

PLAIN TALK

RCA VICTOR

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THE TAPE CARTRIDGE

The tape cartridge used in RCA Victor cartridge type tape recorders provides for simple loading, no threading, ease of storage, and visual indication of the position of the tape in use; the tape cartridge also lends itself to quiet and smooth operation and features automatic braking of the reels when the cartridge is not in use.

The tape cartridge consists of two symmetrical sides labeled "A" and "B". The sides are held together by two screws which are easily removed to permit access to the tape.

RCA tape cartridges are supplied with high quality tape, which will seldom break, however a splice is easily made by disassembling the cartridges as shown in Figure 1.

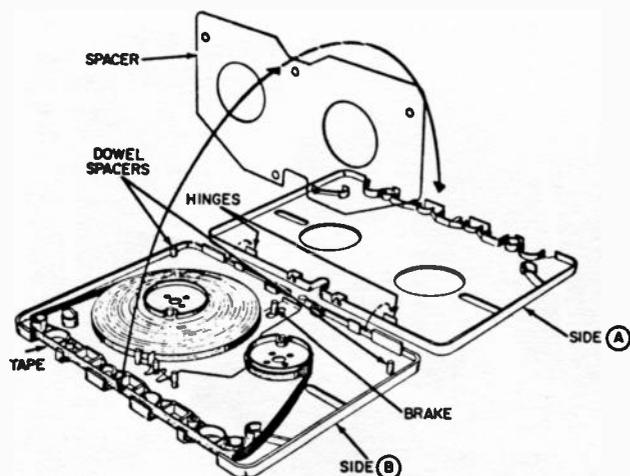


Figure 1—The Tape Cartridge—Disassembled

If the tape is damaged, cut out the bad portion. After the bad portion has been removed, slightly overlap the two ends and cut through the overlap. Butt-edge the two matched ends (do NOT overlap) and apply splicing tape to glossy side of the tape. Trim excess splicing tape from edges.

Many users of tape recorders prefer the convenience of the tape cartridge. The elimination of tape threading and the fact that a tape cartridge can be inserted or removed from the recorder at any point throughout the playing or recording period are special advantages of the cartridge system.

NEW RCA VICTOR SOLID STATE TAPE RECORDERS-PLAYERS

RCA recently announced a completely new line of tape recorder-player products. All incorporate new styling, with many new features; solid state circuitry is used throughout the product line. The wide range of models in this new line make available to the customer virtually every variation of tape recorder-player types. For instance, two models are *battery operated*, four different cartridge types are included, and several models offer 7" reel to reel mechanisms. Other variations offered in the product line include monophonic tape recorders, stereophonic tape recorders, some models with earphone provisions, and certain other models permit remote control operation. In short, the diversity of operating features in RCA Victor tape recorder-player products should satisfy just about every customer requirement.

Following is a brief description of each of the basic models; additional technical specifications will be presented in the RCA Victor Service Data for these products.

Battery Operated Portables

The YGS 11 ("TIROS I") is a battery operated portable. It is a monophonic 3" reel to reel two track recorder. Push buttons are used to select record, rewind, stop and play. Motor speed is regulated by a governor to maintain correct speed through the useful life of the batteries. The unit is housed in a plastic case with a calibrated window to reflect tape usage. A 110V AC adaptor is available as an optional accessory.

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Figure 2—RCA Battery Operated Tape Recorders

NEW RCA VICTOR SOLID STATE TAPE RECORDERS-PLAYERS

(Continued from Page 1)

The YGS 21 ("TIROS" II) is a deluxe battery operated portable. This monophonic 3" reel to reel recorder is two track, with $3\frac{3}{4}$ IPS and $1\frac{7}{8}$ IPS tape speeds. A single control is used for record, play, rewind, and fast forward. Other controls include Off/On volume, and a remote switch on the dynamic microphone. An indicator light is used for recording level and battery condition. Motor speed is regulated by an electronic circuit which maintains constant motor speed throughout the useful life of the batteries.



Figure 3—The YGB 11 ("Relay I")



Figure 4—The YGB 29 ("Relay II")

Cartridge Type Portables

The YGB 11 ("RELAY I") is an AC operated, monophonic, cartridge type, four track tape recorder. The controls includes volume, record/rewind/off/play/fast forward, speed selector and a track selector. A VU meter indicates recording level. Tape speeds of $3\frac{3}{4}$ IPS and $1\frac{7}{8}$ IPS are used. The unit is housed in a vinyl-covered wood cabinet, the operating control locations and the over all styling give a very professional appearance to the cartridge type recorder line.



Figure 5—The YGD 43 ("Relay III")

The YGB 29 ("RELAY II") is also an AC operated, monophonic, cartridge type four track recorder. Ad-

ditional features include PA operation, tone control, earphone operation, and remote control. A tape counter is included to indicate relative tape usage.

The YGD 43 ("RELAY III") is an AC operated, *stereophonic*, cartridge type, four track tape recorder. This instrument is also housed in a vinyl covered wood cabinet with the added features of a tilt down tape deck, and swing-out detachable speakers with 12' cables. Additional controls on this unit include the sound plus sound feature.



Figure 6—The YGH 31 ("Score I")

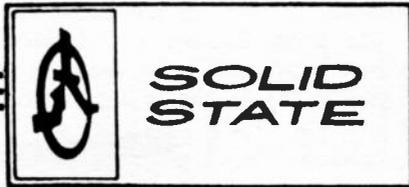
7" Reel To Reel Portables

The YGH 31 ("SCORE I") is an AC operated monophonic, 7" reel to reel, four track portable tape recorder. It is a three speed instrument, $7\frac{1}{2}$ IPS, $3\frac{3}{4}$ IPS, and $1\frac{7}{8}$ IPS. The controls include On/Off/ Volume, speed selector, PA switch, pause switch, track selector, tone control. Push button controls are used for rewind/stop/play/record/fast forward. This recorder uses a 6" speaker has a VU meter and a digital counter for indicating tape usage.



Figure 7—The YGG 45 ("Score II")

The YGG 45 ("SCORE II") is an AC operated *stereophonic*, 7" reel to reel, four track portable tape recorder. The unit operates either in the vertical or horizontal position and has swing out detachable speakers, each enclosure containing a 9" oval and a $3\frac{1}{2}$ " speaker. The controls on this model are Off/On/ Volume, tone, stereo balance, speed selector, PA switch, pause switch, track selector and a sound-plus-sound function. Push button controls are used for rewind/stop/play/record/fast forward. This model has a stereo headphone jack, VU meter, tape counter and has an automatic stop feature.



SOLID STATE AMPLIFIERS IN RCA TAPE RECORDERS

RCA's line of tape recorders for 1966 are fully transistorized. From the battery operated models through the AC operated portables and including the modular tape decks solid state circuitry is utilized throughout.

The YGS 11 uses a six transistor circuit with four stages of audio amplification followed by a push pull audio output stage. Direct current is used for record bias as well as erase bias in this circuit.

In the YGS 21 three audio stages are followed by a push pull output stage. This circuit uses direct current for erasing and a separate 35KC bias oscillator for recording bias. In addition the YGS 21 uses a two stage power supply regulation circuit to stabilize the speed of the motor over a wide range of battery voltages. An indicator lamp shows battery condition in "play" and recording level in "record".

The YGB 11 (monophonic cartridge type) recorder uses a seven transistor circuit. This amplifier is designated as the RS 217 and has four audio amplifier stages followed by a class A audio power output stage. The output transistor serves as a bias oscillator from which recording bias and erase bias is obtained when in the "record" position.

A separate transistor amplifier stage is used to drive the record level indicator, and another transistor is utilized in a special power filter circuit in the power supply.

The YGB 29 (monophonic cartridge type with remote) employs a type RS-217A amplifier which is very similar to the RS-217 amplifier. Circuit variations are made to accommodate the remote control feature.

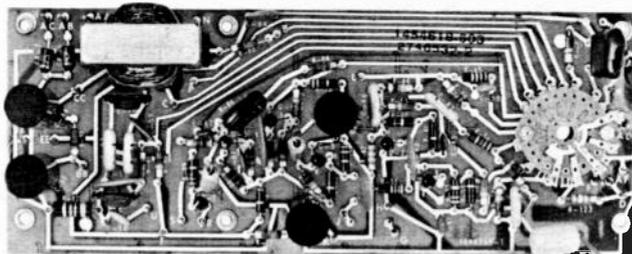


Figure 8—Circuit Board of the RS 217

In the YGD 43 (stereophonic cartridge type) tape recorder an RS-218 amplifier circuit is used. This circuit comprises a left channel system similar to the RS-217 monophonic circuit and also includes a right channel system consisting of four stages of audio amplification and a class A audio output stage. The output stage of the left channel only is switched to serve as the bias oscillator.

The cartridge recorders employ a muting switch which disables the amplifier circuitry when in fast forward and rewind.

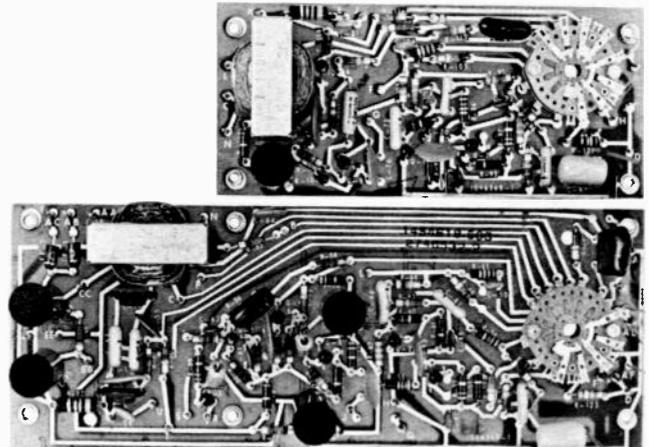


Figure 9—Circuit Boards of the RS 218

The YGH 31 (monophonic, 7" Reel to Reel) makes use of an RS 220 amplifier circuit. This amplifier is similar to the basic RS 217 with circuit differences in that "muting" when on fast forward or rewind is accomplished mechanically.

In the YGG 45 (stereophonic, 7" reel to reel) an additional circuit board is added to constitute the right channel audio circuitry. This amplifier becomes the RS 221. As in the RS 218 circuit, the RS 221 utilizes the output transistor of the left channel as a bias oscillator for use in erasing and record bias.

The muting feature on the 7" reel to reel mechanisms is facilitated by a formed wire guide which withdraws the tape away from the play/record head in both fast forward and rewind.

The modular tape decks also employ solid state amplifiers. The stereo cartridge version, MGC 71 contains an RS 218A amplifier, while the stereo 7" reel to reel contains an RS 221A amplifier. In both of these amplifiers, the audio output stage of the right channel is omitted, and the power output stage of the left channel is used only as a bias oscillator for erase and record bias. These amplifiers are therefore referred to as "preamplifiers" since an external audio power output and speaker system is required.

Straightforward circuit design and a close similarity between all of the audio amplifiers should make the servicing of RCA's broad line of tape recorders easier. Full consideration to serviceability with many test points and clear component identification by means of the familiar RCA "road mapping" is incorporated in the RCA tape recorder amplifiers.

SOUND PLUS SOUND

Sound Plus Sound is RCA's new feature that allows you to listen to a previously recorded track while making a second recording on the same tape. This new feature makes possible the recording of your own voice with that of a well-known orchestra. Also, a "duet" can be made by first recording your voice on the Master Track, and then recording your own voice again on the second or sound plus sound track.

The second recording may be erased and re-recorded without affecting the Master track.

Foreign language and speech study is possible, enabling you to compare your pronunciation with that of the instructor.

A Sound Plus Sound recording is made by first recording a master track on track 2. This is done with the STEREO-MONAUURAL switch in "Mono" (monaural) position.

When the Master Recording is completed, the tape is then returned to the starting point and the "Sound Plus Sound" Track is then recorded. This is accomplished with the STEREO-MONAUURAL switch tuned to "STR" (stereo position). The recorder is placed in "Play" position and the SOUND PLUS SOUND knob is turned clockwise to lock it in position.

You will then hear what you recorded on the Master track and are ready to record on the Sound Plus Sound track. Adjust the volume of the Master track with the BALANCE Control and adjust the VOLUME Control to set the recording level for recording the "Sound Plus Sound" track.

To listen to the combined Master track and Sound Plus Sound recording, follow the procedure used to play a stereophonic tape.

TAPE RECORDER MAINTENANCE

The face of the record head, capstan shaft and pressure roller should be cleaned when there is visible evidence of accumulation of oxide (brown residue) or other foreign matter. Use a small brush or a toothpick wrapped with a soft cloth moistened with alcohol or lighter fluid. Care should be taken to avoid getting the cleaning fluid on the felt pads over the heads. Refer to the instruction book or service data for details for gaining access to the record head, capstan shaft and pressure roller. Do not touch the record head with a magnetized, metallic or abrasive object.

TAPE COUNTER

A digital tape counter incorporated in certain RCA tape recorder instruments serves as a recording index. The numbers in the counter window, while not related to tape footage, serve as a reference making it easy to find the start and end of several different recordings on a single tape. The counter can be returned to zero with a push button at the start of each track.

MARK SERIES "MODULAR DECKS"

The MGC 71 (MODULE MARK I) is a *stereophonic* cartridge type 4 track 3¼ - 1⅞ IPS tape transport. The controls include volume, stereo balance,



Figure 10—The MGC 71 (Module Mark I)

fast forward, PA switch, speed selector, sound plus sound, record/rewind/off/play. A VU meter, tape counter, automatic stop, and the sound plus sound feature are included. A stereophonic dual preampli-



Figure 11—The MGC 72 (Module Mark II)

fier is self contained. The unit employs fine cabinetry styling for use with external power amplifiers and speakers as a "component" in a high fidelity system.

The MGC 72 (MODULE MARK II) is a *stereophonic* 7" reel to reel 4 track, 7½ - 3¼ - 1⅞ IPS tape transport. This instrument has a dual preamplifier and requires a separate power amplifier and speaker system. The controls include On/Off volume, stereo balance, speed selector, track selector, PA switch, sound plus sound and a pause feature. Push buttons control rewind, stop, play/record and fast forward. A VU meter, tape counter, and the sound plus sound feature are included. This unit also employs fine cabinetry styling lending itself as a high quality "component" in a high fidelity system.

TRACK SWITCH

A track switch on the control panel of all RCA four track instruments selects the proper track or tracks to be played. If a cartridge or reel is placed on the recorder, "A" side up, track A1 or A2 may be played. With "B" side up, track B1 or B2 is in position. Be sure the right track is selected when recording or a valuable recording may be erased unintentionally.

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