in record or playback modes.

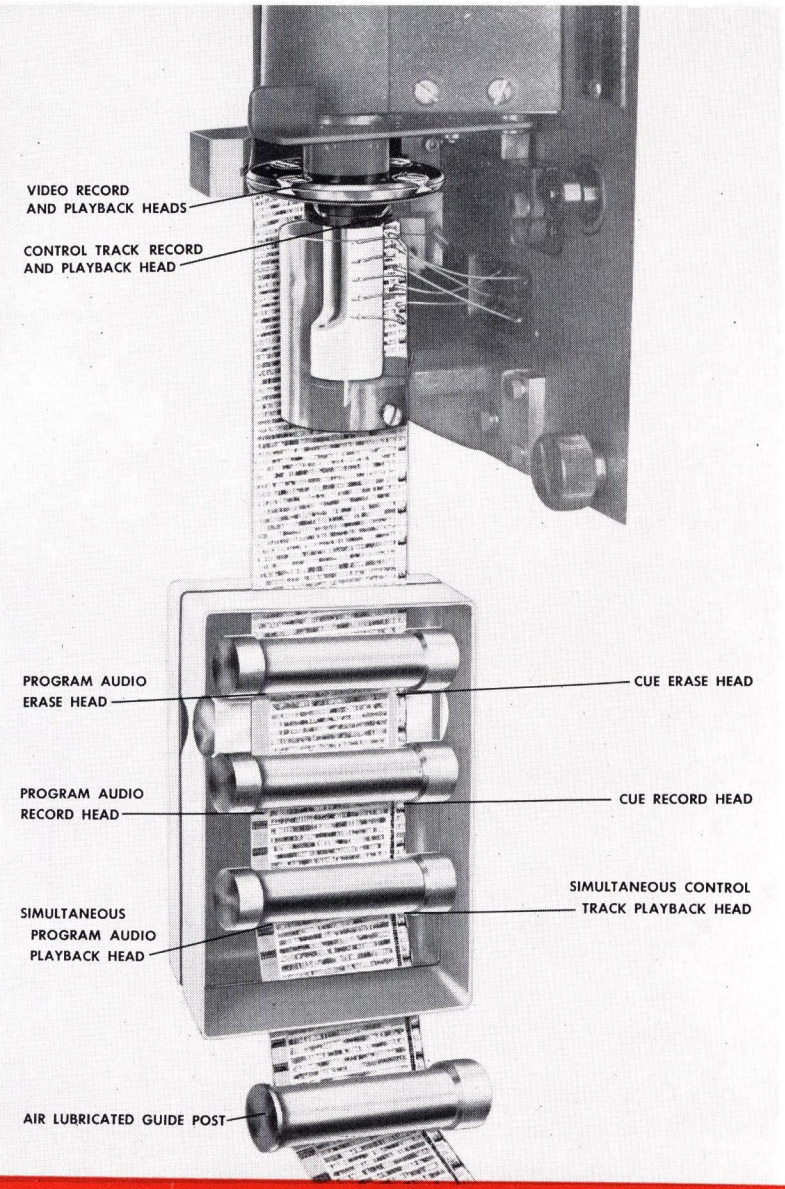
Rack layout of TRT-1B Standard TV Tape Recorder including optional Color Processing Rack.



The Recording Process

The recording process is straightforward. Before the tape gets to the headwheel it passes over the master erase head which removes all previously recorded information. This clean tape then passes between the vacuum guide and headwheel where the FM modulated video signal is recorded. The tape next passes over the control track head where a 240-cycle signal is recorded. This signal will be used during playback to insure that the video heads scan along their respective recorded tracks. A 30-cycle frame pulse, which is only about 75 micro-seconds wide, is superimposed on the control track. This does not interfere with the subsequent tracking operation, but is used later for tape splicing.

Diagram showing all of the record and playback functions by use of simulated magnetic tracks. Information is recorded by the various magnetic heads in the sequence shown. (The magnetic tone wheel, not shown, is attached to the upper portion of the headwheel motor shaft).



A program audio track is recorded along one edge of the tape; the area first having been erased by a separate erase head which is a little wider than the following record head. A simultaneous playback head, after the record head, allows the operator to monitor the signal being recorded.

On the other edge of the tape the cue channel record head provides a means for recording cue information. This can be in the form of voice, tone or digital information. A special feature of the program and cue channel is that recording can be done independent of video recording, in other words, sound may be dubbed on while playing back or previewing the video signal.

Ease of operation and superior performance of the RCA TV Tape Recorder is largely the result of the following design features:

Modulator/Demodulator

The FM Modulator has been designed for either color or monochrome operation and is readily switchable to either standard. A wavemeter is provided which enables the operator to readily determine limits of modulation. The modulator is immune to overloading and is linear over the entire operating range.

The demodulator incorporates increased limiting (better than 55 db) which minimizes the appearance of tape drop-outs in the reproduced picture. Also a feature of the demodulator is a variable de-emphasis network which enables the operator to playback non-standard tapes with best fidelity.

The TV Tape Recorder provides better than 38 db video signal-to-noise performance and exceeds 42 db under controlled conditions.

Built-in Waveform and Picture Monitors

Picture and waveform monitors have been built into the TRT-1B to aid the operator in setting up and maintaining peak performance at all times. A 17-inch picture monitor is located adjacent to the tape transport mechanism and provides quality reproduction of either the record or playback signals. A 5-inch oscilloscope is also located adjacent to the tape transport mechanism to serve a dual purpose: monitoring key signals in the equipment, and for use as a maintenance scope.

Built-in switching facilities have been provided to permit independent monitoring of the picture and waveform signals at many key points within the system. This allows the operator to readily check the performance of specific areas within the machine during operation, and

Unique transistor signal processor and signal selector affords finger-tip control of picture quality.

also enables him to trouble-shoot and localize malfunctions quickly. The picture monitor may be switched to six different signal sources, four of which are pre-wired. Thus the operator can select the following signals: video input, demodulator output, line output, and 240-cycle tone wheel pulse. The two remaining inputs may be used to monitor additional signals from other points in the system. For example, it may be desirable to feed network, studio or master control video to the recorder for preview and cuing purposes.

The waveform monitor may also be switched to twelve different locations. Eleven of these positions are prewired and allow the operator to examine waveforms of the following signals: video in, demodulator out, line out, 2 by 1 switcher output, control track record signal, control track playback signal, and test video signals, (color bars for checking color performance), reference pulse, tone wheel pulse, head wheel servo, capstan servo and spare input. An auxiliary switcher is provided with the accessory Color Processing Rack, for use in switching a color monitor input to key locations within the color system.

New Transistor Signal Processor

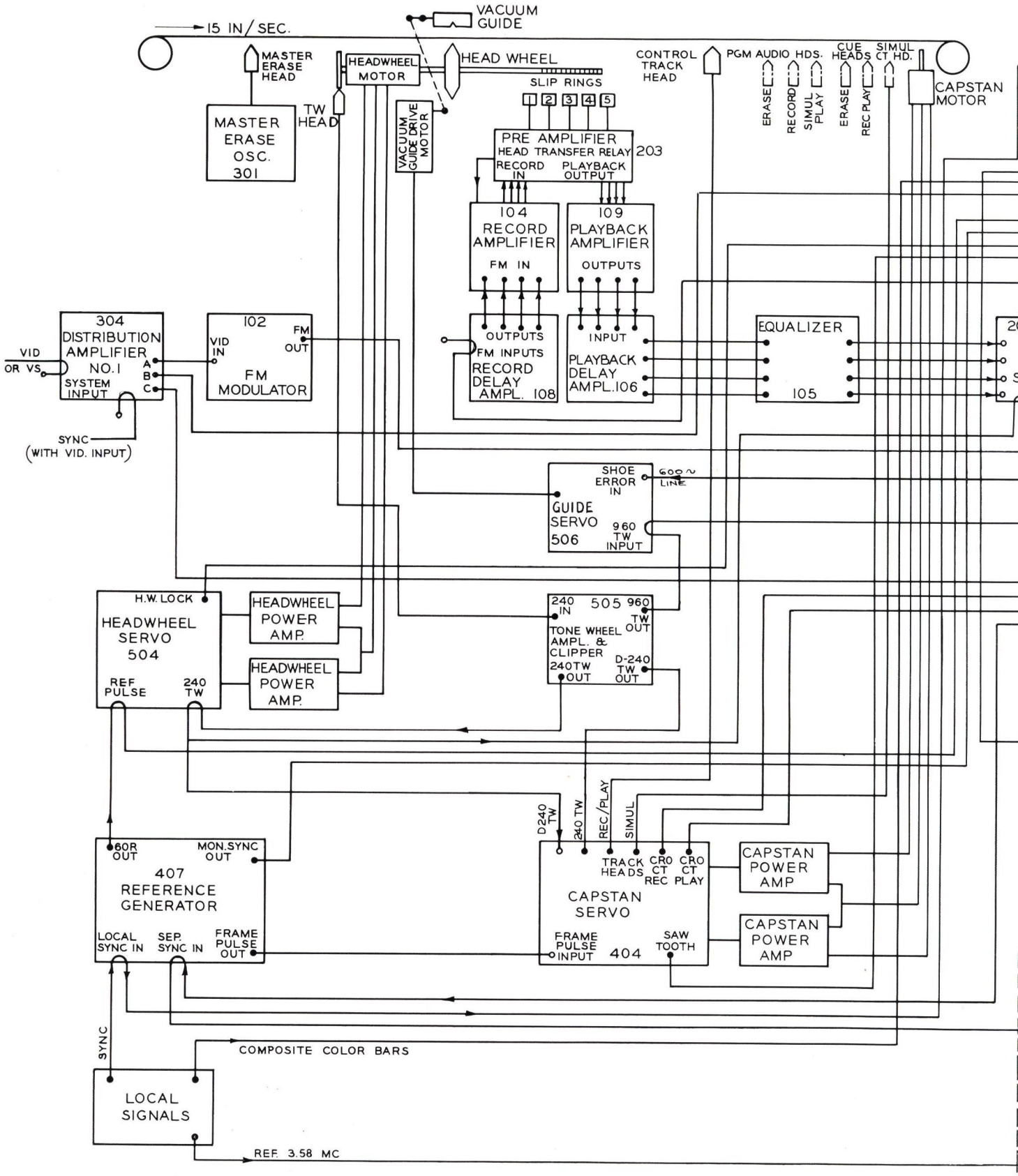
Stabilized pedestal control is provided by a new Transistor Signal Processing Amplifier which dissipates less than 20 watts power. This unit completely regenerates blanking and synchronizing signals and affords finger-tip control of picture quality through convenient grouping of pedestal, video, sync level and other controls. The circuits of advanced design are contained in eight plug-in modules, including the self-contained power supply, which slide into a 5¼-inch rack-mounting chassis.

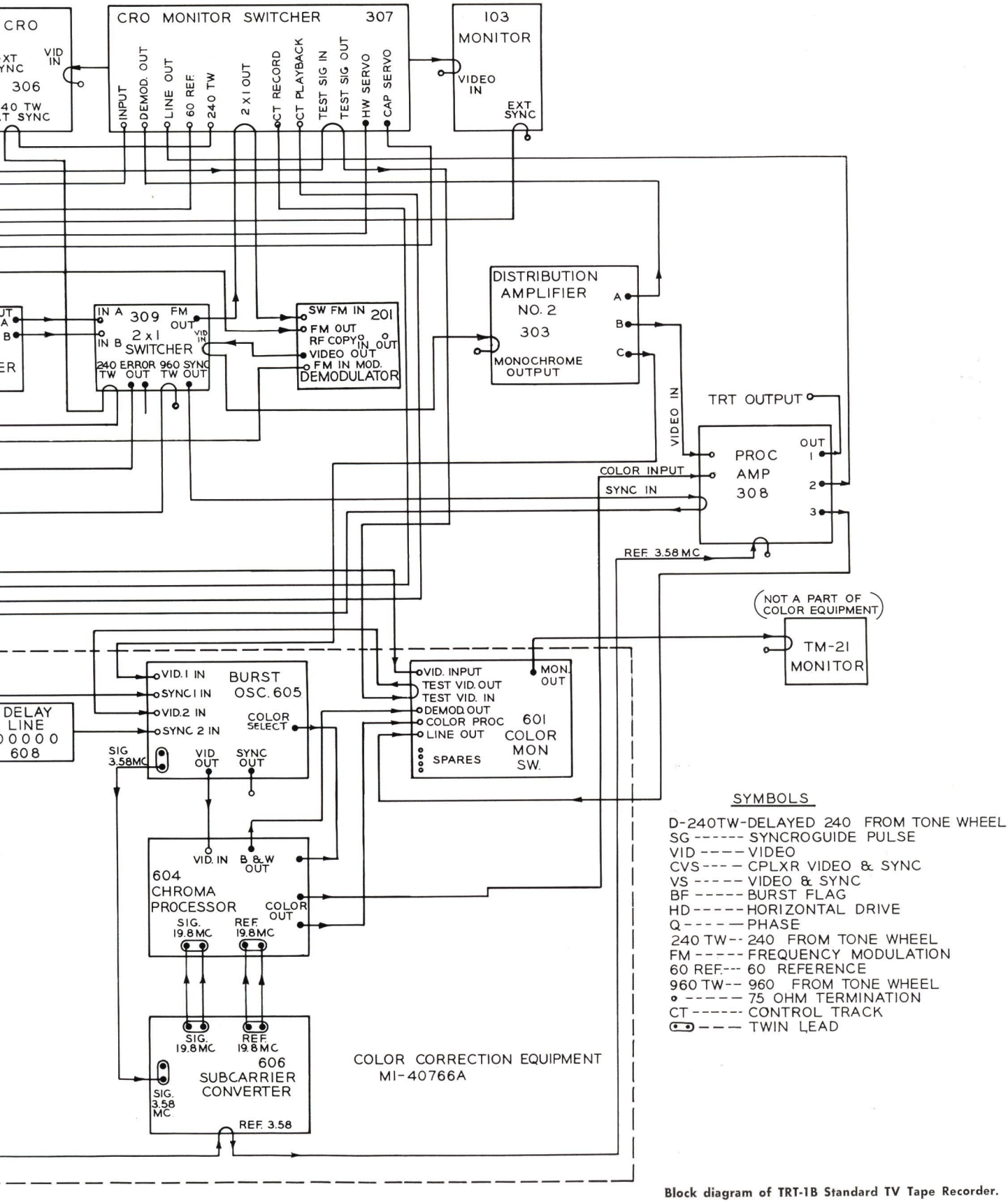
The stabilized circuitry of the Signal Processing Amplifier minimizes the number of front panel controls needed. The absence of the vertical blanking position control indicates a significant step forward in processing video signals, and solves the problems of inaccuracies and slow recovery of regenerated vertical blanking. Color signals are stabilized and controlled by a Color Module. Control of burst phase, video gain and chroma level are available for correcting signal deficiencies incurred by the transmission system.

The circuits of the Signal Processing Amplifier include: an input and blanking module, output module, color module (not required for monochrome tape recording) a horizontal AFC module, vertical advance module, sync logic module and two power modules. On the front panel of each module are the operating controls and test points needed for observation of voltages and waveforms. The modules mount side-by-side on the chassis which is simply a frame which mounts coaxial connectors on the outside and 24-terminal sockets on the inside to engage matching pin connectors mounted on the rear of each module. By this arrangement the utmost in operating efficiency and ease of accessibility is achieved. Test points provide ease of alignment and servicing.

Special Microphone Input

A microphone input is located on the front panel of the recorder for the operator's convenience. (Separate audio input terminals are provided for remote tone and audio cue information.) A BK-6 microphone, also supplied, may be switched into either the program or cue channel. This is very useful during set-up tests or special applications.



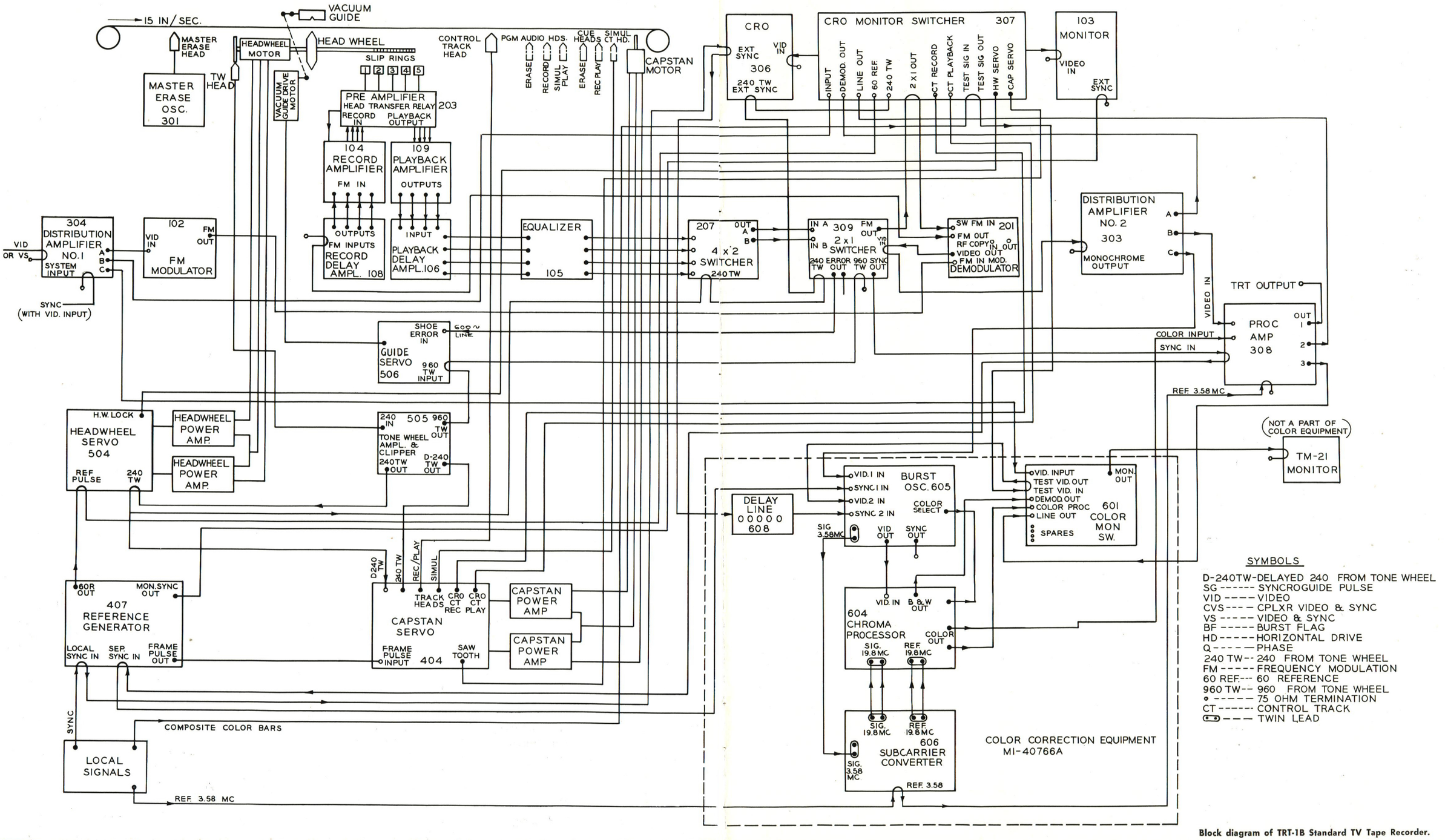


SYMBOLS

D-240TW-DELAYED 240 FROM TONE WHEEL
SG ------ SYNCROGUIDE PULSE
VID ---- VIDEO
CVS --- CPLXR VIDEO & SYNC
VS ----- VIDEO & SYNC
BF ----- BURST FLAG
HD ----- HORIZONTAL DRIVE
Q ----- PHASE
240 TW-- 240 FROM TONE WHEEL
FM ----- FREQUENCY MODULATION
60 REF.-- 60 REFERENCE
960 TW-- 960 FROM TONE WHEEL
o ----- 75 OHM TERMINATION
CT ------ CONTROL TRACK
⊙⊙ --- TWIN LEAD

Block diagram of TRT-1B Standard TV Tape Recorder.

TV TAPE EQUIPMENT



SYMBOLS

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⊂⊃ --- TWIN LEAD

Block diagram of TRT-1B Standard TV Tape Recorder.

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Centralized Control Panel

The central control panel of the RCA tape recorder puts all operating controls at the operator's fingertips. All operating controls of the system are grouped on a single panel measuring 19 inches wide by 17 inches high. Since TV tape recorders employ extensive electronic circuitry, every effort to stabilize, automatically control where possible, and simplify the operational controls has been made. The functions directly related to or controlled by the panel include the following:

- Variable speed wind (forward and reverse)
- Single control record and playback
- Local/remote operation selector
- Capstan speed control
- Video head current indication (individual head or all heads)
- Multi-purpose meter/speaker selection switch
- Individual audio/cue record and playback level controls
- Built-in speaker and volume control
- Master erase current meter
- Control track current meter
- Control track phase adjustment
- Head hour-meter
- Timing reference selector for playback mode
- Timing reference selector during record mode
- Guide position switch for automatic/manual (playback only)
- Individual controls for adjusting guide position on record and play
- Modulator-demodulator output selector switch for monitoring FM performance
- Playback standby mode for fast starts
- RF copy control
- Independent control of program and cue audio recording
- Record setup mode for checking record performance and fast start

A centralized control panel puts all operating controls at a single location for simple, straightforward technical operations.

Complete Cue Channel Facilities

The cue channel facility is a "Siamese twin" to the program audio channel facility and the amplifiers are directly interchangeable in the TRT-1B. Plug-in type broadcast quality audio amplifiers are used in both channels. A high-quality BA-24 10-watt amplifier is used to drive the built-in speaker and may be used to drive an external LC-1A Speaker or its equivalent.

The cue channel has a band pass of 300 to 6 kc, which is sufficient to permit the recording of several types of information, such as voice and tone. If voice is used, information regarding cuing, special instructions for editing and splicing, time checks, etc., may be recorded on the tape for monitoring later during playback. In installations where it is desirable to automatically control several of the basic operating functions such as start/stop, cue and rewind, special tones may be recorded to initiate relays and other control circuitry during the playback operation. If desired, operational instructions as well as tone cues can be recorded simultaneously. Use of the cue channel simplifies the job of locating programs or commercials on a reel of tape.

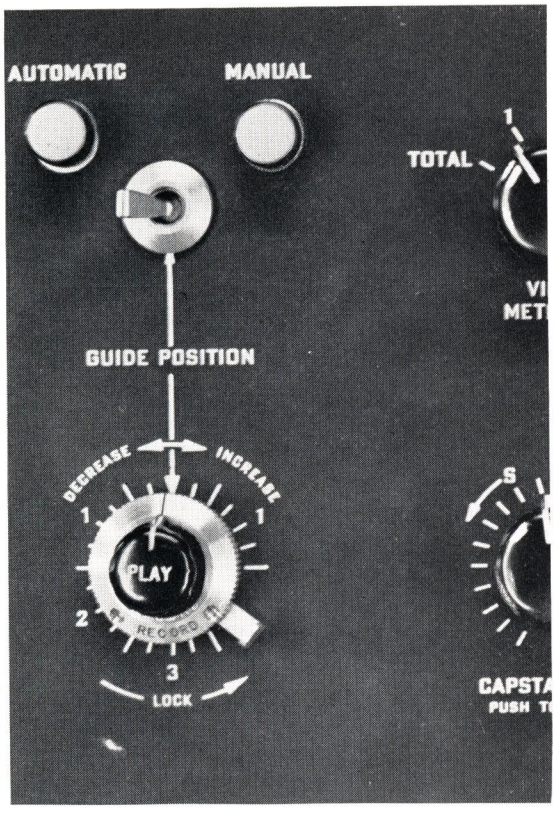
The cue channel may be reused if desired. A separate erase head is provided to clear the cue channel for new or revised information. This may be done without disturbing the program information on other tracks. In fact, the cue information can, if desired, be recorded during the playback period which would then enable the operator to monitor program video and audio while recording special cue instructions.

Guide Position Servo Function

If the transverse tape stretch (due to headwheel-to-tape pressure) is slightly off, skewing will appear in vertical lines in the picture. This skewing can be removed by correcting the transverse tape stretch through adjustment of the head-to-tape pressure. This is what the guide position servo does by slightly moving the position of the vacuum guide, depending upon the presence of an error signal which is derived from the playback video signal.

Guide Position Control for Record and Play

Separate vacuum guide positioning controls have been provided for both the record and playback modes of operation. The vacuum guide position during "record" is set in accordance with a standard test tape, and then can be locked in this position for the remaining life of that particular headwheel panel assembly. Once set, locking the control minimizes any chance of accidental changes thereby assuring properly recorded tapes everytime. A vacuum guide position control is also provided in the playback mode. This control may be operated manually or automatically. The position of this control is independent of the one used during the record mode and whenever the machine is switched between record and playback, the vacuum guide position automatically follows. Another feature of the separate record guide position control is that it enables the operator to readily change the guide position should he desire to use less than normal penetration, thereby obtaining longer head life.



Separate play-record, guide-position controls minimize operator errors.

Servo-Control Track

Information recorded on the servo-control track is used to control the tape speed during playback and, therefore, is of vital importance for successful reproduction of recorded programs. Even though a perfect video recording may have been made, lack of the servo-control signal would make it difficult to reproduce the program. Because of its importance, it was considered highly desirable to include a servo-control track simultaneous playback head. This playback head enables the operator to monitor the recorded control track during the recording operation. In this manner any discrepancy may be immediately detected and rectified. This feature gives added assurance that a satisfactory recording is being made.

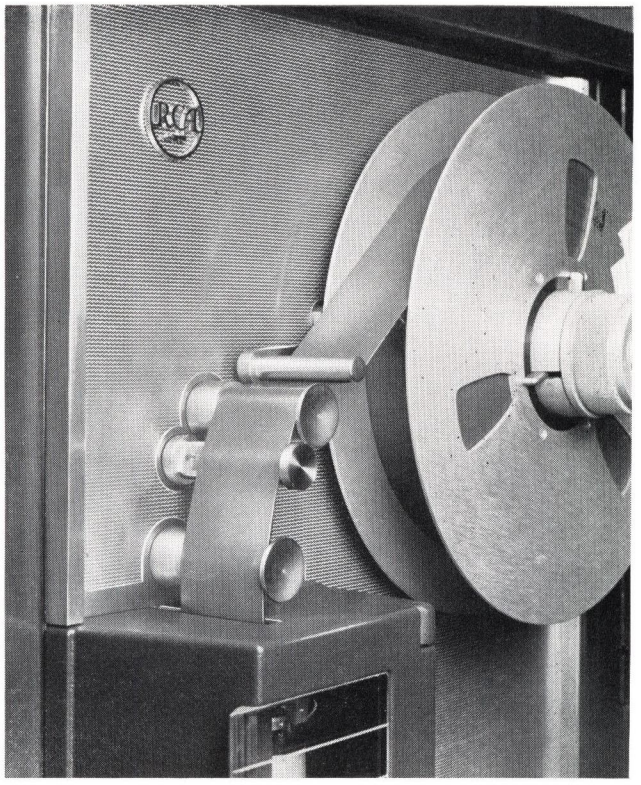
Continuously Variable Winding Speed

The TRT-1B permits rapid cuing of taped programs so necessary for playback, editing, dubbing and splicing. Since desired material is not necessarily at the beginning of the recorded tape, but may be in the middle or near the end of the reel, fast-forward and fast-reverse controls have been provided. These controls alone, however, require continual starting and stopping of the machine in order to jockey the desired segment into position. To improve this technique, a variable speed control is also provided which enables the operator to vary the rate of wind or rewind from 0 to a maximum of 660 IPS or average of 360 IPS (7200 feet in 4 minutes). Thus the tape can be gradually slowed as the desired program is being approached until the program audio or cue audio signal becomes intelligible and can be used as a reference in locating the desired position.

Manual jockeying of tape is not required, for if the desired stopping or starting point is missed, a slight turn of the variable speed control in either forward or reverse direction will inch the tape back to this location.

Simultaneous Audio Playback

Designed into the television tape recorder is a compact audio monitoring system which may be used to monitor program audio during the record cycle (simultaneous playback), program audio during playback, or cue information from the cue channel during playback. The speaker volume control, and delegate switch are located adjacent to the transport mechanism within ready reach of the operator.



Master erase head, located between the two cylindrical tape guides, automatically erases tape prior to recording; also enables operators to erase and re-record portions of a program.

A separate magnetic playback head is located near the program audio record head, thereby enabling the playback of information within a fraction of a second after it is recorded. The advantage of the simultaneous playback head is two-fold. First playback during recording gives the operator positive assurance that information has been recorded, and second, the operator may continuously monitor the quality and content of the recorded information during the recording process.

Master Erase

The RCA Television Tape Recorder incorporates a master erase head which is important for both programming convenience and operating simplification. If several programs or commercials are recorded on the same tape and one becomes obsolete, it is not necessary to erase the entire reel. New material can be recorded in place of obsolete material by erasing only portions of the tape. This reduces the need for a large number of small tapes.

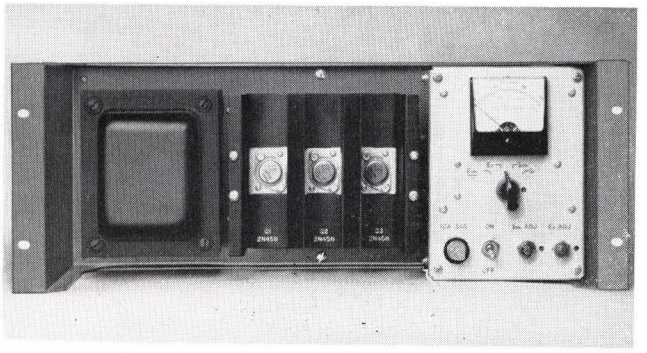
From an operating standpoint the recording procedure is simplified. Tapes do not have to be bulk erased prior to recording. Old or new tapes may be placed directly on the machine and the recording operation begun. The master erase circuitry is automatically switched in operation during the record mode and out of operation during the playback mode.

Tape Timer

Another aid to the operator for rapid cuing, splicing, and editing is the Tape Timer. This indicator numerically displays record or playback time of any tape and may be reset to zero prior to each recording.

Extra Tape Capacity

One and a half hours of continuous recording can be accomplished without the need for a second machine. special events shows, back-to-back programming and automation is greatly facilitated with these extra capacity tape reels. A running time of 96 minutes can be obtained by use of 7200 feet of tape on a 14-inch reel. The RCA equipment is designed to work equally well with 12½-inch, 8-inch, and 6-inch reels.



The TRT-1B Tape Recorder employs new solid state type power supply.

Semiconductor Power Supply

The TRT-1B Tape Recorder employs two WP-16B Semiconductor Regulated Power Supplies. These solid state power supplies are rugged, highly efficient, lightweight sources of precisely regulated voltage. Two units are capable of supplying the total current load required by the TRT-1B Monochrome Recorder.

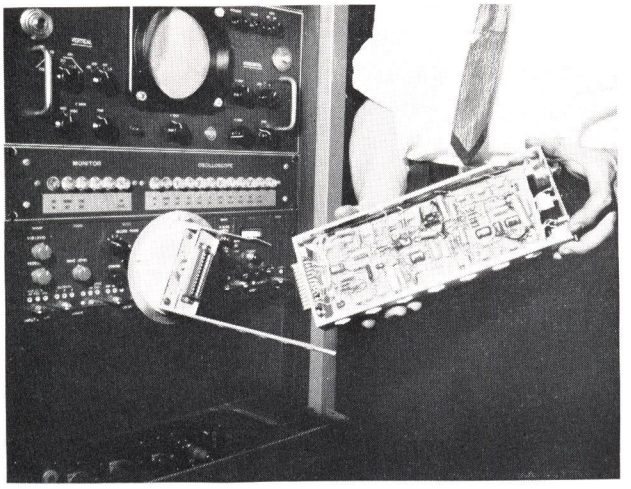
Each power supply is contained on a single recessed chassis which occupies only seven inches of rack space. The small amount of heat which is generated internally is conducted away by convection cooling through a large heat sink in which the regulating transistors are mounted. As a result no ventilating fan or blower is required. The supply will operate within the load specifications in an ambient temperature up to 50 degrees centigrade.

Each power supply has a meter and selector switch on the front panel for ease of adjustment and measurement of

output voltage and current, and unregulated voltage and current. Complete short circuit protection is provided. A control is provided for adjusting the output voltage to a nominal value of +280 volts.

Dual Speed Operation Accessory

Conversion of the TRT-1B for optional dual tape speed (7½ or 15 inches per second) is made possible by the installation of a Two-Speed Conversion Kit, MI-40792, and a Narrow Track Headwheel Assembly, MI-40791. The 7½ IPS speed affords operating economies in that only half as much tape is required to record a given program. Also, at the slower speed, increased playback time is avaliable without the necessity of reel changes. Up to three hours of continuous recording can be obtained. Excellent picture quality is maintained at the 7½ IPS speed suitable for on-air performance.



The Adjustable Module Extender is a convenient accessory when checking the modules of the processing amplifier, pixlock, or automatic timing corrector.

SPECIFICATIONS

Performance Specifications

Recording Medium.....2" wide, Magnetic tape, type 3M, VR-179

Tape Speed.....15 inches per second

Picture-Sound Separation.....18.5 frames, sound leading

Recording Time....Up to 96 minutes on a 14-inch reel of tape (7200 feet)

Playback Timing.....Program playback is snychronous with system timing reference (sync generator) or power line, selected by switch on control panel.

Record Timing .....Selectable either signal sync or generator sync

Rewind Time.....Approximately 4 min. for 7200-ft. reel of tape.

Starting Time.....5 seconds maximum

Stopping Time.....Approximately 0.2 second, from a normal tape speed of 15 inches per second.

Video Head Life.....100 hours minimum with normal routine maintenance

Tape Life.....Average of 100 passages of tape

Frequency Response:

Video Monochrome.....Uniform within ±1.5 db from 30 cycles to 4 mc with respect to the 100 kc response measuring sine wave burst keyed by sync at the output. A switchable roll-off circuit is provided for improvement of signal-to-noise if desired.

Video Color.....30 cycles to 4 mc bandwidth with adjustment for 100% response at 3.58 mc

Audio.....±3 db, 50 to 10,000 cycles per sec.

Cue.....±3 db, 300 to 6,000 cycles per sec.

Signal-to-Noise Ratio:

Video.....Better than 38 db

Audio.....50 db measured overall between a recorded level corresponding to 3% total rms distortion at 1000 cycles per sec. and the noise present with the tape moving at 15 in. per sec. but no signal recorded.

Cue.....34 db measured overall between a reference record level and the noise present with the tape moving at 15 in. per sec. but no signal recorded

Vertical Line Displacements.....Horizontal displacements of vertical picture elements at the head band junction points do not exceed 0.02 microsecond.

Wow and Flutter.....Less than 0.2% rms measuring all components from 0.1 to 240 cycles per second

Electrical Specifications

Input Power Line Rating....117 volts ±5%, ac, 60 cycles, single phase

Power Consumption.....4 kw monochrome, 4.7 kw color

Input Signals:

Video.....Composite video signal in accordance with EIA and FCC specified color/monochrome signal standards; composite color/monochrome signal level 0.5 to 1.4 volts peak-to-peak; input circuit may be bridging or terminated in 75 ohms ±1% unbalanced.

Audio.....Line: —10 +4 VU into 600 ohm balanced line matching input; Microphone: —70 dbm into 150 ohms, for recommended full level recording

Cue.....Line: —10 to +4 VU into 600 ohm balanced line matching input; Microphone: —70 dbm into 150 ohms, for recommended full level recording

System Timing Reference.....Record mode — incoming composite video or generator sync. Playback mode — external sync generator, 60 cycle line

Output Signals:

Video.....Composite monochrome signal — one program and one monitor; composite color signal — one program and one monitor with output level 0.5 to 1.0 volt peak-to-peak; output load impedance — 75 ohms ±1% unbalanced, sending end terminated.

Audio.....Line: +8 VU into 600 ohm balanced line; Monitor: +30 dbm max. level into 8/16 ohm load

Cue.....Line: —10 to 0 VU into 600 ohm balanced line; Monitor: +40 dbm max. level into 8/16 ohm load

SPECIFICATIONS (continued)

Mechanical Specifications:

Picture Monitor.....17-inch, rack-mounted, monochrome

CRO Waveform Display.....5-inch, rack-mounted monitor

Tape Timer Indicator.....Resetable, illuminated counter measures elapsed tape time via direct drive from tape, accuracy within 0.3%

Tape Transport:

Magnetic Tone Wheel.....Generates 240 cps timing signal

Air Lubricated Tape Guides.....Air pressure is utilized on the two tape guides adjacent to the master erase head and on the tape guide immediately after the final recording head.

Headwheel Quadrature.....Accurate to ±0.01 micro-sec., with facility to adjust while recorder is in operation

Overall Dimensions:

Type TRT-1B, monochrome:

Width (5 cabinets in line).....9 feet 5½ inches
Height.....84"
Depth.....25"
Floor Area.....13.7 sq. ft.

Type TRT-1B/C, Color:

Width (6 cabinets in line).....11 feet 3½ inches
Height.....84"
Depth.....25"
Floor Area.....16.5 sq. ft.

Installation.....Equipment supplied rack mounted with necessary interconnecting cable harness

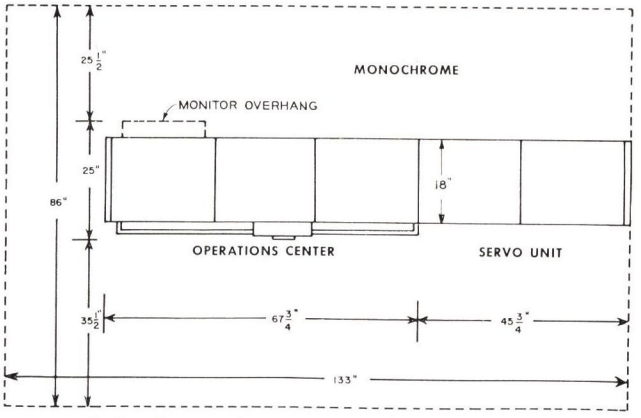
Location.....See recommended layouts, page 5

Components.....All equipment units designed to fit standard racks

Finish.....Cabinets finished dark umber gray

Shipping Weight:

Type TRT-1B (Monochrome).....2440 lbs. approx.
Color Accessory Rack.....575 lbs.



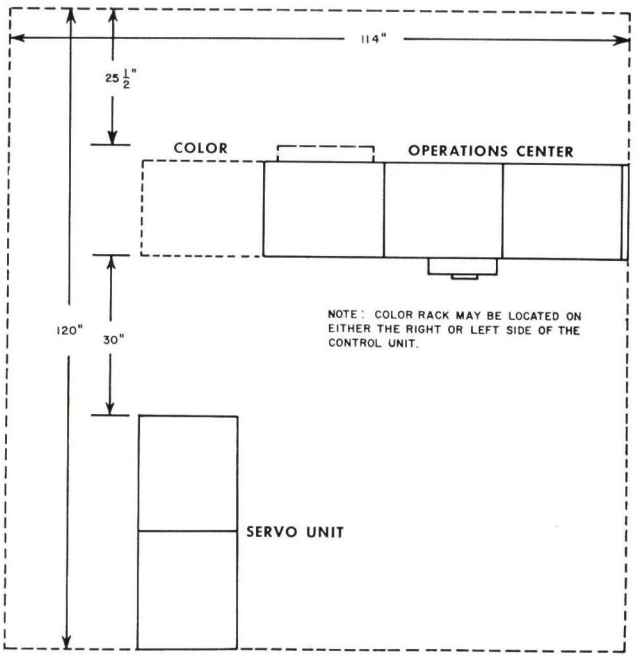
In-line layout of monochrome tv tape recorder.

Equipment Supplied:

For Monochrome Operation

Type TRT-1B Television Tape Recorder.....ES-40991-B comprising the following:

1 Control Unit.....MI-40768-B
1 Servo Unit.....MI-40767-B
1 Headwheel Panel Assembly.....MI-40760-A
2 End Panels for TV Tape Recorder.....MI-40757
1 Test Tape.....MI-40771-B
1 Kit of Tape Recorder Accessories.....MI-40769-A
1 Type BK-6B Microphone
1 Headwheel demagnetizer
1 Set of Spring Scales
1 Dial Indicator for pole tip projection measurements



Alternate layout in L-shape; shows convenient color addition.

1 One-half hour reel of TV tape
1 12½" take-up reel
1 Kit of lubricants
1 Set of adjusting tools
1 Brake release switch
1 Test Module for Processing Amplifier
1 Test Cable for CRO

For Color Operation

Same as above with the addition of the following:

Color Processing Rack.....MI-40766-B
Color Monitor, Type TM-21B.....MI-40226-B

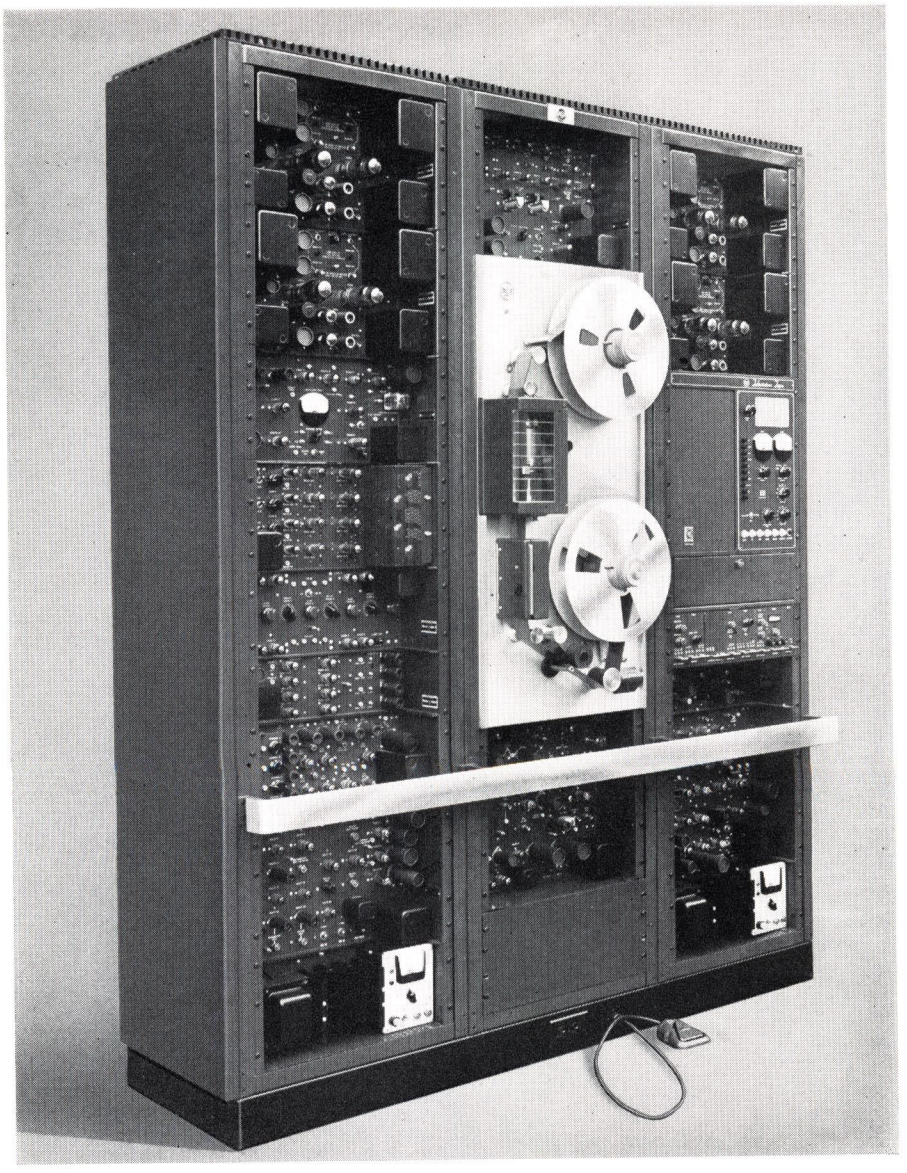
NOTE: All necessary interconnecting cables are supplied. Maximum length of cable interconnecting control racks to power racks is 30 feet.

Accessory Equipment:

Television Tape Splicer.....MI-40772
Remote Control Panel for TRT-1B.....MI-40716-D
Headwheel Panel Assembly (spares).....MI-40760-A
14" Empty Reel in Box.....MI-40776
12½" Empty Reel in Box.....MI-40775
10" Empty Reel in Box.....MI-40774
8" Empty Reel in Box.....MI-40773
6" Empty Reel in Box.....MI-40789
Test Meter.....MI-21200-C1
Remote Control Panel Kit (for Processing Amplifier).....MI-40788
Test Tape—525 Line Standard.....MI-40771-B
Adjustable Module Extender for Servicing Processing Amplifier.....MI-41600
Bulk Tape Eraser.....MI-10880
Shelf for Tape Splicer.....MI-40778
Pix-lock.....ES-26992
(Consisting of one each of the following which may be ordered separately as desired.)
Switchlock.....MI-35825
Linelock.....MI-35819
Air Bearing Kit:
50 cycles.....MI-40787
60 cycle.....MI-40786
Air Bearing Panel Assembly.....MI-40790
Degausser (Head Wheel).....MI-40785
Two-Speed Conversion Kit (7½/15-inch per sec.).....MI-40792
Headwheel Assembly (Narrow Track).....MI-40791

Compact TV Tape Recorder

TYPE TR-11



FEATURES

- Compatible quadraplex recording system
- Reduced size—lower cost
- Straightforward operating procedures
- Monitor speaker and transistor amplifier built in
- Microphone provided for ease of setup
- Air lubricated tape guides
- Optional 7½ or 15 IPS Kit extends tape life and recording time to 3 hours
- Magnetic tone wheel
- Transistor signal processor—fingertip control of video, pedestal and sync
- Built-in switching provisions for optional picture and waveform monitor
- Less than 10 square feet of floor space required
- Solid state power supplies—low heat—high efficiency
- Simultaneous audio and control track playback help assure properly recorded tape

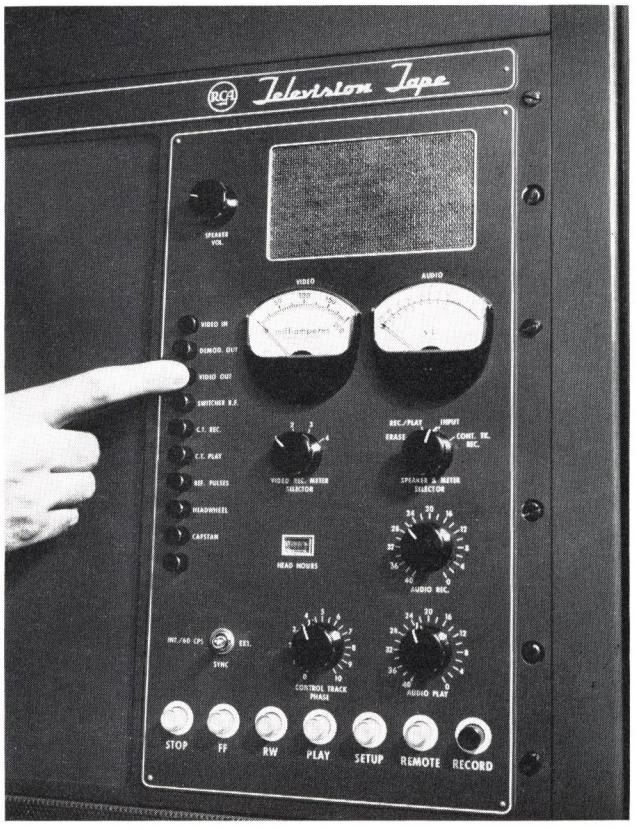
APPLICATIONS

The TR-11 Compact TV Tape Recorder is designed especially for monochrome operation by the telecasting industry. This RCA Recorder is completely compatible with quadraplex recorders now in use. This means that tapes made by these recorders can be played on the TR-11 Recorder. Likewise, tapes made on the TR-11 recorder can be played back on any other recorder.

This economy recorder has many of the features of the Professional TRT-1B Recorder and will produce a high quality monochrome picture. Operation is reduced to a few simple steps; the machine is smaller—requiring less floor space; quality is consistently good and the machine offers the same dependable results as its bigger brother.

The TR-11 Tape Recorder may be used either in a fixed location or in a mobile unit. Its smaller size requires less than ten square feet of floor space. As a result, it is well suited for operational centers where floor space is limited; also in Mobile Units where space is at a premium, the TR-11 will afford additional economies.

Simplified control panel provides basic tape functions and also includes a monitor switcher. In addition to operating controls, video, audio and speaker/meter controls are available for ease of operation and set-up.



Many users will find both the compatibility and the low cost of the new TR-11 machine quite advantageous. It helps to stretch the budget especially in those applications requiring a minimum of two machines. Furthermore, this recorder can be used in conjunction with the RCA TRT-1B and other quadraplex recorders, since it is a compatible machine. This means that the RCA economy recorder does not become useless should need arise for tape compatibility.

Educators will find the compatibility feature very useful—tapes produced on this recorder can be reproduced on all existing broadcast recorders. Furthermore, the owner of this RCA economy machine can utilize television tapes produced by these recorders. Thus tapes produced at ETV centers can be used.

The lower initial as well as day to day operating costs coupled with the reduced size and space requirements makes the TR-11 Compact Recorder an excellent selection for broadcasters, educators and production agencies who have limited budgets.

The TR-11 Recorder will meet FCC requirements for signal timing stability, thereby making it suitable for on-air broadcast applications.

DESCRIPTION

The RCA Type TR-11 Compact TV Tape Recorder is a simplified, low-cost version of the famous Advanced RCA Broadcast TV Tape Recorder. The picture is produced by the same essential means—quadruplex recording and playback. The signal is compatible with broadcast standards at 15 inches per second tape speed.

This economy machine records both picture and sound on a standard 2-inch magnetic tape. The same machine serves both for recording and playback. Up to 96 minutes may be recorded on a standard 14-inch reel of tape at 15 inches per second or up to 3 hours at 7½ inches per second tape speed (optional).

The TR-11 is a vertical mount recorder, consisting of three standard 84-inch racks, mounted in line. The first rack contains various amplifiers and power supply. The second rack supports the tape transport mechanism, recording/playback heads, demodulator and headwheel servo. The third rack contains the simplified control panel (which has space next to it for installing an optional TM-35 master monitor).

A-C circuit breakers and power distribution panel are mounted on the rear of the racks. This makes possible single cable power feed and also simplifies and reduces the cost of installation. An ordinary 3-connector twist lock receptacle is used for supplying power.

Connections are provided so that remote pushbuttons and tallies can be used for the record, play, stop, rewind, fast forward and set-up functions. The circuits operate at 24 volts d-c with the necessary power being supplied from the Control Panel.

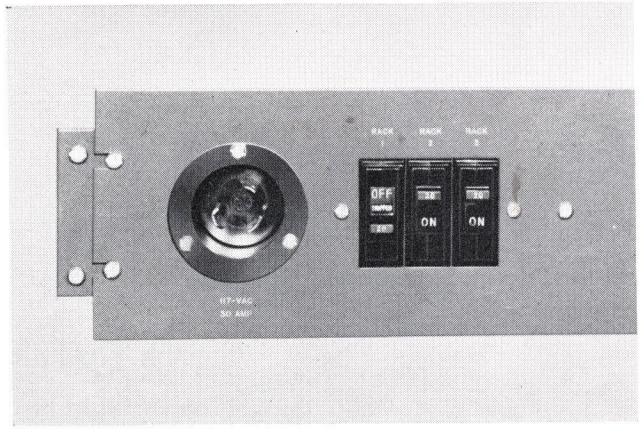
Monitoring Facilities

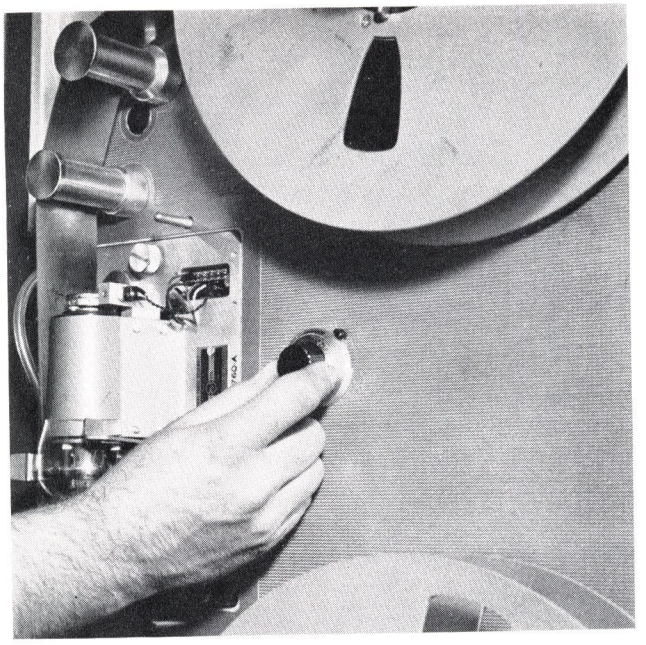
Ample monitoring facilities are provided. Space to accommodate a Type TM-35 waveform and picture monitor within the standard three-rack assembly is available. A CRO/MONITOR Switcher unit is part of the Master Control Panel and provides a 75-ohm feed from the ten functional pushbuttons. Pushbutton selections include: video in, demodulator out, line and switcher out, control track record and play, reference pulse, headwheel, capstan and spare. (For calibrated waveform when used with the TM-35.)

Control panel monitoring facilities include a switchable continuity speaker and associated amplifier, a record current panel meter which indicates the individual video recording head currents on a switchable basis, a VU meter which has ASA standard characteristics and which indicates program audio input and output levels, audio channel erase current, audio channel record level and control track levels. An illuminated tally indicates delegation of control to remote position.

A tape timer indicator is featured in the TR-11. This resettable illuminated counter measures elapsed tape time via direct drive from tape with an accuracy within 0.3 per cent. A separate simultaneous playback head is provided to allow continuous monitoring of the 240 cps control track signal during the record mode, and another separate simultaneous playback head allows continuous monitoring of the program audio track signal during the record mode.

Low power consumption in the TR-11 permits a single a-c power feed to be supplied to one main connector. Three a-c breakers evenly distribute power throughout the recorder.





Mechanical adjustment of vacuum guide position is accomplished by vernier calibrated dial as shown above.

Operating Controls

The TR-11 features simplified operation. Five video, two audio, and five speaker/meter selector controls are provided. All transport controls are located centrally on the master control panel. These include five electrically interlocked momentary contact pushbuttons for record, play, stop, fast forward, and rewind. All have illuminated tallys. There is also a control track phase knob control which adjusts the capstan phasing so that the pickup heads are centered over the recorded video tracks on playback. The Vacuum Guide Position is a calibrated dial knob with provision to lock in place. The toggle switch control is a sync selector switch used to determine reference signal during record and playback.

Accessory Equipment

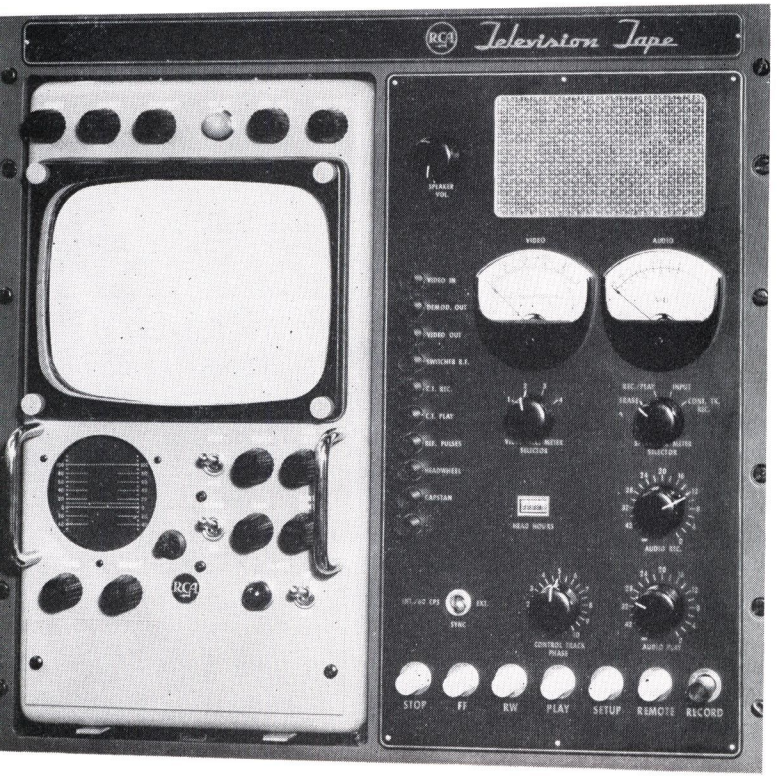
The TR-11 operates at a tape speed of 15 inches per second. Dual speed tape operation at 7½ or 15 inches per second is made possible by the addition of the MI-40792 Two Speed Conversion Kit and a Narrow Track Headwheel Assembly, MI-40791. They provide operating economies in that only half as much tape is required to record a given program. Also at the slower speed increased playback time is available without the necessity of reel changes. Three hours of continuous recording can be obtained. "On Air" picture quality is maintained at the slower speed.

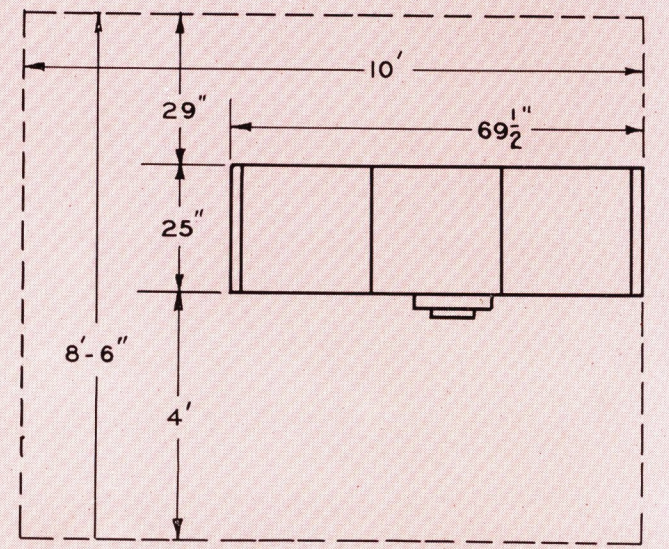
This single chassis is used for manual control of both record and playback quadrature correction in the TR-11. A switch, mounted on the back of the chassis, allows the operator to select playback or record mode.

Remote control of the TR-11 is accomplished by means of an accessory Remote Control Panel, MI-40752. Control facilities for "stop," "fast forward," "fast rewind," "play and record" are provided. A companion panel for remote control of the processing amplifier functions effecting the signal characteristics as pedestal, sync and video designated as MI-40788 is also available.

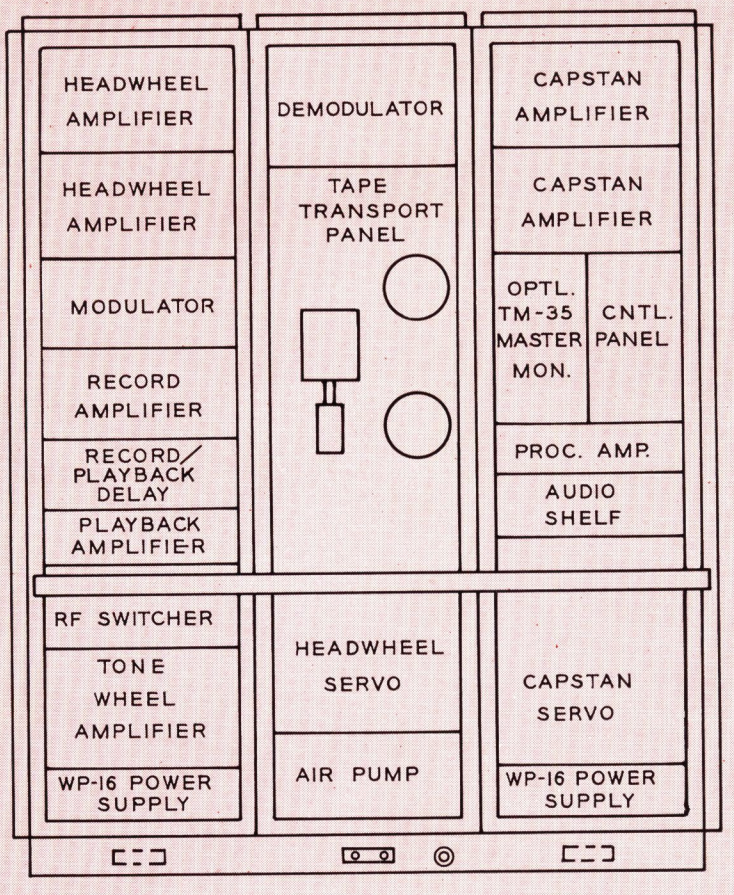
An Adjustable Module Extender Accessory, MI-41600 is available for servicing the processing amplifier. Complete erase, splice facilities are also offered together with spare reels, headwheel panel assemblies, meters, etc. For splicing operations, the Television Tape Splicer, MI-40772, is recommended. This unit features a shear type cutter, precision optics and a splicing tape dispenser—all required for quick clean splicing of the magnetic tape. A convenient Shelf for the Tape Splicer, MI-40778, is available for attachment to the TR-11 Rack Assembly.

Simplified control panel for the TR-11 is shown at right. At left is the TM-35 Master Monitor which is available as an optional accessory.





TR-11 Tape Recorder requires less than 10 square feet of floor space.



Rack layout of TR-11 Recorder showing location of chassis.

SPECIFICATIONS

Performance Specifications

Recording Medium.....2" wide television recording tape

Tape Speed.....15" per second

Picture-Sound Separation.....18.5 frames, sound leading

Recording Time.....Up to 96 minutes on a 14" reel of tape (7200 feet)

Playback Timing.....Program playback is synchronous with the system timing reference, (sync generator) or power line, selected by switch on the control panel

Rewind Time.....Approx. 4½ min. for 7200-foot reel of tape

Starting Time.....5 sec. max.

Stopping Time.....Approximately 0.2 second, from a normal tape speed of 15" per second

Tape Life.....Minimum of 100 passages of tape with the machine meeting all specifications required

Frequency Response:

Video Monochrome.....Uniform within ±1.5 db from 30 cycles to 4 mc with respect to the 100 kc response measuring sine wave burst keyed by sync at the output. A switchable roll-off circuit is provided for improvement of signal-to-noise if desired.

Audio.....±3 db, 50 to 10,000 cycles

Signal-to-Noise Ratio:

Video (proposed SMPTE 4 db pre-emphasis).....Better than 38 db on interchanged taps and up to 48 db on non-interchanged taps

Audio.....50 db measured overall between a recorded level corresponding to 3% total rms distortion at 1000 cycles per sec. and the noise present with the tape moving at 15" per second but no signal recorded.

Vertical Line Displacements.....Horizontal displacements of vertical picture elements of the head band junction points do not exceed 0.02 microsecond

Wow and Flutter.....Less than 0.2% rms measuring all components from 0.1 to 240 cycles per second

Electrical Specifications

Input Power Line Rating.....117 volts ±5%, a-c, 60 cycles, single phase (Please specify if 50 cycle power is to be used)

Power Consumption.....3.5 kw max.

Input Signals:

525 line TV standard: (Please specify if 625 line TV standard is required)

Video.....Composite monochrome signal level 0.5 to 1.4 volts peak-to-peak; input circuit shall be terminated in 75 ohms ±1% unbalanced

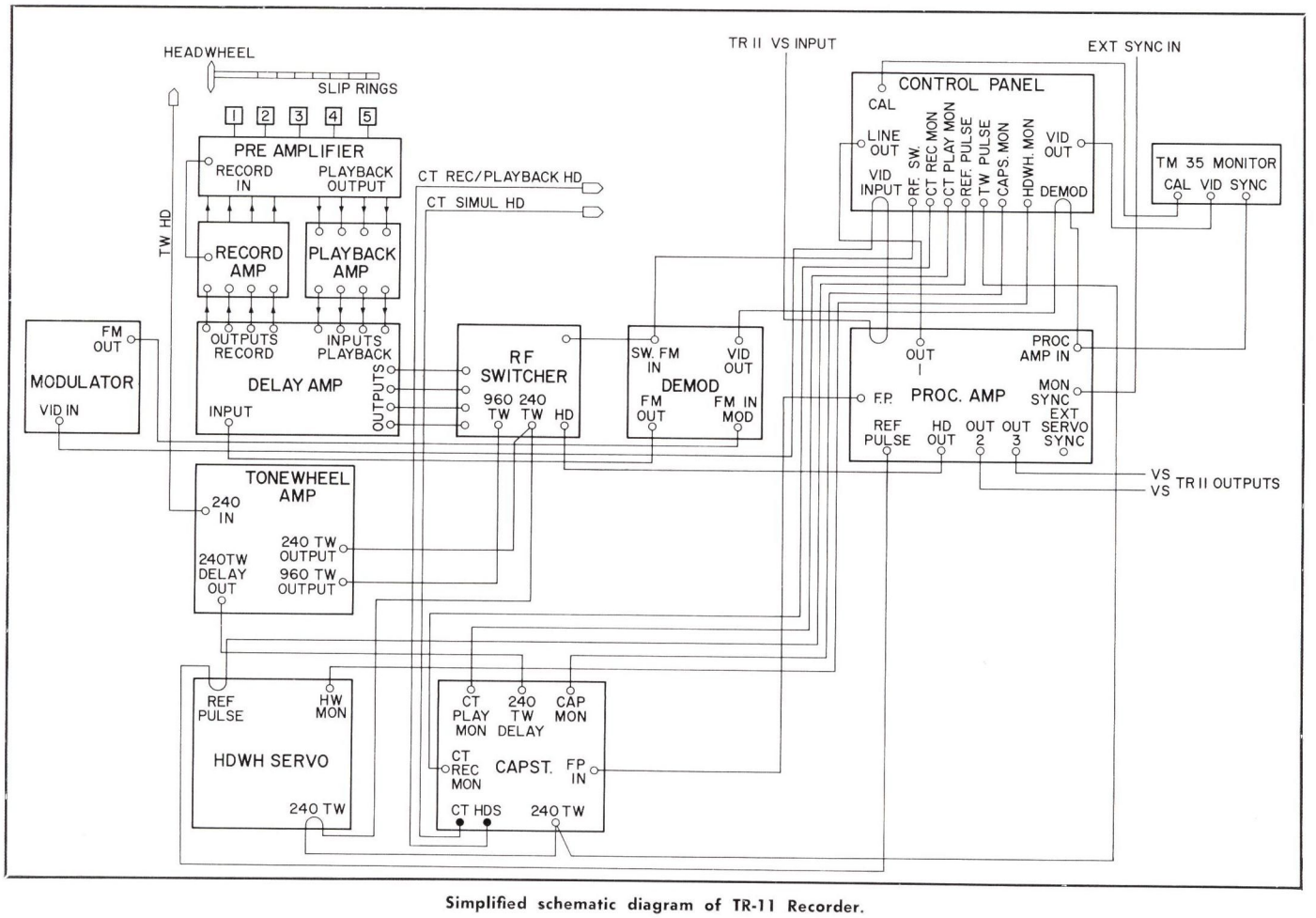
Audio.....Line: −10 +8 VU into 600 ohm balanced line matching input

System Timing Reference.....Record mode—incoming composite video or generator sync. Playback mode—external sync generator, or 60 cycle line

Output Signals:

Video.....Composite monochrome signal—two program and one monitor; Output load impedance—75 ohms ±1% unbalanced, sending end terminated

Audio.....Line: +8 VU into 600 ohm balanced line



Simplified schematic diagram of TR-11 Recorder.

SPECIFICATIONS (Continued)

Mechanical Specifications

Tape Timer Indicator.....Resettable, illuminated counter measures elapsed tape time via direct drive from tape, accuracy within 0.3%

Tape Transport:

Air Lubricated Tape Guides.....Air pressure is utilized on the tape guides

Headwheel Quadrature.....Accurate to ±0.015 micro-sec., with facility to adjust while recorder is in operation

Overall Dimensions:

Width (3 cabinets in line).....69½"

Height.....84"

Depth (overall).....25"

Depth (cabinets only).....18"

Floor Space.....8.2 sq. ft.

Installation.....Equipment supplied rack mounted with necessary interconnecting cable harness

Location.....See recommended layouts

Components.....All equipment units designed to fit standard racks

Finish.....Cabinets finished dark umber gray

Shipping Weight.....1500 lbs. approx.

Equipment Supplied

Type TR-11 Television Tape Recorder.....ES-40908

Comprised of

1 Three-rack Recorder Assembly.....MI-40751

1 Headwheel Panel Assembly.....MI-40760-A

2 End Panels for TV Tape Recorder.....MI-40757

1 Microphone.....MI-40743

1 Kit of Tape Recorder Accessories.....MI-40737

- 1 Headwheel demagnetizer
- 1 Set of Spring Scales
- 1 Dial Indicator for pole tip projection measurements
- 1 12½" take-up reel
- 1 Kit of lubricants
- 1 Set of adjusting tools
- 1 Brake release switch
- 1 Test Module for Processing Amplifier (Banjo)

Accessory Equipment

Television Tape Splicer.....MI-40772

Headwheel Panel Assembly (spares).....MI-40760-A

14" Empty Reel in Box.....MI-40775

8" Empty Reel in Box.....MI-40773

Meter.....MI-21200-C1

Alignment Tape—525 Line Standard.....MI-40771-B

Alignment Tape—625 Line.....MI-40779-B

Adjustable Module Extender for Servicing Processing Amplifier.....MI-41600

Bulk Tape Eraser.....MI-10880

Shelf for Tape Splicer.....MI-40778

TM-35 Master Monitor.....MI-26154

Master Erase Accessory.....MI-35828

Remote Control Panel.....MI-40752

Processing Amplifier Remote Control Panel.....MI-40788

Two-speed Conversion Kit (7½/15-inch).....MI-40792

Headwheel Assembly (Narrow Track).....MI-40791

Pixlock System

FEATURES

- Fades, wipes, dissolves and special effects now possible on video tape
- Transistor design throughout
- Self-contained power supplies
- Lock-in time 3 to 5 sec. maximum
- Ease of adjustment saves set-up time
- Modular construction for maximum accessibility
- Single operating control

DESCRIPTION

With Pixlock, all of the lap dissolve, special effects and other types of transition between two or more live or film television signals become possible with tape signals as well. The Pixlock System provides the TV tape recorder with the capability for playback of tape signals in accurate synchronization with a local sync generating system.

RCA's Pixlock System uses modular construction and transistor circuitry, matching in appearance the processing amplifier. The Pixlock System consists of two basic units, Switchlock (MI-35825) and Linelock (MI-35819) which may be ordered separately, if desired.

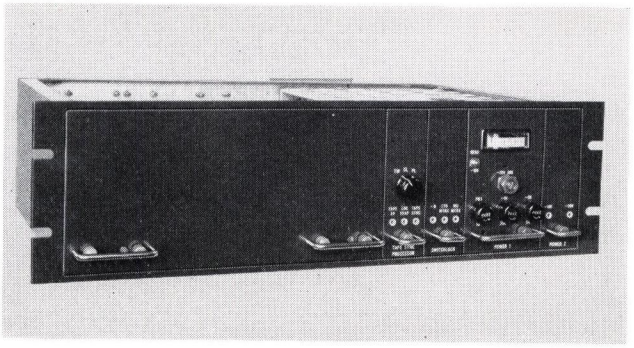
The Switchlock Accessory Kit, the first step for added program flexibility, operates in conjunction with the capstan servo system. Its function is to provide signals to the capstan servo system to control the phase and speed of the tape, in such a manner that vertical rollover of the picture is prevented when switching between tape and other program sources.

The Linelock Accessory Kit provides the means to accurately control the headwheel motor to maintain a precise relationship between the video signal playback from the tape and the local synchronizing signal which is the reference. With the addition of the Linelock modules, the tape system is completely locked both vertically and horizontally, making it possible to achieve roll-free switching, lap dissolves, supers and special effect transitions.

The TRT-1A and 1B Television Tape Recorder with the Switchlock and Linelock accessories is capable of all normal servo functions plus the pixlock feature. Choice of normal, switchlock or pixlock operation is determined by a 3-position selector switch on the switchlock accessory.

The MI-35825 Switchlock Equipment consists of a frame, four modules (identified as "Power 1," "Power 2," "Tape Sync Processor" and "Switchlock,") connection cables and installation hardware. The equipment is inserted in the first rack of the MI-40767-B Servo Unit immediately below the capstan servo chassis. As seen in the simplified functional diagram, the switchlock compares the 240 cycle signal derived from the control track with the reference frame pulse derived from local sync. The regenerated 240 cycle control track signal is divided by eight to form a 30 cycle pulse. This pulse is then properly phased by a frame pulse formed from the signal off the tape. The dif-

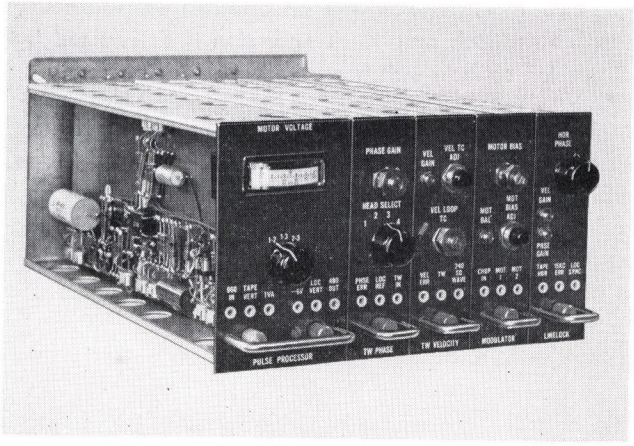
DESCRIPTION (Continued)



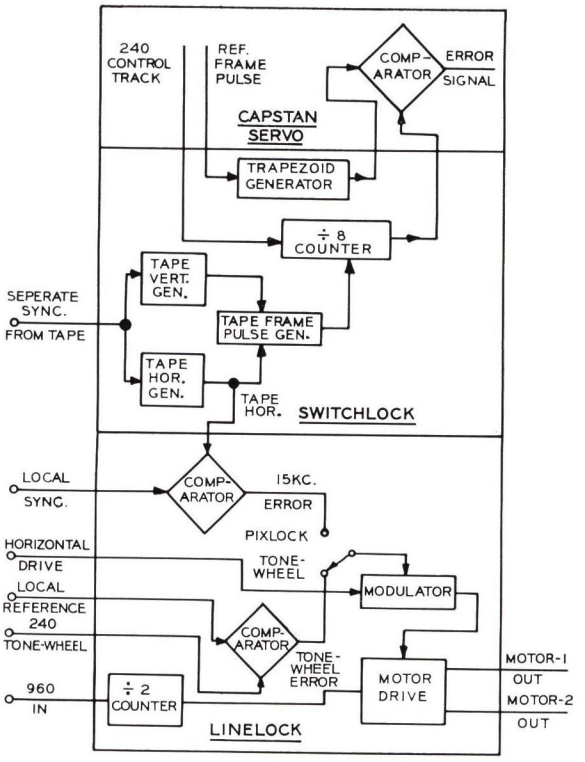
Switchlock Equipment, MI-35825

ference signal serves to speed up or slow down the capstan to maintain vertical lock with an external sync source at all times.

The Linelock Accessory Kit, MI-35819, is made up of five transistor modules (identified as "Pulse Processor," "Tone Wheel Phase," "Tone Wheel Velocity," "Modulator" and "Linelock") together with connection cables and hardware. By removing a blank panel provided with the Switchlock Equipment, the Linelock modules may be inserted into the Switchlock rack-mounting frame. As shown in the functional diagram, this unit operates from a local sync, a 60-cycle reference pulse, 240 cycle tone wheel pulse, 960 cycle pulse and a horizontal drive signal supplied from the Switchlock Assembly. To achieve pixlock, the Linelock Modules perform several automatic sequential operations. After confirming tonewheel lock of the headwheel and switchlock of the capstan servo as described under switchlock, linelock causes the vertical signal to be matched within less than one line of precise coincidence with the local sync signal. Next the playback horizontal sync signal is compared to the local horizontal sync. A precision phase detection loop then controls the headwheel motor to maintain a precise relationship between the video



Linelock Accessory Kit, MI-35819



Pixlock Functional Diagram

signal playback from the tape and the local synchronizing signal which serves as the reference.

Both the Switchlock and Linelock Equipments are easily connected into the RCA TV Tape Recorders. Use of the Switchlock unit obviates the need for the Velocity Loop in the Capstan Servo and the Linelock modules replace the vacuum tube Headwheel Servo chassis. No additional controls are required for set-up or operation of the Switchlock Accessory. There are a total of eight controls involved in the initial set up of the Linelock Accessory. One of these controls, the Horizontal Phasing Adjustment, also serves as the only operating control for the entire Pixlock System.

SPECIFICATIONS

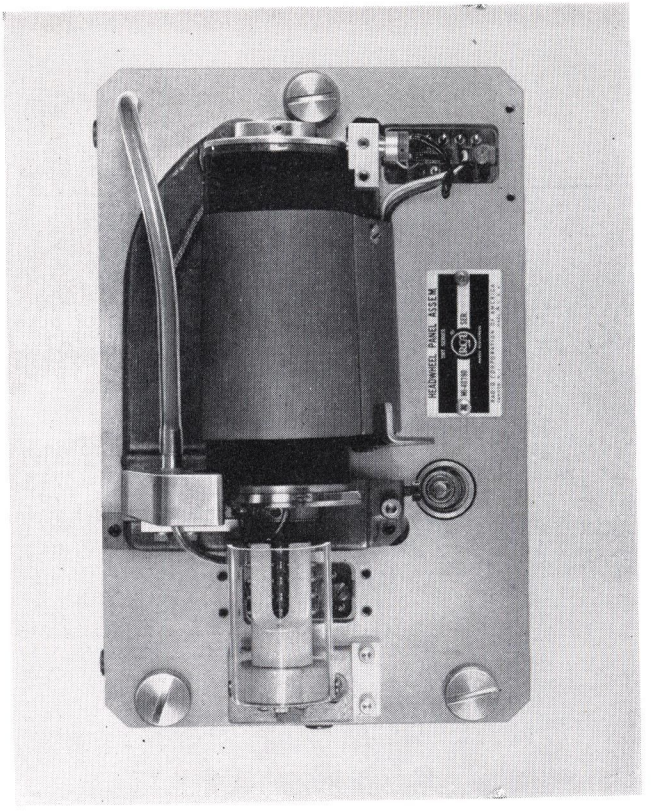
Start-up Time	Fully synchronized picture in less than 5 seconds from STOP mode
Phase Stability	±0.1 microsecond jitter with respect to local sync
Long Term Phase Drift	±0.3 microsecond with respect to local system for periods of one minute or more
Power Requirements	117 volts, 60 cycles, 50 watts
Dimensions Overall	19" wide, 5¼" high, 15" deep
Weight (Pixlock System)	Approx. 40 lbs.

Equipment Supplied

Pixlock System ES-26992
Comprising the following (which may be ordered separately by MI Number):
1 Switchlock Accessory Equipment MI-35825
1 Linelock Accessory Equipment MI-35819

TV Tape Accessories

AIR BEARING HEADWHEEL ASSEMBLY



FEATURES

- Provides ultimate in TV tape recording and reproduction
- Longer life heads—approximately 1½ times
- Improved picture stability
- Unlimited bearing life
- Improved quadrature

DESCRIPTION

The Air Bearing Headwheel Assembly exploits the advantages of air as a lubricant to provide the ultimate in television tape recording and reproduction. By substituting a thin layer of air under pressure for standard ball bearings, the motor shaft of the headwheel panel literally rides on a cushion of air. Metal friction is eliminated. Near perfect rotational concentricity is maintained throughout the life of the recording heads. Improved headwheel servo lock-up and reduced jitter materially improve the overall quality of performance. Tape guides in the equipment are similarly air lubricated to save wear on tape.

The Air-Bearing Headwheel Assembly, MI-40790 consists of the identical parts used on the Standard Headwheel Panel Assembly, MI-40760-A, with the substitution of air bearings for ball bearings. The panels are interchangeable after the installation of a Modification Kit, MI-40786 for 60-cycle operation or MI-40787 for 50-cycle operation.

The MI-40790 panel assembly is easily attached to the TRT-1 tape transport panel by three captive thumb screws It consists principally of the headwheel, headwheel motor, brush and slip-ring assembly, control-track head, tonewheel, tonewheel head, and vacuum guide assembly. The Modification Kit contains an air pump in a soundproof housing, necessary gauges, relays and interconnecting hose.

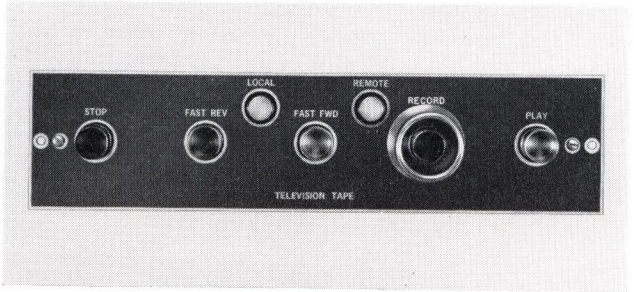
The air-bearing panel utilizes a pneumatic bearing for both the radial and axial positioning of the headwheel. The air compressor supplied is an oilless unit and includes a receiver tank. A regulator to maintain 35 PSIG air pressure and a filter-moisture separator are supplied to provide clean, dry air at the headwheel panel. The air line is equipped with a safety pressure switch. The safety switch prevents operation of the air bearing panel until adequate air pressure is available. In the event of an air supply failure, the safety switch will turn off the tape recorder and allow the headwheel to coast to a stop without damaging the air bearing surfaces.

The air bearing headwheel assembly is shipped in a carrying case equipped with a shock mount support. It should be kept in the case at all times except when in actual use.

Equipment Supplied

Air Bearing Headwheel Assembly complete in carrying case MI-40790
Modification Kit (required accessory)
For 60-cycle operation MI-40786
For 50-cycle operation MI-40787

REMOTE CONTROL PANEL



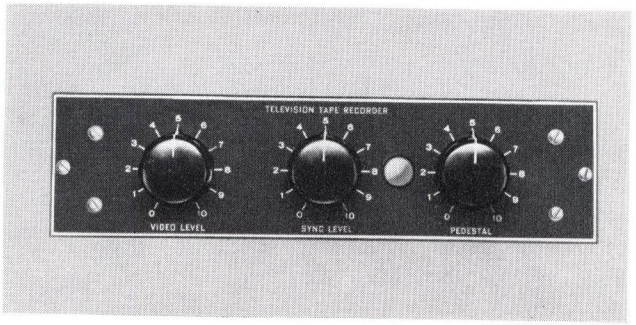
Remote Control Panel, MI-40716, provides convenient control of TRT-1B tape functions.

Remote control of the RCA Television Tape Recorder's mechanical functions is accomplished by means of accessory Remote Control Panels. These control panels provide facilities for "stop," "fast reverse," "fast forward," "record" and "play." Tally lights indicate whether TRT-1B is on local or remote operation. Variable speed rewind is not available at the remote location. The MI-40716-D panel will mount in either the standard console housing mounting adaptor, MI-26252, or the rack mounting adaptor, MI-26254.

Stock Identification:

Remote Control Panels for TRT-1A	MI-40716-C
Remote Control Panels for TRT-1B	MI-40716-D
Remote Control Panels for TR-11	MI-40752

SIGNAL REMOTE CONTROL PANEL KIT



MI-40788 Signal Remote Control Panel Kit.

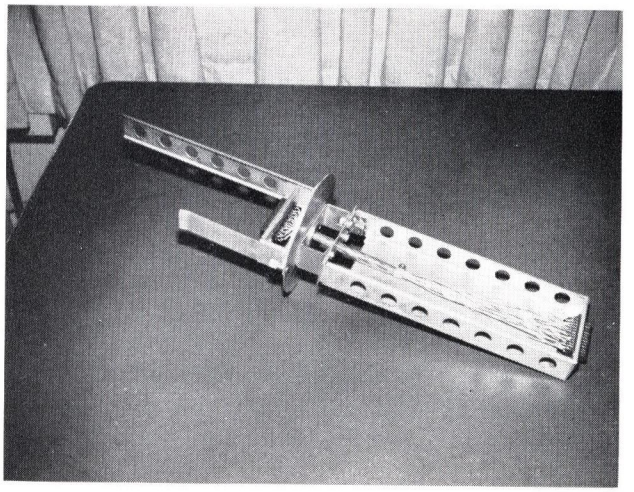
A companion panel to the Remote Control Panel, is the Signal Remote Control Panel, for the Processing Amplifier, MI-40788. This panel provides remote control of such electrical functions effecting the signal characteristics such as pedestal, sync and video. A panel light indicates when the panel is in use.

The Signal Remote Panel is simple to install in the input and output modules of the processing amplifier. The panel is designed for console mounting, and is 11 1/16 inches wide by 2-21/32 inches high, and fits the adaptor for the console.

Stock Identification:

Signal Remote Control Panel (for TRT-1A, TRT-1B and TR-11)	MI-40788

ADJUSTABLE MODULE EXTENDER

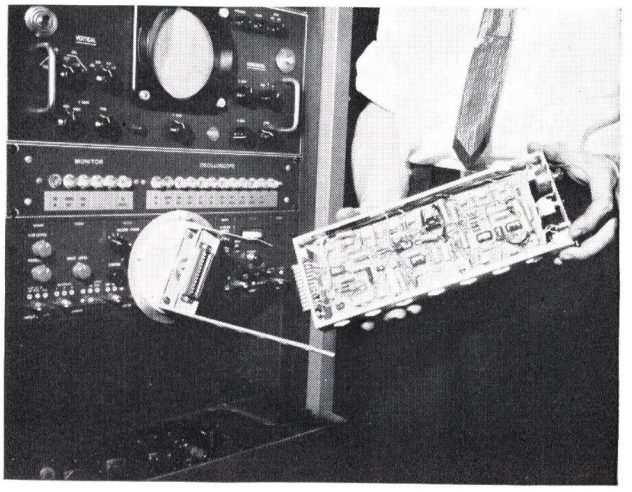


Adjustable Module Extender (MI-41600).

An Adjustable Module Extender Accessory (MI-41600) enables any one of the many modules which comprise the Processing Amplifier, Pixlock and ATC (Automatic Timing Corrector) to be withdrawn to perform service checks. The module extender is inserted in place of the module to be tested and the module to be tested is then inserted in the module extender. The extender is rotatable thereby enabling the unit under test to be rotated within 180 degrees and locked at the desired position.

A standard module extender which provides vertical mounting only of the unit to be tested is provided in the kit of accessories supplied with each recorder.

Stock Identification MI-41600



The Adjustable Module Extender provides ready accessibility to components.

HEAD DEMAGNETIZER (Degausser) MI-40785

The Head Demagnetizer, MI-40785, is designed to demagnetize the video heads, tone wheel head, control track head and audio heads of the television tape recorders should they become magnetized.

The degausser is housed in a plastic, hand-grip case measuring only 4⅞ inches in diameter and 4¾ inches high overall. A momentary-contact, ON-OFF pushbutton safety switch prevents current being applied when not in use. To operate, simply plug into any a-c outlet and hold over the reel of tape, then rotate the degausser around the tape for several seconds. Slowly withdraw it from the tape to arms length before releasing on-off pushbutton.

SPECIFICATIONS

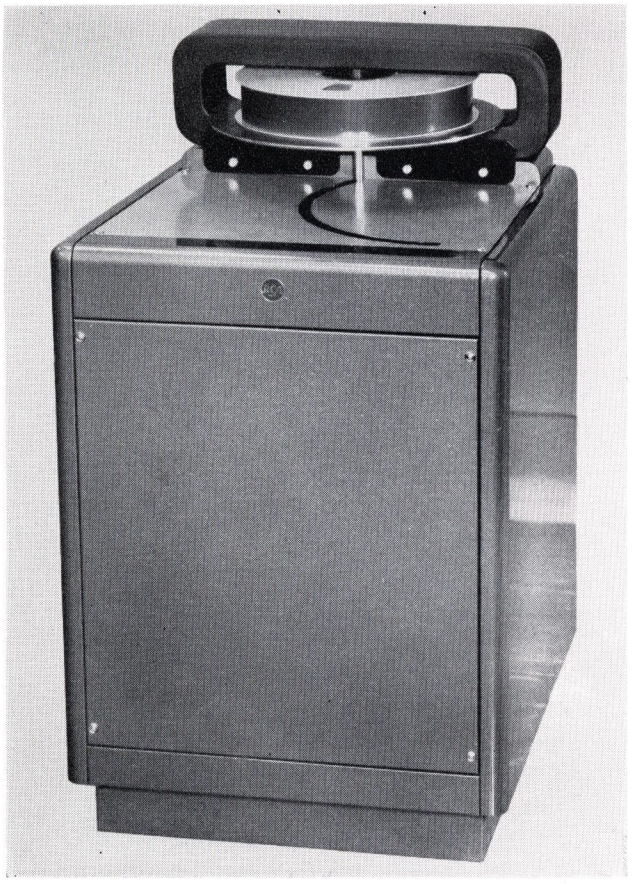
Power Consumption	100-130 volts, 50/60 cycles, a-c, single phase, 8.5 amps
Switch	Momentary contact rating 15 amp a-c inductive
Line Cord	8 ft. long
Dimensions (overall)	4⅞" dia. by 4¾" high (including handle)
Weight	4 lbs. approx.

Head Demagnetizer, MI-40785, affords convenient means of cleaning magnetic tape and film of sound and noise.

Equipment Supplied

Head Demagnetizer complete in plastic, hand-grip type case, furnished with 8-foot line cord, moulded rubber plug.....MI-40785

AUTOMATIC MAGNETIC TAPE ERASER, MI-10880



FEATURES

- **Complete audio and video signal erasure**
- **Automatic erase cycle**
- **Air core coil for uniform erasure**
- **Accommodates up to 2-inch tape on 15-inch reels**
- **Occupies less floor space**
- **Convenient table height**

The new RCA Automatic Magnetic Tape Eraser is a self-contained unit mounted in a metal cabinet of table height requiring a floor space 22 inches square. The unit is designed to erase full reels of magnetic film or tape and will accommodate up to 15-inch reels.

Audio and video signals are erased down to the noise level of the magnetic medium in an automatic 18 second cycle. The erase cycle is fully automatic and controlled by a motor operated mechanism. Once the reel of tape is placed on the carriage and pushed into the operating position the erase cycle is set in motion without manual operation of any controls.

The use of an air core coil eliminates the possibility of "erasure spokes" so common in erasing with an iron core coil. Power factor correction with the air core coil provides a very high field strength from a nominal 12 ampere 220 volt input.

Stock Identification MI-10880

VIDEO TAPE STORAGE CABINETS

FEATURES

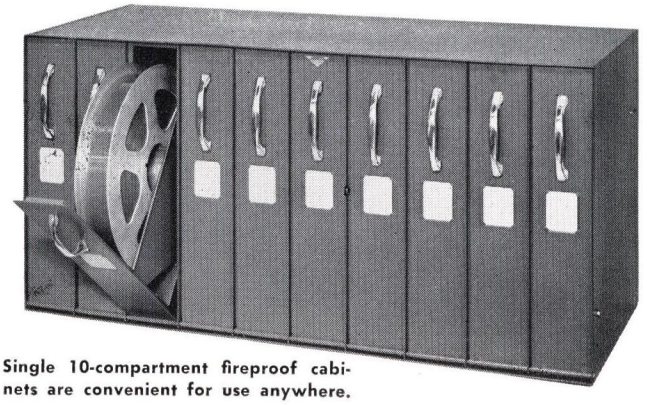
- Maximum storage in minimum space
- Protects and extends life of video tapes
- Sturdy, all steel construction—fireproof and dust free
- Enables fully indexed, orderly storage
- Wide choice of styles, capacity, and finishes
- Can be equipped with security bars

DESCRIPTION

Neumade all-steel cabinets provide maximum video tape storage facilities in a minimum of space. Telecasters will find these clean and orderly compartmentalized storage cabinets an invaluable addition to any recording studio. This filing equipment also protects costly video tapes against damage from fire, dust and other hazards.

The Model VT Neumade cabinets are designed to house video tape reels ranging in size from 6 inches to 14 inches. Each reel has its own double walled fireproof compartment of heavy gauge steel with safety air chambers completely surrounding it—door, sides, top, bottom and back. Individual doors are self-closing with semi-enclosed reel carriages especially designed to prevent reels from "catching." A full grip handle and changeable index tab are provided on each door.

The video tape cabinets are available as complete floor model units housing from 30 to 50 reels according to reel size or as separate ten compartment fireproof cabinets complete for use anywhere. On order, all cabinets can be equipped with approved security bars and combination locks. Neumade cabinets are supplied with standard olive-gray baked-on enamel finish but, when specified, will be supplied to match other manufacturers' finish in satin smooth baked-on enamel. Modern handles with brush chrome finish add to the streamline styling and beauty.



Single 10-compartment fireproof cabinets are convenient for use anywhere.

Model VT-8-50 Floor Cabinet permits storage of up to 50 small reels of TV tape.

SPECIFICATIONS

Equipment Supplied

Floor Cabinets:

For 6", 6½" or 8" Reels:
Files 50 reels in 5 ten compartment fireproof cabinets in outer steel cabinet 72" high, 39" wide, 15" deep ..... Model VT-8-50

For 6" Reels Only:
Individual fireproof compartments for 50 fifteen minute reels, same as above but only 60" high ..... Model VT-6-50

For 12½" Reels:
Individual fireproof compartments for 30 one hour reels in 3 ten compartment cabinets in outer steel cabinet 60" high, 39" wide and 15" deep ..... Model VT-12-30

For 14" Reels:
Same as above but for 30 of the 14" reels. Size 67" high, 39" wide, 17" deep ..... Model VT-14-30

Single 10 Compartment Fireproof Cabinets:

Ten 6-inch reels per cabinet ..... Model VT-6-10
Ten 6½-inch or 8-inch reels per cabinet ..... Model VT-8-10
Ten 12½-inch reels per cabinet ..... Model VT-12-10
Ten 14-inch reels per cabinet ..... Model VT-14-10

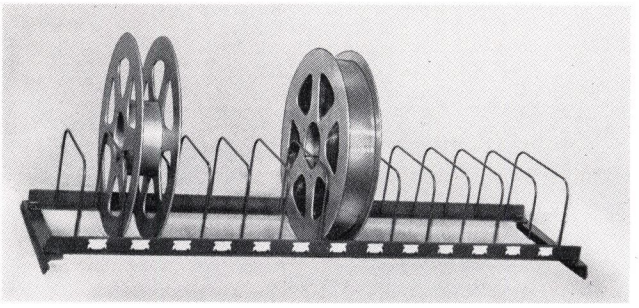
VIDEO TAPE STORAGE RACKS

DESCRIPTION

Although fully fireproof cabinets are recommended for storage of video tapes, these all steel single wall fire-resistant cabinet storage racks prove adequate under certain conditions. The interiors are fitted with steel separator racks with individualized storage and indexing for each reel plus a master index.

The steel cabinet is of sturdy design. The door has a three-point latch and key lock and a utility drawer is provided in the base. The cabinet is 70 inches high, 30 inches wide and 16 inches deep overall. Neumade olive-gray enamel baked-on is standard finish but a finish matching RCA or Ampex is available on special order.

TV Tape Cabinets.



Tape racks of any length may be cut to station requirements and are ready for use complete with end brackets.

Open storage racks are also available to store video tapes. These all steel equipments are fully indexed, with steel rod separators welded to steel angles. Closed steel ends have cast iron feet drilled for floor mounting as are ends and back supports for mounting to wall or other units.

Individual tape rack lengths of any size and length, cut to your needs and ready for use, are also available. These racks are supplied complete with end brackets and have an approximate capacity of 4 reels per foot of rack.

SPECIFICATIONS

Equipment Supplied

Cabinet Racks:

For 6" Reels:
Files 80 reels in fire resistant cabinet 70" high, 30" wide and 16" deep ..... Model VT-806

For 6½" and 8" Reels:
Files 70 reels in cabinet, same as above ..... Model VT-708

For 12½" Reels:
Files 40 reels in cabinet, same as above ..... Model VT-402

For 14" Reels:
Files 30 reels in cabinet, same as above ..... Model VT-304

Tape Racks:

For 6", 6½" and 8" Reels:
Files 125 reels on 7 tiers. Size 75" high, 48" wide, 10" deep ..... Model RVT-125-68

For 6", 6½" and 8" Reels:
Files 144 reels on 8 tiers, same rack as above ..... Model RVT-144-68

For 12½" and 14" Reels:
Files 90 reels on 5 heavy duty separator racks. Size 75" high, 48" wide and 16" deep ..... Model RVT-90-124

For All Size Reels:
Files 54 of the 6", 6½" or 8" reels and 54 of the 12½" or 14" reels. Size 75" high, 48" wide, 16" deep ..... Model RVT-614

Tape Rack Lengths:

For 6", 6½" and 8" Reels:
Files approximately 4 reels per ft. (specify length desired) ..... Model RVT-8

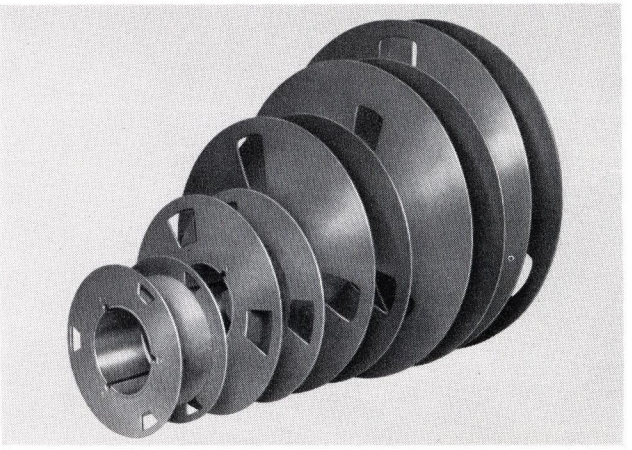
For 12½" and 14" Reels:
Files approximately 4 reels per ft. (specify length desired) ..... Model RVT-14

Note: FOR REELS IN BOXES:
Racks listed above are for reels only. Supplied for reels in boxes when specified at same prices but capacities are less.

TV TAPE REELS

RCA TV Tape Reels meet ASA industry standards and are notable for excellent wearing qualities, edge straightness and recording performance. They include rubber hub lining for ease of threading. The reel flanges are made from lightweight 0.91 inch aluminum alloy and finished clear anodize. The flanges have three air escape holes which also serve for tape inspection. All reels are designed to fit standard 3-inch hubs (I.D. 3.00 inch). They accommodate from 600 to 7230 feet of 2-inch wide video recording tape as listed below.

Stock Identification	*Nominal Capacity*	*Playing time at 15 inch/sec.*	O.D.
MI-40789	600 feet	8 min.	6.000"
MI-40773	1650 feet	22 min.	8.000"
MI-40774	3600 feet	48 min.	10.500"
MI-40775	5540 feet	74 min.	12.500"
MI-40776	7230 feet	96 min.	14.000"



Series of RCA TV Tape Reels.

ALIGNMENT TAPE

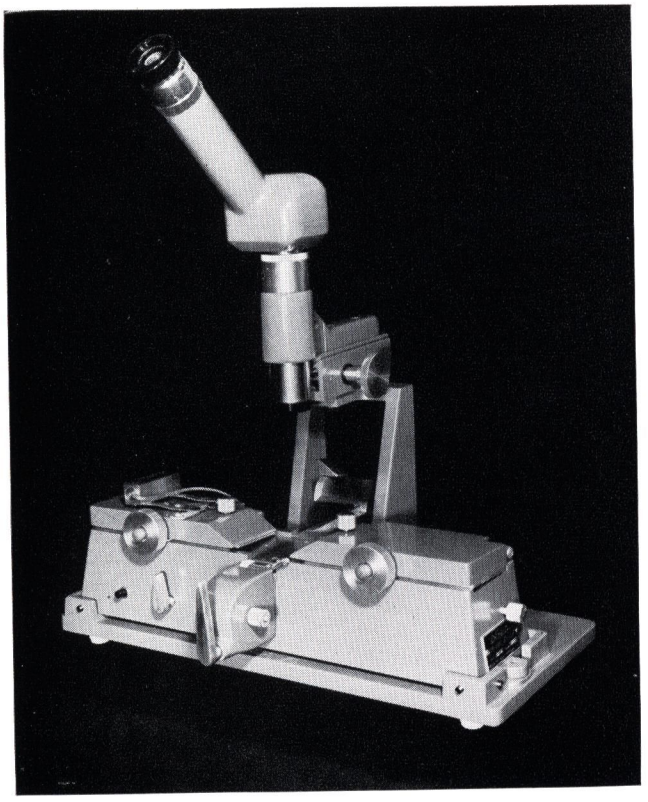
Eight-inch reel alignment tape in plastic case.

RCA Alignment Tapes are designed to speed set-up of new headwheel assemblies and assure proper head to tape spacing. The tapes are a very convenient servicing aid in preparing the physical or mechanical alignments of video tape recorders so that proper quadrature adjustment results. Use of these test tapes assures that recordings made will be interchangeable for playback on other machines or headwheel assemblies.

Two tapes are available: MI-40771-B for use on tape recorders operating 525 lines/60 cycles and MI-40779-B for those operating at 625 lines/50 cycles. Both contain a minimum of 400 feet of specially recorded tape made in accordance with rigid RCA specifications and wound on an 8-inch diameter reel. The alignment tapes come in special plastic case.

Stock Identification	*Line Standard*	*Playing time at 15 inch/sec.*	O.D.
MI-40771-B	525 line/60 cycle	5.33 min.	8.000"
MI-40779-B	625 line/50 cycle	5.33 min.	8.000"

TV TAPE SPLICER AND SHELF, ES-40993



FEATURES

- **Sheer type cutter—machined cutting surfaces accurate to 0.0005 of an inch**
- **Precision mounted 40-power optical system**
- **Slide-in splicing tape dispenser**
- **Fold-a-way light**
- **Special mounting shelf attaches to RCA tape recorders**

DESCRIPTION

The Magnetic Tape Splicer and Shelf, ES-40993, consists of a precision Magnetic Tape Splicer, MI-40772, and a Mounting Shelf, MI-40778. The Splicer is a precision instrument for professional splicing of magnetic tape, required in television tape recording operations. The splicer features a shear-type cutter offering machined cutting surfaces accurate to 0.0005 of an inch, a 40-power microscope for easy location and precise alignment of frame pulses, and a slide-in splicing tape dispenser that measures just the right amount of splicing tape and permits neat, secure splices free of creases and bulges.

The tape splicer has a number of lock-in adjustments which afford all the means for forming clean, solid, square butt-splices. With a minimum of time and effort operators can make perfect splices thus eliminating roll-over and other "splice-faults" of television tape programming. The splicer is provided with a sturdy shelf which can be bolted to the RCA TV tape recorders in a convenient location for ease of editing and splicing tapes. Both splicer and shelf can be supplied separately, if desired.

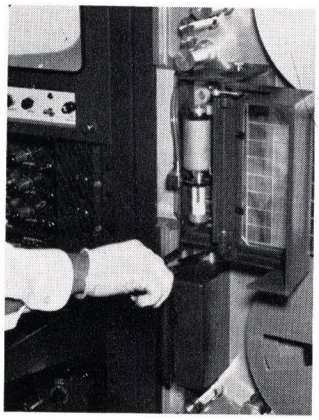
The splicer consists of a sturdy base plate upon which an optical system and splicing components are mounted. The splicer body has a precision tape guide measuring two inches wide by 1/8-inch deep in which the tape is placed during the splicing operations. Two hinged hold-down doors secure the tape in the tape guide. Two Vernier tape advance knobs control tape movement in the guides and allow the operator to align the tape under the cutting shear. When properly positioned for the cut, the tape may be secured by means of tape locks.

A light assembly containing a 6.3 volt screw-base lamp is hinged to the top of the left hand tape hold-down door. It is swung into position to light the splicing area while the optical alignment is being made and swung back to the "rest" position while the splice is being made. Another feature of the splicer is the saddlebar which slides through the ways in the splicer body at right angles to the tape guide. It carries the shear into position for cutting and the splicing tape into position for the splicing operations. The tape shear is mounted on the back end of the saddlebar assembly, and is made of a special alloy, hardened and precision ground. The splicing tape magazine is located on the front-end of the saddlebar and contains a spring-loaded spool which holds the reel of splicing tape. The saddlebar can be locked into position to prevent the bar being moved during cutting or splicing operations.

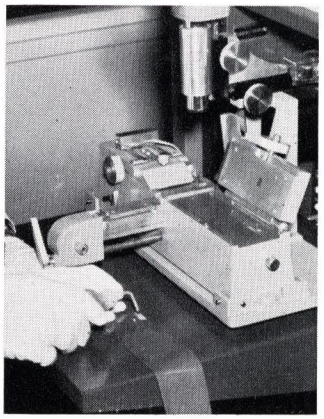
SPECIFICATIONS

Optical System	magnification 40 x
Alignment	0.0005 of an inch
Optical Assembly	6 - 8 volt lamp
Power Requirements	110 volts, single phase, 60 cycle
Power Cord	68 inches
Overall Dimensions:	
Splicer	15" wide, 15½" high, 13" deep, max.
Shelf	17" wide, 3⅝" high, 14" deep
Weight (Shipping):	
Splicer	29 lbs.
Shelf	13 lbs.
Splicing Tape (aluminized low cold flow)	Spool 66 ft. No. 41-VR ¼"
Finish	Dark umber gray
Stock Identification:	
Magnetic Tape Splicer	MI-40772
Mounting Shelf	MI-40778
Tape Developer	Stock No. 222408

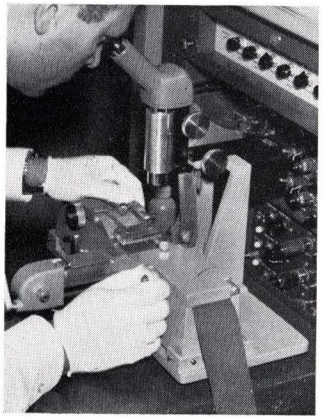
STEPS IN SPLICING TV TAPE



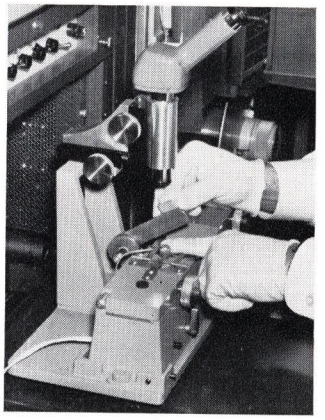
(A) Operator stops recorder at desired location and cuts magnetic tape.



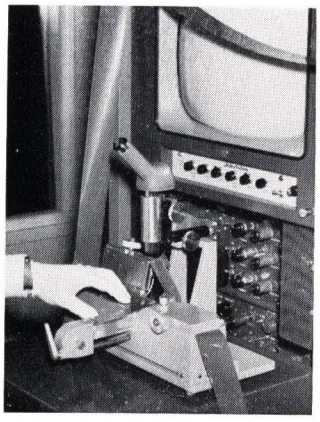
(B) To locate nearest "edit" or "frame" pulse, operator dispenses liquid solution of iron oxide particles to develop magnetic pattern.



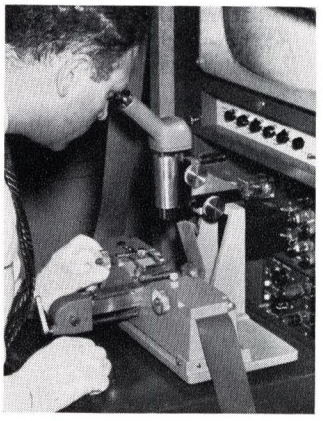
(C) Operator aligns edge of video track on the built-in reticule in order to cut tape halfway between adjacent video tracks.



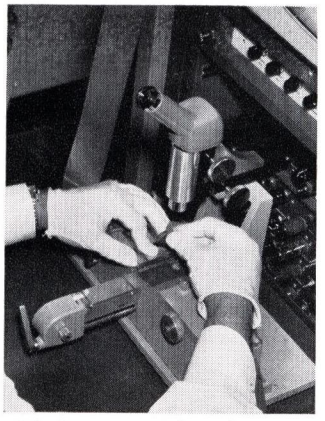
(D) Shear type cutter is brought into position and cut is made.



(E) Tape from top supply reel is draped over tape support post and positioned under left hold-down door.



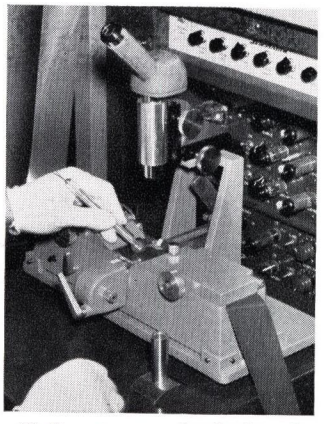
(F) Aligning the tape track prior to making the precision cut.



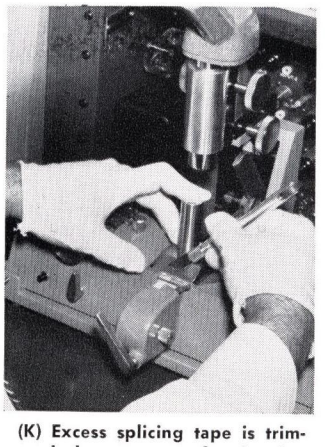
(G) Tape containing the new information is sheared and readied for joining to tape already in splicer.

(H) Operator dispensing splicing tape and preparing to place it into proper position.

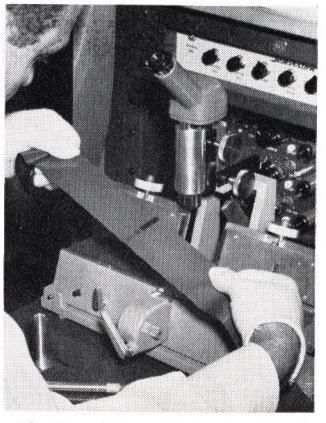
(I) Splicing tape is inserted beneath the lifted ends of the two tapes to be joined.



(J) Operator pressing both ends of tape firmly to provide a perfect butt joint.



(K) Excess splicing tape is trimmed by means of trimming tools.



(L) Examining the completed splice.

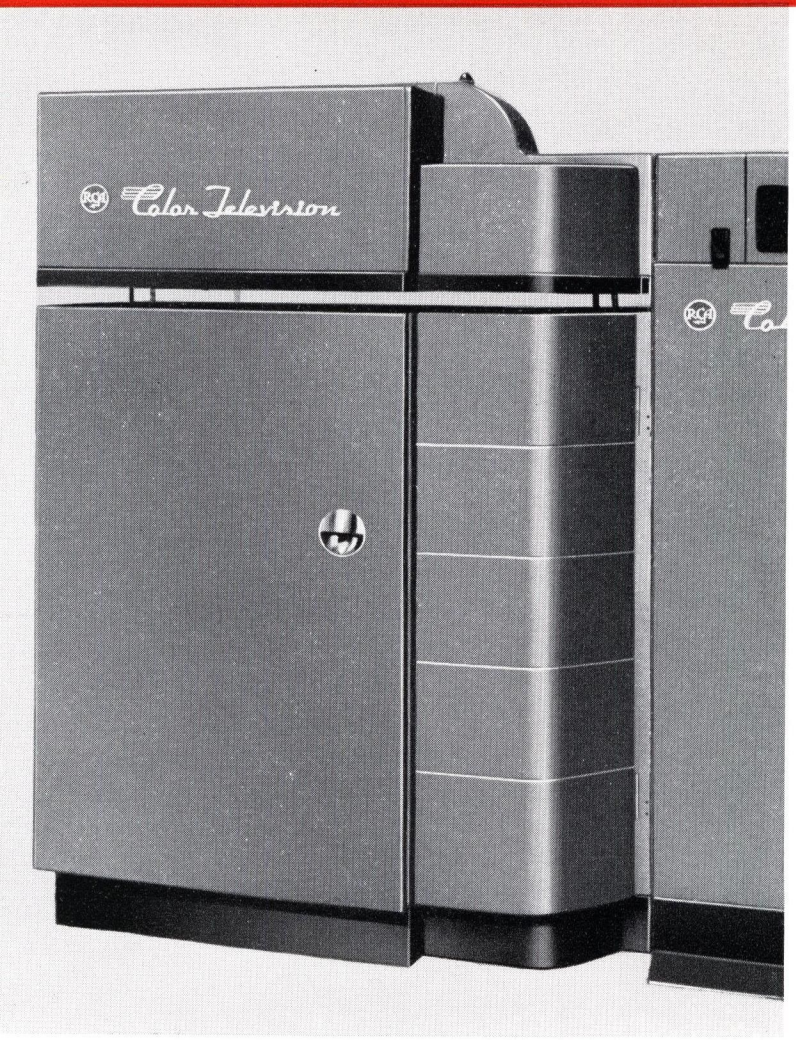
3-Vidicon Color Film Camera Equipment

TYPE TK-26B

Shown above is complete 3-Vidicon Color Film Camera System including Film Projectors and Multiplexer.

FEATURES

- "Real-life" color fidelity
- High signal-noise ratio picture
- Resolution and gamma excellent
- High quality compatible monochrome picture
- Adequate reserve for dense films
- Easy to obtain and maintain registration
- Operates non-synchronously with RCA TP-6EC film projectors
- Only two operating controls—master gain and pedestal
- Stable operation—system stays put



The 3-Vidicon Color Camera housing. Included in the top part of the housing are the three individual vidicon camera sub-chassis and the light splitting optical system. In the bottom pedestal portion of the housing is the camera auxiliary chassis.

DESCRIPTION

The RCA Type TK-26B 3-Vidicon Color Film Camera Equipment separates a color film image into its primary red, blue and green images and converts them to signals required for the compatible color television system. The equipment consists essentially of three vidicon cameras and an associated optical assembly which are supported on a pedestal. The pedestal also serves to house the camera auxiliary which supplies deflection voltage for all three camera assemblies. A control panel is incorporated in this unit. The camera control panel may be mounted in either a studio console or rack mounting desk.

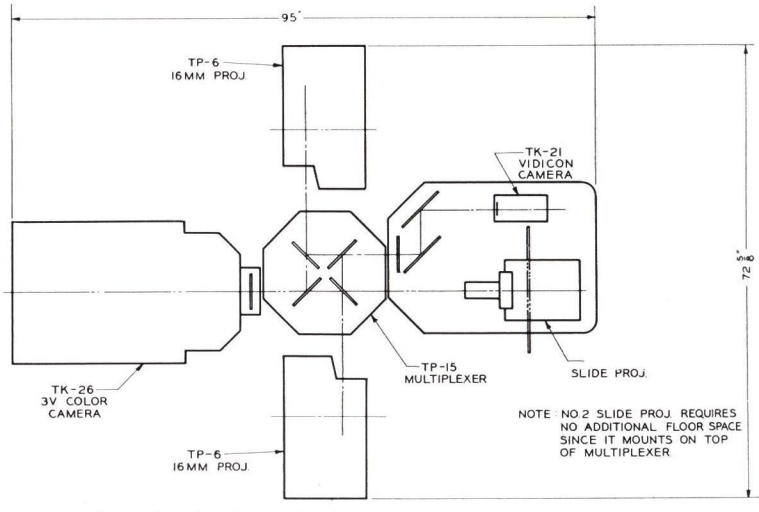
Other film camera equipment units are located in racks or console housings. These include the processing amplifier, colorplexer, aperture compensator, automatic carrier balance control, master monitor, two power supplies and other minor equipment units. The above equipment may be housed in two RCA standard equipment racks, or in one rack plus a 13-inch console for the master monitor, and a 22-inch console for the color processing amplifier and color camera control panel. The TM-21C Color Monitor cannot be rack mounted. It can be mounted on a table or shelf visible from the control position.

USES

The TK-26B 3-Vidicon Color Film Camera provides highest quality reproduction of color film and slides in a television system. The acceptance of television film programming is due in large measure to the performance standards which were made possible by the development of RCA vidicon film camera equipment.

By utilizing the TP-15 Multiplexer, up to four sources of 16mm or 35mm color film, 2 x 2 slides, or opaque material may be used with one TK-26B Film Camera. Long application projectors such as the TP-6EC provide an ample reserve of light to produce the best possible pictures from high density color films. The projectors may be operated directly from the power lines without being locked in with the sync generator.

As an optional mode of operation, the output of one of the vidicon cameras in the 3-V chain may be utilized for the reproduction of monochrome film or slides. This affords maximum flexibility of programming and increased utilization of equipment.



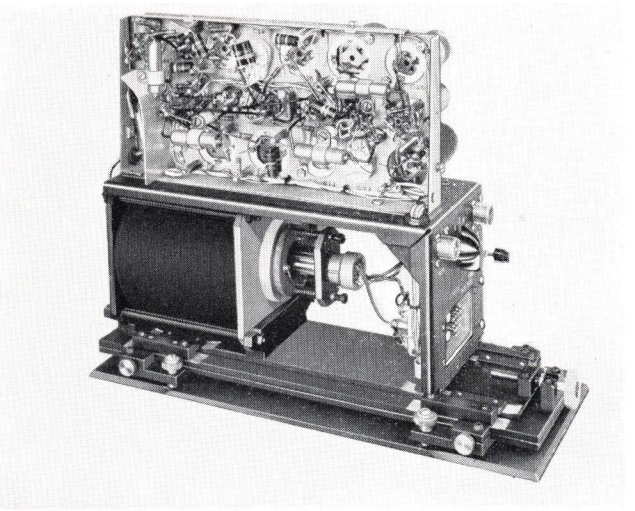
Floor plan for Color Film System with monochrome camera for preview and for separate program output.

TK-26B Color Film Camera (MI-40516-B)

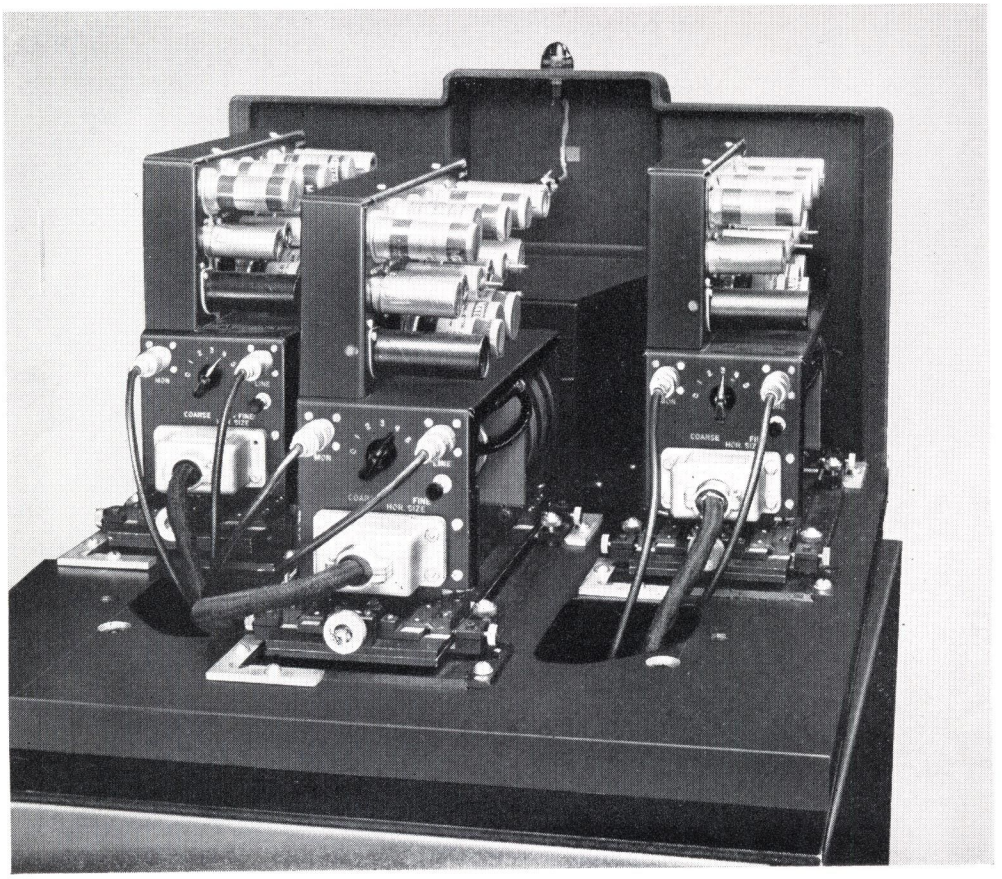
The RCA TK-26B Color Film Camera employs three RCA 7038 vidicon tubes, one for each of the primary colors of the color picture being transmitted. These vidicons "look" at a real image produced by the projector at a field lens in the camera. By use of a separate lens at each vidicon and appropriate choice of dichroics and color shaping filters, each vidicon sees only the red, the green, or the blue component of the color image.

The three identical vidicon camera sub-chassis are located together with the light splitting optics in the upper portion of the camera pedestal. Mechanical alignment of the three camera sub-chassis is easily achieved by thumbscrew adjustment of each chassis. The "in-line" arrangement of the cameras also simplifies this initial set-up. Final, precise registration is easily achieved electronically, and once registered, the stability of registration is excellent. In day-to-day operation, only minor touch-up of controls is necessary.

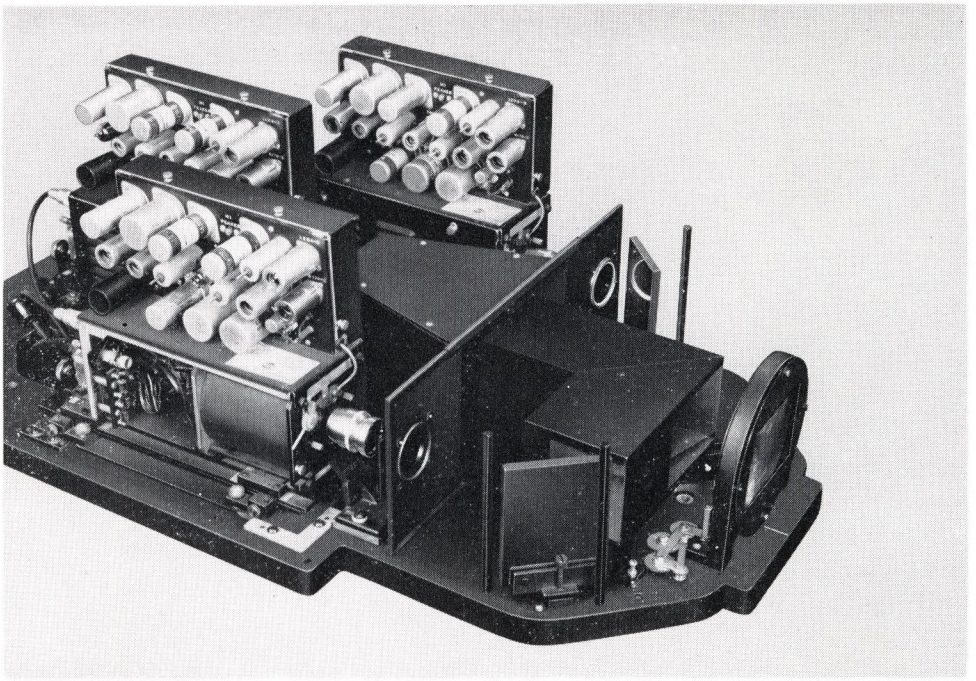
Each camera sub-chassis performs the same function of converting its particular optical image into a television signal which can be readily transmitted to the processing amplifier for synthesizing and encoding into the final composite color television signal. Good shielding of the input circuit allows the desired signal of about 15 millivolts level to enter the preamplifier essentially free of spurious signals. The high transconductance 417A tube together with a 12B4 comprises a high-gain, low-noise cascode amplifier to provide a high signal-to-noise ratio. By maintaining the capacity shunting the load resistor at a minimum,



A single Vidicon Camera Subchassis. Three identical subchassis are used in the 3-Vidicon Color Camera. These subchassis are mounted atop the camera pedestal and are mechanically aligned by means of the thumb-screw adjustments shown.



View of the three camera subchassis mounted atop the camera pedestal. The light-splitting optical system is completely enclosed in a dust-proof housing and each of three color images is directed to the face of one of the vidicon tubes.



Three vidicon cameras and optical system of the TK-26B equipment are shown accurately indexed to the machined optical bedplate. Each camera rests on its own precision focusing base which permits ease of set-up and maintenance, and greatly simplifies operation.

high peaking requirements have been reduced and shot noise in the output has been minimized. An additional amplifier feeds a cathode-follower high-peaking stage driver. This confiuguration permits the single-stage cathode high peaker to compensate properly for any high frequency loses in the input circuit.

A feedback output pair provides duplicate but isolated outputs at a 0.45 volt normal level with excellent linearity. The two outputs have sending-end termination and are used to feed the processing amplifier and a local monitor. Current stabilization, feedback, and precision components stabilize gain so that ±1 db gain differential between units is achieved.

The vidicon tube is accurately positioned in the center of the deflection-focus-alignment components and indexed longitudinally by a precision retaining nut. This assures that the three vidicons will be positioned quite similarly with respect to the necessary focus, alignment, and deflection magnetic fields. Extensive degrees of freedom are designed into the precision focusing base, which in turn is accurately indexed to the machined optical bedplate supporting all camera subchassis and the optics. This permits the necessary motion of the vidicon into its optimum position without disturbing its position in its deflection components. It can be angled and tilted until its photosensitive surface is accurately perpendicular to the optical axis and moved along the optical axis until uniform optical focus is obtained. Side-to-side and up-and-down motion of the camera, maintaining focus and perpendicularity with the optical axis, permits selection of the best photosensitive area (normally the center), and provides the obvious advantage of removing any target or mesh-blemish near the edge of the area used. The lens stays in place, accurately aligned with the optical axis.

Rotational freedom of the entire yoke assembly is provided for precise orientation of the three images. Vernier motion of the vertical coils with respect to the horizontal coils is provided first to skew one image for perpendicularity of horizontal and vertical lines of the image and then to skew register the other two units. Yokes are driven in parallel and the focus coils are connected in series to a well regulated current source. Small differential deflections are provided. Once set up almost all of the foregoing adjustments are permanently made and need no further attention; however, all needed variables are at command so that a superior result is readily attained with no need to compromise.

Optical System

The Optical System separates the light image into three primary color images and directs each to the photoconductive surface of an individual vidicon tube. The individual components of this optical system are accurately indexed to a machined optical bedplate upon which each camera rests on its own adjustable precision mount.

A relay lens system is used to provide adequate space for the optical elements which accomplish the color separation. This consists of a field lens and three relay lenses. A relay lens is mounted directly in front of each camera immediately in front of the vidicon tube. Between the field lens and the relay lenses are mounted the light splitting and color separating dichroic prism and filters. The

dichroic surfaces are sealed within a solid prism optical block to eliminate any multiple reflections within the optical system and to prevent deterioration of the dichroic surfaces from dust or handling. Color trimming filters are used in conjunction with the prism-dichroic surfaces to adjust the overall spectral sensitivity curves as desired for the color camera. The entire optical system is enclosed by a dust tight cover.

The pedestal provides a stable support for the optical assembly and also houses the camera auxiliary chassis. Provision is made for mounting this chassis on either side of the pedestal for the convenience of the operator. Four bolt slots are provided in the base of the pedestal for anchoring the unit solidly to the floor.

Camera Auxiliary, MI-40517-B

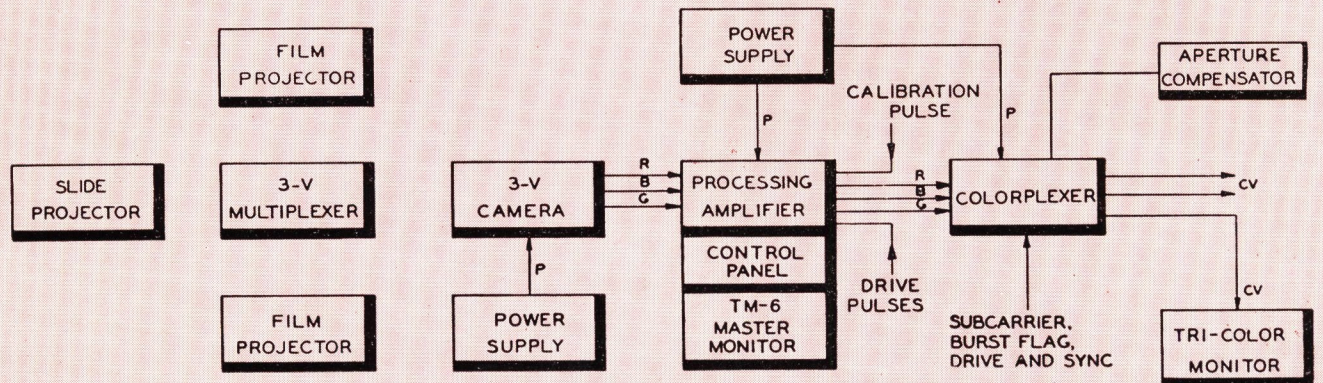
The camera auxiliary unit containing circuits and functions common to all three camera subchassis is mounted in the pedestal below with flexible interconnections. One interconnection bracket receives a-c, d-c power from the power supply, camera cables, tally cable, and local monitor coaxial cables from the camera subchassis and the remote control cable and synchronizing signals from the remote control position. A hinged local control panel permits operation at the film position for setup and easy servicing. One operator can set the camera up, then merely flick the "remote-local" switch to "remote" which transfers operating controls to the operating console or rack for final adjustment of the chain.

A monitor amplifier circuit supplies a wide band signal into a 75-ohm line to a local film room monitor with pushbutton selection of red, blue, green, or superimposed pictures for setup, checking, testing, or continuous monitoring. System blanking is added to this signal so that the "on-air" picture edges are properly defined. An extra loop-through input connection is available on the same switcher so that any other signal such as the "on-air" picture for cuing or the colorplexer output can be readily selected on the same monitor.

Vidicon blanking, which cuts off the beam during scan return for the dual purpose of preventing image erasure and establishing black reference for accurate d-c restoration, is provided by a multivibrator. This circuit is keyed by locally regenerated horizontal drive but made inoperative by locally regenerated vertical drive to supply the composite camera blanking waveform. Clipping action and a cathode follower output stage provide a perfectly clean blanking waveshape pedestal so that this a-c portion of the target voltage does not cause spurious sensitivity variations in the outgoing signal.

Vertical deflection drive is deliberately delayed by about 300μ/sec. and then regenerated at normal width in this unit to eliminate an otherwise characteristic white line at the bottom of the reproduced image. The new drive signal then drives the blanking circuit, as mentioned, and also the deflection circuit. The output system, involving feedback, drives the three parallel vertical yokes through a 10/1 transformer with deflection current easily linear within $\pm$1 per cent. Time constant and voltage return controls on the sawtooth generating circuit provide local and remote over-all size control, respectively. The green camera, considered as the reference, has a fixed resistance in series

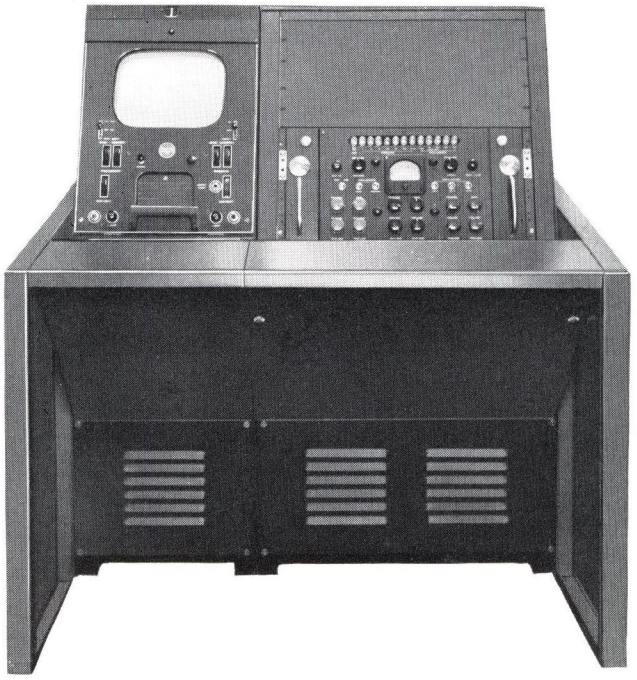
Block diagram showing major components of the TK-26B 3-V Color Film Chain and associated projector equipment.



with its yoke, while the other two have high resolution (vernier) trimming potentiometers for easy vertical-size image registration. Electrical centering of the scanned raster in each case is provided by a circuit made particularly stable by reference to system-regulated voltage and extremely low temperature-coefficient series resistance.

Control is wide and vernier for easy, precise setting. The parallel yokes are a-c coupled to block d-c centering current from the output transformer so that linearity is unaffected by centering considerations.

Horizontal drive is regenerated into a wider pulse within the unit to improve deflection efficiency and to preserve linearity, once adjusted, by making the unit insensitive to incoming drive variations. Spiking, feedback, and damper drive amplitude control yield stable linearity better than ±1 per cent. Time constant and sawtooth generator voltage return controls again provide local and remote size variation. Operation of the damper and driver stages in series for d-c, with a-c coupling to the yokes, removes d-c core biasing in the 12/1 output transformer. Electrical centering is regulated and provided with vernier controls.



Console Housings, MI-26786 and MI-26787 provide a convenient control center for the TK-26B Color Film Camera Equipment. The 13-inch console to left houses the TM-6C Master Monitor, and 22-inch console housing on right provides mounting of the Processing Amplifier. The camera control panel is mounted in the indented section of the 22-inch console desk.

Focus field current for the three precision series coils is well regulated and free of temperature drift. Alignment current is equally well regulated and stabilized so that the six specific currents can be individually adjusted with negligible interaction and drift. Both regulator circuits are readily metered at the jacks provided. Likewise both are referenced to an internal voltage source so that these critical circuits are unaffected by minor adjustments in the power supply room. A relay protection circuit reduces focus current to a minimum for extra deflection and overscan should failure occur in the −105 volt supply. Otherwise underscan would occur with bias supply failure which could damage the vidicons.

In a similar vein, the vidicons are protected against either horizontal or vertical deflection failure by a protection circuit which acts to remove scan by biasing off the accelerating electrode upon either vertical or horizontal scan loss by sampling both deflections as near as practical to the yoke itself.

A metering circuit is switchable between camera units for evaluation of target voltage and beam current. Current measurements, because of the low levels, have the attendant provision for zeroing out any leakage current for an accurate average beam current indication. A regulated −105 volt supply provides necessary bias and control voltages and a tally relay operates from a 24 volt d-c supply to energize an a-c lamp at the top of the camera for "on-air" indication.

Camera Control Panel, MI-40522-A

The Camera Control Panel permits complete local control operation for setup and servicing, eliminating much back and forth travel from film room to control room position, while providing for all necessary functions at the operating position for final adjustment and operation. Transfer of function is complete and all operation is then centered at the operating position. Master size controls are available for convenience in checking scan extremities. The panel is fitted with a cover for all of the controls with only gain and pedestal protruding for operation. This is done so that the setup controls are convenient but protected against accidental brushing to mar operation. Labeling on the lucite panel is illuminated for easy identification. Plug receptacles in the rear of the panel receive the remote control cable from the camera, light control cable for gain adjustment from the projectors, power cable for the processing amplifier and master monitor from the power supply location and a-c line, tally voltage cable from the switcher, and the interconnection cable to the processing unit.

Processing Amplifier, MI-40520-A

The Processing Amplifier has been designed to perform a great number of functions in a single versatile unit. Integration of these electrical functions in a single unit results in a simple, space-conserving, low cost system. Use of this design allows set-up time to be substantially reduced and requires fewer video operators and control room engineers for programming. Hence considerable savings in operating costs can be realized. A large reduction in power consumption as well as increased tube life due to extremely conservative operation of tubes further reduce costs, at the same time improving performance and overall quality.

The basic circuit elements in the Processing Amplifier are three plug-in video amplifiers which very accurately and with extreme stability perform the following functions: cable compensation, video amplification, blanking insertion, shading insertion, feedback clamping, linear clipping, gamma correction, and output amplification. Pulse circuitry needed for the camera and shading generators, is obtained from stabilized multi-vibrators. These multi-vibrators provide pulses of constant amplitude and width independent of the incoming pulse. These circuits require no tube selection and are completely stable. Shading generators are provided for insertion of either horizontal or vertical shading. A fourth plug-in unit serves as the video section of an electronic switcher which is an integral part of the main chassis. The switcher, used with the TM-6C Master Monitor provides an individual or combined presentation of red, blue and green video.

The entire chassis of the processing amplifier is drawer-side mounted for easy pull-out for servicing. The front panel is hinged, thus permitting it to be opened to facilitate removal of tubes and servicing of other components behind the panel.

An edge-lighted translucent plastic escutcheon is mounted on the outside surface of the panel to provide illumination of the nomenclature for the various controls when the unit is operated in semi-darkness. All controls are conveniently mounted on the panel. Thirteen lucite pushbuttons at the top of the panel control the switching arrangement which permits separate Master Monitor Kinescope or CRO observation of important test points, including individual channels, various channels superimposed, and colorplexer output. A staircase signal for the CRO circuit is provided for a sequential display of red, blue, and green channels.

Rack Equipment

All the units normally housed in the master console—master monitor, control panel and processing amplifier may be rack mounted. To complete the camera chain, a colorplexer, aperture compensator, automatic carrier balance, and two WP-16B Power Supplies also mount in standard 84-inch cabinet racks. The Colorplexer accepts the red, green and blue signals from the three vidicon cameras and transforms them to M, I, and Q signals. These are adjusted with respect to bandwidth and delay and then multiplexed to produce one composite signal from the three input signals. The aperture compensator is a 1¾-inch high unit which mounts above the colorplexer and connects to its luminance (M) channel. An automatic carrier balance eliminates carrier instability, reduces the warm up time previously required before on-air operation, and makes possible the elimination of modulator clamp diodes. A color monitor is also included in the chain and is usually located on a table top at the control position.

Equipment	*MI*	*Tubes*	*D-C ma*	*A-C Watts*	*Rack Space Requirements*	*Mounting Space Provided*	*Lbs. Weight*
Camera Subchassis (3 units)	40516-B	21	280	61	—	—	60
Camera Auxiliary	40517-B	22	550	140	34″	—	80
Optical Assembly	40532-A/40878	—	—	—	—	—	65
Pedestal	40519	—	—	—	—	34¼″	150
Processing Amplifier	40520-A	55	360	180	10½″	—	50½
Camera Control Panel	40522-A	—	—	—	5″	—	12
TX-1D Colorplexer	40209-C	36	300	95	21″	—	34
Aperture Compensator	40414	2	33	—	3½″	—	10
Automatic Carrier Balance	40416	—	20	15	1¾″	—	3
TM-6C Master Monitor	26136-C	31	450	90	18″	—	55
TM-21C Color Monitor	40226-C	60	—	780	—	—	213
WP-16B Power Supply (2 units)	26084-B	—	—	1200	14″	—	100
Centering Current Unit for WP-16B	26083-A	—	—	—	—	—	2
Cabinet Rack (single)	30951-D84	—	—	—	—	77″	150
Cabinet Rack (double)	30951-D84	—	—	—	—	154″	300
13-inch Console Housing	26786	—	—	—	—	25″ min.	75
22-inch Console Housing	26787	—	—	—	—	28″ min.	100
Rack Mounting Desk	40415	—	—	—	7¼″	—	15

SPECIFICATIONS

Electrical Specifications

Input Power:

117 volts, 50/60 cps	2600 watts total
+280 volts, DC	2 amps (supplied from two WP-16B Power Supplies included)
24 volts, DC	3 amps (for tally circuits)

Signal Inputs (high impedance):

Horizontal	1.5 to 5.0 volts peak-to-peak
Vertical Drive	1.5 to 5.0 volts peak-to-peak
Blanking	1.5 to 5.0 volts peak-to-peak
Subcarrier	2 volts, peak-to-peak, ±10%
Burst Flag Keying	−4 volts peak
Sync	−4 volts peak

Signal Output:

Bandwidth	Essentially flat to 8 mc
Composite Color Signal	1.0 volt peak (sync to white)
Program Outputs Available	2

Mechanical Specifications

(Individual unit space requirements are discussed in preceding pages)

Unit	*Height*	*Width*	*Depth*	*Weight*
Overall Camera — 3 Camera Sub-chassis, Optical Assem. Pedestal, Cam. Aux., Front and Rear Covers	57″	23¼″	41½″	390 lbs.

Tube Complement

VIDICON CAMERA SUBCHASSIS (Total for 3 Units)
3—7038, 3—417A, 3—12B4, 3—6U8, 6—6AH6, 3—6BQ7.

PROCESSING AMPLIFIER
9—12AT7, 3—6U8, 3—12AU7, 1—6CL6, 4—6BQ7A, 1—12BH7, 1—6BX7, 1—12AX7.

PLUG-IN VIDEO AMPLIFIERS (Total for 4 Units)
12—6BQ7A, 8—12AX7, 8—6CL6, 4—6AL5.

CAMERA AUXILIARY
1—6AH6, 3—6BQ7A, 3—12AX7, 4—12AT7, 1—5963, 1—6AS6, 1—12BH7, 1—12AU7, 2—6CD6, 1—12B4, 2—OB2, 1—6BX7, 1—6X4.

See separate catalog information for tube complement of Colorplexer, Aperture Compensator, Automatic Carrier Balance Control, Color Monitor and Master Monitor.

Equipment Supplied

Console-Mounted Control			*Rack Mounted Console*	
Qty.	*MI Number*	*Description*	*Qty.*	*MI Number*
3	40516-B	Vidicon Camera Subchassis (less vidicon tube)	3	40516-B
3	26861	Vidicon Tube, Type 7038	3	26861
1	40517-B	Camera Auxiliary	1	40517-B
1	40532-A	Optical Assembly	1	40532-A
1	40878	Prism Assembly	1	40878
1	40859-3	Field Lens, 3.14 diopter	1	40859-3
3	26669-3	Camera Lens (1.79 in., f/1.5)	3	26669-3
1	40519	Pedestal	1	40519
1	40520-A	Processing Amplifier (less gamma correctors)	1	40520-A
3	40833-1	Gamma Corrector (0.7)	3	40833-1
1	40833-2	Gamma Corrector (1.0)	1	40833-2
1	26787	Console Housing, 22 inch (for Processing Amplifier)	—	——
1	40522-A	Camera Control Panel	1	40522-A
—	——	Rack Mounting Desk (for Camera Control Panel)	1	40415
1	40209-C	TX-1D Colorplexer	1	40209-C
1	40414	Aperture Compensator	1	40414
1	40416-A	Automatic Carrier Balance Control (for TX-1D)	1	40416-A
1	40226-C	TM-21C Color Monitor (including Kinescope)	1	40226-C
1	26136-C	TM-6C Master Monitor	1	26136-C
1	26544	Sync Interlock Relay	1	26544
1	26655	Kinescope, Type 10SP4 (for TM-6C)	1	26655
1	26667	CRO Tube, Type 7038 (for TM-6C)	1	26667
1	26786	Console Housing, 13-inch (for TM-6C)	—	——
1	26579-B	Blower (for TM-6C)	—	——
—	——	Rack Mounting Adaptor (for TM-6C)	1	26526
—	——	Rack Extension Unit (for TM-6C)	1	40408
2	26084-B	WP-16B Power Supply	2	26084-B
1	26083-A	Centering Current Unit for WP-16B Power Supply	1	26083-A
1	40830	Fan Assembly for TK-26B	1	40830
1	40831-1	Control Cable, 33 conductor, 50 ft. (with connectors)	1	40831-1
3	40835	Interconnecting Cables	3	40835
1	26759-41	Power Cable	1	26759-41
1	26759-42	Power Cable	1	26759-42
1	40846	Color Test Film	1	40846

NOTE: The following bulk cable is required and should be ordered separately to meet individual installation requirements:

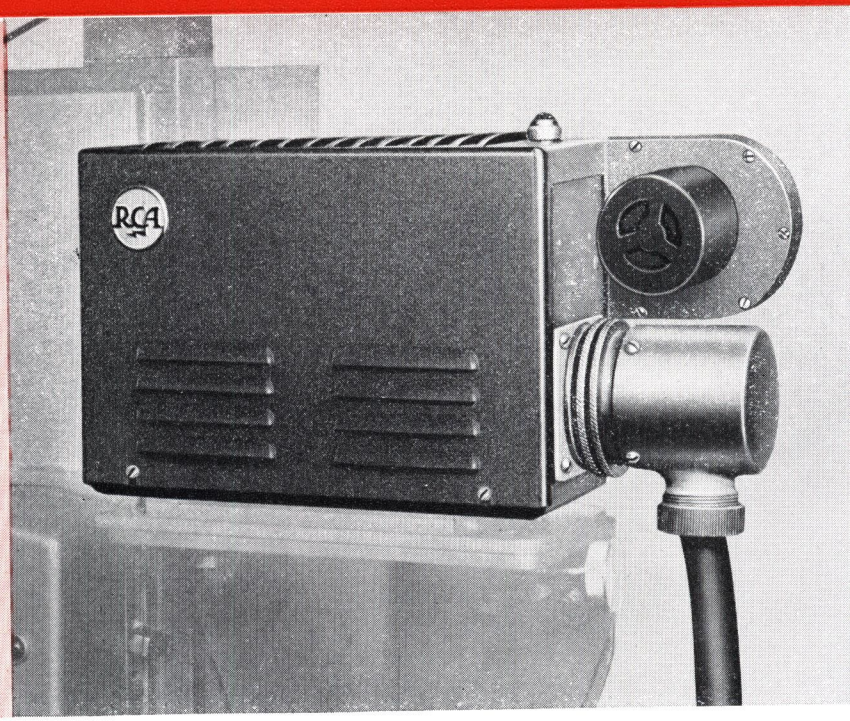
—	13307	Two-conductor Cable	—	13307
—	13380-4	Four-conductor Cable	—	13380-4
—	75	RG-59/U 75 ohm Coaxial Cable	—	75
—	83-A	RG-11/U 75 ohm Coaxial Cable	—	83-A

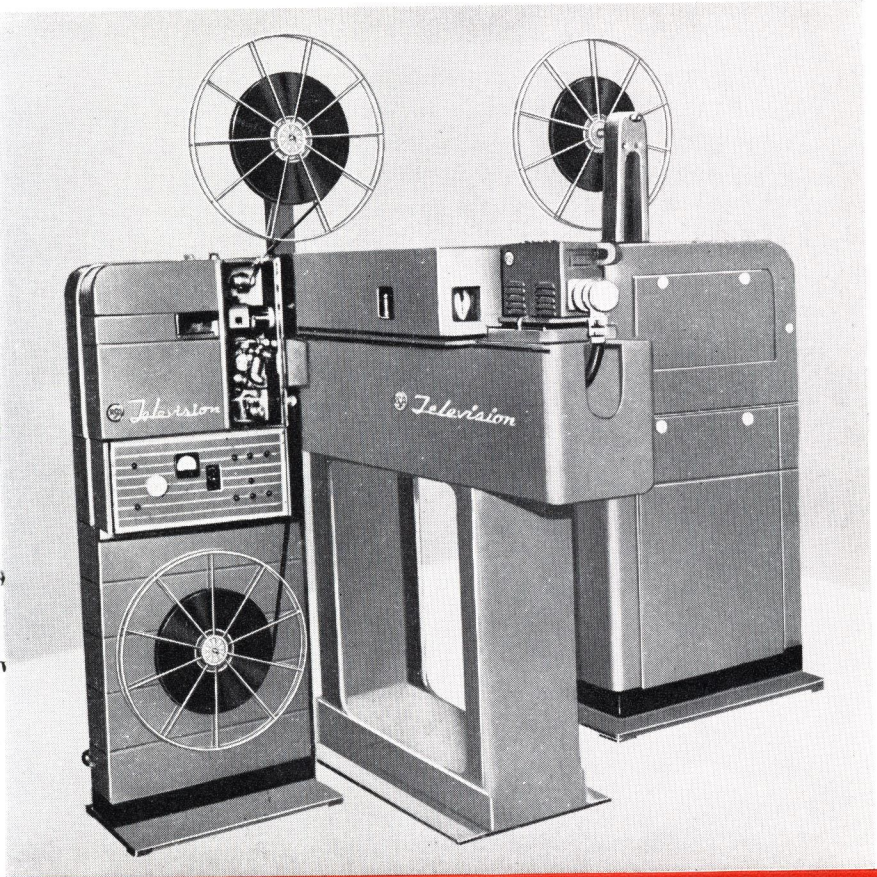
Vidicon Film Camera

TYPE TK-21C

FEATURES

- Variable aperture response correction
- Excellent resolution—in excess of 600 lines
- High signal-to-noise ratio
- Low light source requirement
- Variable gamma or transfer characteristic
- May be mounted directly to projector or multiplexer
- Automatic sensitivity control



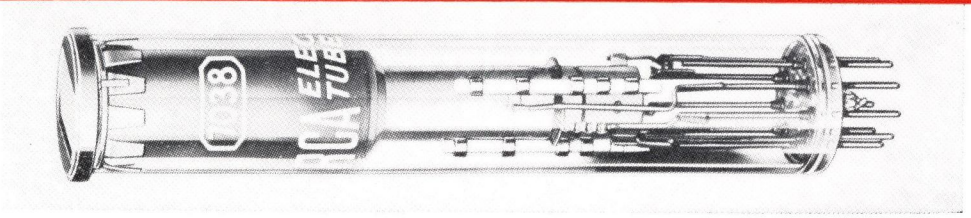


USES

The TK-21C Vidicon Film Camera provides highest quality reproduction of monochrome film or slides in a television system. The present acceptance of television film programming is due in large measure to the performance standards which were made possible by the development of the RCA vidicon film camera system.

As many as four sources of 16mm or 35mm film, 2 x 2 slides, or opaque material may be directed into a single TK-21C Film Camera by utilizing either the TP-11 or TP-15 Series Multiplexers. The small size of the vidicon camera—only ⅛ cubic foot—also makes it possible to mount the camera directly on the RCA TP-6 16mm projector for direct projection. Accessory mounting brackets and lenses are available for this purpose. An Automatic Sensitivity Control is included to maintain constant output level.

Vidicon Camera can be mounted directly on television projector (picture, upper right) or used with an RCA Multiplexer (left).



Heart of the TK-21C Vidicon Camera is the Type 7038 Vidicon tube developed and produced by RCA.

DESCRIPTION

Heart of the TK-21C Vidicon Film Camera is the Type 7038 Vidicon Tube, developed and produced by RCA. This is a 1-inch vidicon with a 0.62-inch picture diagonal (⅜ by ½-inch picture). The camera was designed to utilize the unusual capabilities of this tube with the following criteria in mind: excellent resolution, high signal-to-noise ratio, aperture response correction, high transfer or gamma characteristics, and low light source requirements.

The TK-21C Film Camera system provides crisp, life-like reproduction of monochrome film and slides. Horizontal resolution is in excess of 600 lines, with a measured response of 35 percent at 350 lines compared to zero line number as a base.

The signal-to-noise ratio of the system is determined solely by the first few stages of amplification in the video amplifier. Therefore proper design in these stages, especially in the cascode preamplifier, provides an unusually high signal-to-noise ratio.

The vidicon is the first pickup tube that has high enough signal output with low enough inherent noise to use aperture correction effectively without seriously impairing the signal-to-noise ratio of the reproduced picture. With this excellent signal-to-noise ratio, aperture correction (a scheme for amplifying the high frequencies with respect to the low frequencies without phase distortion) may be added to the signal to compensate for the finite size of the scanning beam. An examination of the amplitude response of the tube shows that to fill the transmitted bandwidth adequately, the response at the higher line numbers can be boosted by a factor of three for a 4.5 mc channel while still maintaining an excellent signal-to-noise ratio in the final picture.

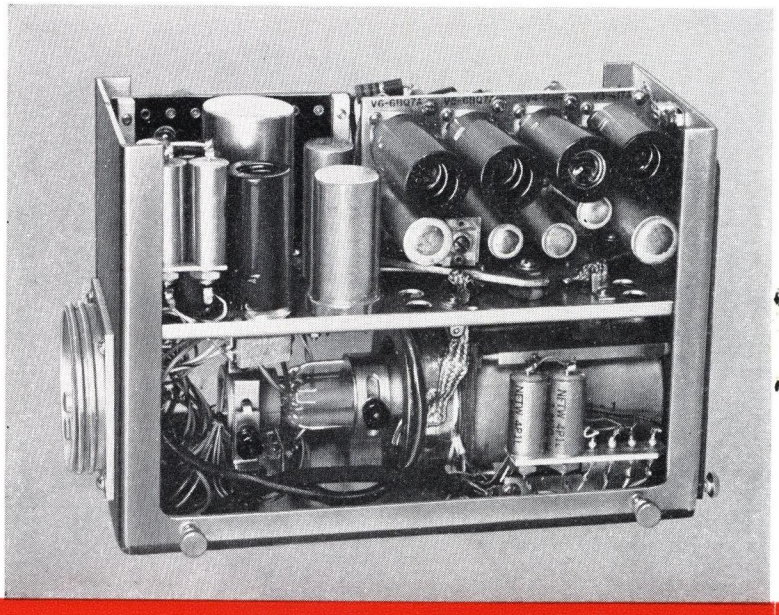
Since the Vidicon tube is essentially an orthicon or low velocity device as far as scanning process is concerned, there is inherently no spurious shading signal developed. In the vidicon camera no variable electrical shading signals are necessary. Hence no shading controls are used nor is edge lighting or any other type of corrective lighting required for flat field.

The gamma or transfer characteristic, which is inherent in the vidicon surface itself, has a log-log slope of 0.65 when signal output current is plotted against light on the photoconductive surface. The slope is practically constant over a wide film contrast range, resulting in more realistic film reproduction than ever before possible.

The variable gamma circuitry of 1.0, 0.7 and 0.5 permits the operator to select a video transfer characteristic which best fits the density variation of a film into the restricted reproducing transfer characteristic of the kinescope. To vary the gamma, a switch is provided on the vidicon control chassis.

Light source requirements for the Vidicon using commercially available lenses, average 300 foot-candles measured at the film gate. When the vidicon camera is mounted on a projector for direct projection, appreciably less than full lamp voltage is needed. This lower light requirement permits reduced voltage operation of the projector lamp, thereby prolonging its life. Multiplexer operation will require more light due to multiplexing light losses; although full voltage illumination is still in excess of operating requirements.

The TK-21C requires only adjustment of gain (target voltage) to compensate for changes in peak light level during normal operation. Black level control is inherent in the vidicon tube, giving an absolute black reference, and shading controls are not required. From a day-to-day operational standpoint, only two variables may require adjustment. These are the wall focus which determines the scanning beam focus and hence picture resolution, and beam bias which controls the density of the electron beam for discharging the target.



View of the Vidicon Camera with the cover removed. Some video circuitry is located in the camera for preamplification, high peaking and camera blanking.

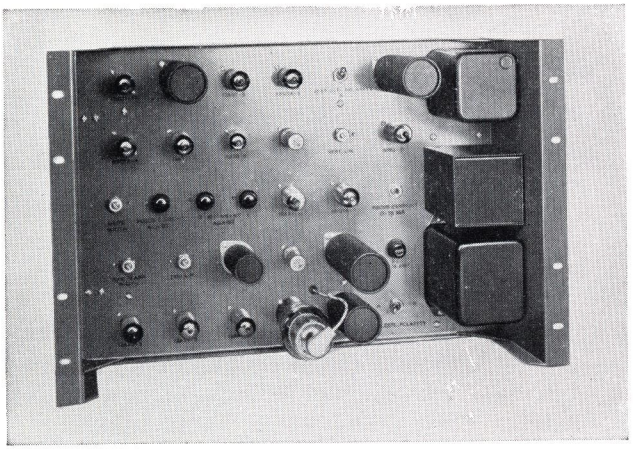
The TK-21C Vidicon Film Camera working in conjunction with the Automatic Sensitivity Control, MI-26191, makes possible virtually unattended operation. The ASC continuously monitors the output of the vidicon camera and translates this information into a control signal which is fed back to the Vidicon tube. The control voltage is applied to all of the control electrodes of the Vidicon, but not to the Vidicon target. This results in an effective change of target voltage, but avoids the introduction of d-c components into the video signal with changes in control voltage. Rapid changes in vidicon sensitivity are thus made automatically to compensate for changes in scene highlight level.

RCA Vidicon Film Camera Equipment is designed to meet the requirements of any size television station. The vidicon camera itself may be mounted directly on TP-6 Series film projector or integrated into an optical multiplexing system. The basic units consist of the camera connected by a standard 24 conductor camera cable to the camera control chassis and deflection chassis which may be located up to 200 feet from the camera. In addition a remote control panel is located at the vidicon control operating position.

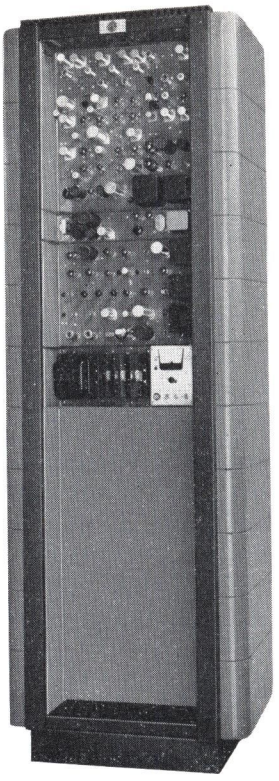
The control and deflection chassis are rack mounted for better servicability, ease of maintenance and performance checks, and to reduce the heat dissipated at the operating position. The remote control panel, which contains the operating circuits, is available in either of two versions for rack or console mounting. This panel uses only d-c control voltages and can be placed up to 200 feet from the camera control and deflection chassis. The camera control and camera deflection chassis occupy only 31½ inches of rack space.

All tube circuitry for deflection of the Vidicon tube is located in the deflection chassis—none in the camera. Deflection voltage is generated in the rack-mounted deflection chassis and delivered to the camera via the camera cable. Because of its high frequency spectrum, horizontal deflection is carried through the camera cable on a coaxial line. The horizontal deflection yoke is arranged in a constant resistance network at the camera to provide proper termination for the coaxial line. Since the frequency spectrum of the vertical deflection circuit is much lower than that of the horizontal, vertical deflection is carried over unshielded leads in the camera cable.

The Vidicon deflection chassis MI-26081-D.



Control Console with Master Monitor (below), and Remote Control Panel (not shown), rack housing Power Supply, Control and Deflection Chassis (right), and TK-21C Vidicon Camera comprise RCA's complete Monochrome Film Camera Chain.



Video circuitry located in the camera provides preamplification, high peaking, camera blanking, and a feedback pair for driving the video output coaxial line to the camera control unit. Although negative film is not recommended for best results, a polarity switch is located on the remote control panel so that negative film can be used when the situation demands. In the camera control chassis, blanking is added, black level is set, aperture correction is introduced and sync addition is provided if required. An output amplifier capable of driving three 75-ohm lines with sending and receiving end terminations is also included in the camera control chassis. For reasons of multiplexing, both horizontal and vertical deflection reversing switches are included.

The remote control panel contains these controls: Pedestal, Gain, Wall Focus, Target, Beam, Horizontal Size, Horizontal Centering, Vertical Size, Vertical Centering and ASC ON-OFF. A meter is provided on the panel to monitor target voltage and beam current for the vidicon. Zero adjustment is provided for this meter.

SPECIFICATIONS

Electrical Specifications

Input Power.....105-125 volts, a-c, 50/60 cycles, single phase

A-c Power Consumption:
- Camera Unit (including blower).....35 watts
- Deflection Unit.....50 watts
- Control Unit.....92 watts
- Master Monitor.....90 watts

Complete Chain Current Requirements.....9 amps

Plate Voltage from Regulated Power Supply.....280 volts d-c

Plate Current from Regulated Power Supply:
- Camera Unit.....100 ma
- Deflection Unit.....194 ma
- Control Unit.....226 ma
- Automatic Sensitivity Control Unit.....30 ma
- TM-6C Master Monitor.....450 ma

Input Signals from Sync Generator (all voltages peak-to-peak):
- Horizontal Drive.....4 volts
- Vertical Drive.....4 volts
- Blanking.....4 volts
- Sync.....4 volts

Input Impedance.....High

Output Signals from Camera Chain (all voltages peak-to-peak):
- No. 1 Picture.....0.7 volt, or 1.0 with optional sync
- No. 2 Picture.....0.7 volt
- No. 3 Picture.....0.7 volt, or 1.0 with optional sync

Frequency Response.....Essentially flat to 8.0 megacycles

Tube Complement

Vidicon Camera:
1—7038 Vidicon, 1—417A, 3—6BQ7A, 1—12AX7

Control Chassis:
1—6AH6, 1—6U8, 2—6AL5, 2—6BX7-GT
4—6AU6, 6—6BQ7A, 1—6AS6, 1—12AT7
1—OB2, 1—6X4, 1—6CB6

Deflection Chassis:
3—12AT7, 1—12AU7, 1—6CD6, 1—6BQ7A
1—6AS6, 3—12AX7, 1—5963, 1—12BH7
1—12BH7A

Automatic Sensitivity Control:
2—6U8A

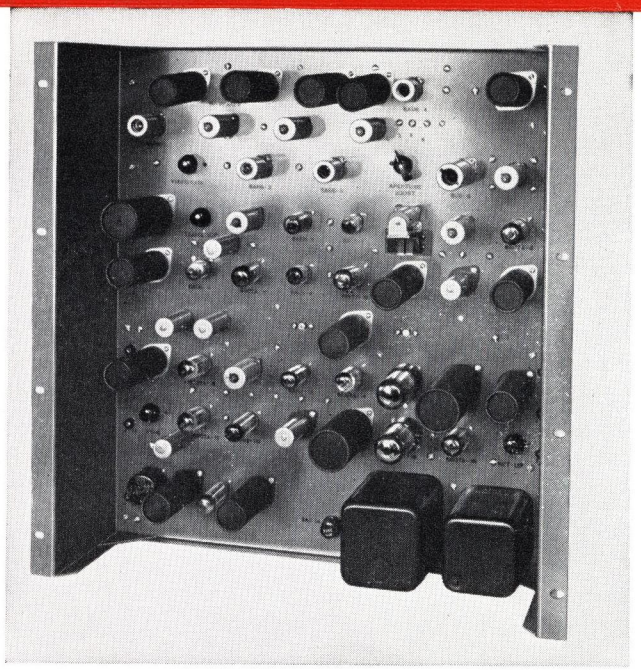
Mechanical Specifications

Dimensions:
- Camera.....4½" wide x 6½" high x 9" deep
- Deflection Unit.....19" wide x 12¼" high x 10" deep
- Control Unit.....19" wide x 19½" high x 10" deep
- Automatic Sensitivity Control.....19" wide x 3½" high x 9" deep
- Remote Control Panel (Console mtd.).....11½" wide x 10" high x 3" deep
- Remote Control Panel (Rack mtd.).....19" wide x 5¼" high x 6" deep
- Master Monitor.....13⅛" wide x 18" high x 20" deep

Weight:
- Camera.....7 lbs.
- Deflection Unit.....23½ lbs.
- Control Unit.....30 lbs.
- Automatic Sensitivity Control.....5 lbs.
- Remote Control Panel.....4 lbs.
- Master Monitor.....55 lbs.

Equipment Supplied

TK-21C Vidicon Film Camera Chain comprising:
- 1 Vidicon Camera (less Vidicon Tube).....MI-26021-E
- 1 Vidicon Tube, Type 7038 (for film camera).....MI-26861
- 1 Vidicon Control Chassis.....MI-26061-C
- 1 Vidicon Deflection Chassis.....MI-26081-D
- 1 Automatic Sensitivity Control.....MI-26191



The Vidicon control chassis MI-26061-C.

- 1 Camera Cable, 50 ft. with right angle connectors.....MI-26725-E10
- 1 Vidicon Remote Control Panel (Select one)
  - Console Mounting.....MI-26241-B
  - Rack Mounting.....MI-26218-A
- 1 Console Housing, 13-inch.....MI-26786
- 1 TM-6C Master Monitor, consisting of:
  - Chassis.....MI-26136-C
  - Type 10SP4 Kinescope Tube.....MI-26655
  - Type 5ABP1 CRO Tube.....MI-26667
- 1 Blower (for TM-6C).....MI-26579-B
- 1 WP-16B Power Supply.....MI-26084-B
- 1 Centering Current Unit for WP-16B.....MI-26083-A

Additional Equipment Required:
- 1 Camera Lens (Select one)
  - Lens (1" F1.9) for use with TP-11 Multiplexer.....MI-26630
  - Lens (2.04" F1.5) for use with TP-15 Multiplexer.....MI-26669-2
- Bulk Cable (Order according to installation requirements. Connectors are supplied on associated chassis)
  - 8-Conductor Shielded Cable (used between Control Chassis and Remote Control Panel).....MI-13380-8
  - RG-58/U Coaxial Cable (used between Control Chassis and Deflection Chassis).....MI-13318
  - 18-Conductor Shielded Cable (used between Deflection Chassis and Master Monitor).....MI-13319
  - RG-59/U Coaxial Cable (used between Control Chassis and Master Monitor).....MI-75
  - 4-Conductor cable (used between WP-16B Power Supply and Master Monitor).....MI-13380-4

Accessory Equipment

Camera Mounting Bracket (for use with TP-6 Film Projectors).....MI-26368-B

Projection Lens (for use with TP-6 Series Projectors and MI-26368-B Mounting Bracket).....MI-26799-A

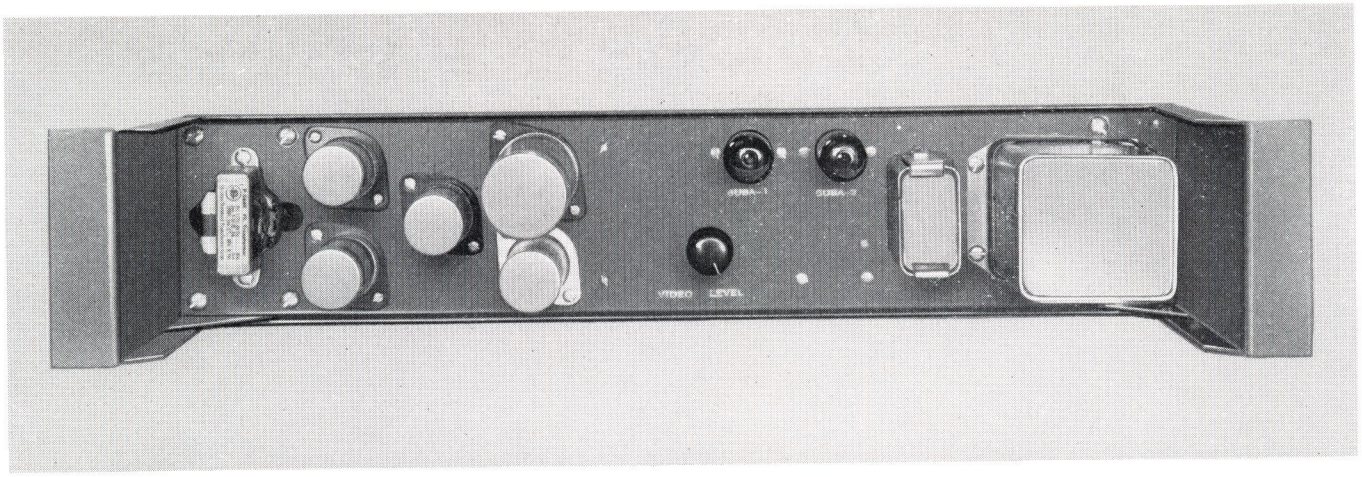
Camera Cable (when lengths other than 50 feet are required).....MI-94-N

Camera Cable Connector (right angle female).....MI-26759-23

Camera Cable Connector (right angle male).....MI-26759-24

Automatic Sensitivity Control

MI-26191



FEATURES

- **Maintains virtually constant video output level from RCA monochrome vidicon film cameras**
- **Rapid, accurate correction of output level without video bounce**
- **Recovery time less than ½ second with 10 to 1 change in light; less than 1 second with 100 to 1 change in light**
- **Eliminates padding of slides to maintain highlight brightness**
- **Provision for manual over-ride of video output level**

DESCRIPTION

The Automatic Sensitivity Control, MI-26191, is an all-electronic, automatic gain-riding unit developed for use with RCA Type TK-21C monochrome film cameras. The ASC unit maintains a virtually constant video output level from the Vidicon film camera by sensing variations in camera output level and applying a control voltage to the camera which raises or lowers the sensitivity of the Vidicon tube. The unit is capable of handling a wide range of variation in film density or picture highlight brightness with little or no attention from the camera operator.

Since the ASC principle is completely electronic it is simple and fast in operation. Wide transitions in highlight density which occur at a very rapid rate (as in switching slides through a slide projector) are readily handled by the ASC unit. Recovery time with 10 to 1 change in light level is less than ½ second; with 100 to 1 change in light level, less than 1 second. Change in video level is less than 5 percent with 10 to 1 change in light intensity, and less than 30 percent with 100 to 1 change in light.

The ASC Unit is designed for use with the RCA TK-21C Vidicon Film Camera. Cameras of the TK-21 series prior to Type TK-21C must be modified to allow ASC operation. A kit of the required modification parts and instructions is available as MI-26193. In addition to this modification, all applicable RCA Technical Bulletin modifications should be made in cameras prior to Type TK-21C, including conversion for use of the Type 7038 Vidicon Tube. The ASC unit also requires use of an MI-26241-B Console Mounted Remote Control Panel or an MI-26218-A Rack Mounted Remote Control Panel, one of which is supplied as part of TK-21C Cameras.

The camera output video signal is amplified, rectified and applied to a d-c amplifier. The output of the d-c amplifier

is applied to a floating d-c power supply, which is raised and lowered with respect to ground. The resultant d-c voltages are then applied to the cathode, G-1, G-2 and G-3 of the Vidicon but not to the target electrode. The Vidicon target voltage is effectively varied by changing the d-c potential of all of the electrodes except the target, which remains at a fixed reference level. The ASC circuit thus produces a rapid, accurate correction of output level without video bounce.

The control voltage and video output level established by the Automatic Sensitivity Control are based on peak video level in the picture at any instant. It is possible to "override" the video output level by operating the video gain control located on the camera remote control panel. An "ASC On-Off" switch is provided on the panel to disable the ASC action during set-up of the camera or in the event it is desired to control camera sensitivity manually. Manual control may be preferred at times when human artistic judgment is required for program purposes. Smooth fades to black or the elimination of highlight flicker, such as might result from scenes of flickering fireplaces, may be handled by turning the ASC unit off and controlling camera sensitivity manually.

The ASC unit consists of a 3½-inch bathtub chassis which is rack mounted above or below the deflection chassis of the TK-21C Camera Chain. The unit requires 30 milli-amperes of regulated d-c at 280 volts, which is obtained from the TK-21C Camera Chain. A source of 110 volts, 60 cycle a-c power is also required.

SPECIFICATIONS

Change in Video Level:
- With 10 to 1 change in light ..... Less than 5%
- With 100 to 1 change in light ..... Less than 30%
- With change from all white scene to 10% white, remainder black ..... Less than 10%

Recovery Time:
- After 10 to 1 change in light ..... Less than ½ sec.
- After 100 to 1 change in light ..... Less than 1 sec.

Effective target voltage range ..... 0 to 70 volts

Input Requirements:
- Video ..... 0.4 volt (nominal) supplied from TK-21 Camera deflection chassis
- Regulated D-C ..... 30 ma. at 280 volts (from TK-21 remote control panel)
- A-C ..... 110 volts, 60 cycles, 0.15 amp.

Tube Complement ..... 2—6U8A

Overall Dimensions:
- Width ..... 19 inches
- Height ..... 3½ inches
- Depth ..... 9 inches

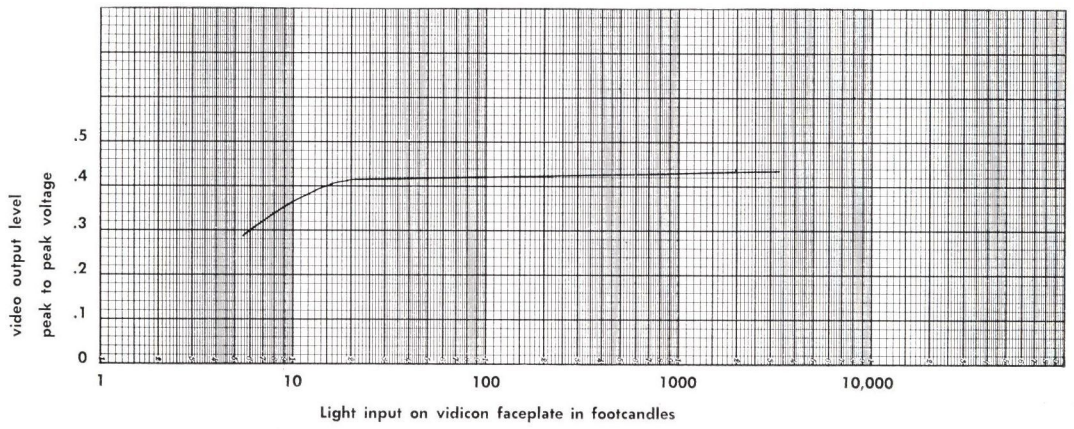
Weight ..... 5 lbs.

Stock Identification:

Automatic Sensitivity Control for TK-21C Film Camera MI-26191

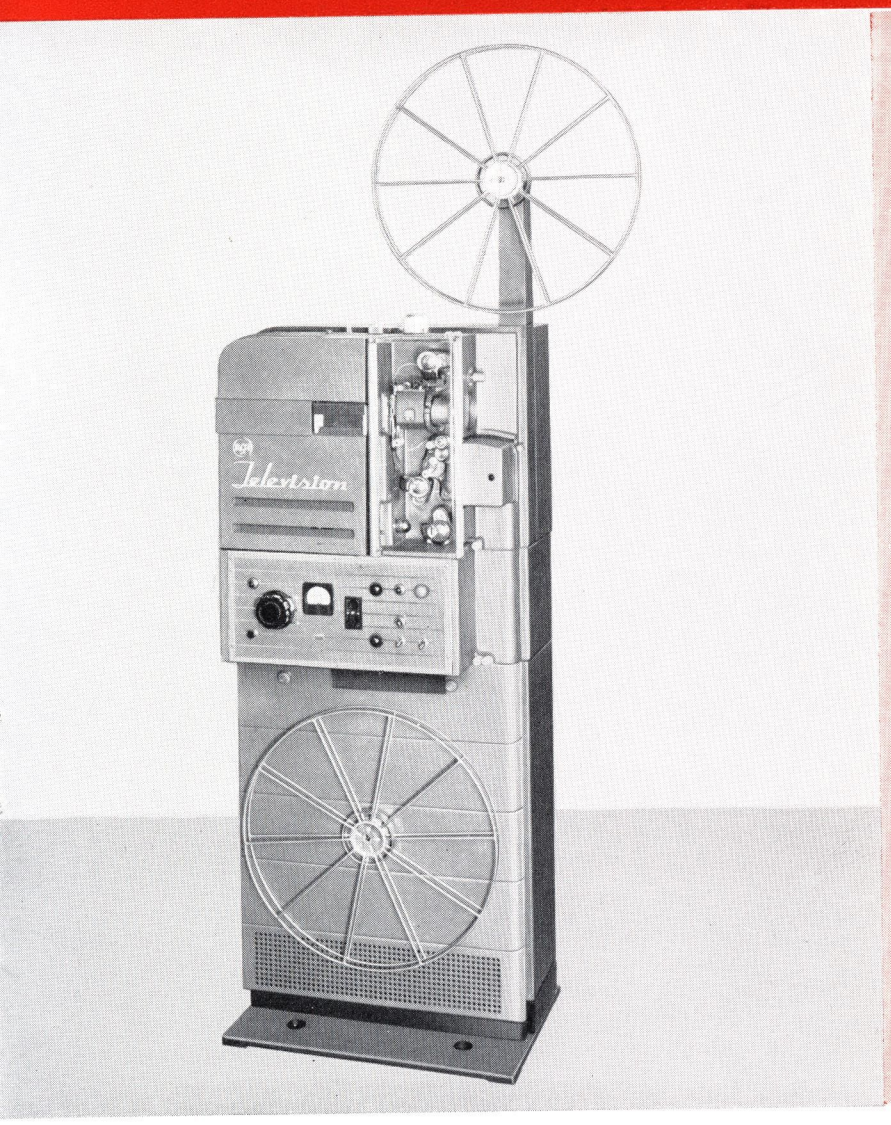
NOTE: The following items are required when Automatic Sensitivity Control is to be used with an existing TK-21, TK-21A or TK-21B Vidicon Camera:

- Camera Modification Kit for ASC MI-26193
- Camera Remote Control Panel, Console mounting (Required to replace existing MI-26241 or MI-26241-A Control Panel) MI-26241-B
- Camera Remote Control Panel, Rack mounting (Required to replace existing MI-26218 Control Panel) MI-26218-A



Professional 16mm TV Projector

TYPES TP-6EC and TP-6EL



FEATURES

- Automatic projection lamp change in less than a second
- Automatic cue
- 50 percent light application
- Rapid start—less than 1 sec.
- For use with color or monochrome vidicon cameras
- 3-2 intermittent runs in oil
- Easy to thread
- Quick-change exciter lamp
- Still frame projection
- Neutral density disc light control
- Provision for magnetic sound

USES

The RCA Professional 16mm Television Projectors, Type TP-6E Series, are specifically designed to meet the exacting demands for better TV film programming. No other projector offers so many professional features—quick automatic projection lamp change, jewelled long-life parts, precision optics, broadcast audio sound—to mention but a few. To meet demands of extensive film programming, large 4000-foot reels are furnished, and local or remote controls assure convenience of operation.

The TP-6E machines project images from either 16mm color or black and white motion picture sound film into the film camera of a television system, as well as provide for quality sound reproduction. An optical Multiplexer is used when employing two projectors with one film camera.

The TP-6EC model is a long application projector for non-synchronous operation with Vidicon Cameras. The projector includes a neutral density disc light control.

The TP-6EL equipment is also a long application projector for non-synchronous operation without the light control feature. A light control kit, MI-26595, may be installed in the projector whenever desired.

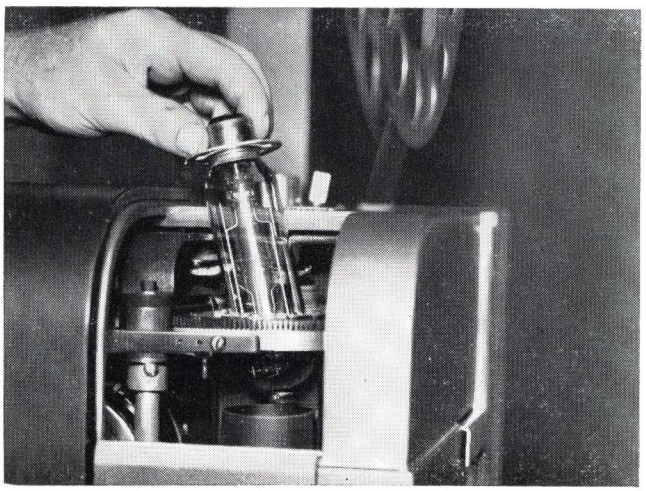
DESCRIPTION

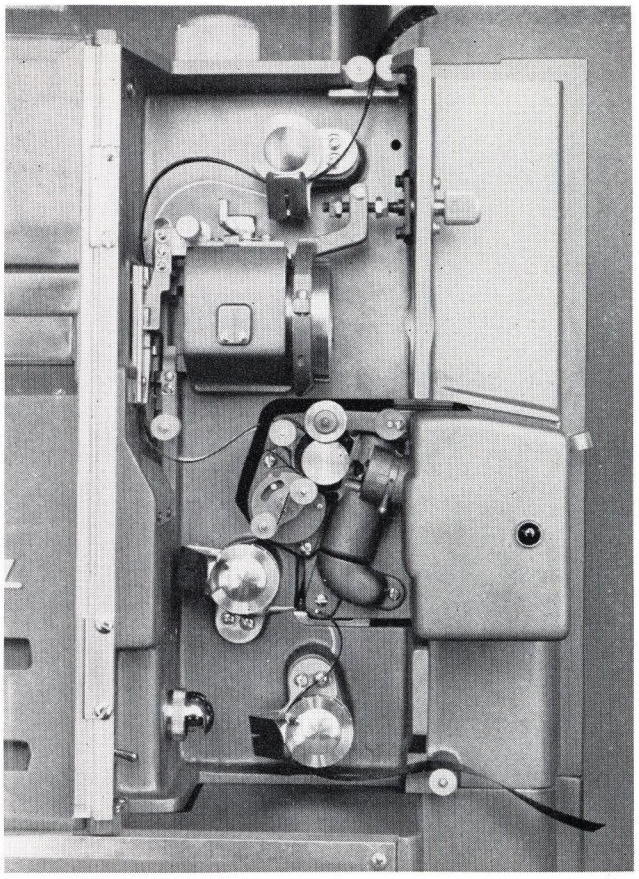
The TP-6E Projectors are comprised of a precision projection optical system, film transport system, sound reproducing system and a control system. The projectors are supplied as single, completely assembled units, ready to be placed in operation. Installation consists only of placing the unit in position, completing the power, audio and control connections and installing a kit of lubricants supplied.

The projector optical system consists of a spherical pyrex reflector, 1000-watt tungsten-filament lamp, condenser lens system, shutter, and projection lens. A feature of the optical system is the automatic lamp change assembly which allows two 1000-watt projection lamps to be housed in a rotating mount. The automatic projection lamp change mechanism consists of a turret arrangement which holds a 1000 watt projector lamp accurately in position until a filament failure occurs. Then, immediately a motor swings the turret around 180 degrees, bringing a new projection lamp into place within a second. The filament is preheated while the new lamp is moved into place, thus avoiding thermal shock failures. A pilot lamp indicates when the bulb has changed. The automatic feature results in continuous programming without costly interruptions or lost commercials.

The automatic cue feature makes possible the handling of a sequence of films in a single projector without need for manually threading and cueing the individual films. The unit automatically stops at the end of each film and cues up the next film within one frame of the desired starting point. The automatic cue system is activated by a small patch of conductive material which is applied directly to the film. This patch closes a control circuit upon passing through the upper film sprocket, activating a frame counting device and stopping the film at the desired point by means of a brake applied to the main drive motor shaft.

Automatic projection lamp change mechanism. Note spare being replaced after new lamp moves into position.





A simple film path and optical system.

The sound stabilization time for the TP-6EC and EL projectors is less than one second. A motor driven puck engages the sound stabilization flywheel momentarily and accelerates it to approximately the correct speed of rotation. The time required for stabilization of sound on a sustained note is thus reduced from the usual period of approximately 4 seconds to less than 1 second. The time interval which must normally be allowed between operation of the projector "run" and "show" controls may therefore be virtually eliminated.

Precision optics are used in both the light projection and sound sections of the TP-6E projectors. The highly efficient condenser lens system is of the relay type. A light spot approximately 3/8-inch in diameter is produced between the two sets of lenses. The shutter cuts the light at this point. The TP-6E projectors have a heat absorbing glass and mirror between the two lenses in the front section to reduce the film gate temperature. Slide projectors used with this equipment should be equipped with the same type fiilter to insure color balance. A variable neutral density filter type light intensity control is incorporated in the TP-6EC Model to maintain constant signal level regardless of variations in film density. The use of separate drive motors (one for the shutter, the other for the sprockets and intermittent) permits still pictures to be shown.

A fast projection lens with a speed of f1.5 is provided for television applications. The focal length of the lens varies with the type camera used. A 2½-inch lens, MI-26799-A is specified for use with the TP-15 Multiplexer; or a 3½-inch lens MI-26325 if the TP-15 Multiplexer incorporates one or more TP-16 Projectors in the film chain. On the TP-6EL projector, the 3½-inch lens is used with the TP-11 Multiplexers and the TK-21 vidicon film camera. A rigid casting, mounted to the main frame, provides the support for the lens barrel.

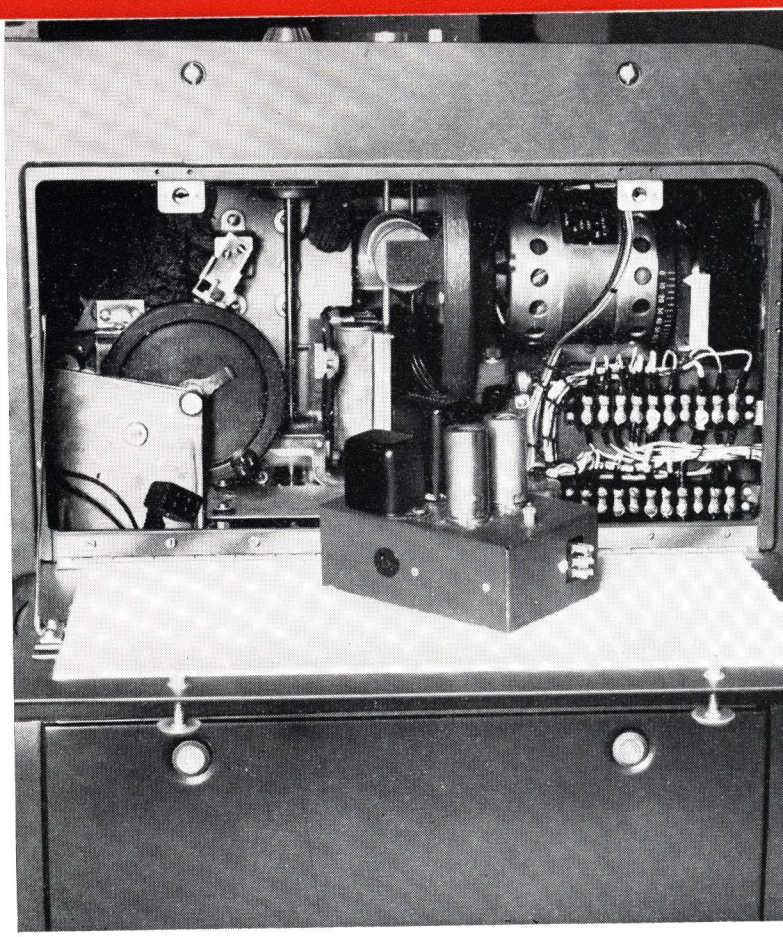
The projectors utilize a 50 percent application time shutter for 50 percent application storage permitted by image retentive qualities of vidicon tubes. Non-synchronous operation of projector equipment is required for use with color equipment since the color signal frequency differs slightly from the 60 cycle line frequency.

In the film transport system, the sprockets are driven by precision helical gears from a shaft rotating at 3600 rpm. The shaft is attached through a flexible coupling to a vertically mounted synchronous motor. The motor has a permanent magnet rotor so that it will lock in at only one point. Motor phasing is adjustable by rotating the motor frame in its supports. A holdback sprocket is provided to prevent take-up reel disturbance from affecting the motion of the film at the sound drum.

A simple film path, generous space provided at the film gate and resultant easy threading are all features of the TP-6E Projectors. All parts in the film path are large and rugged and plenty of finger room is provided. A pressure adjustment permits compensation (during operation) for different types of film. The sprocket and intermittent mechanism may be turned by a knob at the top to check threading and advance film, one frame at a time. Still frame projection provides these features: (1) Is an aid in threading and set up. (2) Permits strip film projection. (3) Directors can preview film start. (4) Reduces "dead air" time. (5) Allows adjustment of camera equipment on a static scene. A lamp at the bottom supplies light for threading in darkened projection rooms. The clear plastic door prevents dust from accumulating on moving parts.

A high degree of picture stability and accurate film indexing is accomplished through the use of a "3-2 claw" intermittent. A three-tooth claw engages the film during pulldown. The top tooth has a sapphire insert to insure long life. The mechanism runs in oil and has pulldown periods which are staggered, thus avoiding the dangers of ordinary movements which require special acceleration attachments. Rugged and sturdy, the TP-6E intermittent is designed for long, quiet, maintenance-free operation. Theatrical type framing is used for the picture so that the position of the film is moved, rather than the aperture. The framing knob is on top where it can be conveniently reached from either side of the projector—a feature important in TV programming.

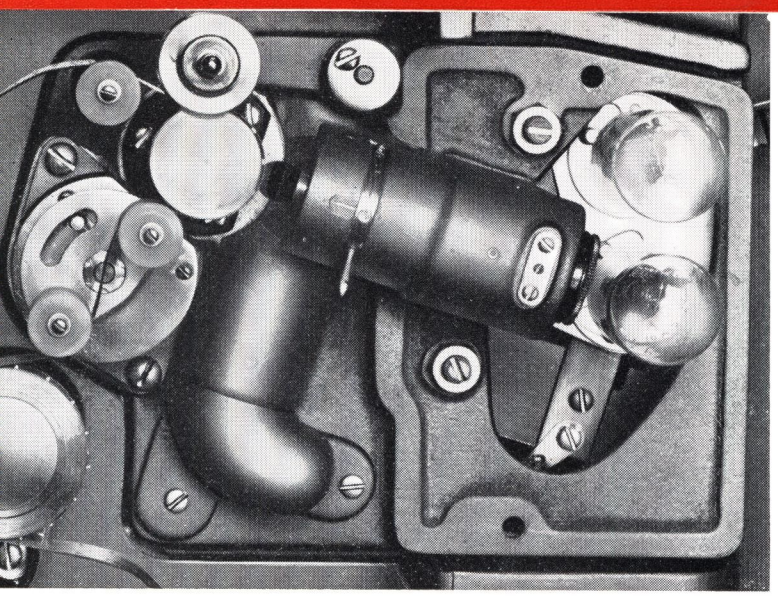
4000-foot capacity reels with a compensated professional "takeup" mechanism provide an enormous film capacity for continuous programming. Programs may be spliced together to save time and avoid errors. The 4000-foot reels accommodate enough film for one hour and fifty minutes of program time. Small reels, however, can also be used with equal facility. The supply reel shaft at the top of the projector has a friction brake with a broad, non-critical adjustment.



Rear view with sound preamplifier partially removed.

The sound reproducing system is shock mounted and film motion at the sound drum is made uniform by the use of an accurately balanced flywheel and damping roller assembly. The sound pressure roller utilizes viscous drag to provide a tight loop around the sound drum. To decrease the sound stabilization time a flywheel starter is used. A brake action maintains the normal lower film loop to prevent the film rubbing against the optical system during starting and stopping periods.

The sound optical system consists of an exciter lamp, optical unit, and sound optical mirror. A lever-operated "in-out" focus control is included to compensate for emulsion reversal. The aperture (slit width) of 0.0005 is ideal for film sound reproduction. Should the exciter lamp burn out during operation, a second exciter lamp can be shifted into place quickly by means of a lever.



Sound exciter lamp assembly and spare lamp. Lever moves spare into operating position.

Broadcast quality sound is assured from the "plug-in" type preamplifier, flat to 10 kc. Two other response curves are available. Average flutter content is 0.15 percent RMS, and distortion 0.5 percent or less. Stabilization time is 1 second measured by a flutter bridge on a steady tone. For magnetic reproduction an accessory kit is available.

Power for the preamplifier and bias for the phototube is supplied by an MI-26835 Power Supply. This unit is mounted in the pedestal of the projector. A d-c voltage for the exciter lamp is provided by an RCA MI-9516 power supply which also is accommodated in the pedestal of the projector.

The control system of the TP-6E projectors permit remote or local operation. Controls include: lamp failure indicator light and reset button, lamp voltage adjustment control and lamp voltage meter, power circuit breaker, ready-off switch, still projection pushbutton, start pushbutton and run pilot lamp, stop pushbutton, remote-control switch, and projector hours indicator.

Manual adjustments may be made by means of such controls as the manual turnover knob, framing knob, douser, projection lens focus, sound optical focus shift, film pressure shoe adjustment, upper reel tension adjustment, threading lamp and switch, exciter lamp change lever, and projection lens iris. Controls for the preamplifier include a gain control, high frequency adjustment control, and bias control. An off-on switch, and hum level potentiometer are provided on the MI-26835 Power Supply; and a regular-emergency switch and voltage control govern the exciter lamp power supply.

SPECIFICATIONS

Film Type	16mm
Reel Capacity	4000 ft.
Film Speed	24 frames per second
Shutter Speed	60 frames per second
Application Time	50%
Projection Lens Speed	Nominal f1.5
Projection Lens Focal Length:	
MI-26799-A	2½"
MI-26325	3.5"
Optical Center Line	48" above floor
Audio Output Impedance	150 ohms or 600 ohms
Audio Output	0 db
Amplifier Frequency Response	Choice of 3 with a high limit of approximately 5, 7, or 10 kc
Signal to Noise Ratio	50 db minimum
Dimensions	54¼" high (without upper reel and arm) 22½" long, 13⅝" wide
Power Requirements	110 volts, 60 cycles, single phase, approximately 1500 watts

Separate Motors are Provided for:
Shutter, Intermittent and sprockets, Take-up mechanism, Projection lamp blower, Exciter lamp fan, and Automatic lamp-change mechanism.

Equipment Supplied

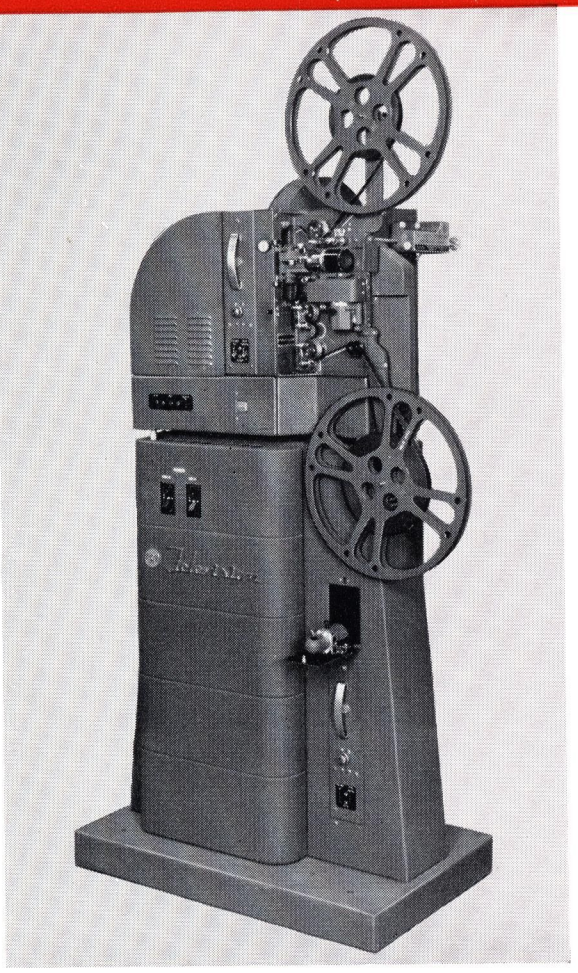
Type TP-6EC 16mm TV Projector (less lens) Including the following:	
1 Basic Projector (including Neutral Density Light Control)	MI-26122-EC
2 Reels (4000 feet)	MI-26636
1 Kit of Tools	MI-26623
1 Kit of Lubricants	MI-26631
Type TP-6EL 16mm TV Projector (less lens) Including the following:	
1 Basic Projector	MI-26122-EL
2 Reels (4000 feet)	MI-26636
1 Kit of Tools	MI-26623
1 Kit of Lubricants	MI-26631

Optional and Accessory Equipment

Projection Lens (one required but not included, order as follows):	
Lens, 3½-inch f/1.5 (for use on TP-6E Projector when used with TP-11 and TP-15 Multiplexers, where the TP-15 is used with a TP-16 Projector)	MI-26325
Lens, 2½-inch, f/1.6 (for use with TP-15 Multiplexer, where it is not used with a TP-16 Projector)	MI-26799-A
Spare Audio Preamplifier	MI-26308
TK-21 Vidicon Camera Mounting Bracket (for direct projection)	MI-26368-B
TP-15 Multiplexer (for monochrome and color vidicon cameras)	ES-40915
TP-11 Multiplexer (for monochrome vidicon cameras)	MI-26328-C
Projector Control Panel (for remote control of two TP-6 Projectors)	MI-26256
Neutral Density Light Control (for conversion of TP-6EL to TP-6EC)	MI-26595
Neutral Density Disc (for MI-26595)	MI-40105
Remote Light Control Panel	MI-40103

Standard 16mm TV Film Projector

TYPE TP-16F



FEATURES

- Excellent 16mm picture definition
- Long-life intermittent
- Quick-change projection lamp
- Quick-change exciter lamp
- Easy to thread
- High quality optical system
- Remote control accessory equipment
- Easy maintenance

USES

The RCA Type TP-16F Television Film Projector is designed primarily for television broadcasting of standard 16mm sound motion picture film. It produces brilliant pictures and high quality sound at relatively low cost. Reliable trouble-free operation over extended periods of program time and provision for quick and easy maintenance contribute to the continued popularity of this projector among television broadcasters. The TP-16F projector is the result of continued improvement on the original time-proven design which has met such wide acceptance in the television industry.

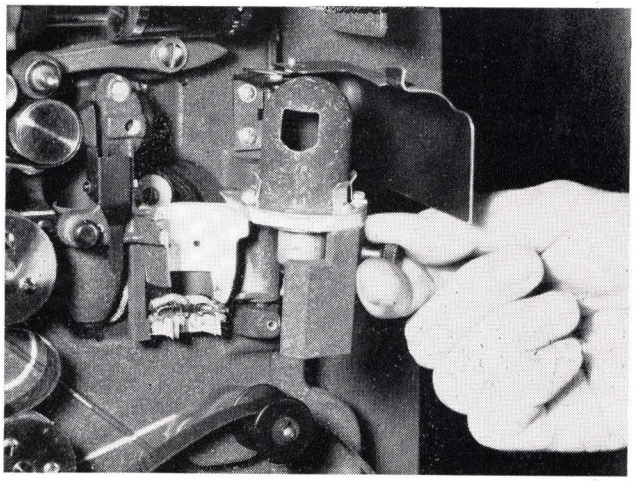
DESCRIPTION

The TP-16F Projector is divided into two major sections which are the upper portion or projector head, and the lower portion or pedestal. The upper portion includes the film transport mechanism, reels, optics, lamphouse, pre-amplifier, and single phase drive motor. Included in the pedestal are the separate take-up motor, spare lamps, and power control. The separate take-up motor coupled with the solenoid operated mechanical brake, actuated through a time delay relay, prevents film pile-up caused by machine coasting.

Numerous design advancements are featured in this projector, including a long-life intermittent with a life-expectancy of 1000 hours. Sapphire rails are used, requiring less lubrication, and precision ball bearings improve picture stability. Easily removable covers on the projector and pedestal facilitate servicing. The filament voltage for both sound exciter and projection lamps is reduced during stand-by, assuring longer lamp life. The sound exciter lamp assembly is easily removable; in fact, it slides out of position under gentle pressure and can be replaced by a duplicate assembly located in the pedestal. Convenient levers are provided in both picture and sound optical channels to compensate for emulsion reversal. The optical system consists of a 1,000 watt air blast-cooled incandescent lamp, a silver-coated pyrex glass reflector, a two element aspheric condenser lens, and a 3.5 inch f2.3 "coated" projection lens including an adjustable iris control.

The TP-16F Projector utilizes a 30% application time shutter for 30% application storage permitted by image retentive qualities of vidicon tubes.

The film transport mechanism is similar to earlier projectors; however, the parts have been arranged to allow

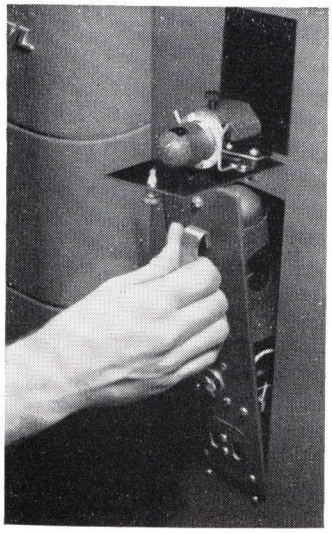


Closeup of the TP-16F Quick Change Exciter Lamp Assembly

easy threading. A positive lens gate locking mechanism that is very easy to operate has been provided. A separate driven sound isolation sprocket reduces the transmission of take-up reel shock to the sound take-off point.

The optical sound preamplifier is assembled on a small chassis which is removable from the base casting. This chassis also contains the d-c voltage supply for the exciter lamp. The following tubes are employed: RCA 12AY7 Phototube and Voltage Amplifier, RCA 12AU7 Push-Pull Output Stage, RCA 5Y3GT Plate Supply Rectifier. A tapped output transformer provides impedance of 150/600 ohms. The maximum optical sound output level is +0 dbm with 1 percent distortion. Average output level with normal film is −6 dbm.

Sound reproduction from films which have a magnetic sound stripe may be accomplished by installing an accessory magnetic sound kit. This kit provides high-quality magnetic sound at a signal-to-noise ratio of approximately 50 db.



Controls mounted on the projector include "Stand-by," "Emergency Run", "Start", "Stop", and "Remote". When the remote switch is operated, "Start" and "Stop" controls at a remote location may be used to control operation. An accessory Remote Control Panel, MI-26256 is available for this purpose.

Spare Lamps are mounted in the Pedestal

SPECIFICATIONS

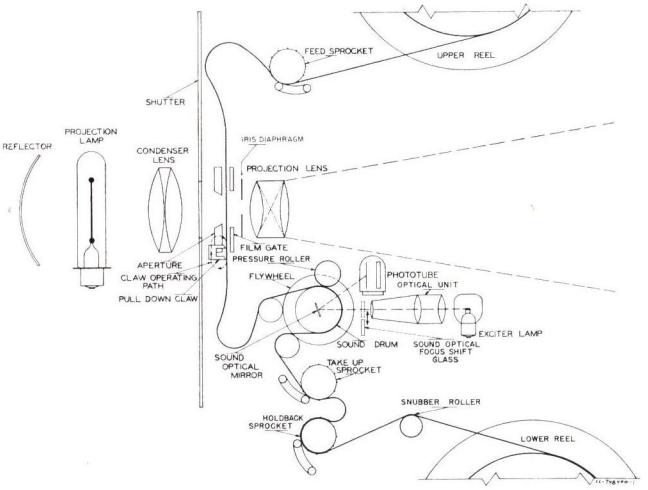
Film Type	Standard 16mm
Film Capacity	400′ to 2000′
Film Speed	24 frames per second
Shutter Speed	60 cycles (30 frames) per second
Application Time	30%
Optical Center Line Height	48″ above floor
Audio Preamplifier (optical sound):	
Maximum Output (1.0% distortion)	+0 dbm
Average Output from Normal Film	−6 dbm
Output Impedance	150/600 ohms
Frequency Response	±2 db from 50 to 4000 cycles
Hum and Noise Level	50 db below maximum output level
Dimensions	Height 68″; Length 32″; Width 16¾″
Weight	Projector 90 lbs.; Pedestal 135 lbs.; Total 225 lbs.
Tubes Required	1 927, 1 12AY7, 1 12AU7, 1 5Y3-GT/-G, Projector Lamp (1000 watt) T-12, Exciter Lamp 4 volt, .75 amp.
Power Required	105-125 volts, a-c, 60 cycles, 1300 watts

Equipment Supplied

Type TP-16F Film Projector (less lens)	ES-26930-F
Including the following:	
1 Projector Head	MI-26125-F
1 Pedestal	MI-26312-C

Optional and Accessory Equipment

Projection Lens (one required but not supplied)	
Lens, 3½″ F2.3 (for use with TP-15 Multiplexer or TP-11C Multiplexer)	MI-26322
TP-11C Multiplexer (for Monochrome Vidicon Cameras)	MI-26328-C
TP-15 Multiplexer	ES-40915
Remote Control Panel	MI-26256
Shutter for Long Application (for TP-16 A thru E Series)	Stock No. 211580
Shutter for Long Application (for early TP-16F)	Stock No. 211581
Relay for Projector Sound Changeover	MI-11729
Spare Preamplifier for TP-16	MI-26307



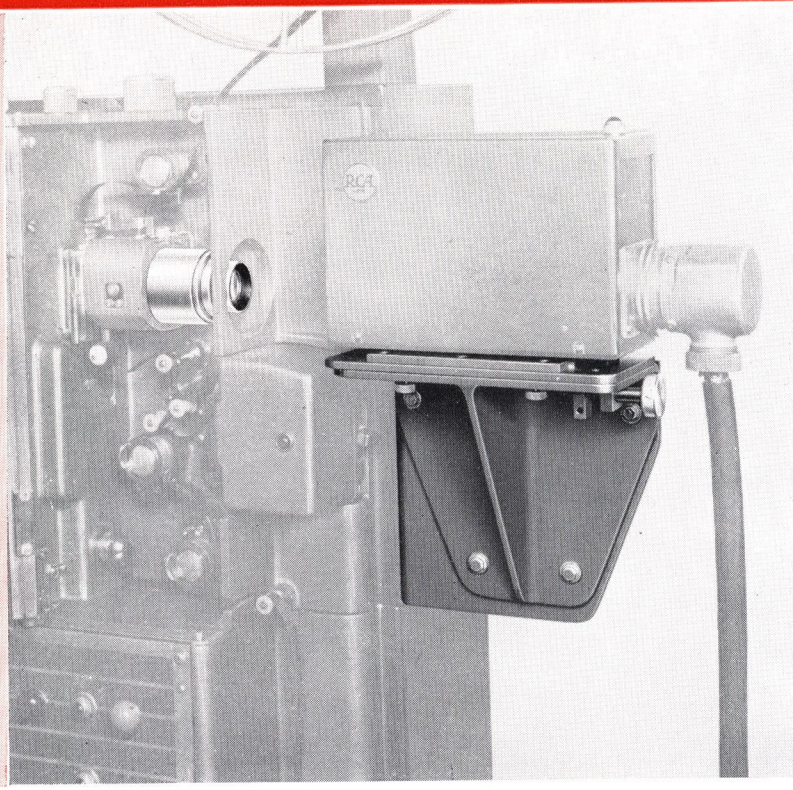
Functional diagram of TP-16F Projector.

Vidicon Camera Mounting Bracket

MI-26368-B

FEATURES

- Provides stable vidicon camera mounting
- Assures most effective use of vidicon camera with film projectors on direct projection
- Adjustable focusing mount
- Easy to install
- Allows accurate alignment adjustment



DESCRIPTION

The Vidicon Camera Mounting Bracket is designed to provide a rigid, stable mounting in applications where the TP-6 Series Film Projector is to be used for direct projection into a TK-21 series Vidicon Film Camera. When multiplexing applications are not contemplated, the mounting bracket provides the most effective use of the TK-21 Film Camera with the TP-6 Film Projector. A 2½-inch f/1.5 projection lens mounted on the TP-6 Film Projector by means of a special adaptor supplied with the bracket focuses the image directly on the photoconductive surface of the vidicon tube.

The RCA Vidicon Camera Mounting Bracket securely anchors the TK-21 series Vidicon Camera to the RCA TP-6 series Television Film Projectors. The bracket has been carefully designed so that it affords maximum stability, accurate alignment adjustment, and ease of installation. An adjustable mount assembly allows camera adjustment for proper focus.

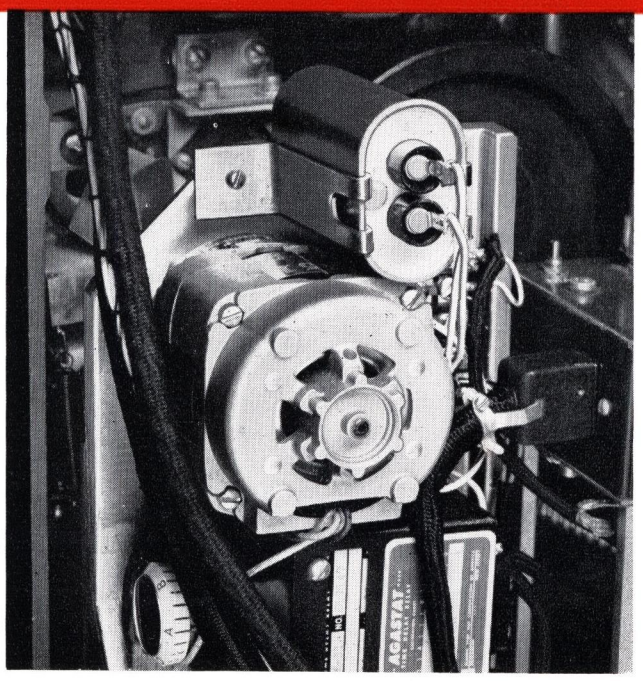
The mount assembly consists essentially of a base plate, guides, blocks, brackets, plate, and assembly hardware. The mount assembly for use with the TP-6 Film Projector is approximately 8½ inches long, 4½ inches wide and 7½ inches high and weighs approximately 15 pounds.

SPECIFICATIONS

Description	*Lbs. Weight*	*Stock Identification*
Vidicon Camera Mounting Bracket and Line Adaptor	15	MI-26368-B
Lens for TP-6 Series Projector	3	MI-26799-A

Rapid Start Kit

MI-40110



FEATURES

- **Optical or magnetic sound stabilization within one second**
- **No mechanical stress applied to film**
- **Greatly simplifies projector cuing**
- **Provides smoother programming**

USES

The MI-40110 Rapid Start Kit (shown above installed in the RCA Type TP-6 Film Projector) makes it possible for a TP-6 Series Film Projector to achieve optical or magnetic sound stabilization in less than one second from a dead start. It greatly simplifies film programming by virtually eliminating the customary four to five second lag between projector "start" and projector "show." Thus an operator may go into a film sequence by a smooth and uninterrupted hand motion between the projector "start" button and "show" button. Smoother and simpler programming is thereby realized, and the transitions from a live action sequence to a film sequence or from film to film may be made without the usual requirement for "roll" cues for the film projector.

DESCRIPTION

The TP-6 Rapid Start Kit, MI-40110, is supplied with all of the major components pre-assembled on a supporting casting. This kit will adapt any of the TP-6 Series Film Projectors for rapid start operation, and may be installed with a minimum of effort. No drilling, tapping or other mechanical modifications are required. The reduction in sound stabilization time is accomplished without compromising any design or operational features of the TP-6.

The casting assembly supplied with the Rapid Start Kit is installed in place of the sound flywheel "kicker" assembly normally provided in the TP-6 Series Projectors to impart an initial acceleration to the sound drum flywheel each time the projector starts. Included in this new casting assembly are a hysteresis synchronous motor, a time delay relay, a solenoid and an idler puck assembly.

When the TP-6 Projector is placed on "standby" by closing the main circuit breaker, the solenoid in the rapid start mechanism is energized and the rubber idler puck is pulled into contact with the shaft of the rapid start drive motor and with the sound drum flywheel. The rapid start mechanism is then ready for instantaneous action, and when the projector "start" button is depressed, line voltage is immediately applied to the hysteresis synchronous drive motor. In less than one second, this motor reaches synchronous speed and at the same time the sound drum flywheel, to which this motor is coupled by means of the idler puck, is accelerated to the proper rotational velocity required for stable sound reproduction from either an optical or magnetic sound track. One second after the "start" button is depressed, the time delay relay opens and de-energizes the solenoid in the rapid start mechanism. This releases the idler puck and decouples the sound drum flywheel from the rapid start motor. The rotational velocity of the flywheel is then maintained in the normal manner by the film motion over the sound drum. The rapid start motor continues to run while the projector is in operation, and serves as a fan motor for the exciter lamp.

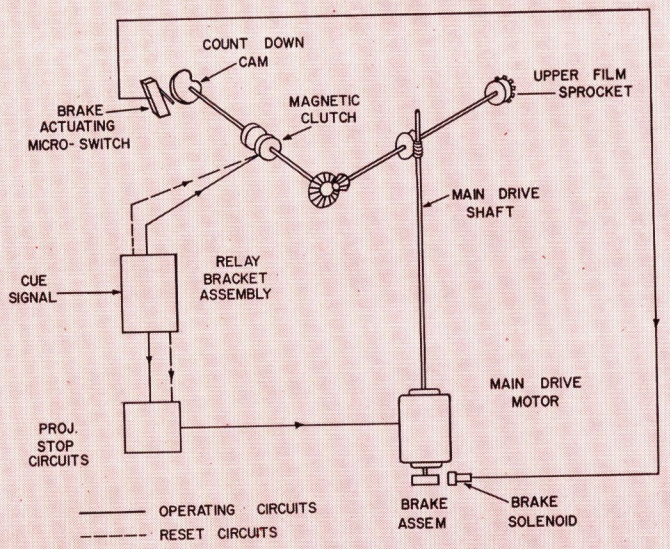
When the projector "stop" button is depressed, the rapid start mechanism returns to a stand-by condition; that is, line voltage is removed from the rapid start motor and the idler puck is again brought into contact with the motor shaft and the sound drum flywheel. This provides an effective braking action on the flywheel and brings it to rest within a very short interval.

SPECIFICATIONS

Sound Stabilization Time	Within one second
Weight (Rapid Start Kit Only)	12 lbs.
Stock Identification	MI-40110

Automatic Cue Kit

MI-26840-B



Functional Diagram showing operation of TP-6 Automatic Cue Kit.

FEATURES

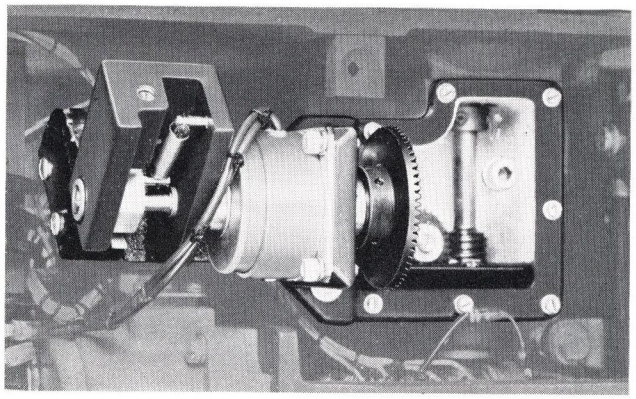
- **Provides greater flexibility in film programming.**
- **Film may be cued at any point without cutting or splicing**
- **Normal operation of projector not affected by modification**
- **Provides consistent cuing accuracy—within one frame**
- **Reduces number of film rethreading and rewinding operations**

USES

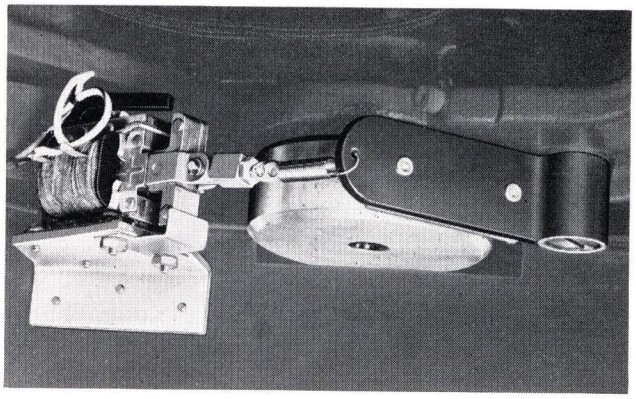
The MI-26840-B Automatic Cue Kit provides a simple and accurate means of automatically cuing film in the TP-6 Series Film Projector. Any 16mm film with either optical or magnetic sound tracks (or both) may be cued automatically. The normal operation of the projector is not affected by installation of the Automatic Cue Kit, and the operation of the kit is completely independent of the picture and sound information contained on the film. Used in conjunction with the MI-40110 Rapid Start Kit, the application of automatic cuing to motion picture film programming is a significant step toward achieving automation of television film facilities.

The addition of the Automatic Cue Kit to a TP-6 Projector makes it possible to automatically stop the projector in a controlled manner such that a predetermined film frame is positioned in the projector gate. This is accomplished by folding a small conductive patch with an adhesive backing around the guided edge of the film between two adjacent sprocket holes on the frame that is to cued. Any number of patches may be applied to a reel of film, and may be removed at any time without damaging the film. A feature film, for example, may be quickly and easily "programmed" in advance by applying a series of conductive patches to cue the begining of the film as well as any desired stopping points to permit a station break or commercial insertions. Automatic cuing also facilitates the showing of a reel of film containing several picture sequences which have been spliced together in accordance with a desired program schedule. By applying the conductive patches in the proper locations, the projector will automatically reset or cue itself for the next picture sequence as each preceding sequence is completed.

The application of automatic cuing to film programming greatly reduces the number of times that a projector must be rethreaded and the film rewound. In addition, the operator is relieved of the responsibility of stopping the projector at just the right moment as required in manual cuing. Wear and tear on the projector is also reduced by elimination of the need to "jockey" a film into the proper starting position.



Magnetic clutch and count-down cam assembly mounted in TP-6 Projector.



Brake assembly and brake solenoid for projector main drive motor.

DESCRIPTION

The MI-26840-B Automatic Cue Kit consists of parts and hardware required to adapt a TP-6 Series Film Projector for automatic cuing. This kit includes a brake assembly, clutch assembly, solenoid, and various hardware items.

The operation of the Automatic Cue Kit is completely independent of the picture and sound information contained on the film. To automatically preset or cue the projector so that a predetermined cue frame is positioned in the projector gate, a ¼-inch square piece of aluminum foil with a silicon adhesive backing is wrapped around the guided edge of the film between two adjacent sprocket holes. When the metallic patch passes between the upper film feed sprocket and the shoe, a control relay is energized; and the following sequence of events takes place.

First, the normal projector stopping circuits are actuated and the magnetic clutch on the count-down cam is energized. Then the cam starts to count the number of film frames passing thru the projector during the deceleration period. After a predetermined number of frames (adjustable from 22 to 26 frames) the count-down cam closes a switch which energizes the solenoid on the main drive motor brake assembly. By this time the projector has almost coasted to a stop and when the brake is applied, the projector can be brought to a complete stop in less than one revolution of the main drive motor. After a short interval the magnetic clutch and the brake are released and the projector is then ready for the next sequence.

The overall time interval required between film sequences to stop and reset the projector automatically with the cue frame in the gate is approximately five seconds.

SPECIFICATIONS

Electrical and Mechanical

Power Requirements:
105/125 volts, 50/60 cps.....Supplied from projector
24 volts DC.....Required from external power source
Braking interval to stop projector.....Adjustable from 22 to 26 frames
Cycling Time.....Approx. 5 seconds
Weight (kit only).....Approx. 15 lbs.

Ordering Information

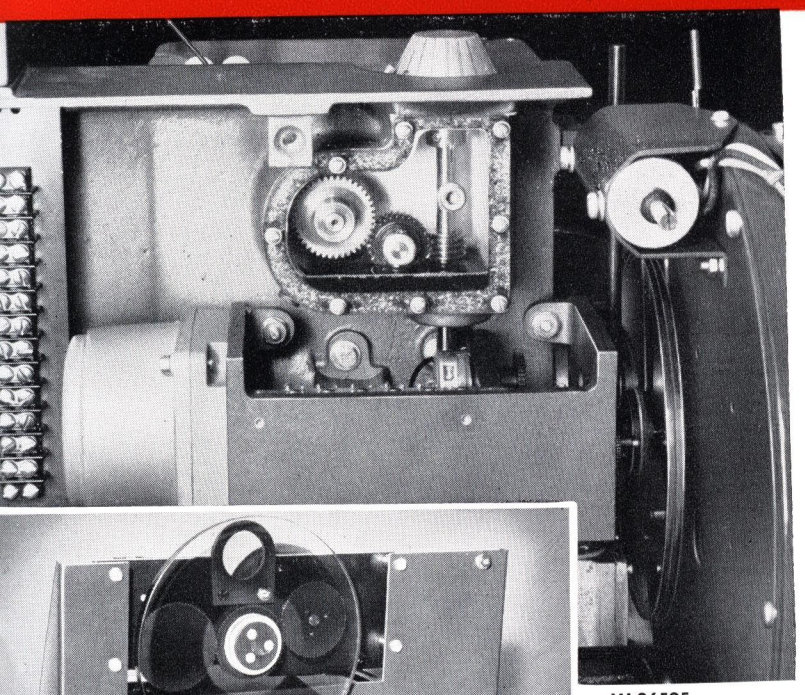
Automatic Cue Kit (for use with TP-6A, 6B and 6C Series Professional 16mm Television Projectors).....MI-26840-B

Accessory Equipment

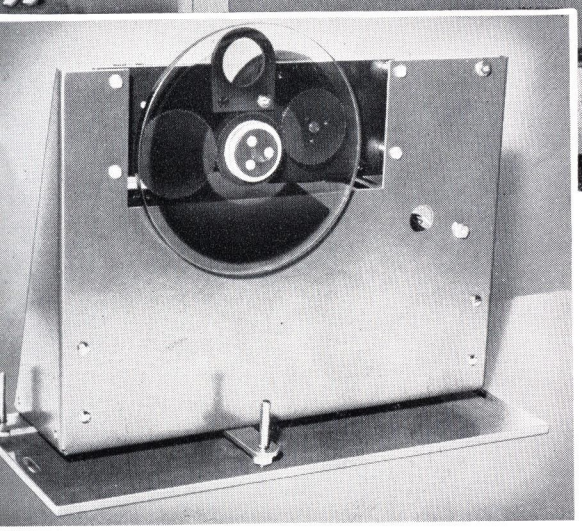
Conductive Foil (Mystic Adhesive Products #7452)....RCA Stock #225030

Light Control Units

MI-26595, MI-26798 and MI-40118



MI-26595



MI-26798

FEATURES

- Wide range of control available—100 to 1
- Maintains proper color balance
- Remote control of continuously variable filter wheel
- Permits operation of vidicon at optimum signal-to-noise ratio
- Instantaneous response

USES

The RCA Light Control Units provide a means of varying the projection light intensity from color and monochrome television film or slide projectors. The light intensity is determined by the angular position of a continuously variable neutral density filter wheel which is inserted in the projector optical path. This compensates for the varying density of slide and film material, and permits optimum operating conditions at all times for either a 1-V or 3-V film camera system.

Three Light Control Units are available. The MI-26595 Light Control is used with the TP-6 series of 16mm Projectors (the TP-6EC come complete with this unit in place); the MI-26798 control is specified for the TP-7 Slide Projector, and the MI-40118 for Slide Projectors when mounted on the TP-15 Auxiliary Cover and Periscope.

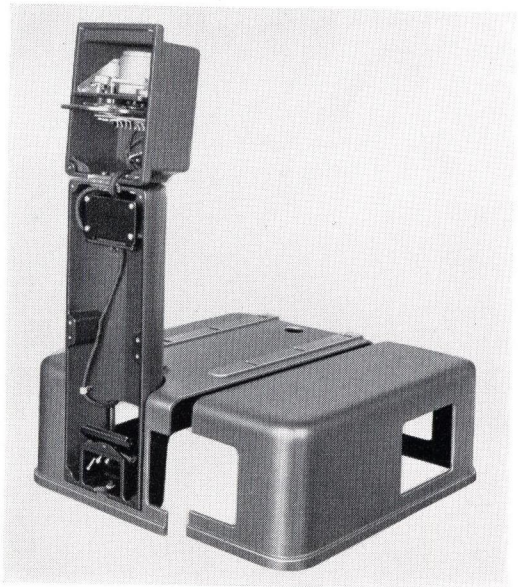
DESCRIPTION

The RCA Light Control Units include the servo amplifier, drive motor, gear train, and other minor equipment items necessary to install the units in the optical path of a film or slide projector. The units have been designed specifically for insertion in RCA type projectors, but they may be used in the optical path of any projector provided there are no physical limitations. For optimum results the MI-40105 Neutral Density Filter Wheel should be inserted in the cross-over region of the relay condenser system to avoid shading error.

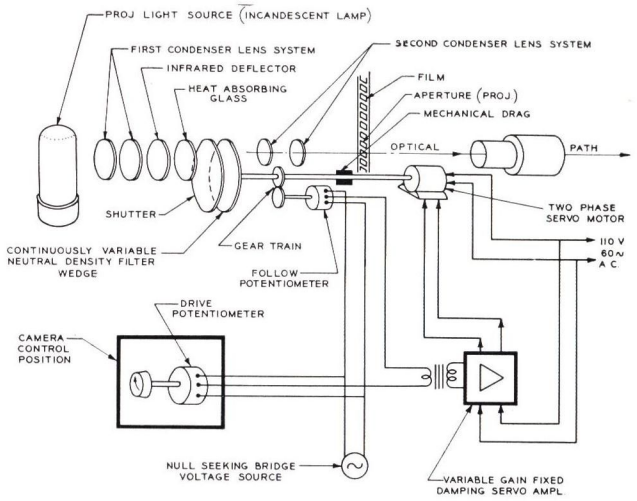
The control units use a continuously variable neutral density wheel to achieve optimum gain control. This system controls the light output at its source rather than varying the video gain in an amplifier. It permits the handling of film with density variations from 100 to 1 without affecting the signal-to-noise ratio of the system. The filter wheel is made by evaporating a continuously variable metal film on a disc of optical glass plate. The density of the filter varies continuously from 0 (essentially 100 percent transmission) to 2 (1 percent transmission) with a gradient of 0.006 density unit per one degree of angular rotation. The center of the filter portion of the wheel is placed in the axis of the optical path and integrated into the condenser lens system in the case of the TP-6 projector, to eliminate horizontal shading due to the density gradient of the filter disc. In the case of the TP-7 unit the filter

wheel is mounted in front of the projection lens. An infra-red reflecting dichroic and a piece of heat absorbing glass are used to reduce the infra-red rays concentrated in the condenser system to a point where they do not affect the glass disc.

A potentiometer is coupled to the drive shaft of the filter wheel by a gear train. Another potentiometer is located at the camera control position. These two potentiometers form a bridge circuit. The difference in electrical potential between the arms of the two potentiometers is fed to an a-c servo amplifier and the output of the amplifier, in turn, is fed to one of the two fields of a 2-phase servo motor which drives the neutral density filter wheel. The servo amplifier and two potentiometers form a null-seeking bridge circuit. If a potential difference between the outputs of the two potentiometers exists, the output of the servo amplifier drives the following potentiometer which is coupled to the servo motor by a gear train until the potential difference between drive and following potentiometers becomes zero. Thus the output signal of the servo amplifier also becomes zero, the servo motor develops no torque, and the filter wheel is brought to a stop at a specific point. The camera operator can remotely control the density of the filter by rotating the driver potentiometer at the camera control position which can be located anywhere in the studio. The interconnections can be made by a conventional two conductor, shielded microphone cable.



MI-40118 Light Control installed in TP-15 Auxiliary Cover and Periscope.



Functional diagram of neutral density filter wheel type light intensity control.

SPECIFICATIONS

Power Requirements

Servo Amplifier.....105-125 volt, single phase, 50/60 cycles, 0.3 amp.

Servo Motor

Field I (with series capacitor).....105-125 v, 50/60 cycles

Field II.....0-125 v, 50/60 cycles

Tube Complement

2—12AX7 2—12AU7

Mechanical Specifications

	MI-26798	MI-26595	MI-40118
Height	12"	*	*
Width	12¾"	*	*
Depth	5"	*	*
Weight (approximate)	18 lbs.	18 lbs.	18 lbs.

Equipment Supplied

Neutral Density Light Control for TP-6 series of Film Projectors consisting of Drive Assembly, Servo Amplifier, Mounting Brackets, Clamps, Cable Assemblies,, Hardware, etc.....MI-26595

Projector Light Control for TP-7 series Slide Projectors consisting of Light Intensity Control Assembly, Hardware and Tubes Complete.....MI-26798

Projector Light Control for TP-7 series Slide Projectors, consisting of Drive Assembly, Amplifier Assembly with tubes in place, Pilot Light Assembly, Cable Assembly and Connectors complete MI-40118

Additional Equipment Required

Neutral Density Filter Wheel
(required with each of above controls).....MI-40105

Accessory Equipment

Remote Light Control Panel.....MI-40103

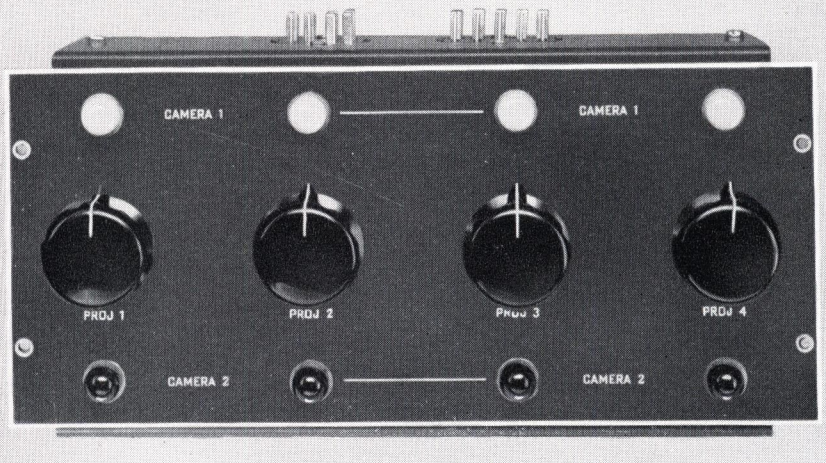
* Consists of unassembled kit of parts.

Remote Light Control Panel

MI-40103

FEATURES

- Provides independent control of 4 film or slide projector neutral density light controls
- Tally lights for camera 1 or camera 2 indication
- Bottom or side cable terminations for either horizontal or vertical mounting



USES

The Remote Light Control Panel provides independent control of the neutral density filter wheel of from one to four film or slide projectors. It is used to vary the amount of light from any of these projectors that may be fed into any combination of two vidicon cameras 3-V or 1-V. Where two vidicon cameras are used, the control panel can be mounted adjacent to or between the two camera controls. When two vidicon cameras are used with the TP-15 multiplexer one of the projectors can be previewed while the other projector is on the air. This control panel permits the setting of the projector light control during preview operation.

When the MI-40103 control panel is used with the TP-11 Multiplexer, it is wired directly to each of the projectors by means of a 2-conductor cable (MI-13307). When used with the TP-15 Multiplexer, only the four potentiometers on the panel are connected directly to the projectors but the tally lights are connected to the TP-15 multilpexer for proper indication of camera and projector operation.

DESCRIPTION

The MI-40103 Remote Light Control contains four potentiometers with convenient black operating knobs on the front panel which remotely control the light intensity of up to four film or slide projectors in either monochrome or color film camera chains. Eight tally lights, four yellow and four red, provide camera 1 or camera 2 identification of each projector with any combination of dual vidicon cameras, 3-V or 1-V.

The Remote Light Control Panel is designed for mounting in an MI-26786 or 26266-B Console Housing, where it may be placed either horizontally in the well area between the console desk portion and the hood or vertically in the hood. Mounting brackets, hinges, and hardware are supplied with the light control panel. Cable terminations may be made from the bottom or side of the panel. When mounted in the console well, an accessory trim frame, MI-26832, is recommended for use with the equipment. A Panel Adaptor, MI-26252, is required for vertical hood mounting.

The panel is of all-steel construction 5.12 inches high, 11 inches wide, and 2.81 inches deep. Two Jones type jacks and plugs provide cable connections with the servo light controls of the various projectors and the multiplexer controls.

SPECIFICATIONS

Dimensions (overall):	
Height	5"
Width	11 1/16"
Depth	2 7/8"
Weight	5 lbs. (approx.)
Finish	Deep umber gray
Stock Identification	MI-40103

Accessory Equipment

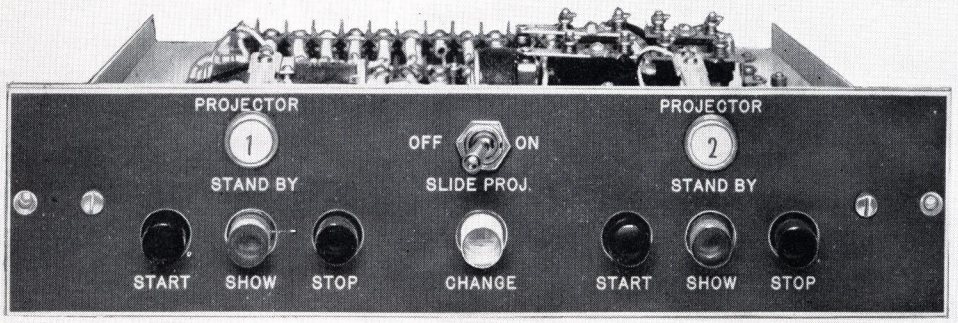
Panel Adaptor (for Mounting in Console hood)	MI-26252
Trim Frame (for Mounting in Console well)	MI-26832
2-Conductor cable	MI-13307

Projector Changeover Panel

MI-26256

FEATURES

- Remote control of television film projectors
- Console or rack mounting (with adaptor)
- Illuminated pushbuttons
- Compact design



USES

Projector Control Panel, MI-26256, is designed as a central control unit for remotely operating television studio film equipment. Any combination of two television motion picture projectors of the RCA TP-6 or TP-16 series can be operated from the panel. In addition, it provides facilities for remotely controlling the RCA TP-7A Slide Projector, or others of similar type.

DESCRIPTION

The Projector Control Panel contains three groups of switches and indicator lamps, a relay, an adjustable resistor, and two terminal boards. It is designed for mounting in a console housing section with other remote control equipment. The panel also may be mounted in standard studio racks by use of the Rack Adapter, MI-26254.

The center group of panel controls remotely operate the film slide projector. They consist of a toggle switch for turning the slide projector lamp on and off, and a momentary contact pushbutton switch for changing slides. A pilot lamp behind the translucent "Change" pushbutton, when lit, indicates that the projector lamp switch is in the "On" position. The remaining two groups of controls are for remote operation of two motion picture projectors. Each group consists of three momentary contact switches actuated by differently colored translucent pushbuttons. A pilot lamp behind each "Start" and "Show" pushbutton, when lit, indicates the function in progress. Two pushbuttons marked "Stop," are not illuminated. They are used to stop the projectors. The center pushbutton (marked "Show") when depressed, "douses" the projector in operation, "undouses" the projector to be operated, and actuates a relay which switches the sound system.

Above each group of three pushbuttons is a numbered "Stand-By" indicator lamp. This lamp lights when the local-remote switch of the projector is in the remote position, thus indicating that the projector is ready for remote operation.

SPECIFICATIONS

Electrical

Control provided for:
(a) Two motion picture film projectors
(b) One slide projector
(c) One audio switching relay

Pilot Lamp Voltage	12 or 24 volts
Power Requirements	120 volts, 60 cycles

Mechanical

Length	11 1/16"
Height	2 5/8"
Depth	10 1/8"
Weight	4 1/2 lbs.
Finish	Umber gray

Ordering Information

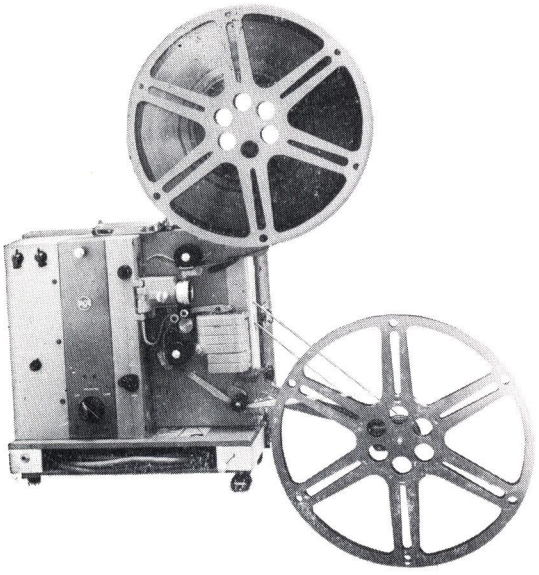
Projector Control Panel	MI-26256

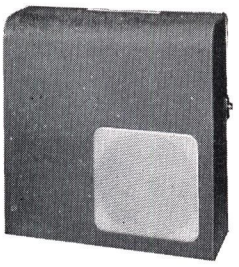
Accessories

Console Mounting Adapter	MI-26252
Rack Mounting Adapter	MI-26254
Audio Switching Relay	MI-11729

Portable 16mm Sound Projectors

MI-35007 and MI-35008





8-Inch Single Case Speaker in detachable cover.

10-Inch Double Case Speaker in carrying case.

FEATURES

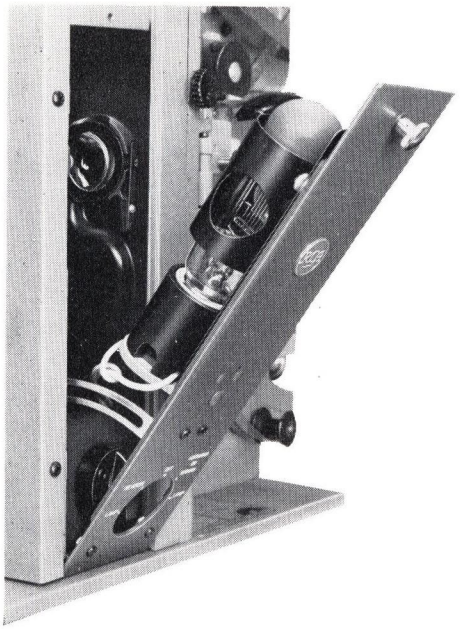
- Easy to thread
- Single switch control
- Whisper-quiet operation
- Fast set-up and pack-up
- 15 watt amplifier
- Built-in lubrication
- Light in weight—easy to handle
- Public address and phonograph facilities
- High quality picture and sound reproduction
- Rugged construction
- Induction type motor

DESCRIPTION

RCA Portable 16mm projectors provide an excellent and economical means for screening and previewing film for television use. They are ideally suited for audition rooms and client auditions in the field, being easy to carry, easy to operate and simple to set up.

The RCA Portable projector is available in either a Single Case or Double Case model. The Single Case unit (MI-35007) is equipped with an eight-inch speaker housed in the easily detachable cover of the projector carrying case. The Double Case unit (MI-35008/35014) is equipped with a ten-inch speaker, housed in a separate acoustically designed carrying case. This case is made of wood and coated with a handsome grey-green coated fabric.

Amazingly simple to operate, the RCA projector can be threaded easily in less than 30 seconds. The picture gate opens wide to permit easy threading of film and cleaning of the aperture plate and film shoe. The film threading path is so easy to follow that the projector can be threaded in the dark if necessary. Equally important are the extra large, slow-speed sprockets which are engineered to reduce film wear to a minimum. These large 16-tooth sprockets eliminate sharp bends in the film path and permit poor splices or damaged film to pass freely without further damage to the film. A special metal alloy pull-down claw with a feather touch to the film affords cushion action and contributes to longer film life. Newly developed nylon sprocket shoes and nylon film pressure shoes are extremely wear resistant.



Projector lamp is attached to lamp house door which swings down to permit speedy replacement of lamp.

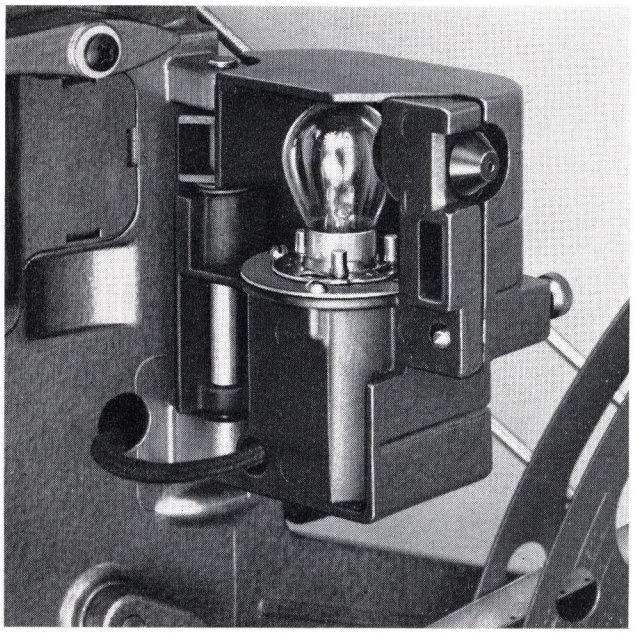
The projector permits instant finger-tip adjustment of either film loop while the machine is in operation. This feature permits an uninterrupted showing even if either the upper or lower loop is lost due to damaged film. Corrections to loop threading to properly synchronize the sound with the picture can be made instantly. Film rewind is rapid and convenient and may be done without removing or interchanging reels. No repositioning of reels or belts is required. A simple lever sets the projector to rewind film.

The RCA Portable projector is designed for two-speed operation for use with either sound or silent film. A finger-tip selection knob permits instant selection of one or the other speed.

Lamps with ratings of up to 1200 watts can be used in the RCA Portable projector. A newly designed blower efficiently dissipates the heat from these powerful lamps and keeps the aperture plate at a comfortably cool temperature for film. This blower together with a specially designed lamp shield results in a cool running projector regardless of the length of operation. A two-element condensing lens combined with an f/1.6 field-flattener projection lens produce sharp pictures, brilliantly illuminated with excellent contrast.

A high quality, 15 watt amplifier is incorporated into the RCA Portable projector. This amplifier employs inverse feedback to assure high quality sound reproduction. A connection is provided for a high-impedance microphone or phonograph pickup. An acoustically balanced intermatched sound system assures fidelity of voices and music throughout the 16mm recording range.

The RCA projector is designed for minimum maintenance. The powerful induction type motor has no brushes, governor or commutator to wear out. Built-in lubrication eliminates periodic oiling. Parts which normally require lubrication are made of oil-impregnated sintered metal which requires no additional oiling under normal operating conditions.



Optical bracket, mounted beneath lens, swings open to permit easy access to exciter lamp.

SPECIFICATIONS

Projection Lamp.....Up to 1200 watt, standard medium prefocused (1000 watt supplied)

AC Power Requirement (with 1000-watt Lamp).....1150 watts (105-125 volts, 60 cy)*

Projection Lens.....2" Field Flattener, f/1.6 coated

Film Capacity.....2000 ft. 16mm film

Operating Speed.....24 frames (sound), 18 frames (silent) per second

Amplifier:

- Mic-Input Gain.....112.5 db
- Mic-Phono Input.....High impedance
- Power Output.....15 watts at less than 5% distortion
- Voice Coil Impedance.....16 ohms

* This equipment is also available for operation on a 50-cycle, 105-125 volt source.

Tube Complement:

1 RCA 7025	3 RCA 6973	2 Silicon Rectifier
1 RCA 12AX7	1 NE-2	1 RCA 921 (phototube)

Power Cable.....10 ft., three #16 conductors, molded plug

Speaker Cable.....40 ft., two conductor #22 with phone plug

Weight:	*Net*	*Shipping*
Projector (MI-35007 and MI-35008)	38¼ lbs.	46 lbs.
Speaker (MI-35014)	19 lbs.	26 lbs.

Dimensions:

- Projector.....15½" long, 15" high, 10" wide
- Speaker (double case unit).....19⅝" long, 15⅝" high, 9¼" wide

Finish.....Grey-green coated fabric

Stock Identification

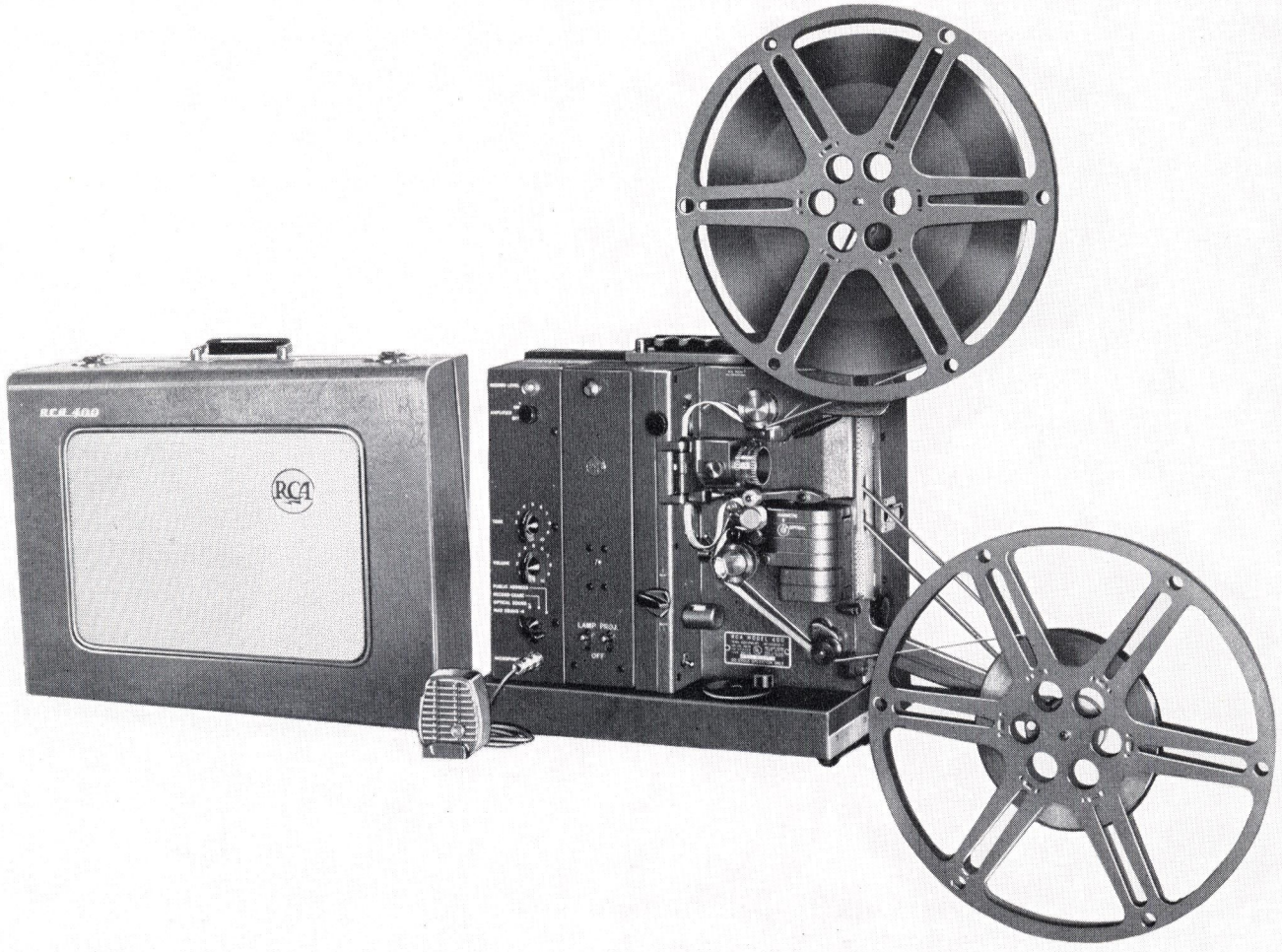
RCA Portable Single Case Projector.....MI-35007

RCA Portable Double Case Projector Less Speaker.....MI-35008

Speaker for MI-35008.....MI-35014

Portable Magnetic Sound 16mm Projector

MI-35002-E



FEATURES

- Records any time—any place
- Plays back immediately
- Erases and re-records at flick of switch
- Easy and economical to operate
- Quality sound and picture
- Built-in lubrication
- Efficient cooling system
- Reproduces optical as well as magnetic track

USES

The Portable Projector makes available the special advantages of magnetic recording and reproduction in many 16mm film applications where there is a requirement for adding sound to film within a modest budget. This new recorder-projector provides better quality sound, flexibility and improved operating convenience as compared with earlier magnetic sound projectors. It provides an ideal means for the previewing and screening of 16mm film with either optical or magnetic sound. The RCA Magnetic Sound Projector is equally useful for the preparation of film for sales and advertising presentations, television newsreels, personnel training and multiple language presentations.

Operating controls are "TONE" and "VOLUME" controls, "MICROPHONE" input, projection "LAMP" and "PROJ" (projector) starting switch. Mixer "VOLUME" control and two "MIXER INPUTS" are mounted adjacent to the rear.

DESCRIPTION

The RCA Portable Magnetic Sound Projector is designed to preview or record magnetically striped film with excellent results at low cost. Easy-to-operate controls permit quick, convenient recording, play-back, erasing and re-recording. In addition to recording magnetic track, the equipment reproduces both optical and magnetic track, projects sharp clear pictures and may be employed as a limited public address system.

All of the operating facilities of the RCA Magnetic Sound Projector are housed in a single-case, portable, attractively styled unit. Furnished as part of the equipment is a speaker in a separate, vinyl-covered case.

The sound frequency response of 100 to 7000 cycles obtainable from magnetic track, when employed with the RCA Magnetic Sound Projector, is superior to average results from optical prints. Unlike optical track, magnetic sound track does not become noisy with wear or mishandling nor does it deteriorate from scratching.

Convenience and flexibility of use, savings in time and money, along with excellent results are among the advantages of recording with the RCA Magnetic Sound Projector. The Magnetic Projector may be carried anywhere without special equipment or cumbersome attachments. The "Magnetic" method of recording eliminates the waiting time for optical film processing, the cost of studio rental, editing, commentator and extra film.

Outstanding among new construction and operational refinements are the following:

The erase head and record-reproduce head are on a common assembly mounted inside the sound drum. This feature greatly simplifies film editing.

Standard frame separation (both magnetic and optical) between picture and sound. Built-in lubrication eliminates periodic oiling.

The erase head is mounted adjacent to the record head. This feature greatly simplifies film editing.

Mixing controls have been integrated in the machine, providing greater and more convenient control of recording voice and music simultaneously.

A monitor jack is provided. This feature permits the use of a pair of headphones for monitoring and also provides an outlet for an additional loudspeaker or monitor speaker.

The projector is equipped with the new field-flattener lens. Reel arms and microphone are stored in the projector cover.

These and many other features make the new RCA "Life-Tested" Magnetic Recorder-Projector better than ever.

SPECIFICATIONS

PROJECTOR

Projection Lamp	Standard Medium Prefocused Lamps, up to 1000 watts
Projection Lens	2-inch, F 1.6 coated, field-flattener
Film Capacity	2000 ft., 16mm film
Operating Speed	16 and 24 frames per second
Magnetic Head Spacing	28 frames from aperture to magnetic head

AMPLIFIER

Input Impedance	500,000 ohms
Power Output	15 watts at less than 5% distortion
Frequency Response—Magnetic Film	100 to 7000 cps
TUBES	3 6V6-GT, 1 5Y3-GT, 1 6AU6, 1 12AX7, 1 5879, 1 921 (Phototube)

SPEAKER

Voice Coil Impedance.....6 ohms; Field Alnico #5 permanent magnet

POWER REQUIREMENTS (A-C ONLY)

With 1,000 Watt Lamp.....1150 watts (105-125 v., 60 cycle)

CABLES

Speaker	50 ft.
Power	15 ft.

DIMENSIONS

Projector	15½" long, 15" high, 10" wide
Speaker	19⅝" long, 15⅝" high, 9¼" wide

WEIGHT

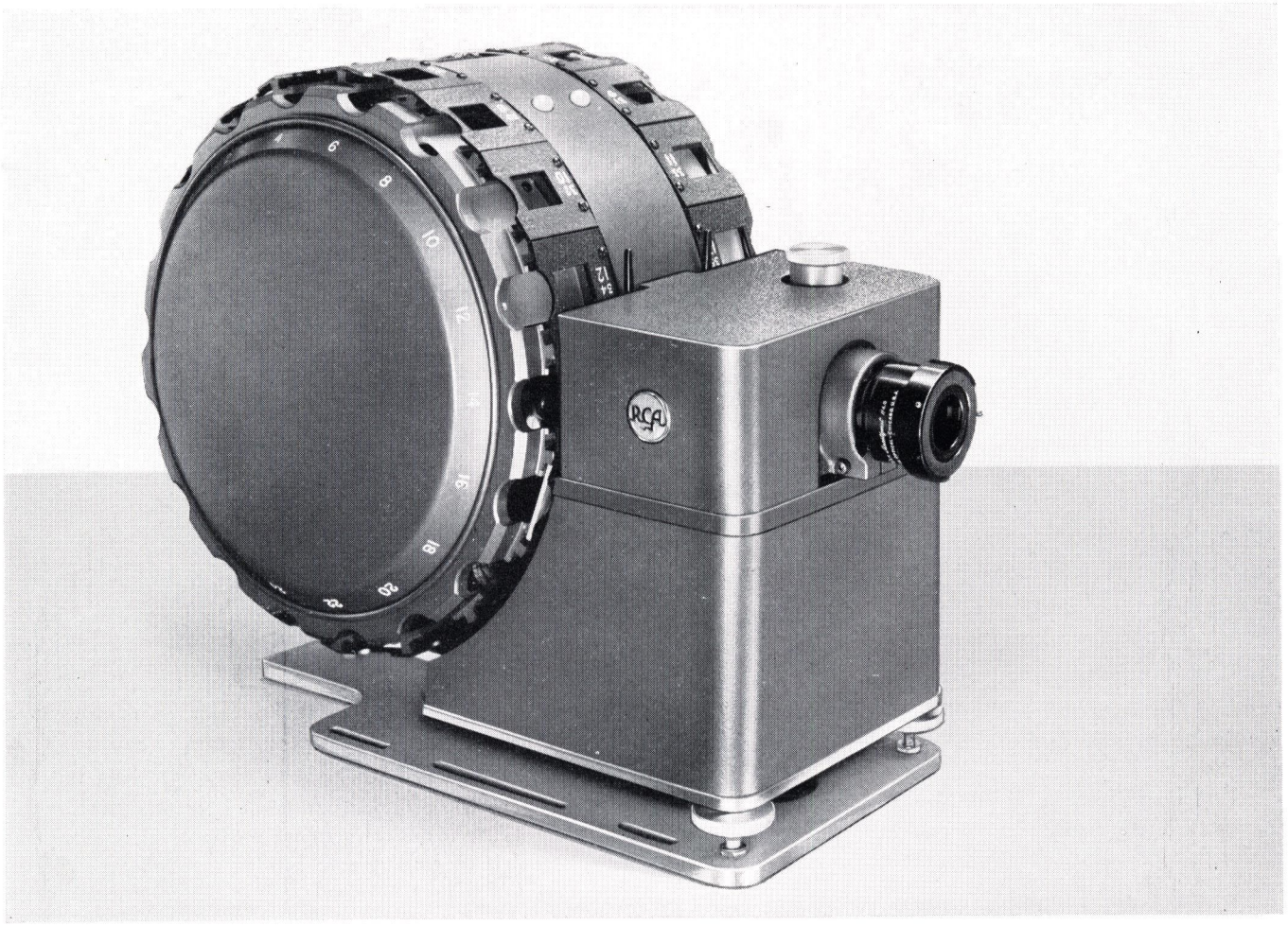
Net:	
Projector	39¼ lbs.
Speaker	19 lbs.
Shipping:	
Projector	46 lbs.
Speaker	26½ lbs.

Stock Identification

Projector	MI-35002-E
Speaker	MI-1312-C

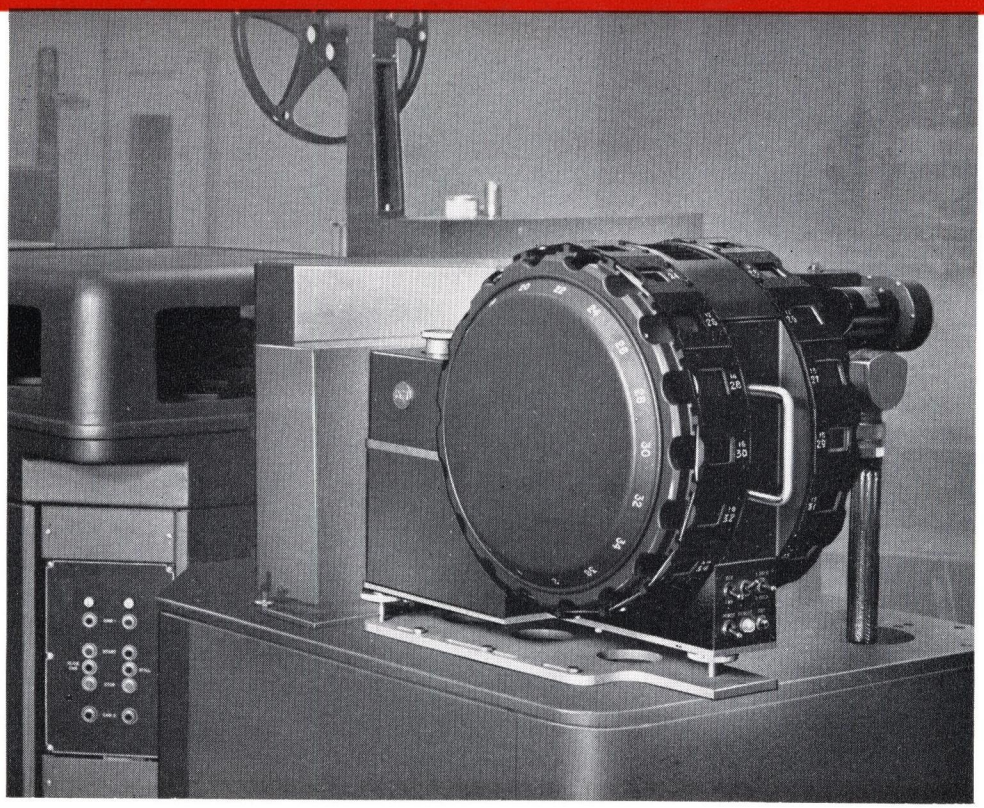
Professional Slide Projector

TYPE TP-7A



FEATURES

- Professional projector designed specifically for TV use—either color or monochrome
- Provides uniform brightness over entire field of projected image
- Dual drum, dual channel machine with 36 slide capacity (18 per drum)
- Single lamp source illuminates both channels, eliminating color balance problem
- Slide change instantaneous
- Slides remain cool, even for extended exposure
- Remote or local control of slide change
- Provides emergency projection lamp with quick manual change mechanism
- Slides may be viewed sequentially in either forward or reverse direction



TP-7A Slide Projector offers instantaneous slide change for use with 3-V and 1-V film camera systems.

USES

The RCA Professional Slide Projector, Type TP-7A, provides a ready means of projecting standard 2 by 2-inch slide transparencies into monochrome or color vidicon film cameras. The optical resolution and detail contrast are excellent for any TV pickup application. The machine has adequate light output for 3-V color film pickup systems, and it provides uniform brightness over the entire field of the projected image.

The TP-7A is semi-automatic in operation, projecting the slides in a sequential manner on signal from a local or remote location. Dual drums provide a slide capacity of 36 (18 per drum), and the slide change time is practically instantaneous. The slides advance either forward or backward. The operator may gain access to the slides on the two magazines for inspection or rescheduling during operation of the projector. It is possible to hold a slide in one channel and show it alternately with a series of slides in the other channel. An emergency projection lamp is available for quick manual change.

The TP-7A Slide Projector is a "Professional Quality" unit designed to operate in TV film rooms. It may be used with any RCA vidicon multiplexer or vidicon film camera chain, using proper mounting facilities and projector lenses.

DESCRIPTION

The Type TP-7A Dual Drum Slide Projector, MI-40011-A, is intended to be used in studio color or monochrome television productions for the presentation of any standard mounted 2 by 2-inch slide. Dual condenser lens systems form two optical channels. A drum type magazine associated with each optical channel provides storage for the slides and is so arranged to bring succeeding slides into position for projection without any dark period as the projector drums are rotated. Instantaneous slide change is accomplished by a moving mirror mechanism which multiplexes the two optical channels.

One projection lamp is used in conjunction with the two sets of condenser optics each of which form an optical channel. Light is collected from both sides of the lamp filament by these optics and directed to each of the two slide gates (one per channel) which are offset from but symmetrically located with respect to the projection axis. Three fixed and one movable front surfaced mirrors located between the slide gates and the single projection lens multiplex the optical channel axes into the centrally located projection lens. Split second movement of this mirror in or out of the optical path switches from one slide channel to the other. A relay type condenser system with four lens elements per channel is used.

This optical arrangement is the nucleus of the design of the TP-7A. It provides the means of meeting all objectives

associated with the optics. Two channels are available to provide the desired continuity of programming. Internal multiplexing of the two channels into one projection lens permits the on-axis projection required on field lens systems. One projection lamp eliminates the possible introduction of color unbalance between the two channels with unmatched lamps. Use of a fully reflective moving mirror in the multiplex system eliminates the need for dichroic or half silvered mirrors which introduce color unbalance with their inherent spectral selectivity. A 300 watt medium prefocused base down lamp provides 450 foot candles on a 3.35 by 4.46-inch screen. This is sufficient light for a 3-Vidicon color film camera. Uniformity of screen illumination exceeds 90 percent in open gate search measurements.

Separate drive motors are used for each drum. As the slide from one drum is being projected the other drum advances to a new slide position. Precision indexing of each slide position on the drum is accomplished by suitable detents.

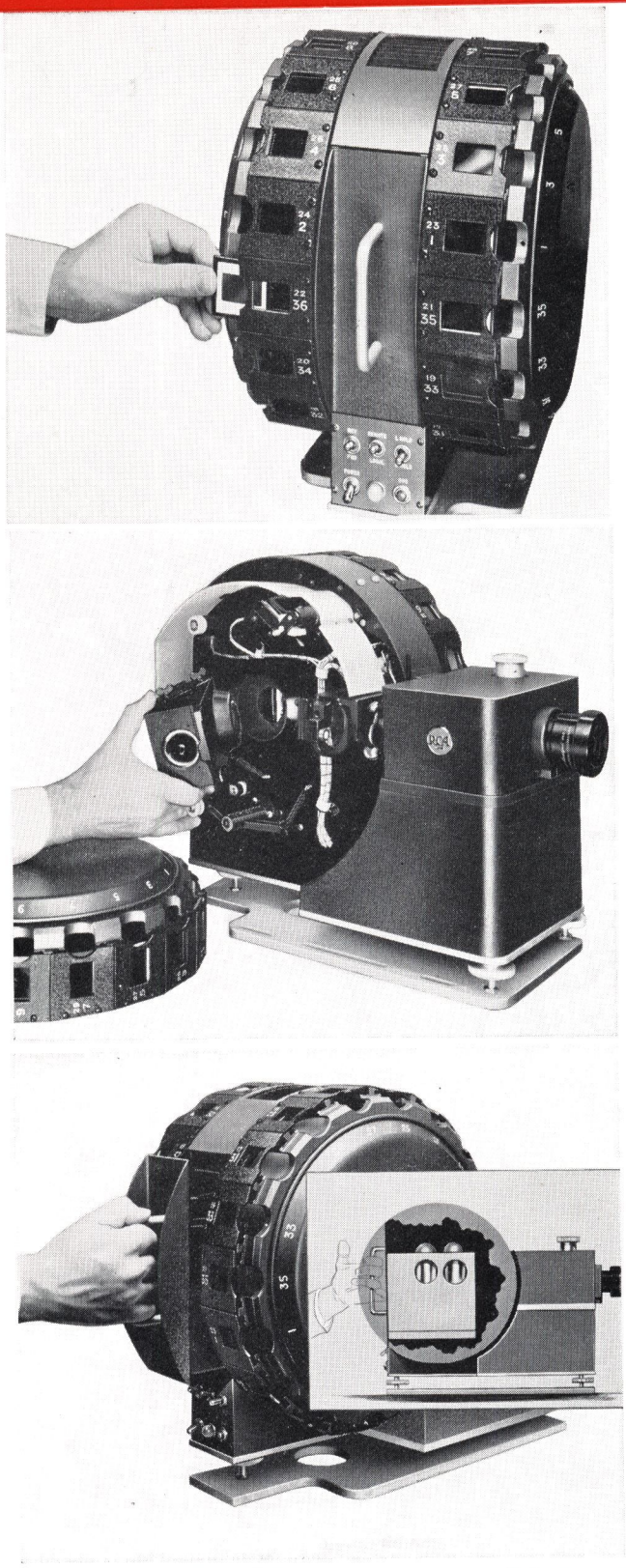
Forced air cooling is provided so that the slides remain cool, even for extended exposure. A centrifugal type blower located under the optical plate shares this space with the moving mirror mechanism. Ample air flow is provided to maintain cool operation with a 500 watt lamp.

The TP-7A is sturdily constructed for years of use. The main framework of the projector consists of a base plate, a horizontal bottom plate, two parallel vertical plates and an optical plate casting. The base plate's function is to provide a means of attaching the projector to its supports. Slots are provided for hold-down bolts. The projector bottom plate is coupled to the base plate through three adjustable leveling legs. These legs have knobs for ease in making adjustments and have locking provisions to eliminate all play between components.

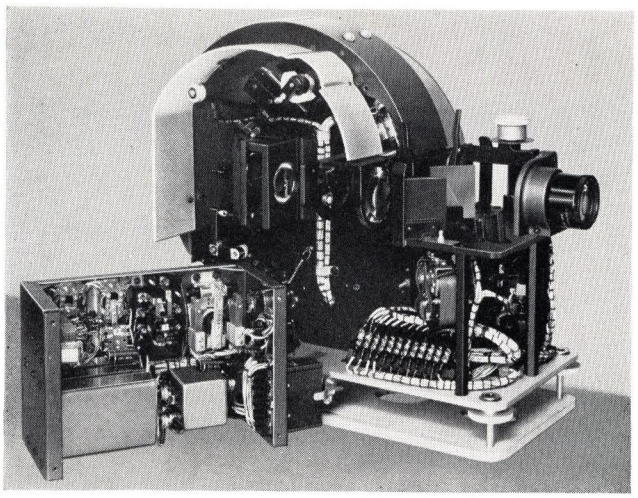
Unitized construction of the TP-7A Professional Slide Projector provides easy accessibility for cleaning or servicing. The top front cover which protects the multiplexer mirrors from dust may be removed thus giving access to all optical components on the optical plate. For access to the condenser optics, the drums can be easily removed. Bottom covers and lamphouse are also removable so that access to every component is possible. Dowel pins and other devices reassure automatic alignment on reassembly.

Operating controls for the TP-7A are located at the rear of the projector. The projector also can be controlled from a remote control panel.

A reversible shaded pole gear-head motor coupled to the mirror through a modified type of geneva movement provides the means for rapid movement of the mirror into and out of the optical paths. The mirror and its mount are



Three views of the RCA TP-7A Projector showing such features as: (1) high slide capacity, easy loading with detents offering plenty of finger room, and soft illumination permitting observation of picture area when loading; (2) unitized construction and mechanical versatility for ease of maintenance and operation; and (3) quick lamp change mechanism which allows spare lamp to be moved quickly into place by pulling back handle.



TP-7A Slide Projector and Control Box with covers removed to show compact circuitry, unitized construction, and optical assemblies including change-over mirror operated by geneva mechanism for instantaneous slide change.

pivoted on a shaft which is perpendicular to the reflective surface. This permits mirror motion only in the plane established by its surface. Although the drive motor rotor has low inertia, a friction type override clutch between the crank and the motor reduces shock when the crank strikes its limit stops. Lever type sensing switches are operated by the crank near each end of its travel. The crank is detented in these positions to prevent spring-back when the motor is de-energized and to maintain proper pressure on the sensing switches. Actual mirror motion time is less than 1/5 second, yet the gentle accelerating and decelerating forces inherent in the geneva mechanism gives smooth quiet operation.

Soft illumination of all slides in the top and rear portions of the drums is provided in this projector. This permits visual observation of picture area when loading the slides. It also permits visual checks on orientation, loading sequence, etc. of the slides in the drum at any time without removing them from the drum. Since the drums may be readily rotated by hand, a complete check on every slide in the drum can be accomplished quickly.

A control box, separate from the TP-7A Slide Projector, may be mounted in a rack or the base of the multiplexer. This box contains all the relays used in the control circuits as well as the larger capacitors associated with the drive motor. All control circuits operate on 24 volts d-c. Interconnection between it and the projector utilizes a 24-conductor cable which is terminated in the projector on two barrier type terminal boards and at the control box by a Jones plug. Separate jacks are supplied on the box for the two power inputs and for two types of remote control connections.

An accessory remote control panel, MI-40111, provides remote control of four functions: left drum hold, right drum hold, forward-reverse, and slide changer. The panel may be located at any convenient operation point, and mounts either in the well area or, when used with an MI-26252 adaptor, in the hood section of a standard RCA 13-inch console housing. The remote control panel is 2⅝ inches high and 11⅛ inches long.

SPECIFICATIONS

Slide Size	2" x 2"
Lamp Size	300 watts (500 wattage available)
Usable Picture Area	.844 x 1.25 min. (SMPTE Standard)
Slide Changer Time	1/5 second
Slide Cycling Time	1 sec. max.
Lenses	Either 9"—f/6 or 7.5"—f/4
Operation	Dual drums operated by individual motors
Slide Capacity	18 per drum, total 36 slides
Control Circuit	24 volts, d-c
Power Requirements	115 volts, 60 cycles, single phase, 7 amps. 24 volts, DC, 1 amp.
Motors:	
Drum and Mirror Drive	0.0013 hp, 80 rpm, reversible, shaded pole
Blower	1/300 hp, 3200 rpm, induction, single phase
Fuse	10 amps., slo-blo, 3AG
Overall Dimensions:	
Projector	23" long, 11" wide, 18" high
Control Box	10" long, 6¾" wide, 5¼" high
Weight	75 lbs. (approx.)
Finish	Dark umber gray
Stock Identification	MI-40011-A

Accessory Equipment

Projection Lens (one required, but not supplied, select as follows):	
Lens, 7½" (for use with TP-11C and TP-15 Multiplexers, where the TP-15 is not used with a TP-16 Projector)	MI-26335
Lens, 9" (for use with TP-15 Multiplexer when it is used with a TP-16 Projector)	MI-26336
Lens Adaptor for MI-26335 Lens when used with TP-11C Multiplexer	MI-26340
Light Control (select one as required):	
Neutral Density Disc Type for use with TP-15 Multiplexer on pedestal for color or monochrome	MI-26798
Neutral Density Disc Type for use with TP-15 Multiplexer on auxiliary cover and periscope for color or monochrome	MI-40118
Variac for all Multiplexers to decrease light output to level required for TK-21 Camera monochrome operation	MI-26646
Tp-11C Multiplexer (for Vidicon Cameras)	MI-26328-C
TP-15 Multiplexer (for 3-V or 1-V Cameras)	ES-40915
Remote Control Panel	MI-40111
Console Mounting Adaptor (for MI-40111 Panel)	MI-26252

Opaque Pickup Assembly

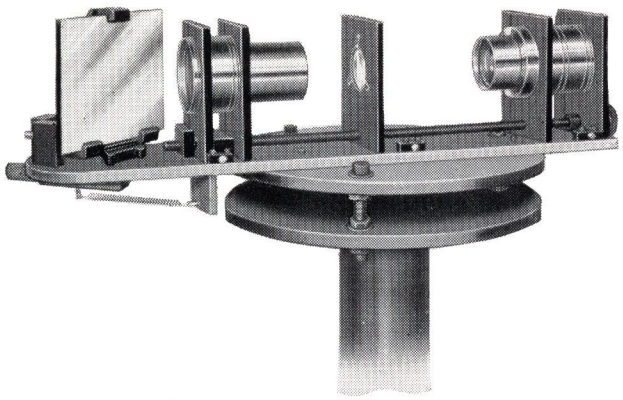
MI-40104-B

FEATURES

- Produces live picture quality
- Flexibility in handling opaque information—either copy or product display
- Eliminates time and expense involved in preparing slides
- Swivel mirror for selection of either of two subject areas
- Choice of mountings—can be used with all types of RCA vidicon multiplexers
- For monochrome or color operation
- Precise focus—good depth of field

USES

The Opaque Pickup Assembly, MI-40104-B is an extension lens system designed for use with either RCA Color or Monochrome TV Film Cameras to enable televising of opaque subjects such as art work, signs, maps, diagrams, comic strips or color magazine pages as well as all kinds of product displays—live or action—in the simplest possible manner. The opaque assembly can be directed into any of the regular multiplexer inputs of the TP-15 Multiplexer or into the fourth input of the TP-11 Series Multiplexers.



Opaque Pickup Assembly with cover removed to reveal optical system

This relatively inexpensive and simple lens assembly can pick up either color opaques or products located in a limited display area. These products can be moved, liquids poured and the products demonstrated. Without physical or circuit modifications, the TK-26B Color Film Camera can reproduce opaques and limited live commercials thus extending the revenue-producing power of the 3-V film equipment. News headlines, news photos, temperature and time announcements may also be telecast in addition to commercials. The Pickup Assembly is equally well adapted for use with monochrome vidicon film cameras. Unlike slides, live color commercials and opaques are relatively easy to prepare and can be changed, reworked, retouched or altered quickly to meet the demand of the sponsor.

The area available for opaque or live objects may be varied from 4½ by 6 inches minimum to 9 by 12 inches maximum. An area of 7½ by 10 inches is the average design size. A swiveled mirror makes it possible to pick up either of two subject areas except when used with the TP-11 Series Multiplexers. There is no need for light covers or strobe lights.

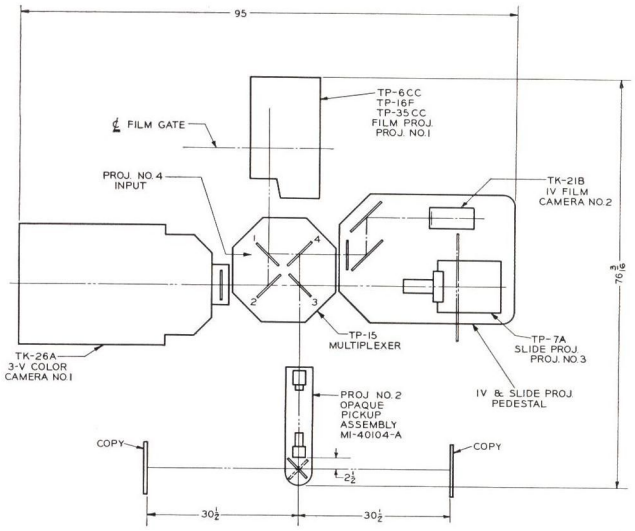
A choice of two accessory mounting assemblies is available; MI-40109 for direct floor mounting, and MI-40108 for mounting the Opaque Pickup Assembly on the MI-40115 Pedestal of the TP-15 Multiplexer.

DESCRIPTION

The RCA MI-40104-B Opaque Pickup Assembly devised for limited live commercials and opaques consists of an extension lens system mounted on a base plate assembly. The lens system may be focused by means of manual focus knob, and a swiveled mirror is provided for selection of either of two subject areas when the opaque assembly is used with the TP-15 Series Multiplexers. When installed with a TP-11 Series Multiplexer, the swiveled mirror in the opaque assembly is removed, and the staging area is located along the optical axis of the lens assembly. Convenient adjustments are included for leveling and alignment of the equipment after it has been installed. The entire assembly has been carefully planned to assure rugged construction and to withstand constant hard usage. Bolts for leveling are included in the base plate.

The optical system begins with a 3½-inch Wollensak Cinema Raptar projector lens with a speed of f1.9 which is focused on the object to be reproduced either directly or by means of the intermediate mirror. A double convex field lens of 63mm focal length is placed at the back-focus image-plane distance. The 1.3 diagonal real image at this plane is then viewed by a Wollensak Cinema Raptar 6-inch relay lens with a speed of 2.3 which produces a new real image at the film camera field lens. All the lenses were chosen for their high quality and freedom from vignetting effects. The system maintains a good depth of focus. Close-ups or distant pick-ups can be focused by moving the 3½-inch lens in its mount by a manually operated focusing knob.

A collimated light source such as a 1-kw slide projector with f2.3 lenses illuminating the 7½ by 10 opaque area is a convenient accessory for lighting purposes. For illumination of a live or action display, several 500-watt photo-flood lamps may be used. A total of 12,000 foot candles

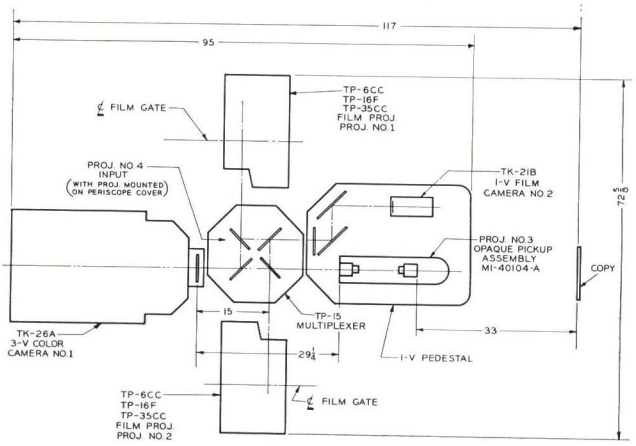


Opaque Pickup Assembly MI-40104-B shown mounted on MI-40109 Floor Mount in order to utilize two copy areas.

of light is required. Vidicons are capable of accommodating extreme highlights with no halo or edge effects in the TV picture. The high lighting level intentionally recommended for use reduces the lag with motion to a negligible amount, thus making possible the use of "action" shots.

The MI-40104-B assembly may be utilized with several types of camera installations. The floor plans reveal typical arrangements. Other set-ups may be realized with the equipment, and final location of the equipment will be determined by individual station requirements. In any installation, the total length of the light path from the copy to the end of the 3½-inch lens barrel should be approximately 30 inches. The total distance from the end of the 6-inch lens barrel to the camera field lens should be approximately 29¼-inches. The optical center-line of the projector must be 48 inches above floor level to conform to the requirements of the RCA Multiplexer, projectors and cameras. The image must be reflected an even number of times to avoid reversal of the copy from left to right.

Floor plan showing Opaque Pickup Assembly mounted on MI-40108 Pedestal Mount.



SPECIFICATIONS

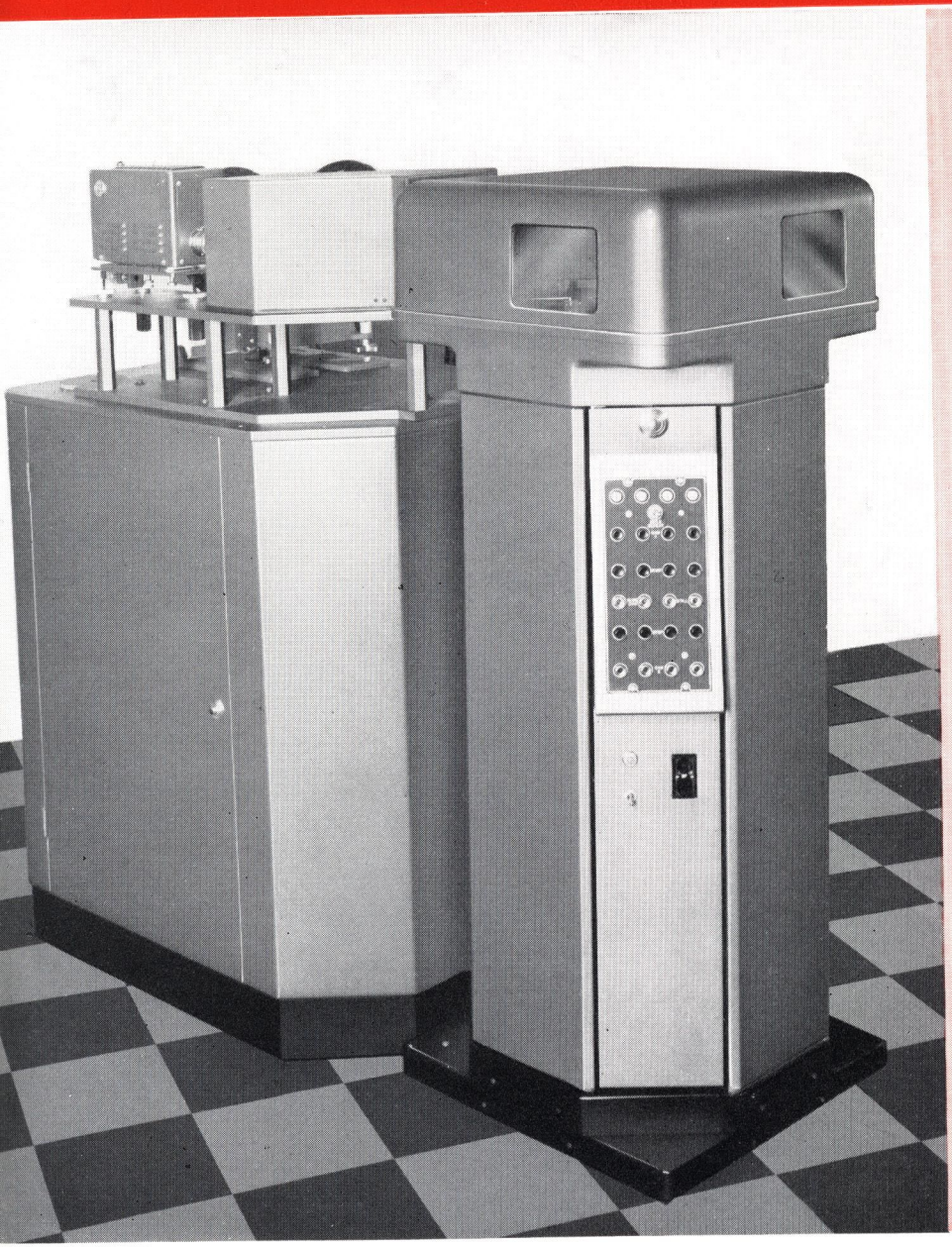
Copy Size	4½" x 6" min.; 9" x 12" max.
Copy Distance (from pickup lens)	Approx. 29¼" for 7½" x 10" copy
Illumination Required	12,000 ft., candles
Pickup Lens	3½" f1.9
Projector Lens	6" f2.3
Field Lens	Double convex, 63mm focal length
Overall Dimensions	23½" long, 12" wide, 50½" high
Height (less mounting pedestal, but including mounting studs)	8⅝"
Weight	60 lbs.
Stock Identification	MI-40104-B

Accessory Equipment

Floor Mount	MI-40109
Pedestal Mount (for use on MI-40115)	MI-40108

Universal Multiplexer

TYPE TP-15



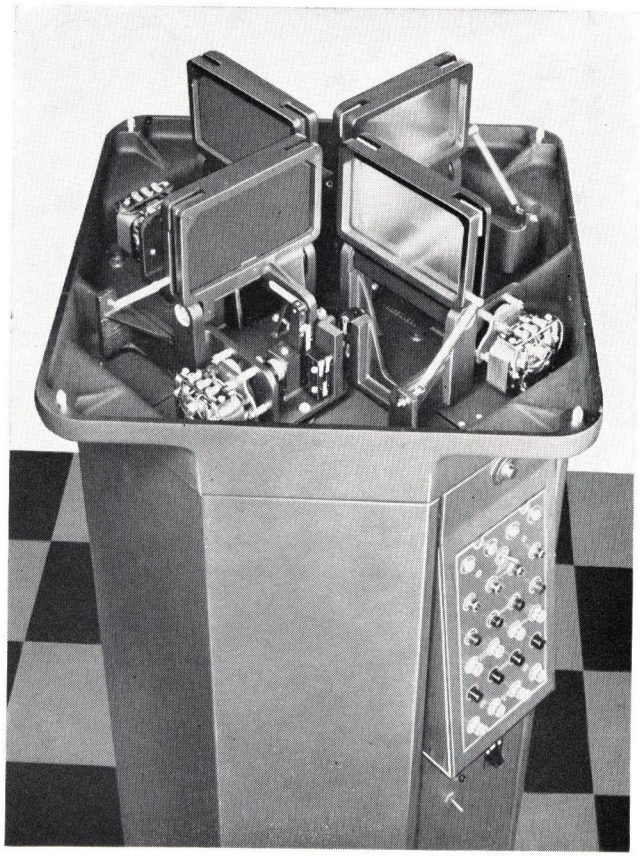
FEATURES

- Flexible—complete integration of monochrome and color film
- Permits preview of picture from upcoming projector while another is "on-air"
- Choice of 3 or 4 picture inputs with 2 picture outputs
- Light efficiency essentially 100 per cent
- Remote control of film and slide projectors and dual channel changeover mechanism
- Drawer-type mounting of control panel and circuits permits ease of servicing
- Precision optics, completely enclosed

USES

The Universal Multiplexer, Type TP-15, is designed to enable one or two vidicon film cameras to handle signals from two 16mm or 35mm film projectors and two still projection equipments, thus allowing maximum flexibility in film reproduction. This multiplexer allows complete integration of monochrome and color in the same system, since any two of the three or four inputs can be fed to two outputs serving either two 1-V monochrome film cameras, two 3-V color film cameras, or a combination of a 1-V and a 3-V camera.

The TP-15 offers program flexibility and standby protection comparable to that of two complete single camera systems. It provides smoothness and continuity in programming without the expense and complexity of duplicated equipment. The TP-15 also requires less valuable projection room space than a two camera system utilizing separate multiplexers and projectors. A further advantage of this multiplexer is that it permits the installation of a monochrome system and later addition of color without discarding any equipment.



Four mirror star array employed by TP-15 Universal Multiplexer to establish desired light paths between projectors and television monochrome or color cameras. The front surface mirrors are driven by reversible motor and limited travel geneva mechanism shown above. The multiplexer pedestal accommodates the local control panel.

The Universal Multiplexer offers ideal facilities for previewing the picture from the upcoming projector while supplying a program signal from another projector, either film, slide, or opaque. This facility for preview permits pre-setting the light intensity control for the projector next to be used as the program source so that the transition from projector to projector as viewed by the camera will not give rise to annoying disruptions or shifts in the level of the video signal at its output.

Pushbutton controls mounted on a panel at the multiplexer, or in an RCA standard equipment housing console when remote control is desired, provide all facilities for starting, stopping, still projection, slide change and delegation of light paths between projectors and either of two Vidicon cameras. The control circuits are designed to favor one camera. This camera maintains priority over the other so that the second camera cannot take the picture away from the first while it is on the air. Either camera #1 or camera #2 can be established as the preferential one.

The TP-15 is able to handle the following combinations of studio equipment:

A. Multiplex 2 motion picture projectors, a slide projector, a 3-V camera and a 1-V camera.

B. Multiplex 2 motion picture projectors, 2 slide projectors, a 3-V camera and a 1-V camera.

C. Multiplex 2 motion picture projectors, a slide projector, and two 3-V cameras.

D. Multiplex 2 motion picture projectors, 2 slide (or 1 slide and 1 opaque) projector, and two 1-V cameras.

E. Multiplex 2 motion picture projectors, 1 slide projector, 1 slide opaque or film projector, and one 3-V or 1-V camera.

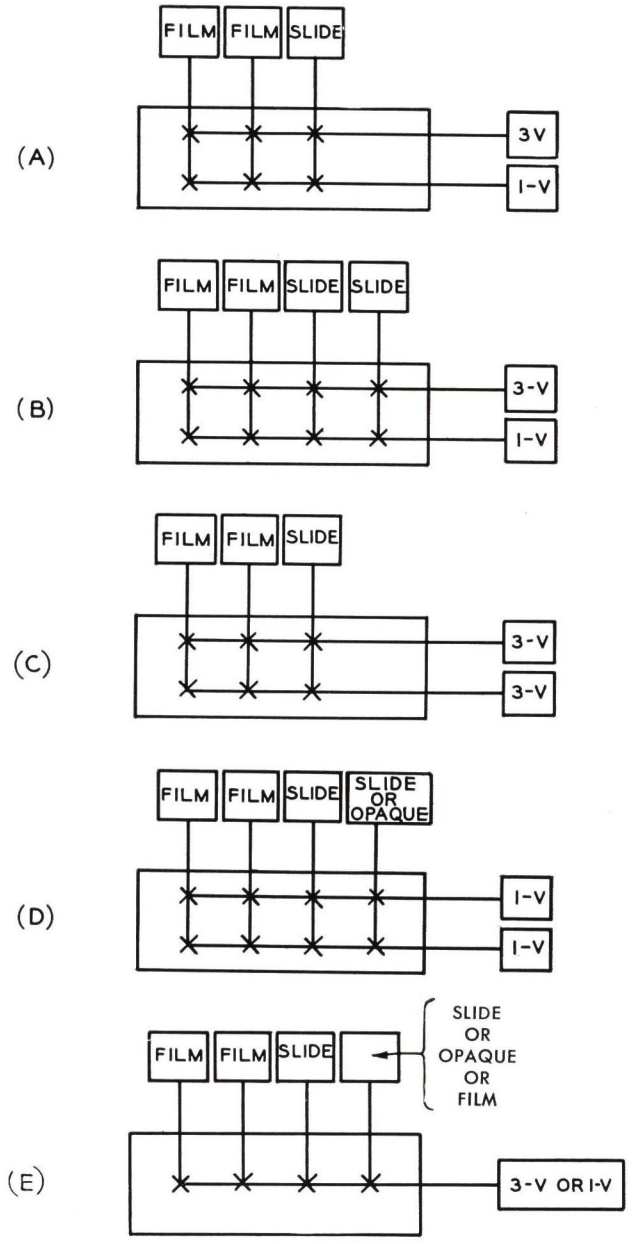


Diagram of possible arrangement of 3-Vidicon, monochrome cameras, and film, slide, or opaque Inputs with TP-15 Universal Multiplexer.

DESCRIPTION

The Type TP-15 Universal Multiplexer consists of a Multiplexer unit, MI-40015, set of mirrors, MI-40114, and a basic control panel, MI-40025, together with a 24-volt d-c power supply, power supply shelf and panel. Four moveable mirrors are used to establish a desired light path between a projector and a Vidicon camera. Each mirror is driven by a reversible motor and a limited travel geneva mechanism. The use of moveable mirrors permit the utilization of the film equipment for maximum program efficiency. Either of two film projectors (16mm or 35mm) or two slide projectors may be switched to either of two multiplexer outputs. The multiplexer base includes mounting space for a local control panel. For ease of assembly and service the control panel and the associated control circuits are mounted on a vertical chassis which is supported by a pair of drawer slides to permit withdrawal for service without disturbing the remainder of the system.

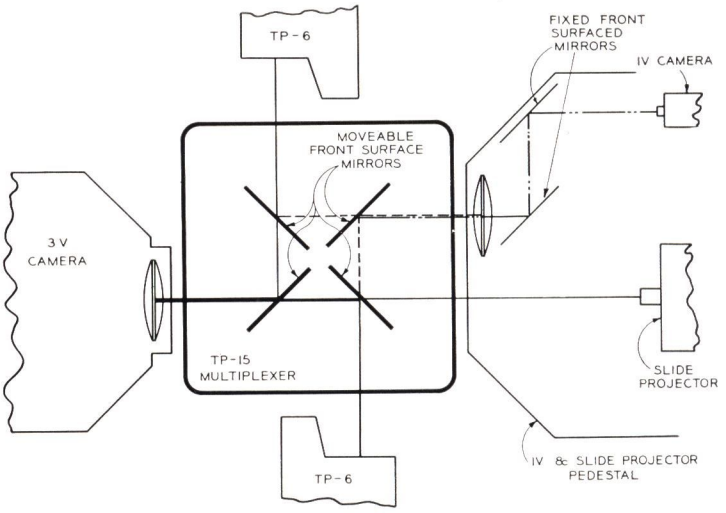
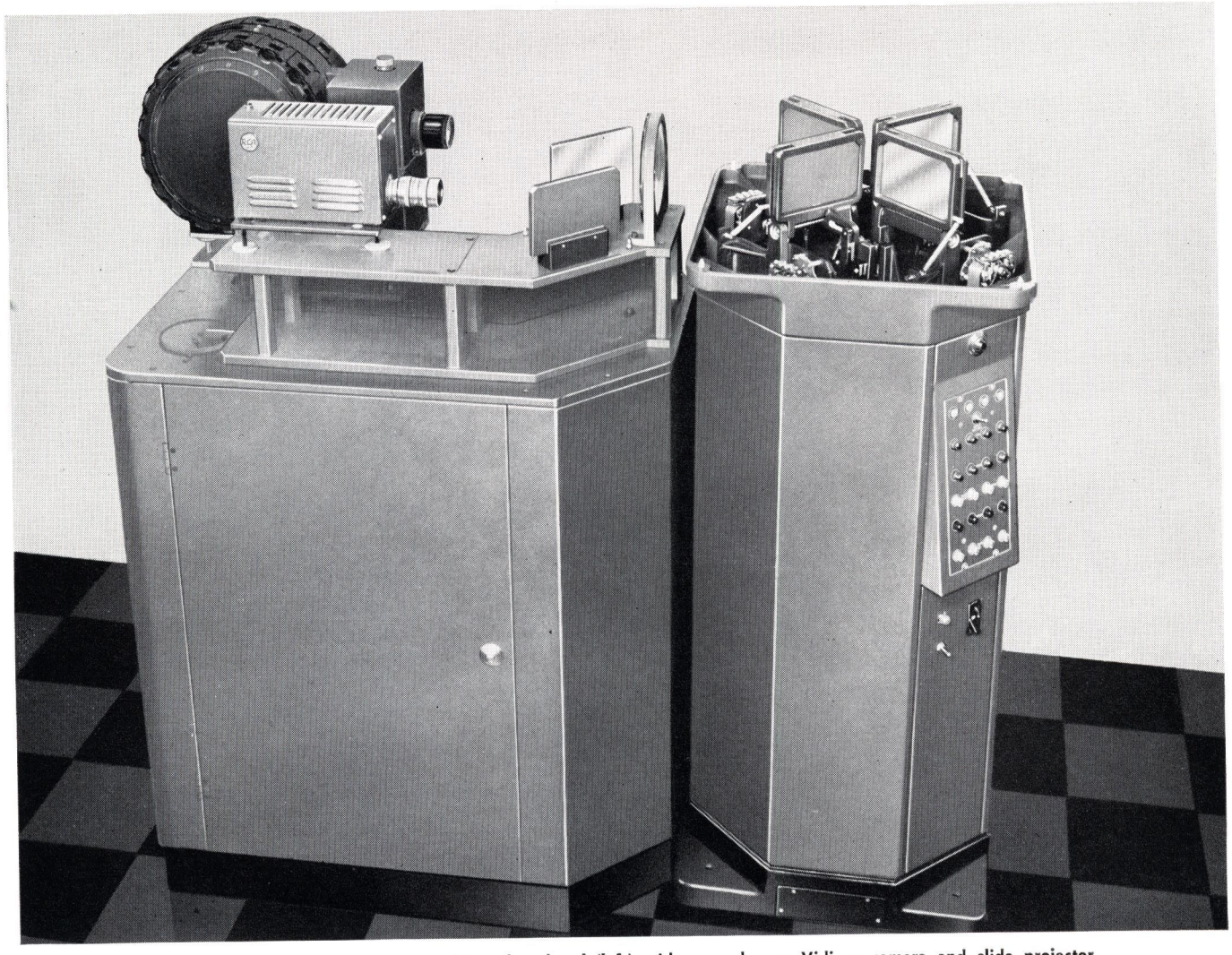
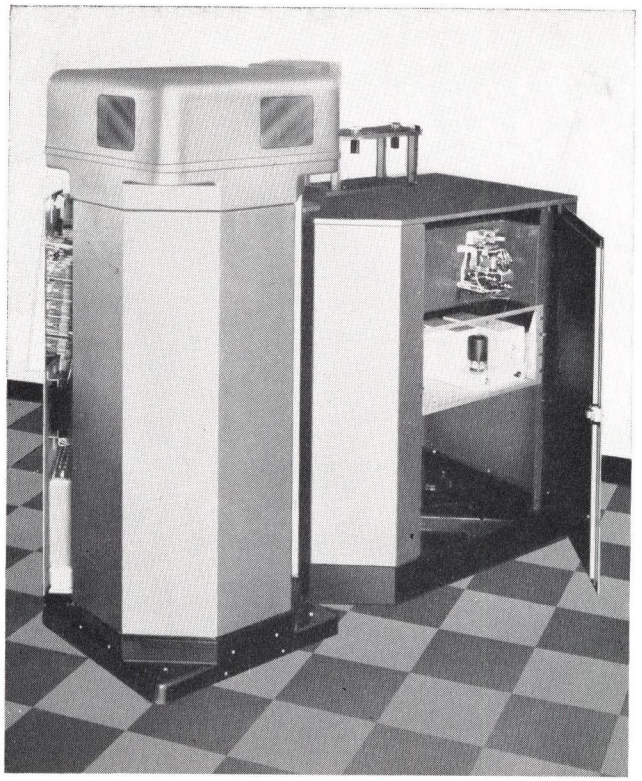


Diagram of light paths between cameras and projectors made possible by TP-15 Multiplexer.



View showing TP-15 Multiplexer (right) and pedestal (left) with monochrome Vidicon camera and slide projector mounted on adjustable bases. Light-tight, dust-free covers have been removed to reveal the entire optical assembly.



Accessibility of control panel and associated circuits for servicing and large storage cabinet in pedestal are features of TP-15 Universal Multiplexer. Shelf space in pedestal is equivalent to 3 feet of standard rack space.

A group of accessory items consisting of a pedestal, optical assembly, set of mirrors and a field lens are required when a TK-21 series Monochrome Film Camera is used with the TP-15 Universal Multiplexer. The pedestal provides mounting for a 1-V camera and a slide projector, and includes 36 inches of rack space to mount such units as a 24-volt d-c power supply, control box for slide projectors or other associated equipment. The optical assembly includes a camera mount that incorporates vernier adjustment for accurate alignment. The mirrors and field lens are mounted on an adjustable bench plate which is covered for protection from stray light and dust. The rugged construction of the entire unit assures stability of operation.

Control panels are available to meet a variety of system requirements. The Basic Control Panel provides all facilities for starting, stopping, still projection, slide change and the delegation of any projector to any multiplexer output. This panel may be used at the multiplexer for local control or at a remote location or both. The Auxiliary Control Panel provides limited control of two projectors and two multiplexer outputs at the multiplexer. Since the operator stands beside the third projector when using this panel he has direct control of this projector. The Auxiliary Control Panel mounts on the multiplexer base opposite the Basic Control Panel and allows convenient access to controls from either side of the multiplexer.

The MI-40103 Control Panel is used at the camera control position to provide control of 4 individual Neutral Density Light Control Units. Tally lights on this panel are connected to the TP-15 Multiplexer for proper indication of camera and projector operation. Auxiliary switching voltages are available from the TP-15 Multiplexer which may be used to automatically switch audio when the multiplexer is used to switch video.

When ordering, it is necessary to specify the desired control panels as well as bulk cables, field lens and type of cover for the TP-15 Multiplexer. Covers are available for accommodating either two 1-V cameras, two 3-V cameras, or one monochrome and one color Vidicon camera.

SPECIFICATIONS

Multiplex Inputs	Three or four
Multiplex Outputs	Two
Projectors Accommodated	2 film (16mm or 35mm), 2 slide
Control	Local or remote
Mirrors (Four)	Three front surface, 1 dual surface
Motors (Four)	115 volts, 60-cycle, geared type, gear ratio 29.5:1
Power Requirements	110 volts, 60-cycle, single-phase, and 24 volts d-c
Dimensions	60" long, 54" high, 20" wide
Weight	350 lbs. (approx.)
Finish	Dark umber gray

Ordering Information

TP-15 Universal Multiplexer Consisting of the following:

1	Multiplexer Unit	MI-40015
1	Set of Mirrors (for MI-40015)	MI-40114
1	Basic Control Panel (for local or remote operation)	MI-40025
1	Power Supply (24 volt, d-c)	MI-11316
1	Shelf (for power supply)	MI-11599
1	Panel (for power supply)	MI-11598-B

Optional or Accessory Equipment

Equipment required for mounting TK-21 series Monochrome camera and slide projector:

Pedestal	MI-40115
Optical Assembly	MI-40116
Set of Mirrors (for optical assembly)	MI-40113

(NOTE: When two TK-21 Series monochrome cameras are to be used order two of each of the above items and one Dual Surface Mirror, Stock #217782 for use in the Multiplexer Unit, MI-40015.)

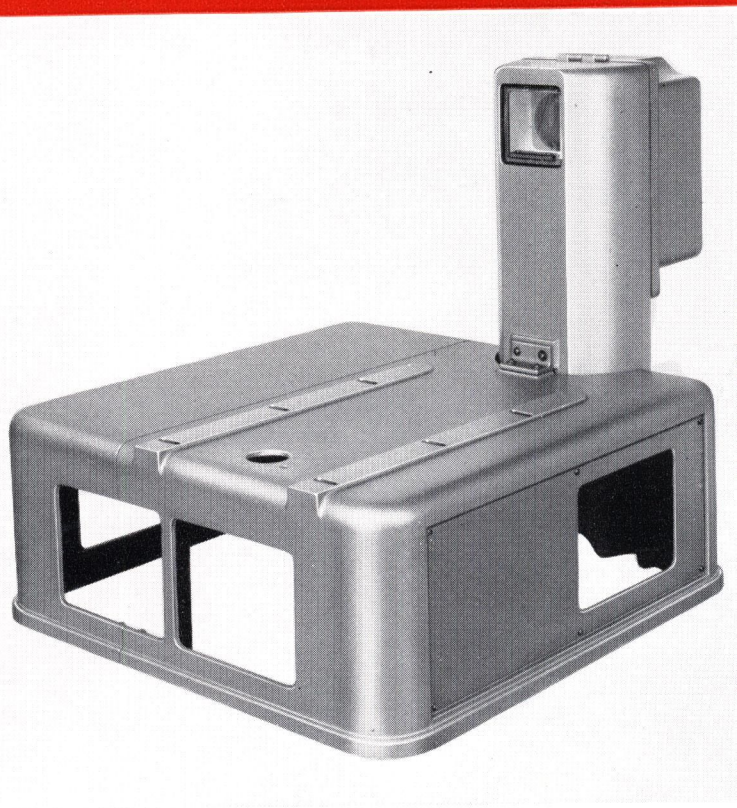
Field Lens for TK-21 camera (Order one for each camera used in system)	
Field Lens (3.14 diopter, for use when TP-15 is not used with Type TP-16 projector)	MI-40859-3
Field Lens (2.79 diopter, for use when TP-15 is used with Type TP-16 projector)	MI-40859-4
TP-15 Multiplexer Cover (select one of the following types)	
Standard Cover (for 3 inputs, 1-V and 3-V output)	MI-40119
Cover for Dual 1-V Monochrome System (four inputs, two 1-V outputs)	MI-40120
Auxiliary Cover and Periscope (four inputs, 1-V and 3-V outputs, mount for slide projector on cover)	MI-40117
Control Panels (select as required)	
Basic Control Panel (for local or remote operation)	MI-40025
Auxiliary Control Panel (provides control of two projectors and two multiplexer outputs at multiplexer. MI-40025 must also be used at multiplexer)	MI-40024
Control Panel for Projection Light Control (4 controls)	MI-40103
Console Housing (for Mounting Panels MI-40025 and MI-40103)	MI-26786
Adaptor (for Mounting Panels MI-40103-40025 in console housing)	MI-26252
Bulk Cable (order as required; connectors are supplied with MI-40015 Multiplexer):	
33 Conductor Cable (for basic control panel)	MI-13320
12 Conductor Cable (for film projectors and basic control panel)	MI-13380-12
8 Conductor Cable (for film and slide projectors)	MI-13380-8
2 Conductor Cable, shielded (for light control)	MI-13307

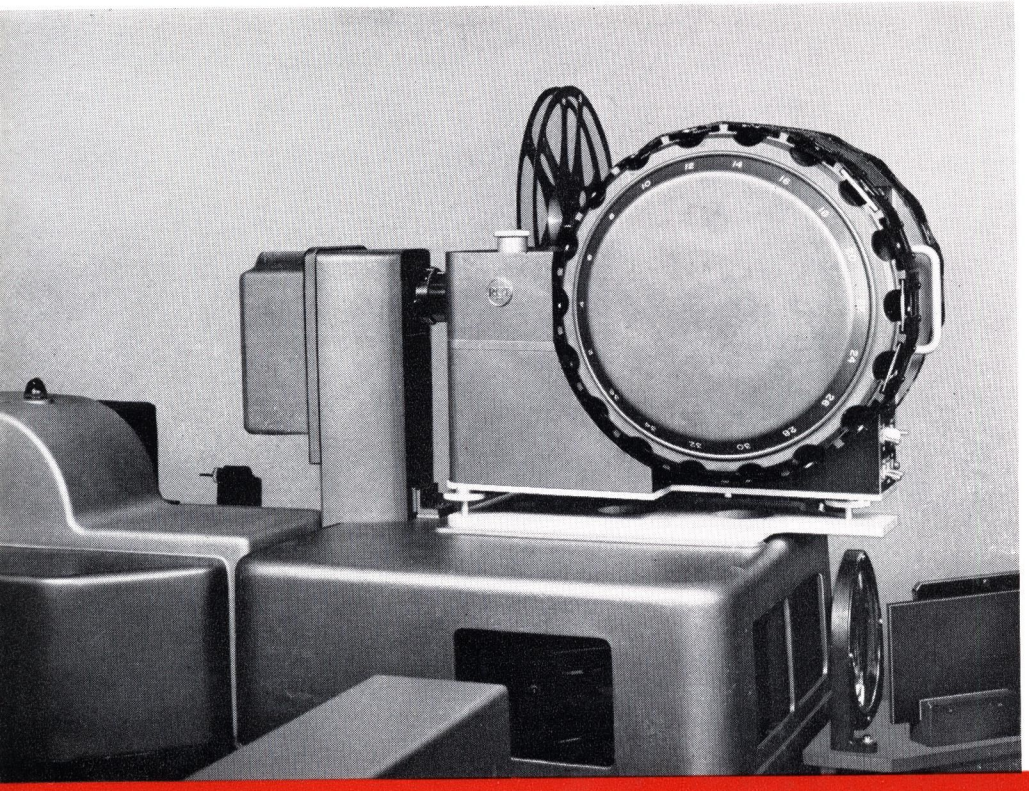
Auxiliary Cover and Periscope

MI-40117

FEATURES

- Adds additional input position to TP-15 Multiplexer by allowing a slide projector to be mounted atop TP-15
- Provides rugged steady support for slide projectors
- Optional light control (manual or automatic) to compensate for variations in slide densities
- Designed for field installation with minimum of effort
- Provisions for servicing or cleaning multiplexer without disturbing alignment of periscope and slide projector
- Utilizes precision optical parts





USES

The MI-40117 Auxiliary Cover and Periscope provides an additional input position to the Type TP-15 Multiplexer. This additional input will accommodate a slide projector such as the RCA Type TP-7A. By offering this added input the periscope provides a degree of flexibility in a color TV chain hitherto unattainable.

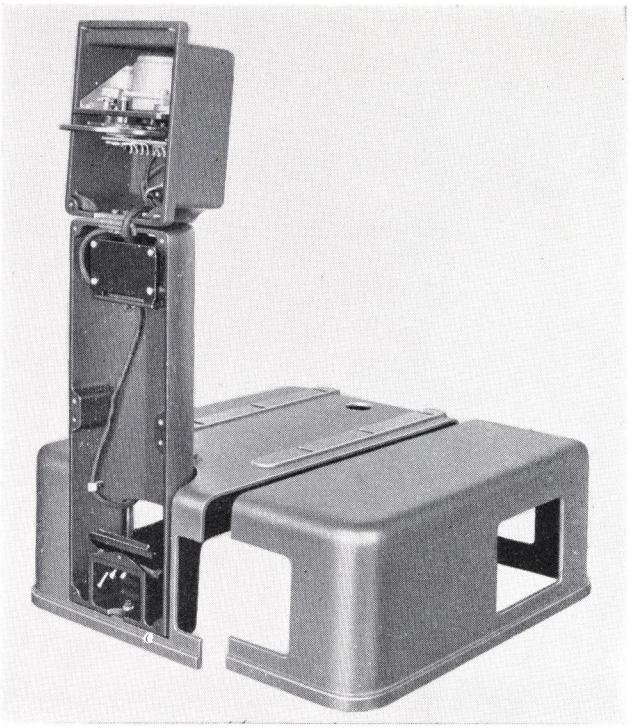
Auxiliary Cover and Periscope mounted on TP-15 Multiplexer provides additional input for a slide projector.

DESCRIPTION

The MI-40117 Auxiliary Cover and Periscope for the Type TP-15 Multiplexer consists of four sturdy aluminum castings providing a convenient mounting for both a slide projector and periscope lens system. The periscope utilizes quality optical parts consisting of a 2½ by 2½-inch right angle prism and front surface optical flat mirror measuring 3½ by 3½ by 3¼ inches set in an adjustable mount for alignment purposes. The mirror can easily be moved through several planes by means of screw-driver adjustments for correct alignment with the Slide Projector.

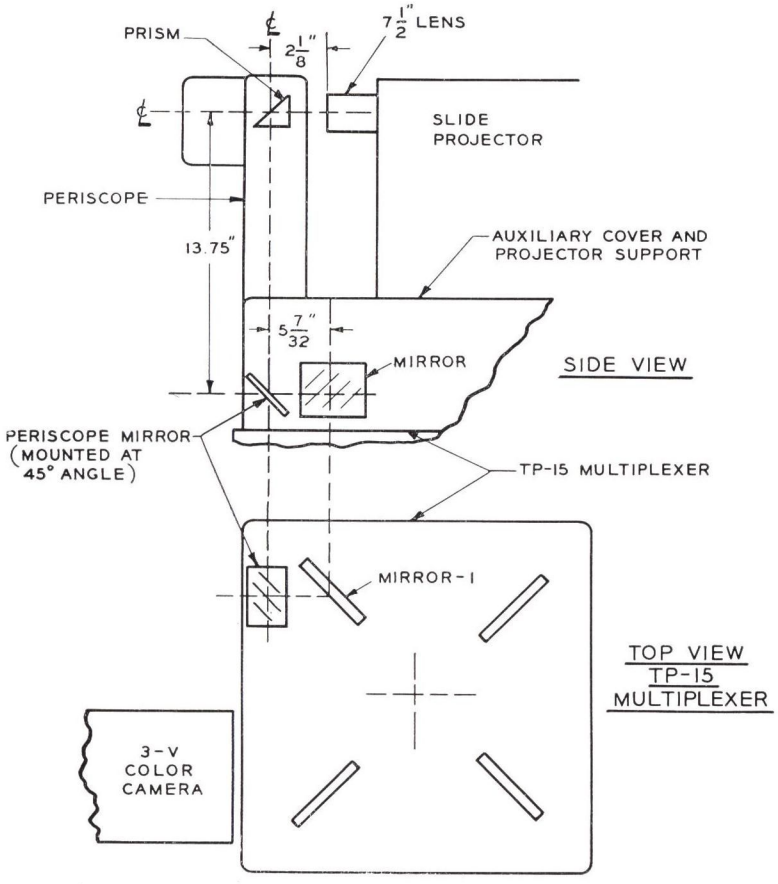
When assembled, the periscope measures 19 3/5 inches high, 5⅝ inches wide, and 7⅜ inches deep. It has provisions for mounting an optional MI-40118 Light Control by means of cantilever type brackets directly within the casing. The optional equipment makes its possible to compensate for variations in slide densities.

The auxiliary cover for the TP-15 Multiplexer measures 20¼ inches square and 8 inches high. Both periscope and slide projector are easily mounted on the cover by means of base bolts. The cover is divided so that routine cleaning and servicing of the multiplexer can be made without disturbing the alignment of the periscope and slide projector.



Light Control, MI-40118, shown mounted in the TP-15 Auxiliary Cover and Periscope.

Schematic showing optical path of Auxiliary Cover and Periscope.



When both halves of the cover are required to be removed for major changes in the multiplexer, locating pins are included so that the prism and projector may be kept in alignment. The equipment is finished deep umber gray metallic to match the finish of the TP-15 Multiplexer.

The MI-40118 Light Control and pilot lamp assembly is accommodated in the hinged periscope section while the amplifier assembly should be mounted in any convenient location such as the pedestal base of the multiplexer. During manual operation it is necessary to adjust only the light control potentiometer to obtain the desired light level.

The control's servo amplifier has power requirements of 105-125 volts, a-c, 50/60 cycles, single phase, 3 amperes, and the amplifier employs two 12AX7 and two 12AU7 tubes.

SPECIFICATIONS

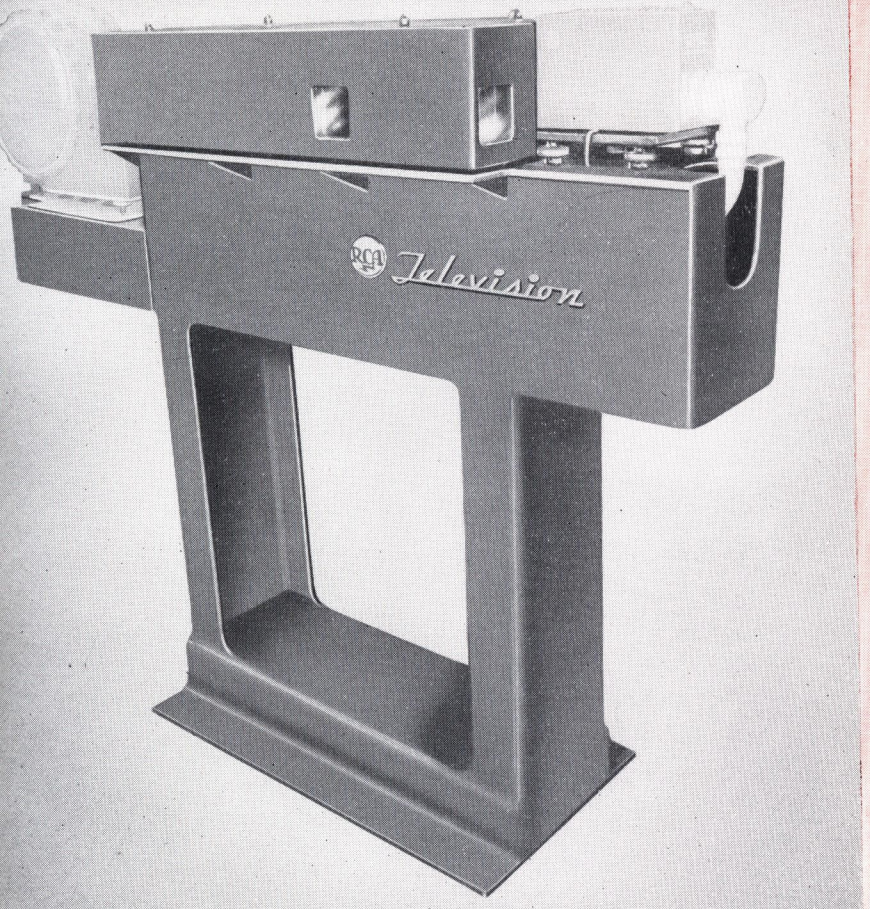
Prism	2½" x 2½" right angle
Mirror	Adjustable, 3½" square
Periscope Dimensions	19 3/5" high, 5⅝" wide, 7⅜" deep
Periscope Height (Max. from floor)	73 13/16"
Auxiliary Cover	20¼" x 20¼" x 8" high
Finish	Deep umber gray metalic
Weight (Periscope and Cover)	40 lbs. (approx.)
Stock Identification	MI-40117

Accessory Equipment

Light Control	MI-40118
Neutral Density Filter Wheel	MI-40105
2-Conductor Cable	MI-13307
8-Conductor Cable	MI-13380-8

Monochrome Multiplexer

TYPE TP-11C



FEATURES

- Three inputs—two film projectors, one slide projector.
- Opaque input accessory (4th input)
- Vidicon camera and slide projector mount directly to multiplexer
- Precision optics and beam splitting prisms maintain "live" picture quality
- Rugged construction for stability of operation
- Light-tight and dust-free
- Remote control of opaque input changeover mechanism

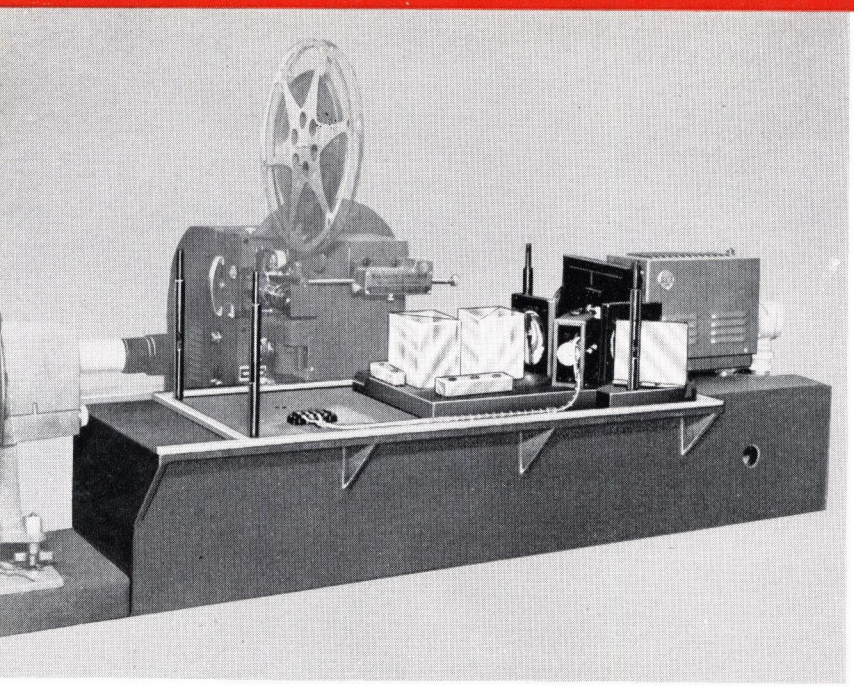
USES

The TP-11C Monochrome Multiplexer is designed to provide multiple picture inputs for a single TK-21 Vidicon Film Camera. The unit can reflect images from two 16mm or 35mm film projectors and one slide projector. A fourth input accessory, MI-26352 is available as an accessory kit and will provide the neceessary facilities required to add an additional input to the TP-11C Multiplexer. The fourth input may be either an opaque projector or the opaque pick-up assembly, MI-40104-B, which is capable of handling both art work and product displays including live action within a limited area. Where desired, a second slide projector may be substituted for the opaque equipment. The TP-11C permits greater operational simplicity by eliminating the number of operating controls that would be required if a separate vidicon camera were used for each projector, and greatly simplifies switching from one projector to another.

DESCRIPTION

The TP-11C Monochrome Multiplexer employs two beam-splitting cubes for transmitting and reflecting the images from three projector sources onto the photo-conductive surface of the vidicon camera tube. The use of these prisms permits the permanent arrangement of the film equipment for maximum program efficiency. Either of the two motion picture projectors or the slide projector may be switched on or off electrically while the prisms remain in a fixed position. A fourth input can be provided by an accessory kit, MI-26352. It accommodates external opaque projection equipment by providing a field lens and moving mirror assembly in the optical path. The mirror may be moved manually or electrically, by means of a solenoid.

The equipment is mounted on a rigid pedestal which is provided with two adjustable supporting shelves for leveling the vidicon camera and the slide projector. The prisms



Closeup of the optical system of the TP-11C Monochrome Multiplexer including optional fourth input for opaques. The optical system is completely covered by a housing to keep it light-tight and dust-free.

DESCRIPTION (cont'd)

and the field lenses are mounted on an adjustable optical bench plate which provides a means of leveling the optics. The complete optical system is covered so that it is light-tight and dust-free. The rugged construction of the entire unit assures stability of operation.

A remote control panel, MI-26256, may be ordered as accessory equipment in order to start, stop or still-project either of the motion picture projectors or the slide projector. The solenoid controlling the multiplexer's moving mirror assembly may be controlled from any convenient point by switching the 117-volt a-c power supply.

SPECIFICATIONS

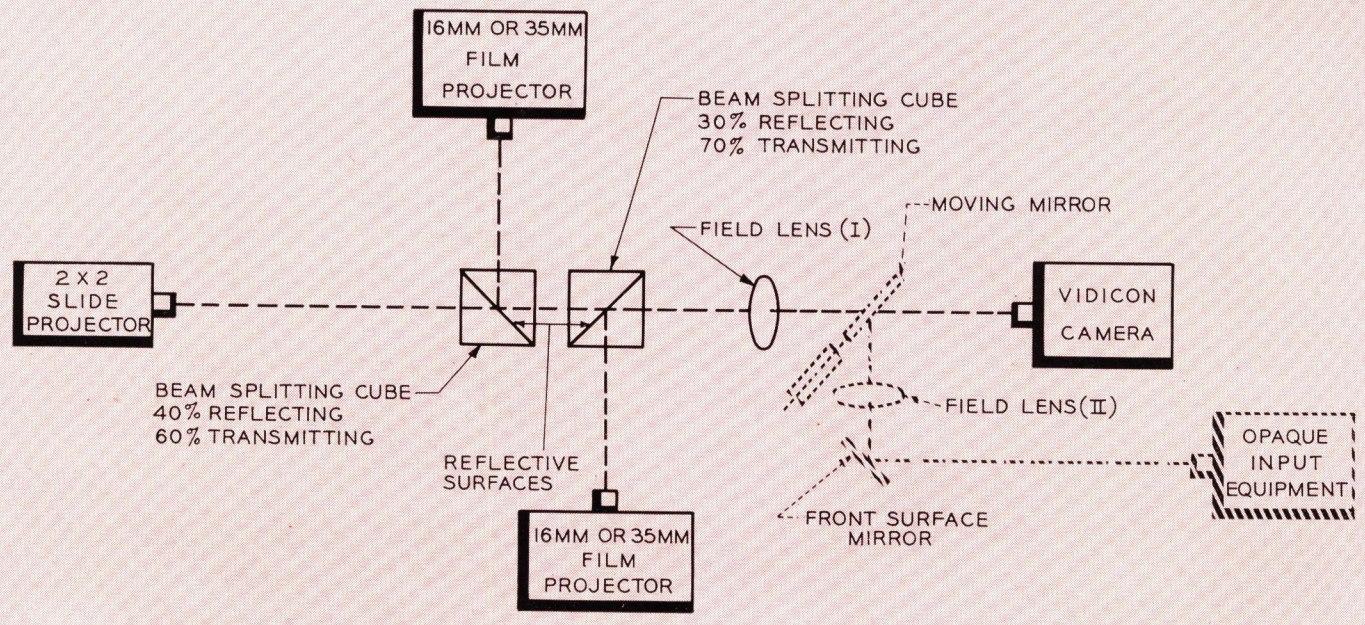
Voltage for Solenoid	117 volts, a-c, 60 cycles
Length	63⅝"
Height	56"
Width	18"
Optical Center Above Floor	48"
Weight	148 lbs.

Equipment Supplied

Type TP-11C Monochrome Multiplexer	MI-26328-C

Accessory Equipment

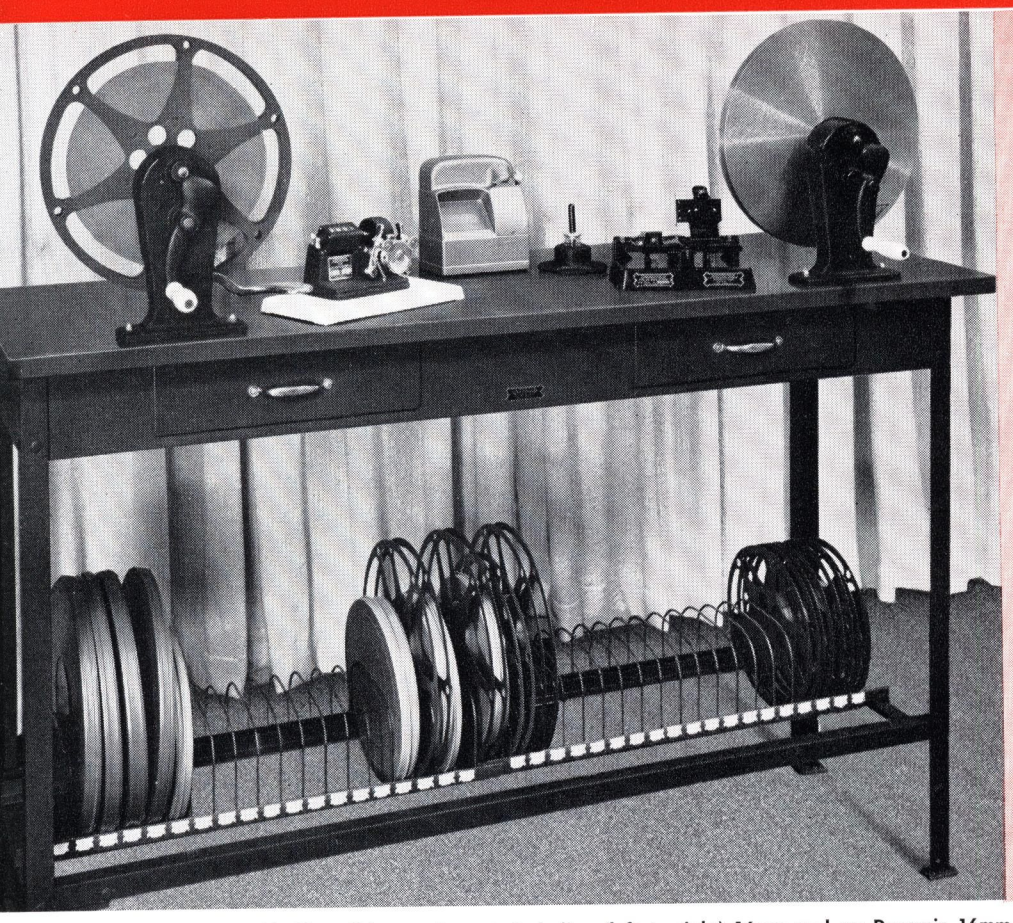
Prism Conversion Kit (for TP-11 and TP-11A Multiplexer)	MI-26801
Projector Changeover Panel	MI-26256
Fourth Input Accessory Kit	MI-26352



Block diagram showing optical alignment of components of a Vidicon Film System incorporating the TP-11C Monochrome Multiplexer with optional opaque input accessory kit comprising moving mirror, second field lens, and front surface mirror.

TV Film Accessory Equipment

FOR 16mm PROGRAMMING



Editing Table with film editing equipment, including (left to right) 16mm reel on Dynamic 16mm Rewind, Model HM-5-S Footage Counter, Baia Viewer, AS-16 Cement Applicator Set, Model R-3 16mm Film Splicer, and Model DAF-26 14-inch Flange on Rewind; below are large and small 16mm Film Reels and Cans in film storage rack.

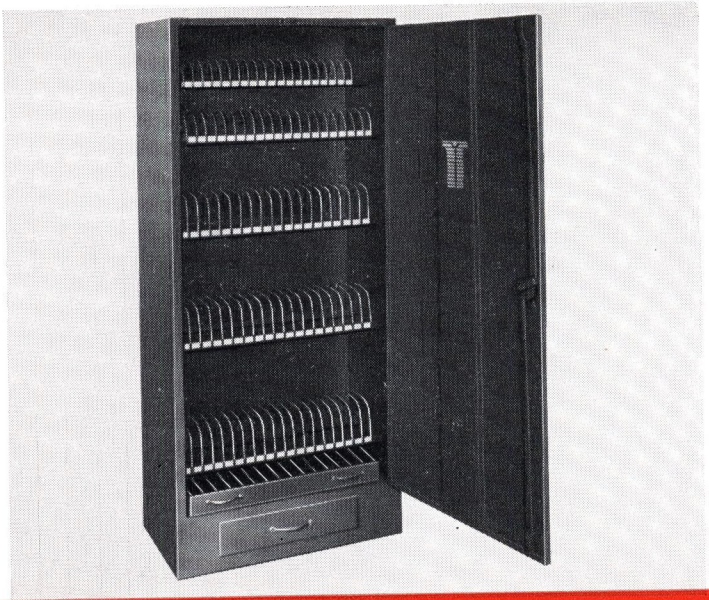
FEATURES

- Complete facilities for film handling and editing
- Enables "last-minute", "hurry-up" changes
- Ample, orderly storage
- Provides protection from fire and dust
- Precision made and trouble-free for dependability when needed

USES

Television broadcasters, through one source, can now obtain from RCA a complete line of "Neumade" film accessory equipment. These film accessories are designed and selected to accommodate practically every editing and film handling need. Individual TV station requirements will vary somewhat, however, practically every telecaster will find that film is forming an increasingly vital part of the overall program structure. Many TV stations, because of expanded programming will find a need to enlarge facilities. Equipment available includes film splicers, rewinds, viewers, measuring machine, editing tables, storage cabinets, reels and cans. Each may contribute to increased efficiency.

Film Storage Rack, MM-119.



FILM STORAGE RACK, MODEL RK-200 ▲

The RK-200 film storage rack provides space for storing film after it has been aired. This model is especially designed to schedule a one week supply of film, and may be located in the projection room, where it will always be handy for the projectionist.

The capacity of the RK-200 is 100-400 foot 16mm reels, and 100 of 800 foot, 1200 foot, or 1600 foot reels. Three tiers above handle 400 foot reels and the three below accommodate the larger reels. Reinforced with cross braces front and back, the RK-200 is drilled for mounting to wall or another unit. Overall size is 48 inches wide, 72 inches high and 16 inches deep.

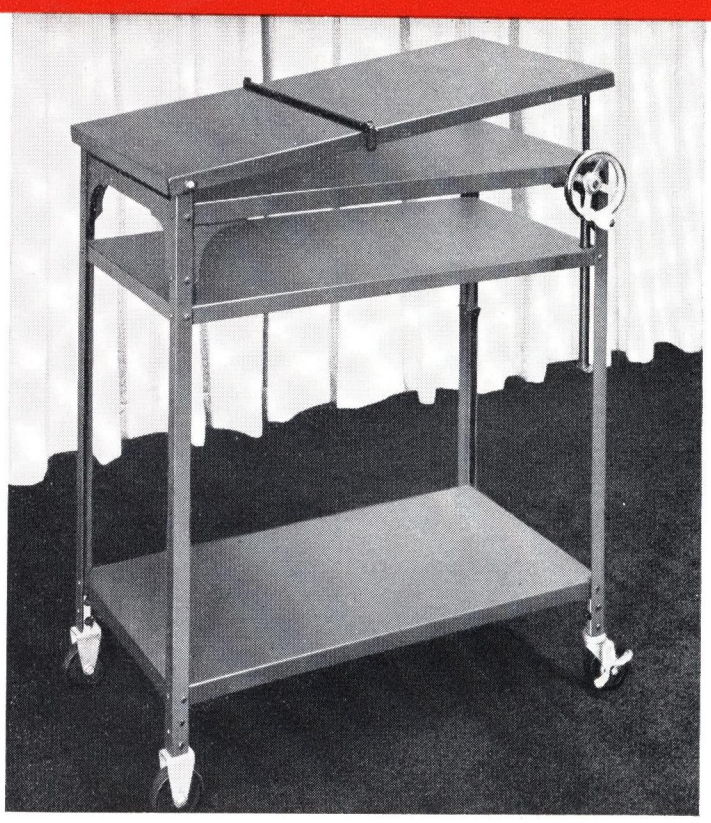
FILM STORAGE RACK, MODEL MM-119

Clean and orderly storage facilities are vitally important to the TV broadcaster. This filing equipment is a valuable addition to any projection room and protects costly films against damage.

The Neumade Model MM-119 Film Rack permits storage of a varied film library. Individual indexes are provided for reel spaces plus a master index. The door has a key lock and three point latching device. Overall size is 70 inches high, 30 inches wide and 16 inches deep. Capacity is 40-400 foot reels, 20-800 foot reels, 20-1200 foot reels and 20-1600 foot reels. A total of 100 filmstrip cans are accommodated. A utility drawer is supplied in base of cabinet.

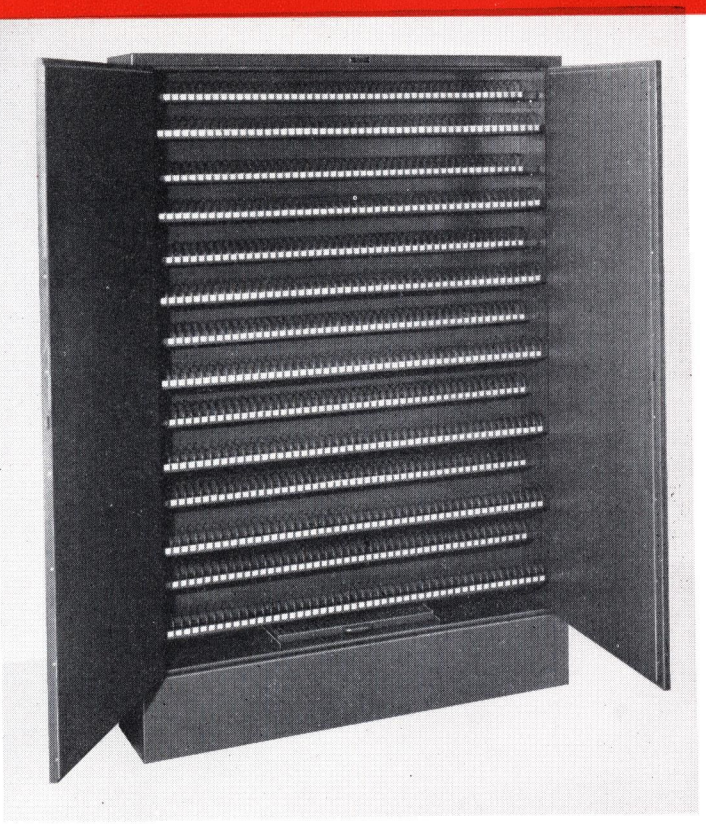
REEL RACK ROLLER TRUCK, MODEL RRT-3 ▶

This handy cart transports daily film from storage to the projection room. When film has been aired it may thus be returned to storage, without the burden of many trips needed when carried by hand. Large, rubber-covered ball bearing wheels (3-inch diam.). Overall size: 30 inches high, 30 inches wide, 9 inches deep.



PROJECTION TABLE, MODEL T-134C ▲

Ideal for audition rooms of TV studios, or where the projector is not in permanent position. Table is sturdily built, non-vibrating, heavy gauge steel. Large rubber covered, ball-bearing casters (2 swivel—2 stationary) permits easy transport. Lower utility shelf provides clearance for speaker of all leading 16mm projectors. Top tilts by hand-driven spiral gears to any height to 10-inch rise. Adjustable bar prevents machine slipping. Finish: olive-gray baked enamel. Overall size: 30 inches long, 16 inches wide, 36 inches high.



COMMERCIAL SPOT STORAGE CABINET, MODEL MM-180-16

Neumade all-steel cabinets provide maximum storage facilities in a minimum of space. The Model MM-180-16 is an ideal storage cabinet for spot commercials, with a capacity of 625 one-hundred foot 16mm film reels. Each may be housed in its own division with individual index card. Provision has been made for a master index. A humidor tray on the bottom prevents films from drying out over long periods of time. Double doors with key lock as well as a three-point latching device are provided. The cabinet dimensions are 72 inches high, 48 inches wide, and 11 inches deep overall.

LARGE FILM CABINET, MM-216

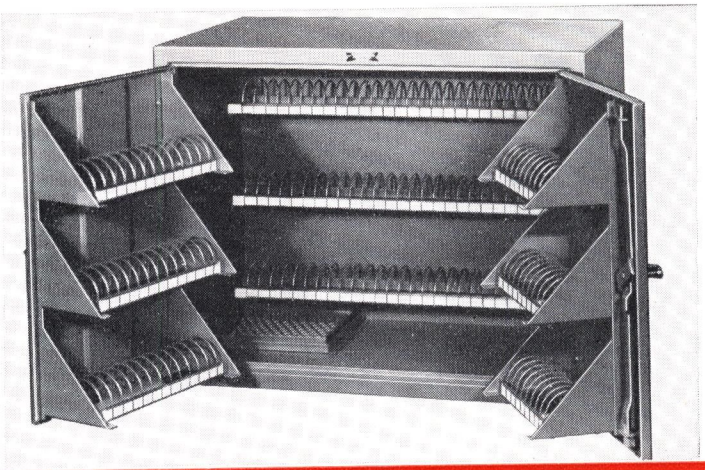
For larger film libraries the MM-216 Cabinet (not shown) is available. It holds up to 200 reels of 800, 1200 or 1600 foot length without cans. The reels may be individually indexed and also master indexed. The cabinet is 90 inches high, 47 inches wide, and 16 inches deep overall. For housing reels in cans, the Model MM-216-C should be specified. Its capacity is 160 reels in cans up to the 1600 foot size.

STEEL SLIDE CABINETS, MODELS SF-5 & SF-5S

TV shows require frequent slide changes and Neumade cabinets shown provide the storage needs. Heavy gauge cabinets are fireproof, welded construction. Cabinet drawers have back stops and permit filing of 2 by 2-inch slides in orderly fashion. Two models available are identical except for type drawer employed. Type SF-5 with five drawers accommodates 1250 slides or 2500 ready-mounts. Type SF-5S is identical but is blocked for sequence filing. Five drawers have 30 adjustable tabbed index dividers. Type SF-5S holds 2500 slides or 5000 ready-mounts. Size of both cabinets is 15 inches wide, 12 inches deep and 13 inches high.

FILM FILING CABINET, MODEL MM-12

Here is a cabinet for bulk storage of "spots" that offers compact design, yet large capacity, to provide maximum utilization of limited space. Each cabinet holds 125 100′ or 200′ 16mm reels and is equipped with double doors with key lock and three point latch. May be stacked like sectional bookcases to provide additional space. Overall size: 29 inches wide, 22 inches high, 17 inches deep.



16mm FILM SPLICER, MODEL R-3

A sturdy, heavy duty precision built splicer for professional use, exactly duplicating the famous Griswold 35mm model. With the Griswold Model R-3, 16mm sound film need never be "looped around" to splice and either sound or silent can be handled. The splices formed are clean, solid, and square—and stronger than the film itself.

The Griswold Model R-3 is supplied with scraper holder, 3 scraper blades, felt moistener, and complete instructions. The splicer is available in two different overlaps, 1/10-inch for positive—1/16-inch for negative. Overall size of the splicer is 5¼ by 8⅜ by 3⅜ inches.

16mm REWINDS

Neumade rewinds have long been popular because they are highly efficient and designed to give many long years of top service.

Precision ball bearings, machine cut steel gears, 3 point base, 4 to 1 gear ratio, streamlined sturdy gray iron cast housings plus brake arm on left hand unit contribute to efficiency and durability. Finished in fine black crystal morocco with bright yellow, extra full grip handles.

MOTOR REWIND, MODEL PD-1

TV projectionists will find that these motor driven rewinds save rewinding and inspecting time. Includes ball bearing, motor driven rewinder, with variable six position speed control for foot or hand operation.

16mm BAIA VIEWER

The Baia Viewer is used for "quick" editing and is very handy for previewing short sequences, interchanging spots and checking continuity of film strip or show. Has self-threading film track which eliminates sprockets or rollers. Picture is seen in motion on 2¼ by 3-inch ground glass screen. Ventilated low wattage bulb used which prevents film buckling.

EDITING TABLE, MODEL T-20

Neumade Editing table designed specifically for film work. The overall size is 42 inches long, 28 inches wide and 30 inches high.

FOOTAGE COUNTER, MODEL HM-5-S

With a Neumade measuring machine the TV broadcaster can be assured of proper timing. It is equipped with precision cut gears and a patented counter. Sprocket hubs have teeth on one side only for silent or sound.

16mm REELS

Every well equipped TV studio needs an assortment of sizes of reels in flat steel as well as small plastic reels. These reels are perfectly rigid with just the right "give." They are true running—with perfect alignment. Finished with durable baked enamel. Sizes available for 400, 800, 1200, 1600 and 2000 feet.

16mm FLANGES, MODEL DAF-26

TV station operators will find these a necessary item for transferring incoming film from spools to reels. They are smooth running, lightweight and very long lasting. All flanges are fabricated with Duralumin sides and brass hubs. Each has a removable key in the hub to engage bakelite cores.

CEMENT APPLICATOR SET, MODEL AS-16

This handy applicator set insures that film cement is always sealed when not in use and prevents spilling, wasting and deteriorating the cement. Specially designed glass bottle spring dipped into heavy cast base. Aluminum disc lays flat on bottle to keep it air-tight. Fluted brass applicator through disc deposits cement quickly and evenly.

FIBER SHIPPING CASES

These sturdy cartons are a "must" for proper shipment of film. They have steel trunk corners, full telescope covers, 1" web straps with non-slip buckle, and a patented "Neu-Clip" metal holder with 2 reversible address cards. Large sizes have full-grip cowhide handle. All cases available in sizes for 400, 800, 1200, 1600 and 2000-foot reels, with capacity of from one to four reels per case.

LARGE 16mm STEEL CANS

These perfectly fitting cans are invaluable for protecting film from dust, abrasion, and atmospheric conditions. Both edges as well as top and bottom are ribbed for extra strength and rigidity. Sizes available for 800, 1200, 1600 and 2000-foot reels.

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RCA BROADCAST SALES OFFICES

Atlanta 3, Ga.
134 Peach Tree Street, N. W., Jackson 4-7703

Boston 16, Mass.
200 Berkeley Street, Hubbard 2-5765

Camden 2, N. J.
Front & Cooper Streets, Woodlawn 3-8000

Charlotte 4, N. C.
504 Charlottetown Mall, 333-3996

Chicago 54, Ill.
2000 Merchandise Mart Plaza, 467-5900

Cleveland 15, Ohio
1600 Keith Bldg., Cherry 1-3450

Dallas 35, Texas
7901 Carpenter Freeway, Melrose 1-3050

Detroit 39, Mich.
12605 Arnold Street, Kenwood 4-5100

Hollywood 28, Calif.
1560 N. Vine Street, Hollywood 9-2154

Indianapolis, Ind.
501 N. LaSalle Street, Melrose 6-5321

Kansas City 15, Mo.
7711 State Line Road, Emerson 1-6770

New York 20, N. Y.
36 W. 49th Street, Judson 6-3800

Paterson, N. J.
495 E. 30th Street, Mulberry 4-0972

Portland 12, Ore.
1841 N.E. Couch Street, Belmont 4-7297

San Francisco 2, Calif.
420 Taylor Street, Ordway 3-8027

Seattle 4, Wash.
2250 First Avenue, S., Main 2-8350

Washington, D. C.
1725 K Street, N.W., Federal 7-8500

THE MOST TRUSTED NAME IN TELEVISION

Radio Corporation of America • Broadcast & Television Division

Camden, New Jersey

TV-101261

Printed in U.S.A.

PRICE LIST

FOR

Television Tape and Film Equipment

PRICES EFFECTIVE OCTOBER 1, 1964

Broadcast and Communications Products Division
Radio Corporation of America
Camden 2, N. J.

ORDERING INFORMATION

RCA broadcast equipment is sold directly to broadcast stations through the Broadcast Sales Representatives operating out of the convenient sales offices listed below. These Broadcast specialists are available to assist you in discussing the application of broadcast equipment.

In ordering equipment, please indicate the Master Item (MI) number for each equipment. This will help us to speed the shipment to you. You will find the Master Item (MI) numbers are used to identify the equipment on the invoices and packing slips.

The Purchaser shall be responsible for all transportation charges, and shipments will normally be forwarded with shipping charges "collect." However, shipping charges can be prepaid and added to the billing invoice if your purchase order authorizes this method. We suggest that you consider the latter procedure since it eliminates the necessity of having petty cash on hand at the time of delivery. Your purchase order should specify the method of transportation desired, otherwise RCA will use its best judgment. The cheapest method of transporation is not always used as this may not always result in the most rapid delivery. Certain items, such as vacuum tubes, are usually shipped by Express because of the design of carrying container, insurance, etc.

Sales Offices

Front & Cooper Streets
CAMDEN 2, NEW JERSEY
Woodlawn 3-8000

1121 Rhodes-Haverty Building
ATLANTA 3, GEORGIA
524-7703

4605 Laurel Canyon Drive
AUSTIN, TEXAS
Glendale 3-8233

2700 W. Olive Street
BURBANK, CALIFORNIA
849-6741

504 Charlottetown Mall
CHARLOTTE 4, NORTH CAROLINA
333-3996

2000 Merchandise Mart Plaza
CHICAGO 54, ILLINOIS
467-5900

1600 Keith Building
CLEVELAND 15, OHIO
Cherry 1-3450

7901 Carpenter Freeway
DALLAS 35, TEXAS
Melrose 1-3050

Dedham Office Park
886 Washington Street
DEDHAM, MASSACHUSETTS
Davis 6-8850

501 N. LaSalle Street
INDIANAPOLIS, INDIANA
Melrose 6-5321

7711 State Line Road
KANSAS CITY 15, MISSOURI
Emerson 3-6770

2110 Airways Blvd.
MEMPHIS, TENNESSEE
324-4434

5805 Excelsior Blvd., Suite A
MINNEAPOLIS, MINNESOTA
929-3033

36 West 49th Street
NEW YORK 20, NEW YORK
MU 9-7200

420 Taylor Street
SAN FRANCISCO 2, CALIFORNIA
Ordway 3-8027

2246 First Avenue, South
SEATTLE 4, WASHINGTON
Main 2-8350

Rm. A3-300, Southfield Office Plaza
SOUTHFIELD, MICHIGAN
357-0080

1725 K Street, N.W.
WASHINGTON 6, D. C.
Federal 7-8500

1645 S. Military Trail
WEST PALM BEACH, FLORIDA
683-2219

Price List for TV Tape and Film Equipment Catalog

(First Edition)

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NOTE: This is a U.S. Domestic Price List including prices of items designed for 115 volt, 60 cycle operation and for U.S. television scanning standards. Prices on equipment for foreign power and scanning standards are available upon request.

TAPE & FILM EQUIPMENT

TV TAPE EQUIPMENT

Catalog Page	MI Number	Type Number	Description	Price
5-18	ES-40991-B	TRT-1B	Television Tape Recorder (for monochrome and color operation, superseded by TR-22B)	Discontinued
*—	ES-35974	TR-22C	Transistor Tape Recorder	$62,500.00
*—	ES-35975	TR-22C1	Transistor Tape Recorder (Switchable Standards)	67,400.00
*—	ES-43570	TR-3	Transistor Tape Player	22,500.00
*—	ES-43571	TR-4	Transistor Tape Recorder	34,900.00
*—	ES-43565	—	Transportable Tape Recorder	24,500.00
—	ES-35994	—	Dual Speed Conversion Accessory for TR-22	3,950.00
8	40766-B	—	Color Accessory Rack	Discontinued
10	40760-B	—	Headwheel Panel Assembly	1,700.00
18	40226-D	TM-21D	Color Monitor (including kinescope)	3,390.00
18	21200-C1	—	Test Meter	85.00
19-24	ES-40908	TR-11	Compact TV Tape Recorder (superseded by TR-2)	Discontinued
—	ES-40981	TR-2	Universal TV Tape Recorder	Discontinued
24	26154	TM-35	Master Monitor (Portable)	1,375.00
24	35828	—	Master Erase Accessory (TR-11)	C/B On Request
25-26	ES-26992	—	Pixlock System	3,800.00
26	35825-A	—	Switchlock Accessory Equipment	1,300.00
26	35819-A	—	Linelock Accessory Equipment	2,500.00
27-34	—	—	Tape Accessories (for use with TRT-1 Series and TR-11 TV Tape Recorders)	
27	40790-A	—	Air Bearing Headwheel Assembly Complete in Carrying Case	1,950.00
27	40786-A	—	Air Bearing Conversion Kit for 60 Cycle Operation	725.00
28	40716-C	—	Remote Control Panel for TRT-1A	Discontinued
28	40716-D	—	Remote Control Panel for TRT-1B	Discontinued
28	40752	—	Remote Control Panel for TR-11	125.00
28	40788-A	—	Signal Remote Control Panel Kit	195.00
28	41600	—	Adjustable Module Extender for Proc. Amp./Pixlock/ATC	95.00
29	11992	—	Head Demagnetizer (Degausser)	Superseded by MI-11995
—	11995	—	Audio Head Degausser 110/50/60	22.50
29	10880	—	Automatic Magnetic Tape Eraser	1,295.00
30	—	—	Tape Storage Cabinets; Floor Cabinets	
30	—	VT-6-50	For 6-inch Reels Only	510.00
30	—	VT-8-50	For 6-inch, 6½-inch or 8-inch Reels	565.00
30	—	VT-12-30	For 12½-inch Reels	425.00
30	—	VT-14-30	For 14-inch Reels	460.00
30	—	—	Single 10 Compartment Fireproof Storage Cabinets:	
30	—	VT-6-10	For 6-inch Reels	85.00
30	—	VT-8-10	For 6½-inch Reels	95.00
30	—	VT-12-10	For 12½-inch Reels	120.00
30	—	VT-14-10	For 14-inch Reels	130.00
31	—	—	Video Tape Storage Racks; Cabinet Racks	
31	—	VT-806	For 6-inch Reels, Files 80 Reels	260.00
31	—	VT-708	For 6½-inch and 8-inch Reels, Files 70 Reels	250.00
31	—	VT-402	For 12½-inch Reels, Files 40 Reels	240.00
31	—	VT-304	For 14-inch reels, files 30 reels	245.00
31	—	—	Tape Racks:	
31	—	RVT-125-68	For 6-inch, 6½-inch and 8-inch Reels, Files 125 Reels on 7 Tiers	160.00
31	—	RVT-144-68	For 6-inch, 6½-inch and 8-inch Reels, Files 144 Reels on 8 Tiers	175.00
31	—	RVT-90-124	For 12½-inch and 14-inch Reels, Files 90 Reels on 5 Separator Racks	165.00
31	—	RVT-614	For All Size Reels	170.00

* Separate Catalog Sheets Available on request.

TV TAPE EQUIPMENT (Continued)

Catalog Page	MI Number	Type Number	Description	Price
31	—	—	Tape Rack Lengths:	
31	—	RVT-8	For 6-inch, 6½-inch and 8-inch Reels, Files 4 Reels per foot ... per ft.	$ 3.90
31	—	RVT-14	For 12½-inch and 14-inch Reels, Files 4 Reels per foot ... per ft.	4.90
32	—	—	TV Tape Reels	
32	40773	—	For 1650 feet of tape	Discontinued
32	40774	—	For 3600 feet of tape	Discontinued
32	40775	—	For 5540 feet of tape	Discontinued
32	40793	—	Alignment Tape for 525 line/60 cycle (mono.)	200.00
33-34	40772	—	Magnetic Tape Splicer (15 IPS)	1,250.00
33-34	40778	—	Mounting Shelf for Tape Splicer	95.00
33-34	Stock #222408	—	Tape Developer	3.35

FILM CAMERAS

35-42	—	TK-26C	3-Vidicon Color Film Camera Chain with Rack Mounting Control Equipment	39,060.00
35-42	—	TK-26C	3-Vidicon Color Film Camera Chain with Console Mounting Control Equipment	39,375.00
38	49859-5	—	Field Lens, 3.31 Diopter (supersedes MI-26669-3)	85.00
38	26669-3	—	Camera Lens (1.79-inch, f/1.5)	Discontinued
40	40415	—	Rack Mounting Desk (for Camera Control Panel)	370.00
41	40833-1	—	Gamma Corrector (0.7)	75.00
41	40833-2	—	Gamma Corrector (1.0)	30.00
41	40209-C	TX-1D	Colorplexer	2,875.00
41	40414	—	Aperture Compensator	300.00
41	40416-A	—	Automatic Carrier Balance	375.00
41	26084-B	WP-16B	Power Supply	865.00
41	26083-A	—	Centering Current Unit for WP-16B	100.00
41	ES-30951-D84	BR-84D	Cabinet Rack	200.00
42	40226-D	TM-21D	Color Monitor (including kinescope)	3,390.00
42	ES-26957-A	TM-6C	Master Monitor (including kinescope, CRO tube and blower)	1,785.00
42	26544	—	Sync Interlock Relay	10.00
42	26579-B	—	Blower (for TM-6C)	110.00
42	26526	—	Rack Mounting Adaptor (for TM-6C)	89.50
42	40408	—	Rack Extension Unit (for TM-6C)	85.00
42	40830	—	Fan Assembly for TK-26B	200.00
42	40846	—	Color Test Film	20.00
43-46	—	TK-21C	Vidicon Film Camera Chain (less lens and ASC)	Discontinued
43-46	26021-E	TK-21C	Vidicon Film Camera (less vidicon tube)	Discontinued
44	26061-C	—	Vidicon Control Chassis	Discontinued
45	26081-E	—	Vidicon Deflection Chassis	Discontinued
45	26241-B	—	Vidicon Remote Control Panel (Console Mounting)	Discontinued
45	26218-A	—	Vidicon Remote Control Panel (Rack Mounting)	Discontinued
46	26630	—	Camera Lens (1-inch, f/1.9) for use with TP-11 Multiplexer	Discontinued
46	26669-2	—	Camera Lens (2.04-inch f/1.5) for use with TP-15 Multiplexer	Discontinued
47-48	26191-A	—	Automatic Sensitivity Control	Discontinued
48	26193	—	Camera Modification Kit for ASC	Discontinued
*—	—	TK-27	Transistorized Color Film Camera Chain	51,900.00

FILM PROJECTORS

49-52	ES-26922-FC	TP-6FC	16mm TV Projector (less lens) for use with color or monochrome film system	Discontinued
49-52	ES-26922-FL	TP-6FL	16mm TV Projector (less lens) for use with monochrome film system	Discontinued
52	26636	—	4000-foot Reels	Discontinued

* Separate Catalog Sheets Available on request.

FILM PROJECTORS (Continued)

Catalog Page	MI Number	Type Number	Description	Price
52	26325	—	Lens, 3½-inch f/1.5	$ 375.00
52	26799-B	—	Lens, 2½-inch, f/2.6	190.00
52	26308	—	Spare Audio Preamplifier for TP-6E	Discontinued
53-54	ES-26930-G	TP-16G	16mm TV Film Projector	Discontinued
54	26322	—	Lens, 3½-inch, f/2.3	Discontinued
54	Stock #211580	—	Shutter for Long Application (for TP-16A thru E Series)	109.00
54	Stock #211581	—	Shutter for Long Application (for early TP-16F, MI-26125-E)	23.25
55	26368-B	—	Vidicon Camera Mounting Bracket and Lens Adaptor (for use with TK-21 and TP-6)	350.00
56	40110	—	Rapid Start Kit	Discontinued
57-58	26840-B	—	Automatic Cue Kit	Discontinued
57-58	Stock #225030	—	Conductive Foil, 60 yds	2.14
59-60	26595	—	Neutral Density Light Control for TP-6 Projectors	1,100.00
59-60	26798	—	Projector Light Control for TP-7 Projectors	890.00
59-60	40118	—	Projector Light Control for MI-40117 Periscope	1,190.00
60	40105	—	Neutral Density Filter Wheel	195.00
61	40103	—	Remote Light Control Panel	260.00
61	26252	—	Panel Adaptor (for mounting in console hood)	38.50
61	26832	—	Trim Frame (for mounting in console well)	21.00
62	26256	—	Projector Changeover Panel	300.00
62	26254	—	Cabinet Rack Mounting Adaptor	25.00
62	11729	—	Audio Switching Relay	14.90
63-64	35018-A	—	Portable Single Case Reverse Projector (supersedes MI-35007)	455.00
63-64	35008	—	Portable Double Case Projector	Discontinued
64	35014	—	Extra Speaker for MI-35018	66.00
65-66	35002-E	—	Portable Magnetic Sound 16mm Projector less Speaker	Discontinued
*—	—	TP-66	16mm TV Film Projector less lens	11,500.00
—	40166	—	Basic Control Panel for TP-66 Projector	300.00
—	ES-40940	—	Magnetic Sound System for TP-66 Projector	750.00
—	ES-40946	—	Light Control System for TP-66 Projector	1,100.00

SLIDE AND OPAQUE PROJECTORS

67-70	40011-B	TP-7B	Professional 2 by 2-inch Slide Projector (less lens)	3,500.00
70	26335	—	Lens, 7½-inch	75.00
70	26336	—	Lens 9-inch	150.00
70	26340-A	—	Lens Adaptor (for MI-26335 Lens when used with TP-11 Multiplexer)	55.00
70	26646	—	Variable Transformer (for TP-7B Slide Projector)	37.00
70	40111	—	Remote Control Panel (for TP-7B Slide Projector)	150.00
71-72	40104-B	—	Opaque Pickup Assembly	Discontinued
72	40109	—	Floor Mount	Discontinued
73	40108	—	Pedestal Mount (for use on MI-40115)	Discontinued

MULTIPLEXERS

73-76	—	TP-15A	Universal Multiplexer, Blue Finish	4,750.00
			Including the following:	
73-76	40015-A	—	Multiplexer Unit	
73-76	40114	—	Set of Mirrors for MI-40015	
73-76	40025-A	—	Basic Control Panel (for local or remote operation)	
73-76	11316	—	Power Supply (24-volt for TP-15)	
73-76	11599	—	Shelf (for Power Supply)	
73-76	11598-B	—	Panel (for Power Supply)	
76	40115-A	—	Pedestal for 1-V Camera	750.00
76	40116-A	—	Optical Assembly for TK-21 Camera	Discontinued
76	40113	—	Set of Mirrors for MI-40116	100.00
76	Stock #217782	—	Dual Surface Mirror for Dual 1-V Operation	71.20

* Separate Catalog Sheets Available on request.

MULTIPLEXERS (Continued)

Catalog Page	MI Number	Type Number	Description	Price
76	40859-3	—	Field Lens (3.14 diopter, for use when no TP-16 Projectors are used in system)	$ 85.00
76	40859-4	—	Field Lens (2.79 diopter, for use with 1 or more TP-16 Projectors)	85.00
76	40119-M	—	Standard Cover (for 3 inputs, 1-V and 3-V outputs)	250.00
76	40120-A	—	Cover for Dual Monochrome System (4 inputs, 2 1-V outputs)	275.00
76	40025-A	—	Basic Control Panel	410.00
76	40024-A	—	Auxiliary Control Panel (for limited local operation)	225.00
77-78	40117-A	—	Auxiliary Cover and Periscope for TP-15 Multiplexer	885.00
78	13380-8	—	8-conductor Cable per ft.	.29
79-80	26328-D	TP-11C	Monochrome Multiplexer, for use with TK-21 Camera, less prisms	Discontinued
—	ES-26916-E	TP-11D	Monochrome Multiplexer, for use with TK-22 Camera	1,990.00
79-80	26394	—	Beam Splitting Prism for TP-11C and TP-11D	375.00
80	26801-A	—	Prism Conversion Kit (for TP-11 and TP-11A, less prisms)	150.00
80	26352	—	Fourth Input Accessory Kit for TP-11C	220.00
—	26810-2	—	Field Lens for TP-11D Multiplexer	110.00

FILM ACCESSORY EQUIPMENT

81-84	—	—	TV Film Accessory Equipment for 16mm Programming	
81-82	—	MM-119	Film Storage Rack	281.75
82	—	RK-200	Film Storage Rack	193.20
82	—	RRT-3	Reel Rack Roller Truck	62.10
82	—	T-134C	Projection Table	108.65
83	—	SF-5	Steel Slide Cabinet for 2 by 2-inch slides	56.90
83	—	SF-5S	Sequential Slide File Cabinet for 2 by 2-inch slides	56.90
83	—	MM-12	Film Filing Cabinet	143.75
83	—	MM-180-16	Commercial Spot Storage Cabinet	477.25
83	—	MM-216	Large Film Cabinet	483.00
84	—	R-3	16mm Film Splicer	41.40
84	—	—	"Dynamic" 16mm Rewinds (set of two)	56.90
84	—	PD-1	Motor Rewind	155.25
84	—	—	16mm Baia Viewer	44.25
84	—	HM-5-S	Footage Counter	103.50
84	—	—	16mm Flat Steel Reels:	
84	—	—	1 Reel 100 ft	.28
84	—	—	1 Reel 400 ft	.74
84	—	—	1 Reel 1600 ft	4.88
84	—	—	1 Reel 2000 ft	6.03
84	—	DAF-26	14-inch Flange	27.60
84	—	AS-16	Cement Applicator Set	5.15
84	—	—	Fiber Shipping Cases:	
84	—	—	1 Reel 800 ft	3.62
84	—	—	1 Reel 1200 ft	4.31
84	—	—	1 Reel 1600 ft	4.83
84	—	—	1 Reel 2000 ft	5.69
84	—	—	16mm Steel Cans:	
84	—	—	1 Reel 400 ft	.74
84	—	—	1 Reel 800 ft	3.10
84	—	—	1 Reel 1200 ft	3.79
84	—	—	1 Reel 1600 ft	4.48
84	—	—	1 Reel 2000 ft	6.03
84	—	T-20	Editing Table	60.35

BROADCAST EQUIPMENT SALES POLICY

FOREWORD

The present statement sets forth basic conditions under which RCA sells broadcast equipment as described in our catalog, and notes certain supplemental information. This statement does not apply to the sale of tubes or sound film recording equipment, for which separate standard sales and lease policies are in effect.

RCA broadcast equipment is sold directly through RCA Sales representatives, who are familiar with broadcast equipment.

CONTRACT PROCEDURE

All sales based on orders for transmitters, antennas and custom built or special apparatus and on orders over $5,000 are made in accordance with the conditions of the RCA Standard Proposal Form for the sale of broadcast equipment and with any agreement stipulated thereon for individual customers.

PRICES

RCA broadcast equipment domestic prices are net f.o.b. factory or warehouse, which is Camden, New Jersey, for most items. These prices do not include any federal, state or local taxes based upon use or measured by sale or use and unless otherwise noted do not include federal excise tax. Any such taxes in effect at the time of shipment will be billed separately or will be included in the prices when required and will be due and payable upon delivery.

RCA's prices do not include installation or installation supervision unless specifically mentioned in a written condition or proposal. Purchaser assumes responsibility for installation and operation of the equipment as well as for obtaining all necessary licenses, permits, etc.

NOTE: The service of factory trained personnel who are specialists in the supervision of the installation of broadcast equipment and its maintenance and repair may be obtained through an order placed with the RCA Service Company, Inc. It is recommended that the advantages of this service be considered at the time of purchase of any major broadcast equipment.

In the case of orders under the Standard Proposal Form the billing prices are based on those prices effective at the date of the order to the extent indicated in the final contract. In the case of orders not under the Standard Proposal Form the billing prices are those prices in effect on the date of shipment.

RCA endeavors to keep its published prices current; however, all published prices are subject to change without notice.

Prices for items marked with a symbol (e) are estimates only and are subject to adjustment to those in effect on the date of shipment.

In the event the estimated prices quoted herein are exceeded by more than 10% and the billing price cannot be established by mutual agreement prior to shipment, such items may be cancelled without liability to RCA or Purchaser by either party giving written notice to the other.

PAYMENT

Terms of payment are subject to approval of RCA's Credit Department at Camden, New Jersey.

DELIVERY

RCA's delivery of broadcast equipment will be f.o.b. factory or warehouse, which is Camden, New Jersey for most items. The Purchaser shall be responsible for all transportation charges, and shipments will normally be forwarded with shipping charges "collect." As an accommodation, when specifically requested to do so by the Purchaser's order, RCA will prepay transportation charges and invoice them to the Purchaser as a separate item.

Delivery will be made to a carrier specified by the Purchaser, unless none is specified, in which event it will be to a common carrier selected by RCA. In the absence of specific routing instructions from the purchaser, RCA's judgment with respect to the selection of a route will be final.

As a special service with respect to shipments overland, by inland waterways or by air we carry All Risk Transportation Insurance for the benefit of our Broadcast Equipment customers, and your interests will be amply protected in all shipments of equipment while in transit by the methods indicated above, at no additional expense to you, provided that you inspect all shipments within 15 days after receipt and report within that time in writing any shortages or damages to the carrier and to RCA.

RCA will endeavor to meet delivery schedules but it assumes no liability for damages of whatever kind for delays in delivery. No delays in delivery shall relieve the purchaser of his obligation of performance.

PATENT LICENSES

RCA broadcast equipment is licensed for radio telephone or television broadcast transmission under United States patents owned by RCA or under United States patents under which RCA is licensed.

PATENT PROTECTION

RCA, at its own expense, will defend any suit which may be brought against purchaser for infringement of United States patents by the equipment furnished when sold or used for radio telephone or television broadcast transmission, and in any such suit will satisfy any final award for such infringement. This is upon the condition that purchaser gives RCA prompt notice of such suit and full right and opportunity to conduct the defense thereof, together with full information and all reasonable cooperation, and upon the further condition that the claimed infringement does not result from the combination of the equipment furnished with other equipment, apparatus, or devices not furnished by RCA. No costs or expenses shall be incurred for the account of RCA without its written consent. If purchaser's sale or use of such equipment for radio telephone or television broadcast transmission shall be prevented by permanent injunction, RCA shall substitute for the infringing equipment or parts other equally suitable equipment or parts, or at RCA's option obtain for purchaser the right to sell or continue the use of such equipment, or at RCA's option take back such equipment and refund any sums purchaser has paid RCA therefor, less a reasonable amount for use, damage and obsolescence.

WARRANTY

Except for electronic tubes, which bear their own warranty which accompanies them at the time of their sale, RCA warrants its broadcast equipment to be free from defects in material and workmanship under normal use and service for a period of one year from the date of delivery. RCA's obligations under this warranty are limited to the repair or replacement of defective parts and the shipment of such repaired or replacement parts to the purchaser f.o.b. factory. Equipment furnished by RCA but listed as manufactured by another bears only the warranty given by such other manufacturer. No warranties other than those set forth herein are given or are to be implied with respect to broadcast equipment. In no event is RCA liable for consequential damages.

REPAIRED AND RETURNED APPARATUS

Before an apparatus is returned to RCA for repairs or adjustments, shipping instructions and an identifying number should be obtained from the nearest RCA Sales Office. RCA assumes no responsibility for unauthorized returns.

EQUIPMENT MODIFICATIONS AND WITHDRAWALS

RCA reserves the right to make, without notice, modifications of the equipment described in this catalog without affecting its right to sell such equipment under orders based on the catalog description, provided, however, that the modifications shall not materially affect performance. These modifications of equipment may be made by RCA or its suppliers from time to time for reasons such as improvement in performance, simplification in design, or availability of material. RCA also reserves the right to withdraw from sale, without notice, any equipment described in our catalog.

ACCEPTANCE OF ORDER

No order shall be binding upon RCA until accepted by it in writing at Camden, New Jersey, and the banking, negotiation or other use of the down payment shall not constitute an acceptance by RCA. Orders received by Sales Offices will be forwarded promptly to RCA's Camden Office.

Printed in U.S.A.