

PLAIN TALK

AND

Technical Tips

RCA RCA VICTOR

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THE KCS 148 PORTABLE CHASSIS

The KCS 148 chassis is similar to the previous KCS 142 chassis, with the addition of a power transformer, parallel wired tube heaters and other circuit refinements.

The instruments employing the KCS 148 chassis are front tuned. Pull-on and push-off type ON/OFF switch and the brightness control are mounted on the front panel. Secondary controls are accessible through the back cover. The horizontal and vertical hold controls have extension shafts which extend through the back. Contrast is controlled by a thumbwheel located on top of the cabinet back.

B+ is protected by a manual reset type circuit breaker. The reset button is located on the back of the receiver. Warm-up buzz is eliminated by use of a slow warm-up audio output tube, 6HG5, and a faster warm-up 6AY3.

The KCS 148 provides for 18 kv of high voltage for the kinescope. The sound detector is a type 6HZ6

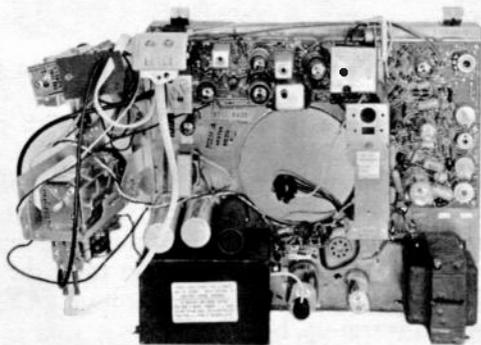


Figure 1 — KCS 148 Chassis

which reduces parasitics that can occur in the UHF region. The kinescope has triple protection against arc-over using a special type resistor in the screen and control grid circuits as well as a high voltage capacitor to bleed off static discharges before they build up.

The instrument uses a high efficiency 4" Duo-Cone speaker front mounted for best sound dispersion. Two built-in antennas are furnished with the instrument, an extension dipole for VHF and an adjustable ring antenna for UHF.

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RCA VICTOR BLACK AND WHITE TELEVISION FOR 1965

Three new 19" portables and the classic 23" console highlight the Black and White products in 1965 from RCA Victor.

All instruments include factory installed UHF for all-channel tuning.

The new Pan-O-Ply picture tube with its lighter weight and built-in protection against implosion is utilized in all Black and White instruments.

The features described in this issue will serve to familiarize the service technician with the 1965 products from RCA Victor.

NEW KCS 151 PORTABLE CHASSIS

The KCS 151 chassis is used with the AF-051 and the AF-071 portable receivers. This is a power transformerless chassis, an improved version of the KCS 146.

Instruments employing this chassis have highly styled cabinets and incorporate concentric preset fine tuning, a high efficiency 3"x5" front mounted speaker, a 19" Pan-O-Ply kinescope, pop-up carrying handle and a cord bracket which is located on the rear cover. The pop-up handle is mounted directly to the chassis top frame and furnishes a carrying handle for the chassis whether in or out of the cabinet.

The AF-051 series receiver is equipped with a mono-

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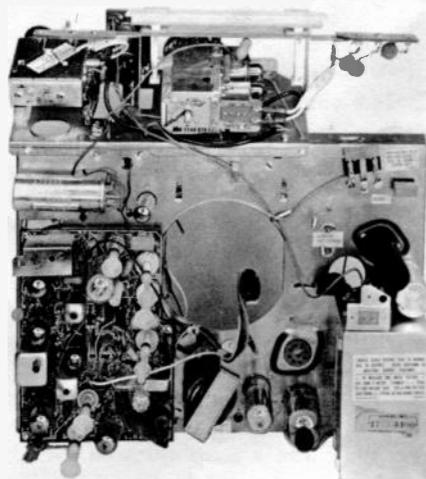


Figure 2 — KCS 151 Chassis

THE KCS 148 PORTABLE CHASSIS

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All receivers using the KCS 148 chassis are equipped for VHF/UHF reception. The UHF tuner is mounted as an integral part of the tuner mounting assembly. The VHF tuner is the new "Power-Grid" 3-circuit KRK 114 employing concentric preset fine tuning, and the UHF tuner a KRK 120. Each tuner has separate tuning knobs. Model AF-117 has both VHF and UHF dial lighting.

These instruments are equipped with the Pan-O-Ply kinescope that eliminates the need for a separate safety glass. As an added serviceability feature, the TMA can be mounted to the chassis when the chassis is removed from the cabinet.

CONTINUING CHASSIS

The KCS 142 Chassis

The KCS 142 chassis is used in a limited production model, the AF-090 "Simplicity." The chassis has two IF's and provides for 18,000 volts of picture power. The new series receivers employ the 19DQP4 Pan-O-Ply kinescope; they also use the new KRK 115 VHF tuner and the transistorized KRK 120 UHF tuner. A monopole antenna is employed with a special balun coil. The contrast and ON/OFF volume controls are mounted on the top of the receiver; the brightness, horizontal hold, and vertical hold controls are on the back.

The KCS 143 Chassis

The KCS 143 chassis is used in the AF-091 "Sportabout" television model, the "Scout." The chassis has three IF's, and has 18,000 volts of picture power. B+ is protected by a chemical .4 amp fuse as well as a 5 ohm fusible resistor. The new receivers feature concentric preset fine tuning using the new KRK 118 tuner for VHF reception and the new KRK 120 to provide for UHF. All primary controls are front mounted.

Secondary customer controls are adjusted by means of insulated shafts which protrude through the cabinet back. The receiver features the new Pan-O-Ply 19DQP4 kinescope which makes for easier tube cleaning as well as lighter weight. The volume control is the pull-on, push-off "Stay-set" type. Two antennas are furnished, a VHF dipole and a UHF adjustable loop.

The KCS 144 Chassis

The KCS 144 chassis is used in the new "Sportabout" television model, the AF-114 "Fairway."

The chassis features 20 kv high voltage and B+ is protected with a .4 amp chemical fuse and a 5 ohm fusible resistor. The chassis has three IF's and uses a KRK 118/120 tuner combination. The noise stabilizer, AGC, vertical height and vertical linearity controls are accessible through the back cover. A Pan-O-Ply 19DQP4 kinescope is used.

The receiver also features front mounted primary customer controls with concentric preset fine tuning.

Two antennas are furnished, a dipole adjustable "V" type for VHF and a loop antenna for UHF.

NEW KCS 151 PORTABLE CHASSIS

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pole antenna for VHF reception and a loop antenna for UHF reception. The AF-071 series has a dipole VHF and loop UHF antenna.

All secondary controls are mounted on the single circuit board. The UHF and VHF tuners as well as the "Stay-set" Volume-ON/OFF control and brightness control are mounted on the tilted top panel. The horizontal vertical hold controls use insulated extension shafts which extend through the back cover as does the contrast control. The vertical linearity, vertical height, and AGC controls are fitted with recessed screw-driver slots accessible through holes in the back of the receiver.

A KRK 114 series filament VHF tuner is used with the KCS 151. This is a new three-circuit tuner which uses a frame-grid 3GK5 as the RF amplifier and a 5KE8 as a combined oscillator-mixer tube. All versions of this chassis are factory equipped for UHF reception and utilize the KRK 120 transistorized UHF tuner. Separate antenna boards are employed for UHF and VHF.

The kinescope circuitry features triple arc-over protection, and the chassis provides 18,000 volts for the kinescope. A snivet proof horizontal output tube, and a 6HZ6 sound detector tube further supports interference-free UHF reception.

The AGC circuit has been improved by adding more degeneration to the cathode of the 6GH8A AGC tube which helps to prevent AGC overload or lockout.

The B+ circuitry in the KCS 151 chassis is protected by a .4 amp chemical fuse and a 5 ohm fusible resistor.

A total of five frame-grid tubes (3GK5 and 5KE8 VHF tuner tubes, 4JD6 and 4JC6 IF amplifier tubes, and an 11KV8 video amplifier tube) are used in this instrument.

THE KCS 136X CHASSIS

The KCS 136X chassis layout is similar to that of the previous KCS 136Y series chassis.

The chassis uses a power transformer with parallel wired heater circuits. A manual reset type circuit breaker is used to protect the DC power supply. The circuit breaker reset button extends through the back cover and is located on the chassis rear apron.

A new slow warm-up audio output tube, the 6HG5, used in conjunction with a faster warm-up 6AY3 helps to eliminate warm-up buzz.

A non-adjustable horizontal linearity coil and associated components in series with the horizontal yoke windings improves picture linearity.

The tuners used with the KCS 136X chassis are all new. A KRK 118 tuner is used with all manual models, while the KRK 116 turret tuners are used on remote control models. The KRK 116 has a 40 mc strip used for a UHF IF two-stage amplifier; in this way the tuner can also be fitted for UHF remote control channel selection of up to six stations by the use of the LF901 Strip Kit and the LF902 Antenna Conversion

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THE KCS 136X CHASSIS

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Kit. An indicator light is used to indicate when the remote control is on.

All instruments using the KCS 136X chassis incorporate the new transistorized UHF tuners, the KRK 120. The UHF tuner is mounted as an integral part of the TMA along with the VHF tuner. The TMA can be bolted to the chassis for out of the cabinet service.

THE KCS 149 PORTABLE CHASSIS

The KCS 149 series chassis is used with the AF-125 "Sophisticate" and the AF-141 "Harlequin" model instruments. The chassis is transformer powered similar to the previous KCS 144 chassis. AF-141R instruments are equipped with the new KRS28 remote control assembly.

A KRK 118 tuner is used in manual models. A KRK 120 UHF tuner is used in all instruments. A KRK 116 VHF and KRK 120 UHF tuner assembly is used with remote control models. As many as six UHF strips can be installed in the KRK 116 tuner so that UHF stations may also be received while the remote control feature is used. All models have concentric preset fine tuning and lighted dial indicators with front mounted primary controls and a thumbwheel contrast control on the cabinet top.

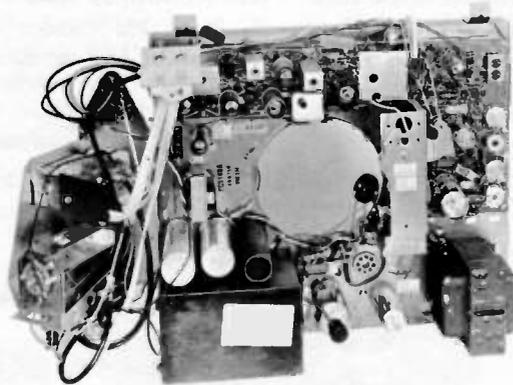


Figure 3—KCS 149 Chassis

The receivers come equipped with adjustable antennas for both UHF and VHF. The VHF antenna is a dipole type while the UHF antenna is a ring type. A cord bracket is on the rear of the set and the carrying handle is the pull-up type. The cabinets are vinyl covered with deluxe vinyl on the AF-141 instruments. B+ protection is furnished by a reset type circuit breaker.

The three-tube IF amplifier is similar to that used in the KCS 136X circuitry. Both the AGC control and the noise inverter stabilizer control are accessible through the back cover.

Horizontal linearity is improved by incorporation of a linearity coil and associated LC circuitry, to maintain a more linear yoke current. This feature made it unnecessary to incorporate a feedback circuit from the high voltage transformer to the control grid of the horizontal output tube.

Vertical stability has been improved by the use of a temperature dependent resistor, RT501, in series with the vertical height control. This prevents vertical height from changing due to variations in operating temperature.

Improvements to insure the elimination of UHF parasitics are realized in the 6HZ6 sound detector tube and in the use of a positive voltage applied to the externally connected suppressor grid of the 6JE6 horizontal output tube.

A slow warm-up 6HG5 audio output tube and the faster heating 6AY3 damper tube are employed in this chassis to eliminate undesirable warm-up buzz.

The instrument uses a 4" Duo-Cone speaker that is front mounted. The AF-141R series instruments are equipped with a "Pillow Speaker" jack.

The kinescope has triple protection against arc-over using a special type resistor in the screen and control grid circuits as well as a high voltage capacitor to bleed static discharges before they build up. The chassis provides 20,000 volts for the kinescope.

As an added serviceability feature, a mounting bolt is provided on the chassis for mounting the TMA when the chassis is not in the cabinet.

SPECIAL FEATURES BLACK & WHITE TELEVISION

Warm-Up Performance

If the audio output tube is functioning before the entire receiver has reached operating temperature, it is possible that a rather annoying buzz may be experienced.

The KCS 136X, KCS 148, and KCS 149 chassis incorporate two new features that enable all sections of the receiver to become operational together. The first is that of delaying the warm-up of the audio out-

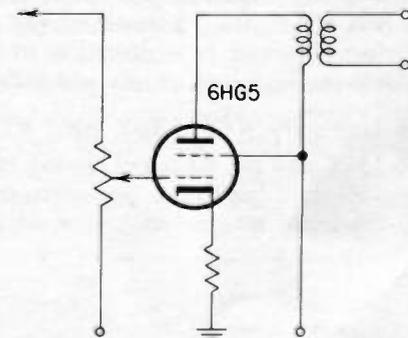


Figure 4—New Slow Warm-up Audio Tube

put tube. The second is a matter of speeding up the warm-up time of the damper tube.

The new 6HG5 audio output tube has electrical characteristics identical to the 6AQ5A with one exception. In the 6HG5, heavy insulation is placed between the heater filament and cathode element to increase the time needed for the tube to reach its operating temperature. Warm-up time is increased approximately 40%.

In the high voltage circuit, the heater element of the 6AY3 damper tube is placed nearer the cathode and

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SPECIAL FEATURES BLACK & WHITE TELEVISION

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warm-up time is decreased about 20%. All current production 6AY3 tubes incorporate this faster warm-up feature.

Improved Limiting Action

By using a lower, regulated plate voltage, improved limiting action of the 1st sound IF tube is achieved. This is done by changing the value of the 1 watt dropping resistor in series with the supply voltage, and adding a bleeder resistor to ground.

Enough current flows through the bleeder resistor so normal changes that occur in plate current do not affect the plate voltage. FM limiting is accomplished by restricting the voltage supply available to the limiter plate.

The Reset Circuit Breaker

All models of the new line, excepting series filament chassis, use a manual reset circuit breaker. The unit is designed to carry 1.2 amps indefinitely, and will open when current flow is approximately 1.8 amps. Momentary current surges will not open the circuit.

The circuit breaker actuating mechanism is a bimetallic spring. The temperature sensitive spring is riveted to a combination contact and positioning spring.

When higher than normal current flows in the circuit, a bimetallic spring heats, expands and pulls the contact away from the terminal contact on the phenolic board. The top part of the "V" shaped contact spring is designed to hold the contact away from the terminal on the phenolic board until the unit is manually reset. When the reset button is pushed, it actuates a pivot mechanism that keeps the temperature sensitive spring from bowing upward, and at the same time lifts the contact portion of the spring so that the spring is bowed in a direction to bring the contact against the terminal on the phenolic board.

Improved Linearity KCS 136X and KCS 149

The KCS 136X and the KCS 149 chassis incorporate a linearity coil for improved performance. In the KCS 136X there are no provisions for adjustments.

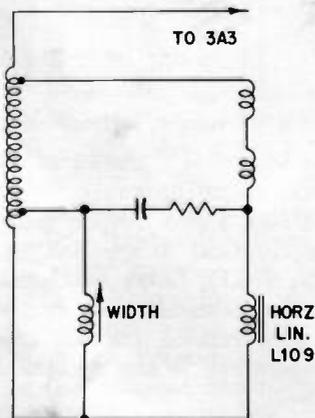


Figure 5—Improved Horizontal Linearity KCS 136X (no adjustment required)

The linearity coil used on the KCS 149 is actually two coils that are wound on the same coil form. The coils are wound such that little mutual inductance exists.

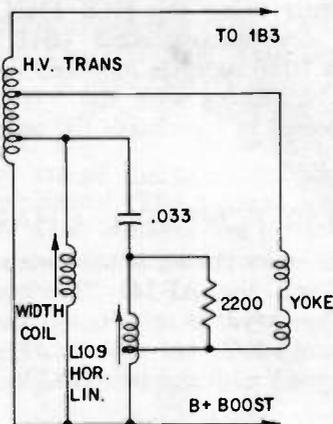


Figure 6—Improved Horizontal Linearity KCS 149 (adjustable)

In an ideal yoke circuit, the current change, plotted against time, is a straight line. In actual circuits, mismatch, due to slight component differences and circuit losses, will change the straight line plot to a parabola. The added LC circuitry changes the yoke inductive reactance so that current change is more nearly linear and the raster more nearly symmetrical.

Improved AGC and Noise Immunity KCS 151

The AGC circuit in the KCS 151 chassis differs from that used in either the KCS 148 or KCS 149

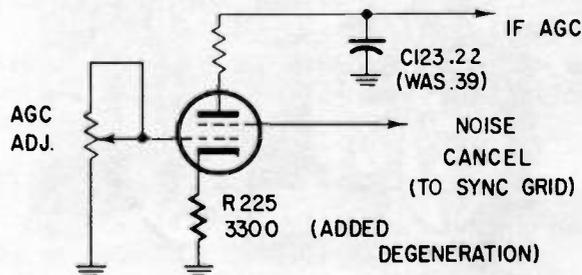


Figure 7—Fast Acting AGC Improved Noise Immunity

chassis. The 6GH8A suppressor grid is internally tied to the cathode and cannot function as a control grid. Since there is no AGC noise cancellation action from grid 3, degeneration is added in the cathode circuit to prevent excessive tube conduction on noise pulses.

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