



SPECIFICATIONS & SCHEMATIC

Manual **180 sq. in.**
Rectangular Tube
Hi-Fi
Color TV

Exclusive Heathkit Features, Plus Choice of 3-Way Installation



1. In A Wall Or Custom Cabinet

Mount in a wall for rec room, den or where space is at a premium. Or fashion your own custom cabinet to match any room's decor. See back page for space requirements and mounting instructions.



GRA-180-1

2. In Heathkit Contemporary Walnut Cabinet

Factory assembled of beautiful walnut solids and veneers with an oil-rubbed walnut finish. The GR-180 speaker is mounted on the right side of the one-piece picture-control panel mask. Measures a compact 18 $\frac{1}{4}$ " D x 28 $\frac{1}{4}$ " W x 29" H.



GRA-180-2

3. In Deluxe Early American Cabinet

Handcrafted of luxurious maple veneers and solids . . . all beautifully finished in popular salem-maple. GR-180 speaker mounts on right side of one-piece picture-control panel mask. Measures 18 $\frac{1}{4}$ " D x 28 $\frac{1}{4}$ " W x 31 $\frac{3}{4}$ " H.

Features Smaller Dot Size For Improved Picture Definition & Brightness . . . Automatic Degaussing . . . Exclusive Self-Servicing

Hi-Fi 90° Rectangular Color Tube . . . with 180 sq. inches of viewing area and smaller "Rare Earth Phosphor" dots for livelier colors, best picture definition. Anti-glare safety glass protects its face.

26 Tube, 10 Diode, 1 Transistor Circuit . . . the latest, most sophisticated design to bring you the best color and black & white pictures. The 24,000 volt regulated high voltage power supply assures sharpness and clarity.

Automatic Degaussing Circuit . . . demagnetizes and "cleans" the picture everytime you turn the set on from a "cold" start. Also eliminates any manual degaussing when you move the set. A mobile degaussing coil is included for initial set-up and adjustments.

Exclusive Heath Magna-Shield . . . covers the entire tube—keeps the picture tube free from stray magnetic fields to give you the purest color possible.

Automatic Color Control Circuit coupled with gated automatic gain control (AGC) reduce color fading, and insure steady, jitter-free pictures even under adverse interference, such as nearby airplane traffic.

2-Speed Transistor UHF Tuner . . . for either fast station selection or fine tuning of individual channels.

Deluxe VHF Turret Tuner . . . with "memory" fine tuning so you don't have to readjust everytime you return to a channel. Also features long-life nickel silver contacts for positive switch action. Both channel indicators are lighted for easy reading.

Kit GR-180, all parts including chassis, tubes, mask, UHF & VHF tuners, mounting kit, and special limited-field 4" x 6" speaker.

3-Stage Video IF Strip . . . reduces interference and improves definition.

Vertical Swing-Out Chassis . . . hinged to make it more accessible for easier installation and servicing.

Two VHF Antenna Inputs . . . for 300 ohm balanced line, and 75 ohm coax to reduce interference in metropolitan or CATV areas.

Hi-Fi Sound Outputs . . . a cathode follower for playing through your hi-fi system and an 8 ohm output for connection to the special limited-field 4" x 6" speaker that's included with your kit.

Built-In Servicing Facilities . . . includes dot generator and mobile degaussing coil for initial set-up, and to converge set any time. Manual includes full-color illustrations that show you exactly what to look for and how to achieve it. Ends service calls for simple adjustments and minor repairs.

All Critical Circuits Preassembled & Aligned . . . includes VHF and UHF tuners, 3-stage IF assembly and high voltage power supply. You wire 3 circuit boards, assemble and wire the parts on the chassis, connect a wiring harness, mount the picture tube and adjust the picture . . . takes 25 to 35 hours.

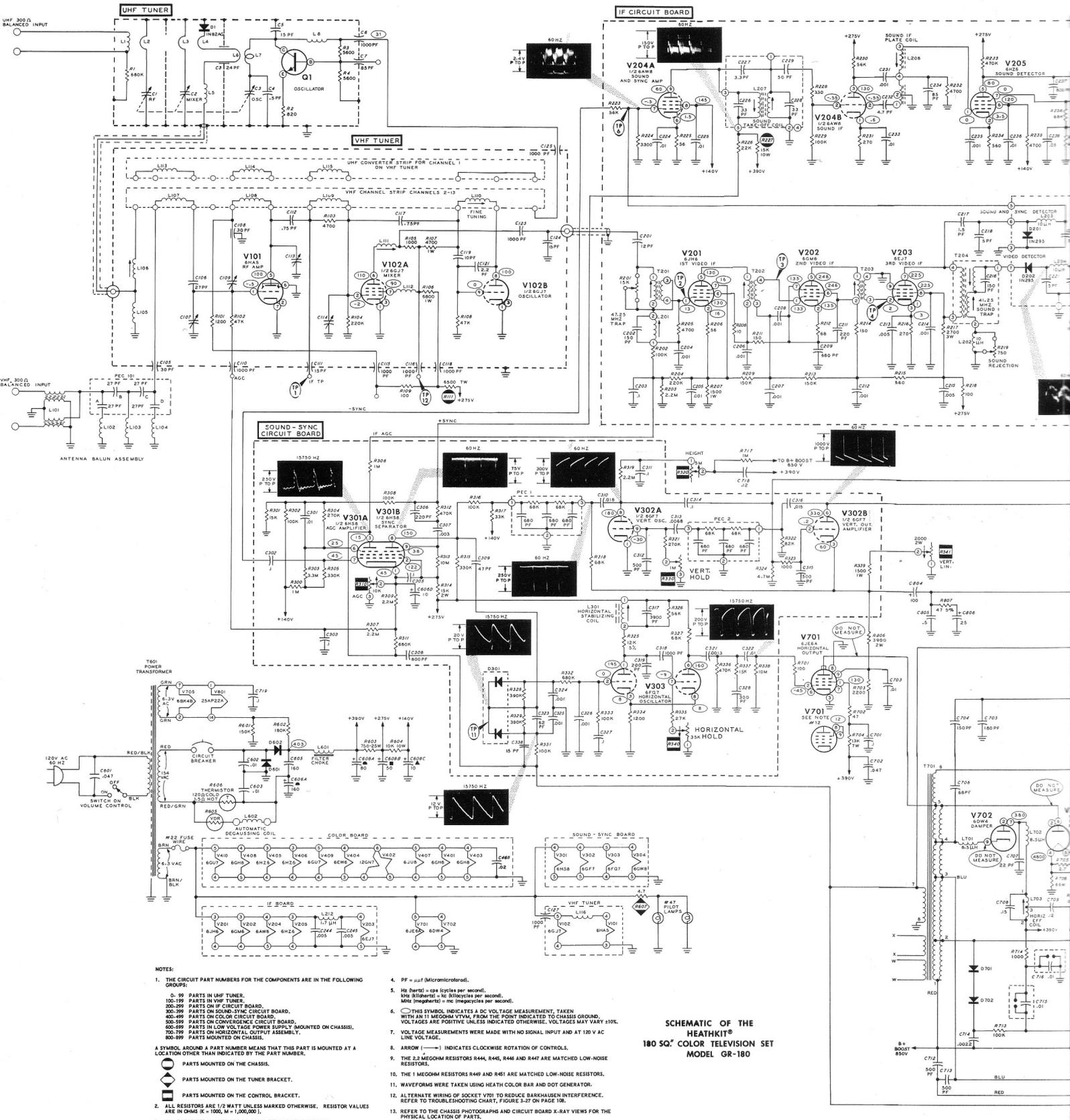
Circuit Breaker Protection . . . no fuses to replace ever.

Extra B + Boost . . . accelerates the electronic beams for a smaller spot size, higher resolution, improved definition and brighter pictures.

Fully Warranted . . . 1 year warranty on picture tube, 90 days on all other parts.

Assembled GRA-180-1,
Contemporary walnut cabinet

Assembled GRA-180-2,
Early American cabinet



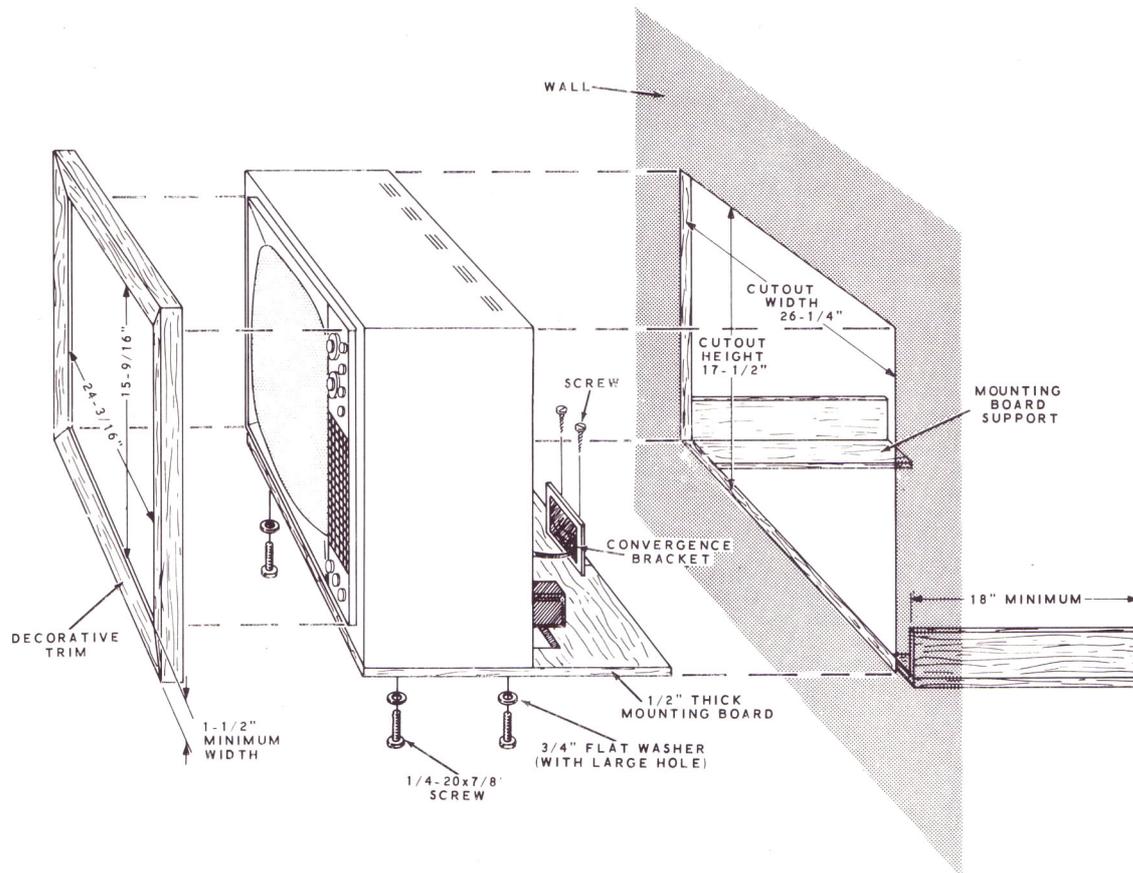
NOTES:

- THE CIRCUIT PART NUMBERS FOR THE COMPONENTS ARE IN THE FOLLOWING GROUPS:
 - Q-99 PARTS IN UHF TUNER.
 - 100-199 PARTS IN VHF TUNER.
 - 200-299 PARTS ON IF CIRCUIT BOARD.
 - 300-399 PARTS ON SOUND-SYNC CIRCUIT BOARD.
 - 400-499 PARTS ON COLOR CIRCUIT BOARD.
 - 500-599 PARTS ON CONVERSION CIRCUIT BOARD.
 - 600-699 PARTS IN LOW VOLTAGE POWER SUPPLY MOUNTED ON CHASSIS.
 - 700-799 PARTS ON HORIZONTAL OUTPUT ASSEMBLY.
 - 800-899 PARTS MOUNTED ON CHASSIS.
- ALL RESISTORS ARE 1/2 WATT UNLESS MARKED OTHERWISE. RESISTOR VALUES ARE IN OHMS (R = 100, M = 1,000,000).
- ALL CAPACITOR VALUES ARE IN μ F UNLESS MARKED OTHERWISE.
- PF = μ sec (Microsecond).
- Hz (Hertz) = cps (cycles per second).
- KHz (Kilohertz) = kc (kilocycles per second).
- MHz (Megahertz) = mc (megacycles per second).
- THIS SYMBOL INDICATES A DC VOLTAGE MEASUREMENT, TAKEN WITH AN 11 MEGOHM VTVM, FROM THE POINT INDICATED TO CHASSIS GROUND. VOLTAGES ARE POSITIVE UNLESS INDICATED OTHERWISE. VOLTAGES MAY VARY $\pm 10\%$.
- VOLTAGE MEASUREMENTS WERE MADE WITH NO SIGNAL INPUT AND AT 120 V AC LINE VOLTAGE.
- ARROW (\rightarrow) INDICATES CLOCKWISE ROTATION OF CONTROLS.
- THE 2.2 MEGOHM RESISTORS R444, R445, R446 AND R447 ARE MATCHED LOW-NOISE RESISTORS.
- THE 1.1 MEGOHM RESISTORS R449 AND R451 ARE MATCHED LOW-NOISE RESISTORS.
- WAVEFORMS WERE TAKEN USING HEATH COLOR BAR AND DOT GENERATOR.
- ALTERNATE WIRING OF SOCKET V701 TO REDUCE BARKHAUSEN INTERFERENCE. REFER TO TROUBLESHOOTING CHART, FIGURE 3-27 ON PAGE 118.
- REFER TO THE CHASSIS PHOTOGRAPHS AND CIRCUIT BOARD X-RAY VIEWS FOR THE PHYSICAL LOCATION OF PARTS.

SCHEMATIC OF THE HEATHKIT® 180 SQ. COLOR TELEVISION SET MODEL GR-180

Easy To Install...

Wall and cabinet installations are extremely simple. Below are the required dimensions. The complete unit easily slides in and out to facilitate installation and servicing. Space is required above and below the installation for adequate air circulation.



SPECIFICATIONS

Picture Size: 180 square inches, approximately.

Deflection: Magnetic, 90 degrees.

Focus: Electrostatic.

Convergence: Magnetic.

Antenna Input Impedance: 300 ohm balanced or 75 ohm unbalanced.

Tuning Range: VHF TV channels 2 through 13. UHF TV channels 14 through 83.

Picture IF Carrier: 45.75 MHz.

Sound IF Carrier: 41.25 MHz.

Color IF Subcarrier: 42.17 MHz.

Sound IF Frequency: 4.5 MHz.

Video IF Bandpass: 3.58 MHz.

Tube Complement: 6HA5—RF amplifier. 6GJ7—Oscillator and mixer. 6JH6—1st IF amplifier. 6GM6—2nd IF amplifier. 6EJ7—3rd IF amplifier. 6GH8—Video cathode follower and color amplifier. 12GN7—Video output. 6AW8—Sound and sync amplifier. 6HZ6—Sound detector. 6GW8—Cathode follower and sound output. 6HS8—Sync and AGC. 6GF7—Vertical oscillator and vertical output. 6FQ7—Horizontal oscillator. 6JE6A—Horizontal output. 6DW4—Damper. 6BK4B—High voltage regulator. 3A3—High voltage rectifier. 1V2—Focus rectifier. 6GH8—Bandpass amplifier and color killer. 6JU8—Color killer detector and ACC and phase

detector. 6GH8—3.58 megahertz oscillator and reactance tube. 6EW6—Burst Amplifier. 6HZ6—X demodulator. 6HZ6—Z demodulator. 6GU7—R-Y and G-Y amplifier. 6GU7—B-Y amplifier and blanker. 19EYP22—Rectangular color picture tube.

Diodes and Transistor: 1—1N82AG diode: UHF mixer. 3—1N295 crystal diode: video detector, sound and sync detector, dot generator. 5—Silicon diodes: pincushion correction, low voltage B+, boosted boost B+. 1—Four-section selenium diode: convergence. 1—Dual selenium diode: horizontal AFC. 1—Transistor: UHF oscillator.

Sound Cathode Follower: Output impedance—3000 ohm. Frequency response— ± 1 db, 50-15,000 Hz. Harmonic distortion—less than 1%. Output voltage—2 volts.

Audio Output: Output impedance—8 ohm. Output power—2 watts. Frequency response— ± 3 db, 50-10,000 Hz. Harmonic distortion—less than 3%.

Power Requirements: 110 to 130 volts AC, 60 Hz, 330 watts.

Net Weight: 80 lbs.

Accessory Cabinet (Model GRA-180-1): Walnut-finished cabinet for housing the TV Set; overall cabinet size with TV Set installed—28 $\frac{3}{4}$ " wide x 29 $\frac{7}{8}$ " high x 18 $\frac{1}{4}$ " deep.

Accessory Cabinet (Model GRA-180-2): Early American cabinet for housing the TV Set; overall cabinet size with TV Set installed—28 $\frac{1}{4}$ " wide x 31 $\frac{3}{4}$ " high x 18 $\frac{1}{4}$ " deep.



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