

INSTALLATION AND OPERATING INSTRUCTIONS
BDC-6 Double Decker

I INTRODUCTION

The BDC-6 "Double Decker" is a three-transistor switching network decoder, designed specifically to operate a Babcock Mark V escapement or a Babcock Mark II escapement directly from the Babcock BCR-16 Superheterodyne Receiver. The BDC-6 can be used with other escapements with 8 to 10 ohms of coil resistance and with any relayless receiver, as described later. Electronic "quick blip" motor control is also available in this unit.

II WARRANTY AND SERVICE POLICY

Every BDC-6 decoder is individually bench tested with a RF source, a BCR-16 Receiver, a Mark V escapement and a #EM-1 Motor Minder. Every BDC-6 leaves the factory in perfect working order. Any unit returned as inoperative will be repaired at a standard charge of \$1.50, which includes return postage. Include check or money order to avoid COD fees. If crash damaged or mis-treated, we reserve the right to offer a new unit at $\frac{1}{2}$ list price. If mounted on a Babcock escapement, the entire assembly -- BDC-6 and escapement -- may be returned together. An extra \$.50, plus escapement parts cost, if needed, will be charged.

III CIRCUIT DESCRIPTION

The BDC-6 contains three transistors interconnected in a circuit that acts similar to a mechanical relay in single channel operation. The audio output from the BCR-16 receiver triggers the $4\frac{1}{2}$ volt escapement batteries, allowing a strong flow of current which actuates the escapement upon command. The third transistor is connected to the motor control unit and it will only actuate the motor control whenever the escapement is not actuated, and whenever the "whisker" wire on the escapement is closed ("quick blip" operation).

IV INSTALLATION INSTRUCTIONS

The BDC-6 may be double decked on the escapement with the hardware provided or separately, on a firewall. In either installation, the wires will go to the same places. Wire lengths are not critical. Follow these instructions:

A. Double Decking

- (a) Install the BDC-6 on the Babcock escapement, using the threaded stock, $\frac{3}{8}$ " spacers, lockwashers and nuts provided. Position as shown in Figure 1, with the copper printed circuitry and numbers toward the rubber hook.
- (b) Make sure that the escapement turns freely as normal and that the "whisker" switch is adjusted for "quick blip" motor control operation. The whisker wire should

close and open between neutral and right rudder for both Mark II and Mark V escapements. It should not be closed on any position.

- (c) Unsolder the bare ground wire from escapement terminal "B" (see Figure 1) and resolder it directly to the regular left side $\frac{7}{8}$ " spacer identified in Figure 1. Do not disturb or remove the coil lead on Terminal "B". The coil wire is the fine wire covered with black insulating sleeving.
- (d) Complete the hook-up, soldering the wires carefully at the terminals. Note that wires are needed from A to 5 and from C to 3.

B. Separate Firewall Installations

- (a) Follow steps (b), (c) and (d) above, making the wire lengths long enough to extend from the escapement location to the BDC-6 location. Make good solder connections, using a hot iron and a good grade of rosin core solder.
- (b) Add one additional wire not shown in Figure 1. Solder this wire from the regular $\frac{7}{8}$ " long left hand spacer to terminal 2 on the BDC-6.

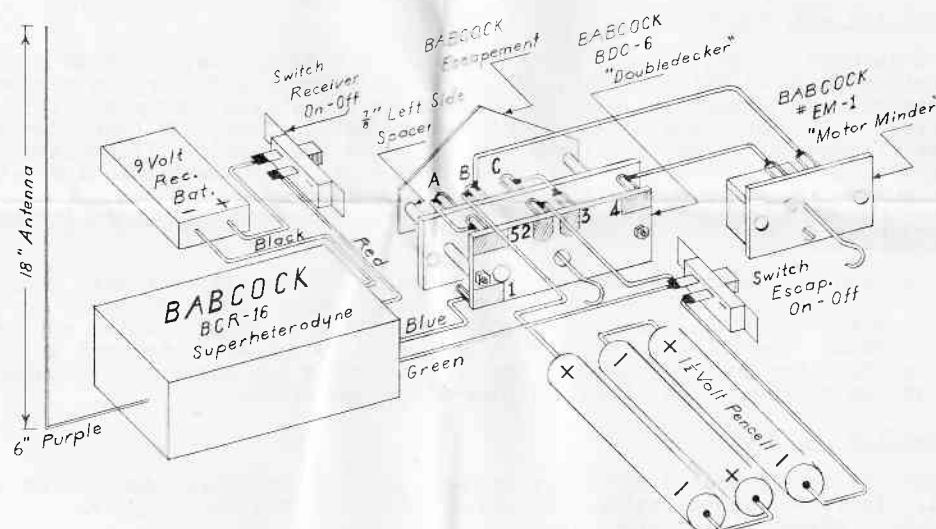
V OPERATION

Operation of the escapement with BDC-6 is the same as with a normal relay operated unit. Motor speed change is by "quick blip" -- giving the system a quick pulse allows the escapement to make one complete revolution. As the "whisker" switch on the escapement switch closes, the motor control unit is actuated. We recommend 3 batteries, $1\frac{1}{2}$ volt pencils, connected in series to give $4\frac{1}{2}$ volts to actuate the escapement, as shown in Figure 1. We also recommend that the regular escapement bonding procedures be used, as described in our escapement instruction sheets. The 47 ohm resistor, normally installed across the escapement coil in relay-type receiver useage, may be omitted in this installation. In some noisy installations, it may be desirable to add a small capacitor between BDC-6 terminals 1 and 2 to reduce escapement chatter. A .05 or .1 mfd paper or disc capacitor, any voltage, would be suitable.

VI USE WITH OTHER RECEIVERS

The BDC-6 will add a real "sock" to actuate the escapement when used with other relayless receivers which may be marginal in operation. In addition, it will give solid electronic "quick blip" motor control from a relayless receiver without resorting to fussy mechanical gimmicks or contacts attached to the escapement armature which will lead to faulty operation. Simply make a normal BDC-6 installation and connect the relayless receiver output wires to terminals 1 and 2 on the BDC-6. The relayless receiver output wires are those wires which would normally go directly to the escapement, and these wires must be connected to the BDC-6 such that positive (+) polarity goes to terminal 1. Minus (-) polarity goes to 2. If the polarity is unknown, check by trial and then reverse the wires if necessary to give operation.

Figure 1.



NOTE: In either installation, remove and discard the regular escapement grounding solder lug. This is the lug which is located on the phenolic plate and which connects from terminal "B" to the one inch left-side machine screw.