SERVICE MANUAL

MODEL "ROYAL 7000-1"
SOLID STATE TRANSOCEANIC®
CHASSIS 18ZT40Z

To the Service Technician

GENERAL

The Royal 7000-1 Solid State Portable Receiver covers a wide range of frequencies which provide the operator with coverage of: FM, Longwave, Standard Broadcast, VHF Weather Band and seven Shortwave bands. It operates on eight 1½volt "D" cells which provide up to 300 hours of performance under normal operating conditions and has a ninth 1½ volt battery which is used to power the dial lights and also the chart light. A 4" x 6" oval speaker is used for excellent reproduction and delivers undistorted power output of 500 milliwatts. This receiver can also be used as a FM-AM tuner in conjunction with external high fidelity audio equipment.

An earphone jack has been provided so that the user can connect a set of Zenith low impedance headphones (part no. 39-34) or a Zenith hearing aid type low impedance earphone (part no. 39-75).

A Waverod antenna which is stored in the cabinet top is used on the FM, VHF and Shortwave Bands. The Standard Broadcast and Longwave Bands have a built-in Wavemagnet antenna which eliminates the need for an external antenna under average conditions. Provisions have also been made for external antenna connections.

FM SECTION

Separate tuners are used on the FM (88 to 108 MHz) and the VHF Weather Band.

The FM (88 to 108 MHz) tuner consists of a RF amplifier plus an autodyne converter (mixer-oscillator) while the VHF tuner has an RF amplifier and separate mixer and oscillator transistors. Following the tuners there are three I.F. Stages, Ratio Detector, first audio, pre-driver, driver and diode biased class "B" push-pull audio output.

The FM R.F. and Autodyne converter stages operate in common base circuits. Three I.F. stages are common emitter circuits and have slug tuned I.F. transformers operating at 10.7 MHz. To eliminate overloading and resultant distortion in the I.F. passband and in the S curve of the Ratio Detector, AGC is obtained from the collector of the 2nd I.F.. This AGC voltage is taken thru a 6 pf. capacitor to diode X2 and fed to the base of the RF transistor as reverse bias. The I.F. signal is reduced to audio with a conventional Ratio Detector incorporating two matched solid state diodes which are located in T 13.

On the VHF Band the RF stage operates in a common base circuit while the mixer and oscillator transistors are common emitter circuits. A fixed frequency crystal controlled oscillator is used for operation on the VHF Band. The frequency of operation is determined by the crystal selected. Any time a crystal is replaced the receiver must be realigned. A.F.C. voltage is not applied to the VHF tuner due to the normal stability of crystal controlled oscillators. The remainder of the circuits are as explained above with the FM tuner.

AUTOMATIC FREQUENCY CONTROL (AFC)

As with all high frequency oscillators, stability is important. It is desirable to provide Automatic Frequency Control, which is guided by voltages, directly related to oscillator frequency shift. Automatic Frequency Control is accomplished by taking D.C. voltage from the tertiary winding of the Ratio Detector and feeding it back to diode X4, which is a voltage sensitive variable capacitor. This diode is connected across the oscillator portion of the autodyne circuit and acts as a frequency controlling device. If the oscillator shifts frequency, it causes ratio detector unbalance and a D.C. voltage is fed back to the diode. Changing capacity of the diode will automatically adjust the frequency of the oscillator circuit to compensate for original oscillator shift. In this manner, we have continuous oscillator Automatic Frequency Control.

The lock-in range of the AFC circuit is approximately 700 KHz at 100 micro-volts. Should you desire to receive a weak FM station within the AFC pull-in range of a strong FM station, an AFC disabling switch has been provided in the receiver circuitry. The AFC voltage is removed from the oscillator when the AFC switch is placed in FM position.

To obtain proper AFC action, place the AFC switch in FM position and tune to the exact desired station frequency; then put the AFC switch in the AFC position. . .this will insure proper AFC action.

AM SECTION

On AM operation this instrument utilizes a conventional superheterodyne circuit using individual mixer and oscillator transistors to produce the 455 KHz intermediate frequency. The I.F. frequency amplifiers are conventional in design. The diode (part of T14 assembly) is used as a detector and AGC voltage source. This is then followed by the first audio amplifier, a pre-driver, and a driver stage for the diode biased class "B" push-pull output.

On A.M. the R.F. stage uses common base circuitry for L.W. and B.C., but is common emitter on all Shortwave bands. The oscillator transistor uses common base circuitry, while the mixer and I.F. transistors have common emitter circuitry.

AGC voltage is supplied from the AM diode detector to the base of the RF transistor. The AGC voltage is then taken from the RF emitter and fed to the base of the mixer and first I.F. transistor.

AUDIO SYSTEM

The audio system is common to both the FM and AM. Output from either the FM Ratio Detector or the AM Detector is fed to the base of the 121-430 first audio, and then to the 121-430 pre-driver, the 121-441 driver and into the diode biased class "B" push-pull output stage consisting of one 121-678 and one 121-679 transistor.

Provision has been made for use of this receiver as a tuner in conjunction with high fidelity equipment through the use of an output jack located on the upper rear of the cabinet. The volume control on the Royal 7000-1 must be at minimum volume position to eliminate sound from the receiver's speakers.

OUTPUT TRANSISTORS

The output stage of this receiver consists of a matched pair of one 121-678 and one 121-679 transistor which function in a complementary symmetry push-pull, class "B" audio circuit. These transistors are grouped by beta ratings and are color coded accordingly. If one of these transistors fail, replace both output transistors with a new matched pair which will be stocked as part no.800-245. Care must be taken to replace the transistors in the proper sockets so that they will function properly and provide a balanced output.

COMPONENT REPLACEMENT

When soldering components at the base of a transistor socket, it is suggested that the transistor be removed to avoid any possibility of excessive heat transfer through the pin connection to the transistor. When soldering the low voltage electrolytics and diodes, the wire leads should be held with a pair of long nose pliers. The long nose pliers will act as a heat sink.

TROUBLE SHOOTING AND SIGNAL TRACING

The old technique of "screwdriver testing" is definitely not recommended while trouble shooting any solid state product. In that method various circuit points were touched or shorted to ground to cause a hum or click in the speaker. This must be avoided because a solid state component can be destroyed if excessive voltage or if wrong voltage polarity is applied.

Only standard point to point signal tracing with the proper RF, IF, and Audio Signal Sources should be used.

BATTERY OPERATION

Eight Zenith part number Z4NL 1½ volt or standard "D" type flashlight batteries. Approximate battery life of up to 300 hours. One Zenith Z4NL battery is used for the chart and dial lights. Normal no signal current drain is approximately 25 milliamperes.

AC OPERATION

This receiver may be operated from the standard 115 or 230 volt alternating current supply. To do this Zenith engineers have designed a built-in power supply and switching circuits which allow you to select between battery operating or AC operation. This change-over is made by inserting the AC power cable in the socket located on the cabinet rear. Inside the receiver is a switch which permits selection for operation on either 115 or 230 volt AC power lines.

IMPORTANT: IF THE RECEIVER IS NOT TO BE OPERATED ON BATTERIES FOR SEVERAL WEEKS, THE BATTERIES SHOULD BE REMOVED.

TUNING RANGES

Band	Meters (M)	Mega Hertz (MHz)	Kilo Hertz (KHz)
VHF	1.8	*	*
FM	3.4 to 2.8	88 to 108	88,000 to 108.000
LW	2000 to 750	.15 to .4	150 to 400
BC	555 to 188	.54 to 1.6	540 to 1,600
SW 1	188 to 85	1.6 to 3.5	1,600 to 3,500
SW 2	85 to 33	3.5 to 9.0	3,500 to 9,000
31	31	9.4 to 10.1	9,400 to 10,100
25	25	11.4 to 12.3	11,400 to 12.300
19	19	14.6 to 15.8	14,600 to 15,800
16	16	17.1 to 18.5	17,100 to 18.500
13	13	20.6 to 22.4	20,600 to 22,400

Intermediate Frequency. . . . . .AM - 455 KHz
FM - 10.7 MHz

* This receiver is shipped with a crystal installed for operation on 162.55 MHz. The crystals used are of the third overtone type. To determine the operating frequency, multiply the crystals' fundamental frequency times three, and subtract 10.7 MHz. Example:

57.75 MHz
X 3
173.25 MHz
-10.7 MHz
162.55 MHz

AM OSCILLATOR BIAS ADJUSTMENT

Stability of the AM Oscillator may be maintained over a wide range of battery supply voltage's. If a variable DC voltage supply is available adjustment may be made as follows:

1. Set Manual Gain Control to maximum clockwise position.
2. Rotate Band Switch to 13 meter position.
3. Connect the positive end of a 4½ volt battery to Test Point 3 while the negative end is connected in series with a volt meter. The other end of the meter is connected to Test Point 6. There should be a meter reading of approximately 0.5 to 1.0 volt.
4. Adjust Bias Control R19 for minimum voltage change on the meter while varying the DC supply between 8 and 12 volts.
5. Return Manual Gain Control to the Normal position.

BATTERY LEVEL METER ADJUSTMENT

This receiver is equipped with a combination Tuning and Battery Level Meter which will indicate the condition of the batteries being used. A meter reading in the blue section indicates good batteries. Under normal conditions no adjustment should be necessary. If the meter has been replaced or other repairs made which affect the meter circuit, adjustment may be made as follows. Use a supply of 9 volts and while holding the "Dial Light/Battery Level" switch in the BATTERY LEVEL position adjust control R51 so that the meter pointer lines up with the left edge of the blue section of the meter.

ALIGNMENT

Alignment wrenches, Zenith part number 68-32, 68-35, and 68-45 may be used for aligning this receiver. Charts for proper alignment are included in this service manual.

CHASSIS REMOVAL INSTRUCTIONS

To remove this chassis it will first be necessary to remove the B.F.O., Manual Gain, Tone, Volume and Tuning Knobs from the front panel. A set screw holds the Band Selector knob in place, and will be visible, from the rear, when in the FM or BC position. Loosen screw and remove knob. The chassis is mounted by five (5) screws. (see chassis layout drawing for location). Remove the screws and also the bracket secured by the three (3) right hand screws. The chassis is now free to be removed. Note–be certain to replace the bracket and screws when replacing chassis.

DIAL LIGHT REPLACEMENT

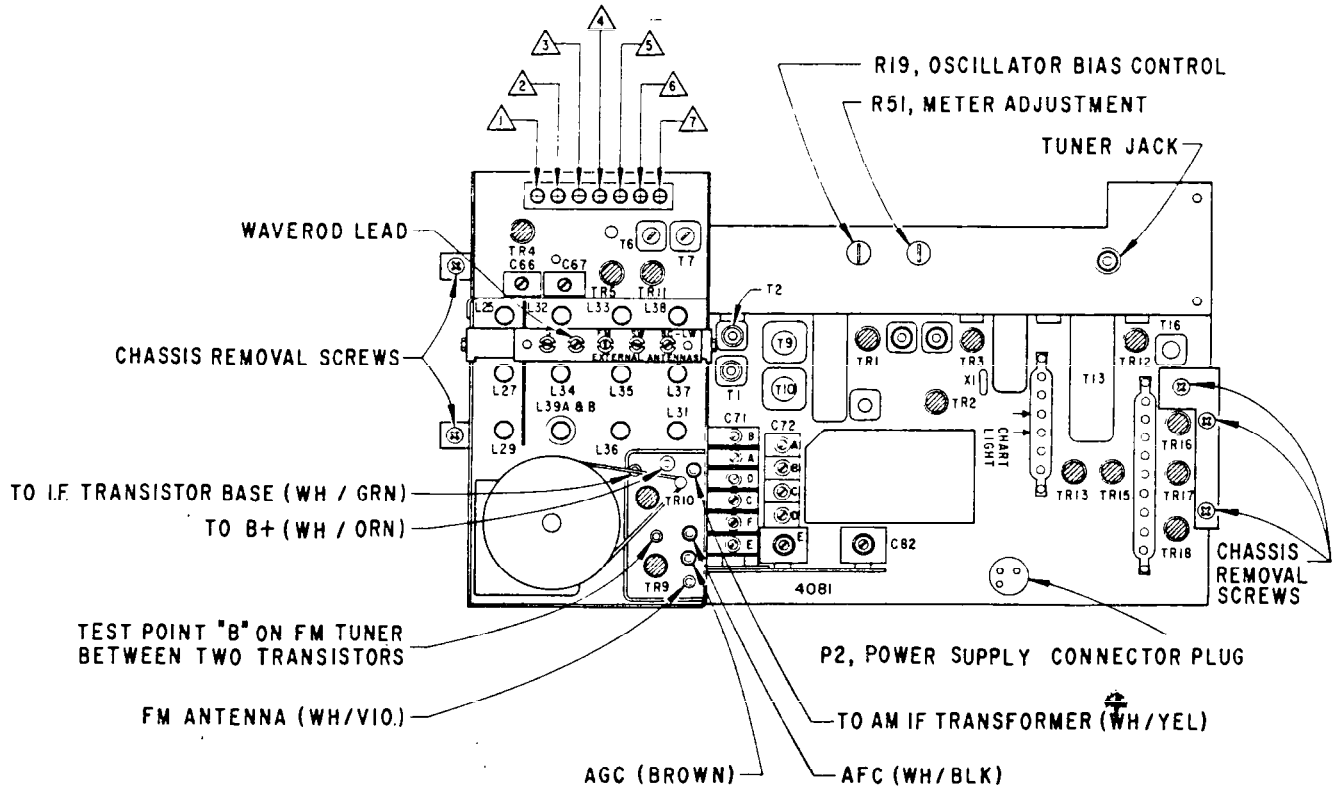
The dial light assembly is mounted to the dial scale drum by two screws. Lights may be replaced in the following manner. Remove cabinet back. Rotate Band Selector to BC position. The dial drum will now be visible through a rectangular cut out at the top of the chassis. Remove the two screws (one at each end of the dial light assembly). Lift plate. These lights are Zenith part number 100-218.

NO.	TRIMMER CHART	NO.	TRIMMER CHART
C66	BROADCAST ANTENNA TRIMMER	C71 F	SW1 OSCILLATOR TRIMMER
C67	LONG WAVE ANTENNA TRIMMER	C72 A	BROADCAST MIXER TRIMMER
C71 A	SW2 ANTENNA TRIMMER	C72 B	LONG WAVE MIXER TRIMMER
C71 B	SW1 ANTENNA TRIMMER	C72 C	BROADCAST OSCILLATOR TRIMMER
C71 C	SW2 MIXER TRIMMER	C72 D	LONG WAVE OSCILLATOR TRIMMER
C71 D	SW1 MIXER TRIMMER	C72 E	LONG WAVE OSCILLATOR PADDER
C71 E	SW2 OSCILLATOR TRIMMER	C82	BROADCAST OSCILLATOR PADDER

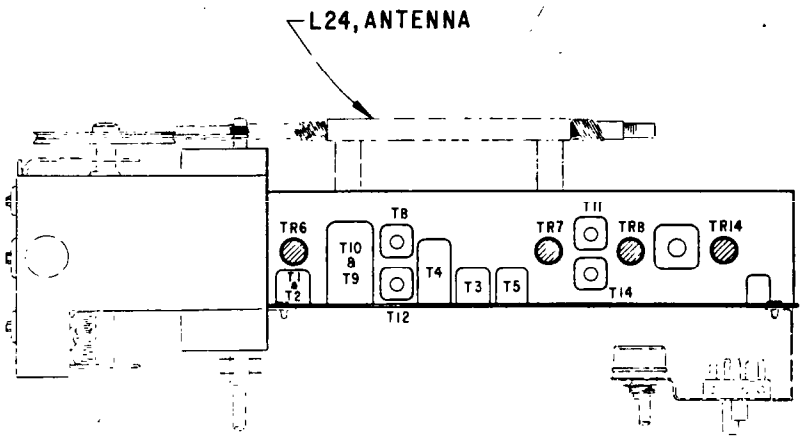
NOTE: REALIGN VHF WEATHER BAND AFTER ANY CRYSTAL CHANGE AS IN STEP NO. 20

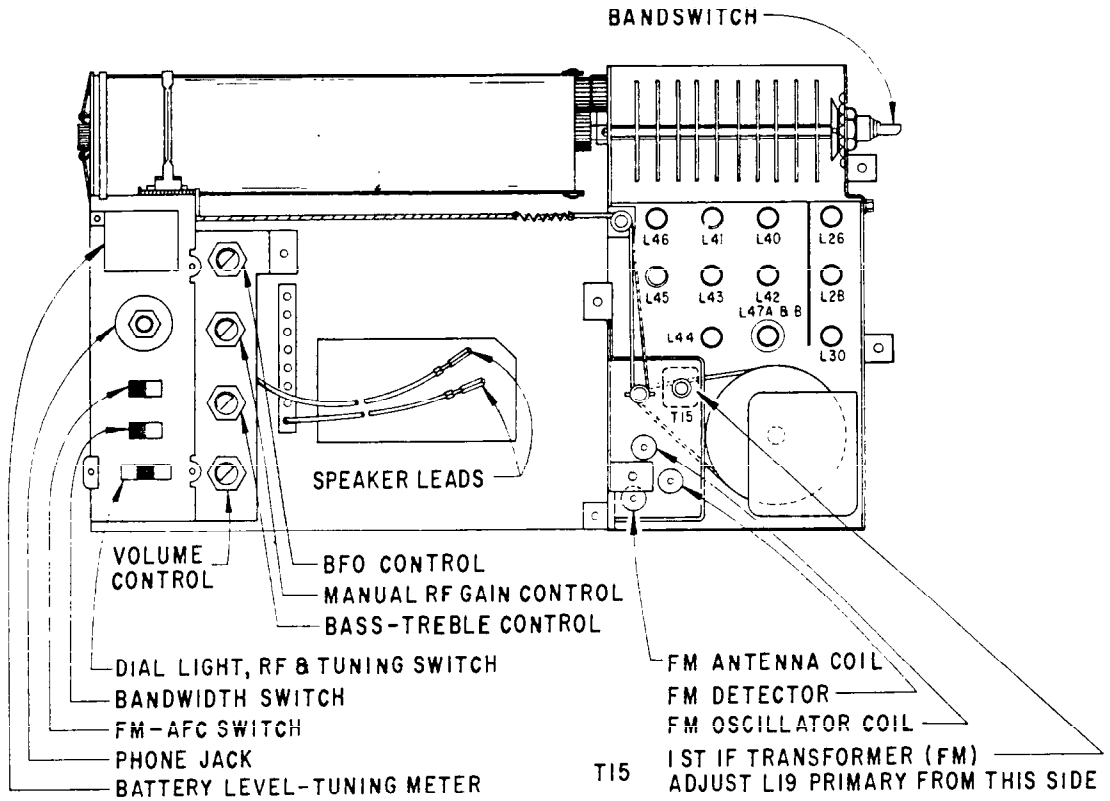
TEST POINT VOLTAGES
(NO SIGNAL)

	AM	FM
1	1.75	.85
2	2.5	1.5
3	.03	0
4	1.8	1.3
5	.2	0
6	5.4	.53
7	5.2	.54



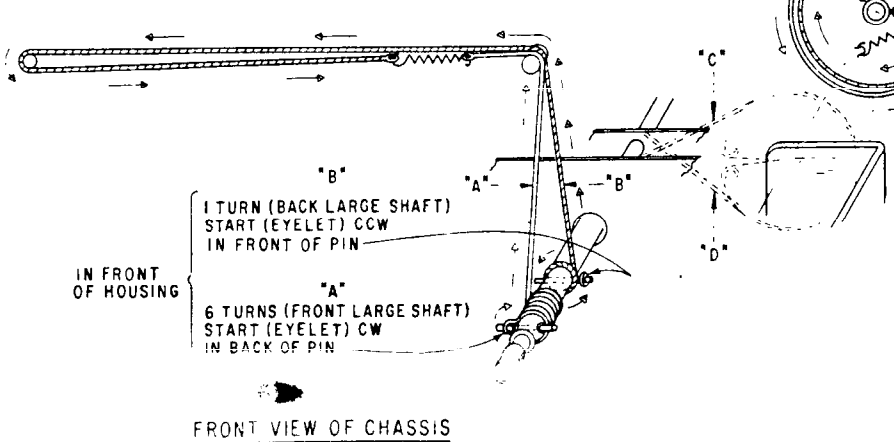
TRANSISTOR, TRIMMER, AND COIL LAYOUT





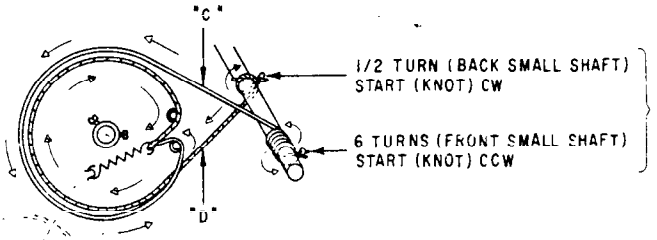
DIAL CORD DRIVE

SHOWN IN FULL COUNTERCLOCKWISE POSITION

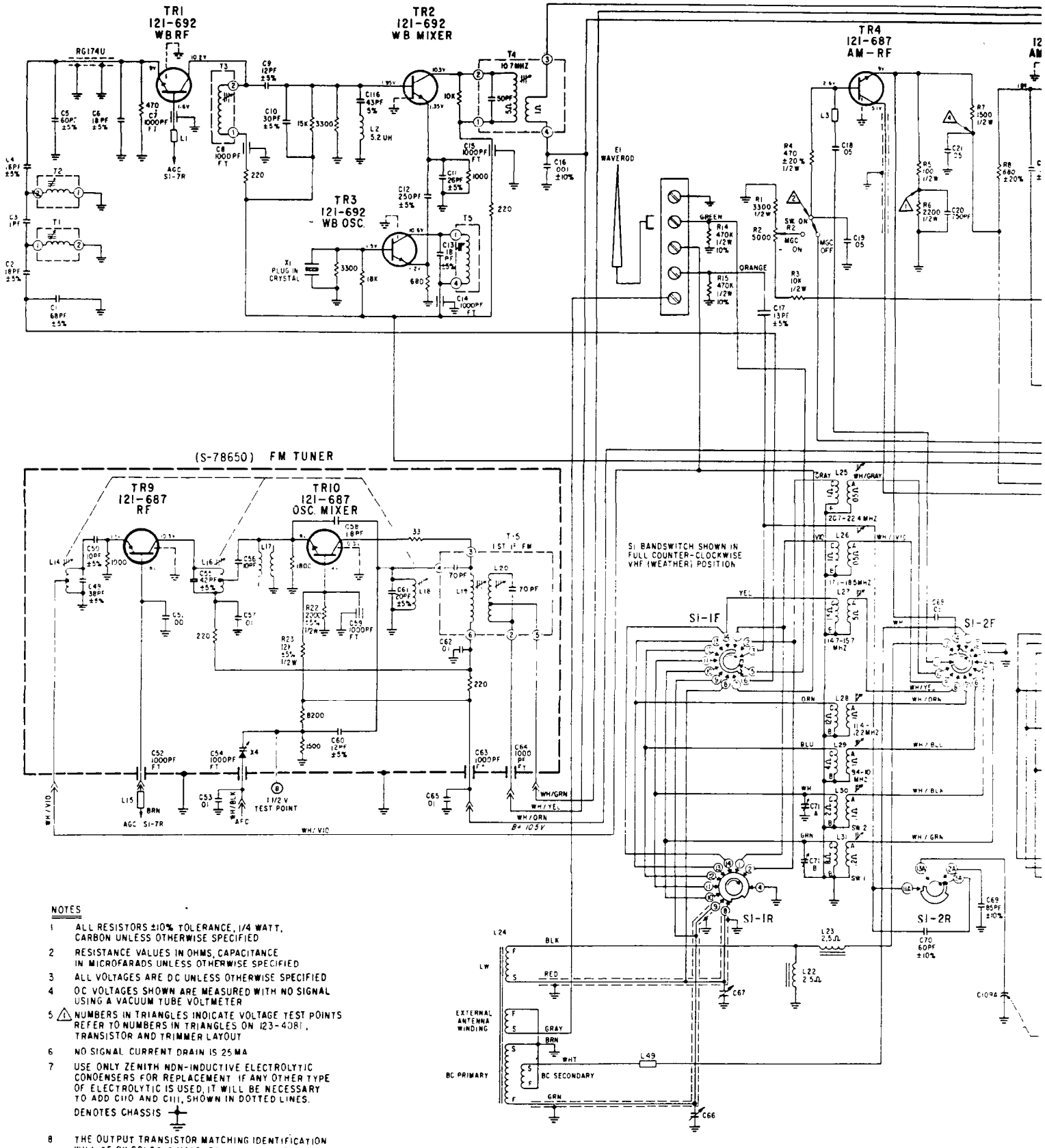


FRONT VIEW OF CHASSIS

REAR VIEW OF CHASSIS

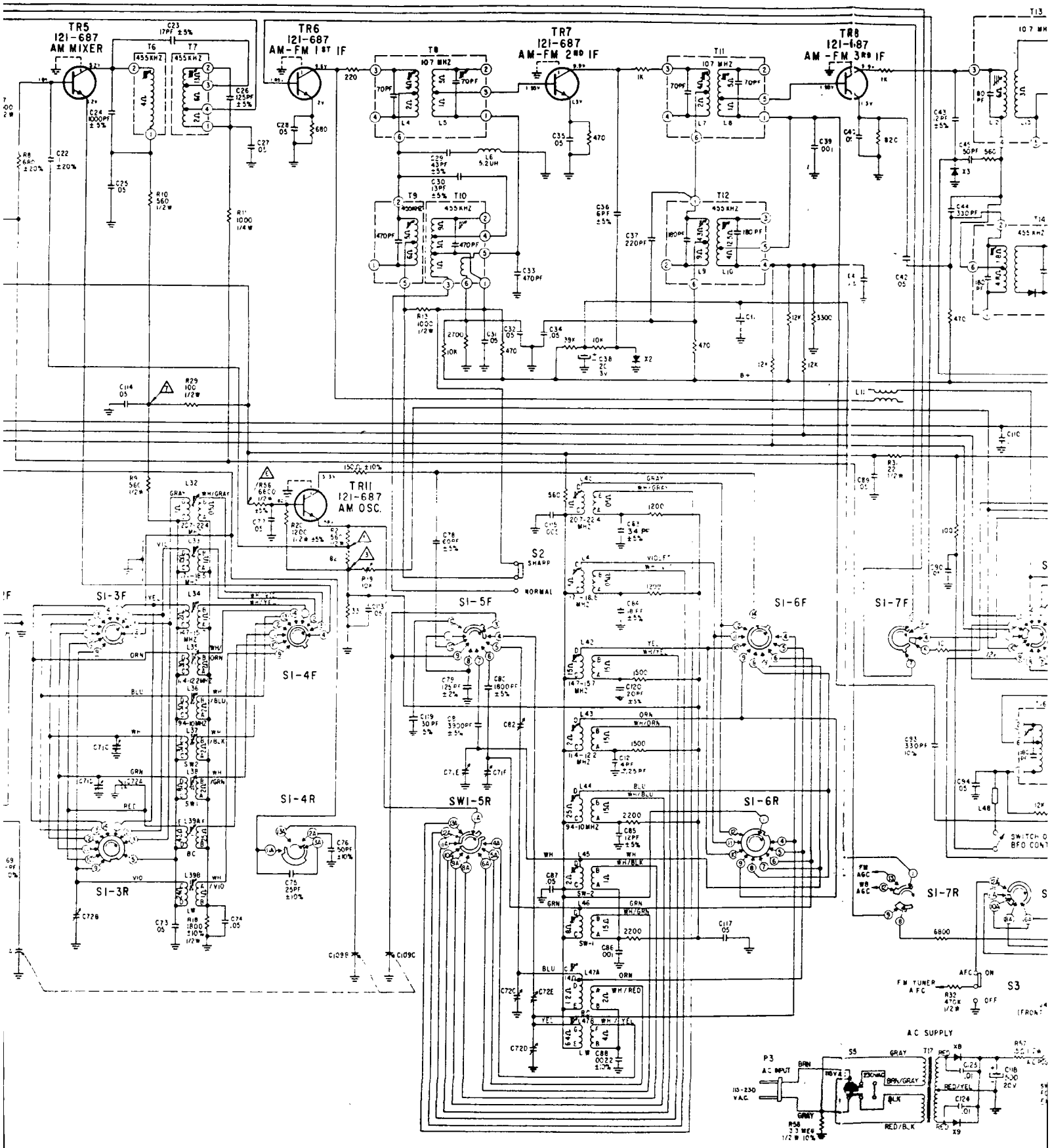


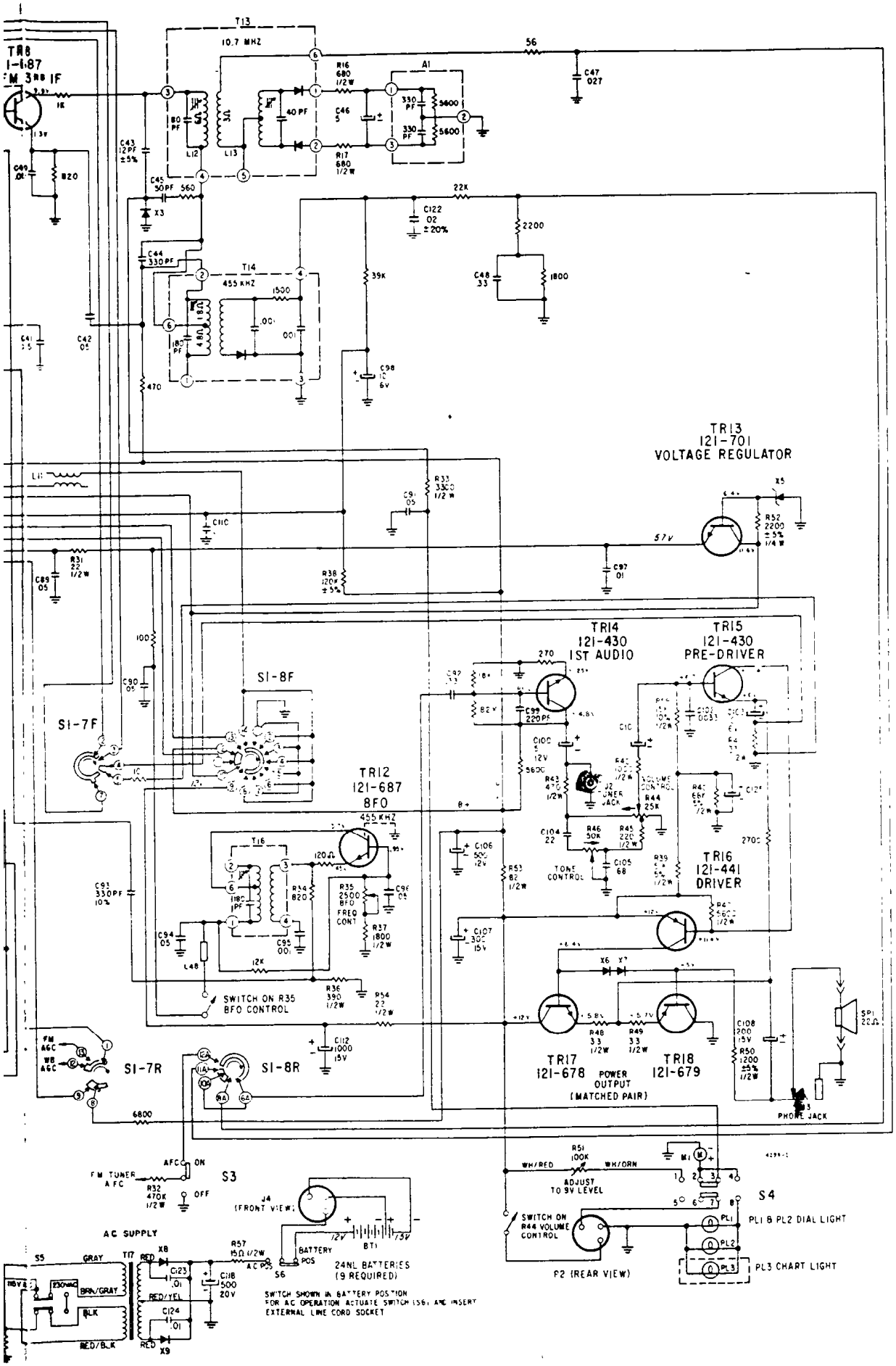
NOTE: REALIGN VHF WEATHERBAND AFTER ANY CRYSTAL CHANGE AS IN STEP NO. 20



NOTES

1. ALL RESISTORS ±10% TOLERANCE, 1/4 WATT, CARBON UNLESS OTHERWISE SPECIFIED
2. RESISTANCE VALUES IN OHMS, CAPACITANCE IN MICROFARADS UNLESS OTHERWISE SPECIFIED
3. ALL VOLTAGES ARE DC UNLESS OTHERWISE SPECIFIED
4. DC VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL USING A VACUUM TUBE VOLTMETER
5. ⚠ NUMBERS IN TRIANGLES INDICATE VOLTAGE TEST POINTS REFER TO NUMBERS IN TRIANGLES ON 123-4081, TRANSISTOR AND TRIMMER LAYOUT
6. NO SIGNAL CURRENT DRAIN IS 25 MA
7. USE ONLY ZENITH NON-INDUCTIVE ELECTROLYTIC CONDENSERS FOR REPLACEMENT IF ANY OTHER TYPE OF ELECTROLYTIC IS USED, IT WILL BE NECESSARY TO ADD C110 AND C111, SHOWN IN DOTTED LINES.
   DENOTES CHASSIS ⏚
8. THE OUTPUT TRANSISTOR MATCHING IDENTIFICATION WILL BE BY COLOR A MATCHED PAIR MUST CONSIST OF ONE 121-678 AND ONE 121-679 WITH THE SAME (BETA) COLOR CODE


TR5
121-687
AM MIXER
TR6
121-687
AM-FM 1ST IF
TR7
121-687
AM-FM 2ND IF
TR8
121-687
AM-FM 3RD IF
TR11
121-687
AM OSC.
S1-3F
S1-4F
S1-4R
S1-3R
S1-5F
S1-6F
S1-7F
S1-6R
S1-7R
SWI-5R
S2
SHARP
NORMAL
S3
FM TUNER AFC
AFC ON
OFF
AC SUPPLY
P3
AC INPUT
105-230 VAC
SCHEMATIC


TR8
121-687
FM 3RD IF
T13
10.7 MHZ
T14
455 KHZ
A1
TR13
121-701
VOLTAGE REGULATOR
TR14
121-430
1ST AUDIO
TR15
121-430
PRE-DRIVER
TR12
121-687
8FO
TR16
121-441
DRIVER
TR17
121-678
TR18
121-679
POWER OUTPUT
(MATCHED PAIR)
S1-7F
S1-8F
S1-7R
S1-8R
SWITCH ON R35
8FO CONTROL
VOLUME CONTROL
TONE CONTROL
FREQ CONT
PHONE JACK
FM TUNER AFC
AFC ON
OFF
S3
ADJUST TO 9V LEVEL
S4
SWITCH ON R44 VOLUME CONTROL
P2 (REAR VIEW)
PL1 & PL2 DIAL LIGHT
PL3 CHART LIGHT
AC SUPPLY
BATTERY
24NL BATTERIES
(9 REQUIRED)
SWITCH SHOWN IN BATTERY POSITION
FOR AC OPERATION ACTUATE SWITCH (S6) AND INSERT
EXTERNAL LINE CORD SOCKET

ITEM NO.	PART NO.	DESCRIPTION
C77	22-3689	.05 Mfd Ceramic Disc 25 V
C78	22-2979	60 Pf Ceramic Tubular 5% 500 V
C79	22-5276	125 Pf Ceramic Tubular 2% 500 V
C80	*22-5623	1800 Pf Mica 5% 100 V
C81	*22-5624	3900 Pf Mica 5% 100 V
C82	22-3902	Broadcast Padder
C83	22-5318	34 Pf Ceramic Disc 5% 500 V
C84	22-5432	18 Pf Ceramic Disc 5% 500 V
C85	22-2379	12 Pf Ceramic Disc 5% 500 V
C86	22-3748	1000 Pf Ceramic Disc 10% 1000 V
C87	22-3689	.05 Mfd Ceramic Disc 25 V
C88	22-18	.0022 Ceramic Disc 10% 500 V
C89	22-3689	.05 Mfd Ceramic Disc 25 V
C90	22-3689	.05 Mfd Ceramic Disc 25 V
C91	22-3689	.05 Mfd Ceramic Disc 25 V
C92	22-5596	.33 Mfd Mylar Tub. 20% 50 V
C93	22-3255	330 Pf Ceramic Disc 10% 500 V
C94	22-3689	.05 Mfd Ceramic Disc 25 V
C95	22-3748	.001 Mfd Ceramic Disc 25 V
C96	22-3689	.05 Mfd Ceramic Disc 25 V
C97	22-3393	.01 Mfd Ceramic Disc 25 V
C98	22-3256	10 Mfd Electrolytic 6 V
C99	22-2703	220 Pf Ceramic Disc 10% 500 V
C100	22-2884	5 Mfd Electrolytic 12 V
C101	22-3615	1 Mfd Electrolytic 25 V
C102	22-13	.0033 Mfd Ceramic Disc 500 V
C103	22-5413	100 Mfd Electrolytic 6 V
C104	22-5583	.22 Mfd Mylar Tubular 20% 50 V
C105	*22-5709	.68 Mfd Ceramic - Disc 30% 3 V
C106	22-2985	500 Mfd Electrolytic 12 V
C107	22-5192	300 Mfd Electrolytic 15 V
C108	22-4571	200 Mfd Electrolytic 15 V
C109A	22-3743	Antenna Tuning
C109B		Mixer Tuning
C109C		Oscillator Tuning
C110	22-3955	.1 Mfd Mylar Tub 10% 50 V
C111	22-3955	.1 Mfd Mylar Tub 10% 50 V
C112	22-4573	1000 Mfd Tub Electrolytic 15 V
C113	22-3689	.05 Mfd Ceramic Disc 25 V
C114	22-3689	.05 Mfd Ceramic Disc 25 V
C115	22-5037	.005 Mfd Ceramic Disc 25 V
C116	*22-5586	43 Pf Ceramic Disc 5% 500 V
C117	22-3689	.05 Mfd Ceramic Disc 25 V
C118	22-4501	500 Mfd Electrolytic 20 V
C119	22-5092	30 Pf Ceramic Disc 5% 500 V
C120	22-3849	20 Pf Ceramic Disc 5% 500 V
C121	22-5128	4 Pf Ceramic Disc ± .25 Pf 500 V
C122	22-5989	.02 Mfd Ceramic Disc 20% 16 V
C123	22-4617	.01 Mfd Ceramic Disc 500 V
C124	22-4617	.01 Mfd Ceramic Disc 500 V
C125	22-3615	1 Mfd Electrolytic 25 V
R1	63-1806	3300 10% 1/2 W
R2	*63-7530	5000 Manual Gain Control & SW.
R3	63-1827	10 K 10% 1/2 W
R4	63-1772	470 20% 1/2 W
R5	63-1743	100 10% 1/2 W
R6	63-1799	2200 10% 1/2 W
R7	63-1792	1500 10% 1/2 W
R8	63-1779	680 20% 1/2 W
R9	63-1775	560 10% 1/2 W
R10	63-1775	560 10% 1/2 W
R11	63-4186	1000 20% 1/4 W
R13	63-1785	1000 10% 1/2 W
R14	63-1897	470 K 10% 1/2 W
R15	63-1897	470 K 10% 1/2 W
R16	63-1778	680 10% 1/2 W
R17	63-1778	680 10% 1/2 W
R18	63-1796	1800 10% 1/2 W
R19	*63-7126	Oscillator Bias Control 10 K
R20	63-1788	1200 5% 1/2 W
R21	63-1775	560 10% 1/2 W
R22	63-1797	2000 5% 1/2 W
R23	63-1830	12 K 5% 1/2 W
R29	63-1743	100 10% 1/2 W
R31	63-1715	22 10% 1/2 W
R32	63-1897	470 K 10% 1/2 W
R33	63-1806	3300 10% 1/2 W
R34	63-1782	820 10% 1/2 W
R35	*63-7528	2500 B.F.O. Control And Switch
R36	63-1768	390 10% 1/2 W
R37	63-1796	1800 10% 1/2 W
R38	63-4272	120 K 5% 1/4 W
R39	63-1857	51 K 5% 1/2 W
R40	63-1861	68 K 5% 1/2 W
R41	63-1722	33 10% 1/2 W
R42	63-1785	1000 10% 1/2 W
R43	63-1771	470 10% 1/2 W
R44	63-7135	25 K Volume Control & Switch
R45	63-1757	220 10% 1/2 W
R46	*63-7529	50 K Tone Control
R47	63-1817	5600 10% 1/2 W
R48	63-4522	3.3 10% 1/2 W
R49	63-4522	3.3 10% 1/2 W
R50	63-1788	1200 5% 1/2 W
R51	*63-7125	100 K Meter Adjustment Control
R52	63-4198	2200 5% 1/4 W
R53	63-1740	82 10% 1/2 W
R54	63-1715	22 10% 1/2 W
R56	63-1819	6800 5% 1/2 W
R57	63-1708	15 10% 1/2 W
R58	63-1932	3.3 Meg 10%
R59	63-1834	15 K 10% 1/2 W
X1	*103-166	57.75 MHz Plug In Crystal (162.55 MHz)
X1	*103-167	57.72 MHz Plug In Crystal (162.45 MHz)
X1	*103-168	57.52 MHz Plug In Crystal (161.85 MHz)
X1	103-169	57.99 MHz Plug In Crystal (163.27 MHz)
X1	103-170	57.45 MHz Plug In Crystal (161.65 MHz)
X2	103-44	Crystal Diode
X3	103-31	Crystal Diode
X4	103-39	AFC Diode
X5	103-140	Zener
X6	*103-141	Audio Diode
X7	*103-141	Audio Diode
X8	212-71	Silicon Rectifier
X9	212-71	Silicon Rectifier
S1	*85-1208	Bandswitch
S2	*85-1014	Slideswitch S.P.D.T. Bandswitch (Blue)
S3	*85-1013	Slideswitch S.P.D.T. A.F.C. (White)
S4	85-1015	Slideswitch (Momentary Contact) (Black)
S5	85-818	Slideswitch D.P.D.T. 230 - 115 V.A.C.
S6	85-1043	Slideswitch S.P.S.T.
PL1	100-218	Dial Light Lamp
PL2	100-218	Dial Light Lamp
PL3	100-218	Chart Lamp
P1	58-214	Tuner Plug
P2	58-235	Three Pin Power Supply Plug
P3	58-316	AC-Input Plug
J1	*44-84	Tuner Jack
J2	78-644	Tuner Output Jack
J3	44-34	Headphone Jack
J4	78-1101	Battery Socket
BT1	Z4NL	1½ V Battery (9 Required)
SP1	49-1143	4" x 6" P.M. Speaker
M1	*122-38	Meter (RF & Battery Checker)
A1	105-96	Integnet
E1	1-19	Waverod

PART NO.	DESCRIPTION	PRICE
	CHASSIS 18ZT40Z	
12-4850	Meter Mtg. Bracket	.35
20-1256	10.7 MHz Trap Coil	.50
22-13	.0033 Mf Disc. Capacitor - 500 V.	.25
22-2379	12 Pf Disc Capacitor - 500 V. (2 Req.)	.20
22-2381	6 Pf Disc Capacitor - 500 V.	.25
22-2595	60 Pf Disc Capacitor - 500 V.	.35
22-2654	50 Pf Disc Capacitor - 500 V.	.15
22-2703	220 Pf Disc Capacitor - 500 V. (2 Req.)	.25
22-2720	1 Pf Gimmick Capacitor - 500 V.	.20
22-2729	.001 Mf Disc Capacitor - 25 V.	.25
22-2884	5 Mf Electrolytic Capacitor - 12 V. (2 Req.)	1.50
22-2891	250 Mf Capacitor - 100 V.	
22-2898	13 Pf Disc Capacitor - 500V.	.15
22-2985	500 Pf Electrolytic Capacitor - 12 V.	2.00
22-3255	330 Pf Disc Capacitor - 500 V. (2 Req.)	.25
22-3256	10 Mf Electrolytic Capacitor - 6 V.	1.00
22-3393	.01 Mf Disc Capacitor - 25 V.	.25
22-3558	16 Pf Disc Capacitor - 500 V.	.25

*Denotes Parts Not Previously Used.

Part No.	Description	Price
63-1830	12 K Ohm Resistor - 1/2 W. 5%	.34
63-1897	470 K Ohm Resistor - 1/2 W. 10% (2 Req.)	.17
63-4101	10 Ohm Resistor - 1/4 W. 10%	.17
63-4122	33 Ohm Resistor - 1/4 W. 10% (2 Req.)	.17
*63-4140	82 Ohm Resistor - 1/4 W. 10%	.17
63-4150	150 Ohm Resistor - 1/4 W. 10%	
63-4157	220 Ohm Resistor - 1/4 W. 10% (2 Req.)	.17
63-4175	560 Ohm Resistor - 1/4 W. 10%	.17
63-4185	1000 Ohm Resistor - 1/4 W. 10%	.17
63-4186	1000 Ohm Resistor - 1/4 W. 20%	.17
63-4189	1200 Ohm Resistor - 1/4 W. 10% (2 Req.)	.17
63-4192	1500 Ohm Resistor - 1/4 W. 10% (3 Req.)	.17
63-4196	1800 Ohm Resistor - 1/4 W. 10%	.17
63-4199	2200 Ohm Resistor - 1/4 W. 10% (2 Req.)	.17
63-4220	6800 Ohm Resistor - 1/4 W. 10%	.17
63-4224	8200 Ohm Resistor - 1/4 W. 10%	.17
63-4231	12 K Ohm Resistor - 1/4 W. 10% (2 Req.)	.17
73-24	8-32 x 1/4 Slotted Hex Hd. Set Screw - Cuppoint (2 Part Of S-58142)	
76-1474	Drive Shaft (Part Of S-64842)	2.50
78-1675	Transistor Socket (5 Req.)	.45
79-174-12	No. 18 Sleeving - Yellow - 1 1/2"	.03
80-209	Drive Cord Tension Spring	.10
80-1467	Spring	.05
80-1672	Retaining Spring	.20
80-1951	Retaining Spring (3 Req.)	.03
83-2770	7 Lug Terminal Strip	.20
83-3218	2 Lug Terminal Strip	
83-3674	7 Lug Terminal Strip	.20
*83-5668	4 Lug Terminal Strip	
*83-6983	Antenna Terminal Strip	
*85-1208	Bandswitch	
86-306	Terminal	.03
86-441	Insulated Feed-Thru Terminal (3 Req.)	.05
93-920	.020 x .093 x 7/32 Steel Washer - Cadmium Plate (2 Part Of S-78724)	.03
93-966	No. 1205 Internal Shakeproof Lockwasher - Cadmium (2 Used On 54-227)	.03
93-1793	Nylon Washer (Used On S-78724)	.03
94-334	Capacitor Mtg. Bushing (3 Req.)	.03
94-613	Iron Core Bushing (3 Req.)	.10
95-2002	1st. I.F. Transformer (Primary)	2.50
94-2003	1st. I.F. Transformer (Secondary)	2.50
*95-2609	1st. I.F. Transformer (FM)	2.00
103-39	Silicon Diode	3.00
112-1467	2-56 x 5/16 Phillips Pan Hd. Mach. Screw - Cadmium (1 Mts. S-64842)	.03
113-8	6-32 x 1/4 x 1/4 Hex Hd. Mach. Screw - N.P. - Internal Shakeproof Lockwasher (1 Mts. 22-5705 & 2 Mt. 22-5861)	.03
113-10	6-32 x 3/16 x 1/4 Hex Hd. Mach. Screw - N.P. - Internal Shakeproof Lockwasher (1 Mts. S-78649)	.03
113-13	6-32 x 7/16 x 1/4 Hex Hd. Mach. Screw - N.P. - Ext. Shakeproof Lockwasher (3 Mt. 22-3743)	.03
113-33	4-40 x 1/4 x 7/32 Hex Hd. Mach. Screw - Cadmium - Internal Shakeproof Lockwasher	.03
113-121	6-32 x 7/32 Phillips Rd. Hd. Mach. Screw - N.P. - Ext. Shakeproof Lockwasher (1 Joins 22-3902 & 57-6867)	.03
113-123	4-40 x 3/16 Phillips Rd. Hd. Mach. Screw - Cadmium - Internal Shakeproof Lockwasher	.03
114-39	8-32 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw - Cadmium (1 Used On S-78743, 4 Used On S-85347, 2 Used On S-79040 & 57-6678 & 2 Join S-78743 & S-80653) (11 Req.)	.03
*121-687	Transistor - FM/AM Amplifier & Oscillator - R.F. Oscillator & Mixer (5 Req.)	.80
125-94	Rubber Grommet (3 Used On 22-3743)	.03
126-857	Coil Shield (2 Req.)	.03
126-1027	Coil Shield (Part Of S-78649)	.15
*126-1331	Coil Shield (Part Of S-78649)	.20
149-74	Iron Core (2 Part Of S-45000)	
149-211	Iron Core (25 Req.)	.10
149-311	Iron Core Sleeve (2 Req.)	.05
149-316	Iron Core & Spring (3 Req.)	.25
S-45000	Series Antenna Coupling Coil Assem.	.75

*Denotes Parts Not Previously Used.

Part No.	Description	Price
S-58095	FM Tuning Coil Assem. (3 Req.)	.60
S-58142	Pulley & Bushing Assem.	.80
S-58179	Drive Cord & Eyelet Assem.	.15
S-64842	FM Tuner Drive Shaft Assem.	2.30
*S-78076	Oscillator Coil Assem. (B.C. & L.W.)	2.80
S-78077	Antenna Coil Assem. (2-4 MHz)	1.00
*S-78078	Antenna Coil Assem. (4-9 MHz)	.80
*S-78079	Antenna Coil Assem. (9.4-10 MHz)	.80
*S-78080	Antenna Coil Assem. (11.4-12.2 MHz)	.80
*S-78081	Antenna Coil Assem. (14.7-15.7 MHz)	.80
*S-78082	Antenna Coil Assem. (17.1-18.5 MHz)	.80
*S-78083	Antenna Coil Assem. (20.7-22.4 MHz)	.80
*S-78084	Oscillator Coil Assem. (2-4 MHz)	.90
*S-78085	Oscillator Coil Assem. (4-9 MHz)	.90
*S-78086	Oscillator Coil Assem. (9.4-10 MHz)	.85
*S-78087	Oscillator Coil Assem. (11.4-12.2 MHz)	.85
*S-78088	Oscillator Coil Assem. (14.7-15.7 MHz)	.85
*S-78089	Oscillator Coil Assem. (17.1-18.5 MHz)	.85
*S-78090	Oscillator Coil Assem. (20.7-22.4 MHz)	.85
*S-78091	Mixer Coil Assem. (2-4 MHz)	.90
*S-78092	Mixer Coil Assem. (4-9 MHz)	.90
*S-78093	Mixer Coil Assem. (9.4-10 MHz)	.90
*S-78094	Mixer Coil Assem. (11.4-12.2 MHz)	.90
*S-78095	Mixer Coil Assem. (14.7-15.7 MHz)	.90
*S-78096	Mixer Coil Assem. (17.1-18.5 MHz)	.90
*S-78097	Mixer Coil Assem. (20.7-22.4 MHz)	.90
*S-78649	Coil, Bracket & Shield Assem.	6.30
*S-78665	Antenna Coil & Wire Assem. (2-4 MHz)	1.00
*S-78666	Antenna Coil & Wire Assem. (4-9 MHz)	.80
*S-78667	Antenna Coil & Wire Assem. (9.4-10 MHz)	.80
*S-78668	Antenna Coil & Wire Assem. (11.4-12.2 MHz)	.80
*S-78669	Antenna Coil & Wire Assem. (14.7-15.7 MHz)	.80
*S-78672	Oscillator Coil & Wire Assem. (B.C. & L.W.)	3.45
*S-78673	Oscillator Coil & Wire Assem. (2-4 MHz)	.90
*S-78674	Oscillator Coil & Wire Assem. (4-9 MHz)	.90
*S-78675	Oscillator Coil & Wire Assem. (9.4-10 MHz)	.85
*S-78676	Oscillator Coil & Wire Assem. (11.4-12.2 MHz)	1.60
*S-78677	Oscillator Coil & Wire Assem. (14.7-15.7 MHz)	1.60
*S-78678	Oscillator Coil & Wire Assem. (17.1-18.5 MHz)	1.60
*S-78679	Oscillator Coil & Wire Assem. (20.7-22.4 MHz)	1.60
*S-78689	Mixer Coil & Wire Assem. (B.C. & L.W.)	3.50
*S-78690	Mixer Coil & Wire Assem. (2-4 MHz)	.90
*S-78691	Mixer Coil & Wire Assem. (4-9 MHz)	1.30
*S-78692	Mixer Coil & Wire Assem. (9.4-10 MHz)	.90
*S-78693	Mixer Coil & Wire Assem. (11.4-12.2 MHz)	1.60
*S-78694	Mixer Coil & Wire Assem. (14.7-15.7 MHz)	1.60
*S-78724	R.F. Housing Assem.	2.30
*S-78743	Coil Mtg. Bracket & Clip Assem.	2.20
*S-79040	Tuner Housing Assem.	1.90
*S-79780	Coil Mtg. Bracket Assem.	.70
*S-80653	Bracket & Terminal Strip Assem.	.95
*S-85347	R.F. Shelf Bracket & Terminal Strip Assem.	

MODEL ROYAL 7000Y1
USING CHASSIS 18ZT40Z

Z4NL	1 1/2 V. Battery (9 Req.)	.25
1-19	Telescopic Antenna	6.85
11-247	Line Cord	1.30
15-108	Socket Shell	.25
16-3525	Packing Carton	
22-4501	500 Mfd. Electrolytic Capacitor - 20 V.	
22-4617	.01 Mf Disc Capacitor (2 Req.)	.10
36-556	Handle	2.50
39-75B	Earphone	.90
43-965	Antenna Pivot Housing	.60
43-1040	Battery Container (2 Req.)	.45
43-1099	Battery Container	.35
*44-84	Jack	
46-6251	Sprocket Knob (2 Req.)	.65
46-6359	Band Selector Knob	2.35
46-6361	Control Knob - Volume - Tone - Manual Gain (3 Req.)	1.00
46-6828	Control Knob - B.F.O.	.95
46-7382	Tuning Knob	1.30
49-1143	4" x 6" PM Speaker	7.40

Part No.	Description
54-12	6-32 x 5/16 Hex Nut - Nickel (Part Of S-85392)
54-347	6-32 'Keps' Nut (1 Mts. 57-7769, 11 Mt. 112-1438, 4 Mt. 112-2066 & 4 Mt. 49-1143)
54-412	Speed Nut (4 Req.)
54-583	1/4-32 x 3/8 Hex Nut - Chrome (Used On 44-84)
*54-789	Palnut (4 Mt. S-78792)
54-794	Tinnerman Speed Nut (3 Mt. 57-6658)
54-817	Tinnerman Speed Nut (8 Mt. 192-418)
56-557	Upper Door Pin (2 Req.)
56-596	Lower Door Pin
56-605	Lower Door Pin
57-6649	Name Plate (Part Of S-85394)
57-6657	Cabinet Top
57-6658	Base Plate
57-6679	Chart Light & Tuning Escutcheon (Part Of S-78773)
57-6708	Speaker Escutcheon
	857-181 Control Overlay
	883-91 Grille Backing Strip
	938-16 Grille
57-6801	Name Plate - Trans-Oceanic
57-6971	Battery Panel
57-6994	Cord Retaining Plate (2 Req.)
57-7330	Chassis Support Plate
*57-7654	Trim Plate (L.H.)
*57-7655	Trim Plate (R.H.)
*57-7769	Selector Knob - Background Plate
58-214	Plug - Jack
58-316	A.C. Input Plug
*59-1048	Dial Slide
63-1708	15 Ohm Resistor - 1/2 W. 10%
63-1932	3.3 Megohm Resistor - 1/2 W. 10%
69-262	8-32 x 1/2 Phillips Rd. Hd. Mach. Screw-Stat. Bronze (3 Used On S-85392)
*73-123	8-32 x 1/4 Allen Hd. Set Screw - Cuppoint (Part Of 46-6359)
76-1770	Pivot Shaft
78-1101	Three Contact Socket
78-1834	Pilot Light Socket & Wire
80-1091	Plate Return Spring
80-1998	Contact Spring
80-2010	Handle Spring (2 Req.)
80-2078	Spring (Part Of S-78777)
80-2165	Lower Door Spring
83-2785	Rubber Strip (Cabinet Back)
83-3024	Rubber Strip (Cabinet Assem.)
83-3672	8 Lug Terminal Strip
83-6538	Trim Strip (Used On 57-6658)
83-6543	Time Indicator Strip
83-6544	Trim Strip (Part Of S-78794)
83-6545	Trim Strip (Part Of S-78794)
83-6574	Tuning Escutcheon Trim Strip (Part Of S-78773)
83-6575	Chart Light Trim Strip (Part Of S-78773)
83-7000	Lower Door Trim Strip
83-7006	Protective Strip (Used On S-85392)
83-7420	Slide Switch Strip
*83-7628	Grille Backing Strip
*83-7629	Protective Cover Strip
85-818	Slide Switch (Part Of S-80964)
85-1043	Slide Switch (Part Of S-85392)
86-221	Terminal
86-306	Terminal
86-323	Spade Terminal (2 Req.)
86-512	Wire Retaining Pin
93-799	Brass Washer (Part Of S-85392)
93-1289	3/16 x 7/16 x 1/32 Thick Fibre Washer (Joins 15-108 & 78-1101)
93-1794	.082 x 1/4 x .015 Thick Brass Washer (1 Part Of Ea. S-78766)
93-1818	Shoulder Washer (3 Joins S-80963 & S-85392)
*93-1863	Vinyl Washer (Part Of 46-6359)
93-1884	Spring Washer (Part Of S-78774)
*93-1892	Finish Washer (Used On Jack & Plug)
*94-1549	Bushing (Cover Panel)

Part No.	Description	Price
*S-78739	Drive Cord, Eyelet & Spring Assem. - Pointer Guide	.55
*S-78740	Drive Cord & Eyelet Assem. - Dial Drive	.30
*S-78741	Drive Cord & Eyelet Assem. - Dial Drive	.30
S-85229	Wavemagnet Antenna Assem.	

R.F. TUNER COMPONENTS

12-3515	Slide Stop Bracket	.03
12-3517	Tuner Slide Bracket	.35
19-322	Coil Mtg. Clip (2 Part Of S-78743 & 3 Part Of S-78649) (5 Req.)	.05
19-442	Coil Mtg. Clip (21 Part Of S-78743)	.05
20-1256	10.7 MHz Trap Coil	.50
22-18	.0022 Mf Disc Capacitor - 500 V.	.25
22-2371	25 Pf Disc Capacitor - 25 V.	.25
22-2379	12 Pf Disc Capacitor - 500 V. (2 Req.)	.20
22-2594	17 Pf Disc Capacitor - 500 V.	.25
22-2729	.001 Mf Disc Capacitor - 25 V.	.25
22-2731	10 Pf Disc Capacitor - 500 V.	.25
22-2898	13 Pf Disc Capacitor	.15
22-2979	60 Pf Ceramic Capacitor - 500 V.	.30
22-3066	10 Pf Gimmick Capacitor - 500 V.	.20
22-3309	1.8 Pf Gimmick Capacitor - 500 V.	.20
22-3393	.01 Mf Disc Capacitor - 25 V. (4 Req.)	.25
22-3538	125 Pf Mica Capacitor - 100 V.	.25
22-3689	.05 Mf Disc Capacitor - 25 V. (14 Req.)	.30
22-3743	Threesection Variable Capacitor (Antenna, Mixer & Oscillator Tuning)	7.25
22-3748	.001 Mf Disc Capacitor - 1 KV.	.25
22-3749	1000 Pf Mica Capacitor - 100 V.	.90
22-3849	20 Pf Disc Capacitor - 500 V. (2 Req.)	.30
22-3902	Single Section Trimmer Capacitor	1.00
22-3955	.1 Mfd. Capacitor - 50 V.	.30
22-4613	1000 Pf Feed-Thru Capacitor - 500 V. (5 Req.)	.10
22-5092	30 Pf Ceramic Capacitor - 500 V.	.35
22-5128	4 Pf Disc Capacitor - 500 V.	.15
22-5276	125 Pf Ceramic Capacitor - 500 V.	.45
22-5318	34 Pf Disc Capacitor - 500 V.	.20
22-5319	38 Pf Disc Capacitor - 500 V.	.15
22-5320	42 Pf Capacitor - 500 V.	.20
22-5432	18 Pf Disc Capacitor - 500 V.	.15
22-5585	750 Pf Disc Capacitor - 500 V.	.10
*22-5588	60 Pf Disc Capacitor - 500 V.	.20
22-5589	85 Pf Disc Capacitor - 500 V.	.10
*22-5590	50 Pf Ceramic Capacitor - 500 V.	.10
*22-5623	1800 Pf Mica Capacitor - 100 V.	.80
*22-5624	3900 Pf Mica Capacitor - 100 V.	1.15
*22-5705	Six Section Trimmer Capacitor	5.10
*22-5861	Five Section Trimmer Capacitor - B.C. Mixer, L.W. Mixer, B.C. Oscillator, L.W. Oscillator & L.W. Oscillator Padder	3.60
*22-6017	Trimmer Capacitor - L.W. Antenna Trimmer (Fixed)	
*22-6045	Trimmer Capacitor - B.C. Antenna Trimmer (Fixed)	
24-1170	FM Tuner Cover	.25
*52-1486	Coaxial Cable	.50
*52-1608	Shielded Cable	.55
*52-1781	Shielded Cable	
54-139	3/8-32 x 9/16 Hex Palnut (Used On 85-1208)	.03
54-227	4-40 x 1/4 x 3/32 Thk. Hex Nut - N.P. (2 Used On 85-1208)	.03
54-633	Retaining Nut (Use Only When 78-1675 Is Used) (3 Part Of S-85347 & 2 Part Of S-79040)	.10
*56-493	Guide Pin	.10
*57-6678	Switch Mtg. Plate	.25
*57-6867	Trimmer Mtg. Plate	.03
63-1743	100 Ohm Resistor - 1/2 W. 10% (2 Req.)	.17
63-1772	470 Ohm Resistor - 1/2 W. 20%	.17
63-1775	560 Ohm Resistor - 1/2 W. 10% (2 Req.)	.17
63-1779	680 Ohm Resistor - 1/2 W. 20%	.17
63-1788	1200 Ohm Resistor - 1/2 W. 5%	.34
63-1789	2 K Ohm Resistor - 1/2 W. 5%	.17
63-1792	1500 Ohm Resistor - 1/2 W. 10%	.17
63-1796	1800 Ohm Resistor - 1/2 W. 10%	
63-1799	2200 Ohm Resistor - 1/2 W. 10%	.17
63-1819	6800 Ohm Resistor - 1/2 W. 5%	.34

Part No.	Description	Price
95-2671	Power Transformer	4.50
96-696	Pivot Leg (1 Part Of Ea. S-78766)	.20
100-218	Chart Light Lamp - GE No. 123	.17
*101-4453	Transistor Layout, Patent & Warning Label	
110-606	Padding - R.H.	2.20
*110-607	Grille Cloth (Part Of S-85392)	.10
110-612	Padding - L.H.	2.15
112-320	6-20 x 3/8 Pan Hd. Self-Tap. Screw-Stat. Bronze (Joins 43-965 & 1-19)	.03
112-1124	4-24 x 11/32 Special Fillister Hd. Self-Tap. Screw - Black Zinc Plate (4 Req.)	.03
112-1376	4-24 x 3/8 Phillips Pan Hd. Self-Tap. Screw-Stat. Bronze (2 Mt. S-85392)	.03
112-1438	6-32 x 5/16 Special Hd. Mach. Screw (1 Mts. 95-2671, 2 Used On 57-7769, 4 Used On 57-6708, 5 Mt. S-85389 & 6 Mt. S-85390)	.03
112-1714	6-32 x 3/16 Phillips Pan Hd. Mach. Screw - Cadmium (4 Join 83-6544 & S-78794)	.05
112-1865	6-20 x 7/16 Phillips Pan Hd. Self-Tap. Screw - Cadmium (1 Mts. 18ZT40Z)	.03
112-2032	6-20 x 7/16 Special Hd. Self-Tap. Screw-Stat. Bronze (4 Mt. 166-193)	.03
112-2038	6-32 x 5/32 Special Hd. Mach. Screw-Stat. Bronze (4 Mt. 57-6658)	.03
112-2065	4-24 x 1/4 Phillips Fl. Hd. Self-Tap. Screw - Chrome (4 Mt. S-78774)	.03
112-2066	6-32 x 5/16 Special Hd. Mach. Screw - Chrome (4 Mt. 36-556)	.03
112-2071	4-24 x 1/4 Phillips Pan Hd. Self-Tap. Screw - Stat. Bronze (1 Used On 80-1091 & 2 Used On 83-7006) (3 Req.)	.03
112-2072	6-20 x 3/8 Phillips Truss Hd. Self-Tap. Screw - Stat. Bronze (1 Mts. Ea. 57-6994, S-80964, 95-2671, S-85392, 2 Used On 83-3672 & 3 Part Of S-80963) (10 Req.)	.03
112-2096	6-20 x 3/8 Phillips Fl. Hd. Self-Tap. Screw - Cadmium (2 Mt. Ea. S-78766)	.03
112-2097	6-20 x 1/2 Phillips Pan Hd. Self-Tap. Screw - Cadmium (3 Mt. 18ZT40Z)	.03
*112-2122	4-24 x 1/4 Special Fl. Trim Hd. Screw - Cadmium (2 Mt. S-85394 & 6 Mt. S-85395) (8 Req.)	
114-811	6-20 x 1/4 x 1/4 Hex Hd. Self-Tap. Screw-Stat. Bronze (2 Mt. Ea. S-78786)	.03
114-813	6-20 x 3/8 Hex Hd. Self-Tap. Screw-Stat. Bronze (4 Mt. S-78777)	.03
114-1095	Special Hex Hd. Screw (Part Of S-85392)	.65
*166-105	Bumper (4 Req.)	.03
166-193	Cabinet Foot (4 Req.)	.05
188-140	Retaining Ring	.03
188-155	Knob Clamping Ring (Part Of 46-7382)	.05
188-168	Retaining Ring (1 Joins Ea. 46-6251 & S-78786) (2 Req.)	.10
188-441	Knob Clamping Ring (Part Of 46-6361 Or 46-6828)	.03
189-372	Plastic Bag	4.05
189-377	Envelope (For 57-6801)	.03
192-418	Dial Crystal	7.30

Part No.	Description	Price
199-466	Antenna Sleeve	1.20
*202-3290	Specifications Booklet	
*202-3291	Instruction Book	
*202-3292	Short Wave Chart Book	5.40
*202-3371	Service Notes	
212-71	Silicon Rectifier (2 Req.)	1.25
220-142	Packing Cushioning Material	
S-78766	Handle Swivel Assem. (2 Req.)	1.10
S-78772	Chart Light Door & Socket Assem. (Part Of S-78773)	1.50
S-78773	Chart Light & Tuning Escutcheon Assem. (Part Of S-85395)	5.55
S-78774	Log Chart Retaining Plate & Azimuth Scale Assem.	7.45
S-78777	Antenna & Sleeve Assem.	10.20
S-78778	Contact Spring & Strip Assem. - R.H.	.55
S-78779	Contact Spring & Strip Assem. - L.H.	.55
S-78786	Bracket & Stud Assem. (2 Req.)	1.25
S-78791	Chart Light & Trim Strip Assem.	2.40
S-78792	Tuning Escutcheon & Trim Strip Assem.	3.60
S-78794	Upper Door & Trim Assem.	4.05
S-80527	Map Housing & Crystal Assem.	9.70
S-80963	Plate & Stud Assem.	1.05
S-80964	Switch & Bracket Assem.	1.10
S-80967	Elastic Cord & Staple Assem.	.10
*S-85389	Cabinet End Plate Assem. - R.H.	9.60
*S-85390	Cabinet End Plate Assem. - L.H.	
*S-85392	Cabinet Back Assem.	
*S-85394	Lower Door & Trim Assem.	
*S-85395	Cabinet Assem.	
*S-85684	Battery Cover Assem.	

"OPTIONAL AT EXTRA COST"

S-75893	Swivel Base Assem.	
16-3527	Carton	
*57-6616	Base Plate (Bottom)	
57-6620	Base Support (Ring)	
80-2034	Tension Spring (2 Req.)	.05
93-1682	Spring Washer	.05
93-1790	Base Washer	
96-694	Leg - Left (2 Req.)	
96-695	Leg - Right (2 Req.)	
112-2041	6-18 x 1/4 Phillips Pan Hd. Self-Tap. Screw - N.P. (2 Mts. Ea. 57-6618)	
112-2043	8-32 x 1/4 Phillips Fl. Hd. Mach. Screw - N.P. (3 Mts. S-78811)	
112-2109	6-32 x 3/8 Phillips Fl. Hd. Mach. Screw - Spec. - N.P. (1 Used On Ea. 96-694 & 96-695) (4 Req.)	.03
188-140	Retaining Ring	.03
199-464	Spacer Sleeve (1 Used On Ea. 96-694 & 96-695) (4 REq.)	.10
202-3070	Instruction Sheet	.05
S-78811	Swivel Base Plate Assem. (Top)	4.80

*Denotes Parts Not Previously Used.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

ZENITH RADIO CORPORATION

1900 N. Austin Avenue Chicago, Illinois 60639

202-3371 RR

Printed in U.S.A.

CHASSIS 18ZT40Z

ITEM NO.	PART NO.	DESCRIPTION
L1	149-311	Iron Core Sleeve
L2	S-23757	5.2 Uh Choke Coil
L3	149-311	Iron Core Sleeve
L4	INT8 BOT	2nd I.F. Transformer Pri. 10.7 MHz
L5	INT8 TOP	2nd I.F. Transformer Sec. 10.7 MHz
L6	S-23757	5.2 Uh Choke Coil
L7	INT11 BOT	3rd I.F. Transformer Pri. 10.7 MHz
L8	INT11 TOP	3rd I.F. Transformer Sec. 10.7 MHz
L9	INT12 BOT	3rd Transformer Pri. 455 KHz
L10	INT12 TOP	3rd Transformer Sec. 455 KHz
L11	20-1256	10.7 MHz Trap Coil
L12	INT13 BOT	Ratio Detector Transformer Pri. 10.7 MHz
L13	INT13 TOP	Ratio Detector Transformer Sec. 10.7 MHz
L14	S-58095	Antenna Coil Assembly
L15	149-311	Iron Core Sleeve
L16	S-58095	Det. Coil Assembly
L17	20-1256	10.7 MHz Trap Coil
L18	S-58095	Osc. Coil Assembly
L19	INT15	1st I.F. Transformer Pri.
L20	INT15	1st I.F. Transformer Sec.
L22	S-45000	Series Antenna Coupling Coil Assembly
L23	S-45000	Series Antenna Coupling Coil Assembly
L24	S-85229	Wavemagnet Winding Assembly (Fixed)
L25	*S-78083	13 M Antenna Coil (20.7-22.4 MHz - Top)
L26	*S-78082	16 M Antenna Coil (17.1-18.5 MHz - Bottom)
L27	*S-78081	19 M Antenna Coil (14.7-15.7 MHz - Top)
L28	*S-78080	25 M Antenna Coil (11.4-12.2 MHz - Bottom)
L29	*S-78079	31 M Antenna Coil (9.4-10 MHz - Top)
L30	*S-78078	S.W. 2 Antenna Coil (Bottom)
L31	S-78077	S.W. 1 Antenna Coil (Top)
L32	*S-78097	13 M Mixer Coil (20.7-22.4 MHz - Top)
L33	*S-78096	16 M Mixer Coil (17.1-18.5 MHz - Top)
L34	*S-78095	19 M Mixer Coil (14.5-15.7 MHz - Top)
L35	*S-78094	25 M Mixer Coil (11.4-12.2 MHz - Top)
L36	*S-78093	31 M Mixer Coil (9.4-10 MHz - Top)
L37	*S-78092	S.W. 2 Mixer Coil (Top)
L38	*S-78091	S.W. 1 Mixer Coil
L39A, L39B	S-83512	B.C. Mixer Coil (Top); L.W. Mixer Coil (Bottom)
L40	*S-78090	13 M Oscillator Coil (20.7-22.4 MHz - Bottom)
L41	*S-78089	16 M Oscillator Coil (17.2-18.5 MHz - Bottom)
L42	*S-78088	19 M Oscillator Coil (14.7-15.7 MHz - Bottom)
L43	*S-78087	25 M Oscillator Coil (11.4-12.2 MHz - Bottom)
L44	*S-78086	31 M Oscillator Coil (9.4-10 MHz - Bottom)
L45	*S-78085	S.W. 2 Oscillator Coil (Bottom)
L46	*S-78084	S.W. 1 Oscillator Coil (Bottom)
L47A, L47B	S-78076	B.C. Oscillator Coil (Bottom); L.W. Oscillator Coil (Top)
L48	149-333	Iron Core Sleeve
L49	149-311	Iron Core Sleeve
T1	*95-2612	RF Input Transformer (W.B.)
T2	*95-2612	RF Input Transformer (W.B.)
T3	95-2613	RF Output Transformer (W.B.)
T4	*95-2611	10.7 MHz I.F. Transformer (W.B.)
T5	*95-2614	Oscillator Transformer (W.B.)
T6	95-2002	1st I.F. Primary Transformer (AM)
T7	95-2003	1st I.F. Secondary Transformer (AM)
T8	95-2610	2nd I.F. Transformer (FM)
T9	*95-2604	2nd I.F. Primary Transformer (AM)
T10	*95-2605	2nd I.F. Secondary Transformer (AM)
T11	95-2610	3rd I.F. Transformer (FM)
T12	95-2606	3rd I.F. Transformer (AM)
T13	*95-2608	Ratio Detector Transformer (FM)
T14	*95-2607	4th I.F. Primary Transformer (AM)
T15	*95-2609	1st I.F. Transformer (FM)
T16	*95-2634	B.F.O. Transformer
T17	*95-2671	Power Transformer
C1	22-3768	68 Pf Ceramic Disc 5% 500 V
C2	22-5432	18 Pf Ceramic Disc 5% 500 V
C3	22-2720	1 Pf Tubular Gimmick 10% 500 V
C4	22-3558	16 Pf Ceramic Disc 5% 500 V
C5	22-2595	60 Pf Ceramic Disc 5% 500 V
C6	22-5432	18 Pf Ceramic Disc 5% 500 V
C7	22-4728	1000 Pf F.T. 500 V
C8	22-4728	1000 Pf F.T. 500 V
C9	22-2379	12 Pf Ceramic Disc 5% 500 V
C10	22-5092	30 Pf Ceramic Disc 5% 500 V
C11	22-3939	26 Pf Ceramic Disc 5% 500 V
C12	22-2891	250 Pf Mica 5% 100 V
C13	22-5432	18 Pf Ceramic Disc 5% 500 V
C14	22-4728	1000 Pf F.T. 500 V
C15	22-4728	1000 Pf F.T. 500 V
C16	22-3748	.001 Mfd Ceramic Disc 10% 1000 V
C17	22-2898	13 Pf Ceramic Disc 5% 500 V
C18	22-3689	.05 Mfd Ceramic Disc 25 V
C19	22-3689	.05 Mfd Ceramic Disc 25 V
C20	22-5585	750 Pf Ceramic Disc 10% 500 V
C21	22-3689	.05 Mfd Ceramic Disc 25 V
C22	22-3955	.1 Mfd Mylar Tub. 20% 50 V
C23	22-2594	17 Pf Ceramic Disc 5% 500 V
C24	22-3749	1000 Pf Mica 5% 100 V
C25	22-3689	.05 Mfd Ceramic Disc 25 V
C26	22-3538	125 Pf Mica 5% 100 V
C27	22-3689	.05 Mfd Ceramic Disc 25 V
C28	22-3689	.05 Mfd Ceramic Disc 25 V
C29	*22-5586	43 Pf Ceramic Disc 5% 500 V
C30	22-2898	13 Pf Ceramic Disc 5% 500 V
C31	22-3689	.05 Mfd Ceramic Disc 25 V
C32	22-3689	.05 Mfd Ceramic Disc 25 V
C33	22-5761	470 Pf Ceramic Disc 10% 1000 V
C34	22-3689	.05 Mfd Ceramic Disc 25 V
C35	22-3689	.05 Mfd Ceramic Disc 25 V
C36	22-2381	6 Pf Ceramic Disc + . 5 Pf 500 V
C37	22-2703	220 Pf Ceramic Disc 10% 500 V
C38	22-3753	20 Mfd. Electrolytic 3 V
C39	22-2729	.001 Mfd Ceramic Disc 25 V
C40	22-3689	.05 Mfd Ceramic Disc 25 V
C41	22-3689	.05 Mfd Ceramic Disc 25 V
C42	22-3689	.05 Mfd Ceramic Disc 25 V
C43	22-2379	12 Pf Ceramic Disc 5% 500 V
C44	22-3255	330 Pf Ceramic Disc 10% 500 V
C45	22-2654	50 Pf Ceramic Disc 5% 500 V
C46	22-2884	5 Mfd Electrolytic 12 V
C47	22-5652	.027 Mfd Mylar Tub. 10% 50 V
C48	22-5596	.33 Mfd Mylar Tub. 20% 50 V
C49	22-5319	38 Pf Ceramic Disc 5% 500 V
C50	22-2731	10 Pf Ceramic Disc + .5 Pf 500 V
C51	22-2729	.001 Mfd Ceramic Disc 25 V
C52	22-4613	1000 Pf F.T. 500 V
C53	22-3393	.01 Mfd Ceramic Disc 25 V
C54	22-4613	1000 Pf F.T. 500 V
C55	22-5320	42 Pf Ceramic Disc 5% 500 V
C56	22-3066	10 Pf Tubular Gimmick 500 V
C57	22-3393	.01 Mfd Ceramic Disc 25 V
C58	22-3309	1.8 Pf Tubular Gimmick 500 V
C59	22-4613	1000 Pf F.T. 500 V
C60	22-2379	12 Pf Ceramic Disc 5% 500 V
C61	22-3849	20 Pf Ceramic Disc 5% 500 V
C62	22-3393	.01 Mfd Ceramic Disc 25 V
C63	22-4613	1000 Pf F.T. 500 V
C64	22-4613	1000 Pf F.T. 500 V
C65	22-3393	.01 Mfd Ceramic Disc 500 V
C66	*22-6045	B.C. Ant. Trimmer
C67	*22-6017	L.W. Antenna Trimmer
C68	22-3689	.05 Mfd Ceramic Disc 25 V
C69	22-5589	85 Pf Ceramic Disc 10% 500 V
C70	*22-5588	60 Pf Ceramic Disc 10% 500 V
C71A	22-5705	S.W. 2 Antenna Trimmer
C71B		S.W. 1 Antenna Trimmer
C71C		S.W. 2 Mixer Trimmer
C71D		S.W. 1 Mixer Trimmer
C71E		S.W. 2 Oscillator Trimmer
C71F		S.W. 1 Oscillator Trimmer
C72A	*22-5861	B.C. Mixer Trimmer
C72B		L.W. Mixer Trimmer
C72C		B.C. Oscillator Trimmer
C72D		L.W. Oscillator Trimmer
C72E		L.W. Oscillator Padder
C73	22-3689	.05 Mfd Ceramic Disc 25 V
C74	22-3689	.05 Mfd Ceramic Disc 25 V
C75	22-2371	25 Pf Ceramic Disc 10% 25 V
C76	*22-5590	50 Pf Ceramic Disc 10% 500 V

*Denotes Parts Not Previously Used.

ALIGNMENT PROCEDURE

STEP NO.	CONNECT GENERATOR TO	INPUT SIGNAL FREQUENCY	BAND	DIAL FREQUENCY	ADJUST	PURPOSE
NOTE - Perform A.M. I.F. and B.F.O. alignment with bandwidth switch in sharp position, manual gain control off. Connect meter across speaker voice coil.						
1	Test Point "5"	455 KHz	BC	1600 KHz	T12, T10, T9, T7, T6, T14	Align A.M. I.F. for max.
NOTE - Turn B.F.O. Control ON and set to mid rotation with bandwidth switch in sharp.						
2*	Test Point "5"	455 KHz	BC	1600 KHz	T16	Adjust BFO for zero beat.
NOTE - Place bandwidth switch to normal and turn B.F.O. to off.						
3*	One turn loop loosely coupled to wavemognet	1620 KHz	BC	1620 KHz Gang Open	C72C	Set B.C. oscillator to scale
4*		600 KHz	BC	600 KHz	C82	
5		Repeat steps 3 and 4 until minimum change				
6*		1420 KHz	BC	1420 KHz	C66, C72A	Align B.C. antenna and mixer for maximum
7*		600 KHz	BC	600 KHz	L39A	
8		Repeat steps 6 and 7 until minimum change				
9*		405 KHz	LW	405 KHz Gang Open	C72D	Set L.W. Oscillator to scale.
10*		160 KHz	LW	160 KHz	C72E	
11		Repeat steps 9 and 10 until minimum change				
12*		375 KHz	LW	375 KHz	C67, C72B	Align L.W. Antenna and mixer for maximum
13*		160 KHz	LW	160 KHz	L39B	
14		Repeat steps 12 and 13 until minimum change				
NOTE - Align F.M. with A.F.C. switch off.						
15	Test Point "B" **	10.7 MHz modulated	FM	98 MHz	T11, T8, T15 and top of T13	Align F.M. I.F. and Ratio Detector Pri. Connect meter across voice coil and reduce input so output will not be greater than 0.4 volts.
16		10.7 MHz modulated	FM	98 MHz	Bottom of T13	Align FM Ratio Detector Sec. Ploce meter probe on pin 6 of T13 and adjust bottom of T13 to zero after determining that there is a symmetrical swing around this zero point
17		Repeat steps 15 and 16 until minimum change				
18	FM Antenna Terminals ***	98 MHz modulated	FM	98 MHZ	L18	Set FM Oscillator to scale-meter across voice coil
19		98 MHz modulated	FM	98 MHz	L14, L16	Align FM antenna and detector for maximum
20		****	VHF	****	T5, T3, T1, T2, T4	Align weather band for maximum.
21	3 feet of wire approximately 1 foot from and parallel to Extended Waverod.	3.4 MHz	SW1	3.4 MHz	C71F	Set SW1 Oscillator to scale
22		1.8 MHz	SW1	1.8 MHz	L46	
23		Repeat steps 21 and 22 until minimum change				
24		3.4 MHz	SW1	3.4 MHz	C71B, C71D	Align SW1 Antenna and mixer for maximum.
25		1.8 MHz	SW1	1.8 MHz	L38, L31	
26		Repeat steps 24 and 25 until minimum change				
27		8.75 MHz	SW2	8.75 MHz	C71E	Set SW2 Oscillator to scale.
28		3.9 MHz	SW2	3.9 MHz	L45	
29		Repeat steps 27 and 28 until minimum change				
30		8.75 MHz	SW2	8.75 MHz	C71A, C71C	Align SW2 Antenna and mixer for maximum
31		3.9 MHz	SW2	3.9 MHz	L30, L37	
32		Repeat steps 30 and 31 until minimum change				
33		9.7 MHz	31M	9.7 MHz	L44, L29, L36	Align 31M, 25M, 19M, 16M, and 13M Oscillator, Antenna and Mixer.
34		11.8 MHz	25M	11.8 MHz	L43, L28, L35	
35		15.2 MHz	19M	15.2 MHz	L42, L27, L34	
36		17.8 MHz	16M	17.8 MHz	L41, L26, L33	
37		21.6 MHz	13M	21.6 MHz	L40, L25, L32	

* Rock Tuning Capacitor when making adjustment.

** Probe from generator should be isolated through a .05 MFD Capacitor.

*** Probe from generator should be terminated with the proper resistor to match 72 ohm line input impedance.

**** VHF Band must be realigned when crystals are changed. Factory shipped with crystal for operation on 162.55 MHZ.