

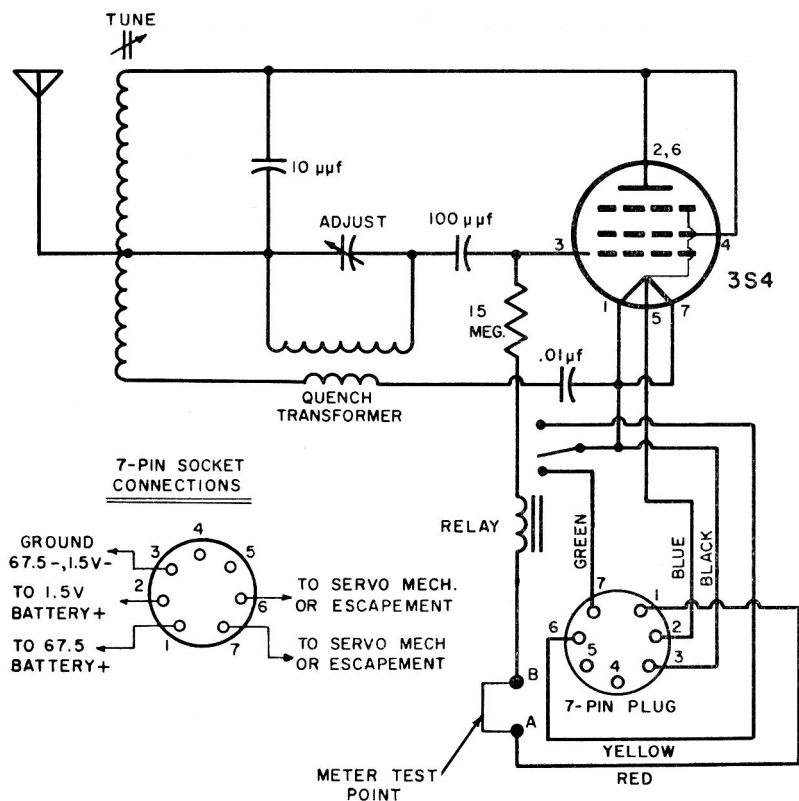
RADIO-CONTROL RECEIVER

The F-208 is a miniature radio receiver operating on a frequency of 27,255 megacycles. It is designed for installation in radio-controlled models of all types. Under radio control of a remotely located transmitter, the receiver will operate an escapement or servo-mechanism, which in turn actuates a rudder or varies engine speed, etc.

INSTALLATION

POWER CONNECTIONS:

The receiver is equipped with five short color-coded leads which terminate in a 7-pin plug. The plug may be removed and the colored leads connected to the batteries and escapement. Alternatively, the 7-pin socket supplied may be permanently installed in the model, batteries and escapement being wired to the socket as shown in Figures 1, 2, 3 or 4. The receiver plug may then be inserted into the socket. This will permit the rapid disconnection of the receiver when necessary.

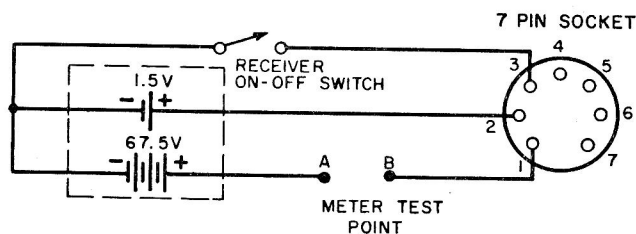


BATTERIES

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-expectancy. The receiver requires a 67.5 volt "B" battery and a 1.5 volt flashlight battery. For operating escapements and two additional 1.5 volt flashlight batteries are required. To operate a servo-motor, three 1.5 volt flashlight batteries are needed. To switch power off or on, install a single-pole, single-throw switch in the model. Then cut the black lead and connect each end to the switch as shown in Figure 1.

METER TEST JACK

After installing the receiver, the red lead must be cut at a convenient place, each end being connected to the 2-pin socket provided. The socket, which should be installed in the model, is represented by points A and B in the schematic diagram. During normal operation, insert the shorted 2-pin jumper plug into the socket. The unshorted 2-pin plug supplied may be connected to a DC milliammeter. For receiver adjustment, the jumper plug is removed and the meter plug inserted in its place.

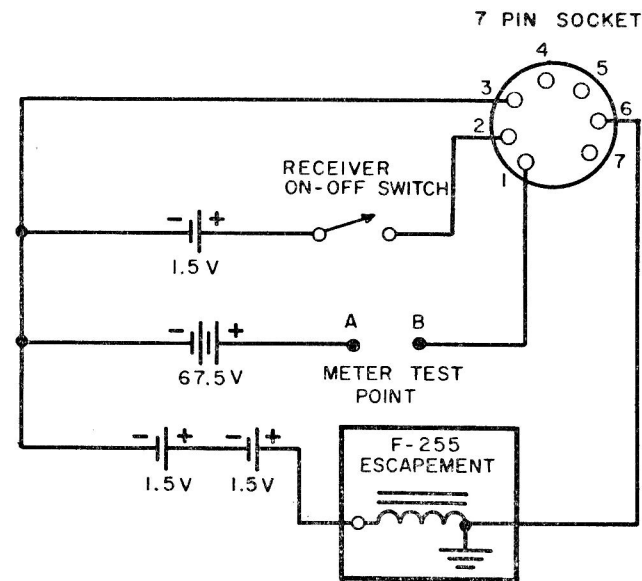


Battery connections for R/C receiver F-208

FIGURE 1

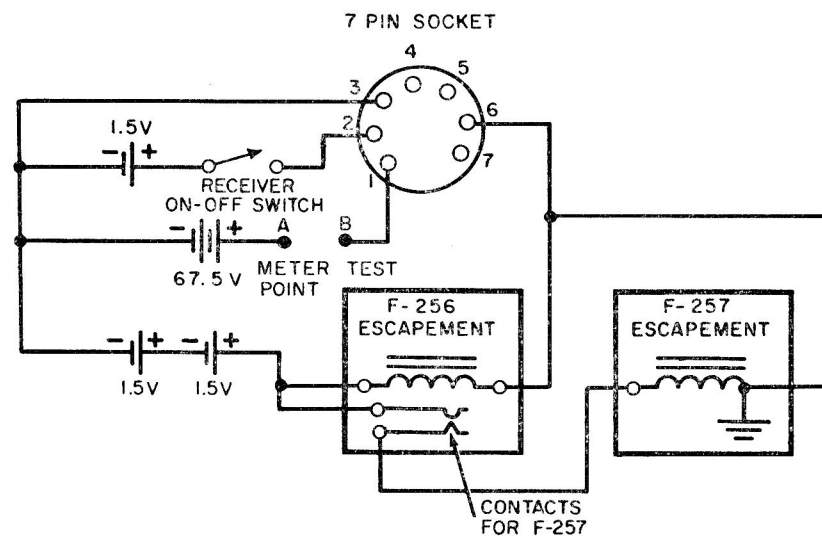
ANTENNA

The antenna should consist of a fairly stiff length of wire, (mounted vertically if the transmitter also has a vertical antenna). The length of antenna is critical and should be exactly 15 inches in length. After the antenna has been firmly installed, connect the single yellow lead from the receiver to it.



Typical receiver connections using Lafayette F-255 escapement (for all models including aircraft)

FIGURE 2



Typical receiver connections using Lafayette F-256 and F-257 escapements (for all models including aircraft)

FIGURE 3

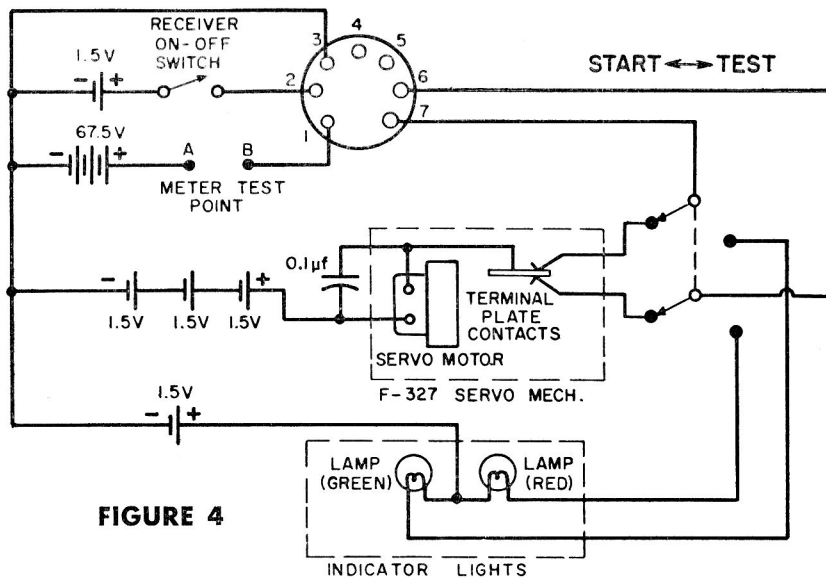


FIGURE 4

Typical receiver connections using Lafayette F-327 servo-mechanism (for boats and all land vehicles)

RECEIVER ADJUSTMENT

Adjust the receiver as follows, using a DC milliammeter with a full scale reading of 4-5 ma.

1. Remove jumper plug in "Meter Test Jack" and insert DC milliammeter leads into the vacated socket.
2. Turn on receiver power and note milliammeter reading - it should be in the vicinity of 2.5 ma.
3. Turn ADJUST knob (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 hand capacity effects. 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 the maximum meter reading is noticed.
4. Turn on and operate the R/C Transmitter. The receiver 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 plug.
5. Connect an escapement to the receiver as indicated in the diagrams and test the set-up for proper functioning.

SERVICE NOTES

The following adjustments are only necessary when relay trouble is suspected. Electronic components should first be checked and replaced, if necessary, by a competent radio-TV serviceman.

1. Check receiver adjustment first. 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.

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 5.

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.

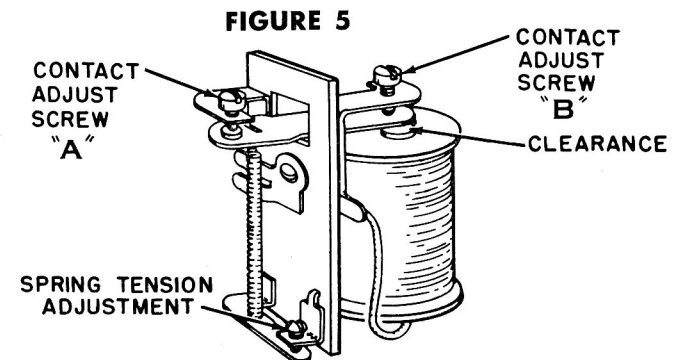


FIGURE 5

RETUNING THE RECEIVER

When repairs have been made or tubes changed, the receiver must be re-adjusted as follows:

- (a) Turn ADJUST KNOB all the way in (clockwise).
- (b) Place transmitter as far from receiver as is 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 reading.
- (e) Shut off transmitter (release "key") and reset ADJUST knob for the critical maximum meter reading.

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 will not drop below about 2.4 ma. as the ADJUST knob is rotated, 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 mmf. 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.

**LAFAYETTE RADIO
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