COMMAND MASTER R/C SYSTEM

Sterling MODELS

MODEL R-T

FOR MODELS UP TO 52" SPAN AND TO .19 ENGINE

DESIGNED BY *Dick Jansson*

INSTRUCTION MANUAL R-T 50¢

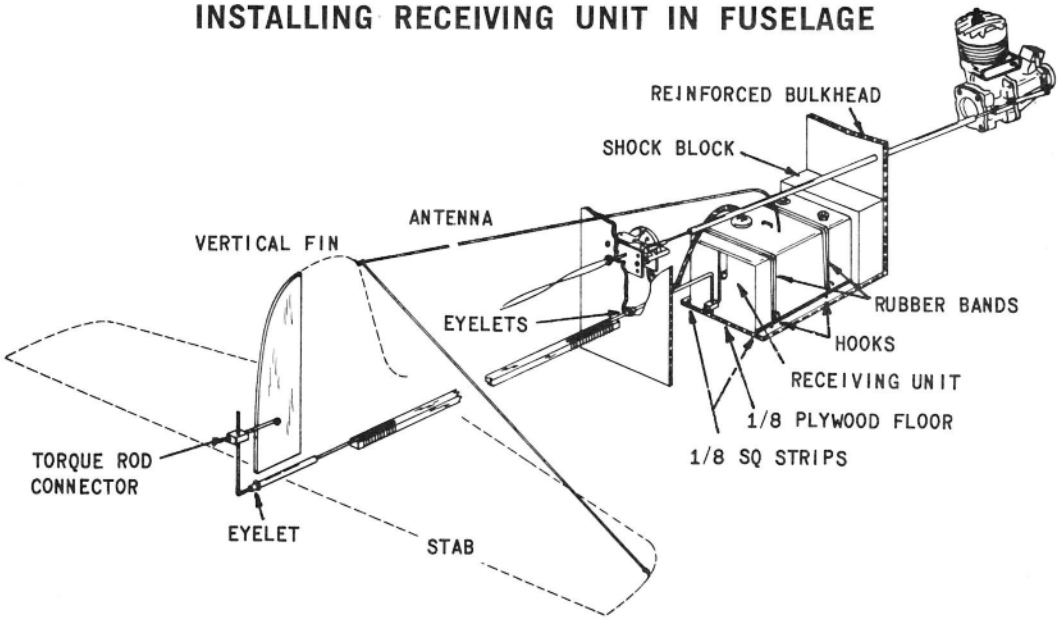
PROPORTIONAL RUDDER WITH THROTTLE CONTROL

(Throttle escapement not supplied)

You are about to enjoy the finest radio control equipment of its type, ever designed. Backed up with an unprecedented Five Year Guarantee (details on back of manual), your Command Master R/C System, designed by Dick Jansson, will give you many years of fine service and flying pleasure.

Spend a little time reading this manual before you install and fly. These brief instructions are designed to acquaint you with the system and should be kept handy for guidance and reference. Good Luck and Happy Landings!

INSTALLING RECEIVING UNIT IN FUSELAGE



Place Receiving Unit in fuselage so that your model balances at the point designated on its plans. If no balance point is available, then balance model ⅓ back from front of wing with all equipment in place and model assembled.

Receiving Unit is securely held to ⅛ plywood floor with rubber bands thru hooks as shown. Cut floor to fit, making it large enough to accommodate a 1" thick soft Balsa or Styrofoam shock block. Bulkhead in front of shock block should be plywood, reinforced if necessary, to take shock of hard landings. Center Receiving Unit on plywood floor, then cement hardwood strips (⅛ sq.) on either side to permanently locate unit.

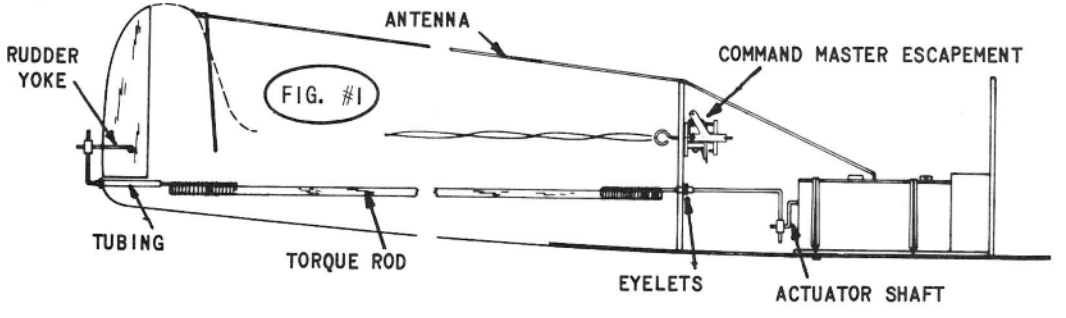
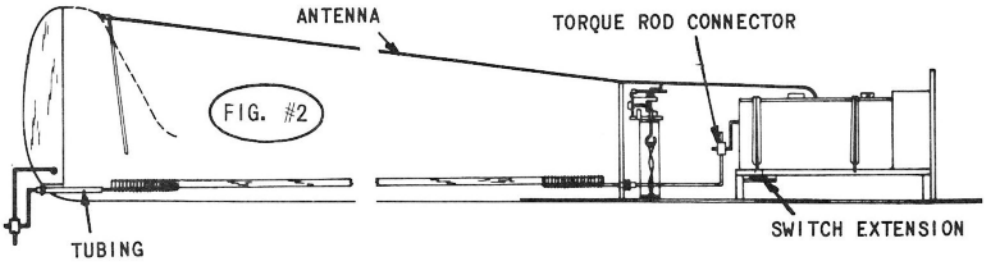


Figure #1 shows plywood floor cemented directly to bottom of fuselage. Cut ⅝ x ⅝ hole for on-off switch thru floor and bottom of fuselage. Switch is at rear of hole which allows clearance for forward movement, protecting switch in the event of hard impact. Figure #2 shows raised floor if Receiving Unit cannot be mounted to bottom of fuselage. In this case, blocks are installed to raise floor to desired height.

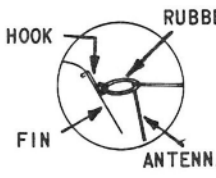
Note difference in torque rod bends. In Figure #1, front of torque rod is bent down, back is bent up. Figure #2 is just the opposite. If elevated floor is used, make switch extension assembly as shown in sketch, and cement to bottom of floor under switch cut out. Extension arm extends thru slot cut in side of fuselage. Any other similar arrangement can be made at discretion of modeler.



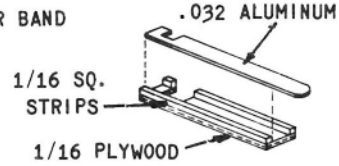
Torque rod is made from ¼" sq. hard Balsa. Ends are 1/16 Music wire. Bind and cement in place, leaving wire straight. Drill hole slightly larger than tubing, and insert tubing (at least 1" long) thru back of fuselage as shown. Do not cement in place yet. Tubing should fit wire snugly — yet freely.

Slip 2 brass eyelets (same fit as tubing) on torque rod wire, flanges facing each other as shown. With Receiving Unit in place, determine location and make front bend in wire. Install torque rod, inserting straight end thru tubing. Rear eyelet in front of torque rod must be cemented to a bulkhead to position and support the torque rod. If necessary, install a cross piece across fuselage to which eyelet can be cemented. Both eyelet and rear tubing are now securely cemented in place, making certain torque rod swings freely.

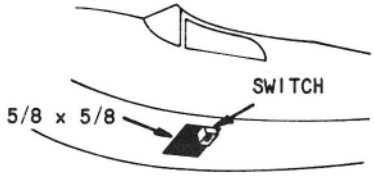
Nylon Universal Torque Rod Connectors link torque rod to Actuator Shaft. Place connector on torque rod thru straight hole, then engage actuator thru conical hole. Place connector in center of actuator shaft as shown, then solder loose eyelet (at bulkhead) to rod. Place cardboard between eyelets as spacer and to prevent soldering eyelets to each other.



RUBBER BAND ATTACHMENT



SWITCH EXTENSION ASSEMBLY



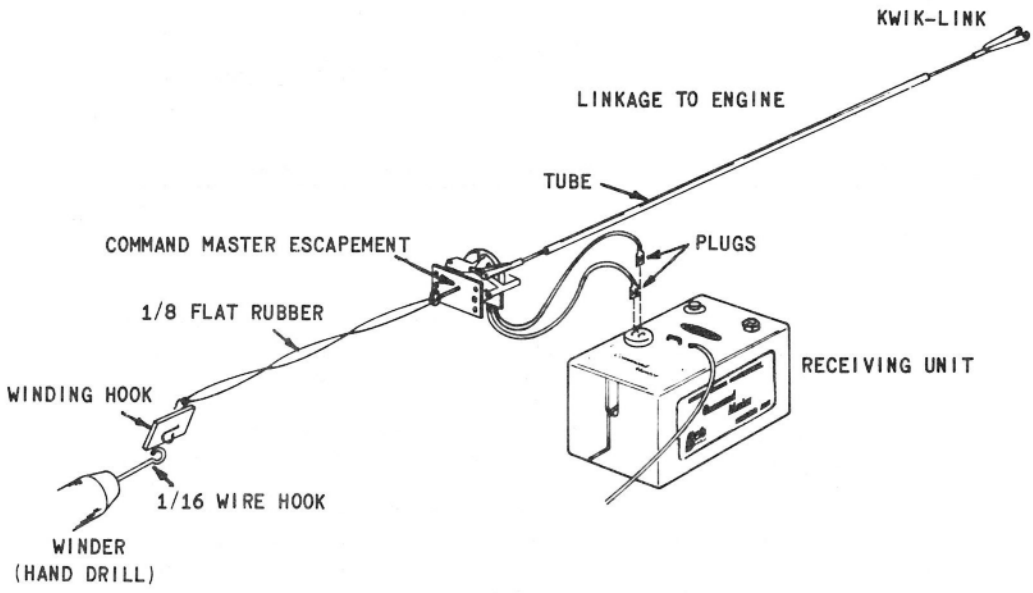
FUSELAGE SWITCH HOLE

Rudder yoke shown in Figure #1 is straight length of 1/16 wire with loop bent on one end where it is bolted to rudder. Yoke in Figure #2 has 90° bend as shown. In Figure #1 arrangement only, rudder movement can be increased by raising end of yoke, decreased by lowering.

Slip eyelet on rod protruding from end of fuselage, flange facing fuselage. Solder to rod, leaving clearance from tubing for free movement. Bend rear of torque rod as shown. Be certain front and rear bend are in line with each other. Engage in rudder yoke, conical connector hole on yoke. Be certain torque rod swings freely and easily. Movement of rudder can now be checked out by turning on Receiving Unit and Transmitter. Rudder movement must be equal on each side. Adjustments can be made by carefully bending end of torque rod to one side or the other.

Figure #1 shows special 100 ohm Command Master Escapement recommended and matched to this system for throttle control. Figure #2 shows the Babcock MC-27 Escapement, which is also suitable. Command Master Escapement has direct push-pull action and is mounted to bulkhead in typical fashion as shown in Figure #1. See engine control installation for wire hook up and other details.

Wire coming from top of Receiving Unit is antenna. It is brought out thru hole made in fuselage behind wing and attached to top of vertical fin, then down to stab as shown. Hold at contact points shown with small rubber bands attached to hooks, so that antenna is held semi-taut in straight line. This installation will allow it to release on hard impact.



THROTTLE ESCAPEMENT INSTALLATION AND USE

Drawing shows typical installation using the Command Master 100 ohm Throttle Control Escapement. (If Babcock MC-27 is used, it is installed according to the manufacturer's instructions similar to installation of this unit.) The four corner holes use 2/56 x ½ mounting bolts that secure escapement to bulkhead. If bulkhead is Balsa, cement 1/16 plywood in place first for a solid base.

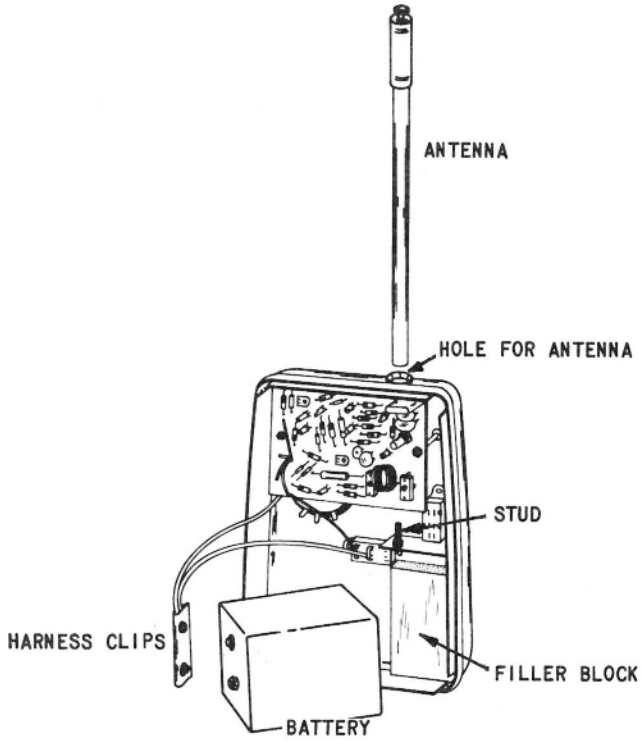
Plugs on end of leads are now inserted into Receiving Unit as shown. Reversing plugs will make no difference, however, plugs must be in place and pushed firmly down until seated. (If Babcock MC-27 escapement is used, loose plugs provided are soldered to leads).

If your model does not provide a winding hook, make one as shown in drawing and mount in rear of fuselage. There should be a minimum of 8" rubber length. Use one loop of ⅛ flat rubber. Rubber should be 1" longer than distance between hooks. Rubber is wound before each flight, but do not overwind or it will jam escapement. Winder can be made by inserting a 1/16 wire hook securely in hand drill as shown.

Linkage (connection) between the throttle escapement arm and throttle control arm on engine is now installed. There are many commercial units made for this purpose. Unit shown on sketch is DuBro Kwik-Link. Install linkage according to sketch and manufacturer's instructions.

So that there is absolutely no binding in push-pull motion of link, it is protected and guided thru a nylon, brass or aluminum (no steel) tube as shown. Fit should be loose and full travel motion of throttle linkage must move forward and back with utmost freeness and absolutely no binding.

The engine speed control sequence is: High to Medium to Low to Medium to High. Sequence can be altered to skip either or both medium speeds if desired.To change sequence, start engine and turn on Receiver and Transmitter. Push throttle control thru entire sequence and observe rotation of nylon wheel. Each outer tooth on wheel is a sequence stop. Removal of a tooth will eliminate that sequence. CAUTION! Do not remove a high speed or low speed tooth.

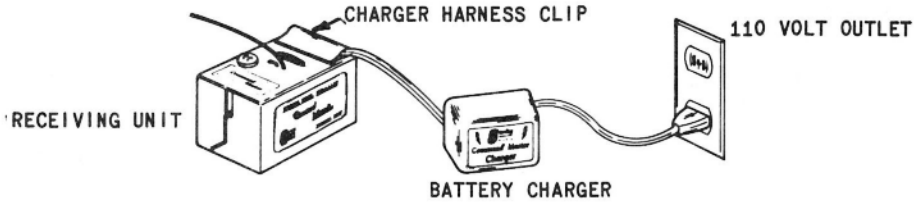


TRANSMITTER-BATTERY AND ANTENNA INSTALLATION

Remove screws and take off back cover of transmitter case. Install a 9 volt Burgess #D6 or Eveready #276 (or equivalent battery of same size) by snapping harness clips to battery as shown. Place battery in case with filler block alongside as shown so battery does not shift. Insert antenna through hole in top of case and screw tightly into stud as shown. Replace back cover and screws. Under normal use, battery should last an entire flying season.

Pre-flight distance checks at about 300 paces should be made at the beginning of each flying day. If battery has fallen below 8 volts, range (distance) will be cut down severely. In this case, a fresh battery MUST be installed IMMEDIATELY! Be certain antenna is FULLY EXTENDED, since it will not function at all when pulled out only part way.

At the end of each flight, push in antenna so it won't be stepped on. Storage of battery at low temperature (refrigerator) will extend its life span.



CHARGER AND IT'S USE

Built-in Nicad Batteries must be fully charged before each flying day. Receiving Unit does not have to be removed from model. Snap charger harness clip to Receiving Unit and plug opposite end into ordinary 110 volt household outlet. A full charge requires 10 to 12 hours and will easily provide a full day's flying.

Do not charge receiver longer than 12 hours or damage may be permanently caused to batteries. If batteries are not charged, there will be a sluggish response to the controls. If this occurs, flying should be stopped immediately, and not commenced until batteries are fully charged.

PRE-FLIGHT CHECK AND FLYING HINTS

Don't fly your model unless it is balanced FULLY ASSEMBLED at point designated on plan. If no balance point is given, model should balance approximately ⅓ back from leading edge of wing. Add weight if necessary.

Angle of wing and stabilizer (Angle of Incidence) when viewed from side must likewise be checked to conform with plan. Usually there is 1° to 4° difference (depending on design of model) in the setting with front of wing higher than rear of the wing; or front of stab lower than rear of the stab.

Engine is generally installed with downthrust (front pointed down to offset power stall) and side thrust (front pointed right to offset turning tendency of engine torque). DO NOT FLY MODEL UNTIL IT COMPLIES WITH PRECEDING CHECK LIST!

If you are a beginner, it would be best (although not necessary) to enlist the aid of an experienced flyer on your first flights. Test flying should be done on a calm day. Wind throttle escapement rubber, start engine and check out the radio at 300 paces with the engine running. BE SURE ANTENNA IS FULLY EXTENDED.

On test flights, use only approximately one minute's supply of fuel in tank, so if any problems arise, engine will stop, which will help prevent damage. Always check controls just prior to launching model. Set engine at medium speed and launch model level, at approximate flying speed into any prevailing wind. Model should climb smoothly and fly in straight line.

If model dives, wing angle of incidence must be increased. If wing is on top of fuselage, add 1/16 thick shims under front of wing. On low wing models, add shims at rear of wing. If it stalls, reverse position of shims, decreasing angle of incidence. Add shims until model flies correctly. Shims may also be used on stabilizer in same manner as wing. Lowering front of stabilizer will make model climb and vice versa. If model turns, adjust rudder in opposite direction until straight flight is obtained. Engine side thrust or down thrust can also be adjusted if need be. The preceding procedure is known as trimming your model.

Always fly your model well up wind. Wind can always bring the model back to you. Do not attempt any maneuvers until model is high in the air. Try out turns gently until "you get the feel" of the controls. Note how a slight movement of the control lever produces a slight turn in the model and how turn increases as control lever is moved. Try out the throttle control. Note the reaction at various engine speeds. Learn to use the speed in maneuvering, landing, and even avoiding objects that come up unexpectedly.

When flight is completed, landing is made into the wind. Landings can usually be made with engine running at low speed or with engine stopped completely. After you are completely familiar with your model and its reaction to your radio commands, many aerobatic maneuvers can be attempted. Always work from a high altitude so that there is plenty of time to recover to a normal flight path.

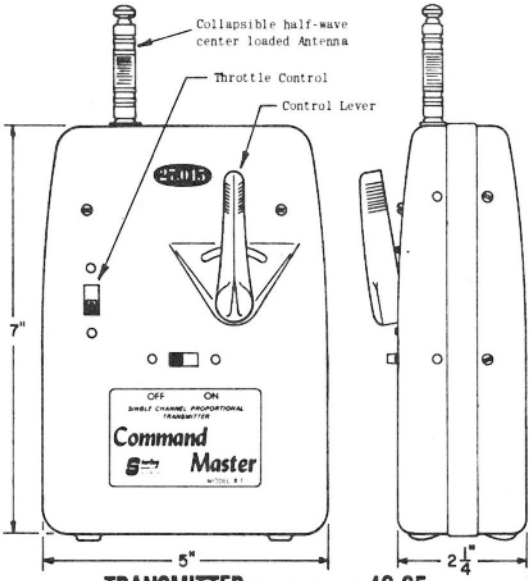
To spin, place engine in low speed and push control lever completely over for maximum turn. Recovery is made by moving lever in opposite direction which applies opposite rudder. To loop your model, place engine in high speed and go thru spin procedure; when rudder is returned to neutral, or a little opposite rudder is momentarily applied, model will recover and, with the additional speed, go into a loop.

If model stalls, the flight path can be smoothed out by applying turn just as the model is nosing up. This will help to level off model until engine cuts and model can be landed safely. When in any trouble, always shift engine to low speed.

Most Radio Control modelers fly together as organized clubs. By so doing, help and information is readily available so that flying is enjoyed to its fullest extent. Many clubs have their own flying site and carry membership insurance.

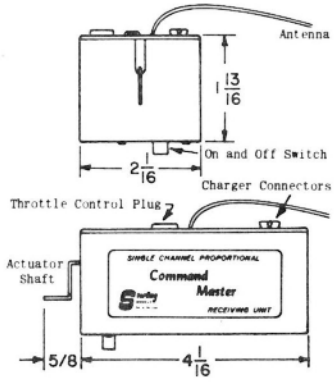
National parent body is Academy of Model Aeronautics, 1239 Vermont Avenue, .N. W., Washington, D. C. 20005. Membership application is enclosed. Write for listing of clubs in your area.

It is necessary that a F. C. C. License be obtained before operating this or most any radio control equipment. Send application form 505, class C, to your nearest Federal Communications Commission field office. Check telephone directory for address.



TRANSMITTER (less batteries) 49.95

- **Weight complete with Eveready #276 battery (or equivalent): 1¾ lb.**
- Tough ABS plastic case with polished Aluminum band designed for perfect balance and that comfortable feel.



RECEIVING UNIT 79.95

- Complete, Ready-to-fly Weight: 9½ oz.
- Injection molded Lexan case, sealed against dirt. Practically unbreakable.
- Includes permanently installed re-chargeable Nicad batteries.

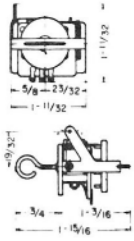
UNIVERSAL TORQUE ROD CONNECTORS (3 for) 50c

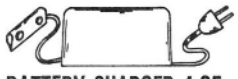
- **Injection molded of Friction Free Nylon**
- **Two-way conical tunnel acts as Universal, correcting misalignments and insuring free and electrically noiseless operation. Other 1/16 hole is straight thru.**

THROTTLE ESCAPMENT 6.95

(not supplied with system)

- **Special 100 ohm low current drain**
- **3-position which provides low to medium to high. Adjustable to instant high — skipping a medium**
- **Easy to install—push-pull action**
- **Weight ¾ oz.—Rugged construction**





BATTERY CHARGER 4.95

- Isolated transformer type
- Use with any 250 mah Nicad pack up to 9.6 volts. Automatic cut-off.
- Tough ABS plastic case.
- Complete with snap fasteners and standard AC cord.

TECHNICAL SPECIFICATIONS

TRANSMITTER RT-1 5x7x2½

All Transistor single tone AM Modulated Relayless Pulse, uses unijunction and silicon transistors throughout. Battery: 9v. Pulse width: 4 PPS—Rudder; Pulse Rate 12 PPS—Throttle; 3600 Cycles Per Second Audio Tone Frequency; Center Loaded Half Wave—54" Antenna, Power Output 225 milliwatts. Range: as far as visible.

If purchased separately **$49.95**

RECEIVING UNIT RT-1 1¾x2x4

Super-Het Crystal Control, 5 Transistor Relayless Circuit. Audio Tone Selectivity: 3600 C.P.S. Thermal Stability from 0 to 140 Degrees. Built-In 9.6 Nicad Battery. Decoder Board, rudder-throttle type, 6 transistor, pulse-width rate. Powerful double coil magnetic actuator, with built-in magnetic centering.

If purchased separately **$79.95**

MAGNETIC ACTUATOR *If purchased separately* **$ 6.95**

CHARGER

Isolated transformer type charger for 9-volt 250 mil. Nicad batteries.

If purchased separately **$ 4.95**

UNIVERSAL TORQUE ROD CONNECTORS

Molded nylon, friction free, electrically isolates torque rod.

If purchased separately **3 for $.50**

WARRANTY

Sterling Models warrants to the original consumer purchaser of this new Sterling Command Master System — Model R-T, that any part thereof which proves to be defective in material or workmanship within 30 days from the date of original purchase, will be repaired or at the company's option, replaced free of charge. The company reserves the right to determine whether complaint is actually due to defective material or workmanship; or mishandling by the purchaser.

This Warranty is solely between the company and the original consumer and no other company or persons — and cannot be returned to the dealer or wholesaler. To obtain action, consumer must inform company directly of his complaint and return entire system prepaid and insured to the company, together with $1.00 to cover return postage.

FIVE (5) YEAR BLACK BOX GUARANTEE

If the Receiving Unit ceases to operate at any time within five (5) years from date of purchase because of crash or any reasons, immediate replacement will be made on receipt of the Receiving Unit at the factory with $7.50*, provided the lid is not removed and unauthorized repairs are not attempted.

If case is painted, marked or disfigured (not caused by crash) an additional $2.50 charge is required for a replacement unit on serviceable but disfigured cases. There will be no case replacement charge if repairs are made in your own Receiving case, but this will necessitate an approximate 10 day delay for return.

Unless prevented by unusual circumstances, replacement unit will be shipped within 24 hours after our receipt of return, by First Class Mail.* There is no limit to the number of times Receiving Unit may be replaced under this Guarantee.

IN THE EVENT LID IS REMOVED, BLACK BOX GUARANTEE IS VOID.

Repairs will then be made as follows: Minimum estimate charge $3.00. You will be promptly advised of cost of repairs from which the $3.00 is deductible. Repairs will then be effected promptly upon receipt of balance plus postage as advised. Prompt shipment will be made only if remittance is in cash, money order or cashier's check. Personal check will require a minimum of 7-day delay in shipment for check clearance.

This Guarantee and Warranty are both NULL AND VOID unless form is COMPLETELY filled out and RETURNED DIRECTLY TO THE FACTORY WITHIN 10 DAYS OF PURCHASE.

* Black Box Guarantee covers Receiving Unit only and price includes its return postage. Transmitter, however, must be returned with Receiving Unit so that they can be matched and peak tuned to each other, otherwise, range cannot be guaranteed. Additional postage charge of $1.00 for First Class and $2.00 for Air Mail must accompany remittance for return Transmitter postage. Black Box Guarantee replacement service on Receiving Unit not accompanied by Transmitter must be requested specifically in writing when returning unit, in which case range is not guaranteed.

STERLING BUILDING
BELFIELD AVE. & WISTER STREET • PHILADELPHIA, PA. 19144 U.S.A.