

SERVICE

If the equipment is damaged it should be returned to R.C.S. together with a 7/6d. postal order to cover the cost of handling, booking, preliminary checking, and postage.

But before returning the outfit to the factory be sure to check for simple installation errors. These may sound obvious but are far too often the cause of equipment being returned unnecessarily.

Points to check:

1. Transmitter batteries not down in voltage and correctly connected.
2. Receiver batteries not down in voltage and, if pencils, correctly fitted to battery box.
3. Transmitter aerial screwed into socket and fully extended for maximum range checks.
4. Receiver aerial fully extended.
5. Receiver tuning slug setting.
6. Wiring harness connection if not R.C.S. accessory pack.
(Always check voltages on lead).

Do not allow so-called experts to tamper. Never send batteries back through the post and PLEASE PACK CAREFULLY; equipment is often received with more damage caused in transit than in crashes.

Remove the batteries from the case and clip if the equipment will not be in use for a long period or corrosion may result.

Manufactured by
RADIO CONTROL SPECIALISTS LTD.

NATIONAL WORKS · BATH ROAD · HOUNSLOW · MIDDLESEX · ENGLAND

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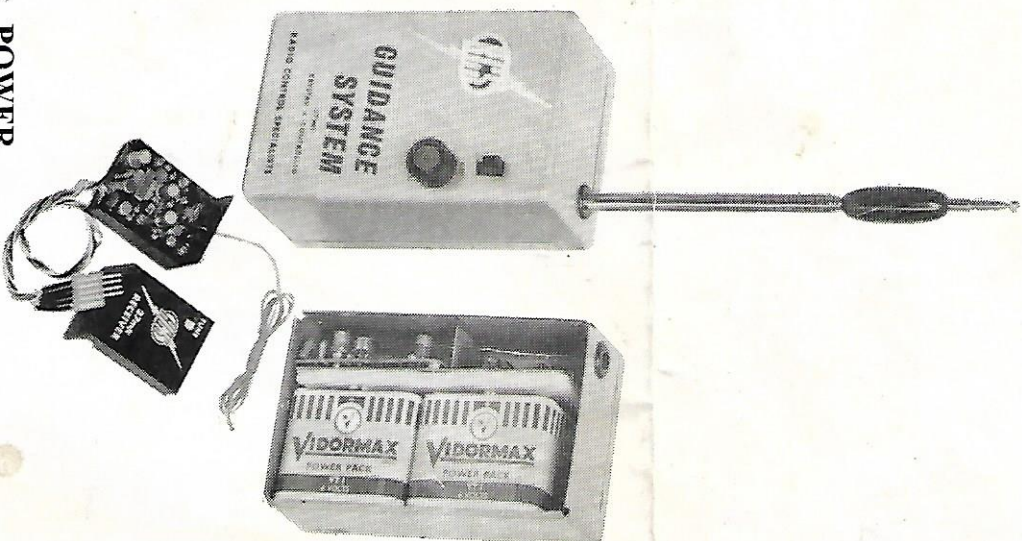


RADIO CONTROL

SPECIALISTS LIMITED

All-Transistor Single Channel

GUIDANCE SYSTEM



MK. II SUPER POWER

BOOKLET PRICE ONE SHILLING

The RCS ALL-TRANSISTOR SINGLE CHANNEL GUIDANCE SYSTEM MK. II

INTRODUCTION

The R.C.S. MK. II all-transistor transmitter and receiver was specifically designed for the remote control of mechanical functions, model aircraft or boats. Designed with the same objects in mind, the MK. II version represents an improvement over that equipment by virtue of the fact that the very latest electronic components, and in particular, transistors, have been used to their very fullest advantage.

The extremely small size, minimal weight and simplicity of installation of this equipment make possible the radio control of models which were previously considered far too small for this purpose.

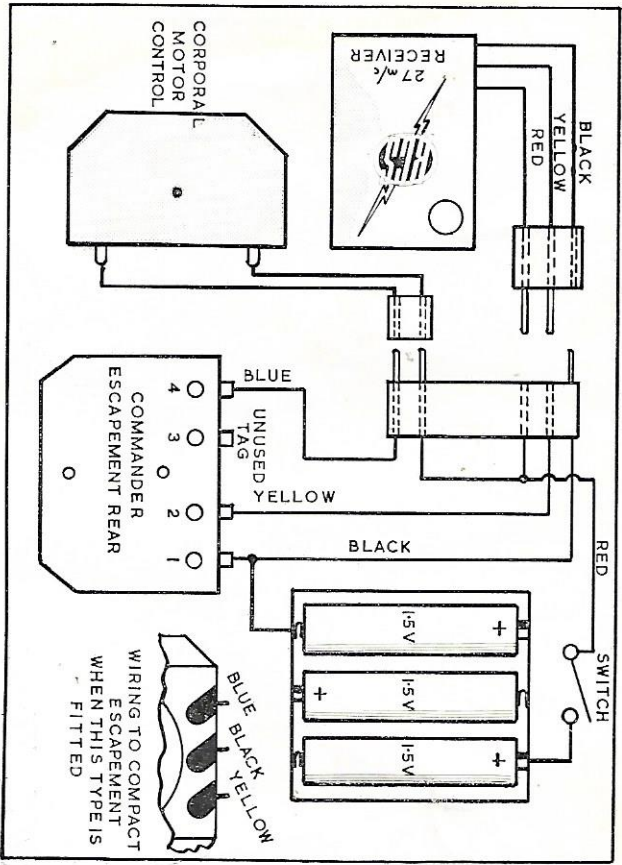


Fig. 1.

GENERAL

The receiver is designed to give the maximum possible resistance to vibration and shock damage. Special printed circuit boards are used to provide a sound basis for construction.

The crystal controlled, all transistor transmitter, complete with telescopic special aerial with tuned input, is small and light and designed to fit easily into one hand. The batteries will last months with average use.

SPECIFICATION

RECEIVER

This is a six transistor unit designed to operate between 2.4 and 4.5 volts. For the majority of applications, and where high output currents are required, of the order of 400 mA, the optimum voltage to use is 4.5.

The super regenerative detector stage is of a type specially developed by R.C.S. over many months and represents a new generation of such detectors, replacing all former types which were developments of an early American circuit. These early types used transistors which were

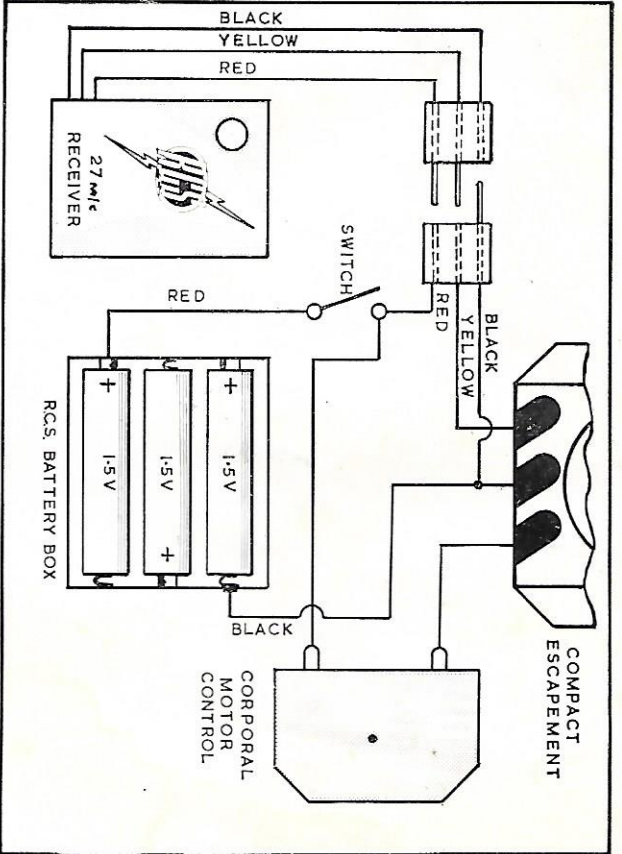
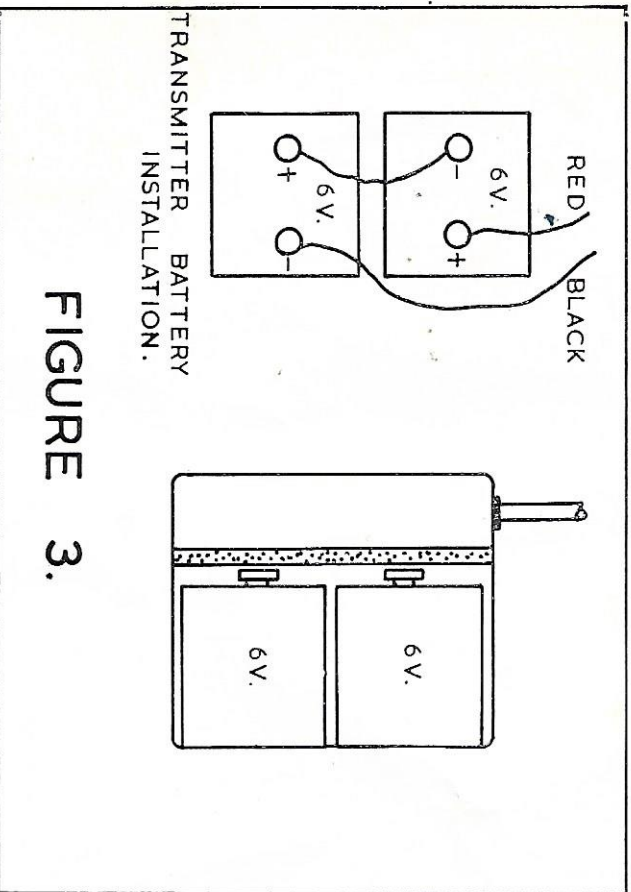


Fig. 2.

operating near their upper frequency limit so necessitating unusual techniques to make them function as super regenerative detectors at 27 Mc/s. By employing a very recently evolved transistor working well inside its capabilities the R.C.S. circuit gives increased stability and sensitivity.

On the standard version two audio amplifiers follow the detector, the second of these being transformed coupled to a boot-strap-driven D.C. switch stage, which in turn drives the power output stage. A special version may be supplied to order which has one further power stage incorporated; which derives its base drive from the collector load of the first power stage. This means that the second power stage can only operate when the first is not conducting, and vice versa, so that the second stage can be used to operate engine control escapements having only a single "quick blip" contact, which is not normally possible with a relayless receiver. Alternatively, these two transistors can be used to operate the separate coils of magnetic actuators or other pulse proportional units (fig 4). This type is designated "twin output."

Output from the set is via a 3 pin plug which has a matching socket on the R.C.S. MK. II accessory outfit which is available for use with this equipment. The complete receiver is housed in a miniature nylon case which is fully crash resistant.



OUTPUT CURRENT: 400 mA on 4.5 v.
MINIMUM OUTPUT LOAD: 9 ohms
RECOMMENDED OUTPUT
LOAD: 11 ohms e.g. Elmic escapements

SIZE: 1 13/16" × 1 5/16" × 1"

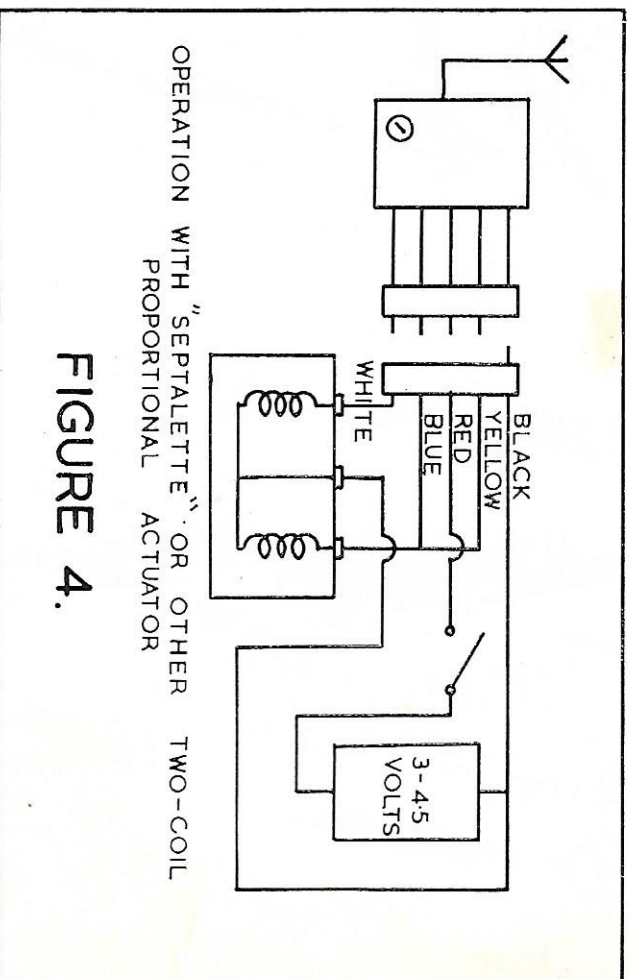
WEIGHT: 1 1/2 oz.

RECOMMENDED BATTERIES: 2.4 or 3.6 volt Deace cells or
3 or 4.5 volts U7 pencils
3.6 or 4.5 is recommended for
general use.

TRANSMITTER

This is a five transistor unit operating from 9 to 12 volts supply.

The crystal controlled oscillator using a crystal with a tolerance of $\pm 0.003\%$ at 68°F, ensures maximum freedom from R.F. drift consistent with high power output. The R.F. amplifying transistor is a silicon NPN type specially developed for the purpose. R.F. power is fed into the tuned aerial via a precise matching system which permits optimised output.



Harmonic suppression and over-all stability fall well within the requirements set down by the Post Office and other appropriate governing bodies throughout the world.

A two transistor modulation generator impresses a 100% square wave modulation at about 500 c/s on to the R.F. output wave-form via a switching stage which in turn controls the R.F. power amplifier.

An on-off switch is fitted which allows continuous transmission of carrier only, and a single press button is keyed to transmit a modulated signal which operates the receiver output. Quick blip is easily obtained by tapping the button with a finger.

The unit is attractively housed in a steel case, which is stove-enamelled with a silver grey hammer finish.

CURRENT CONSUMPTION: 25 to 38 mA, aerial extended.

R.F. OUTPUT: Not less than 200 mW.

RECOMMENDED BATTERIES: Two 6 volt PP 1 or equivalent.

WEIGHT: $5\frac{1}{2}'' \times 3\frac{1}{2}'' \times 2\frac{3}{8}''$
less batteries — 1½ lb.

GENERAL INFORMATION

The receiver is wired to operate an Elnic Compact compound escapement and, via a separate plug which is included in the special accessory outfit, an Elnic Corporal engine escapement. However, other types can be used equally satisfactorily as shown in the diagrams.

The MK. II accessory outfit consists of an Elnic Compact, switch, battery box and prewired harness in one pack with a matched Elnic Corporal available separately in another pack. Such an outfit is strongly recommended, as it eliminates soldering entirely and enables the equipment to be installed and used in a few minutes.

TUNING

The only tuning required is by means of a ferrite slug in the receiver coil which is accessible through the hole marked **TUNE**. Since the tuning on this receiver has been made fairly sharp, it is possible to use two MK. II Guidance Systems simultaneously, if the transmitter frequencies are at either end of the band. **DO NOT USE A BLUNT, OR OVERSIZED TUNING TOOL.** A special tuner is available for 2/-.

With the transmitter and receiver switched on, and the transmitter aerial fitted but not extended, get a helper to press the control button whilst the tuning slug is adjusted to the mid-point of the range over which the escapement is pulled in with the signal transmitted.

Check this tuning with the transmitter aerial fully extended by taking the model 300 yards or so from the transmitter and peaking the tuning slug exactly. This need only be done at long intervals, since experience will show that, if the range with the transmitter aerial retracted is approximately as high as when tested originally, then the extreme range will also remain satisfactory.

The R.C.S. MK. II accessory packs for rudder and engine control are strongly recommended. These are prewired and consist of a compound escapement, battery box, plug and switch. The use of these items eliminates all soldering, avoids mistakes, and ensures immediate use. Two types are available, one fitted with a Commander escapement and the other with the newer Compact escapement. Figure 1 shows the general wiring diagram for either type. Figure 2 shows method of wiring to customer's own escapements. If a conquest is used on its own connect between black and yellow.

INSTALLATION

Although the receiver is virtually vibration proof, it is advisable to protect it against landing shocks with foam rubber. The receiver should be placed in the aircraft with the tuning hole facing the rear, i.e. the printed circuit board will be so positioned that the components are not pulled away from it in a shock landing.

Also, the batteries should be fitted forward of the receiver since they are relatively heavy and could damage it if they move forward in a crash. If an R.C.S. battery box is in use then the back of this should be placed against the forward bulkhead, so that the pencils are pushed into their clips in a crash, not thrown out of them. Whatever battery arrangement is used, however, it should be wrapped in foam rubber to prevent movement in flight and consequent fatigue and fracture of the wiring leads.

BOATS AND LAND VEHICLES

For short range use with boats, etc., one 9v battery type PP7 will be found to give adequate and long service in the transmitter.