Meissner

14-TUBE "COMMUNICATIONS" KIT

5 Bands—3.8 to 555 Meters

WIRING INSTRUCTIONS FOR KIT No. 7502

CHASSIS AND ASSEMBLY OF PARTS

The first step in the construction of this receiver is the preparation of the chassis and the mounting of the various component parts in their proper places. The Chassis Lay-out shown on the back page of this folder will furnish complete information to the constructor for cutting and drilling a metal chassis for this receiver. A completely punched chassis of heavy tern-plated steel, finished in black crystal lacquer, may be purchased under Meissner part No. 18282.

The Parts List on the back page should be accurately checked and all materials should be on hand before beginning the assembly. The sockets, coils, transformers, and other such parts may be readily located by reference to the small Top View shown on the Schematic Circuit Diagram and also by reference to the under-chassis Pictorial Wiring Diagram. The tuning unit, No. 7512, should be set into the chassis from the top and bolted securely with three No. 6-32 machine screws on each side.

If a lacquered chassis is used great care must be exercised [illegible] connections to the under-side of the chassis wherever a ground lug is shown. One of these lugs is fastened under one of the mounting screws on each tube socket and should be placed directly against the under-side of the chassis between it and the socket. The end of the lug should then be bent up and soldered to the socket terminal as indicated. Several ground connections on the Pictorial Diagram have been shown by the use of the ground symbol wherever the connection could not be correctly indicated otherwise. A short length of bare tinned wire may be used to make such connections by soldering directly to the chassis.

It is necessary in many cases to mount tie-lugs on the mounting screws of sockets or I. F. transformers. These should be placed in position when these parts are mounted. The push-pull input audio transformer should not be mounted until the remainder of the wiring is completed. It may also be desirable to leave off the tuning assembly and the power transformer until the remainder of the chassis is wired which will permit easy handling.

WIRING

The wiring of this receiver should follow as closely as possible the general arrangement shown on the Pictorial Wiring Diagram. All leads should be kept as short and direct as possible and grid and plate leads must be kept close to the chassis and separated from each other. It is advisable to wire the heater circuits first, using No. 18 gauge or larger solid tinned wire. This wiring should be twisted as shown and care should be taken to see that opposite polarities appear on each tube socket.

The remainder of the wiring may be completed in any order which the builder desires as long as the various condensers and resistors are placed in the proper locations indicated on the Pictorial Wiring Diagram. If the tuning assembly has been left out until the last of the wiring was completed, it should now be mounted and the several leads which come out of it connected to the proper points in the chassis as indicated. The audio transformer and power transformer should also be mounted and connected at this time. After completion of the wiring of the entire chassis each connection should be carefully checked with either the Schematic or Pictorial Wiring Diagram to make absolutely sure that nothing has been left out or incorrectly connected.

ALIGNMENT AND OPERATION

Complete alignment instructions for the high frequency end of this receiver are contained in the instruction folder packed with the Multi-Wave Tuning Assembly. The only other necessary adjustments are those required to properly align the I. F. channel and the noise-silencer and AVC Amplifier of this receiver.

The I. F. adjustment is made in the conventional manner by feeding the out-put of the signal-generator into the grid of the 6L7 mixer tube. This signal should be adjusted to 456kc. The Band-Width switch should be thrown to the position marked "1" on the Schematic Diagram which shorts out the crystal and provides the most selective operation of the No. 7412 band-expanding I. F. transformer. The trimmers on all the I. F. transformers in the signal circuit (No. 7486, 7437, 7412, and 5742) should now be adjusted to maximum output on the 456kc signal.

The crystal should now be switched into the circuit by throwing the Band-Width switch to position marked "C" and the crystal frequency located exactly by rapidly swinging the generator frequency back and forth between 450 and 460kc. A fairly strong signal should be used and a point should be noted during this operation where a peculiar "chirp" or instantaneous increase in output voltage occurs. This point will be very sharp and the generator will have to be set very carefully to get its frequency to correspond exactly to this setting which represents the crystal frequency. When the generator is once set on this frequency, the crystal may be switched off by returning the Band-Width switch to its former position and the I. F. transformers again aligned, this time very accurately to the generator frequency.

The Noise Silencer I. F. Transformer No. 6762 is mounted nearest the pair of 6H6 tubes and directly at the right rear corner of the tuning unit. This transformer should be adjusted by first turning the Noise-Level control to the left until there is a noticeable reduction in back-ground noise. Set this control just beyond this point and tune in a medium strength signal on the receiver. The trimmer on the Noise Silencer I. F. Transformer should now be adjusted to reduce this signal as much as possible or to give minimum output.

The AVC I. F. Transformer, which is the other No. 6762 unit, is adjusted in very much the same manner. When the AVC level control is turned completely to the left and the I. F. Gain control turned fully on (to the right) a signal should be tuned in and adjusted for minimum output by setting the trimmer on the AVC I. F. transformer.

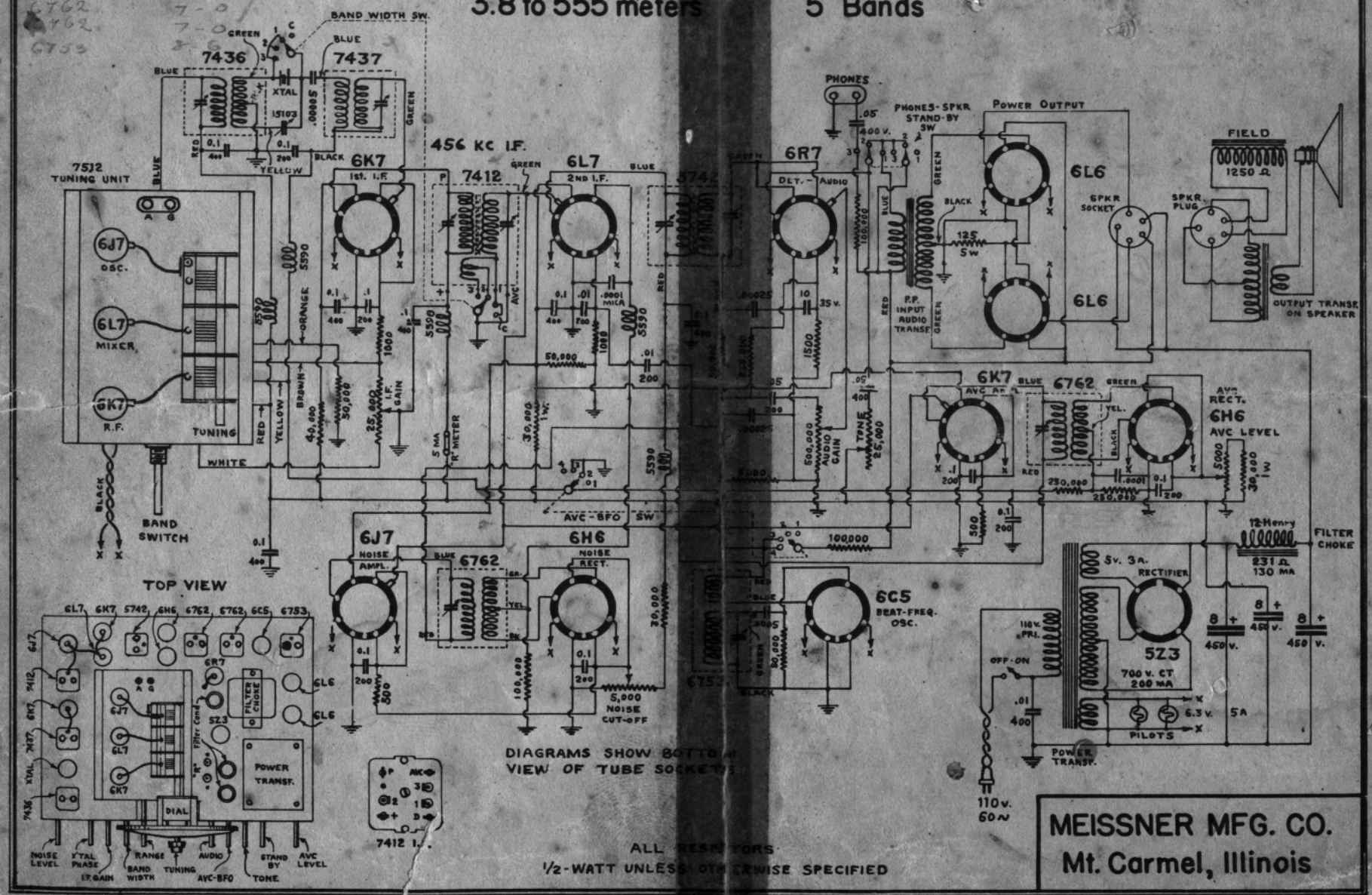
MEISSNER MFG. CO. **Mt. Carmel, Ill.**

COMMUNICATIONS "14"

Metal Tube Superheterodyne Receiver

3.8 to 555 meters — 5 Bands

No. 7502



DIAGRAMS SHOW BOTTOM VIEW OF TUBE SOCKETS

ALL RESISTORS 1/2-WATT UNLESS OTHERWISE SPECIFIED

MEISSNER MFG. CO.
Mt. Carmel, Illinois

Meissner

Meissner

Multi-Wave Coil Assemblies & Complete Tuning Units

SECTION 1

The All-Wave Tuning Assembly incorporates the necessary coils and switching arrangement for the construction of a Multiband superheterodyne receiver of the most advanced design. Whether the constructor employs the coil assembly with three or more bands or the completely wired-and-adjusted tuning unit, he should have little difficulty in using it as the "tuning brain" of his pet receiver design.

The completely wired units are available in two standard designs, each incorporating five frequency-bands. The only difference in the two units lies in the frequency range of each band and the maximum capacity of the tuning condenser employed.

The Multi-Wave coil assemblies are identical to those supplied in the tuning units but are also available in combinations of three and four bands. It is necessary to keep in mind that the proper tuning condenser must be used with each coil assembly.

Instructions for Complete Tuning Units

SECTION 2

The completely wired Tuning Unit is illustrated in figure 1 and shows the relation of the various parts, such as tuning condenser, tube sockets, etc. This unit is intended to be mounted in a standard three-inch chassis pan by cutting an opening large enough to permit the entire assembly to be inserted from the top with the mounting flange resting on the side edges of the opening. The unit may be bolted directly to the chassis by means of the mounting holes in the flanges or, if desired, a cushion mounting may be used by employing rubber washers between the flange and the chassis. If the latter mounting is used, it is necessary to solder a piece of flexible braided cable to some point on the main chassis and solder the other end to the sub-chassis of the Tuning Unit. This provides the necessary ground lead for the voltage supply returns of the tubes mounted on the Tuning Unit.

It will be noted that there is ample space allowance to permit a control, such as volume, tone, etc., to be mounted on the main chassis to the right of the Tuning Unit in such a position as to balance the band switch control with respect to the tuning knob.

The complete schematic diagram of the wired Tuning Unit is shown in figure 3 and includes all parts furnished in the Tuning Unit. The Antenna and Ground terminals supplying the receiver are mounted directly on the unit and are internally wired to the assembly. Only six connections are brought out of this unit to be wired to the remainder of the receiver. These are color-coded and clearly indicated on figure 3 at the right side of the diagram.

On the unit designed for Amateur or "Communications" type receivers which employs a 260-mmfd. tuning condenser and covers the 5-meter band on the high frequency end, two slight changes should be noted on this circuit diagram:

1. **The oscillator grid-coupling condenser is changed from .00005-mfd. to .000025-mfd.**
2. **A .0005-mfd. by-pass condenser to ground is connected to one of the heater terminals on the 6J7 oscillator tube.**

In all other respects the circuit diagram applies to both types of Tuning Units.

The coils and band switch are so connected that the low frequency bands are at the left-hand or counter-clockwise position of the band switch. The tuning ranges and alignment points for each band are indicated in the table in figure 2. The location of the various trimmers and padders for each band is clearly shown in the bottom view of the unit (figure 2). The illustration shows the 5-band assembly which includes the long-wave band and employs a 410-mmfd. tuning condenser. The "Communications" Type unit with a 260-mmfd. condenser is slightly different in appearance in that it does not have the shielded Long-Wave coils but their position is occupied by the Broadcast band coils. The Align-aires (air-tuned trimmers) are located in essentially the same positions. The padders for bands 1 and 2 are somewhat rearranged as indicated on the diagram.

Both types of Tuning Units, No. 7511 and No. 7512, are carefully aligned and padded before shipment in a superheterodyne receiver. If no changes are made in the setting of the Align-aires and padders before placing the receiver in operation, good reception should be obtained on all bands providing the rest of the receiver is functioning properly. Inasmuch as the coil assembly is already connected to the associated parts of the circuit, it is very improbable that any improvement can be made by re-aligning or adjusting the padders on this unit. If for some reason these adjustments have been accidentally changed or it is thought desirable to re-align the unit, this may be readily accomplished by referring to the aligning instructions given for the Multi-wave coil assemblies.

Instructions for Multi-Wave Coil Assemblies

SECTION 3

The tuning ranges and capacities of tuning condenser employed in the several types of Multi-wave coil assemblies available are indicated in the following table:

260-mmfd. condenser

Band	Range	Cat. No. 7515	7514
1	550-1560 KC	"	.....
2	1560-4400 KC	"	"
3	4.3-12.0 MC	"	"
4	11.38-32.0 MC	"	"
5	32.0-60.0 MC	"	"

410-mmfd. condenser

Band	Range	7505	7504	7503
1	140-400 KC	"	.....	.....
2	530-1800 KC	"	"	"
3	1750-6200 KC	"	"	"
4	5.9-18.0 MC	"	"	"
5	14-43 MC	"	"	.....

These coil units are to be mounted by the constructor according to his own design with a few important restrictions. It is very necessary for efficient operation of these coils that the tuning condenser be of high-grade, low-minimum construction (Meissner No. 15127, 260 mmfd. or No. 15130, 410 mmfd.) and mounted as nearly as possible directly over the coil assembly. The sockets for the R.F., Mixer and Oscillator tubes should be mounted in the relation shown in

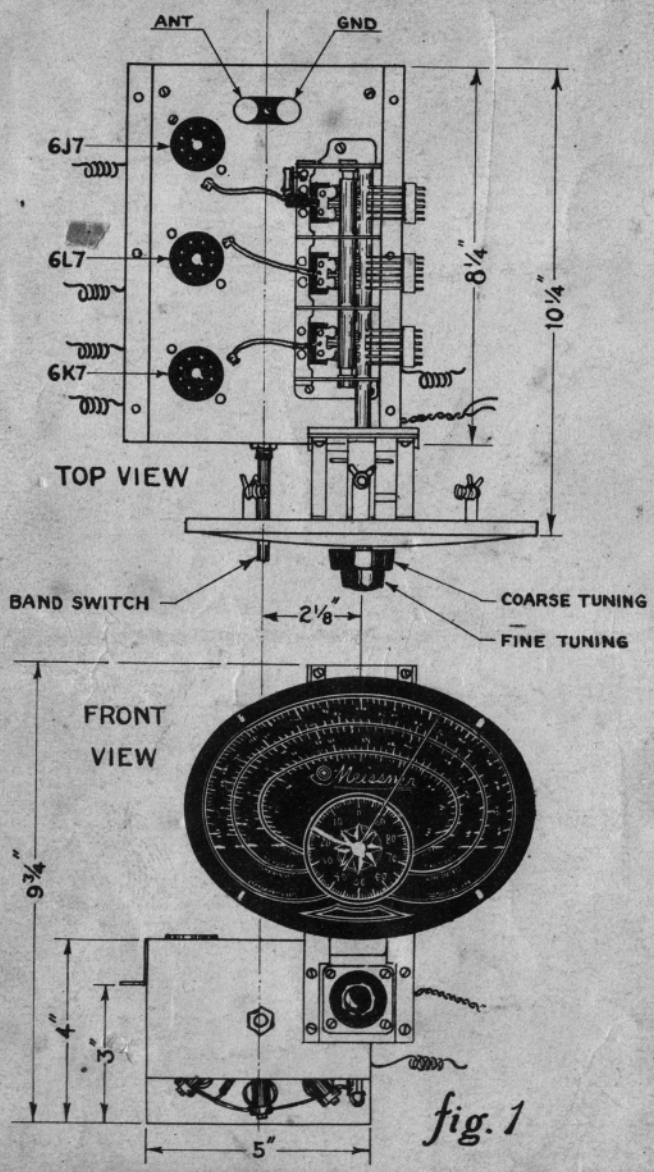


fig. 1

COMPLETELY WIRED & ADJUSTED
TUNING UNIT
No. 7511 OR 7512

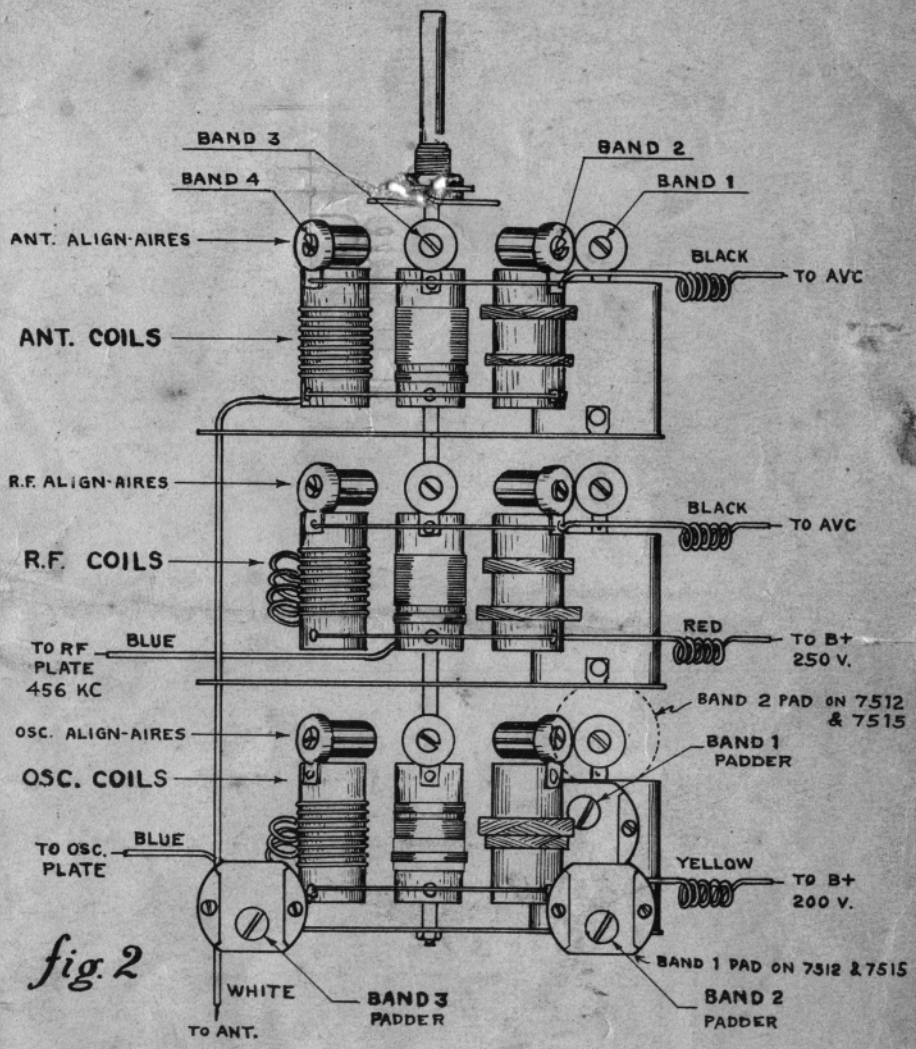


fig. 2

BAND NO.	260-mmfd. Condenser			410-mmfd. Condenser		
	RANGE	ALIGN AT	PAD AT	RANGE	ALIGN AT	PAD AT
1	550 - 1560 KC	1400 KC	600 KC	140 - 410 KC	375 KC	150 KC
2	1560 - 4400 KC	3960 KC	1750 KC	540 - 1800 KC	1600 KC	600 KC
3	4.3 - 12.0 MC	10.0 MC	4.75 MC	1700 - 6200 KC	6000 KC	1800 KC
4	11.38 - 32.0 MC	28.0 MC	FIXED	5.9 - 18.0 MC	17.0 MC	FIXED
5	32.0 - 60.0 MC	FIXED	FIXED	15.0 - 42.5 MC	FIXED	FIXED

figure 1. On no account should the heavy braided leads which connect to the tuning condenser be lengthened or materially altered in any way. Examination of these leads will show that one lead from each section of the coil assembly is brought out from the front section of the band switch while the other lead from each section connects to a common ground bus representing the low-potential end of the coils.

The schematic diagram (figure 3) shows the connections of the coils in this assembly contained inside the dotted lines. All leads which are brought out of the coil assembly to be connected to the remainder of the circuit are color-coded and clearly indicated near the dotted lines of figure 3. The heavy braided cables mentioned above are indicated on this diagram as "grid" and "ground." The "grid" cables should be brought through the chassis through large insulated holes at least 3/8" in diameter and soldered to the stator terminals of the condenser. The "ground" cables of each coil section should be brought through similarly insulated holes and soldered directly to the corresponding section of the condenser rotor wiper.

The remainder of the circuit diagram (figure 3) indicates the connections of a suitable R.F., Mixer and Oscillator arrangement which has been found to operate most efficiently with this coil assembly. Careful observation of these circuit components will result in utmost success and satisfaction with this coil assembly. If the coil assembly being used is of the type designed for use with a 260-mmf tuning condenser, it is necessary to change the value of the oscillator grid-coupling condenser to .000025-mfd and to add a .0005-mfd by-pass condenser to ground to one of the heater terminals of the 6J7 oscillator tube. For coil assemblies designed for use with a 410-mmf tuning condenser the circuit diagram should be followed exactly as given.

The Align-aires (air-tuned trimmers) and padders on these coil assemblies have been factory-adjusted to approximately the correct capacities. If other parts of the receiver circuit are functioning properly reception should be obtained on all bands without further adjustment. Due to variation in location of parts and circuit wiring it is necessary to properly align and pad the coil assembly to obtain most efficient operation of the receiver. For this purpose a high-grade signal generator or service-oscillator and output-meter must be used.

The alignment procedure is essentially the same as usually employed in aligning any superheterodyne receiver. The intermediate-frequency channel must be accurately adjusted to 456 KC. Reference to the alignment table in figure 2 will indicate the aligning and padding frequencies for each band as well as the low and high frequency limits of the band. This table provides all information of this type on 5-band units for both 260-mmfd and 410-mmfd tuning condensers. If the unit at hand has less than five bands it is necessary to select the proper bands from this table by referring to the tabulation given above.

The lowest frequency band should be adjusted first by feeding into the Antenna circuit a signal equivalent to the high-frequency end of that band and adjusting the corresponding oscillator Align-aire to give maximum response. The band switch must be in the proper position and the tuning condenser at minimum capacity (open). The generator should then be set to the aligning frequency listed in the second column of the aligning table, the signal tuned in on the receiver, and the Antenna and R.F. Align-aires adjusted to give maximum response. The generator frequency should now be dropped to the value given for padding and the signal tuned in by adjusting the tuning-control of the receiver. The padding condenser for the band being aligned should now be adjusted while rocking the tuning condenser to obtain maximum response. It is now well to return the generator frequency to the aligning point and adjust the receiver to receive this signal and check the Antenna and R.F. Align-aires for maximum response. The Oscillator Align-aire should not be readjusted.

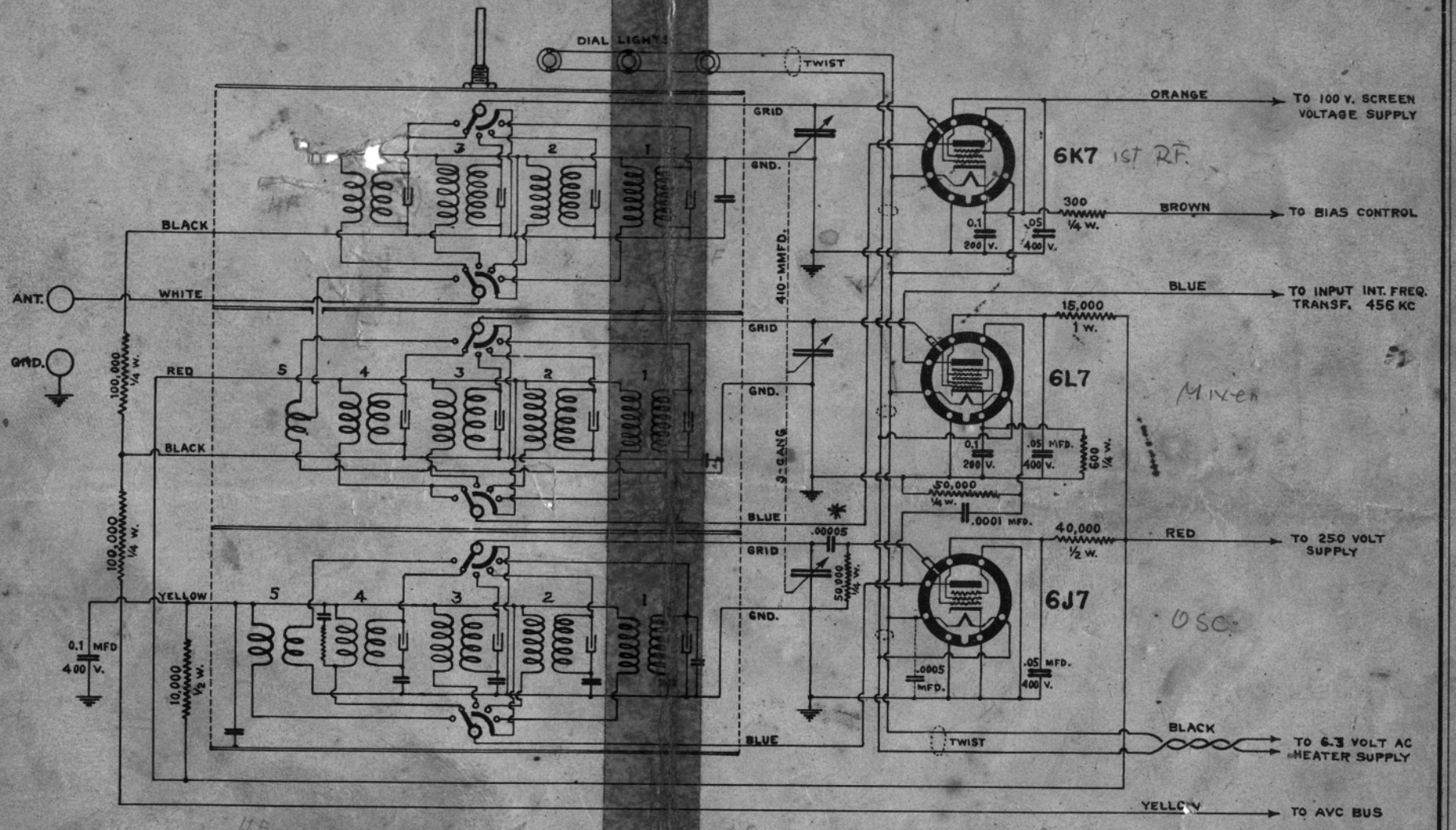
If these adjustments are carefully made the band should track perfectly with the dial calibrations. The same procedure should now be repeated on the remaining bands progressing toward the higher frequencies. In each case the Oscillator Align-aire should be carefully adjusted to the high-frequency end of the band with the tuning condenser at minimum capacity, the Antenna and R.F. Align-aires adjusted with the receiver tuned to the alignment frequency and the padders adjusted near the low-frequency end of the band while rocking the gang condenser.

It will be noted that on the highest-frequency bands there are no aligning or padding adjustments to be made. The padder on the next highest frequency band is also fixed and requires no adjustment. The coils for these bands will be found to give sufficiently accurate tracking as they are wound within very close limits to proper inductance. This completes the alignment adjustments on the tuning unit and the bands may now be checked for sensitivity. Typical input voltages to the Antenna for 50 Milli-watts output from a receiver using a single R.F. stage, diode detector, high-gain first-audio and pentode output are as follows:

Five microvolts on long-wave and broadcast bands

One microvolt or less on 1700 to 6200 KC and 5900 to 18,000 KC.

Better than 100 microvolts on the ultra-high frequency bands.



COMPLETE SCHEMATIC DIAGRAM

fig 3 25pf.

Ant 2 x 3

PARTS REQUIRED FOR 14-TUBE "COMMUNICATIONS" RECEIVER

1 MEISSNER Coil and Tuning Kit
No. 7502 containing:
- 1 No. 7512 5-band Tuning Unit, wired and pre-aligned
- 1 No. 15103 3-plate midget variable condenser
- 1 No. 7453 Matched pair Crystal Filter I. F. Transformer (7436 and 7437)
- 1 No. 7412 Ferrocart 456-kc Band Expanding I. F. Transformer
- 1 No. 5742 Ferrocart 456-kc Output I. F. Transformer
- 2 No. 6762 456-kc Single-tuned Diode I. F. Transformer
- 1 No. 6753 456-kc Beat-Freq. Osc. Transformer
- 5 No. 5590 Shielded R. F. Chokes

10 Octal Metal tube sockets
1 4-prong tube socket
2 5-prong sockets
3 6K7 Metal tubes
2 6J7 Metal tubes
2 6L7 Metal tubes
1 6R7 Metal tube
1 6C7 Metal tube
2 6H6 Metal tubes
2 6L6 Metal tubes
1 5Z3 Glass tube (rectifier)
1 25,000-ohm I. F. Gain control
1 5,000-ohm Noise-Level control
1 500,000-ohm Volume Control
1 25,000-ohm Tone Control with Switch
1 5,000-ohm AVC-Level Control
1 125-ohm, 5-watt resistor
2 500-ohm, ½-watt resistors
2 1,000-ohm, ½-watt resistors
1 1,500-ohm, ½-watt resistor
1 5,000-ohm, ½-watt resistor
1 30,000-ohm, ½-watt resistor
2 30,000-ohm, 1-watt resistors
1 40,000-ohm, ½-watt resistor
4 50,000-ohm ½-watt resistors
3 100,000-ohm, ½-watt resistors
3 250,000-ohm, ½-watt resistors
2 .01-mfd. 200-volt condensers
1 .05-mfd. 200-volt condensers
7 .1 -mfd. 200-volt paper condensers
1 .01-mfd. 400-volt paper condenser
2 .05-mfd. 400-volt paper condensers
6 .1 -mfd. 400-volt paper condensers
1 .00005-mfd. mica condenser
2 .0001-mfd. mica condensers
2 .00025-mfd. mica condensers
1 .0005-mfd. mica condenser
1 10-mfd. 35-volt electrolytic condenser
1 13" x 17" x 3" Metal Chassis (Meissner 18282)
1 Power trans. 110-volt primary;
775-volt secondary c. t., 200 m. a.;
6.3-volt sec. @ 5.0 amp.;
5-volt @ 3 amp.
3 8-mfd. 450-volt Electrolytic Condensers
3 2-pole, 5-position Rotary Switch (MEISSNER 18254)
1 5-prong speaker plug
1 Push-pull Input Audio Transformer
1 12-Henry, 231-ohm, 130-ma. Filter Choke
1 Dynamic speaker with output trans. to match 6L6's in push-pull; 1250-ohm field
1 AC line cord and plug
1 ½" rubber grommet for line cord
2 ⅜" rubber grommets
2 Special brackets (See instr.)
2 Lengths extension Shafting, ¼" dia.
2 ¼" Shaft couplings
2 Twin tip jack strips
5 Metal tube grid clips
1 456-kc Quartz crystal, mounted
3 6.3 v. .15a. Dial lights
9 3-Terminal tie-lugs
6 2-Terminal tie-lugs
1 4-Terminal tie-lug

Miscellaneous assortment of machine screws, nuts, lockwashers, and soldering lugs.

7502 INSTRUCTIONS CONTINUED

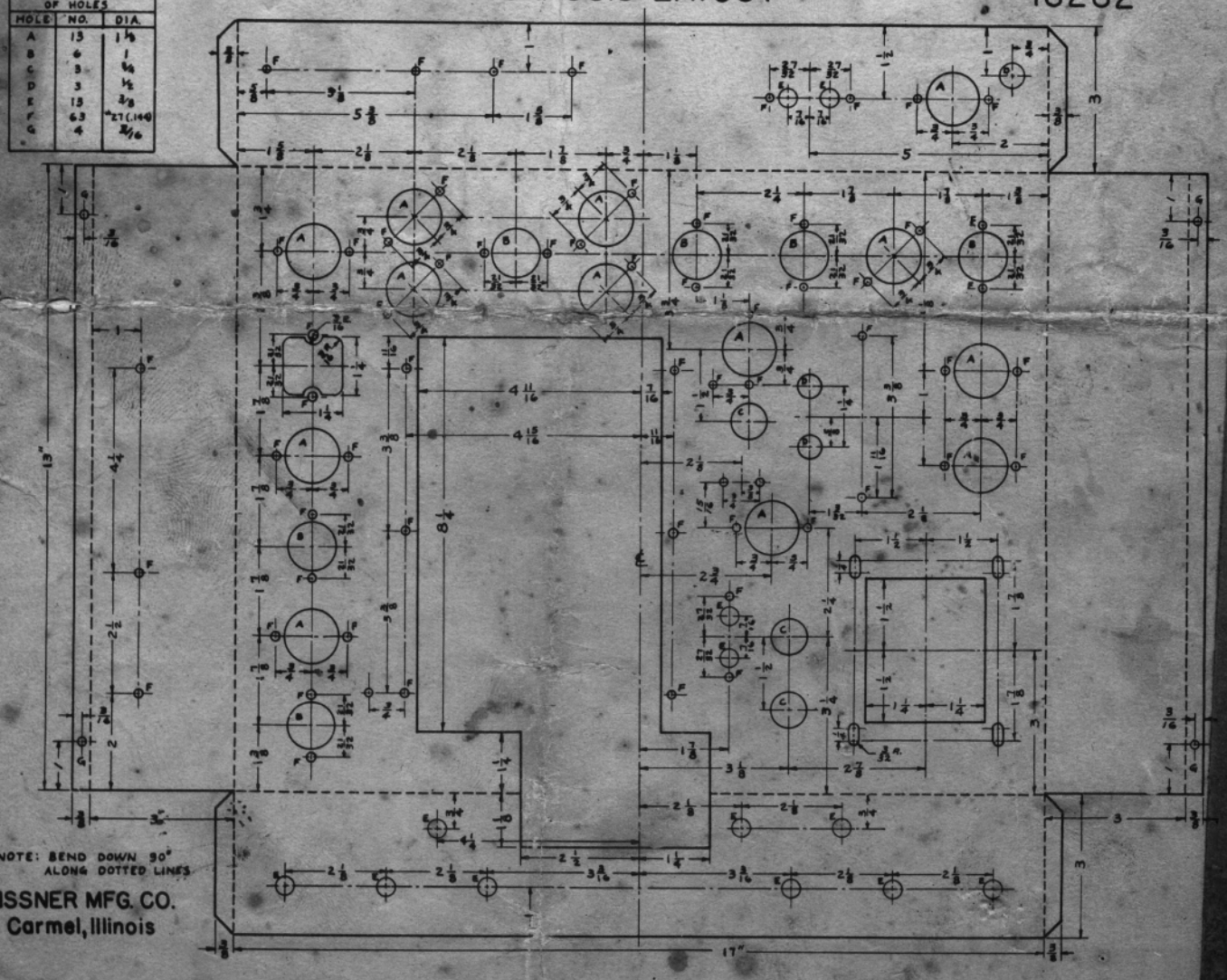
The I. F. Band Width Switch provides four positions which might be designated as Crystal (C), Selective (1), Medium (2), and High Fidelity (3). The Range Switch has five positions which serve to select tuning ranges as indicated in the tuning assembly instruction sheet for the No. 7515 Coil Assembly which is used in the 7512 tuning unit. The AVC-BFO switch has four positions which give operation of the receiver with or without AVC action when using the Beat-Frequency Oscillator or with it disconnected. The positions of this switch from left to right when it is wired according to the Pictorial Wiring Diagram are as follows:

1. AVC on BFO off.
2. AVC off BFO off.
3. AVC off BFO on.
4. AVC on BFO on.

The Stand-By Switch serves to connect the set for operation with either loud speaker or head phones without disturbing any other connections. The left-hand position of the switch gives head-phone reception when the phones are plugged into the tip-jacks provided in the rear of the chassis. The right-hand position of this switch gives full operation through the loud-speaker, while the center position provides a "No-Signal" condition of the receiver without actually turning off the set. This switch may be used during transmitting to kill the receiver entirely as far as out-put is concerned by switching to the center position from either the left or right according to whether head phones or speaker are being used. The signal will return instantly without any "warming-up" period as soon as the switch is thrown to either of the side positions. This is a great convenience when listening after a transmitting period.

CHASSIS LAYOUT 18282

DIAMETERS OF HOLES		
HOLE	NO.	DIA.
A	13	1 1/8
B	6	1
C	3	1/4
D	3	1/2
E	13	3/8
F	63	#27 (.144)
G	4	3/16



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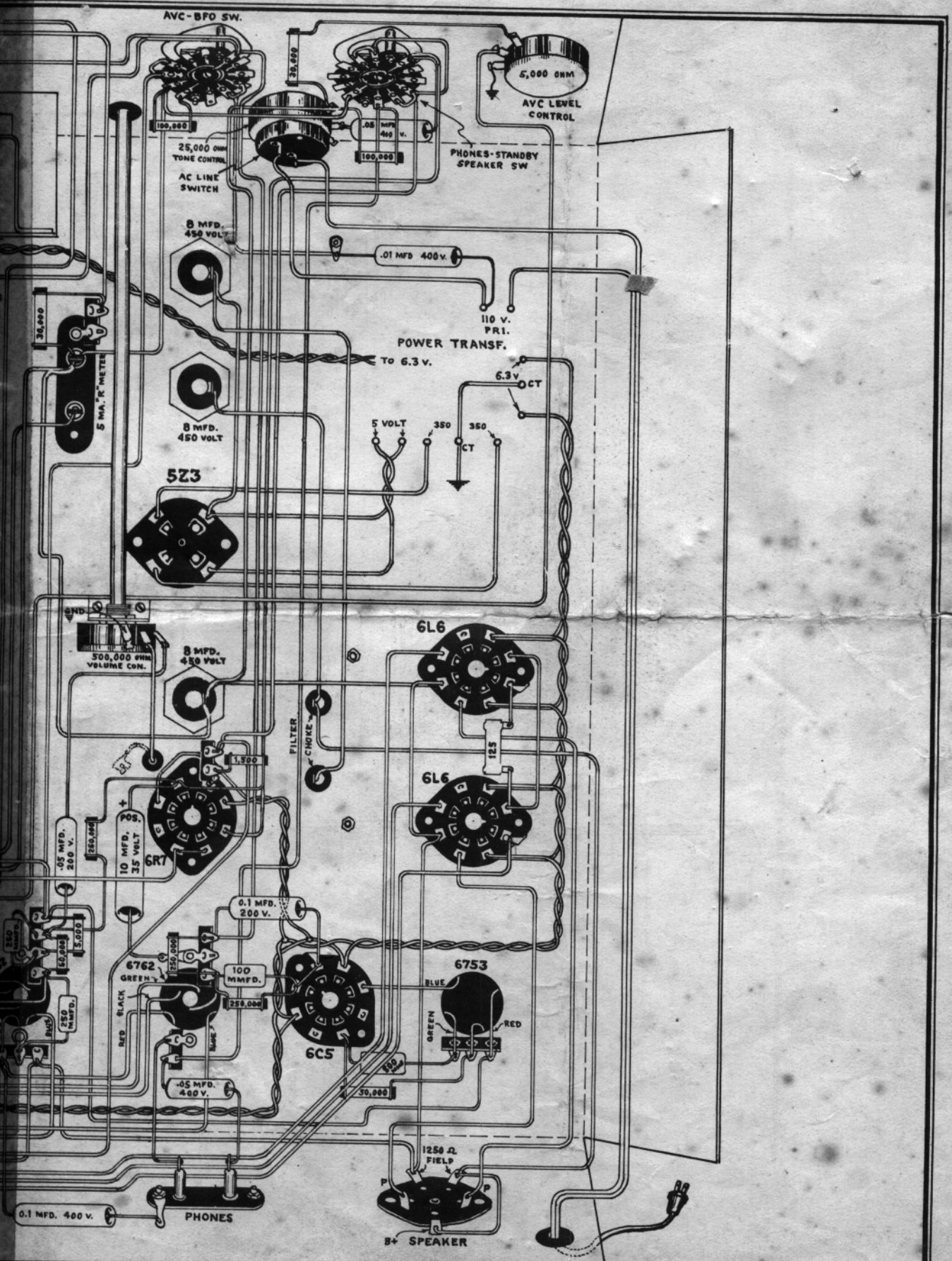
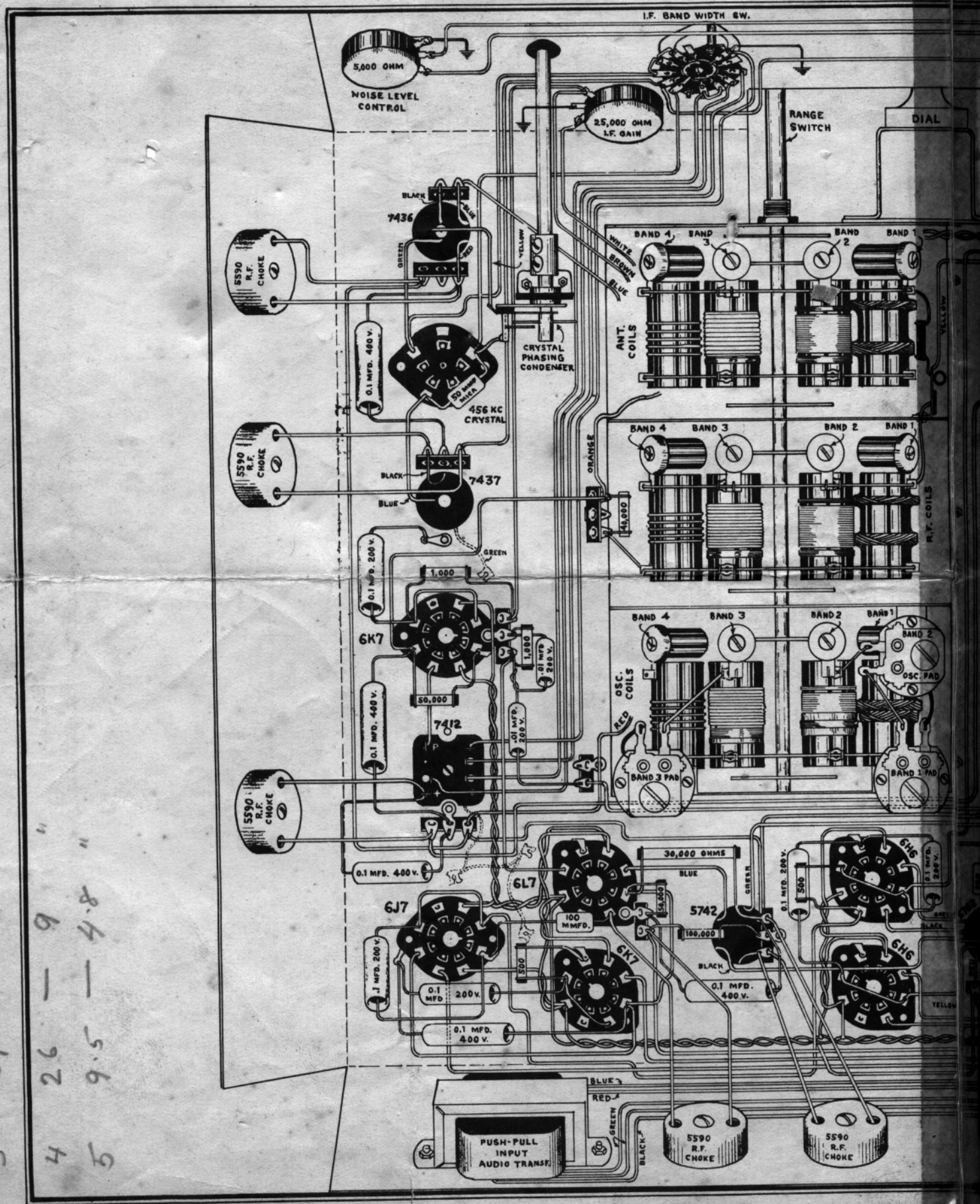
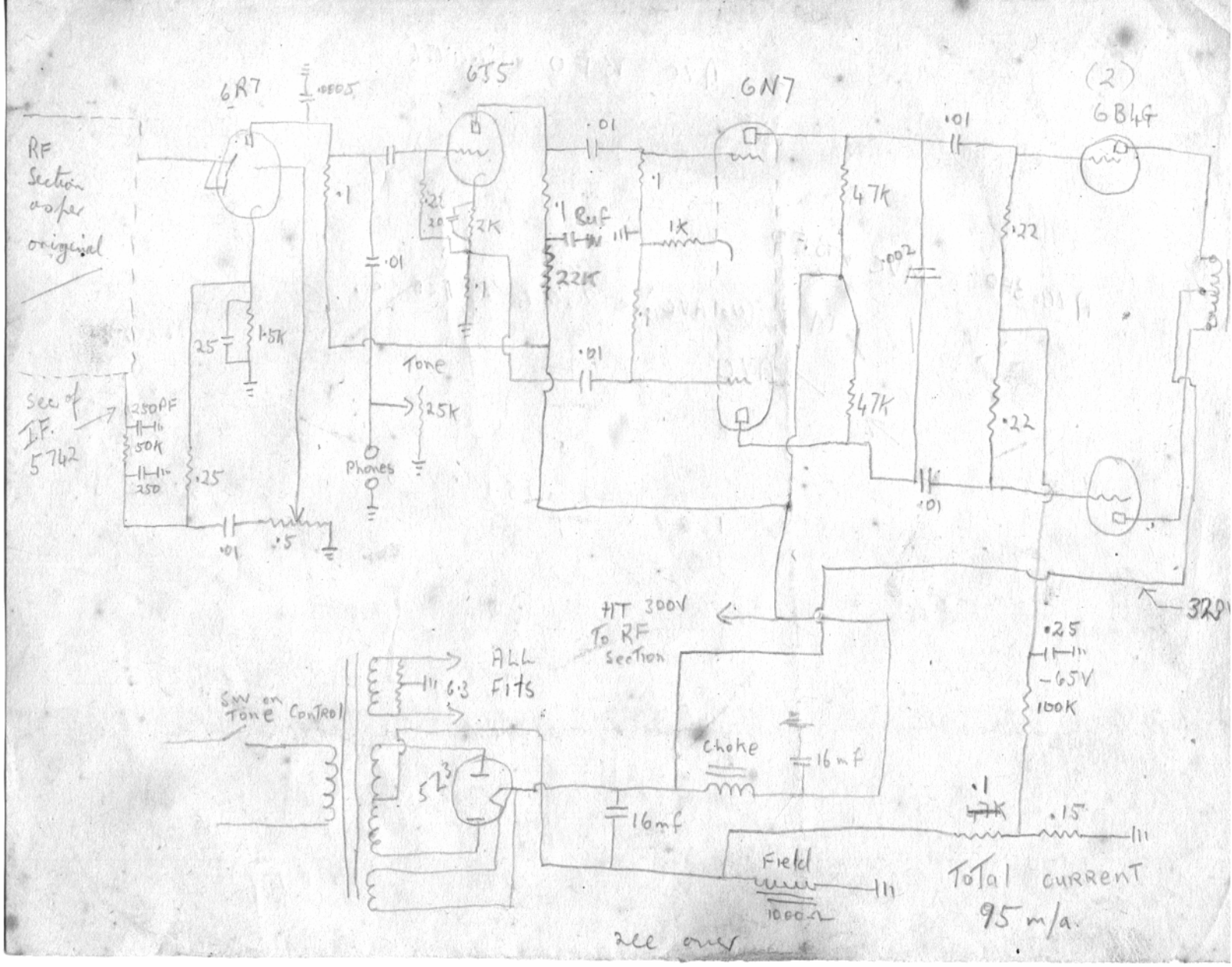

AVC-BFO SW.
5,000 OHM
AVC LEVEL CONTROL
25,000 OHM TONE CONTROL
AC LINE SWITCH
PHONES-STANDBY SPEAKER SW
8 MFD. 450 VOLT
.01 MFD 400 V.
110 V. PRI.
POWER TRANSF.
To 6.3 V.
6.3 V CT
5 VOLT
350
350 CT
5 MA. "R" METER
5Z3
8 MFD. 450 VOLT
500,000 OHM VOLUME CON.
8 MFD. 450 VOLT
6L6
6L6
FILTER CHOKE
125
1,500
POS.
10 MFD. 35 VOLT
.05 MFD. 200 V.
6R7
0.1 MFD. 200 V.
6762
GREEN
BLACK
RED
BLUE
100 MMFD.
6C5
6753
BLUE
GREEN
RED
.05 MFD. 400 V.
1250 Ω FIELD
0.1 MFD. 400 V.
PHONES
B+ SPEAKER

Meissner



To 2 — 192 — 68
3 — 69 — 25
4 — 26 — 9
5 — 9.5 — 4.8


6R7
6T5
6N7
(2) 6B4G
RF Section as per original
See IF 5742
250PF
50K
250
.25
1.5K
25
.01
.5
.1
.25
2K
20
Tone
25K
Phones
.1 Ref
22K
1K
47K
47K
.002
.22
.22
.01
.01
.01
.01
HT 300V To RF Section
328V
.25
-65V
100K
ALL 6.3 Fits
SW on Tone Control
5Z3
choke
16mf
16mf
.1
.15
Field
1000Ω
Total current 95 m/a.
see over

MEISSNER COMMUNICATION RECEIVER

Made byMeissner Manufacturing Co. Mt. Carmel, Ill.

14 tube communication Rx. Kit. No. 7502. with tuning unit 7512 R/F,Mixer & Osc. Pre assembled

Valves	Octal x 14 & 1 x UX
6K7	R/F
6L7	Mixer
6J7	Osc.
6L7	1st I/F
6K7	2nd I/F
6R7	Det. & 1st Audio
6K7	AGC Amp.
6H6	AGC Det.
6K7	Noise Amp.
6H6	Noise Det.
6C5	BFO
6J5	S Meter
6J5	2nd Audio
6V6	Audio O/P
5Z3	Rect.

Many mods. Done EM spkr. Removed,6B4 triodes 6N7 driver & 6J5 phase splitter removed. High B+ 'xformer replaced with lower voltage one & single ended audio circuit built. S meter added. (Original circuit had P/Pull 6L6s 'xformer driven by the 6R7 1st audio.

Bought as Trade In from Mairangi Radio in the 1960s
Original circuit in plastic bag in cupboard.