

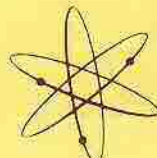
MODEL **GD-19 5-Channel Digital
Proportional Radio Control System**

HEATHKIT®

ASSEMBLY MANUAL



HEATHKIT COMPANY



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Price \$2.00

595-1060-09

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The Heathkit electronic product you have purchased is one of the best performing electronic products in the world.

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During your first 90 days of ownership, any parts which we find are defective, either in materials or workmanship, will be replaced or repaired free of charge. And we'll pay shipping charges to get those parts to you — anywhere in the world.

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Sincerely,

HEATH COMPANY
Benton Harbor, Michigan 49022

Prices and specifications subject to change without notice.

Assembly
and
Operation
of the



5-CHANNEL DIGITAL PROPORTIONAL RADIO CONTROL SYSTEM

MODEL GD-19



HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

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INTRODUCTION

The Heathkit 5-Channel Digital Proportional Radio Control System, Model GD-19, consists of a Transmitter, a Receiver, four Servos, and the Receiver Battery Pack. This all solid-state system uses digital techniques to provide five channels (fifth servo optional) of simultaneous proportional control.

TRANSMITTER

The Digital Transmitter, Model GDA-19-1, can be purchased to operate on any one of the fifteen frequencies which make up the following three bands.

<u>27 MHz Band</u>	<u>53 MHz Band</u>	<u>72 MHz Band</u>
26,995 MHz	53,100 MHz	72,080 MHz
27,045 MHz	53,200 MHz	72,240 MHz
27,095 MHz	53,300 MHz	72,400 MHz
27,145 MHz	53,400 MHz	72,960 MHz
27,195 MHz	53,500 MHz	75,640 MHz

The completed Transmitter is housed in an attractive, light blue, wrinkle finish aluminum case that has rounded corners to provide a comfortable grip. A 54" antenna collapses into the case when it is not in use. A relative power output meter is provided for visual monitoring of the radiated signal. Sealed plastic molded control sticks and trim tabs allow complete control of the servo positions. (The trim tabs are designed to rotate the control potentiometer for trim adjustment without changing the position of the control sticks.)

A total of twelve silicon transistors are used in the Transmitter; or thirteen transistors if the unit operates on the 72 MHz band. All parts except the battery charging circuit are mounted on two glass epoxy circuit boards: the transmitter circuit board and the encoder circuit board. The transmitter circuit board is preassembled and prealigned to one of the above frequencies.

Supply voltage for the Transmitter is from an internal 9.6 volt nickel-cadmium rechargeable battery. A charging circuit is provided inside the Transmitter case for charging the transmitter and receiver batteries. Charging current for the batteries is obtained from the 120 volt power line. A pilot lamp on the Transmitter indicates when the batteries are being charged.

NOTE: It is necessary to have a CLASS C operator's license from the FCC (Federal Communication Commission) before the GDA-19-1 Transmitter can be operated on the 27 and 72 MHz bands. A technician class or higher amateur radio operator's license is required to operate on the 53 MHz band. (A pushbutton is provided, for keying purposes, on the top of the 53 MHz transmitter. The amateur radio operator uses this pushbutton to comply with FCC regulations for this band by transmitting his amateur radio station call letters at regular intervals.)

A delay of at least a few weeks will occur between the time you apply for your license and the time you receive it from the FCC. Therefore, you will save time if you apply for your license immediately. The necessary forms are included with this kit. All applications for this license must be accompanied by the FCC license fee.

RECEIVER

A total of nine silicon transistors, five silicon-controlled switches (SCS), and three ceramic IF filters are used in the GDA-19-2 Receiver. All parts are mounted on two glass epoxy circuit boards: the receiver circuit board and the decoder circuit board. The outputs for the five radio controlled channels are supplied to the individual servos by a space-saving connector block and inline connectors.

Supply voltage for the Receiver and Servos is from a compact rectangular 4.8 volt nickel-cadmium rechargeable battery, Heathkit Model GDA-19-3. The supply voltage is controlled by an ON-OFF switch. The completed Receiver is housed in an attractive, compact, molded nylon case.

SERVOS

The Heathkit Model GDA-19-4 Digital Proportional Servo is a compact, 9 transistor, electromechanical unit that is used to accurately move the control elements in model airplanes, boats, and cars. Both linear-motion and circular-motion outputs are available. The two linear-motion outputs travel in opposite directions from each other, providing a more universal servo.

The servo has been designed for long life and trouble-free operation. One outstanding feature is the use of a variable capacitor as a feedback element instead of the usual potentiometer. The variable capacitor uses intermeshing aluminum plates which are insulated from each other with a polyethylene film. The Servo is housed in a compact molded nylon case.

ASSEMBLY NOTES

UNPACKING

To avoid intermixing the parts, do not open a pack until you are instructed to do so.

The GD-19 Radio Control System is divided into the following major packs: The transmitter pack, marked with the first seven numbers 171-1983; the receiver pack, marked with the first seven numbers 171-2038; the receiver battery pack, marked with the first six numbers 191-361 and the four servo packs, each marked with the first seven numbers 171-2126. If you ordered a complete Radio Control System you will also receive pack #8. This pack contains all the parts that were variable, depending on which crystal you ordered. A paragraph at the beginning of each Parts List (Transmitter, Receiver, and Servo) will tell you which pack or packs to open.

Also included in this kit is the manual pack, consisting of one Assembly Manual (see front cover for part number), one Parts Order Form, one Kit Builders Guide, and six blue and white labels.

NOTE: To order replacement parts, refer to the Replacement Parts Price List and use the Parts Order Form furnished with this kit.

Refer to the "Kit Builders Guide" for complete information on unpacking, parts identification, tools, wiring, soldering, and step-by-step assembly procedures.

STEP-BY-STEP PROCEDURE

The following assembly instructions for the Radio Control System are divided into three sections: Transmitter, Receiver, and Servos. Refer to the Identification Photographs of these units (Pages 118, 124 and 127) from time to time during assembly to see the actual position of wires and components.