Howard Radio Co.

	Model: 440	**Chassis:**	**Year:** Pre August 1939
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders Volume 10 - HOWARD 10-24
Riders Volume 10 - HOWARD 10-25
Riders Volume 10 - HOWARD 10-26

MODEL 438
Alignment, Socket Trimmers

HOWARD RADIO CO.

MODEL 440, Series 1,2
Crystal Alignment

NOTE: When using a Crystal set Phasing Control to almost minimum capacity. See special alignment instructions below for Crystal.

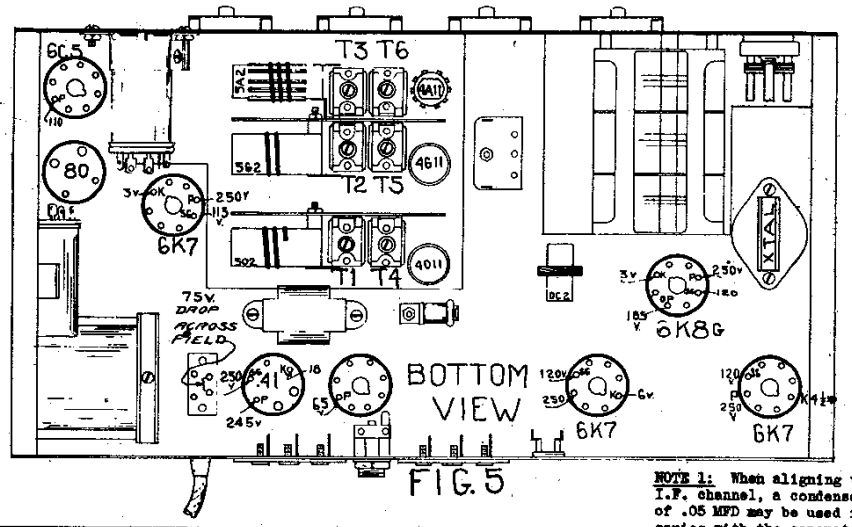


FIG. 5

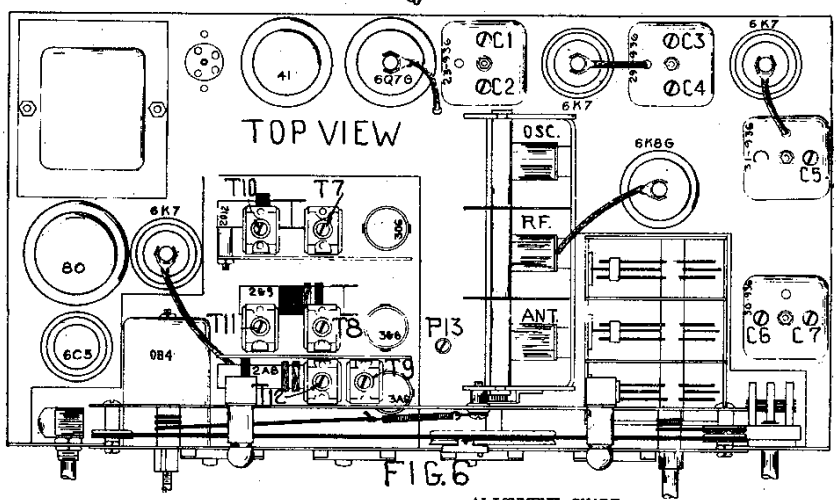


FIG. 6

NOTE 1: When aligning the I.F. channel, a condenser of .05 MFD may be used in series with the generator lead.

NOTE 2: When aligning the broadcast band, a 250 MMFD condenser may be used in series with the signal generator.

NOTE 3: When aligning the short wave bands, a 400 ohm resistor may be used in series with the signal generator.

NOTE 4: After the chassis has been removed from the cabinet, be sure when it is again assembled that the speaker plug is in place in the socket on top of the chassis and that the speaker cable wires do not lay back near the RF circuit, thus causing howling.

NOTE 5: Check for an image signal about .9 mc. lower in frequency. For example:- If a peak has been made at 6 mc. an image should be heard at about 5.1 mc. Otherwise the original setting was not correct.

ALIGNMENT CHART

BAND MC	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMER LOCATION	TRIMMER ADJUSTMENTS	TRIMMER FUNCTION	APPROX. MICROVOLTS
IF	465 KC	Grid of 6K8G	See Fig. 6	C1, C2, C3, C4, C5, C6, C7	IF	15
42-16	32 MC	A and DG	See Fig. 5	T1, T2, T3	OSC. RF. ANT.	8
18- 5.5	17 MC	A and DG	See Fig. 5	T4, T5, T6	OSC. RF. ANT.	3
5.5- 1.7	5 MC	A and DG	See Fig. 6	T7, T8, T9	OSC. RF. ANT.	1
1.6- 5.5	1400 KC	A and DG	See Fig. 6	T10, T11, T12	OSC. RF. ANT.	1
1.6- 5.5	600 KC	A and DG	See Fig. 6	P13	OSC. PAD.	1

ALIGNMENT INSTRUCTIONS - FOR RECEIVERS EQUIPPED WITH CRYSTALS

(1) REMOVE CRYSTAL, set crystal phasing condenser to almost minimum capacity and throw "XTAL" switch to "IN" position.

(2) With the 465 KC signal, re-adjust the I.F. Trimmer C-6 by turning the screw counterclockwise. The signal now may be slightly weaker than before and sound "off-side". This, however, is a normal condition.

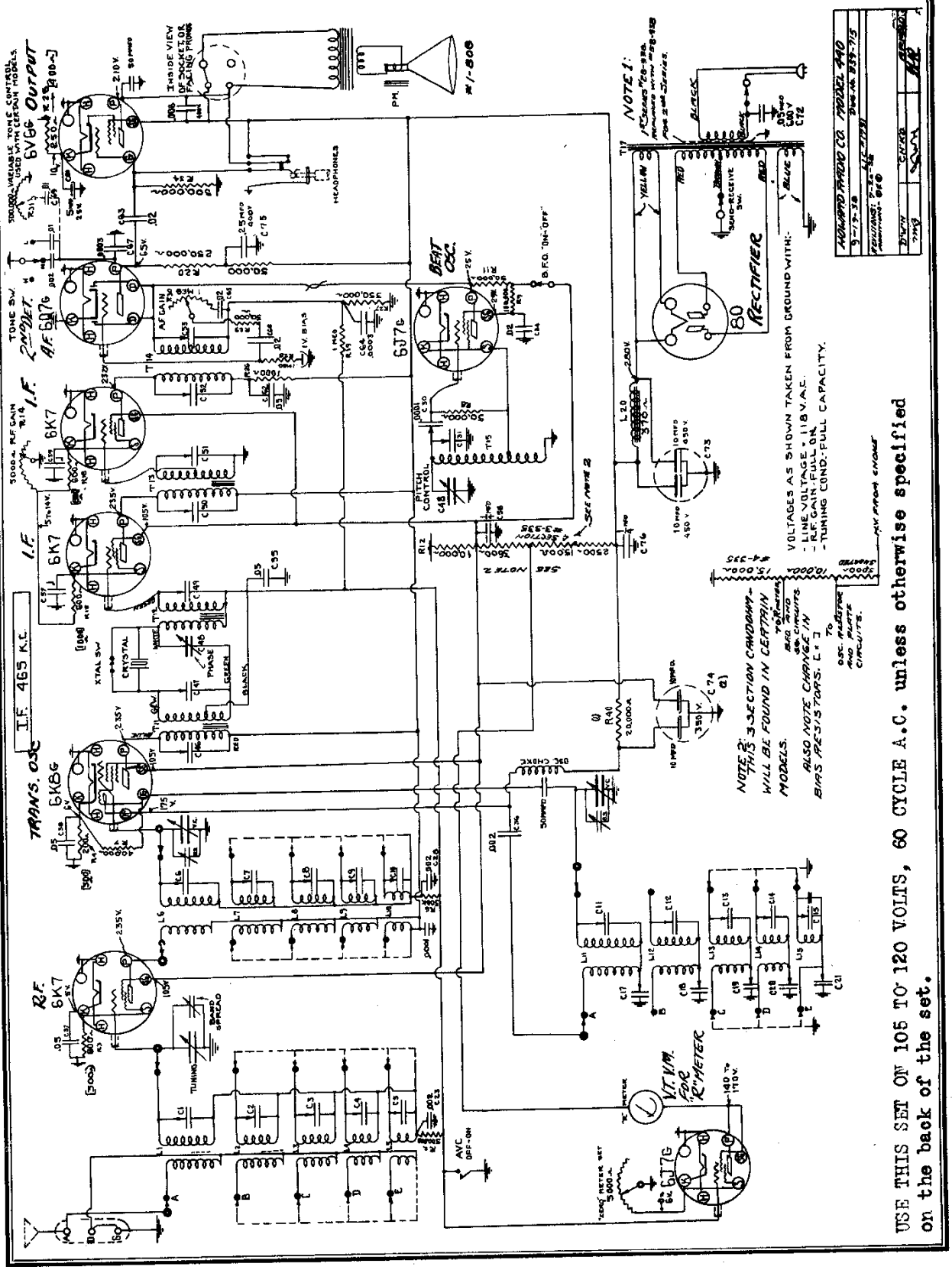
(3) REPLACE THE CRYSTAL - A very noticeable drop in signal strength may be noted due to the filtering action of the crystal and the frequency control of the signal generator must be "rocked" slowly back and forth until the increase in signal strength indicates the exact frequency of the crystal being used. Now re-align the entire I.F. system to this frequency.

(4) Adjust "XTAL" phasing condenser for the lowest pitched note possible and re-adjust signal generator frequency. Repeat and continue to repeat this alignment procedure until no further improvement in the alignment can be accomplished.

NOTE: If the "XTAL" switch should now be thrown to another position, an apparent rise in gain will be noticed, which is caused by the addition of higher frequencies and background noise, so it does not mean that the sensitivity of this set is impaired in any way by use of the crystal.

HOWARD RADIO CO.

MODEL 440, Series 1,2
Schematic, Voltage



ALIGNMENT PROCEDURE

PRELIMINARY:

Output meter connection - 4000 ohm or more copper oxide meter across 5 ohm terminals. Shunt with speaker.

Output meter reading to indicate .5 watt . . . . . 1.575 V.

Average sensitivity in microvolts for .5 watt output . . . . . See chart below

Generator ground lead connection . . . . . Direct to chassis

A.V.C. Switch . . . . . On

Band spread dial set at 100 . . . . . Min. Capacity

Generator modulation . . . . . 30%, 400 cycles

Position of volume control A.F. gain Position of volume control R.F. gain . Full On

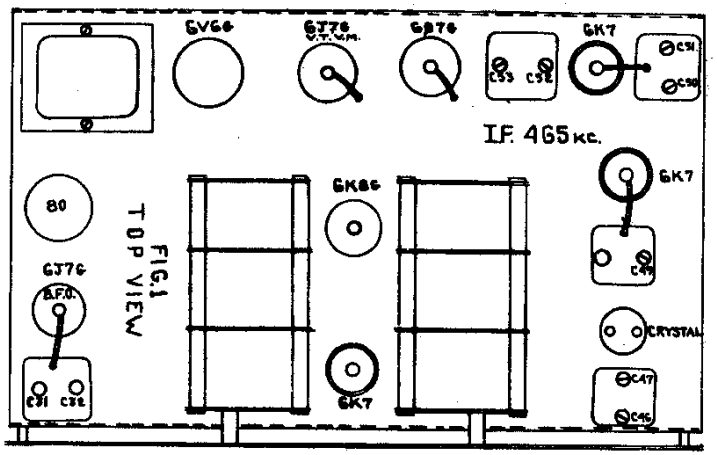
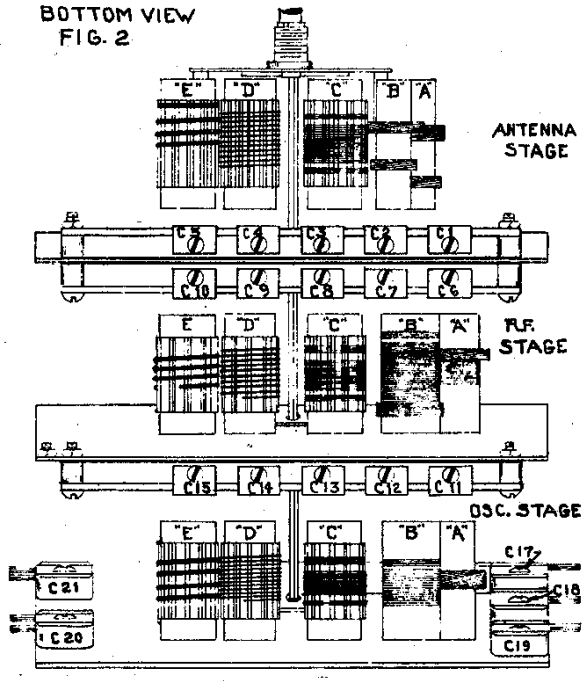


FIG. 1 TOP VIEW



BOTTOM VIEW FIG. 2

NOTE 1: When aligning the I.F. channel, a condenser of .05 MFD may be used in series with the generator lead.

NOTE 2: When aligning the broadcast band, a 250 MMFD condenser may be used in series with the signal generator.

NOTE 3: When aligning the short wave bands, a 400 ohm resistor may be used in series with the signal generator.

POSITION OF VARIABLE AND BAND SW.	GENERATOR FREQUENCY	GENERATOR CONNECTION	TRIMMER LOCATION	TRIMMER ADJUSTMENTS IN ORDER	TRIMMER FUNCTION	APPROX. MICRO-VOLTS
Closed "A" Band	465 KC	6L7 Grid	See Fig.1	C53,52,51, 50,49,47,46	I.F.	15
36 MC "E"	36 MC	A-D-G Ant. Term.	See Fig.2	C15, 10, 5	Osc.Trans.Ant.	3
16 MC "E"	16 MC	A-D-G Ant. Term.		C21	Padder	3
15 MC "D"	15 MC	A-D-G Ant. Term.	See Fig.2	C14, 9, 4	Osc.Trans.Ant.	1
7 MC "D"	7 MC	A-D-G Ant. Term.			Padder	1
6 MC "C"	6 MC	A-D-G Ant. Term.	See Fig.2	C13, 8, 3	Osc.Trans.Ant.	1
3 MC "C"	3 MC	A-D-G Ant. Term.		C19	Padder	1
2.6 MC "B"	2.6 MC	A-D-G Ant. Term.	See Fig.2	C12, 7, 2	Osc.Trans.Ant.	1
1.3 MC "B"	1.3 MC	A-D-G Ant. Term.		C18	Padder	1
1.2 MC "A"	1200 KC	A-D-G Ant. Term.	See Fig.2	C11, 6, 1	Osc.Trans.Ant.	1
.6 MC "A"	600 KC	A-D-G Ant. Term.		C17	Padder	1

NOTE 4: When using a CRYSTAL, set PHASING CONTROL to almost minimum capacity. See special alignment instructions for Crystal MODEL 438