

instructions

FOR THE



RF MODULE

FOR THE

RECEIVER

MODEL GDA-1205-2



INTRODUCTION

Your Heathkit Model GDA-1205-2 RF Module, is part of a modular system that is unique in the R/C world! These modules can be interchanged in both the Transmitter and Receiver in a matter of seconds. No longer will there be any conflict on an R/C frequency. The entire spectrum of the three R/C bands will be almost instantly available. Seventeen different Receiver RF Module kits and 17 matching, preassembled, Transmitter RF Modules are available from the Heath Company.

The Module's two-piece case is made of high-impact nylon and is not only durable but fuel-resistant as well. The circuit board is made of high-grade glass epoxy, and the gold-plated connectors assure you years of trouble-free service.

If you have purchased a system; including the Transmitter, Receiver, Receiver Battery Pack, and Servos; you should assemble the System components in the following order:

1. Transmitter
2. Receiver Battery.
3. Receiver Module.
4. Receiver RF Module(s).
5. Servos.

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

PARTS LIST

Check each part against the following list. Make a check (✓) in the space provided as you identify each part. Any part that is packed in an individual envelope with the part number on it should be placed back in the envelope after you identify it until it is called for in a step. Do not discard any packing materials until all parts are accounted for.

IMPORTANT NOTE: One resistor, three capacitors, two variable transformers, and one crystal have been supplied, which meet the specific requirements of the RF frequency you have ordered. These seven components are listed separately at the end of the "Parts List."

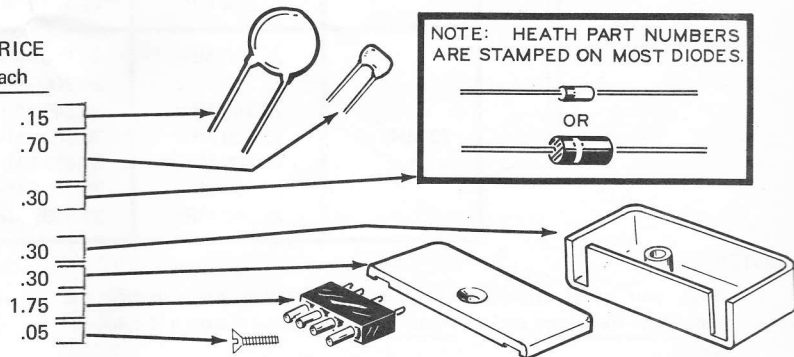
Each circuit part in this kit has its own "Circuit Component Number" (R1, C4, D2, etc.). This is a specific number for only that one part. The purpose of these numbers is to help you easily identify the same part in each section of the

Manual. These numbers will appear:

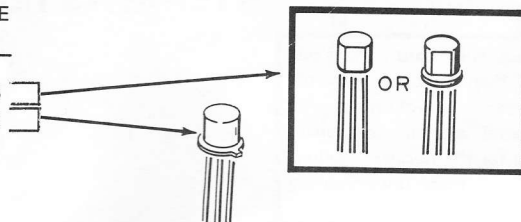
- In the Parts List.
- At the beginning of each step where a component is installed.
- In some illustrations.
- In the sections at the rear of the Receiver Module Manual.

To order a replacement part: Always include the PART NUMBER. Use the Parts Order Form furnished with the kit. If one is not available, see "Replacement Parts" inside the rear cover of the Manual. Your Warranty is located inside the front cover.

QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
(X)	1 75 pF disc capacitor	21-148	C4	.15
(X)	2 .047 μ F (473) ceramic capacitor	21-182	C6, C3	.70
(X)	1 1N4149 diode	56-56	D1	.30
(X)	1 RF circuit board	85-1597		.30
(X)	1 Case top	95-96		.30
(X)	1 Case bottom	95-97		1.75
(X)	2 4-pin connector w/leads	238-98		.05
(X)	1 2-56 x 5/16" screw	250-422		



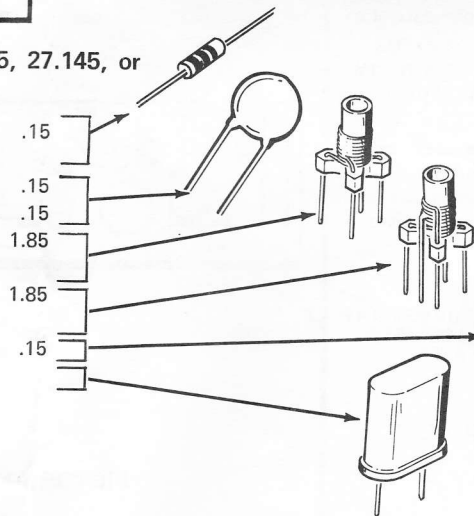
QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
(X)	1 16G2349 transistor	417-164	Q2	1.05
(X)	1 SE5055 transistor	417-228	Q1	1.20
()	1 Instruction sheet (See page 1 for part number.)			
()	Solder			



NOTE: Find the frequency band (27 MHz, 53 MHz, or 72 MHz) from the following sections in which your RF Module is listed. Then check your remaining parts against that list.

27 MHz BAND (Transmitter frequency: 26.995, 27.045, 27.095, 27.145, or 27.195 MHz)

()	1 1500 Ω (brown-green-red) resistor	1-36-12	R1	.15
()	2 47 pF disc capacitor	21-147	C1, C2	.15
()	1 75 pF disc capacitor	21-148	C5	.15
()	1 4-lead variable transformer	40-913	T1	1.85
()	1 5-lead variable transformer	40-914	T2	1.85
()	1 "Heathkit" label	390-1137		.15
()	1 Receiver crystal	*	Y1	



HEATHKIT

GDA-1205-2

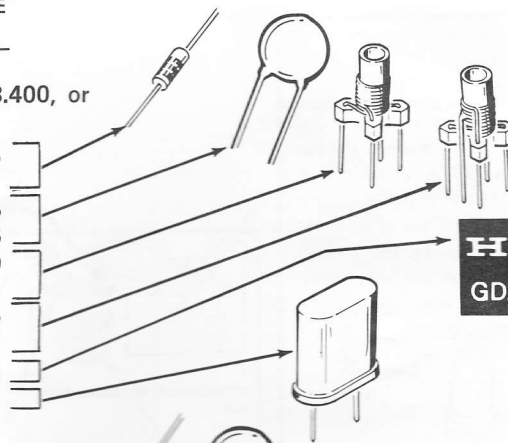
27MHz

* See "Crystal Chart" (on Page 5) for frequency and part number.

QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
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53 MHZ BAND (Transmitter frequency: 53.100, 53.200, 53.300, 53.400, or 53.500 MHz)

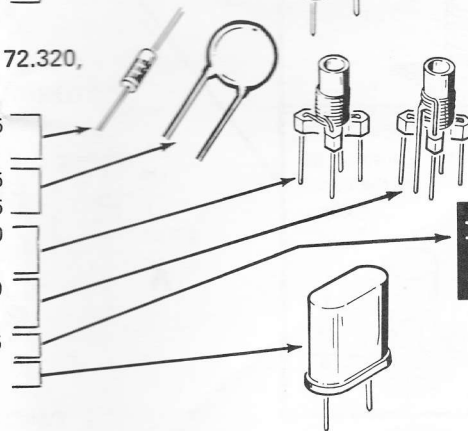
()	1	2700 Ω (red-violet-red) resistor	1-5-12	R1	.15
()	2	27 pF disc capacitor	21-6	C1, C2	.15
()	1	47 pF disc capacitor	21-147	C5	.75
()	1	4-lead variable transformer	40-915	T1	2.70
()	1	5-lead variable transformer	40-916	T2	2.75
()	1	"Heathkit" label	390-1138		.15
()	1	Receiver crystal	*	Y1	



HEATHKIT
GDA-1205-2 53 MHz

72 MHZ BAND (Transmitter frequency: 72.080, 72.160, 72.240, 72.320, 72.400, 72.960, or 75.640 MHz)

()	1	1000 Ω (brown-black-red) resistor	1-2-12	R1	.15
()	2	27 pF disc capacitor	21-6	C1, C2	.15
()	1	47 pF disc capacitor	21-147	C5	.75
()	1	4-lead variable transformer	40-917	T1	2.00
()	1	5-lead variable transformer	40-918	T2	2.00
()	1	"Heathkit" label	390-1138		.15
()	1	Receiver crystal	*	Y1	



HEATHKIT
GDA-1205-2 72MHz

*See "Crystal Chart" (on Page 5) for frequency and part number.

CRYSTAL CHART

Frequency Band	Transmitter Frequency**	Receiver Crystal		Price Each
		Frequency	Part No.***	
27 MHz	26.995 MHz	26.542 MHz	404-384	5.00
	27.045 MHz	26.592 MHz	404-385	5.00
	27.095 MHz	26.642 MHz	404-386	5.00
	27.145 MHz	26.692 MHz	404-387	5.00
	27.195 MHz	26.742 MHz	404-388	5.00
53 MHz	53.100 MHz	26.3235 MHz	404-389	5.00
	53.200 MHz	26.3735 MHz	404-390	5.00
	53.300 MHz	26.4235 MHz	404-391	5.00
	53.400 MHz	26.4735 MHz	404-392	5.00
	53.500 MHz	26.5235 MHz	404-393	5.00
72 MHz	72.080 MHz	36.2665 MHz	404-394	5.00
	72.160 MHz	36.3065 MHz	404-560	5.00
	72.240 MHz	36.3465 MHz	404-395	5.00
	72.320 MHz	36.3865 MHz	404-561	5.00
	72.400 MHz	36.4265 MHz	404-396	5.00
	72.960 MHz	36.7065 MHz	404-397	5.00
	75.640 MHz	37.5935 MHz	404-398	5.00

NOTES:

** When you order additional Receiver RF Module Kits, specify the transmitter frequency and kit Model number. See the Heathkit Catalog for details.

*** When you order replacement receiver crystals, specify the receiver crystal frequency and the part number for that crystal.

STEP-BY-STEP ASSEMBLY

START

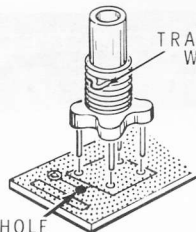
Position the RF circuit board printed side up as shown; then proceed with the following steps. Be sure to follow the same procedure to bend and cut component leads as you did for the Receiver Module. Do not solder any leads until you are instructed to do so.

- () C1 and C2. 27 MHz band Modules use 47 pF disc; 53 and 72 MHz band Modules use 27 pF disc capacitors.

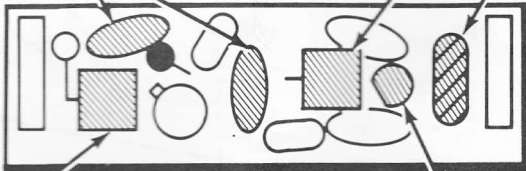


REMOVE COATING
EVEN WITH BOTTOM
OF CAPACITOR BODY

- () T1. Four-lead variable transformer. Position the transformer tap over the hole on the circuit board as shown.



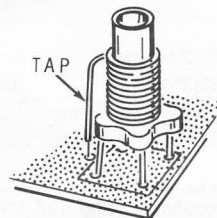
HOLE



PICTORIAL 1

CONTINUE

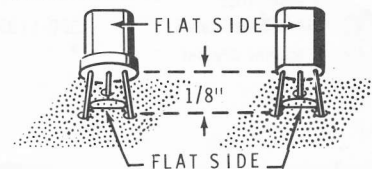
- () T2. Five-lead variable transformer.



- () Y1. Receiver crystal.

- () Read the frequency marked on your crystal. Then refer back to the "Crystal Chart" on Page 5 and circle that frequency in the "Receiver Crystal" Frequency Column.

NOTE: When you install the following transistor, first line up the flat of the transistor with the outline of the flat on the circuit board. Then insert the transistor leads into their correct holes, and position the transistor 1/8" above the circuit board.

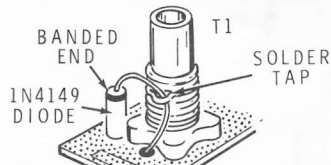


- () Q2. 16G2349 transistor (#417-164).

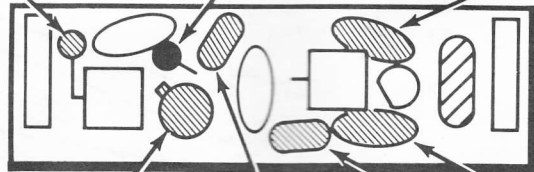
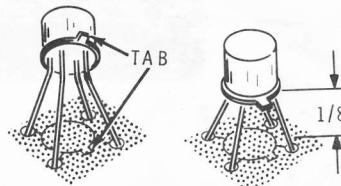
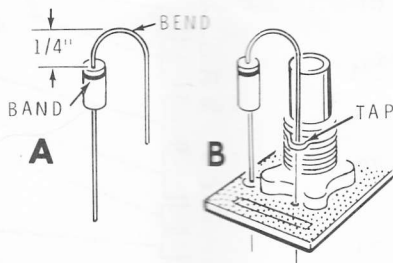
START 

() Refer to Detail 2A below and form the leads of a 1N4149 diode (#56-56) as shown in Part A.

() D1. Pass the loop at the banded end of the diode down through the tap of transformer T1 as shown in Part B of Detail 2A, then straight down through the circuit board hole. At the same time, pass the other diode lead down through the hole in the diode outline as shown. Solder the diode lead at the transformer tap.



() Q1. SE5055 transistor (#417-228). NOTE: Position the transistor tab over the tab printed on the circuit board.

**PICTORIAL 2**

Detail 2A

CONTINUE 

() R1. 27 MHz: 1500 Ω (brown-green-red). or 53 MHz: 2700 Ω (red-violet-red). or 72 MHz: 1000 Ω (brown-black-red).

() C4. 27 MHz: 75 pF disc. 53 MHz: 47 pF disc. 72 MHz: 47 pF disc.

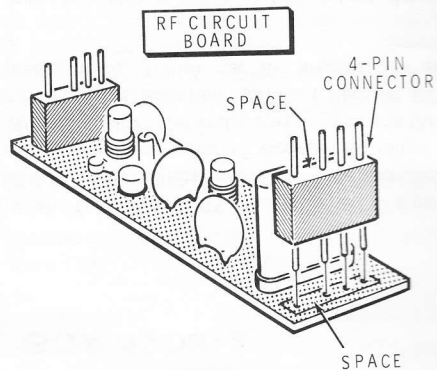
NOTE: Position this capacitor slightly above the top of the circuit board to allow clearance for transformer T2.

() C5. 75 pF disc.

() C6. .047 μ F (473) ceramic.

() C3. .047 μ F (473) ceramic.

() Carefully solder all foil pads except the four holes at each end of the circuit board. Use only enough solder to make a good, firm connection.

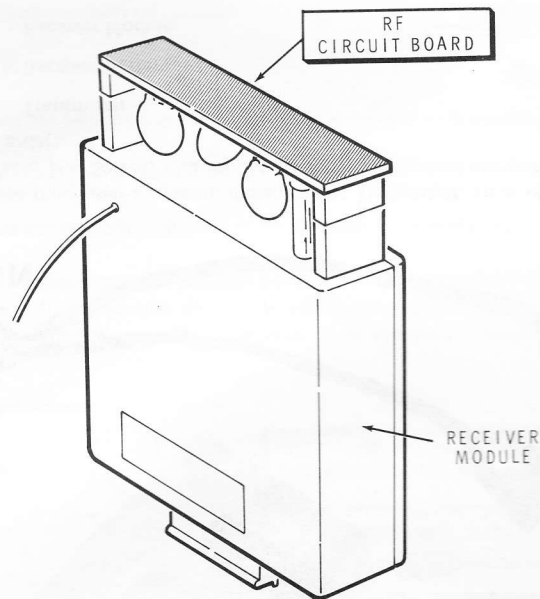


PICTORIAL 3

FINAL ASSEMBLY

Refer to Pictorial 3 for the following steps.

- () Mount a 4-pin connector onto either end of the RF circuit board as shown. Note that the leads are spaced so the connector can be mounted only one way. As in the previous assembly steps, bend the leads down onto the foil (toward the center of the board) and cut them to 1/16" length. Do not solder the leads. Be sure both connectors are against the board.
- () In the same manner, mount the remaining 4-pin connector on the other end of the RF circuit board. Do not solder the leads.



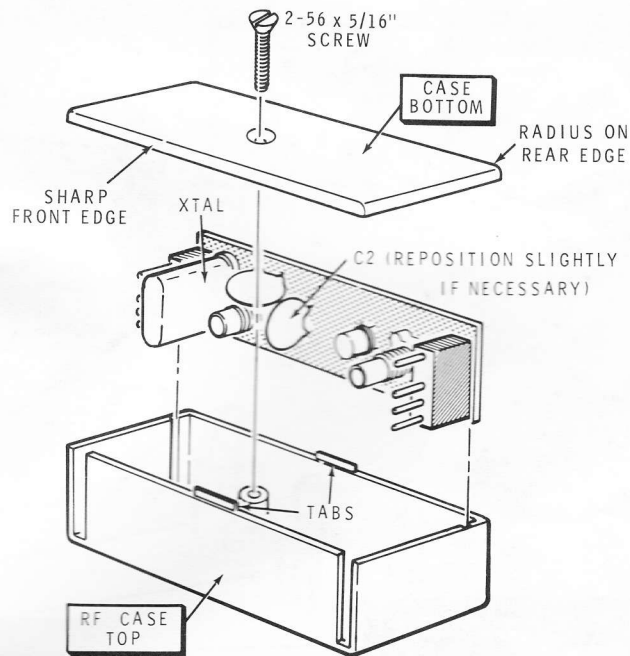
PICTORIAL 4

Refer to Pictorial 4 (on Page 8) for the following steps.

- () Carefully align the pins of the connectors on the RF circuit board with the connector pins on the Receiver Module. Then firmly press the RF circuit board onto the Receiver as shown.
- () Carefully solder each of the remaining RF circuit board foils to include all eight connector leads.
- () Very carefully remove the RF circuit board from the Receiver Module.
- () Carefully inspect the RF circuit board for the following conditions:
 1. Be sure there are no solder bridges between foils.
 2. Be sure both transistors are properly positioned.
 3. Be sure all connections are well soldered.
 4. Be sure diode D1 is soldered to the top of transformer T1.

Refer to Pictorial 5 for the following steps.

- () Position the RF case top so its open side is up as shown.
- () Position the RF circuit board over the top of the case top. Be sure the crystal is positioned as shown. Then, carefully slide the board down into the slots in the case until the board is firmly seated in the case. NOTE: Reposition capacitor C2 slightly if necessary.
- () Align the small tabs on the case bottom with the edges of the case top. Then temporarily secure the bottom to the top with a 2-56 x 5/16" screw.



PICTORIAL 5



Refer to Pictorial 6 for the following steps.

- () Position the RF Module case as shown.
- () Remove the backing from the "Heathkit" label and press the label in place on the top of the RF Module as shown.

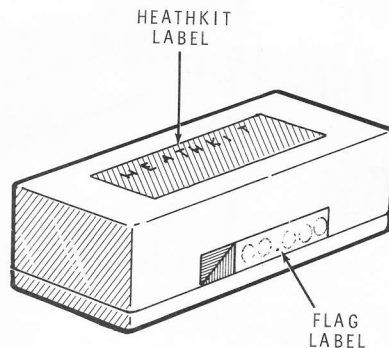
Refer to the "Crystal Chart" on Page 5 of this Manual and locate the Receiver Crystal Frequency you previously marked. To the left, under "Transmitter Frequency," find the one that is directly beside the marked frequency.

- () Locate the set of metallic frequency labels that was provided with the original receiver kit. Carefully peel the "flag label" that pertains to your Module from the label set, and press the label into place inside the embossed outline on the end of the Module as shown in the Pictorial.

NOTE: You probably will need other "frequency labels" in the future. Be sure to keep the unused labels in a handy location (with your Receiver Manual) for later reference.

CAUTION: Do not handle your RF Module roughly. If you drop it, for instance, the crystal may be damaged.

If you are building an entire R/C System and have completed the assembly of all the Receiver RF Modules, proceed to the "Test and Adjustment" section in your Transmitter Manual.



PICTORIAL 6