

General-Electric Models 376, 377, 378, Alignment Information

NOTES IN CONNECTION WITH METER ALIGNMENT:

- (1) Use unmodulated signal.
- (2) Connect 20,000 ohm-per-volt meter from junction of R29 and R41.
- (3) Connect 20,000 ohm-per-volt meter from grid pin 1 of (V5) 6AU6 limiter to chassis with a 200,000-ohm resistor in series. The resistor must be connected directly to the grid to minimize capacity loading and to isolate the meter from the i-f voltage. Keep signal generator output down so that meter indicates not more than one volt at the grid (5 microamperes through 200,000 ohms) (Alignment Steps 7 through 13).
- (4) Use 400-cycle modulation (Steps 1, 2, 3, 15, 16, 17, and 18).
- (5) Connect a standard output-meter across speaker voice coil. Turn volume control full on. Keep signal generator output down so that meter indicates not more than $\frac{1}{2}$ watt output (1.26 volts) during alignment. (Steps 1, 2, 3, 15, 16, 17 and 18.)
- (6) Two oscillator settings will give response. The higher frequency response is the correct one; the other is the image response. If in doubt, start with the trimmer screw loosened completely and adjust for the first response.

(7) For alignment of the standard band oscillator and r-f trimmers, the input signal should be inductively coupled to the radio loop antenna by connecting a 4-turn, 6-inch diameter loop of bell wire across the signal generator terminals, and then locate the loop about one foot from the radio loop antenna to prevent possible errors in peak readings. The position of the loop in respect to the radio loop antenna should not be changed during any one set of adjustments. Steps 15, 16, 17 and 18.

(8) The lead from the signal generator must be kept as short as possible and it must be kept away from later stages to prevent regeneration. The signal may also be fed in to the tube pin connection from the top of the chassis to prevent regeneration.

(9) A dummy antenna is a resistor in series with the hot lead of the signal generator. The resistance of the resistor plus the termination impedance of the signal generator should equal 300 ohms.

(10) If a dial scale is not available, index the dial pointer as follows: Turn the pointer to the left-hand limit of travel and mark the dial plate at a reference edge of the pointer slide. Then set the pointer by turning the dial knob until the indicated dimension exists between the reference edge and the mark.

ALIGNMENT CHART

STEP	SIGNAL GENERATOR FREQUENCY	SIGNAL INPUT POINT	BAND SWITCH	DIAL SETTING	ADJUST	SEE NOTE	REMARKS
AM I-F METER ALIGNMENT							
1	455 kc	Conv. grid directly thru .01 mfd	STD	....	Peak C47 and C46	4, 5	Adjust for max.
2	455 kc	Conv. grid directly thru .01 mfd	STD	....	Peak C33	4, 5	Adjust for max.
3	455 kc	Conv. grid directly thru .01 mfd	STD	....	Peak C23 and C22	4, 5	Adjust for max.
FM DISCRIMINATOR AND I-F METER ALIGNMENT							
4	10.7 mc	Pin 1 of V5 (6AU6) thru .01 mf	FM	....	Discrim. Secondary for zero meter	1, 2	Apply 1 volt signal input.
5	Detune signal generator	Pin 1 of V5 (6AU6) thru .01 mf	FM	....	*Signal Generator	1, 2	*Detune signal generator to point of maximum meter reading.
6	As in Step 5	Pin 1 of V5 (6AU6) thru .01 mf	FM	....	Peak discr. primary	1, 2	Adjust for max.
7	10.7 mc	Pin 1 of V4 (6AU6) thru .01 mf	FM	....	Peak C45 and C44	1, 3	Adjust for max.
8	10.7 mc	Pin 1 of V3 (6BA6) thru .01 mf	FM	....	C31 and C30	1, 3	Adjust for max.
9	10.7 mc	Pin 7 of V2 (6BE6) thru .01 mf	FM	....	C21 and C20	1, 3, 8	Adjust for max.
FM R-F METER ALIGNMENT							
10	98 mc	Dipole terminals thru dummy antenna	FM	98 mc or $3\frac{1}{4}$ inches	Peak C62	1, 3, 6, 9, 10	
11	98 mc	Dipole terminals thru dummy antenna	FM	For max. output	Peak L4 vane	1, 3, 9	
12 Repeat steps 10 and 11 until no further improvement in sensitivity.							
13	98 mc	Dipole terminals thru dummy antenna	FM	98 mc	Peak L1 vane	1, 3, 9	
14 Repeat steps 10, 11, and 12.							
AM R-F METER ALIGNMENT							
15	1500 kc	Inductively coupled	STD	1500 kc or 5 inches	Peak C12	4, 5, 7, 10	
16	1500 kc	Inductively coupled	STD	For max. output	Peak C16	4, 5, 7	
17 Repeat steps 15 and 16 until no further improvement in sensitivity.							
18	1500 kc	Inductively coupled	STD	Do not change from Step 16	Peak C6	4, 5, 7	

General-Electric Models 376, 377, 378, Alignment continued

AM I-F VISUAL ALIGNMENT

1	455 kc ±20 kc at 60-cycle sweep	Conv. grid directly pin 7 V2 (6BE6) thru .01 mf	AM	....	C47 and C46*	4, 5	*Adjust for max. amplitude and min. distortion of curve on scope screen.
2	Same as Step 1	Same as Step 1	AM	....	C33	4, 5	Same as Step 1.
3	Same as Step 1 and 2	Same as Step 1 and 2	AM	....	C23 and C22	4, 5	Same as Steps 1 and 2.

FM I-F VISUAL ALIGNMENT

4	10.7 mc ±.3 mc at 60- cycle sweep	Conv. grid directly pin 7 V2 (6BE6) thru .01 mf	FM	....	C45 and C44	1, 2, 11	Adjust for max. amplitude and min. distortion.
5	Same as Step 4	Same as Step 4	FM	....	C31 and C30	1, 2, 11	Same as Step 4.
6	Same as Steps 4 and 5	Same as Steps 4 and 5	FM	....	C21 and C20	1, 2, 11	Same as Steps 4 and 5.

DISCRIMINATOR VISUAL ALIGNMENT

7	10.7 mc ±.3 mc at 60- cycle rate	Conv. grid directly pin 7 V2 (6BE6) thru .01 mf	FM	....	Primary of T5 discrim. trans- former	1, 3, 11	Adjust primary for max. amplitude.
8	Same as Step 7	Same as Step 7	FM	....	Secondary of T5	1, 3, 11	Adjust secondary for vertical symmetry with respect to mid- point horizontal traces.
9	Same as Step 7	Same as Step 7	FM	....	Primary of T5	1, 3, 11	Adjust for straightest possible slope of straight line trace.

FM R-F VISUAL ALIGNMENT

10	98 mc Note 6	Dipole terminals thru dummy antenna	FM	98 mc or 3 $\frac{1}{8}$ in.	Adjust C62*	2, 6, 7, 8, 10	*Set dial pointer accurately, then adjust for steepest slope of straight line trace on scope.
11	98 mc Note 1	Dipole terminals thru dummy antenna	FM	98 mc	Peak L4 vane	1, 2, 9, 10	Center response curve on scope, then peak for max. amplitude.
12	98 mc Note 1	Dipole terminals thru dummy antenna	FM	98 mc	Peak L1 tuning vane	1, 2, 10	Peak for max. amplitude.

AM R-F VISUAL ALIGNMENT

13	1500 kc Note 6	Antenna thru 200 mmf	STD	1500 kc or 5 in.	Adjust C12	4, 6, 7	Adjust C12 for steepest slope of straight line trace on scope.
14	1500 kc Note 5	Antenna thru 200 mmf	STD	1500 kc	Adjust C16	4, 5, 7, 9	Adjust C16 for max. ampli- tude.
15	1500 kc Note 5	Antenna thru 200 mmf	STD	1500 kc	Adjust C6	4, 5, 7	Adjust C6 for max. ampli- tude.

NOTES IN CONNECTION WITH VISUAL ALIGNMENT TABLE:

- (1) Use FM signal modulated at 60 cps ±300 kc.
- (2) Connect vertical plates of scope to the limiter grid (pin 1 of V5) (6AU6) through 200,000 ohm resistor.
- (3) Connect vertical plates of scope to the junction of R29 and R41 (FM audio) through 200,000 ohms.
- (4) Connect vertical plates of scope at junction of R13 and C28 (AM audio output) through 200,000 ohms.
- (5) Use FM signal modulated at 60 cps ±20 kc.
- (6) Use a 60 cycle amplitude modulated signal.
- (7) If a dial scale is not available, index the dial pointer as follows: Turn the pointer to the left-hand limit of travel and mark the dial plate at a reference edge of the pointer slide. Then set the pointer by turning dial knob until the indicated dimension exists between the reference edge and the mark.

- (8) Two oscillator settings will give a response. The higher frequency response is the correct one, the other response is the image. If in doubt, start with the trimmer screw loosened completely and adjust for the first response.

- (9) In some cases tuning of the converter grid will cause "pulling" of oscillator which will change the oscillator frequency. After centering the response curve on the scope, if peaking of L4 causes the response curve to move off of the screen it is necessary to realign the oscillator for calibration.

- (10) A dummy antenna is a resistor in series with the hot lead of the signal generator. The resistance of the resistor plus the termination impedance of the signal generator should equal 300 ohms.

- (11) Leads from the signal generator must be kept as short as possible and away from later stages to prevent regeneration. The signal may also be fed to the tube pin connection from the top of the chassis to prevent regeneration.