



4. The guaranteed temperature operating range of 20° to 130°F.
5. The extreme sensitivity with no blocking.
6. The absolutely stable circuitry, free from oscillation producing regeneration even at high temperatures. Precision parts placement and printed circuit design aid in achieving this assured stability, in addition to rigorous circuit engineering.
7. Advanced design in relay and reed circuits producing the most positive simultaneous operation ever produced with less critical adjustments.
8. The high gain transistor detector (collector detection) and expensive transformer coupled audio amplifiers provide a high gain circuit without the need for temperature unstable diode reflexing.
9. The use of precision engineered printed circuitry without messy jumpers and the exclusive use of first quality American made components throughout assures a consistent and highly reliable receiver every time.

OPERATING INSTRUCTIONS:

Batteries:

The Navajo receiver operates on 30 volts total. No filament battery is required. One hearing aid type 30 volt battery or two of these cells in parallel will give many hours of reliable service. The Navajo will operate on voltages as low as 25 volts but is not recommended as the simultaneous feature begins to suffer. Replace the battery when the voltage drops under 27 volts under load. Measure this voltage with the receiver turned on and possibly keying one channel.

Antenna:

The antenna length for the Navajo is not critical and may vary from 18 to 36 inches. An average antenna (measured from the receiver case) would be 30 inches in length. A vertical piece of piano wire mounted directly behind the wing is recommended. The antenna should be routed as far from other wiring and actuators (especially servo motors) as possible. Some noisy servo motors can radiate strong signals as far as one foot or more.

Installation:

For maximum protection, the Navajo should be carefully installed by the following instructions:

Though far from delicate, the Navajo is an expensive, precision instrument. The few extra minutes spent installing it will be amply rewarded in the event of a crash. Mount the Navajo vertical with the antenna leadout upward. The receiver should be mounted base forward against a bulkhead and shock mounted by 1/2 inch of foam rubber placed between the receiver base and the bulkhead. The unit may then be held in place by rubber bands stretched securely over the case to the bulkhead. The power and actuator wiring may now be routed neatly at the bottom of the fuselage and the antenna lead at the top, clear of actuators and other wiring. Leave sufficient slack in the power wires and antenna lead for pulling in the event of a crash.

Refer to Fig. 1 for wiring connections:

When soldering connections, always wrap the wire around the connection to be soldered and solder with a good grade of resin core solder. Under no circum-

-(Fig 1 wiring connections--cont'd)

stances use acid core solder. Glue or tie all wiring adjacent to soldered connections to prevent vibration fatigue. Assure that all batteries are secure in their holders such that vibration cannot produce a noisy floating connection.

Spark and Noise Suppression:

Spark suppression is absolutely necessary to prevent relay contact burning due to the high inductive kick of actuators. A 100 ohm 1/2 watt resistor should be placed directly across the motor or escapement power terminals. In the event a noisy servo motor causes some trouble, a .05 mfd ceramic capacitor placed across the motor terminals, in addition, usually aids the situation tremendously. Separate power supplies for the receiver and servo, and antenna routing are influential. It must be pointed out that if a noisy servo does become a problem, the problem must be cured at the source of the trouble; not in the receiver. As was stated, the receiver is completely isolated, shielded and filtered; nothing more can be done. Tests to date indicate that only especially noisy servos present problems.

Tuning and Testing:

Upon completion of the wiring, double check to make certain that it is correct and that spark suppression has been installed. A reversed battery polarity or excess voltage could damage the receiver.

The Navajo is completely pretuned at the factory. The reed relay and power relays are all adjusted and should require no further adjustment. The reed and relay contacts can be cleaned by passing a piece of clean bond paper or a calling card between these contacts. Never use a file or sand paper for cleaning contacts. Do not use cleaning solutions except those that leave no residue on the contacts. In normal operation dust can be removed by using a piece of paper. In dusty areas it would be advisable to seal the receiver can with masking tape.

Under normal circumstances, no tuning of the receiver is necessary or recommended. After completion of a double check on the wiring, position the receiver switch ON and key the transmitter. Response as noted by relay operation (or actuator operation) should be noted. A range check on the equipment should now be performed.

If for any reason tuning is deemed necessary it may be accomplished as follows:

1. Connect a pair of headphones between pins #1 and #2 of the five pin connector. For more precise tuning use an AC VTVM in place of the phones.
2. Key the transmitter; a tone should be heard in the headphones or a reading on the VT volt meter.
3. Remove the antenna from the Hercules transmitter, and have an assistant position the transmitter (while holding the key) such that the tone is very weak, but still audible. With the transmitter held absolutely stationary at this point, adjust the tuning coil for loudest tone in headphones or highest meter reading.
4. Reposition the transmitter such that the tone is again very weak, but audible. Repeat tuning adjustment.
5. The RF Tuning Coil is extremely broad in its tuning and will require no adjustment. Tuning is now complete. Range check prior to flight.

WARRANTY:

Our standard written 30-day warranty card accompanies each unit. F & M Electronics, Inc. maintains a fully trained staff for the prompt repair of your CG equipment. All repair charges are itemized and nominally priced.

TUNING ACCESSIBLE THROUGH RECTANGULAR OPENING

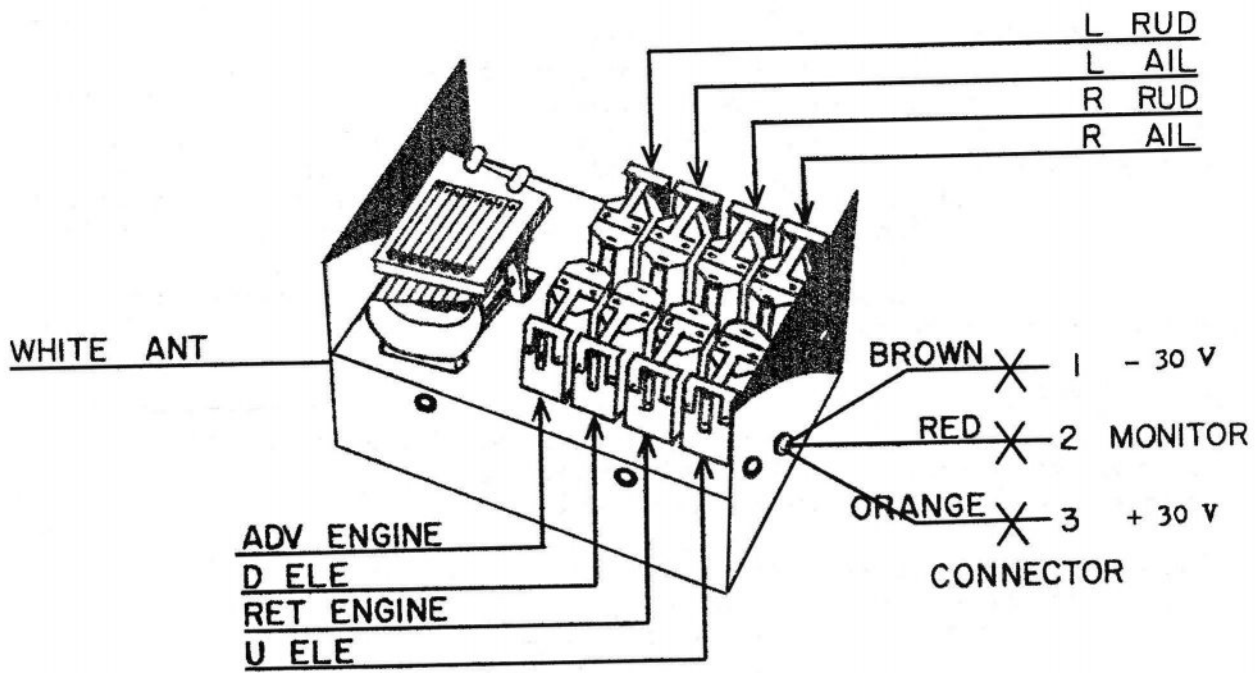
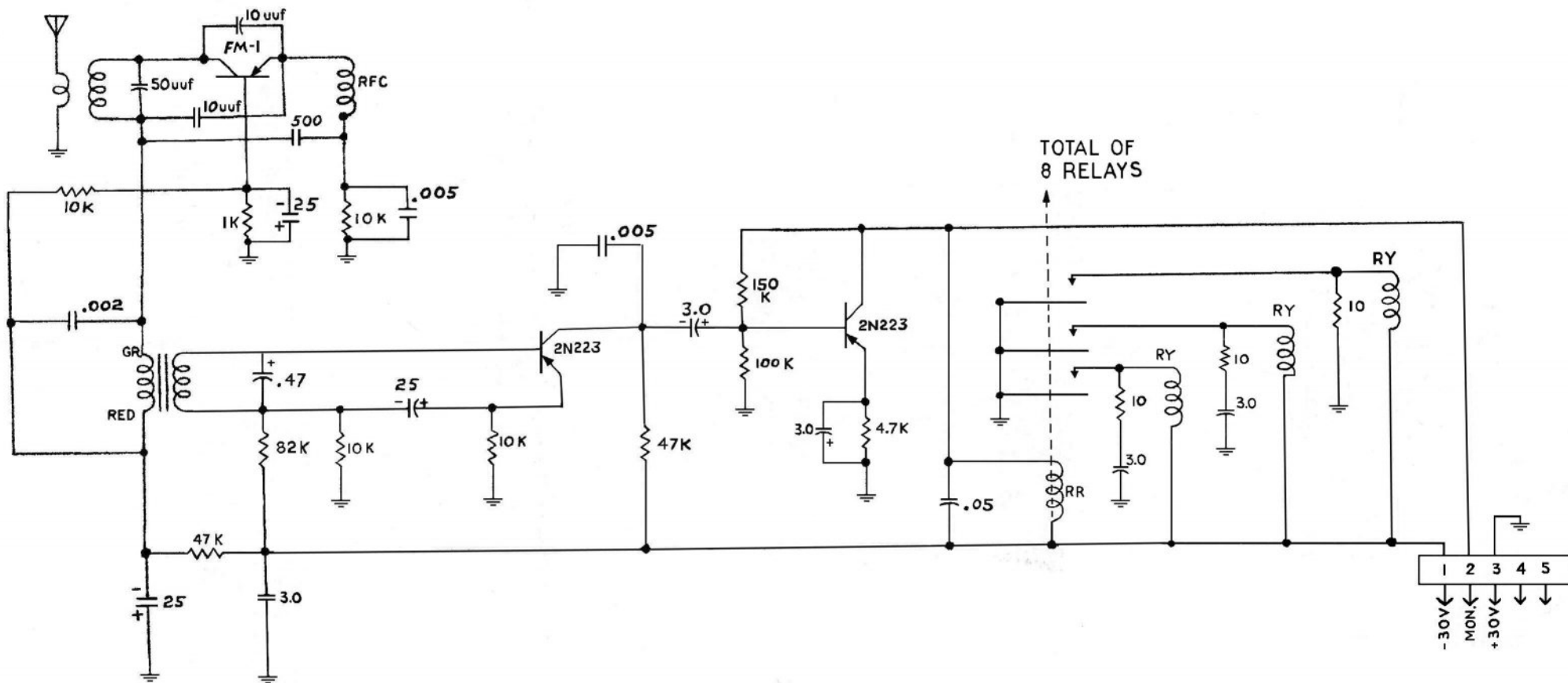


FIG. 1



# NAVAJO

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