

# Babcock "MAGIC CARPET" MARK III RECEIVER

## Installation and Testing Instructions

Price \$1.00

### 1. INTRODUCTION

The Mark III receiver is a product of many years experience in building reliable radio equipment for control of model aircraft and boats. You need no previous electronic experience to operate Babcock R/C equipment. By following these instructions carefully, with particular emphasis to electrical connections and bonding, no difficulties will be encountered. Once completed, you have only to "educate" your thumb to correctly operate your R/C transmitter and enjoy many happy hours of R/C flying or boating.

### 2. WARRANTY AND SERVICE POLICY

To insure service on your Mark III receiver, be sure to mail in your REGISTRATION CARD (Page 3), fully completed, immediately. This card **MUST** be in our files to validate your warranty. Your "Magic Carpet" Mark III receiver is unconditionally guaranteed except as follows:

- a. Transistors are not guaranteed.
- b. Relays will be replaced **ONLY** if our inspection indicates faulty workmanship.
- c. Warranty does not include configuration changes or modifications and the warranty is void if such changes have been made or receiver tampered with.
- d. If in the opinion of Babcock Models, Inc., the damage caused by an obvious crash or submersion is sufficiently great to make repair costs economically prohibitive, we reserve the right to replace the receiver at 50% of the list price.
- e. **RETURNING RECEIVER FOR SERVICE.** Pack the receiver carefully. Include a note identifying the receiver and stating briefly the problems encountered. **ALSO INCLUDE \$1.00 (CASH OR MONEY ORDER) TO COVER HANDLING AND POSTAGE.** Or... if you prefer, send your letter of explanation and \$1.00 separately, but be sure your name and address is on or in the packed receiver for identification. Address both package and/or letter to Service Department, Babcock Models, Inc., Costa Mesa, California.
- f. **CAUTION!** Babcock Models, Inc., or any of its appointed Authorized Service Stations will honor your 90 day warranty **ONLY IF YOUR REGISTRATION CARD IS ON RECORD IN OUR FILES.**

### 3. CIRCUIT DESCRIPTION

The Mark III receiver is all transistorized. Its complement consists of a high frequency transistor employed

as a super regenerative detector, followed by two stages of temperature compensated voltage amplification, which are in turn followed by a transistor relay control stage in the Babcock "TRANS-FLEX" circuit. Approximately 15 microvolts of carrier at 26.995 megacycles is adequate for reliable relay operation.

### 4. INSTALLATION IN MODEL AIRCRAFT

The installation of the Mark III receiver is simplicity itself however, we urge you to follow the directions exactly. The antenna is to be an 18 inch length of small gauge piano wire (not supplied). This wire is to be installed vertically at the forward end of the aircraft. Do not cut or shorten the 6 inch antenna lead (purple) inasmuch as the receiver is designed to operate with a total antenna length of 24 inches (the combined length of the antenna and lead in).

Drawing #2 illustrates a typical aircraft installation which includes the switch and connections for the Babcock Mark II #886 escapement plus the Babcock Universal #891 motor control escapement. This will give right, left, up and motor speed control. In order to insure a sufficient ground plane, absence of electrical noise and adequate range, it is necessary to bond from the escapement lug as shown to the metallic torque rod or rods. If metallic rods are not used a ground wire should be installed within the fuselage running from end to end to which the escapement is bonded. In this particular installation it will be noted that the blue color wire is not used and may be cut off at receiver.

### 5. INSTALLATION IN BOATS

For installation in model boats, the same considerations apply as for model aircraft except that heavier batteries (RCA VS300 or its equivalent) may be used and we suggest that the Drawing #3 which uses a Babcock Electric Compound Servo #897 be followed carefully.

The tuning instructions given for Aircraft apply equally to boats. Note Filter capacitors on drive motor (Drawing #3) for arc suppression. (Not supplied). In this installation the blue wire is used.

### 6. BATTERY COMPLEMENT

For small aircraft (Babcock Tri-Pacer and Aeronca-Champion) use RCA #VS309 battery, which weighs only .7 oz., or its equivalent. Under ordinary conditions such batteries will give you approximately 20 hours of use. For larger aircraft or boats, use RCA #VS300 or its equivalent.

## 7. CHECKING RECEIVER AFTER INSTALLATION

Connect a millimeter across lugs 1 and 2 of the "on-off" switch. (Drawing #2). With the switch in "off" position, the idling current of your receiver should read approximately 4 ma. (milliamperes). Pressing the control button on your Babcock "Magic Wand" transmitter (or any CW type transmitter) will cause the receiver relay to close and your escapement to operate if the receiver is properly tuned. Total receiver current should rise to approximately 13 ma. This will vary somewhat due to your battery voltage. The receiver will operate with battery voltage from 9 volts down to 7½ volts. A "listening" check can also be made by clipping high impedance head phones in series with a .01 mfd. capacitor (not supplied) directly across the relay coil (inside receiver case). Listening in the headphones with the receiver turned on and no signal from your transmitter, a loud "rushing" or hissing noise should be heard. With a signal from your transmitter this noise will cease. At this point, it is suggested that you install a 47 ohm ½ watt resistor directly across your escapement coil for the purpose of arc suppression. (See Drawing #2). In marine installation (see Drawing #3) arc suppression by two .02 mfd. capacitors is used on the driving motor.

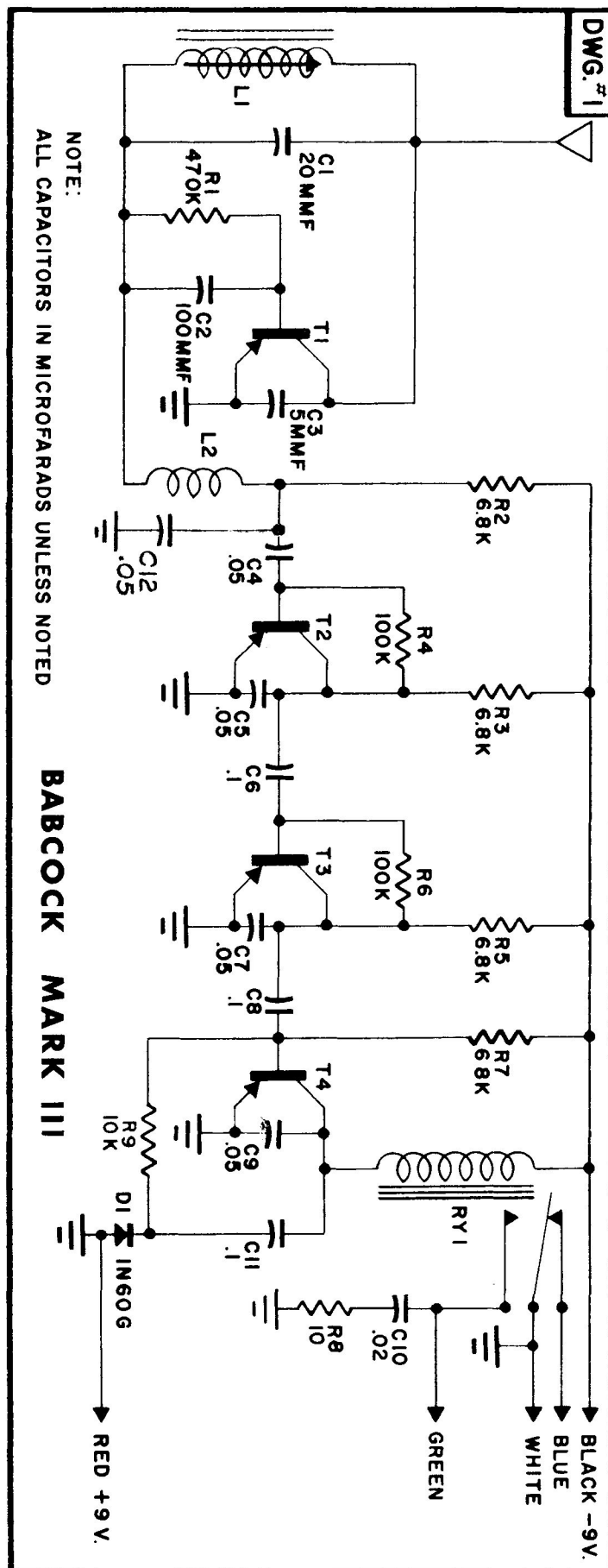
## 8. MOUNTING YOUR MARK III RECEIVER

The receiver is mounted by attaching it to the piece of sponge rubber supplied with contact cement and in turn cementing the rubber to the floor of the model aircraft. This mounting must be very soft due to the low mass of the receiver. Hard mounting can cause misoperation from vibration.

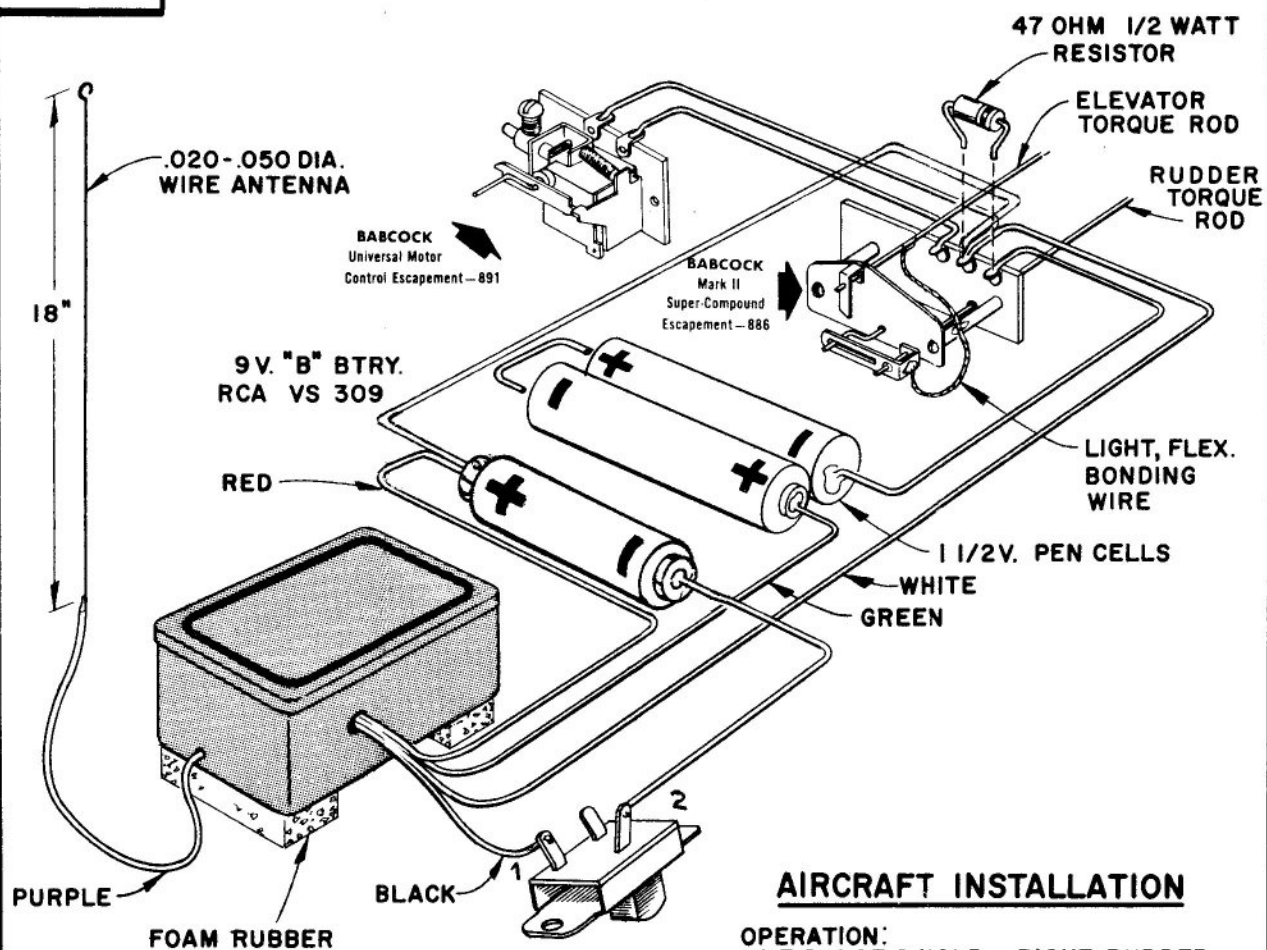
## 9. TUNING

To tune your receiver accurately to your transmitter, two methods are suggested. Both of these methods are identical from the standpoint of accurate tuning.

- THE FIRST METHOD.** With the transmitter switch turned off, bring the transmitter antenna within a few inches of the receiving antenna and the escapement should operate. Carefully tuning the slug in the receiver as you move the transmitter away from the receiver will increase the range. This is a "ground check," meaning the maximum range will be obtained when your transmitter is at the furthest point from the receiver. The correct tool for this is Walsco #2543 or General Cement #8282-7 (not supplied) obtainable at any radio store.
- THE SECOND METHOD.** Remove the antenna from transmitter. Tune your transmitter slug for maximum brilliancy of the radiation indicator and then use this transmitter as a "signal generator" (low power transmitter) to operate your receiver at close range. Careful adjustment of your receiver tuning slug while gradually moving the transmitter away from the airplane to obtain maximum range will result in accurate tuning. Replace the antenna in the transmitter, re-tune and test again at maximum range before flying.



DWG. #2



### AIRCRAFT INSTALLATION

OPERATION:  
ONE PULSE & HOLD = RIGHT RUDDER  
TWO PULSES & HOLD = LEFT RUDDER  
THREE PULSES & RELEASE RESULTS  
IN A MOTOR SPEED CHANGE

Cut along  
dotted lines.

Place in  
envelope  
and return to  
Babcock Models, Inc.  
Costa Mesa, Calif.

### REGISTRATION CARD IMPORTANT—Read Your Service Policy

Mail this card immediately to validate your warranty,  
otherwise you will be charged for service.

Purchaser's Name \_\_\_\_\_ Date Purchased \_\_\_\_\_

Purchaser's Address \_\_\_\_\_  
Number Street City State

Dealer from whom Purchased \_\_\_\_\_

Dealer's Address \_\_\_\_\_  
Number Street City State

BABCOCK MARK III RECEIVER Serial # \_\_\_\_\_

Used in: Boat ☐ Airplane ☐

