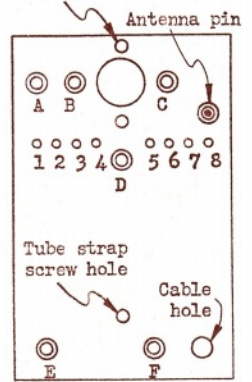
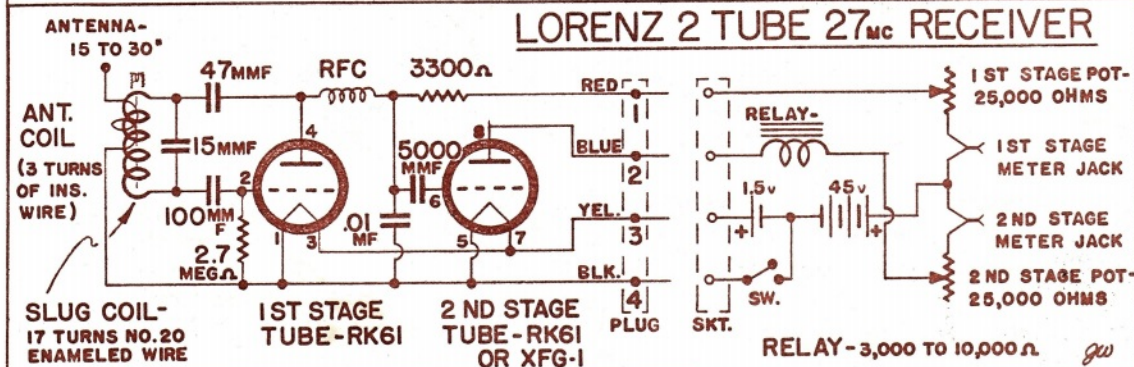


Aligning lug hole for vertical coil mount



BASE HOLE IDENTIFICATION



FLEA CLIPS:

- | | |
|------------|------------|
| 1st Stage: | 1- A Minus |
| | 2- Grid |
| | 3- A Plus |
| | 4- Plate |
| 2nd Stage: | 5- A Minus |
| | 6- Grid |
| | 7- A Plus |
| | 8- Plate |

A, B, C, D, & E are eyelets used for solder terminals.
Note: Red dot on side of tube indicates Plate lead.

COMPONENT PLACEMENT- in suggested order of assembly:

HORIZONTAL COIL

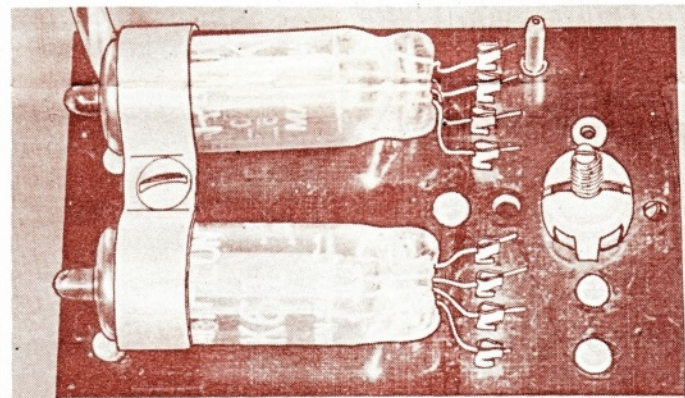
VERTICAL COIL

Item:	Connects to:
Slug coil	Eyelets A, E, C
15 mmf cond.	" B, C
100 mmf cond.	F.C. 2, Eye. C
*A Plus jumper	F.C. 2, F.C. 7
*47 mmf cond.	F.C. 4, Eye. B
5000 "	F.C. 6, Eye. F
.01 mf cond.	F.C. 1, Eye. F
R F Choke	F.C. 4, Eye. F
2.7 meg res.	F.C. 1, F.C. 2
(leave F.C. 1 end long for use later as A minus jumper lead)	
3300 ohm res.	Eyelets E, F
*A Minus jumper	F.C. 1, Eye. D
Red wire	Eyelet E
Yellow wire	F.C. 7
Blue wire	F.C. 8
Black wire	F.C. 5, then to Eyelet D
Antenna coil	Ant. pin, Eye D

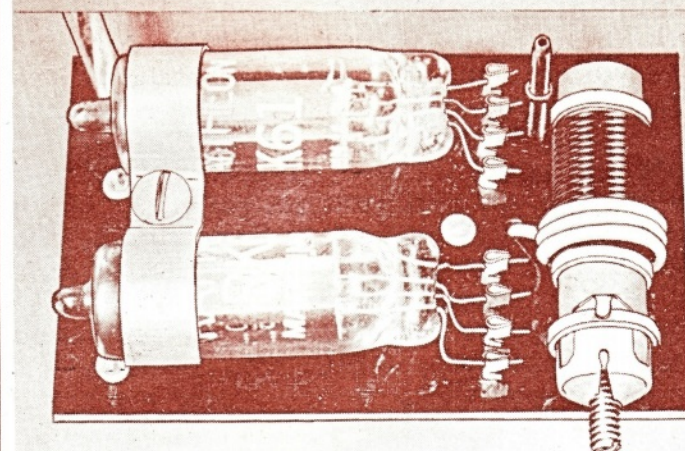
- o First, solder 15 mmf cond. across slug coil terminals, leaving cond. lead nearest screw end of slug long for later connection to eyelet B after slug is mounted.
- o Next, push slug assembly into large base hole, with aligning tab in hole near edge of base, rocking from side to side slowly until side lugs snap into place.
- o Solder long 15 mmf lead in place at Eyelet B.
- o Solder 100 mmf condenser between rear slug coil terminal and Eyelet A.
- o Continue rest of assembly as for horizontal coil order of placement listed in adjoining column.

* Use insulating tubing (spaghetti) over leads as shown in photos to prevent contact between components & flea clips.

NOTES: Where 2 or more connections are made to a flea clip or eyelet, wait until all are in place before soldering-- except for the cable wires and antenna coil leads which are easier to add after other soldering is completed. It has been found simpler to wind the antenna coil after all other assembly-- we suggest the following procedure: wind 3 turns next to each other near the front end of the slug (wind in same direction as slug coil turns), then twist the ends of the antenna coil together to hold the turns tight. Next, apply cement to the turns so that, when dry, the coil will hold together. Untwist the ends and solder to circuit-- keep in mind that the antenna coil may have to be shifted back and forth approx. 1/4" so allow sufficient lead length.



VERTICAL COIL ARRANGEMENT



HORIZONTAL COIL ARRANGEMENT

REFER TO ORIGINAL LORENZ ARTICLE IN FEB. 1953 ISSUE OF MODEL AIRPLANE NEWS FOR BACKGROUND DATA TO SUPPLEMENT THIS INFORMATION PAGE BY CONTROL RESEARCH BOX 9 · HAMPTON, VA.

The two versions of the receiver shown differ only in the position of the slug assembly relative to the base. The horizontal layout provides for convenient slab mounting on a bed of foam rubber, the vertical slug layout may best use rubber band type suspension. Either receiver may be mounted in any attitude desired. Operationally, both receivers perform the same and both are also equally simple to assemble,

Proper initial operation and continued reliability depend more upon having correct voltages available than any other factor. "A" (Filament) voltage must be at least 1.3 under load to avoid loss of range - check this with both tubes installed and receiver switched on (initially do not connect "B" power). "B" (Plate) voltage must be at least 40 under load (initially, use only 2nd tube in circuit, relay also, and connect A & B batteries - with 1st tube out the 2nd will draw maximum current, giving a true load condition). Observe voltage readings for at least ten seconds- if they do not hold steady above these minimums, replace batteries. Once receiver is operating properly, A & B voltage checks may be made with both tubes installed and receiver switched on - initial method of checking described is only to assure safe procedure while receiver is not adjusted. Two penlite cells in parallel is minimum recommend "A" power, two 22 1/2 v. hearing aid type cells in series is minimum recommended "B" power.

The antenna is very non-critical as to length and may be anywhere in the range given. However, avoid having the antenna close to and parallel with other wiring - do not bundle in with them. Avoid bends or abrupt changes in direction along the antenna length, except for a few inches at the receiver end. Vertical or horizontal position of the antenna may be used. Hookup wire, enameled wire, or music wire is satisfactory.

Two meter jacks are shown, but only one meter is needed. Initially, so that the 1st stage may be setup without worrying about what is happening in the 2nd, disconnect the 2nd tube. Connect antenna, both batteries, meter in 1st stage, then switch on receiver while watching meter. If the current acts erratic try adjusting the pot to steady the current at about .5 ma. If no positive setting can be obtained except possibly a sudden jumping up of current at extreme pot adjustment, the circuit is too sensitive for the tube. Correct by sliding the antenna coil away from the screw end of the slug assembly 1/8" at a time until the current steadies and responds smoothly to pot variations. Another tube may be insensitive and require moving the antenna coil toward the screw end of the slug - in any case, the best position is just back from the point where erratic idling begins,

Turn transmitter on and adjust slug screw to obtain lowest current - should be .1 ma or less. If current will not drop this low, particularly if shifting the antenna coil forward does not bring on erratic idling, the tube probably requires "ageing" by high idling at between 1 and 2 ma for 15 minute periods until it responds properly when signalled. Or, the tube may be used in the 2nd stage until it gets enough operating time to come around. When 1st stage is operating correctly, change meter to the 2nd stage and connect 2nd tube. Once set, 1st stage will not change during check of 2nd.

Note 2nd stage idling - if not at zero or less than .1 ma, and is erratic with tendency to jump up, case antenna coil back slightly until 2nd tube idles with no jumping up for at least a minute. Upon signal, the 2nd tube should jump to about 2 ma if an 8k relay is used, or about 2.5 ma with a 5k relay. Final bench receiver check should be made by swapping meter from one stage to the other, noting each stage's idling and signal response and making final antenna coil shift, if necessary, for best compromise. When satisfied, spot glue coil to place - it will not have to be reset for several hours of operation. Lastly, make a range check - at least 100 yards from the transmitter - and make final tuning adjustment, if necessary. Also, be sure relay pull-in setting is at least .2 ma under normal maximum 2nd stage current - check this with the 2nd stage pot. This pot is optional but is recommended as a convenience feature.