

F. M. ALIGNMENT

F.M. INTERMEDIATE FREQUENCY AMPLIFIER AND DISCRIMINATOR

FIRST: With a sensitive D.C. Microammeter connected in place of the shorting bar on the alignment terminals and an unmodulated 10.7 Mc. signal applied to the 6BE6 control grid, adjust the bottom slug of the discriminator and the slugs on the bottom of the 3rd, 2nd and 1st I.F. transformers for maximum current.

Attenuate the input signal to maintain the current at approximately 60 microamperes.

SECOND: Replace the shorting bar on the alignment terminals and connect a vacuum tube voltmeter across the 750 uuf. mica demphasis condenser contained in the 6AL5 discriminator circuit. With an unmodulated 10.7 Mc. signal applied to the 6BE6 control grid, adjust the top slug of the discriminator to obtain the Zero D.C. voltage point lying between the positive and negative swings of the vacuum tube voltmeter. As this slug is detuned far from resonance in either direction the voltage will approach zero. However, when slightly detuned, the voltage will be positive on one side of resonance and positive on the other. The correct setting is halfway between these points where the voltage passes through zero. As a final check on the accuracy of the discriminator alignment, the D.C. voltage variations should be observed as the signal frequency is varied either side of 10.7 Mc. The voltage increase as the frequency is shifted, say 100Kc., in one direction, should be the same as the voltage decrease as the frequency is shifted 100Kc. in the other direction. Discrepancies here may be corrected by a slight adjustment of the bottom slug on the discriminator. For example, if the voltage becomes plus 3.5 volts for a 100 Kc. frequency shift in one direction and minus 2.5 volts for a 100 Kc. shift in the opposite direction a slight adjustment of this bottom slug will make these two voltages equal at about 3 volts.

F.M. R.F. AMPLIFIER AND CONVERTER

The F.M. R.F. trimmers located underneath the chassis in the locations as shown on the chassis layout should be adjusted with an applied signal at the dipole terminals of 105 Mc and a sensitive D.C. microammeter connected in place of the shorting bar on the alignment terminals. Attenuate the signal to maintain this current at approximately 60 microamperes. With an applied signal of 91 Mc. the sensitivity should be checked and should be comparable with that at 105 Mc. The trimmers should not be altered from their 105 Mc. setting but the gang F.M. rotor plates may be bent to improve the 91 Mc. sensitivity if necessary.

ALIGNMENT AND SENSITIVITY						
1. SIGNAL GENERATOR MODULATED 30% AT 400 C.P.S.						
2. NOMINAL SENSITIVITY A.M = 500 MW, F.M = 100 μ a. AT ALIGNMENT TERMINALS.						
3. DISCRIMINATOR SECONDARY, ADJUST FOR ZERO VOLTAGE MEASURED WITH V.T.V.M ACROSS 750 μ ufd. CONDENSER IN DISCRIMINATOR CIRCUIT COMMON LEAD TO B-.						
4. TONE CONTROL SWITCHES IN NORMAL OR CENTER POSITION.						
STEP	APPLY SIGNAL		THRU SERIES DUMMY	SET GANG AT	ADJUST FOR MAX. OUTPUT	NOMINAL SENSITIVITY IN MICROVOLTS
	AT MC.	TO				
1	.455	6SG7 1ST. I.F. PIN No. 4	.05		2 ND . A.M. I.F. TRANS. TRIMMERS.	1600 μ v.
2	.455	6BE6 PIN No. 7	.05	MIN. CAP.	1 ST . & 2 ND . A.M. I.F. TRANS. TRIMMERS.	100
3	10.7	6SH7 LIMITER PIN #4	.05		DISCRIMINATOR TRANS. PRI.	300,000
4	10.7	6SH7 LIMITER PIN #4	.05		DISCRIMINATOR TRANS. SEC.	ZERO VOLTS. SEE NOTE No. 3
5	10.7	6BE6 PIN No. 7	.05	MIN. CAP.	1 ST . 2 ND . 3 RD . F.M. I.F. TRANS.	250
6	.146	6BE6 PIN No. 7	200 μ ufd.	1460 KC.	B.C. OSC. TRIM.	10
7	.146	ANT.	200 μ ufd.	1460 KC.	B.C. ANT. & INTER-STAGE TRIMMERS.	2
8	.6	ANT.	200 μ ufd.	600 KC.	B.C. OSC. PAD.	3
9	16	ANT.	400 Ω CARBON	16 MC.	S.W. OSC. INTER-STAGE & ANT. TRIM.	12
10	6	ANT.	400 Ω CARBON	6 MC.	S.W. PAD.	22
11	105	DIPOLE	300 Ω CARBON	105	F.M. OSC. INTER-STAGE & ANT. TRIM.	100
12	90	DIPOLE	300 Ω CARBON	90	CHECK POINT	90

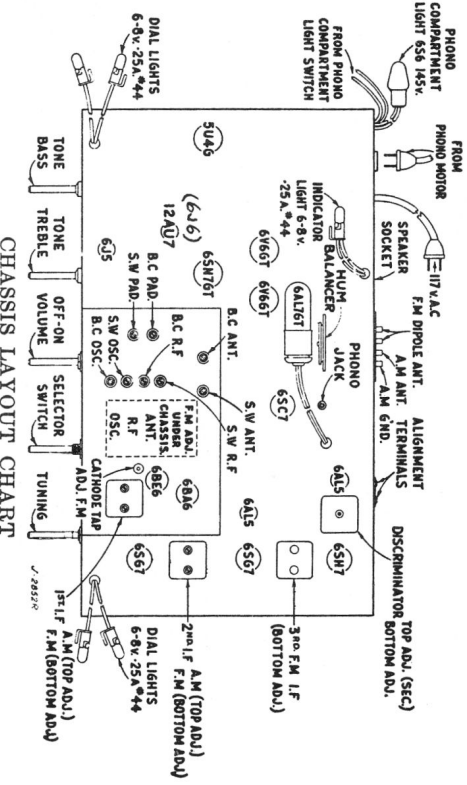
ALIGNMENT AND SENSITIVITY

1. SIGNAL GENERATOR MODULATED 30% AT 400 C.P.S.
2. NOMINAL SENSITIVITY A.M. = 500 MW, F.M. = 100 μ va. AT ALIGNMENT TERMINALS.
3. DISCRIMINATOR SECONDARY, ADJUST FOR ZERO VOLTAGE MEASURED WITH V.T.V.M. ACROSS 750 μ FD. CONDENSER IN DISCRIMINATOR CIRCUIT COMMON LEAD TO B-.
4. TONE CONTROL SWITCHES IN NORMAL OR CENTER POSITION.

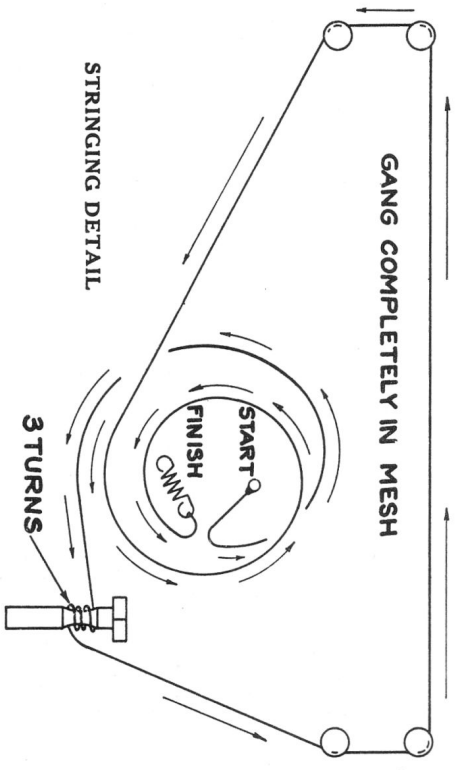
STEP	APPLY SIGNAL AT MIC.	THRU SERIES TO DUMMY	SET GANG AT	ADJUST FOR MAX. OUTPUT	NOMINAL SENSITIVITY IN MICROVOLTS
1	.455 6S67 1ST I.F. PIN No. 4	.05		2ND A.M. I.F. TRANS. TRIMMERS.	1600 μ V.
2	.455 6BE6 PIN No. 7	.05		1ST & 2ND A.M. I.F. TRANS. TRIMMERS	100
3	10.7 6SHT 6SHT 7 LIMITER PIN No. 4	.05		DISCRIMINATOR TRANS. PRI.	300,000
4	10.7 6SHT 6SHT 7 LIMITER PIN No. 4	.05		DISCRIMINATOR TRANS. SEC.	ZERO VOLTS. SEE NOTE NO. 3
5	10.7 6BE6 PIN No. 7	.05		1ST. 2ND. 3RD. F.M. I.F. TRANS.	250
6	.146 6BE6 PIN No. 7	200 μ fd.		B.C. OSC. TRIM.	10
7	.146 ANT.	200 μ fd.	1460 KC.	B.C. ANT. & INTER-STAGE TRIMMERS.	2
8	.6 ANT.	200 μ fd.	600 KC.	B.C. OSC. PAD.	3
9	.16 ANT.	400 Ω . CARBON	16 MC.	S.W. OSC. INTER-STAGE FANT TRIM.	12
10	.6 ANT.	400 Ω . CARBON	6 MC.	S.W. PAD.	22
11	105 DIPOLE	300 Ω . CARBON	105	F.M. OSC. INTER-STAGE FANT TRIM.	100
12	90 DIPOLE	300 Ω . CARBON	90	CHECK POINT	90

BAND SELECTOR SWITCH SHOWN IN EXTREME COUNTER CLOCKWISE POSITION (PHONO), NUMERAL DENOTES WAFER BACK FROM FRONT CHASSIS SKIRT AND LETTER DESIGNATES FRONT OR REAR OF INDICATED WAFER.
 ALL VOLTAGES 110% MEASURED TO CHASSIS WITH 20,000 OHM/VOLT METER AT 117 V. LINE VOLTAGE AND SELECTOR SWITCH IN F.M. POSITION WITH ZERO SIGNAL INPUT, 6S67 VOLTAGES WITH SWITCH IN PHONO POSITION.
 TONE CONTROL SHOWN IN NORMAL POSITION, ROTATION OF SWITCH
 COVERS 9 POSITIONS, 4 EACH SIDE OF NORMAL OR CENTER.

RESISTOR



CHASSIS LAYOUT CHART



SPECIFICATIONS

- Standard Broadcast Range..... 540Kc. - 1650Kc.
- Short Wave Range..... 5.7Mc. - 17.4Mc.
- Frequency Modulation Range..... 88 Mc. - 108 Mc.
- Intermediate Frequency (AM)..... 455 Kc.
- Intermediate Frequency (FM)..... 10.7 Mc.
- Power Consumption (Radio Only)..... 115 Watts
- Power Consumption (Radio and Phono)..... 128 Watts
- Undistorted Output..... 7 Watts
- Maximum Power Output..... 10.1 Watts

