

ZENITH

MODELS 12H090-12H091-12H092-12H093-12H094 CHASSIS No. 11C21

The 11C21 chassis incorporates a superheterodyne circuit with three stages of IF, and one stage of RF amplification on all bands.

AM Alignment: The alignment of this chassis on the short wave and standard broadcast band is conventional. The alignment slugs in the IF transformers are threaded and screw into the coil forma. The slugs are slotted for a small size fiber screw driver. Do not press hard on the aligning tool (fiber screw driver) or the threads in the coil forms will strip and adjustment will be impossible.

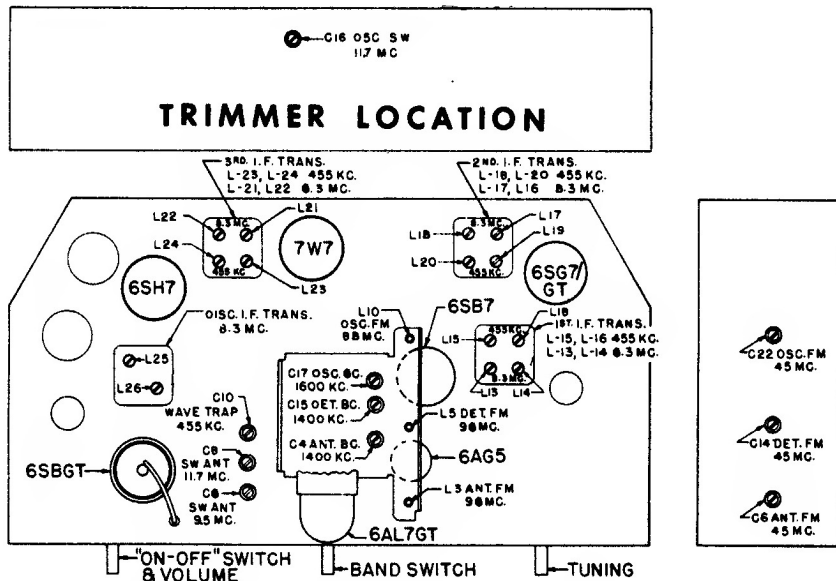
FM RF Alignment: The same coil slug arrangement which tunes the 100 MC FM band also tunes the 45 MC band. However, on 45 MC the band switch connects trimmer condensers in parallel and padding wires in series with the 100 MC coils. The tuning slugs are attached to threaded shafts and the slugs are varied in the field of the coils by turning the shafts clockwise or counter-clockwise. After adjustments the shafts must be secured with a drop of speaker cement.

FM IF Alignment: The same type of tuning slugs for aligning the AM IF Amplifier are used for the FM I.F.'s. Observe the same precautions when making adjustments. The second 8.3 Mc IF stage is overcoupled. Overcoupling gives a wide band pass with good sensitivity. When an overcoupled stage is aligned with an unmodulated signal, the stage must be loaded. A 300 ohm carbon resistor soldered across the secondary of the second IF transformer provides a satisfactory load for this circuit. The resistor leads must be kept short to reduce the distributed capacity of the circuit.

When aligning a loaded stage, it will be found that considerable signal from the generator will be required, and that it will tune broadly. THE LOAD RESISTOR MUST BE REMOVED AFTER ALIGNMENT.

If the signal generator used does not have sufficient output to overcome the temporary loss caused by the load resistor, the load resistance may be increased or the signal fed into the preceding stage.

FM Discriminator Alignment: When the secondary of the discriminator is aligned (operation 9) use sufficient signal input to get a good positive and negative indication before setting the slug for zero reading. A center zero indicating meter is recommended for this adjustment, but is not absolutely necessary. Reversing the leads of a non-zero center meter, or observing closely when this meter starts to go to the left (negative) of zero will give the same results.



DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1363	3-GANG VARIABLE
C2	22-1507	25 MMFDC. CER. 500 V.
C3	22-1504	10 MMFDC. CER. 300 V.
C4	ON CI	BROADCAST ANT. TRIM.
C5	22-1506	22 MMFDC. CER. 300 V.
C6	22-1493	FM ANTENNA TRIM.
C7	22-1503	150 MMFDC. 300V.
C8		S.W. ANT. TRIM.
C9	22-1497	S.W. ANT. TRIM.
C10		WAVE TRAP TRIMMER
C11	22-1508	55 MMFDC. CER. 500V.
C12	22-1506	DI MFD. 600V.
C13	22-1503	17 MMFDC. CER. 500V.
C14	22-1494	FM DET. TRIMMER
C15	ON CI	BROADCAST DET. TRIM.
C16	22-1502	S.W. OSC. TRIMMER
C17	ON CI	BROADCAST OSC. TRIM.
C18	22-1567	30MMFDC. CER. 300 V.
C19	22-1169	DOI MFDC. MICA 60D V.
C20	22-1509	52 MMFDC. CER. 300V.
C21	27-87	475 MMFDC. MICA DISC.
C22	22-1314	F.M. OSC. TRIMMER
C23	22-878	.05 MFD. 200V.
C24	22-162	100MMFDC. MICA 600V.
C25	22-630	.02 MFD. 600V.
C27	22-1126	300MMFDC. MICA 600V.
C28	22-363	100MMFDC. MICA 600V.
C29	22-171	.03 MFD. 600V.
C30	22-1562	.004 MFD. 900V.
C30	22-446	.004 MFD. ±10% 600V.
C31	22-1127	.02 M.F.D. 400V.
C32	22-1126	.01 MFD. 400V.
C33	22-288	30MMFDC. MICA 600V.
C34	22-319	.003 MFD. 200V.
C36	22-242	750MMFDC. MICA 500V.
C37	22-868	450MMFDC. SILVER MICA.
C38	22-1041	.03 MFD. 400V.
C39	22-1237	.003 MFD. 100V.
C40	22-1496	30 MFD. ELECTRO. 450 V.
C41		30 MFD. 450V.
C42	22-1368	.02 M.F.D. 200 V.
R1	63-607	15M OHM 1/2 W.
R2	63-715	100M OHM 1/4 W.
R3	63-883	82M OHM 1/2 W.
R4	63-1448	3600 OHM 1/2 W.
R5	63-593	47M OHM 1/4 W.
R6	63-712	33M OHM 1/4 W.
R7	63-310	16M OHM 1/4 W.
R8	63-379	220 OHM 1/4 W.
R9	63-605	1000 OHM 1/2 W.
R10	63-600	2.2 MEGOHM 1/4 W.
R11	63-960	66M OHM 1/2 W.
R12	63-1446	1200 OHM 1/2 W.
R13	63-392	33M OHM 1/4 W.
R14	63-1447	120M OHM 1/2 W.
R15	63-803	2200 OHM 1/2 W.
R16	63-296	220M OHM 1/4 W.
R17	63-380	100M OHM 1 W.
R18	63-260	100M OHM 1/4 W.
R19	63-976	15 MEGOHM 1/4 W.
R20	63-583	100M OHM 1/4 W.
R21	63-1549	2.3 MEG-VOL. CONTROL
R22	63-651	62M OHM 1/4 W.
R23	63-503	15M OHM 1/4 W.
R24	63-441	1 MEGOHM 1/4 W.
R25	63-588	3300 OHM 1/4 W.
R26	63-583	3200 OHM 1/4 W.
R27	63-646	47M OHM 1/4 W.
R28	63-1187	47M OHM 1 W.
R29	63-687	330M OHM 1/4 W.
R30	63-387	470M OHM 1/4 W.
R31	63-1188	200 OHM WIREWOUND
R32	63-620	33 OHM 1/4 W.
R33	63-826	120 OHM 1/4 W.

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial To	Adj. Trimmers	Purpose
1	Pin 8 on Converter Tube 6SB7 socket	.05 Mfd.	455 Kc. Modulated	BC	600 Kc.	L15,16,19,20,23 and 24	Align I.F. channel for maximum output
2	Pin 1 on R.F. tube 6AG5 socket	.05 Mfd.	455 Kc. Modulated	Aut.	Press any button on Auto.	C10	Adjust wavetrap to minimum
3	2 Turns loosely coupled to wavemag.		1600 Kc. Modulated	BC	1600 Kc.	C17	Set oscillator to dial scale
4	2 turns loosely coupled to wavemag.		1400 Kc. Modulated	BC	1400 Kc.	C15 & C4	Align det. and ant. stages.
5	Antenna Post (Remove line ant.)	400 ohms	11.7 Mo. Modulated	SW	11.7 Mo.	C16	Set oscillator to dial scale
6	Antenna Post (Remove line ant.)	400 ohms	11.7 Mo. Modulated	SW	11.7 Mo.	C9	Align ant. stage
7	Antenna Post (Remove line ant.)	400 ohms	9.7 Mo. Modulated	SW	9.7 Mo.	C8	Align ant. stage Repeat Oper. 6 for maximum output
8 (a)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L25 oil slug primary diso.	Align primary of discriminator for maximum reading
9 (b)	Pin 4 grid on 6SH7 limiter socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L26 oil slug seo. of disor.	Adjust secondary of discr. for zero reading
10 (o)	Pin 4 (grid) on 7W7 2nd IF tube socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L21 & L22 prim. & seo. of 3rd IF transformer	Align 3rd IF transformer for maximum reading
11 (o) (d)	Pin 4 (grid) on 6SG7 1st IF tube socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L17 & L18 prim. & seo. of 2nd IF transformer	Align 2nd IF transformer for maximum reading
12 (o) (d)	Pin 8 (grid) on 6SB7 converter tube socket	.05 Mfd.	8.3 Mo. Unmodulated	FM 45		L13 & L14 prim. & seo. of 1st IF transformer	Align 1st IF transformer for maximum reading
13 (o)	Antenna Post (remove line ant.)	270 ohms	98 Mo. Unmodulated	FM 100	98 Mo.	L10 Osc. coil Slug	Set oscillator to dial scale
14 (o)	Antenna Post (Remove line ant.)	270 ohms	98 Mo. Unmodulated	FM 100	98 Mo.	L5 and L3 Det. and RF oil slugs	Align det. and Ant. stage to maximum reading
15 (o)	Antenna Post (remove line ant.)	270 ohms	45 Mo. Unmodulated	FM 45	45 Mo.	C22	Set oscillator to dial scale
16 (o)	Antenna Post (remove line ant.)	270 ohms	45 Mo. Unmodulated	FM 45	45 Mo.	C14 and C6	Align detector and ant. stages for maximum reading

The signal generator output should be kept just high enough to get an indication on the meter.

(a) Vacuum Tube Voltmeter pin 5 on discriminator transformer to chassis (half discriminator load.)

(b) Vacuum Tube Voltmeter pin 7 on discriminator transformer to chassis (full discriminator load.)

(c) Vacuum Tube Voltmeter 6SH7 limiter grid (pin 4 to chassis).

Zenith Radio
Chassis 11C21

(d) 300 ohm $\frac{1}{2}$ watt carbon resistor soldered across the secondary L18 (pin 2 and 3 of 2nd IF trans.).

The leads to the resistor must be as short as possible and the resistor removed before operation 13 is started.