



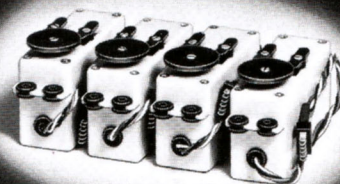
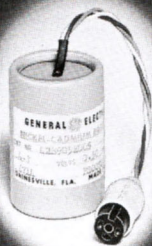
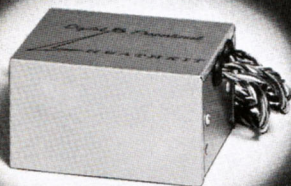
SPECIFICATIONS & SCHEMATIC

## 5-Channel Digital Proportional R/C System

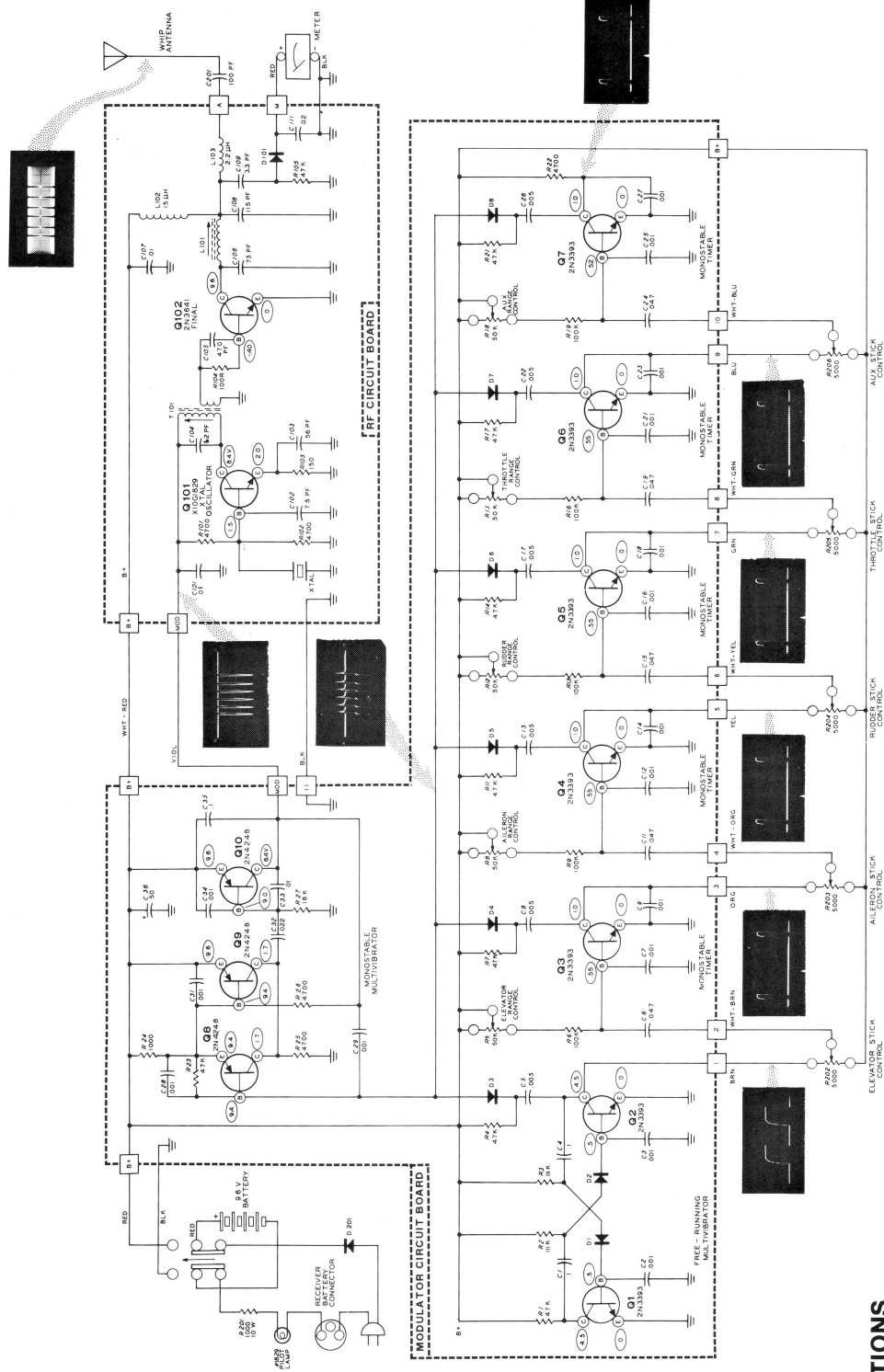
**Now — For Radio-Control Modelers —  
The Heathkit Version Of The Famous Kraft  
System With Revolutionary Capacitor  
Servos — At Savings Of Over \$200!**

- All solid-state system consists of transmitter, receiver, four servos and two rechargeable nickel cadmium battery packs
- Easy . . . fun to build, no special skills or knowledge needed

“Full House + 1” Operating Versatility. Designed by Kraft Systems, Inc. and put into kit form by Heath, this new R/C system now offers the most economical way to go “full house” on a complete digital proportional rig. This all solid-state system consists of a transmitter, receiver, four servos and two rechargeable nickel cadmium battery packs. Just 20 hours from parts to installation and you save over \$200!



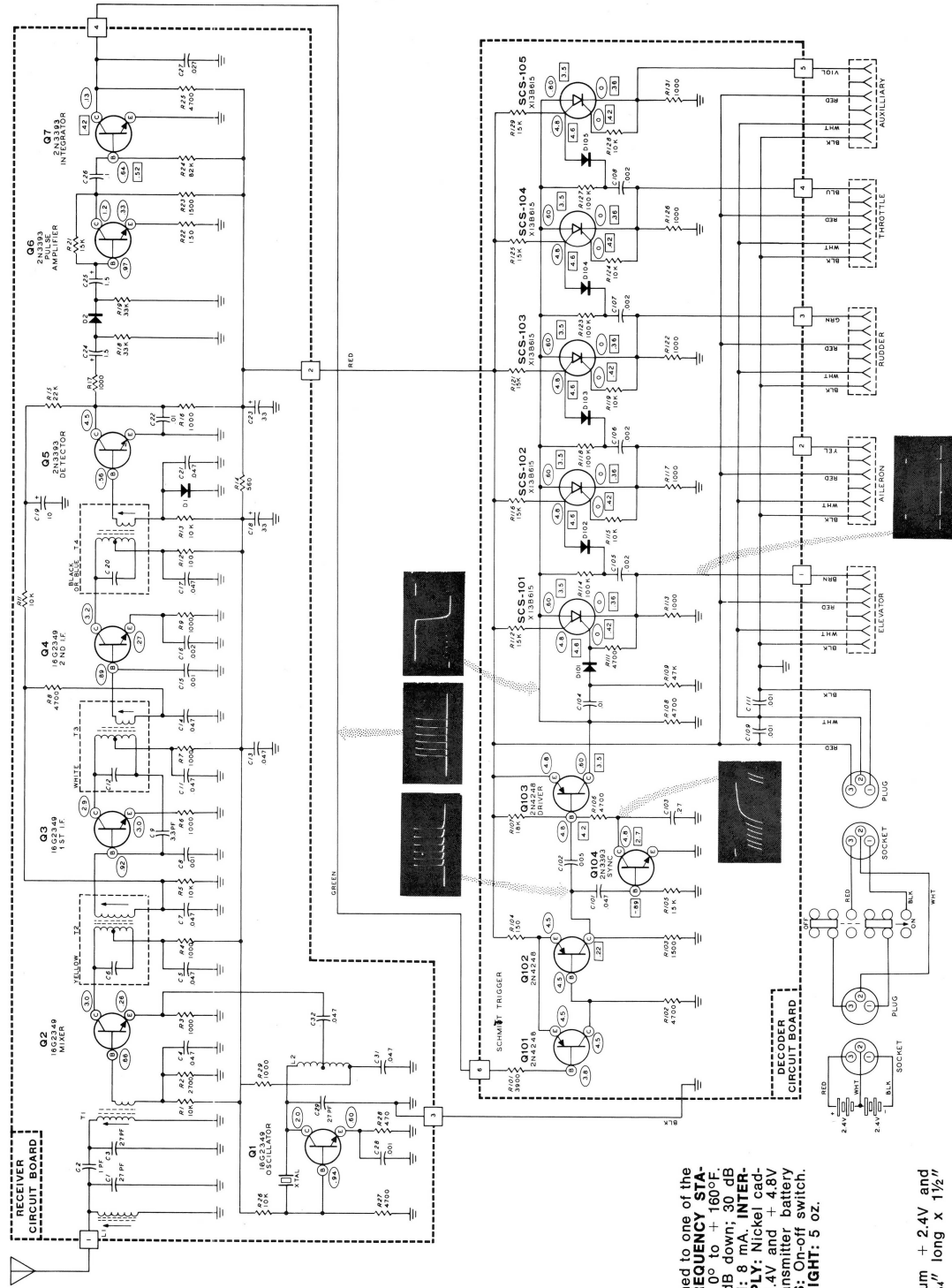
**SCHEMATIC OF THE  
HEATHKIT®  
DIGITAL 5 TRANSMITTER  
MODEL GDA-47-1**



**SPECIFICATIONS  
GDA-47-1**

**RF CARRIER FREQUENCY:** One of the following, crystal controlled: 26,995, 27,045, 27,095, 27,145 and 27,195 MHz. (Preassembled and adjusted by Heath Co.). **FREQUENCY STABILITY:** Within  $\pm .005\%$ . **TEMPERATURE:** 0° to +160°F. **RF OUTPUT CIRCUIT:** Pi network. **MODULATION:** On-off carrier keying. **RF INPUT POWER:** 600 mW. **RF OUTPUT POWER:** 400 mW into 50 ohm load (antenna). **APPROXIMATE CURRENT DRAIN:** 100 mA. **CONTROLS:** Elevator with trim tab, aileron with trim tab, rudder with trim tab, throttle with trim tab, auxiliary and on-off switch. **POWER SUPPLY:** Internal 9.6V nickel cadmium battery. Rechargeable simultaneously with receiver battery at 35-40 mA from 120V power line. **DIMENSIONS:** 6 3/4" H x 6 3/4" W x 2 5/8" D. **NET WT. WITH BATTERY:** 2 3/4 lbs.

**SCHEMATIC OF THE  
HEATHKIT®  
DIGITAL 5 RECEIVER  
MODEL GDA-47-2**



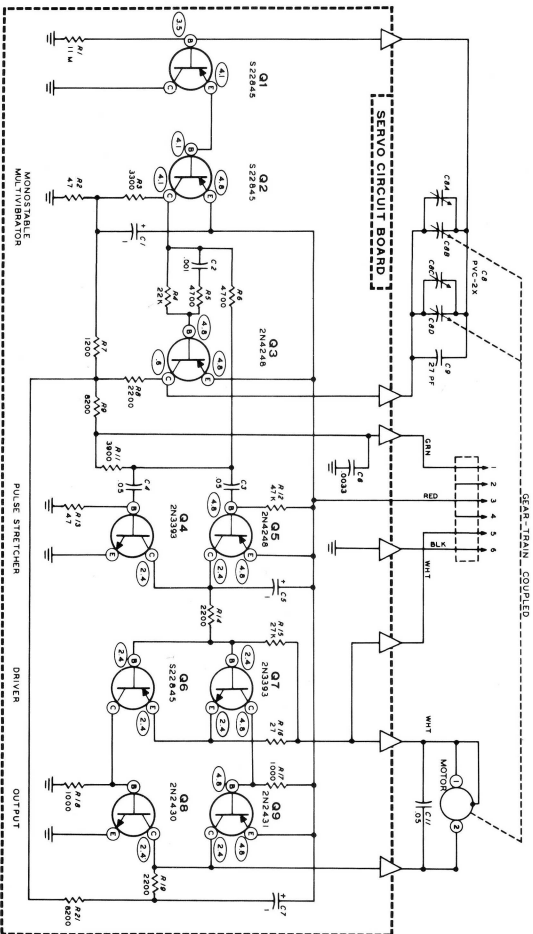
**SPECIFICATIONS  
GDA-47-2**

**RF CARRIER FREQUENCY:** Crystal controlled, matched to one of the following: 26,995, 27,095, 27,145, 27,195 MHz. **FREQUENCY STABILITY:** Within  $\pm$  0.05%. **TEMPERATURE RANGE:** 0° to + 60°-F. **SENSITIVITY:** 5  $\mu$ V. **SELECTIVITY:** 3.0 MHz @ 6 dB down; 30 dB down @ 10 kHz. **APPROXIMATE CURRENT DRAIN:** 8 mA. **INTERMEDIATE FREQUENCY (IF):** 455 kHz. **POWER SUPPLY:** Nickel cadmium battery (Heath GDA-47-3 Battery Pack); + 2.4V and + 4.8V outputs. Rechargeable simultaneously with the transmitter battery at 35-40 mA from the 120V power line. **CONTROLS:** On-off switch. **DIMENSIONS:** 1 7/8" H x 2 3/8" W x 2 7/8" L. **NET WEIGHT:** 5 oz.

**SPECIFICATIONS  
GD-47-3**

**RECEIVER BATTERY:** Rechargeable nickel cadmium + 2.4V and + 4.8V outputs, 500 mA hours current rating. 2 3/4" long x 1 1/2" diameter (max.) Net weight 5 oz.

**SCHEMATIC OF THE  
HEATHKIT®  
DIGITAL 5 SERVO  
MODEL GDA-47-4**



**SPECIFICATIONS  
GDA-47-4**

**INPUT SIGNAL:** Pulse: 1 to 2 ms wide; 4V peak to peak. **THRUST:** 3.25 lbs. minimum. **TRANSIT TIME FOR 5/6" TRAVEL:** 0.7 seconds  
**LINEAR OUTPUT TRAVEL:** 5/6" end-to-end. **ROTARY OUTPUT TRAVEL:** Over 100° rotation (end-to-end). **TEMPERATURE RANGE:** 0° to +160°F. **POWER BATTERY REQUIREMENTS:** Idling Current: 2 mA. Stall Current: 350 mA. No Load Running Current: 80 mA. **TOTAL GEAR TRAIN BACKLASH:** Less than .02". **MECHANICAL OUTPUT:** (1) Rotary arm; (2) Retard wheel; (3) Linear arms. **POSITION ACCURACY:** ± 0.5%. **DIMENSIONS:** 1 1/2" H X 3/4" W X 2 7/8" L. (Length includes mounting ears; height includes linear arms.) **NET WEIGHT:** 2.5 oz.

## **The Best News An R/C Modeler Can Get These Days Is That His Radio Equipment Can Cost Less . . .**

### **That's What's Happening With The New Heathkit Digital-5 Proportional System . . .**

#### **It's Got More Features, More Performance . . . And It Saves \$200 Or More!**

The New Heathkit Digital Proportional System offers the best of all R/C worlds . . . a "full house" of time-proven circuitry . . . rugged, reliable . . . proven in contests and months of sport flying . . . and you can build it, easily, quickly, and save \$200 or more.

Using digital techniques, the system provides 5 channels of simultaneous proportional control . . . 4 with trim adjustments. The transmitter radiates a train of 6 pulses, 5 are controlled by the two control sticks and a thumbwheel . . . the 6th is a reference point for the receiver. The receiver uses elaborate digital circuitry and noise-limiting to route the signals to the proper servos with interference-free operation assured.

The servos use a new variable capacitor feedback system to eliminate failures due to dirty wirewound elements, worn wipers or vibration.

Each servo has three outputs . . . two are linear in simultaneously opposite directions . . . one is rotary for convenience in location. Put the new Heathkit R/C Proportional System to work for you . . . it's your best buy . . . and you save even more when you buy the system.

System Kit GD-47, transmitter, receiver, 4 servos, 2 nickel cadmium battery packs, all necessary cable and connectors. Specify frequency desired. (Available on 27 MHz only) . . . 5 lbs.

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## **You're In Complete Command**

### **With The New Heathkit 5-Channel Digital Proportional Transmitter . . .**

#### **No Matter What The Range!**

- Factory assembled and tuned RF section assures peak performance, speeds kit assembly
- 5 channels for complete command of 5 separate servos . . . all channels are trimmable
- Out-of-sight control range
- Antenna telescopes into case
- True d'Arsonval meter shows relative power output and battery condition
- Built-in battery charger with indicator light
- Improved, rounded-edge case design
- Choice of operating frequencies in 11 meter band (26.995, 27.045, 27.095, 27.145 and 27.195 MHz)

If You Can See It, You're In Command! With the new Heathkit R/C transmitter in your hand, you can be confident of complete control of your craft thanks to efficient circuitry that produces high output power (0.8 watt input, 0.4 watt output). And its 5 channels that use a fixed frame rate (rather than variable) produce 6 pulses instead of 5 for more reliable control of the 5th channel. Four of the channels have trimming adjustments conveniently beside and below each of the two sticks. The right stick controls elevator and ailerons; left stick controls rudder and throttle. The 5th channel is a thumb-type control centered below the two sticks.

Easy To Build, Easy To Use. The RF circuitry of the transmitter is

already assembled and aligned to assure that your kit performs to the utmost. The 12 silicon transistor, 10 diode circuitry uses fiberglass boards for rugged reliability, Mylar and Tantalum capacitors in critical circuits. Powered by a 9.6v., 500 mah. nickel cadmium rechargeable battery; built-in battery charger . . . just plug the receiver battery into the transmitter and plug the transmitter into 110 VAC with the cords provided . . . the red indicator tells when batteries are being charged . . . the meter tells when transmitter battery needs charging . . . AC line isolation is provided during charge for shock protection (charges only when transmitter is "off"). Operates up to 5 hrs. per charge. Just pull up the 54" telescoping antenna, turn the switch on and you're in business . . . the Heathkit Transmitter fits easily in your hand (rounded edges on the aluminum case for the natural hand curvature) . . . and its weighs only 2 $\frac{3}{4}$  lbs., measures just 6 $\frac{3}{8}$ " H., 6 $\frac{3}{4}$ " W. and 2 $\frac{5}{8}$ " deep.

Kit GDA-47-1, transmitter, battery, charging cord, (specify frequency) shipping wt. . . . 3 lbs.

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## **Put This Sensitive Solid-State 5-Channel Heathkit Receiver In Your R/C Model For Long Distance Command . . .**

### **Weighs Just 5 Oz.**

- Highly sensitive reception
- Virtually immune to noise
- Not affected by temperature variations
- 5th channel for flaps, retractable gears, etc.
- Impact resistant
- Powered by nickel cadmium rechargeable battery
- Operates up to 5 hours per charge
- Choice of 5 operating frequencies in 11 meter band (26.995, 27.045, 27.095, 27.145, 27.195 MHz)

Out-Of-Sight Range, Interference-Free Reception. That's what you get with the new Heathkit R/C Receiver in your craft. The special circuitry uses 11 transistors, 5 SCS devices, and 7 diodes to produce this kind of performance. The decoder section uses Silicon Controlled Switch (SCS) shift logic plus noise limiting diode and integrator circuit to assure accurate routing of pulse information to the proper servo with elimination of virtually all noise-produced interference pulses.

Rugged Construction, Easy Alignment, Compact Installation. Inside the handsome blue aluminum case of the new Heathkit R/C receiver

are 2 tough fiberglass circuit boards on which are mounted all the components of this superheterodyne circuit with 455 kHz IF. Power is supplied by a 4.8 V nickel cadmium rechargeable battery which has a 500 mah. (milliampere hours) rating; listed below as GDA-47-3. Although compact (just 2 $\frac{7}{8}$ " H. by 2 $\frac{3}{16}$ " W. and 1 $\frac{5}{8}$ " D.), the receiver is easy to assemble and alignment is accurate by tuning the coils for maximum output as indicated on the transmitter meter which is used for this purpose before it is installed in the transmitter. No special instruments needed for alignment.

Your best Receiver Buy, Bar None. The Heathkit R/C receiver invites comparison for value. Special design, exceptional performance . . . and lowest price.

Kit GDA-47-2, receiver only (specify frequency), shipping wt. . . . 3 lbs.  
Kit GDA-47-3, receiver battery pack only, shipping wt. . . . 1 lb.

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## **For Fast, Precise Response . . . The Unique New Heathkit Variable Capacitor Servo . . .**

### **Three Outputs, 3.5 Lb. Thrust, 2.5 Oz. Weight**

- Sealed variable capacitor feedback
- Three outputs . . . two linear, bi-directional shafts plus rotary
- Operates in any position
- Midget size fits anywhere
- Weighs just 2 $\frac{1}{2}$  oz.

Control You Can Count On . . . that's the new Heathkit Capacitor Servo. Fast, exact, this new system responds when you want it, exactly as you want it, thanks to the new variable capacitor design. No more failure due to dirty feedback elements or vibration . . . no sliding contacts to corrode or shift, no wire to wear out . . . this electronic method of feedback is reliable and accurate . . . improves resolution since a capacitor provides infinite resolution compared to discrete steps in wirewound types of feedback.

Powerful, Versatile. Inside its small, tough nylon case is a powerhouse

. . . a full 3.5 lb. thrust delivered by its outputs . . . thrust that is usable in many different ways . . . two linear shafts that travel  $\frac{5}{8}$ " in opposite directions simultaneously, plus a rotary output with over 100° of rotation . . . so useful that one servo can do several things at once. So compact (just 1 $\frac{7}{16}$ " H., 1 $\frac{5}{16}$ " W., 2 $\frac{9}{16}$ " L.), it fits anywhere, in any position.

Easy To Build. Despite its small size, you'll find these new servos go together easily . . . the 9-transistor circuit mounts on a fiberglass circuit board . . . all nylon gears, shafts, and case fit together accurately, easily. All necessary cables, connectors, and grommets are included for each servo. Best of all is the money you save . . . for these sell for just a fraction of the assembled price.

Kit GDA-47-4, one servo only, shipping wt. . . . 1 lb.