

# O. S. "PIXIE" TA-2 RA-1 INSTRUCTION

## TA-2 TRANSMITTER

This is a 5 transistor, crystal-controlled, all transistorised, amplitude modulated tone transmitter.

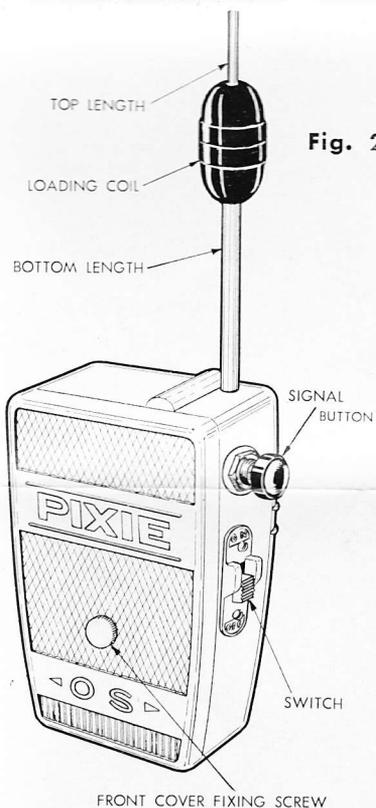
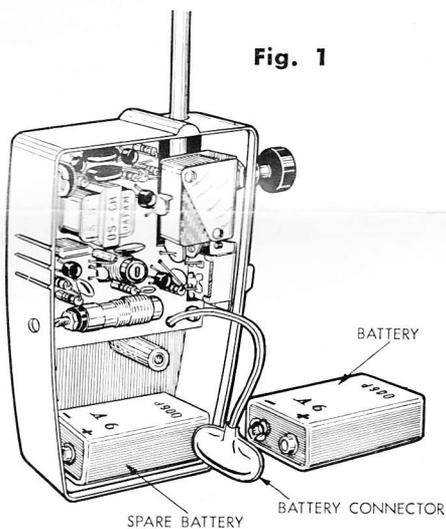
It is equipped with an O.S. special top loading coil antenna for high performance. Despite its compact dimensions, this transmitter is noted for its exceptionally good range.

### OPERATION :

1. The three parts of the antenna, i.e. bottom length, loading coil and top length, must be firmly screwed together to ensure good electrical connection. It is suggested that the antenna be checked, from time, to time, to make sure that it has not loosened during handling.
2. Open transmitter case, by unscrewing chromium-plated knob on front, firmly connect the snap as shown in Fig. 1, and install 9V battery in the lower part of case.
3. Extend both top and bottom parts of antenna fully, and switch ON (push up). The carrier wave is now transmitted. On pressing the signal button, the modulated wave is oscillated. This operates the receiver.

### CAUTION

1. Do not operate signal button unless antenna is fitted. When reduced transmitter output is required (i.e., when making preliminary receiver adjustments close to transmitter) this should be done by reducing the antenna length. Antenna and loading coil should not be removed since too high a current will be drawn by the transistors.
2. Battery should be replaced when voltage drops below 7.5V with signal "ON".



3. Do not touch antenna when transmitting, since this reduces the output.
4. When not in use, switch "OFF"(down position). When the transmitter is to be stored for long periods remove battery, as the old battery may damage the transmitter.

#### ADJUSTMENT :

Every transmitter is correctly adjusted in the factory, and tampering is not advised.

In the event of insufficient output, as measured by field strength meter, caused by severe shock etc., turn tuning screw to left or right until maximum output is indicated.

### RA-1 RECEIVER

This is a super regenerating detector system, all transistor, tone system, single channel receiver, with relay. The basic characteristics of transistors to change sensitivity with temperature change etc., has been overcome with our special circuit design. This has been fully borne out by experiments and the receiver is very stable in temperatures ranging from 30 deg.F-120 deg.F. Range is at least 1200 feet on the ground and 1700 feet in the air when used with the TA-2 transmitter.

#### WIRING :

Take great care to wire up the receiver exactly as per Fig.3 & 4 and keep leads as short as possible.

Use insulated wire of 10 strands or more and resin core solder. Never use acid-core solder or acid flux. Be careful not to confuse the (+) and (-) terminals. To do so may seriously damage the receiver.

#### SELECTION OF ACTUATOR MECHANISM :

Airplanes : Small type; With engines smaller than Max-10 engine. Small K-II Compound Escapement may be used for rudder with S-2, 2-claw Escapement for motor control.

Large type; With Max-10 and larger engines. S-103 Rudder Servo for rudder. S-2 or S-4 Escapement or S-104M Motor Control Servo for throttle.

Boats : K-II or S-103 for rudder control. S-2, S-4 or S-104M for motor control.

It is preferable to use electric servos for ships and boats, which require more power for their rudders.

#### RELAY :

This is fully tested. Attempts at adjusting are not recommended. Capacity of the contact point is 1 amp. at 6V. DC., therefore take care that maximum current requirements of escapement and servos for rudder mechanisms do not exceed this.

## INSTALLATION :

1. Use foam rubber (preferably) or form plastic to insulate the receiver from engine vibration and landing shocks.
2. Check wiring and soldered joints frequently. Poor, or fractured joints are the most common cause of loss of control.

## ADJUSTMENT :

Check wiring connections carefully and adjust receiver in the following order:

1. Insert an earphone, and switch on.
2. Superregenerative hiss ("sh" sound) will be heard in earphone.
3. Hold transmitter about 10 yards away, and switch on. The carrier wave is now radiated and superregenerative hiss will stop.
4. Press the transmitting button and the signal "P" can be heard.
5. If the audible signal is weak, adjust the tuning screw with a non-metallic screw-driver for maximum signal strength.
6. Now check tune with the transmitter at a distance of 200-300 yards. Check operation of controls and also check for malfunction due to vibration from engine.
7. Remove earphone and re-check operation of rudder mechanism, servos, escapements, etc.

## CAUTION :

1. When voltage of the 9V battery drops below 7.5V, it must be replaced. Voltage should be measured under load, with receiver on, and operating under maximum current.
2. Use antenna (as fitted to receiver) fully extended. Even when shortened, it must be at least 2 feet. On ships and boats mount aerial as high as possible, and keep it parallel with water level. (A length of steel wire may be substituted.) using antenna in this way results in maximum sensitivity.
3. When temperature rises above 120 deg. F., sensitivity of the transistors drop. During use and storage do not leave in direct sunlight or in places of high humidity.
4. When using rudder servos with a heavy current drain which will induce a spark in the relay contact points, malfunction of the receiver may result. This can be rectified by fitting an additional spark suppressing condenser (.04-.1mF) in parallel across the relay contact points.
5. The receiver may also be influenced by sparks created by the brushes of a nearby electric motor. In this case, fit 0.1-1 mF condenser between the motor brushes.

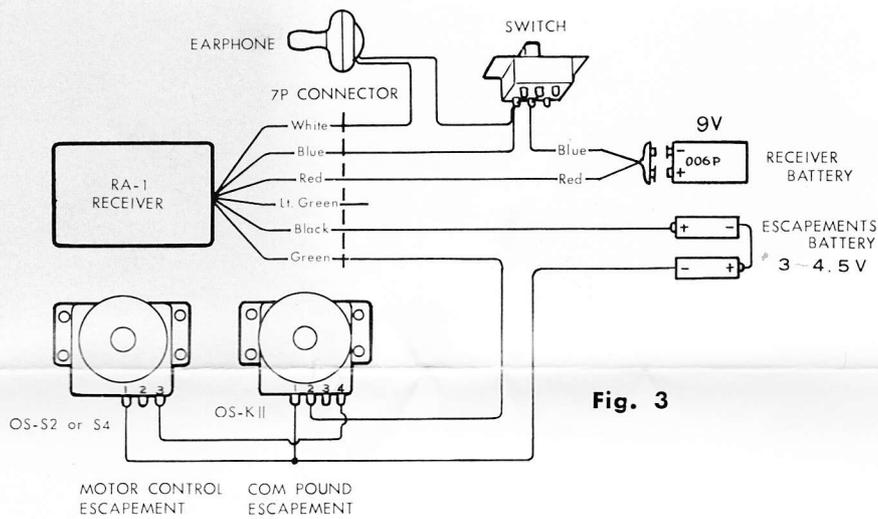


Fig. 3

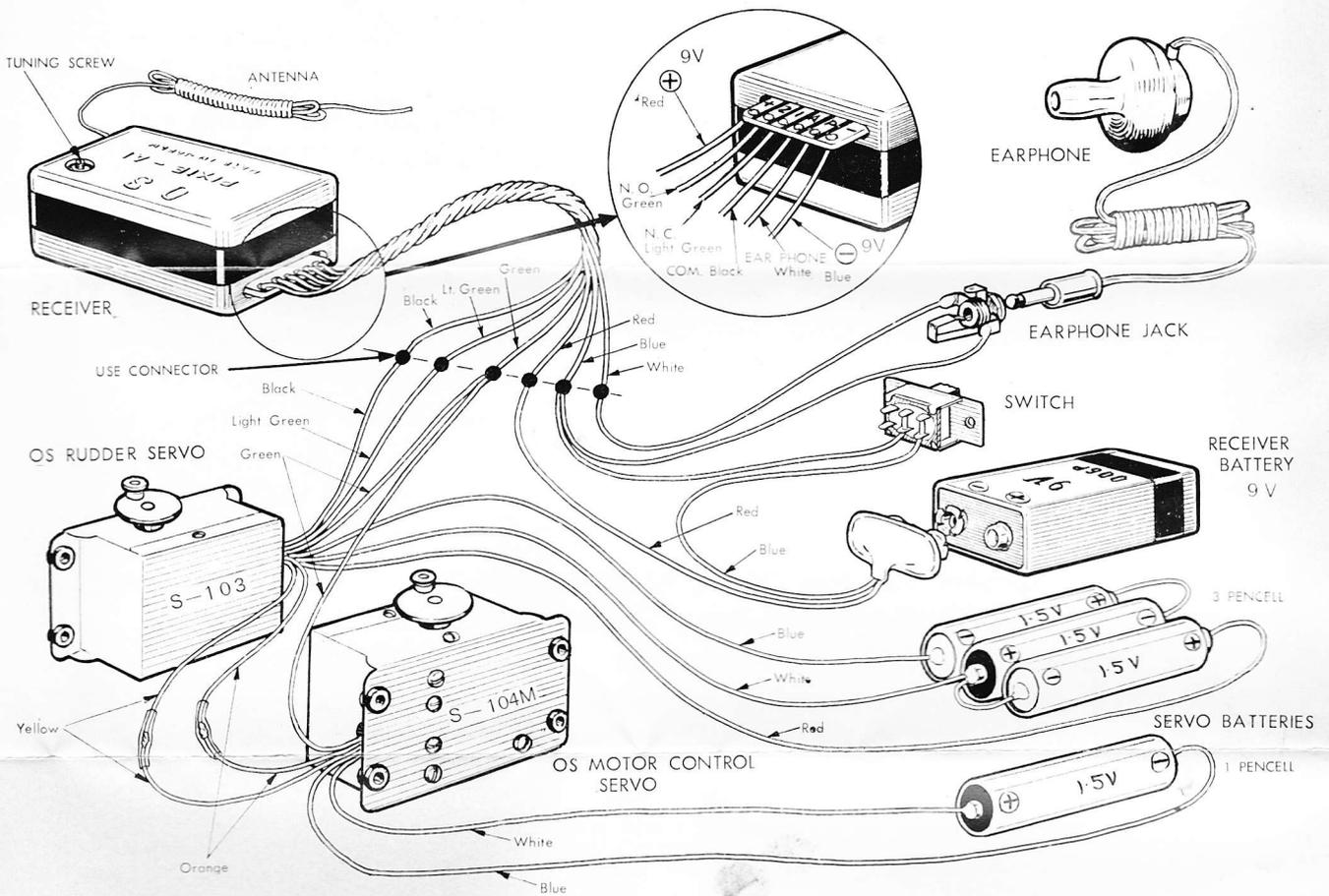


Fig. 4

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