

# PLAIN TALK

AND

# Technical Tips

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## A NEW CONCEPT IN AMPLIFIERS

The RS-209, 210, 211 chassis are examples of a new concept in power amplifier design.

In the usual design, the large components such as the tubes, transformers, electrolytic capacitors, etc., are mounted on the top or outside of the chassis. The smaller components such as the resistors, capacitors, coils, etc., are installed under the chassis. This method presents a problem of heat dissipation as some of the heat radiating components are enclosed.

In the new line of RCA Victor Solid State amplifiers, all of the components are mounted on the top side of the chassis. Using this method, mounting flanges are unnecessary. The chassis is mounted by means of studs which go through the bottom of the

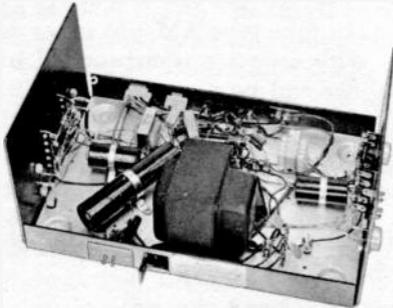


Figure 1 — The RS-209 All Transistorized Audio Amplifier

chassis at several locations. The side plates constitute heat sinks for the output transistors. Heat dissipation is facilitated as all components are in the open. Since all components are readily accessible, servicing is easier.

The amplifiers have a built-in reserve of power to assure effortless reproduction of dynamic musical passages—even at crescendo levels. The output transistors are capacitively connected to the speaker system, eliminating the possibility of limitations caused by output transformers.

### RS-209 Transistor Power Amplifier

The RS-209A amplifier chassis has six transistors, two silicon rectifiers and a voltage regulator diode. This amplifier is used with the transistorized tuner chassis, the RC-1218. No controls are provided on this chassis. The Class B output stage delivers power directly to the voice coils of the speakers without the use of an output transformer. The voltage regulator

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## RCA VICTOR NEW VISTA SOLID STATE STEREO

Solid State tuners and amplifiers developed in RCA Victor laboratories set a new RCA Victor standard of performance in home instruments. They provide new power for stereo reproduction of true brilliance and clarity. Instant warm-up characterize the stereo instruments that employ both Solid State tuners and Solid State amplifiers. Moreover, the Solid State units give high dependability, efficiency, and durability.

The high standards set by RCA Victor tube type tuners and amplifiers are maintained and even improved in the transistorized equipment described in this issue of Plain Talk and Technical Tips.

## THE NEW RC-1218 TUNER

The RC-1218 is a completely new fully transistorized AM/FM/FM-Stereo tuner chassis designed for use with a transistorized power amplifier such as the RS-209 or 211.

This chassis provides for AM broadcasts, FM broadcasts or FM-Stereo broadcasts, and has phono and tape inputs. Audio output is available for tape recordings from any of these program sources. Four "road-mapped" "Security Sealed Wiring" boards are used in this chassis. Each major circuit section is easily identified. All components and test points are readily accessible for servicing.

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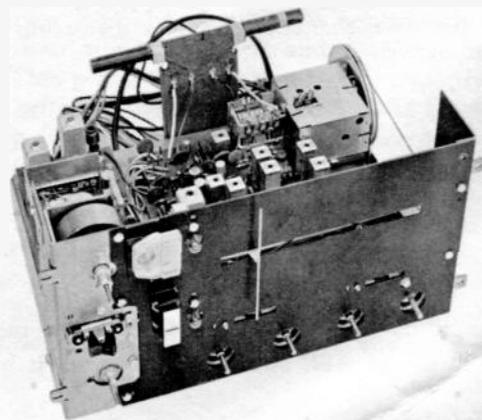


Figure 2 — The RC-1218 All Transistor Tuner

## THE NEW RC-1218 TUNER

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A single shaft, 6-gang tuning capacitor simplifies the tuning of this chassis. The first three (FM) sections of the gang are used to tune the antenna, RF and oscillator stages of the FM section and the second three (AM) sections perform similar functions for the AM portion of the tuner. The use of a single shaft tuning gang removes any possibility of "backlash" between the AM and FM tuning. A flywheel on the shaft of the tuning knob provides for smoother tuning and vernier drive is utilized to provide further ease in tuning.

A slide rule dial with logging scale is provided so that stations may be located and catalogued easily.

The dial and the control panel are illuminated by indirect lighting. The window panels and lamps are so placed that the light enters the edge of the window panels and illuminates the depressed characters.

Tuned RF stages are used in both the AM and FM sections of this tuner to provide high selectivity and sensitivity.

The high performance of the RC-1218 tuner is reflected in the following audiophile specifications.

Sensitivity (20 db signal-to-noise ratio):

FM—0.5  $\mu$ v; AM—100  $\mu$ v per meter.

Selectivity (3 db bandwidth): FM—200 kc;

AM—6 kc.

Image Rejection: FM—35 db;

AM—70 db.

FM-Stereo Separation:

35 db @ 1,000 cps.

FM Audio Response:

20-15,000 cps.

The FM tuner (RF and mixer) section of the RC-1218 chassis is newly designed. It is assembled on a "Security Sealed Wiring" board and mounted directly on the FM section of the tuning gang. The FM tuning gang and circuit board are fully shielded.

The AM IF, FM IF and ratio detector have wide response with good selectivity.

A new improved FM-Stereo circuit is employed in this chassis. This type of circuit provides better separation between channels and less distortion in the output.

Automatic switching from stereophonic to monophonic operation takes place on weak signals. This circuit also permits a simpler, less critical adjustment procedure for FM-Stereo reception. A stereo indicator light is included to indicate the reception of a stereo signal.

A unique feature of this chassis is the new mechanical design of the AFC switch. This switch is built in

conjunction and concentric with the tuning shaft. With this construction the AFC is automatically turned off whenever the tuning shaft is rotated, thus making it possible to tune in stations without the "pulling" effect which would otherwise occur. After the station is tuned in, it is only necessary to press the center of the tuning knob in to activate the AFC. When the AFC is ON, an indicator lamp will show that the instrument is under AFC control.

The RC-1218 utilizes a precision tuning meter to assist in tuning in AM and FM stations properly. A maximum indication on the meter indicates the correct tuning for AM as well as FM stations. Another innovation in this chassis is the Rocker-Bar ON/OFF switch.

Inputs are provided for a stereo record player or a stereo tape recorder. In all positions of the function switch other than TAPE, the tape input is connected to the preamplifier circuitry after the second stage and acts as an output for recording the program material to which the function switch is set.

The RC-1218 chassis contains 20 transistors and 11 diodes. A large ferrite antenna is provided for AM reception and the FM section is equipped with antenna terminals on the chassis. An external FM antenna or a built-in cabinet antenna may be connected to these terminals if desired. The chassis is shock mounted in the cabinet and readily accessible if service is required.

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## THE CONTINUING RC-1215

The RC-1215 tube type AM/FM tuner continues for 1965. Used with separate transistorized or tube type power amplifier and power supply—available with or without FM-Stereo. Audiophile specifications:

Sensitivity (20 db signal-to-noise ratio):

FM—0.7  $\mu$ v; AM—100  $\mu$ v per meter.

Selectivity (3 db bandwidth): FM—170 kc;

AM—4.5 kc.

Image Rejection: FM—35 db;

AM—70 db.

FM-Stereo Separation:

30 @ 1,000 cps.

FM Audio Response:

20-15,000 cps.

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## PERSONAL AND TABLE RADIOS

A full selection of personal and table radios are in the 1965 line. Noteworthy among the new personals are models using the RC-1219 chassis. This 8 transistor and 2 diode AM receiver operates from 2 "D" cells. High performance is achieved by specially selected transistors and new circuit design. Battery life is greatly extended by use of inexpensive, high capacity "D" cells.

## NEW RECORD CHANGER HAS BUILT-IN AMPLIFIER

These new amplifier chassis are not assigned individual amplifier designations since each is integral with its record changer. The printed wiring board, output transistors, and controls are mounted on the motorboard of the record changer. The AC power supply is taken from a special winding on the motor, which eliminates the need for a separate isolation step-down transformer. There are three versions of the basic chassis and are identified as a part of the integrated record changer.

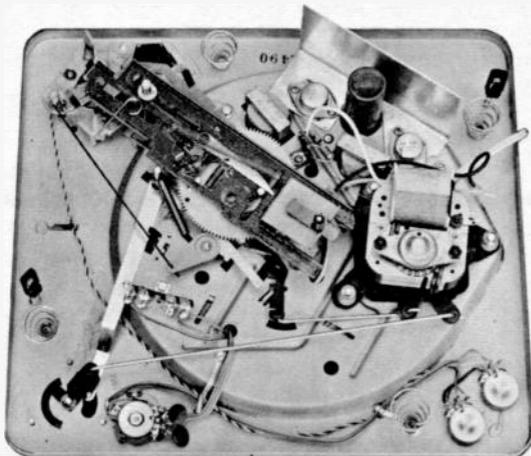


Figure 3 — The RP-219-49 Underside

THE RP-219-39 AMPLIFIER has three transistors, plus a silicon rectifier diode. The single channel monophonic amplifier chassis has a maximum power output of 1 watt. It has two controls, Volume and Tone, which are mounted on the front of the motorboard.

THE RP-219-49 AMPLIFIER has six transistors, and two silicon rectifiers. The dual channel, stereophonic amplifier chassis has a maximum power output of 2 watts. Three controls, a Volume control in each channel and a Dual tone control, are on the phonograph motorboard mounting. Channel balance is set by individually adjusting the volume of each channel. The circuitry of this amplifier is similar to monophonic chassis RP-219-39.

THE RP-219-12 AMPLIFIER has six transistors, and two silicon rectifiers. This dual channel, stereophonic amplifier chassis has a Music Power Output of 3.6



Figure 4 — Circuit Board Typical of the RP-219 Series

watts E.I.A. (7.2 watts peak). The amplifier has a dual concentric volume control. All amplifier controls including the dual Bass and Treble controls are on the phonograph motorboard mounting.

## A NEW CONCEPT IN AMPLIFIERS

(Continued from Page 1)

diode is used to control the source voltage for the tuner chassis. This amplifier delivers a Music Power Output of 60 watts E.I.A. (120 watts peak).

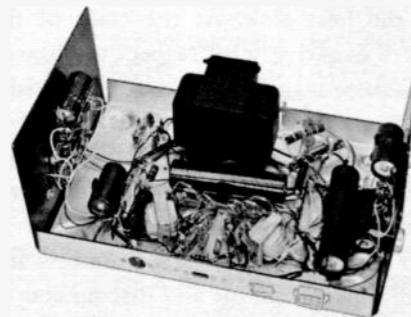


Figure 5 — The RS-210 All Transistor Audio Amplifier

### RS-210A Transistor Power Amplifier

The RS-210A amplifier is a new eight transistor, three silicon rectifier, power amplifier. It has its own power supply and an additional power supply which is designated for use with the RC-1215 tube-type tuner. It is similar in appearance and circuitry to the RS-209A with additional circuitry to provide the correct match to the RC-1215 chassis preamplifier output as well as to provide DC power and filament voltage for the tuner chassis. This chassis delivers a Music Power Output of 60 watts E.I.A. (120 watts peak).

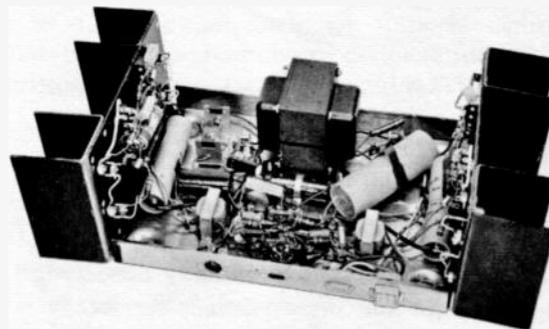


Figure 6 — The RS-211 All Transistor Audio Amplifier

### RS-211A Transistor Power Amplifier

The new RS-211A chassis uses ten transistors, four diodes, four silicon rectifiers and a voltage regulator diode. This power amplifier and power supply chassis is used with the transistorized tuner, the RC-1218. Its circuitry is similar to that of the RS-209A with additional components and circuitry for higher output power. The DC power supply furnished to the tuner chassis is regulated by the use of the voltage regulator diode. Physically, the RS-211A chassis may be identified by the radiating fins attached to each end on which are mounted the four power transistors. This chassis delivers a Music Power Output of 150 watts E.I.A. (300 watts peak).

## RS-206 ALL TRANSISTOR PORTABLE "VICTROLA" AMPLIFIER

The RS-206A is a new eight transistor, dual channel stereophonic amplifier. Two silicon diodes are used in its self-contained power supply. It is designed for use in the top-of-the-line portable "Victrolas." The printed wiring chassis is mounted on a metal sub-chassis at the top of the record changer compartment.

Four output transistors are mounted on the outside of the sloping section of the subchassis which is utilized as the heat sink. As the cases of the output transistors are negative with respect to chassis and run quite warm, these transistors are covered with a plastic dome to prevent accidental contact. The RS-206A has four controls—loudness, bass, treble, and balance. It also has jacks permitting connection of a "Sing-Along" microphone and stereophonic headphones. A switch, located near the headphone jack, connects this output into the audio driver circuit and disconnects the speakers when headphones are used. This chassis has a Music Power Output of 16.6 watts E.I.A. (33.2 watts peak).

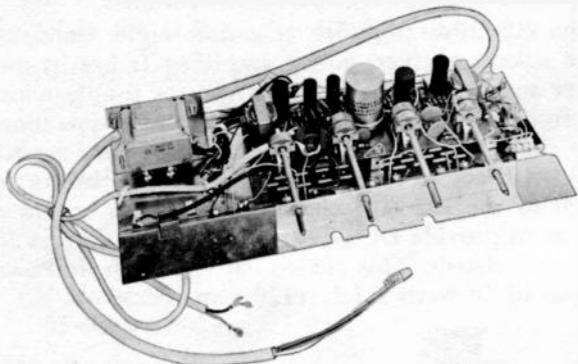


Figure 7—The RS-206 Transistorized Amplifier

## CARTRIDGE TAPE RECORDERS

The 1YB, 1YC, and 3YD series tape recorders are continued for the 1965 model year. Both the tape transport and the tape cartridge embody new design features for longer and more efficient service.

Tape transport improvements include a new speed shift detent lever, which instead of centering after a speed shift, detents in that position. Tape transport speed can be determined at any time by observation.

In conjunction with the speed shift detent arrangement, the motor pulley and detent lever are redesigned to offer a more positive acting speed shift.

The bracket on which the Play/Record head is mounted has been modified to permit more accurate alignment of the tape head. Both elevation and azimuth adjustments can be made faster and with greater accuracy.

The bullet shaped cartridge guides have been redesigned. The improved design permits more rapid and positive cartridge removal and insertion.

In the improved clutch, a teflon coating on the take-up pulley provides the necessary friction for tape take-up action. Teflon is very resistant to abrasion as well as heat damage, and will contribute to smooth take-up clutch operation.

The capstan bearing retainer, instead of being screwed to the adjustable plate, is held by spring action. The bearing retainer is made of phosphor bronze material which has a cutout formed spring on each shoulder that clips into a hole on the adjustable bearing plate. This arrangement holds the bearing firmly and, at the same time, provides for rapid bearing removal should that be necessary.

## Tape Cartridge Improvements

The new tape hubs can be identified by their gray color in contrast to the white hubs used previously. The color change is a result of the new plastic com-



Figure 8 — Tape Cartridge

pound used in manufacture. The new plastic formula has a larger percentage of glass which makes for more durability. The new hub is stronger and less liable to warping or hole tearout.

The internal construction of the tape cartridge has been improved to give smoother, more efficient action.

The cutouts on each side of the cartridge which serve to expose a narrow cross section of each reel have been elongated. The cutouts are long enough so that a complete cross section of each reel is always visible to the operator.

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