# MIN-X SUPER HETRODYNE RECEIVER INSTRUCTION SHEET

## (R-6 SERIES)

### INTRODUCTION

The Min-X super hetrodyne multi-simultaneous tone receiver is of the latest and most advanced design. It requires only a six volt power source. This receiver is extremely sensitive offering optimum range and reliability, yet being selective enough to reject unwanted signals occuring in the citizens band. It will operate simultaneously with equipment operating on adjacent R/C channels and will provide protection against interference from citizens band voice communication which may be only 10 K.C. away.

### TRANSMITTER REQUIREMENTS

Due to the extreme selectivity of these receivers, it is absolutely necessary that the companion transmitter is on the correct frequency. No commitment as to operation of the receiver can be made unless it is operated by a properly tuned Min-X tone transmitter.

### INSTALLATION AND MOUNTING

Ideal mounting is obtained when the receiver is enclosed in a compartment or pocket of at least 1/2" foam rubber. This should be a vertical installation if possible with the printed circuit board toward the front. Be certain the receiver is mounted loosely so as not to be affected by vibration, and be sure the complete receiver installation is not touching any portion of the model since this would defeat the purpose of the anti-vibration mounting. Relay packs, if used, should be mounted forward of the receiver to prevent impact damage.

### WIRING AND ANTENNA

Refer to the seperate wiring diagrams for proper hook up procedure. Be careful of of all solder connections and routing of wiring. A little extra time and planning will be rewarded with a neat, trouble free installation. Antenna length should be close to 30 inches, as supplied, when measured from the case. Route the antenna as far as possible from other wiring and servos. It is highly recommended that the antenna be attached to the tip of the fin (or to the stabilizer tip) to avoid paralleling push rods and to prevent"signal blanking". The Min-X Servo pack is specifically designed to solve all relayless installation problems. It's use is highly recommended to obtain a neat, convenient, and trouble free installation.

### BATTERY REQUIREMENT

The superhet receiver is designed to operate from a 6.25 volt (or 6 volt) power source. A battery pack of 5-500 M.A. ni-cad batteries should be used as a total power source and the hook up for this arrangement is shown on the wiring diagram sheet. Dry cell batteries are not recommended. Double check all wiring to assure correct installation. Reversed or excessive voltage can damage the transistors in the receiver.

### REED BANK

The reed bank used on the super-het receiver was designed and is produced by Min-X for use on our receivers. Its solid epoxy base, ni span steel reeds, and glass circuit board with silver contact screws represent a step forward in reed design.

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The reed bank is completely adjusted and under normal use should never need re-adjustment. Cleaning may be accomplished by passing a piece of "bond type" paper between the contact screws and the reeds. An abrasive should not be used and the reeds should not be touched with the fingers as acid action will stain them.

TUNING AND RANGE CHECKING

Tuning and adjustments on this unit are factory set. Re-adjustments should not be required, nor are they recommended. Every receiver is operational checked before leaving the factory and should be ready for installation and use at the frequency marked on the crystal.

| Transmitter Operating Frequency | Receiver Crystal Frequency |
|---|---|
| 27.195 M.C. | 26.740 |
| 27.145 M.C. | 26.690 |
| 27.095 M.C. | 26.640 |
| 27.045 M.C. | 26.590 |
| 26.995 M.C. | 26.540 |

An initial range check of 1000 feet should be made to assure proper operation. After the initial range check, transmitter antenna off checks of 6 to 7 feet are all that is required. When checking with the transmitter, antenna removed, the antenna connector should be pointed at the receiver and at right angles to the receiver antenna (i.e. with the receiver antenna running along the fuselage, move the transmitter off the wing tip). Various conditions will affect the antenna off check (ground conditions, height of model from the ground, temperature and humidity) so the individual should establish his own distance check. Note this distance and check it before each session. If at any time in the future you should fail to get reliable response at this distance (or close to it) it may be considered an indication of trouble. Check the transmitter output and condition of receiver batteries first. If this is not the problem it is likely to indicate the receiver should be realigned. It is strongly urged that the receiver, transmitter and antenna (loaded type only) be returned to the factory for this service.

OPTIONAL FIELD TUNING PROCEDURE

It must be stressed at this point that this tuning procedure is not as accurate as a factory aligment where proper test instruments are employed.

The first basic concept that must be understood is that a superhet receiver is not tunable as to frequency. The frequency is crystal controlled. It is only tuned to accept or reject a signal on its own crystal assigned channel. A careful examination of the receiver will show that there are five (5) adjustments. Only four (4) of these controls are field tunable. The unshielded slug tuned coil located in the corner of the circuit board is an oscillator drive control and should not be moved. A 0-50 or 0-100 M.A. meter of good quality should be inserted into the plus battery lead. Meter test leads should not exceed a total of 20" in length. At idle the receiver current will be between 6 and 12 M.A. Remove the antenna from the transmitter and move it to a point where very little signal is received. (Make all adjustments with a weak signal.) A rubber band is helpful in keeping the transmitter keyed while working on the receiver. With a completely insulated (no metal of any type) tuning screwdriver slowly and carefully adjust each of the 3 I.F. transformers

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(R-6 SERIES)

located on the outer edge of the circuit board until maximum current reading is indicated on the meter. At no time should any of the I.F. stages require more than ¼ turn from the factory set position. If the signal cannot be tuned in within this area there are other problems and tuning is not the answer. After maximum signal is achieved with the three transformers the same procedure is applied to the single transformer located toward the center of the board. It cannot be stressed strongly enough that constant tuning of this receiver is not necessary. Factory test receivers have gone for as long as two years without being tuned or range checked other than the antenna off check recommended, and this is under the most extreme test conditions. Constant tuning will loosen the I.F. transformer locking device making it impossible to hold a setting. Do not fill the opening with any type of wax, glue or sealer as internal transformer damage has been found from this procedure.

PRODUCT WARRANTY

The purpose of any warranty is to assure the purchaser of a product that he will be satisfied with. Every effort by the manufacturer has been made to achieve this end.

It is reasonable to assume that when a product of the nature of Min-X radio equipment has given satisfactory performance over a period of ninety days it has been properly manufactured with components correctly assembled and tested. Therefore, a ninety day limitation has been placed on free replacement or adjustment under this warranty. Malfunction of any product as a result of reversed voltage, physical damage or tampering automatically excludes it from the protection of this warranty. Tubes and transistors due to their delicate nature are not covered by this warranty.

The warranty slip included with this receiver MUST be on file before any requests for service will be recognized. This warranty applies only to the original purchaser.

When returning a receiver for repair or adjustment it must be sent prepaid to the factory accompanied by a letter explaining the reason for return. Companion transmitter and antenna (Loaded type only) must be included. All units should be adequately packaged to insure their safe arrival. We cannot be responsible for damage suffered in transit. All repaired units will be returned C.O.D. and will be handled with all possible promptness

GENERAL SPECIFICATIONS

Size: 2 1/8" x 2 7/8" x 1"
Operating Temperature: 0° - 135°
Sensitivity: 2-4 micro volts
Current Drain: Idle, 6-12 ma
On signal, 50 ma.
Operating Voltage: 6 Volts (6.25 nicads).

Weight: 4.5 ozs
Selectivity 3 KC
Reed Bank: Ni-Span steel reeds, silver contact screws. Epoxy encapsulated base.
Operating frequency 290-560 C.P.S

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8714 Grand River Ave.
Detroit, Michigan. 48204

COLOR CODE OF SIGNAL WIRES FROM THE RECEIVERS TO THE SERVOS [redacted]

[redacted]

## 6 CHANNEL

Reed #1 Blue
Up Elevator

Reed #2 Grey
Low Motor

Reed #3 Blue
Down Elevator

Reed #5 Yellow
Right Rudder

Reed #4 Grey
High Motor

Reed #6 Yellow
Left Rudder

## 10 CHANNEL

Reed #1 Orange
Up Trim

Reed #2 Blue
Up Elevator

Reed #3 Grey
Low Motor

Reed #4 Blue
Down Elevator

Reed #5 Grey
High Motor

Reed #6 Orange
Down Trim

Reed #7 White
Right Aileron

Reed #8 Yellow
Right Rudder

Reed #9 White
Left Aileron

Reed #10 Yellow
Left Rudder

## 12 CHANNEL

Reed #1 Orange
Up Trim

Reed #2 Blue
Up Elevator

Reed #3 Grey
Low Motor

Reed #4 Blue
Down Elevator

Reed #5 Grey
High Motor

Reed #6 Orange
Down Trim

Reed #7 White
Right Aileron

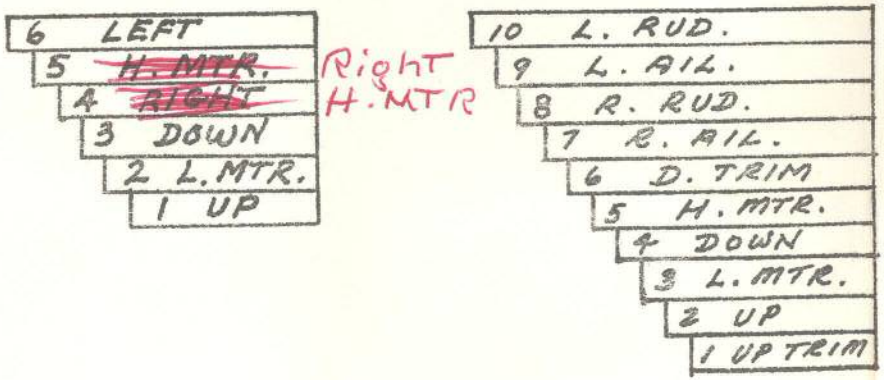
Reed #8 Yellow
Right Rudder

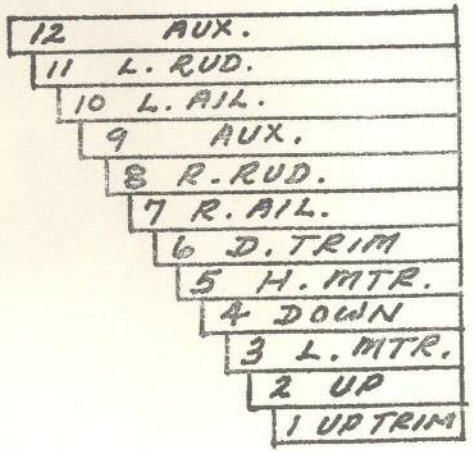
Reed #9 Brown
Auxiliary

Reed #10 White
Left Aileron

Reed #11 Yellow
Left Rudder

Reed #12 Brown
Auxiliary




MIN-X
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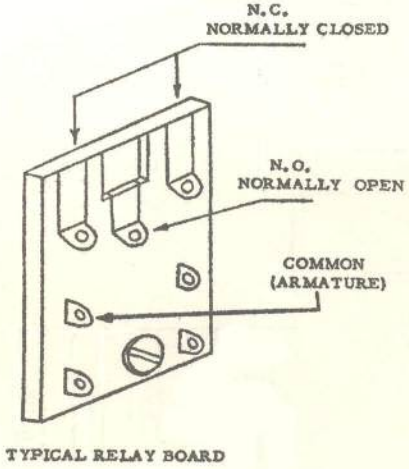
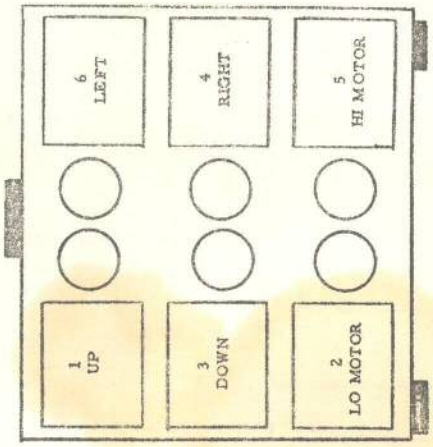
Phone 894-3251

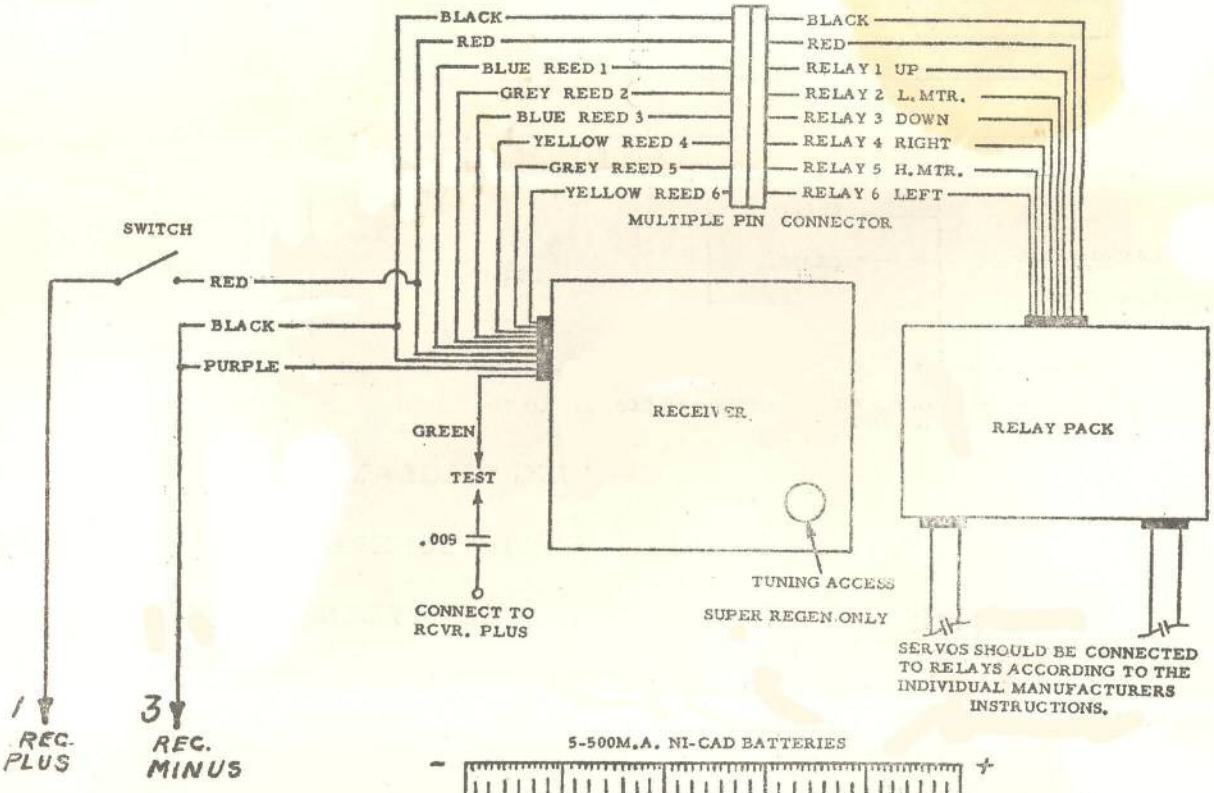
# WIRING DIAGRAM FOR MIN-X 6 VOLT RELAY MODEL RECEIVER.

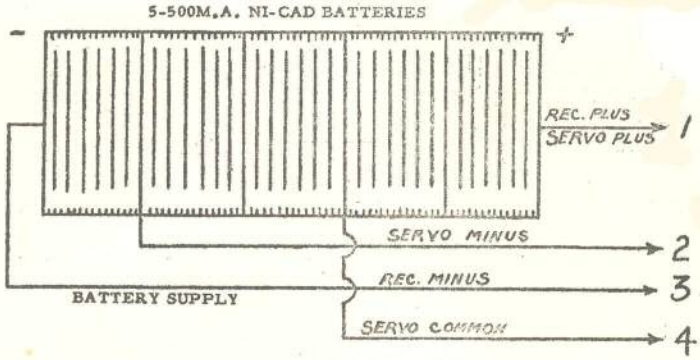
## SIX CHANNEL SUPERHET & SUPER REGEN.




TYPICAL RELAY BOARD




USE OF NI CAD BATTERIES WILL ALLOW THE RECEIVER AND SERVOS TO OPERATE FROM A COMMON SUPPLY.

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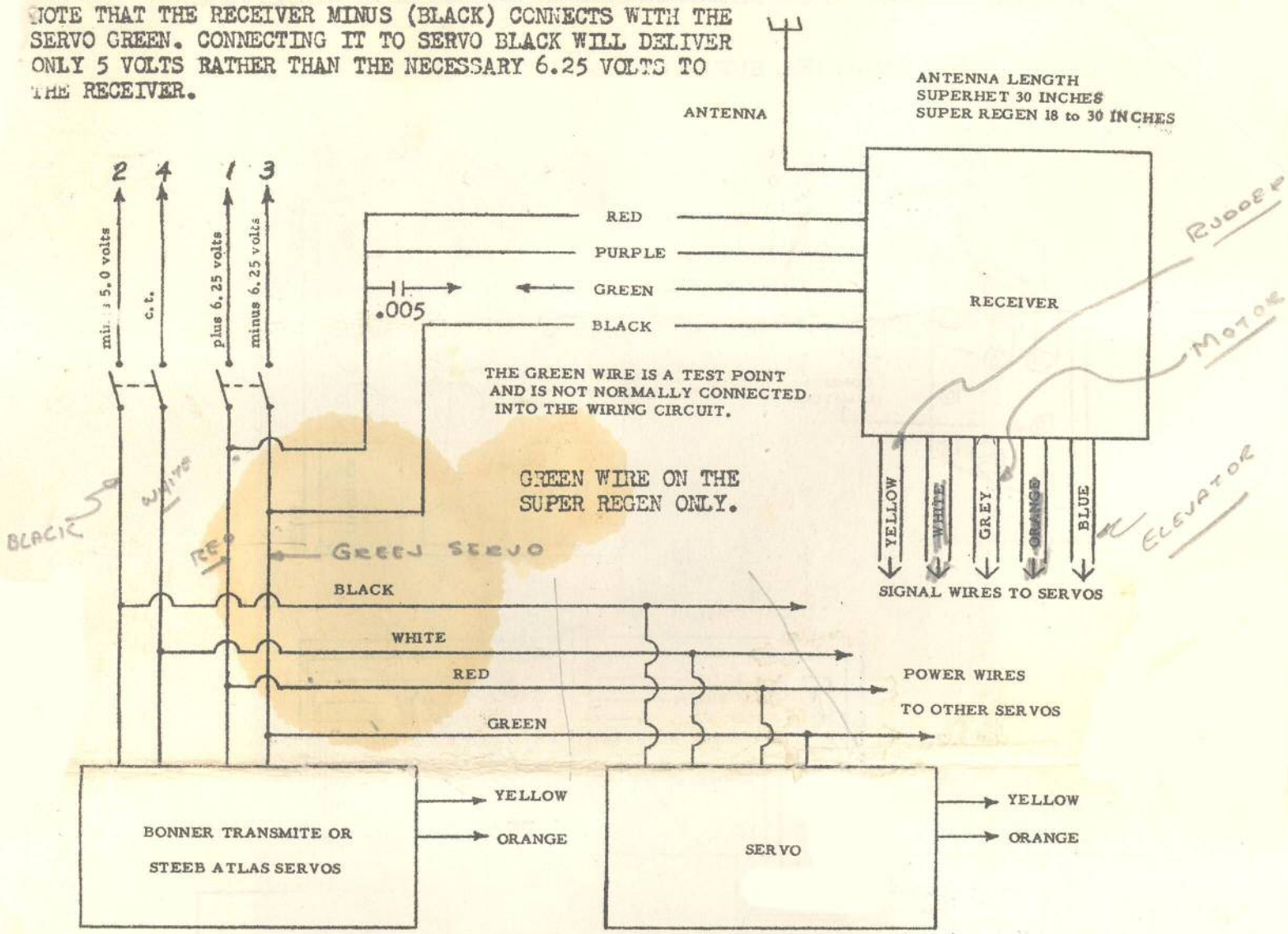
NUMBERS CORROSPOND TO THOSE ON BATTERY WIRING DIAGRAM NOTE THAT THE RECEIVER MINUS (BLACK) CONNECTS WITH THE SERVO GREEN. CONNECTING IT TO SERVO BLACK WILL DELIVER ONLY 5 VOLTS RATHER THAN THE NECESSARY 6.25 VOLTS TO THE RECEIVER.

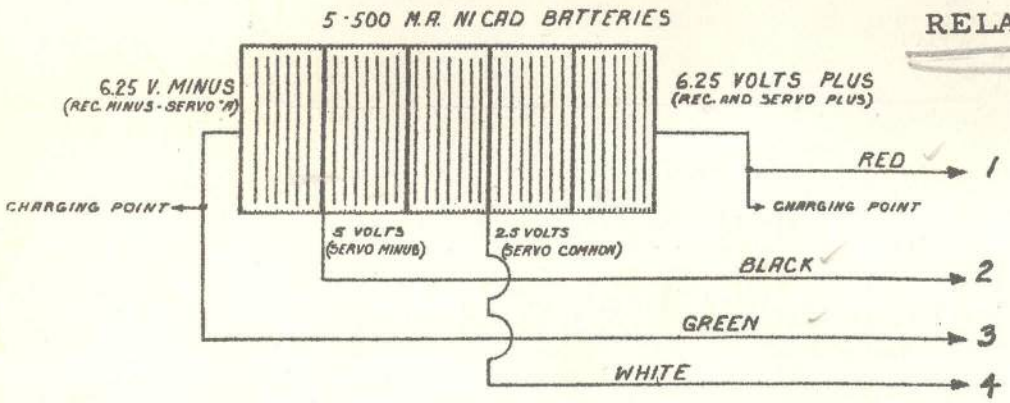



ORANGE & YELLOW ARE SIGNAL WIRES. THESE ARE CONNECTED TO THE SIGNAL WIRES FROM THE RECEIVER.

## WIRING DIAGRAM OF THE MIN-X

## 6 VOLT SUPERHET AND SUPER REGEN

## RELAYLESS RECEIVERS.




WIRING OF 5 NI CAD BATTERY PACK TO ALLOW COMMON SERVO AND RECEIVER OPERATION.