

How to Install the Babcock MARK II Super Compound Escapement

This escapement is a precision piece of Babcock radio control equipment engineered to give long life, trouble-free operation. Designed to operate as an actuating mechanism in any powered model, it offers more power, longer battery life with less weight than heretofore possible.

All necessary installation parts are supplied. Complete satisfaction is guaranteed if accurate installation is made in accordance with the following recommendations. Bear in mind, for control of its four functions, **no sequence of function is necessary**—the same command **always** gives the same control.

While a wide variety of installations are possible, the following more common methods are suggested for best results.

INSTALLATION CONSIDERATIONS

Use care to see that rudder and elevator torque rods (see Figure 1) are aligned at right angles to bakelite face of escapement. It will prevent binding. All linkage should be moved manually before installation of control arms to insure freedom of movement. Pay particular attention to control surface hinges.

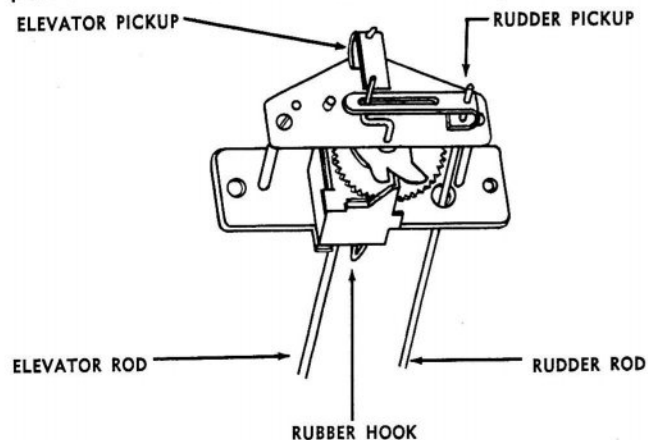


Figure 1

Actuating rubber should lead as straight away from rubber hook as possible. Use 3 volts for either $\frac{1}{8}$ " or $\frac{1}{4}$ " rubber. To insure maximum torque, rubber unwound should be about 10% longer than spacing between escapement hook and tail hook.

Wire torque rods (not balsa) should be extended from escapement to rudder. Here's why: (1) Long piano wire type of torque rod (when properly bonded in accordance with receiver instruction book) makes an excellent ground plane for the receiver. (2) Springiness of piano wire torque rod results in less rudder control

due to prop blast when engine is running. This also has important secondary effect of giving full rudder control during the glide, after engine has stopped. Thus you get equal rudder effect with or without power. Use $\frac{3}{4}$ wire on small models, $\frac{1}{2}$ on large.

USE WITH SECONDARY ESCAPEMENT

Figure 2 is a simplified schematic of the compound escapement used with Babcock Universal Motor Control Escapement on third position of the compound.

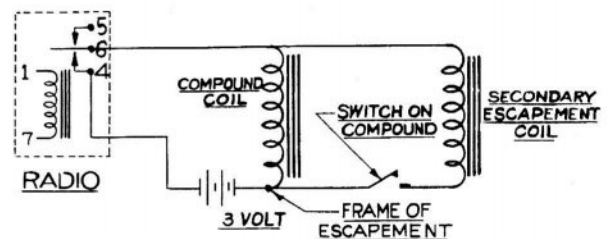


Figure 2

USE AS A RUDDER AND ELEVATOR SERVO WITHOUT A SECONDARY ESCAPEMENT

The Babcock Mark II super compound escapement may be used to obtain "right" and "left" as noted, and also "up" elevator on the third position by mounting the elevator linkage as shown in Figure 1. Elevator should be so arranged that when crank arm slips off elevator linkage, following 3rd position, elevator returns to neutral. Thus one pulse and hold is right, two pulses and hold is left, three pulses and hold is up elevator. In all cases the super compound returns to its original neutral position—no sequence to remember. This mode of operation is successfully used in small 1/2A aircraft. Loops and "flared out" landings are easy with this set-up.

THE 4 FUNCTION COMPOUND ESCAPEMENT CONNECTION

The schematic of Figure 3 shows a satisfactory arrangement used by many modelers. This way a single channel radio will give motor control in addition to above mentioned rudder and elevator functions. It involves the use of the back contact of the relay as shown. Relay pin numbers are those at the relay socket of the Babcock BCR-3 receiver. Other Babcock receiver connections are covered in their respective instruction books. In this case, however, the secondary escapement switch is moved to a new position as follows:

First escapement position is right rudder. With escapement held in this position, bend the switch wire on the shaft so it closes and opens again just prior to reaching right rudder position. Under no circumstances should this switch be closed at the time the escapement has reached the "right" position.

As the schematic indicates, the secondary escapement can work only when receiver relay is deenergized and compound switch is closed. In operation, an extremely short pulse (and release) on the transmitter button will operate the secondary escapement. This operation is as follows: The relay in the radio returns to its back contact. As the compound switch passes closed position an instantaneous pulse operates the motor speed control. Thus an extremely short pulse and release gives a change in motor speed. One pulse and hold gives right, two pulses and hold is left, three pulses and hold is up elevator. In all cases, the super compound returns to the same neutral. Again, no sequence to remember.

This is a lot of control from a single channel and the most possible functions of a practical nature yet devised.

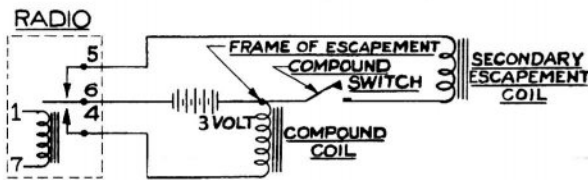


Figure 3

FOR USE IN MODEL BOATS

The above scheme is ideal for electric propelled boats wherein the Babcock sequence reversing relay replaces the secondary escapement shown in Figure 2. (See sequence reverser instructions for further details on this method of operation.) Alternately the scheme of Figure 3 may be used.

For boats such as Sterling Chris Craft "Catalina" and 40" motor yacht, the super compound can handle the rudder directly even when boat is powered with large electric motors. In this case we recommend 1/4" rubber. The super compound Mark II can handle as much as a double row of knots using 1/4" rubber. In the event the super compound Mark II is used to control a rudder servo such as Babcock motor driven motor servo (also used as elevator servo in model aircraft), contacts can be placed so the motor runs in a right hand direction when one pulse is given and runs in a left hand direction when 2 pulses are given. Thus, depending upon the length of time these commands are held, the boat rudder will take any desired position.

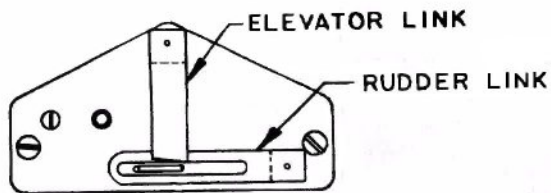
Many other uses of the versatile Babcock Super Compound Escapement will occur to the ingenious modeler.

"The Ultimate in Radio Control"

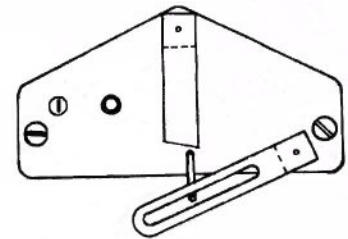
BABCOCK RADIO ENGINEERING, INC.

Van Nuys, California

INSTALLATION OF TORQUE ARMS FOR RUDDER & ELEVATOR CONTROLS



NEUTRAL

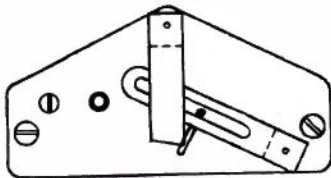


ONE PULSE - RIGHT

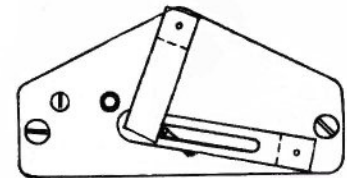
SOLDER LINKAGES TO TORQUE ARMS IN NEUTRAL POSITION AS SHOWN.

INSTALL STOP ON ELEVATOR SURFACE TO PREVENT IT FROM GOING BELOW NEUTRAL.

IMPORTANT: ALL BEARINGS AND HINGES MUST ALLOW FREE MOVEMENT.



TWO PULSES - LEFT



THREE PULSES UP ELEVATOR

BABCOCK SUPER COMPOUND ESCAPEMENT
BABCOCK MODELS, INC.
COSTA MESA, CALIF.