

LAFAYETTE RADIO
 165-08 LIBERTY AVENUE
 JAMAICA 33, N. Y.

RADIO-CONTROL RECEIVER F-208 (R-272P)
Operating and Installation Instructions

GENERAL

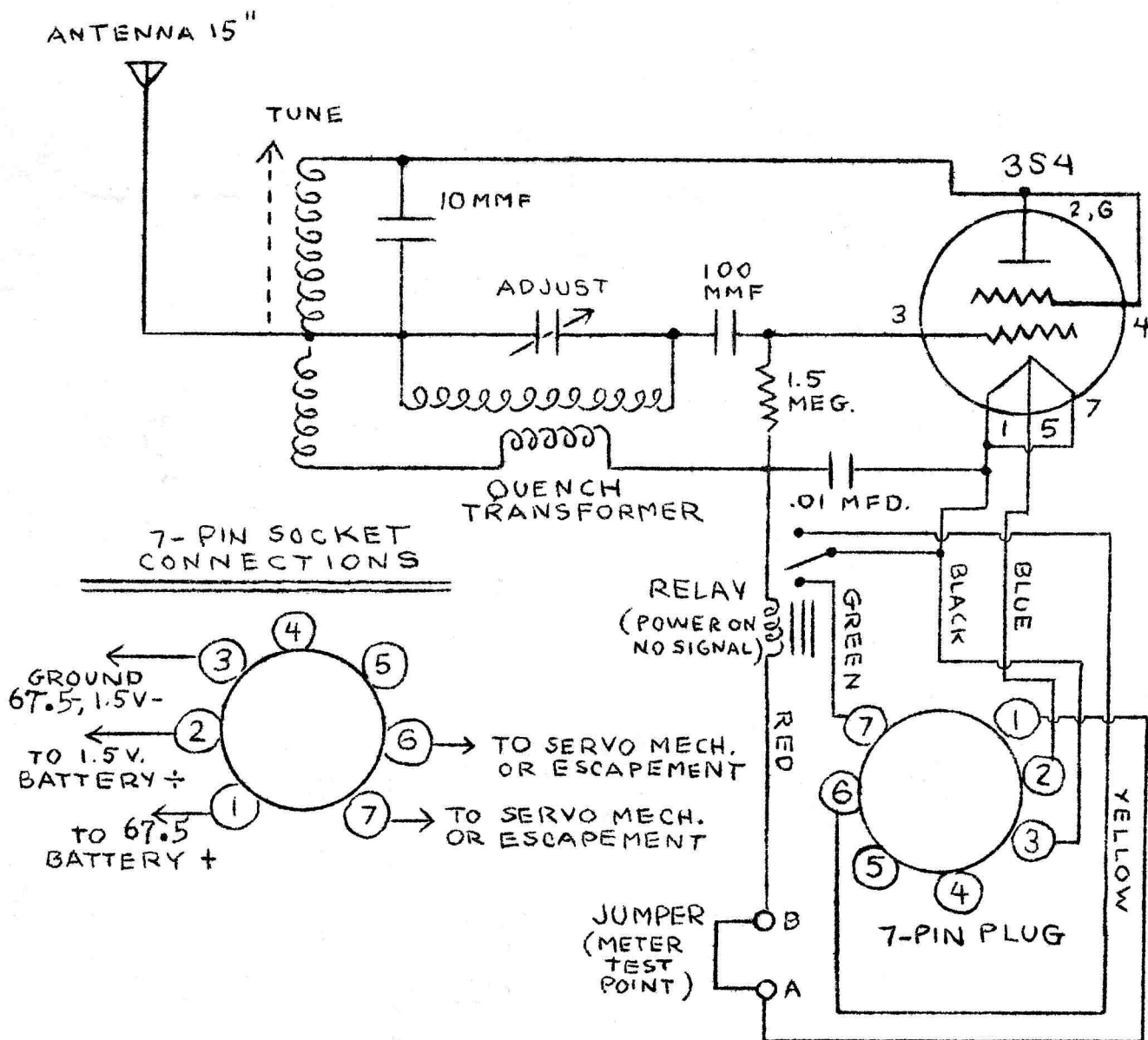
The F-208 is a miniature radio receiver and relay, operating at 27.255 megacycles, and designed for mounting within a radio-controlled model boat, airplane, car, etc. for the purpose of switching on or off an escapement or servo mechanism. The escapement or servo, in turn, actually operates the rudder or varies the engine speed, etc., of the model. **NOTE** that the radio receiver is essentially a remotely-controlled switch and must always be associated in use with a servo mechanism or escapement or some combination of these control devices.

Connecting Power to the Receiver

As shown in the schematic diagram, Figure 1, and by examination of the receiver, a short color-coded cable terminated by a 7-pin plug is provided.

Figure 1
 CIRCUIT DIAGRAM

RADIO-CONTROL RECEIVER F-208
 27.255 MEGACYCLES
Schematic Diagram

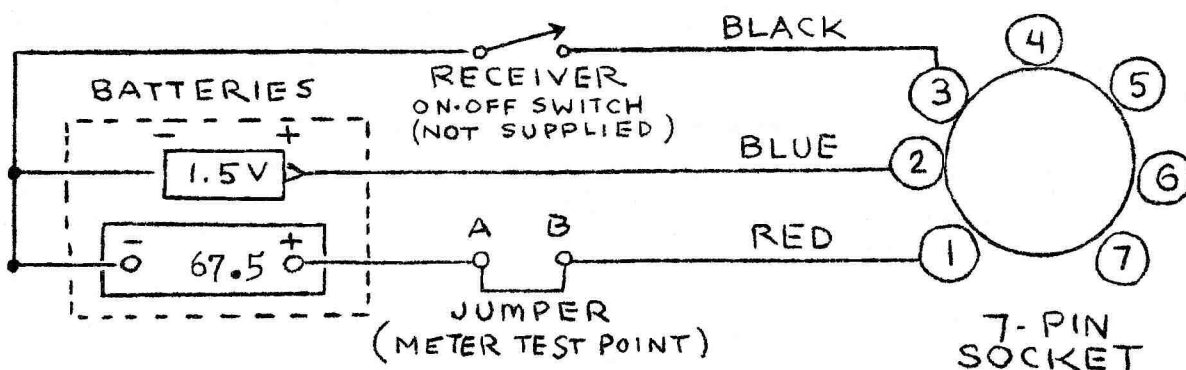


The plug may be cut and the colored wires connected to batteries and servo or escapement as indicated, or the 7-pin socket supplied with the receiver may be mounted on the controlled model and permanently connected. Short lengths of 22-gauge or heavier stranded wire may be used for these connections.

Figure 2 indicates, by block diagram, the power connections to the receiver.

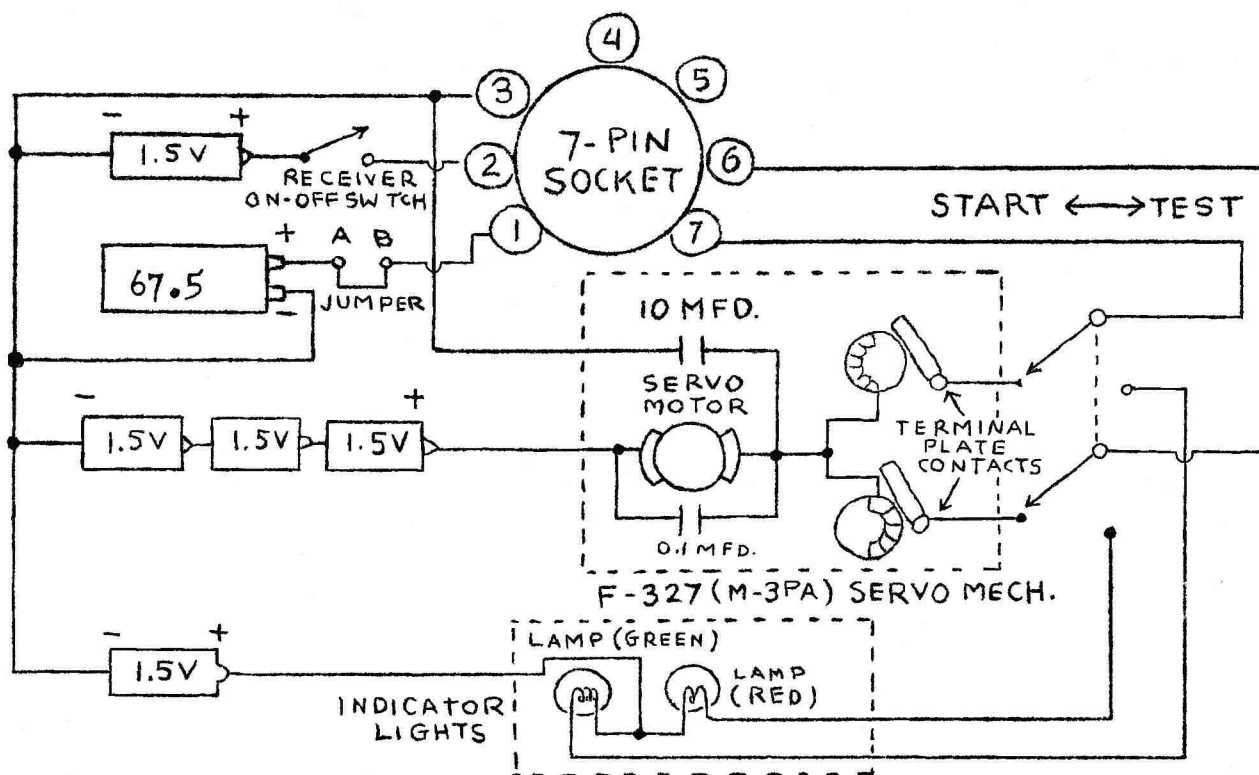
FIGURE 2
BLOCK DIAGRAM

BATTERY CONNECTIONS FOR R/C RECEIVER F-208



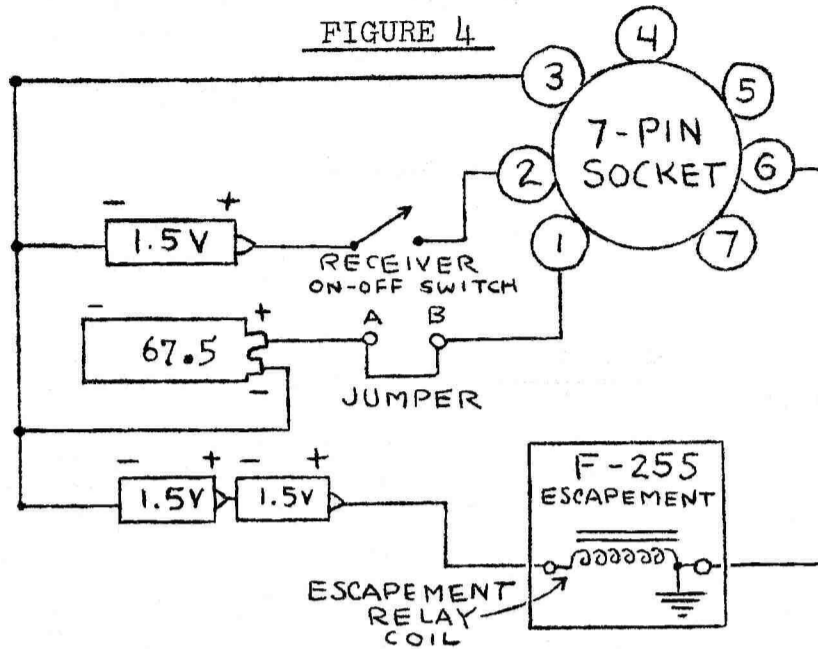
Typical Receiver Hookups
With Lafayette F-327 (M-3PA)
Servo Mechanism
For Boats, Cars, Land Vehicles, Etc.

FIGURE 3



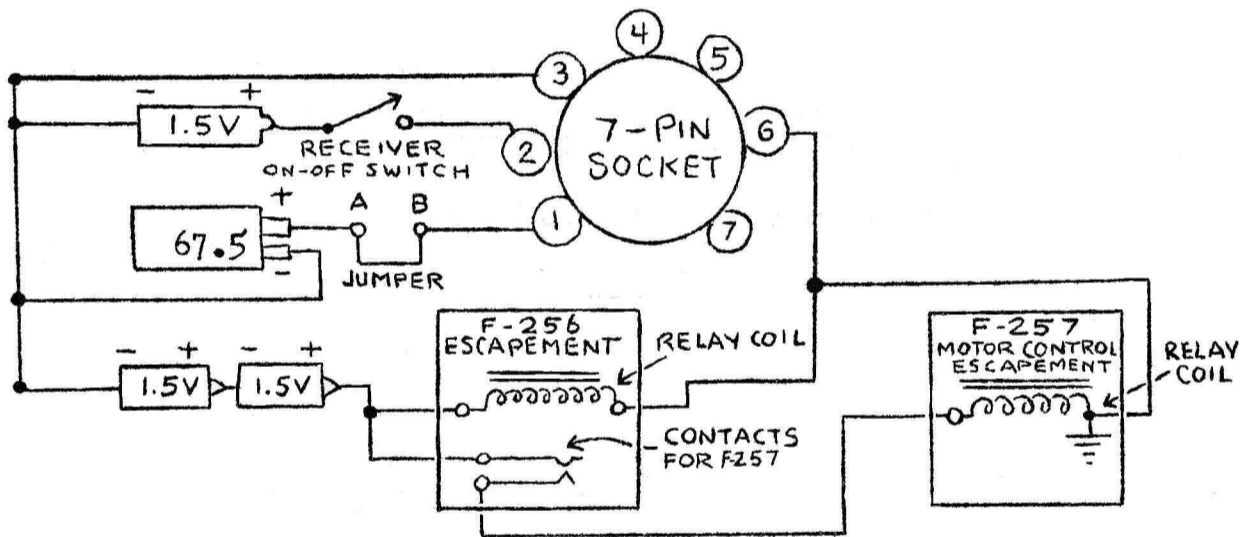
With Lafayette F-255 Escapement
For All Models Including Aircraft

FIGURE 4



With Lafayette F-256 and F-257
Escapements for Aircraft, Etc.

FIGURE 5



Additional Parts Required
For Receiver Installation

1. For receiver adjustment, a dc milliammeter will be needed; with a full scale reading of 4-5 ma.

2. BATTERIES - should be as large as the weight - carrying limitations of the model will permit. Generally, the larger the physical size of the battery the longer the life. Needed for the receiver are a 45 volt "B" battery and a 1.5 volt flashlight battery. For operating escapements, 2 additional flashlight batteries are needed (3V) and for a servo mechanism 4.5 volts are used - 3 1.5 volt batteries.

3. Meter test jack: "METER TEST POINT" shown on Figure 1 and other diagrams may be just 2 wires twisted together, a closed-circuit phone jack, or just 2 binding posts, connected by a jumper wire. The jumper wire must be removed and the meter inserted between points A and B to get the necessary current readings for proper receiver adjustment. Points A and B may actually be anywhere along the wire leading from the 67.5 volt battery positive terminal to the receiver.
4. ANTENNA - may be a rigidly-mounted piece of insulated wire 15" long- the length is quite critical. Mount it away from nearby metal surfaces.
5. Receiver on-off switch- a single pole, single throw switch is needed- a double pole, double throw switch may be used to permit simultaneous switching of boat, etc., motor.

Receiver Installation and Adjustment

1. Connect batteries to receiver in accordance with Block Diagram Figure 2. Be careful to observe correct battery polarity. Connect antenna.
2. Remove jumper wire at meter test point (see Fig. 1 and paragraph 3 "Meter test jack" above) and insert dc milliammeter. Turn on receiver power.
3. Note milliammeter reading- it should be in the vicinity of 2.5 ma.
4. Turn ADJUST knob all the way in (clockwise) as far as it will go, and then back it off SLOWLY, watching the meter. Lift your hand from the knob before taking meter readings, to avoid effects of hand capacity. Adjust this knob for maximum meter reading - note that this maximum point is QUITE CRITICAL and can easily be bypassed. You may have to repeat this operation before noticing the maximum meter reading point.
5. Turn on and operate the R/C Transmitter. The receiver's meter reading should dip to about 1.4 ma. Repeat several times to make sure receiver holds its adjustment, remove the meter and restore the jumper wire.
6. Connect an escapement to the receiver as per diagrams above and test the set-up for proper functioning.

SERVICE NOTES

The following adjustments may be made only if absolutely necessary due to relay replacement or other malfunctioning. Electronic components should first be checked and replaced, if necessary, by a competent radio-tv serviceman.

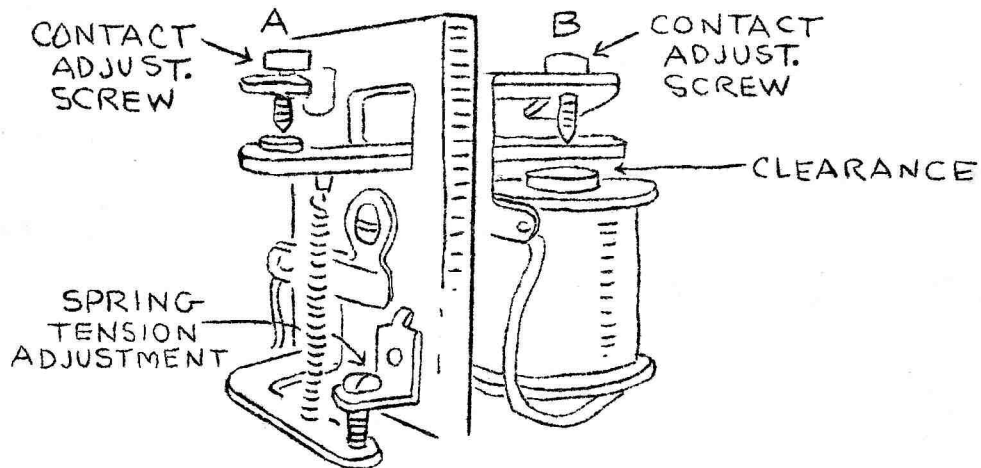
1. Check receiver as in paragraphs 3, 4 and 5 under "Receiver Installation and Adjustment". Current readings on the meter should approximate those given.
2. Note operation of relay - it should be actuated at about 2.3 ma. and drop out at about 2.0 ma.
3. If readjustment of "Adjust" knob provides proper current readings but relay does not operate properly, relay adjustment is needed. If

proper current readings are not obtained the receiver may have to be retuned.

4. RELAY ADJUSTMENT. Adjustment of the relay should not ordinarily be attempted unless receiver tuning adjustments, tube replacement, and check of receiver circuit components have ruled out all other possibilities. Refer to Figure 6.

Relay Adjustments

FIGURE 6



Decreasing spring tension (by turning "Spring Tension Adjustment" screw counter-clockwise) decreases the required pull-in current - increasing tension increases required pull-in (actuating) current. If sufficient spring adjustment is not obtainable with the screw, stretch spring to decrease tension or cut a few turns off to increase tension.

Should the solenoid pole piece develop considerable residual magnetism, tending to pull the armature bar down even when no current is going through the coil, increase the clearance slightly between pole piece and armature bar by turning "Contact Adjusting Screw" B a small amount counter-clockwise, and turning the screw A clockwise by the same amount to maintain the same clearance between A and the armature contact.

5. RETUNING THE RECEIVER - necessary when repairs have been made or tube changed: (a) turn ADJUST knob all the way in (clockwise); (b) place transmitter as far from receiver as practicable and have someone turn it on and "key" it; (c) back off ADJUST knob slowly and tune it for greatest dip on the meter (lowest current reading) - keep turning counter-clockwise slightly beyond this point and leave it there; (d) turn TUNE screw, using a non-metallic screwdriver preferably, slightly clockwise or counter-clockwise and tune it for greatest dip on meter (lowest meter reading) - remove screwdriver before taking readings; (e) shut off transmitter (release "key") and reset ADJUST knob for the critical maximum meter reading.

6. SOME RECEIVER TUNING "TROUBLES". - (a) if meter reading cannot be raised to 2.5 ma. or so, regardless of setting of ADJUST knob (without transmitter signal), increase length of antenna 6" or a foot; (b) similarly, if meter current reading without signal won't

drop below about 2.4 ma. as the ADJUST knob is manipulated, cut antenna length slightly (or add a 10 mmf. capacitor in series with the antenna); (c) if current reading drops from about 2.5 ma. to about 1.4 ma. with transmitter signal but then will not come back up to 2.5 ma. when transmitter "key" is off, turn ADJUST knob to decrease capacitance (counter-clockwise); (d) similarly, if receiver range is insufficient, turn ADJUST knob slightly clockwise; (e) if the relay produces a buzzing sound as the ADJUST knob is turned past the sensitive spot (maximum current point with no signal), the antenna is too long-cut it slightly or add the series 10 mmfd capacitor suggested above.

SUGGESTED READING

Extremely valuable aids in understanding and using radio-controlled models are the two books (both available from Lafayette Radio), listed below:

MODEL CONTROL BY RADIO by Edward L. Safford, Jr. Gernsback Library No. 43. Lafayette No. BK-900, at 1.00.

RADIO CONTROL HANDBOOK by Howard G. McEntee. Gernsback Library No. 53. Lafayette No. BK-910, at 2.25.