instructions

FOR THE

HEATHKIT®

SERVO-CENTERING STANDARD CIRCUIT BOARD

MODEL GD-1189

HEATH COMPANY
BENTON HARBOR, MICHIGAN 49022

597-1519

PARTS LIST

NOTE: The Servo Centering Standard uses factory-matched parts to provide an accurate reference for centering servos. CAUTION: DO NOT CHANGE THE SETTING OF THE 100 kΩ CONTROL, AS IT IS FACTORY SEALED.

Open the container and check each part against the following list. Make a check (√) in the space provided as you identify each part. The illustrations show what the parts look like.

Some parts are packaged in envelopes with the part number marked on the outside. Except for the initial parts check, keep these parts in the envelope until they are called for in the assembly steps.

To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with the kit.

	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
( )	1	4700 Ω (yellow-violet-red) resistor	1-8-12	R303	.15
( )	1	10 kΩ (brown-black-orange) resistor	1-9-12	R301	.15
( )	1	Servo centering standard circuit board	85-1655		.60
( )	1	Set of factory selected parts consisting of: 100 kΩ control .047 µF Mylar capacitor	100-1667		1.55
( )	1	4-pin cable socket	432-103		1.80
( )	1	4-pin cable plug	432-104		.70
( )	1	4-wire cable assembly	238-34		4.00
( )	1	MPSA20 transistor	417-801		.25
( )	1	Foam tape	73-92		.25
( )	3"	Sleeving	346-1		.10
( )	1	Parts Order Form	597-260		n/c
( )	1	Instruction Sheet			

Solder (Additional 3' rolls of solder can be ordered under part number 331-6 for $.25 each.)

The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering (Michigan residents add 4% sales tax) to cover insurance, postage, and handling. Outside the U.S.A., parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.
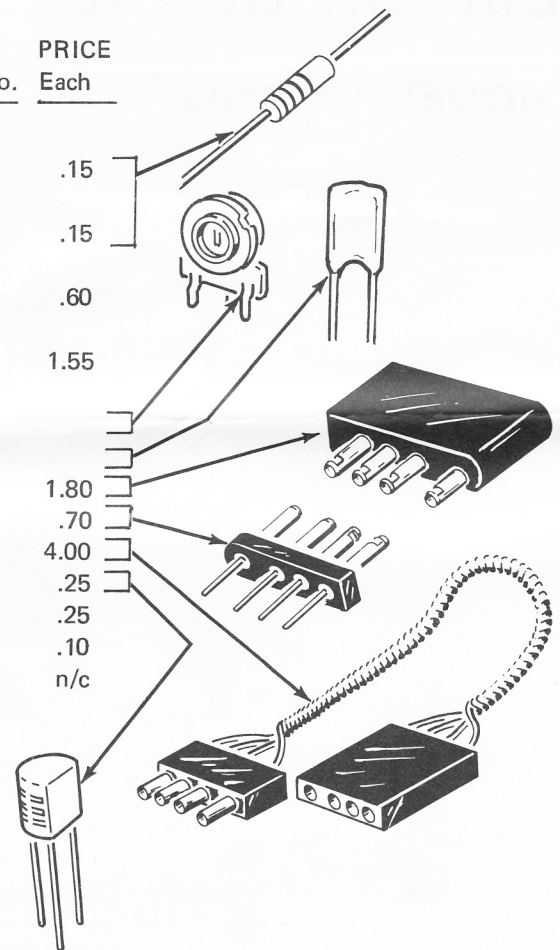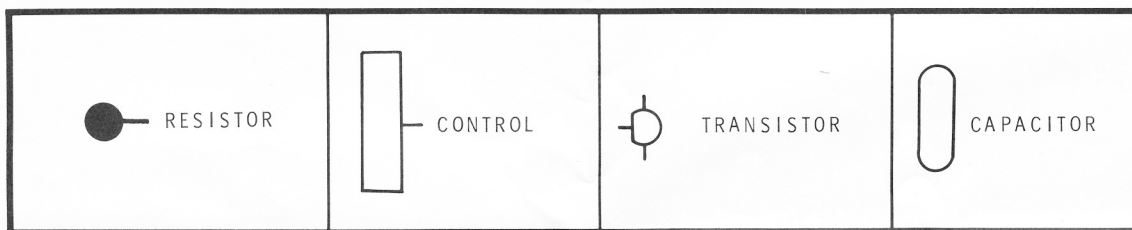
STEP-BY-STEP ASSEMBLY

The circuit board (#85-1655) you will use when you assemble the Servo Centering Standard has no outlines printed on its component side. However, to help you make sure you install each circuit board component at the proper location, outlines which represent the actual components are drawn on the Pictorials. The following chart shows the outlines that correspond to the actual circuit board components.

Install these components at the indicated locations as shown in the appropriate mounting Detail on the Pictorial.

There are no specific steps that direct you to solder the leads to the circuit board foils. When all the holes in a foil pad have been used, solder the bent-over leads to that foil pad and cut off the excess lead lengths. This will eliminate the possibility of excessive solder build-up and covering of unused circuit board holes. Also, be careful so you do not make any solder bridges between adjacent foils.

RESISTOR   CONTROL   TRANSISTOR   CAPACITOR

START ◄

Position the servo centering standard circuit board as shown in the Pictorial. Then complete the following steps.

FOR GOOD SOLDER CONNECTIONS, YOU MUST **KEEP THE SOLDERING IRON TIP CLEAN.** WIPE IT OFTEN WITH A DAMP SPONGE OR CLOTH.

NOTE: When you install parts on the circuit board, bend the leads flat onto the foil area from which they extend. Then cut off the leads 1/16" from the holes. Solder a foil pad only when all of the holes in that pad are filled.

SAFETY WARNING: Avoid eye injury when you cut off excess leads. Hold the ends so they cannot fly toward your eyes.

( ) C301: .047 µF Mylar.

( ) R301: 10 kΩ (brown-black-orange).

( ) Q301: MPSA20 transistor (#417-801). Be sure the transistor is positioned as shown. Also be sure the leads are positioned in their correct holes.

( ) R303: 4700 Ω (yellow-violet-red).

( ) Locate the 4-pin cable assembly. Then cut the cable in half.

( ) Remove 1/8" of insulation from the wire ends of the cable assembly with a plug at one end. Then twist the fine wire strands and apply only enough solder to hold the strands in place.

PLUG

PICTORIAL 1
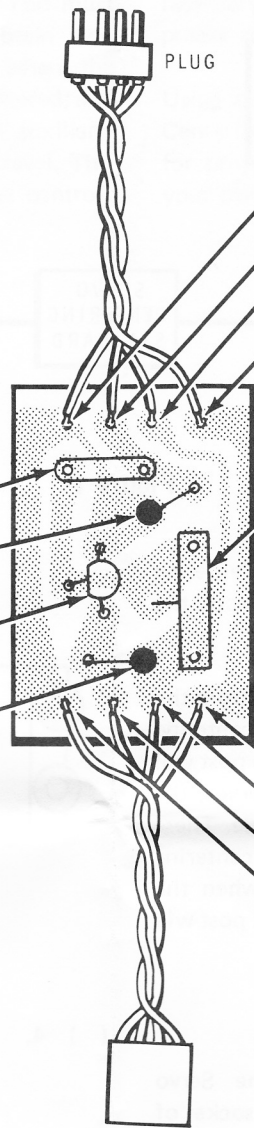
CONTINUE ▽

Connect the wires at the end of the cable assembly in the following steps.

( ) Black cable wire.

( ) Green cable wire.

( ) Red cable wire.

( ) White cable wire.

( ) R302: 100 kΩ control (#10-941).
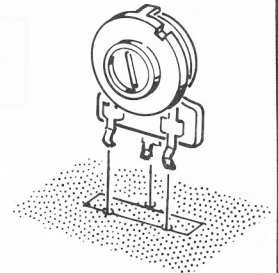
( ) Locate the remaining cable assembly. Remove 1/8" of insulation from the wire ends. Then twist the fine wire strands and apply only enough solder to hold the strands in place.

Connect the wires at the end of this cable assembly in the following steps.

( ) White cable wire.

( ) Red cable wire.

( ) Green cable wire.

( ) Black cable wire.

( ) Check to see that all connections are soldered.

( ) Cut off a 1-1/8" length of foam tape. Remove the paper backing from one side of the tape. Then press the tape onto the foil side of the circuit board.

NOTE: If your system uses the 432-103 and 432-104 connectors, cut off the connectors on the cable assembly and replace them with the connectors supplied with your kit. Be sure to replace the plug with a plug and the socket with a socket. Match the wire colors of the cable assembly with the wire colors of your servo and receiver.

FINISH

0 ¼ ½ ¾ 1 (INCHES) 2 3 4 5 6 7
1/8 3/8 5/8 7/8
0 5 1 (CM) 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
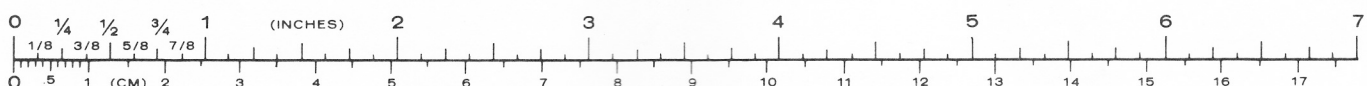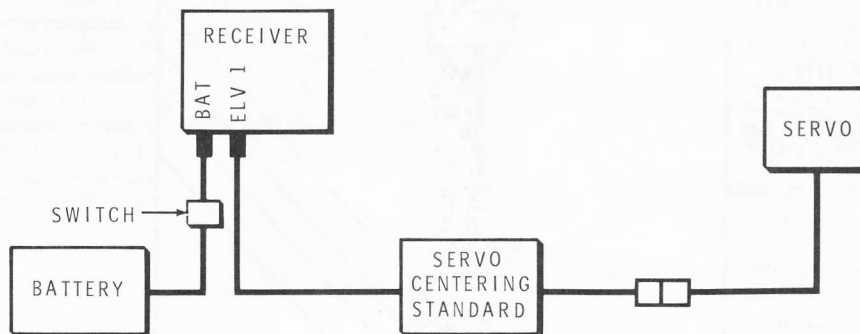
SERVO CENTERING

Figure 1

Each servo will be adjusted using the Servo Centering Standard as a reference so all servos will operate exactly the same way.

On many servos, the centering control is accessible from the outside of the Servo. On these servos, when the centering control is turned in one direction the rotary output post will turn in the opposite direction. With some other servos, the centering control is not accessible from the outside. These servos must be opened and centered by turning the centering control within its mounting. On these Servos, when the control is turned in one direction the rotary output post will usually turn in the same direction.
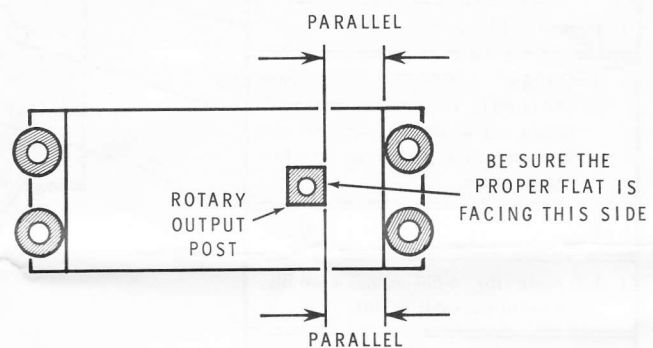
Refer to Figure 1 for the following steps.

( ) 1.   Insert the 4-pin cable plug of the Servo Centering Standard into the channel 1 socket of your receiver.

( ) 2.   Plug the 4-pin cable socket of the Servo Centering Standard onto the 4-pin cable plug of the servo to be centered.

NOTE: When the Servo Centering Standard is being used, moving the channel 1 stick will not change the position of the servo rotary output post.

( ) 3.   Turn the receiver and transmitter on. The servo rotor will normally rotate to some off-center position. NOTE: Do not be concerned if the servo chatters when plugged into the Servo Centering Standard.

Figure 2

( ) 4.   Refer to the centering instructions on your servo and adjust the servo's centering control until the rotary output post is positioned as shown in Figure 2. After you properly center the servo, set it aside for use later.

( ) 5.   Perform steps 2 through 4 for all the servos in your system. CAUTION: ONCE A SERVO HAS BEEN CENTERED TO THIS STANDARD, DO NOT ADJUST IT AGAIN.

( ) 6.   After you center all your servos to this standard, turn your receiver and transmitter off. Then remove and save the Servo Centering Standard.

NOTE: The Servo Centering Standard may be used later if you purchase a new servo or if you want to recheck your R/C-system at a later date.

SETTING SERVO TRAVEL

NOTE: Each transmitter stick and auxiliary channel knob controls the movement of its respective servo. You must make adjustments to your transmitter to obtain two conditions: (a) the servo must be centered when the transmitter stick (or auxiliary channel knob) is centered; and (b) full movement of the transmitter stick (or auxiliary channel knob) should cause about 90° of servo travel. The range of servo travel is determined by the range control.

However, when you adjust one range control you must also readjust the corresponding stick control (to recenter it). Therefore, since these adjustments interact, it will be necessary to perform the adjustments several times to obtain proper stick centering and the 90° servo travel.

Using one of the servos you have adjusted to the Servo Centering Standard as a reference, adjust your transmitter for proper stick centering and servo travel as described in your transmitter manual.