Instructions for Installation and Operation of

Babcock Single Channel R-C Boat Equipment

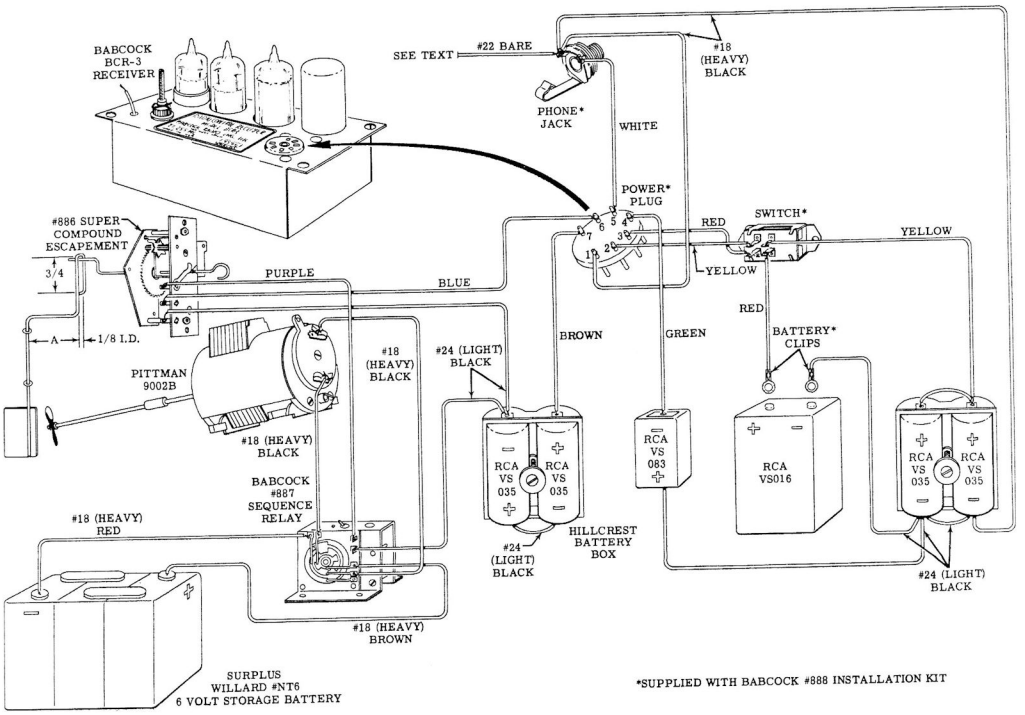
With the growing interest in model boats, the need for comprehensive instructions for installing radio control has been increasing. BABCOCK MODELS, therefore, has prepared this information to assist you, the model boat builder and operator, in getting your boat operating in the water as rapidly as possible. It is usually the custom to complete the boat kit before buying the radio equipment and accessories for installation. Sometimes, this procedure results in added installation difficulty. Had the modeler been fully aware of component requirements and the size of each component, he might have been able to make minor changes in the hull and deck structure to accommodate them before the finish paint job was applied. We suggest that you fully acquaint yourself with what will be required to install radio control in your boat and preferably that you obtain and install all components before you apply the finish paint job. This, we are sure, will save you considerable work.

This instruction sheet describes the installation of Babcock single channel equipment that will provide full-left, full-right and neutral rudder and motor direction control. The following is a complete list of the various components you will require for this installation:

1	BABCOCK	BCR-3 Receiver	$29.95
1	BABCOCK	BCR-3 Installation Kit	2.95
1	BABCOCK	#886 Super Compound Escapement Mark II	7.95
1	BABCOCK	#887 Motor Speed Control and Sequence Reversing Relay	12.95
1	Pittman	9001B or 9002B motor (depending on size of boat)	
2	Hillcrest	Battery boxes	
1	Willard	NT6 Surplus Storage Battery—(6 volt motor power battery)	
4	RCA	VS035 Flashlight Cells—(1½ volt filament and servo power)	
1	RCA	VS083 Hearing aid battery—(15 volt bias battery)	
1	RCA	VS016 "B" Battery—(67½ volt plate circuit supply)	

and of course, you will have to have a Babcock BCT-2 Transmitter to operate the equipment after you have installed it in the boat. The BCT-2 sells for $39.95.

Interconnecting Wiring Diagram - BABCOCK BCR-3 (Single Channel) Radio Control Receiver



*SUPPLIED WITH BABCOCK #888 INSTALLATION KIT

The BCR-3 Installation Kit will have a quantity of multi-colored wire, a power switch, a jack for headphones and a 7 pin power plug to connect the equipment to the receiver. An instruction book is packed with each receiver and transmitter and should be reviewed carefully before the actual installation is started. Be sure to fill out and mail in your registration card to the factory. Also mail a registration and license form to the F.C.C. Read the following installation instructions at least once before proceeding:

Figure 1 is a pictorial diagram of all the equipment as installed in the boat. It is not necessary to maintain a physical relationship as shown. The location of the escapement and the motor will be dictated by the construction of the boat and most certainly will have to be in the aft section. The balance of the equipment should be arranged in the hull in the most convenient manner considering that the radio receiver and the batteries will have to be removed from time to time and that the rudder escapement is powered by a rubber band that must run the length of the boat. Don't place something in its way. Don't forget that the #887 Sequence Reversing Relay will operate properly only when it is mounted on a horizontal surface. The normal pitch and rolling of a boat will not affect this operation. If you are building a plastic hull, there should be enough waste material left over to fashion brackets for the escapement and motor, receiver, etc. A ⅛" strip of sponge rubber betwen the receiver and the mounting surfaces may well eliminate future troubles.

After you have decided on what you believe the most practical arrangement in the hull, the components should be placed as closely as possible in the positions they will later occupy and the hull floated in the water to insure that the trim will be maintained. If the hull lists or pitches off the water line, the components should be shifted around until the hull is properly trimmed.

Now that we have all the positions of the components determined and the mounting brackets installed, let us proceed with the installation and the rigging of the equipment. It is presumed that you have the boat rudder installed and have constructed the rudder control arm as shown in the inset of Figure 1. The escapement should be installed bearing in mind that the amount of rudder deflection will be determined by the distance between the center line of the rudder shaft and the loop of the tiller (Dimension A on Figure 1).

Most manufacturers show how the motor should be installed. Don't forget that you will have to have a flexible coupling between the motor shaft and the propeller shaft in order to avoid binding. These flexible couplings are available in hobby shops and your hobby dealer will be glad to show you the various types.

The installation kit will not have all the wire necessary to complete the installation since this kit is designed primarily for model airplanes. You will have to acquire some #18 stranded wire for the motor busses. On the diagram, we have suggested using red and brown for some of the motor wiring.

Your installation will be much neater if you work out what is known in the electronics industry as a wiring harness. This type of harness is well worth the trouble it takes to construct as it will make you very proud when you remove the deck to show the fellows your installation.

Step 1 would be to connect the wires to the power plug as shown in the diagram. Slide a ½" piece of sleeving included in the installation kit over the soldered connection. This will give rigidity to the connection and keep it from breaking under movement and vibration. The equipments should be placed in the boat in the approximate positions that they will occupy in the final installation and the wires routed to the various elements as required. Try to group the wires so they may be bound together to form the harness, then cut each wire to its correct length leaving a little slack. Tie the harness at the branch point to hold it together while you lace it. After the harness has been laced and tied, the wires should be connected as shown in the pictorial diagram. Be sure your soldering iron is good and hot and that you use a rosin core type solder. Be sure and construct the harness to follow the color coding in Figure 1 as this will help you keep track of the wire and will assist you in trouble-shooting at some later date.

The bare tinned wire supplied with the installation kit is used to connect the metal frames of all the accessories together. This wire should be run from the motor frame to the sequence reverser frame and to the escapement. It should terminate at the ground connection on the headphone jack as shown on the pictorial diagram. This bonding will prevent static from being generated that can cause misoperation in the receiver.

Install a hook well forward and along the center line of the boat to anchor the escapement rubber to. Install one loop of ¼" rubber between the escapement hook and the hook installed forward on the hull. It will be wise to use a small loop of wire between the rubber and the forward hook since this can be removed easily to wind the rubber.

If the foregoing has been carefully followed, you should now have a properly wired installation which we are now ready to check out as soon as we install the proper batteries and wind up the escapement rubber.

Be sure to install batteries in the transmitter as instructed on page 7 of the transmitter-receiver instruction book except that we recommend equivalent RCA batteries. With the transmitter and receiver turned on, pressing the button on the transmitter should give right rudder. Release the button and the rudder should return to neutral. Now press the button twice in quick succession holding it down the second time and the rudder will move to left and stop. Release the button and the rudder will move to neutral.

Motor Control is obtained by pressing the button three times in rapid succession, holding it down the third time. Through the third position contacts of the Super Compound Escapement, the Motor Control and Sequence Reversing Relay will then move one step. Release the button as soon as the Sequence Relay operates. If the motor has been running, it will now stop. Three more pulses of the control button will start the motor rotating in the opposite direction. With a little practice, you'll soon have the "touch" and never miss a control.

Well, that completes the installation. Finish up the paint job and go sailing.

"The Ultimate in Radio Control"

BABCOCK MODELS, INC.

14743 Lull Street, Box 3134, Van Nuys, California