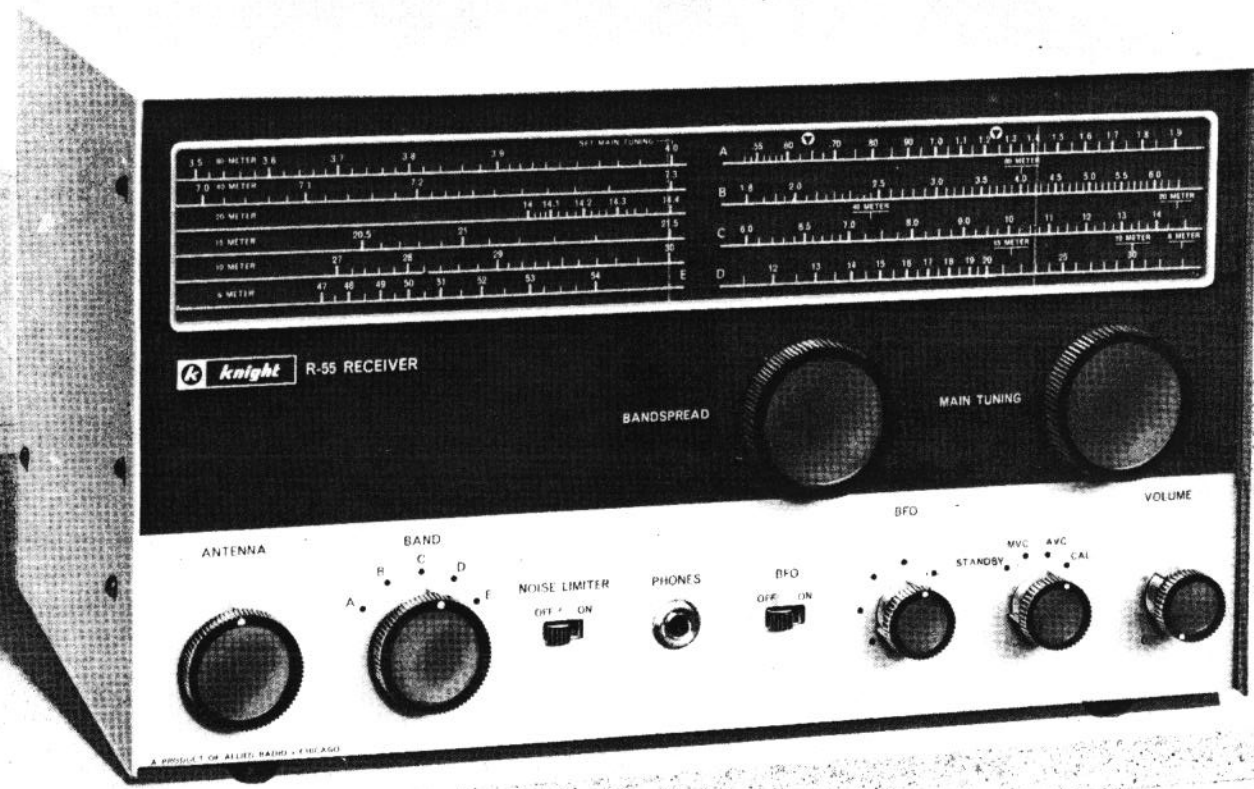
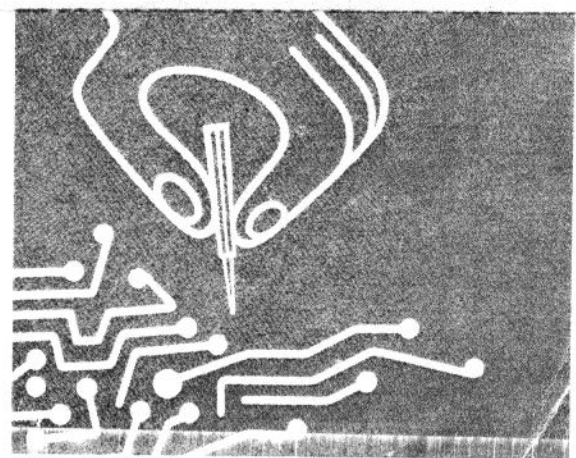


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R-55 5-BAND SHORTWAVE RECEIVER 83 YU 935

ASSEMBLY MANUAL



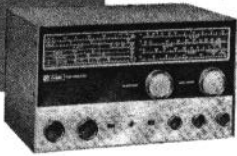


FIGURE 2

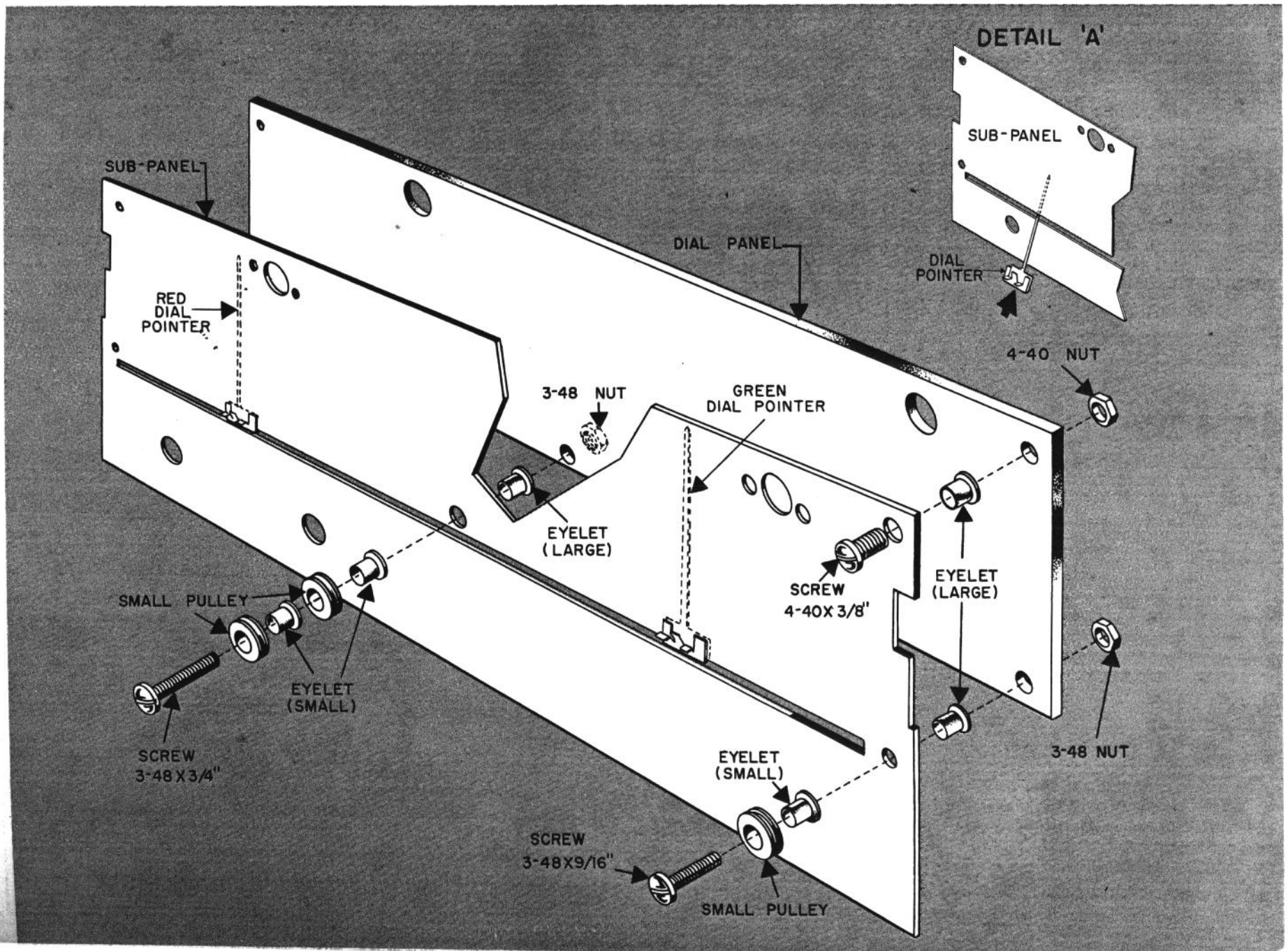
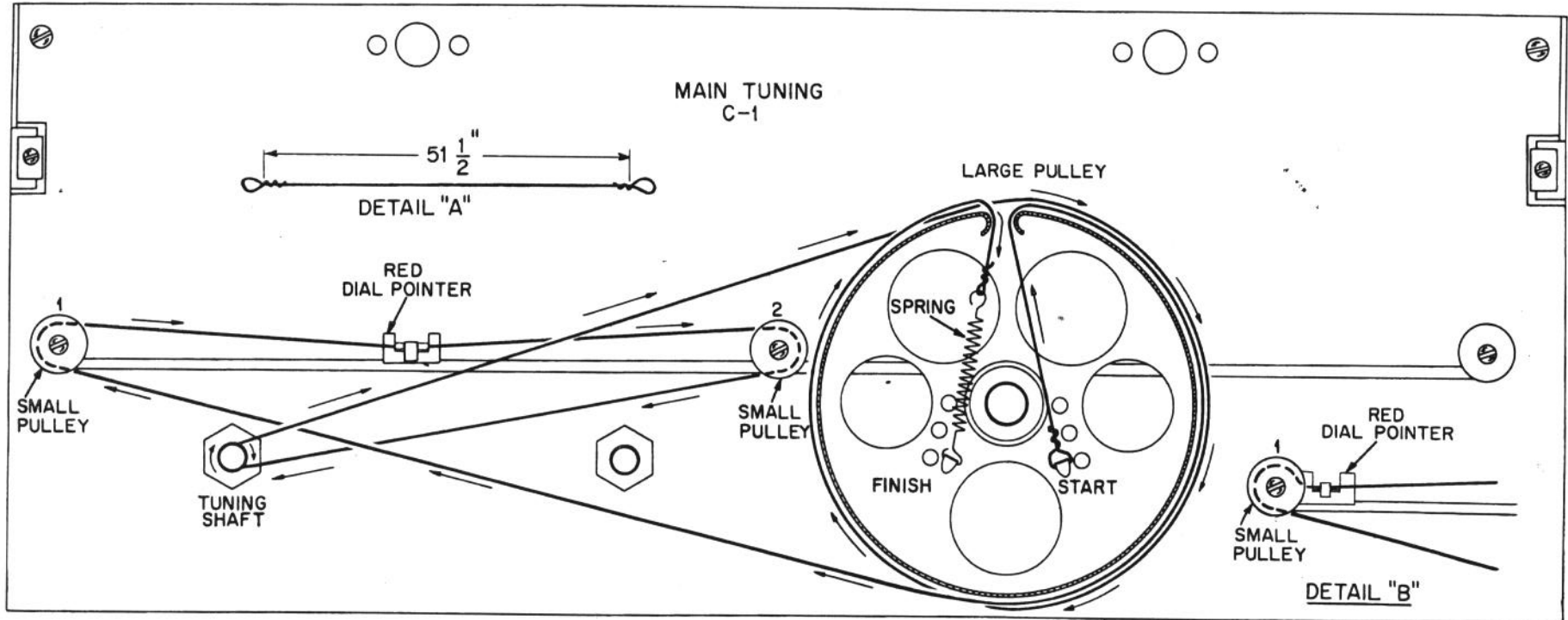
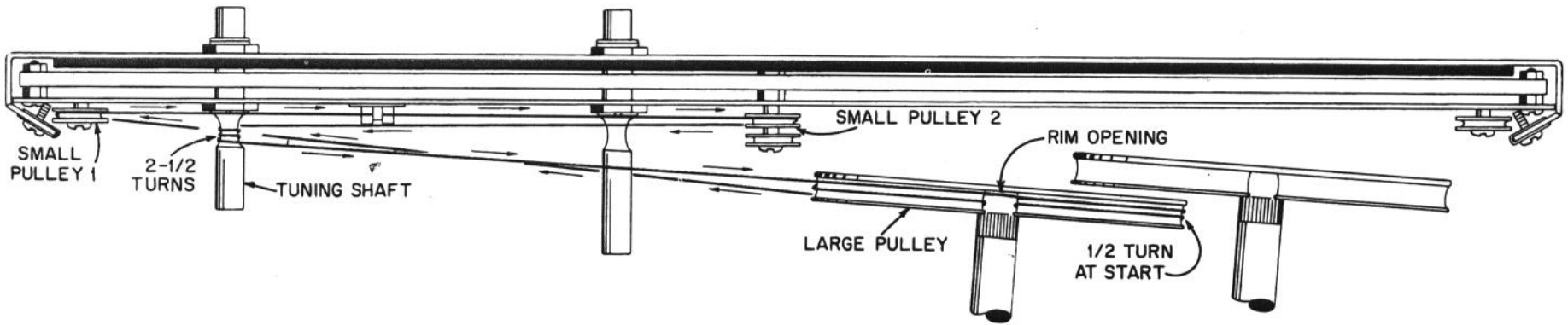
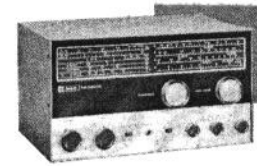


FIGURE 18



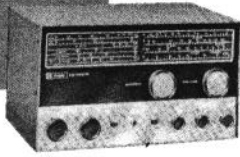


FIGURE 19

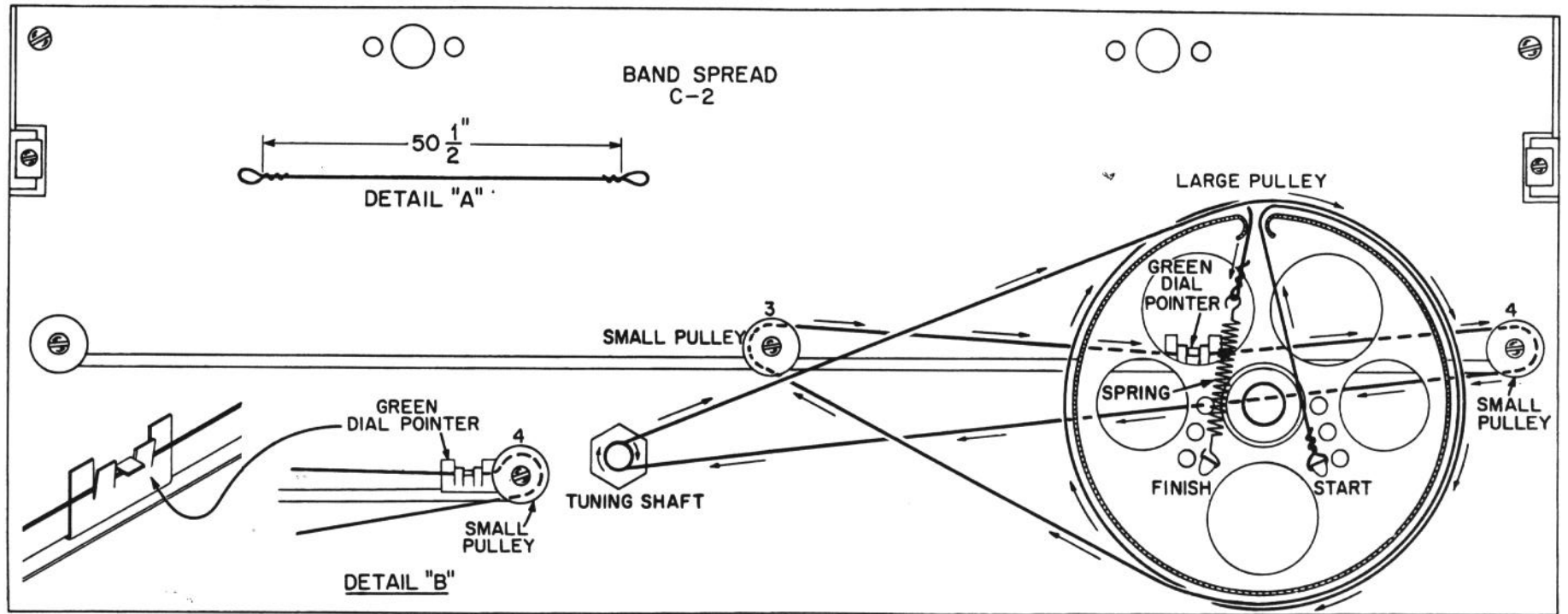
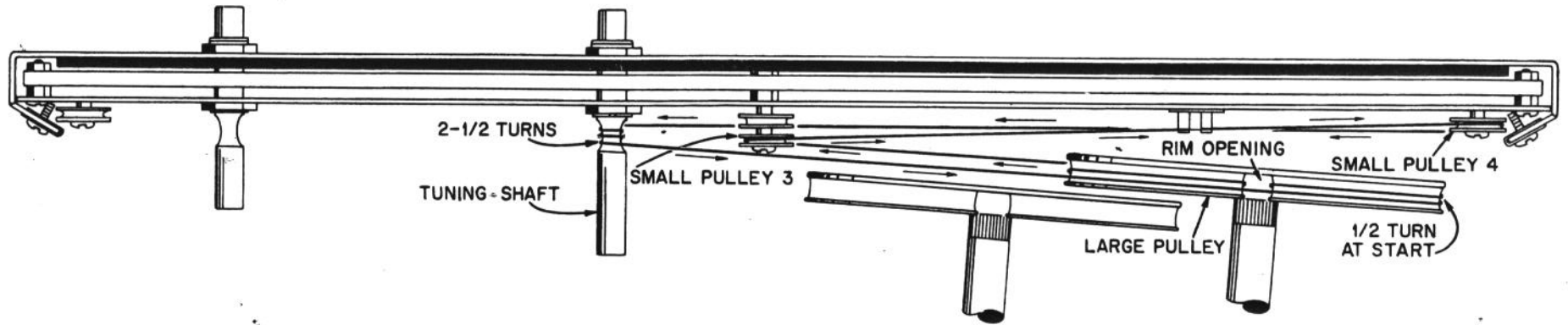
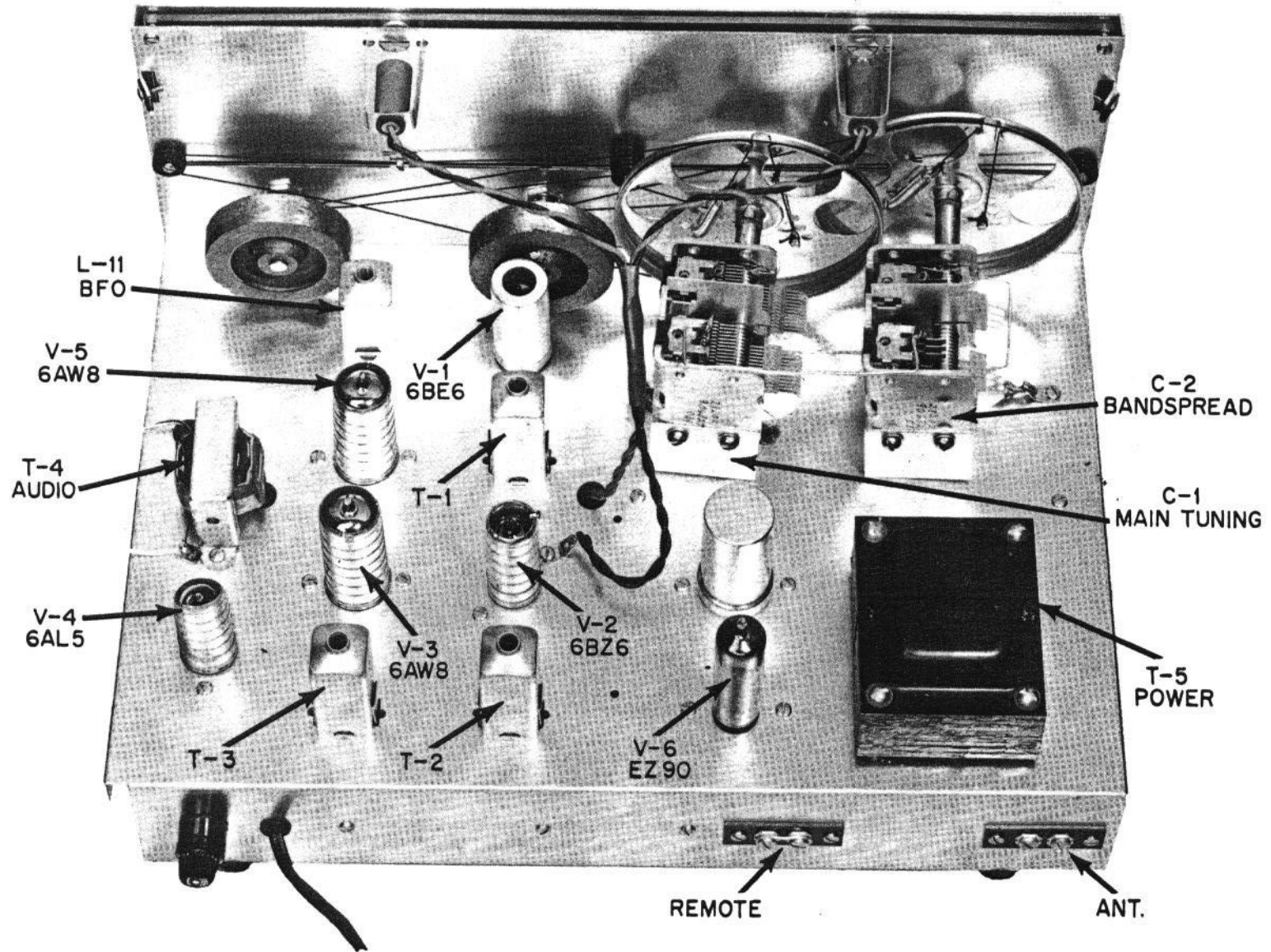
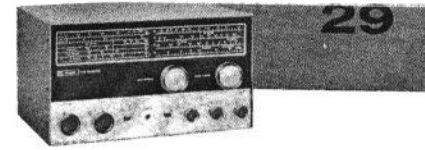


FIGURE 32





ON THE AIR ALIGNMENT

For alignment of all bands, the controls should be set as follows unless otherwise stated.

VOLUME set to maximum

BFO set to OFF

NOISE LIMITER set to OFF

STANDBY-MVC-AVC-CAL set to MVC

BANDSPREAD pointer set to SET MAIN TUNING

BAND SWITCH set to band being aligned

I.F. ALIGNMENT. See Figure 32.

BAND A

.53mc to 1.9mc (broadcast band)

Connect an antenna to terminal 1 of TS-1 (marked ANT on the chassis). See section on antenna.

Plug the AC line cord in a 110 v. 60 cycle outlet.

At the low end of BAND A tune in a local broadcast station with the MAIN TUNING dial.

Insert the plastic tuning rod through the top of T-3 until it engages the bottom tuning slug. Adjust this slug for maximum volume, then adjust the top tuning slug for maximum.

Similarly adjust T-2, then T-1.

NOTE: L-1 to L-10 have been preadjusted at the factory. Only a slight adjustment will be necessary to peak these coils. These adjustments are made from the bottom of the chassis with the bottom cover attached.

BAND A

At the HIGH END of the band, tune in a local broadcast station whose frequency of transmission is known.

Simultaneously adjust the MAIN TUNING and C-6 until the signal being received is loudest and at the correct location on the dial.

Tune in a known frequency at the LOW END of the band.

Simultaneously adjust the MAIN TUNING and L-6 until the signal being received is loudest and at the correct location on the dial.

Without changing the MAIN TUNING dial, adjust L-1 for maximum volume. Because of interaction between C-6 and L-6 it will be necessary to repeat these adjustments several times for best accuracy.

BAND B

1.8mc to 6.3mc (80 meters)

Rotate the ANTENNA control until it is almost counterclockwise.

Tune in station WWV at 5mc. In some areas, WWV can only be received at night.

Simultaneously adjust the MAIN TUNING and L-7 until WWV is loudest and the dial pointer reads 5mc.

Adjust L-2 for maximum volume.

BAND C

6mc to 14.4mc (20 and 40 meters)

ANTENNA control to center of rotation.

Tune to station WWV at 10mc.

Simultaneously adjust the MAIN TUNING and L-8 until WWV is loudest and the dial pointer reads 10mc.

Tune L-3 for maximum volume.

BAND D

11.5mc to 33mc (10 and 15 meters)

ANTENNA control almost fully counterclockwise.

Tune to station WWV at 15mc. WWV can be received best during the day.

Simultaneously adjust MAIN TUNING and L-9 until WWV is loudest and the dial pointer reads 15mc.

Tune L-4 for maximum volume.

BAND E

47mc to 54mc (6 meters)

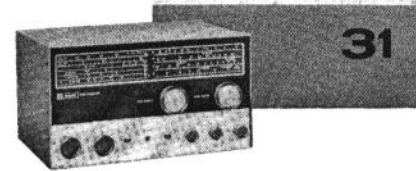
ANTENNA control almost fully clockwise.

MAIN TUNING set to 6 METERS.

Rotate the BANDSPREAD to a strong signal of known frequency.

Simultaneously adjust the BANDSPREAD and L-10 until the signal is loudest and at the correct location on the BANDSPREAD dial.

Tune L-5 for maximum volume.

**BFO**

STANDBY-MVC-AVC-CAL set to MVC

BFO set to ON

Tune to a strong signal on any band except the broadcast band (A).

As you rotate the BFO control a whistle should be heard. If not, adjust L-11 from the top of the chassis.

ALIGNMENT WITH INSTRUMENTS

EQUIPMENT REQUIRED

Voltmeter capable of reading down to 0.5 volts AC.

Signal generator with ranges from 530kc to 54mc. 30% modulation at 400 cycles.

300 μf capacitor.

SEE FIGURE 33.

Connect the coaxial cable to the generator as shown.

Connect one lead of the 300 μf capacitor to the ANT terminal. Connect the other lead to the center conductor of the coaxial cable coming from the signal generator. Connect the shield wire of the cable to the GR terminal of the receiver.

Connect the leads of the voltmeter to the speaker terminals.

STANDBY-MVC-AVC-CAL set to MVC

NOISE LIMITER set to OFF

BFO set to OFF

NOTE: As the MAIN TUNING pointer is moved up scale, the ANTENNA control should be increased proportionately. That is, when the MAIN TUNING pointer is at the high end of the band the ANTENNA control should be almost fully clockwise (open); at the center of the band the ANTENNA control should be at mid-rotation; at the low end of the band the ANTENNA control should be almost fully counterclockwise (closed).

Follow the instructions on the alignment chart.

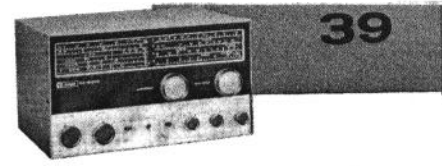
ALIGNMENT CHART

BAND	MAIN TUNING MC	BAND SPREAD	SIGNAL GENERATOR MC	ANTENNA CONTROL	ADJUST FOR MAXIMUM
A	.53	SET MAIN TUNING	1.65	*OPEN	T-3 TOP & BOTTOM
A	SAME	SAME	SAME	SAME	T-2
A	SAME	SAME	SAME	SAME	T-1
REPEAT FIRST THREE STEPS					
A	.53	SET MAIN TUNING	.53	**CLOSED	L-6
A	1.9	SAME	1.9	OPEN	C-6
REPEAT ABOVE TWO STEPS					
A	.6	SET MAIN TUNING	.6	ALMOST CLOSED	L-1
B	1.9	SAME	1.9	SAME	L-7
B	2.5	SAME	2.5	¼ OPEN	L-2
C	6.0	SAME	6.0	SAME	L-8
C	6.0	SAME	6.0	SAME	L-3
D	11.5	SAME	11.5	SAME	L-9
D	11.5	SAME	11.5	SAME	L-4
E	6M	50	50	ALMOST OPEN	L-10
***SET GENERATOR AT 46.8Mc AND CHECK FOR IMAGE					
E	6M	50	50	ALMOST OPEN	L-5

*OPEN means clockwise.

**CLOSED means counterclockwise.

***Leave MAIN TUNING at 50 Mc and set generator at 46.8 Mc. An image of the tone heard at 50 Mc should be heard at reduced volume. If you cannot hear this image, L-10 is tuned incorrectly.



RESISTANCE CHART

TUBE	PIN								
	1	2	3	4	5	6	7	8	9
V-1	22K	0	0	0	2.7K*	10K*	0
V-2	1.7 Meg	180Ω	0	0	1.8K*	22K*	0
V-3	2.7K	100K	220K*	0	0	180Ω	1.7 Meg	47K*	1.3K*
V-4	0	2.2 Meg	0	0	200K	N.C.	620K
V-5	∞	4.7K	320K*	0	0	150Ω	470K	10K*	600Ω*
V-6	145Ω	N.C.	0	0	N.C.	145Ω	330Ω*

All measurements made with reference to chassis ground unless otherwise specified.
*Measured from terminal 2 of C-36.

Set controls as follows for resistance measurements:
Band switch to A—BFO OFF—Volume open—AVC—Noise limiter OFF

SPECIFICATIONS

TUNING RANGES	BAND A .53mc to 1.9mc BAND B 1.8mc to 6.3mc BAND C 6mc to 14.5mc BAND D 11.5mc to 33mc BAND E 47mc to 54mc
ANTENNA INPUT IMPEDANCE	52Ω
AUDIO OUTPUT IMPEDANCE	3.2Ω
MAXIMUM AUDIO OUTPUT	1 watt
INTERMEDIATE FREQUENCY	1650kc
IMAGE REJECTION	From 42 db at 80M to 14 db at 6M
SENSITIVITY	80M-4μv; 40M-6μv; 20M-8μv; 15M-7μv; 10M-6μv; 6M-10μv.
TUBE COMPLEMENT	6BE6 (converter and oscillator) 6BZ6 (1st IF amplifier) 6AW8 (2nd IF amplifier) 6AL5 (detector and noise limiter) 6AW8 (audio output and BFO) EZ90 (rectifier)
POWER CONSUMPTION	60 watts, 117v, 60 cycle
DIMENSIONS	11" deep, 14¼" wide, 8⅝" high.
NET WEIGHT	19 lbs.

The proper operating voltages are found on the circuit diagram. The proper resistances are found in the resistance chart. Never measure resistances with the receiver turned on.

TROUBLE	POSSIBLE CAUSE	SERVICE PROCEDURE
Receiver dead	Defective tube(s)	Replace defective tubes.
	Tubes in wrong sockets or not seated. Line cord not in AC outlet	Visual inspection
Poor sensitivity on all bands	Fuse open	Check fuse. Look for power supply shorts.
	Low B+ voltages	Check C-36
Output distorts on strong AM signals when receiver is in AVC position	Defective tubes	Check tubes
	IF stages misaligned	Realign.
HUM	AVC line is grounded	Check S-2 wiring.
	Open filter capacitor. Shorted tube. Short circuit which draws excessive current	C-36 defective. Test tubes. Look for wrong connections and uninsulated wires shorting.
Beat frequency oscillator does not function	Bad 6AW8A	Replace tube.
	L-11 not properly adjusted	Readjust L-11.

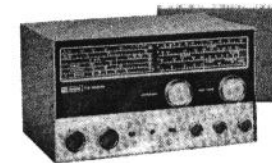


PARTS LIST

CAPACITORS

Symbol Number	Description	Part Number
C-1	Main tuning capacitor	282021
C-2	Bandsread	282022
C-3	Antenna trimmer	281022
C-4	75 μmf , 5% silver mica	264759
C-5	20 μmf , disc	296014
C-6	3-50 μmf , trimmer	283005
C-7	500 μmf , 5% silver mica	294008
C-8	.001 μf , disc	276016
C-9	.05 μf , disc	275506
C-10	.0047 μf , disc	276477
C-11	.05 μf , disc	275506
C-12	.02 μf , disc	276025
C-13	6.2 μmf , 5% disc	296033
C-14	BFO adjustment	281023
C-15	100 μmf , silver mica	266017
C-16	.01 μf , disc	276015
C-17	.01 μf , disc	276015
C-18	1000 μmf , silver mica	266014
C-19	150 μmf , disc	276158
C-20	10 μmf , disc	276018
C-23	.05 μf , disc	275506
C-24	470 μmf , disc	276478
C-25	50 μf , electrolytic 10v	221500
C-27	.01 μf , disc	276015
C-28	.001 μf , 5% disc	276016
C-29	.0047 μf , 5% disc	276477
C-30	470 μmf , 5% disc	276478
C-31	50 μf , electrolytic 10v	221500
C-32	100 μmf , disc	276017
C-33	.01 μf , disc	276015
C-34	.01 μf , disc	276015
C-35	.01 μf , disc	276015
C-36	40-40-40 μf , electrolytic 350v	236404
C-37	.001 μf , disc	276016
C-39	.0047 μf , disc	276477
C-40	.0047 μf , disc	276477
C-41	620 μmf , 5% silver mica	264628
C-42	.01 μf , disc	276015
C-43	.01 μf , disc	276015
C-44	.01 μf , disc	276015

PARTS LIST

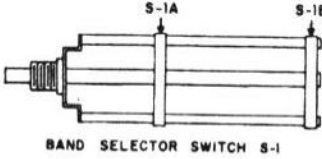
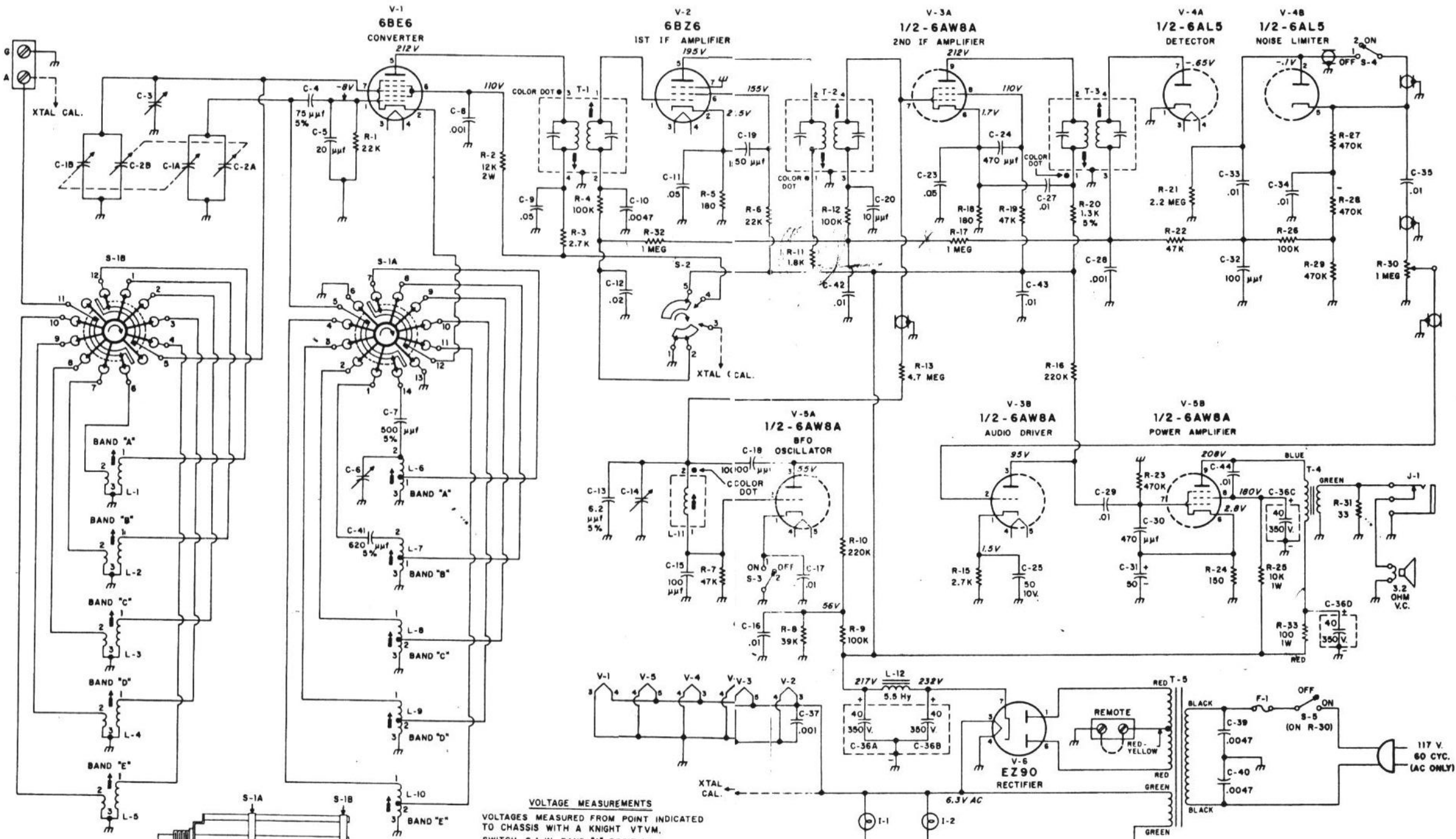


COILS

Symbol Number	Description	Part Number
L-1	band A Antenna coil	162033
L-2	band B Antenna coil	162034
L-3	band C Antenna coil	162035
L-4	band D Antenna coil	162036
L-5	band E Antenna coil	162037
L-6	band A Oscillator coil	162038
L-7	band B Oscillator coil	162039
L-8	band C Oscillator coil	162040
L-9	band D Oscillator coil	162041
L-10	band E Oscillator coil	162042
L-11	BFO coil	162032
L-12	Choke coil	140003

RESISTORS

R-1	22K	301223
R-2	12K, 2 watt	307123
R-3	2.7K	301272
R-4	100K	301104
R-5	180 Ω	301181
R-6	22K	301223
R-7	47K	301473
R-8	39K	301393
R-9	100K	301104
R-10	220K	301224
R-11	1.8K	301182
R-12	100K	301104
R-13	4.7 meg	301475
R-15	2.7K	301272
R-16	220K	301224
R-17	1 meg	301105
R-18	180 Ω	301181
R-19	47K	301473
R-20	1.3K, 5%	302132
R-21	2.2 meg	301225
R-22	47K	301473
R-23	470K	301474
R-24	150 Ω	301151
R-25	10K, 1 watt	304103
R-26	100K	301104
R-27	470K	301474
R-28	470K	301474
R-29	470K	301474
R-30	1 meg control with switch	390005
R-31	33 Ω	301330
R-32	1 meg	301105
R-33	100 Ω , 1 watt	304101



VOLTAGE MEASUREMENTS
 VOLTAGES MEASURED FROM POINT INDICATED TO CHASSIS WITH A KNIGHT VTVM.
 SWITCH S-1 IN BAND "A" POSITION.
 SWITCH S-2 IN "AVC" POSITION.
 SWITCHES S-3 AND S-4 IN "OFF" POSITION.
 NO SIGNAL INPUT.
 LINE VOLTAGE = 117 V. 60 CYCLES AC.
 TOLERANCE ± 20%.

NOTES:
 RESISTORS INDICATED IN OHMS.
 K=1,000 OHMS.
 MEG=1,000,000 OHMS.

CAPACITORS INDICATED IN MICROFARADS
 UNLESS OTHERWISE SPECIFIED.
 ⌚ = CHASSIS GROUND.

DIAGRAM, R-55 RECEIVER SCHEMATIC