

# ***REALISTIC***

## **COMMUNICATION RECEIVER**

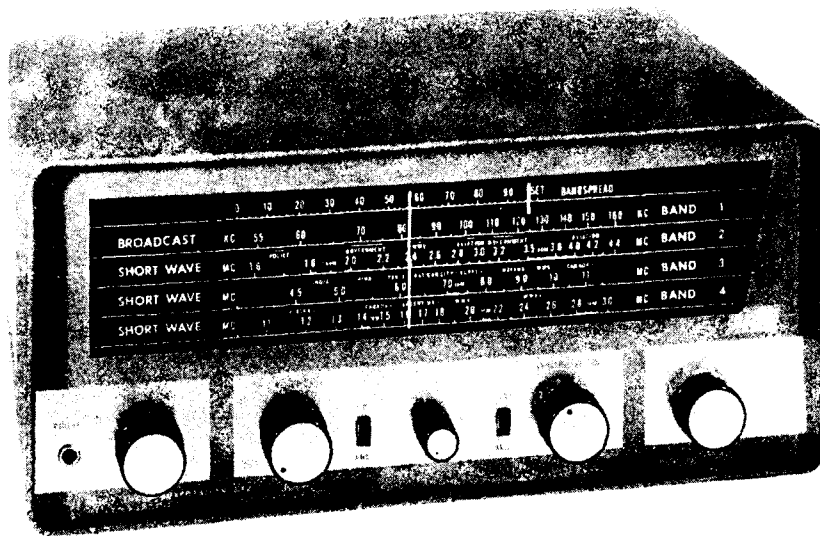
### **OPERATING AND SERVICE INSTRUCTIONS**

# **MODEL DX-75**

**RADIO SHACK CORPORATION**

**DIVISION OF TANDY CORPORATION**

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## INTRODUCTION

The Realistic DX-75 Communications Receiver is designed to provide both the usual "long wave" standard broadcast reception and "short wave" international broadcast reception. Therefore, it allows the listener to span the oceans and travel around the world by means of radio waves of radio waves.

Short wave radio signals are used for long distance transmission because of the way they are reflected back to earth by the ionosphere. Radiation from space (primarily from the sun) causes ionization of the layers of gases high above the earth. Short wave radio signals will not penetrate these ionized gases; instead, they bounce back to earth much like a stone skips across the surface of quiet water. Variations in the reflecting characteristics of the ionosphere due to sun spots, seasons, time of day, etc., produce periods when the skipping of short wave signals is especially effective. Since many of these periods occur in regular cycles the listener may develop a schedule of the best times to listen for signals from distant parts of the world.

Listed below are some of the many types of broadcasts that can be heard on the short wave bands:

- Amateur Radio (Ham)
- Mobile Radio - Telephone
- Military
- Citizens Band (CB)
- Int. Short Wave (Voice of America, etc.)
- Standard Time Signals (WWV)

## GENERAL

The Realistic DX-75 is a four band AM receiver which covers the standard broadcast frequencies in one band: 550 to 1600 KC; and the short wave frequencies in three bands: 1.6 to 4.4 MC; 4.5 to 11 MC; 11 to 30 MC. Utilizing four tubes (one multipurpose tube affords five tube performance) plus rectifier, the superhetrodyne circuit is designed to operate from a 105 to 125 volt, 60 cycle power source. A power transformer eliminates the hazard of a hot chassis. Housed in a vinyl clad steel table model cabinet, the receiver features an eight inch "slide rule" type dial with continuous tuning of all four bands, plus bandspread for precise location of signals on the busy short wave bands.

## SPECIFICATIONS

Dimensions	6-5/16 x 14-1/4 x 19-17/32
Weight (net)	15 pounds
Frequency Range	550 to 1600 KC - 1.6 to 30 MC
Sensitivity	3.5 $\mu$ v at 20 MC (6 db signal-to-noise ratio with 30% mod.)
Selectivity	6 db down, $\pm$ 4.5 KC; 60 db down, $\pm$ 25 KC
Audio Output	1.5 watts
Input Voltage	105 to 125 volts, 60 cps
Power Consumption	35 watts

## INSTALLATION

Choice of a location for the receiver may be subject to several considerations. These include the arrangement of furniture in the room, the comfort and convenience of the listener, and access to a good electrical ground and an outside antenna. Many hours of listening enjoyment are available from a short wave receiver so it is recommended that the selection of a location for the DX-75 be carefully made.

The antenna for standard broadcast is self-contained, however, an outside antenna is required for distance reception on the short wave bands. As a general rule an outside antenna should be as high as practical and as long as possible (up to 100 ft.) for best reception of short wave signals. The antenna should be mounted away from power lines, trees, buildings, etc., and should be attached to its supports by glass or ceramic insulators. No. 12 to 16 ga. copper covered steel wire (uninsulated) is best for both the antenna and the down lead. A lightning arrestor should be connected to the down lead for protection against storm damage. For additional information on antenna design refer to "A. R. R. L. Antenna Book" published by American Radio Relay League, or to any of the many other antenna handbooks currently available.

Connect the down lead from the antenna to the #2 terminal on the rear of the receiver and connect the #1 terminal to a good earth ground such as a water pipe. Plug the power cord into a standard receptacle providing 117 VAC power.

## OPERATION

VOLUME Clockwise rotation of the Volume control knob turns on power and increases volume.

BAND SELECTOR Rotation of the Band Selector knob switches antenna and local oscillator circuits for the various tuning bands. Index numbers are located near the knob and at each end of the dial.

TUNING Rotation of the Tuning knob causes the main tuning indicator (red) to move across the dial.

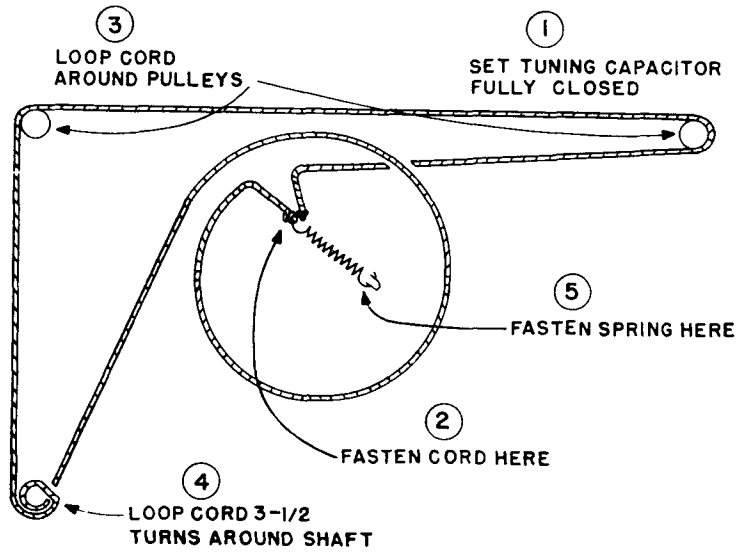
BANDSPREAD Rotation of the Bandspread knob affects a fine tuning adjustment of the reception frequency. Normally the indicator should be adjusted to the SET position. After the approximate frequency has been tuned by use of the main tuning knob, the bandspread adjustment gradually reduces the frequency for pinpoint selection of signals.

BFO Clockwise rotation of the BFO control turns on a Beat Frequency Oscillator and increases the % of modulation of the IF signal by this oscillator. A CW signal, as used for single side band or code telegraphy purposes, contains no modulation and must be modulated in the receiver for proper reception (Note: settings in the lower range of this control may also improve reception of weak signals other than CW type).

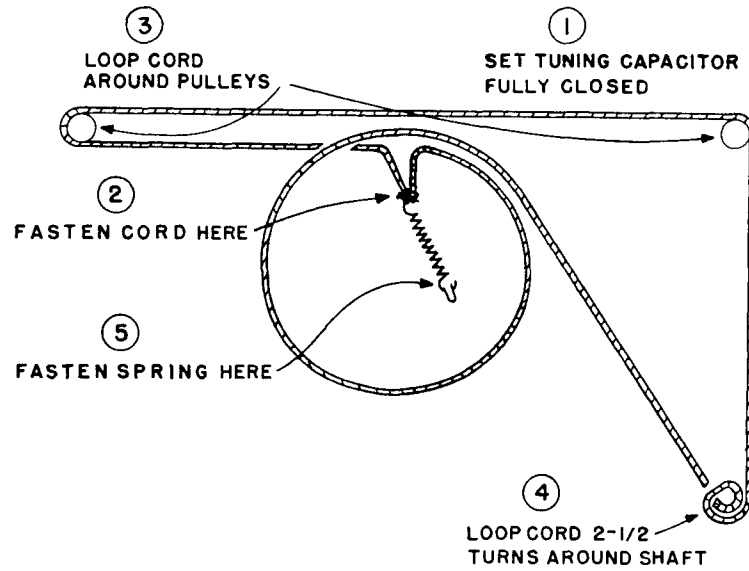
ANL ON In the up position this slide switch activates the Automatic Noise Limiter circuits designed to minimize background noise, static, etc. Operation in the down position may be necessary for reception of the very weak signals since the noise limiter suppresses all lower level signals.

REC / STBY The receiver may be silenced by moving this slide switch to the STBY position without actually turning off power to the tubes. Switching back to the REC position instantly returns the receiver to normal operation without warm-up or retuning.

PHONE This jack provides a connection for headphones (50 to 1000 ohms) which automatically silences the internal speaker. The Volume control functions as usual to vary the volume at the headphones.

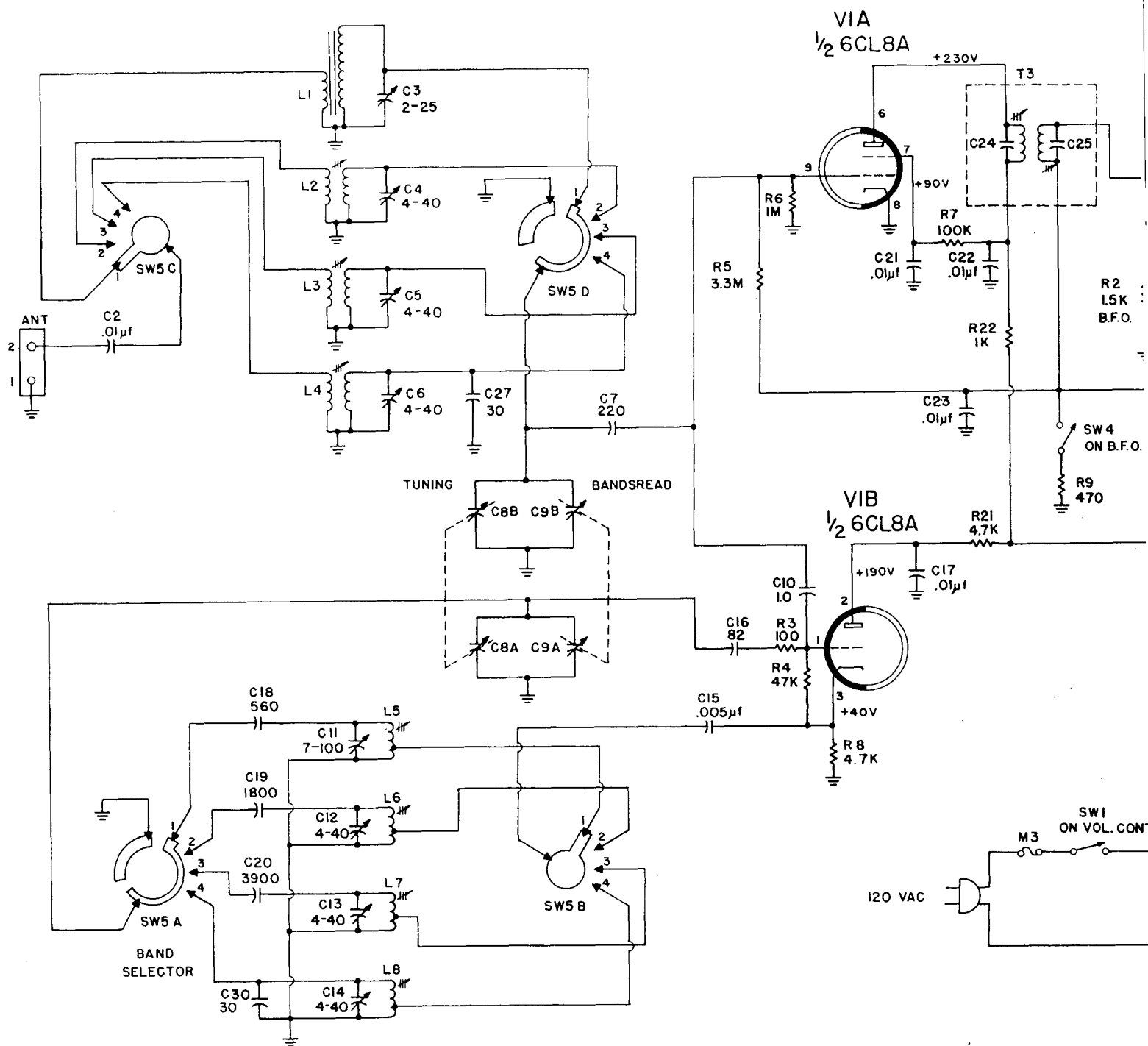


MAIN TUNING DIAL CORD  
(REAR VIEW)

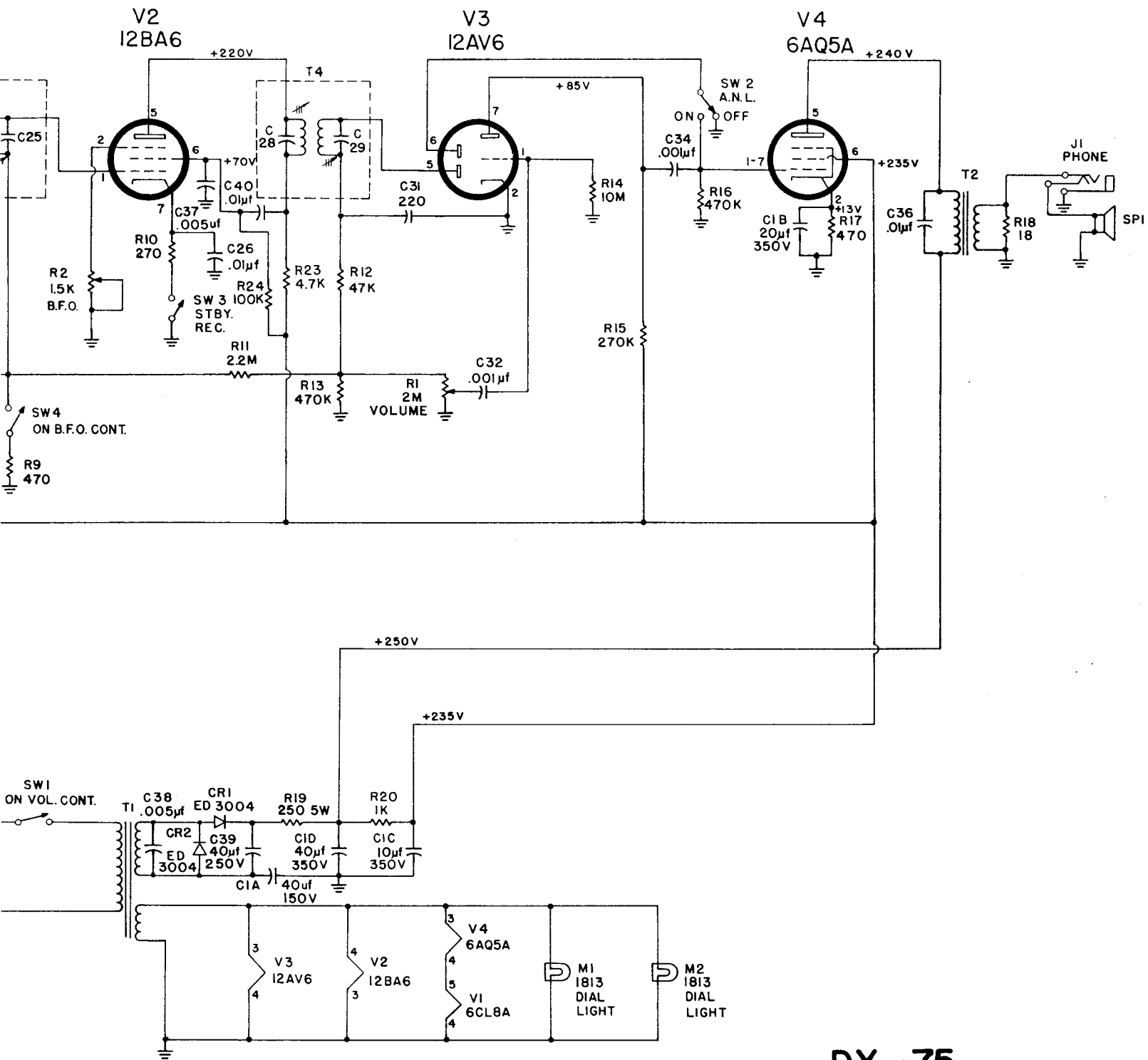


BAND SPREAD DIAL CORD  
(REAR VIEW)

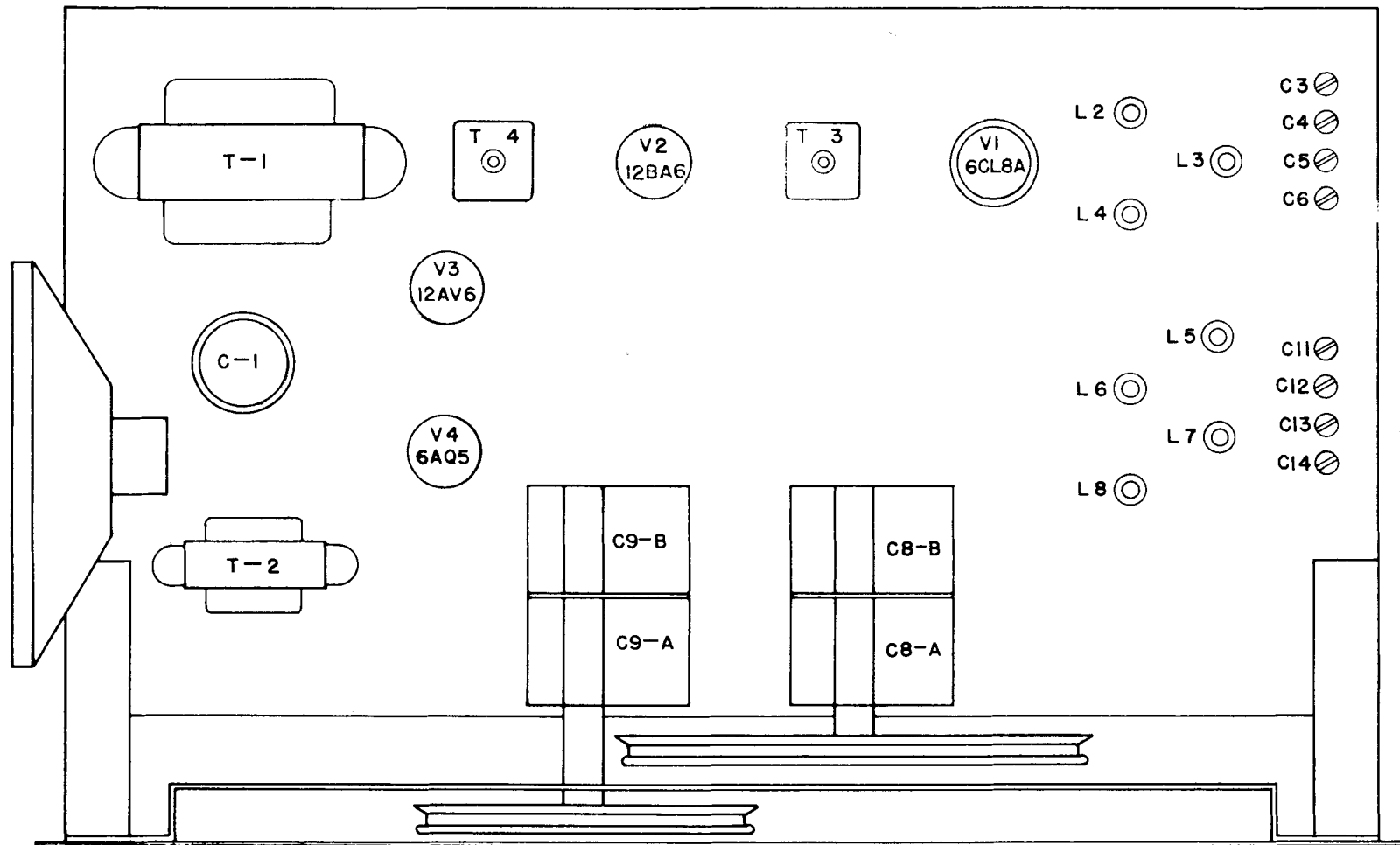
Fig. 1 Dial Stringing Diagram



ALL RESISTOR VALUES ARE IN OHMS & 1/2 WATT UNLESS OTHERWISE SPECIFIED.  
 ALL CAPACITOR VALUES ARE IN MICROMICROFARADS UNLESS OTHERWISE SPECIFIED.



**DX-75**



9

Fig. 2 Chassis Layout Diagram

ALIGNMENT INSTRUCTIONS

Equipment required:

1. Oscilloscope with calibrated vertical scale
2. RF Signal generator capable of:
  - a. Operation from 455 KC to 30 MC
  - b. Attenuation below  $1\mu v$  output
  - c. Modulation at 1 KC with variable modulation percentages

IF Alignment

1. Loosely couple a 455 KC, 50% modulated signal into the antenna terminals (Band Selector in position #1)
2. Connect oscilloscope to speaker terminals
3. With signal generator set to lowest useable signal level, peak all IF transformers for maximum recovered audio.

RF Alignment

1. Preliminary set up
  - a. Beginning with all trimmer capacitors tightly closed, open the trimmers as follows:
 

C3	1/4 Turn
C4	3/4 Turn
C5	1/4 Turn
C6	7/8 Turn
C11	1/2 Turn
C12	1/4 Turn
C13	1/4 Turn
C14	1/4 Turn

- b. Beginning with all slugs at top of form adjust as follows:

- |    |          |
|----|----------|
| L2 | 15 Turns |
| L3 | 22 Turns |
| L4 | 15 Turns |
| L5 | 30 Turns |
| L6 | 22 Turns |
| L7 | 30 Turns |
| L8 | 15 Turns |

NOTE:

These settings are approximate and are NOT final.

RF Alignment (con't.)

2. Final Alignment

In the following procedure, a signal of the specified frequency (70% modulated) is fed into the antenna terminal. The antenna and local oscillator tuned circuits are adjusted for maximum recovered audio, always adjusting the oscillator components first.

Band	Signal Freq. and Dial Setting	Adjust for Maximum
1	600 KC 1400 KC	L5, L1 C11, C3
2	1.8 MC 4.3 MC	L6, L2 C12, C4
3	5.0 MC 11.0 MC	L7, L3 C13, C5
4	11.0 MC 30.0 MC	L8, L4 C14, C6

NOTE: The above adjustments should be made in the order shown, and should be repeated several times on each band, until proper tracking and calibration are obtained.



## PARTS LIST

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
	<u>TUBES</u>			<u>CAPACITORS (CONT.)</u>	
V1		6CL8A	C31	220pf ±20% Z5F 500V Ceramic	
V2		12BA6	C32	001μf ±20% Z5U 500V Ceramic	
V3		12AV6	C33	NOT USED	
V4		6AQ5A	C34	.001μf ±20% Z5U 500V Ceramic	
	<u>CAPACITORS</u>		C35	NOT USED	
C1	40-20-10-40μf/350V -350V -350V -150V Electrolytic		C36	.01μf GMV Z5U 500V Ceramic	
C2	.01μf GMV Z5U 500V Ceramic		C37	.005 GMV Z5U 500V Ceramic	
C3	2-25pf Ceramic Trimmer		C38	.005 GMV Z5U 500V Ceramic	
C4	4-40pf Ceramic Trimmer		C39	40μf/250V Electrolytic	
C5	4-40pf Ceramic Trimmer		C40	.01μf GMV Z5U 500V Ceramic	
C6	4-40pf Ceramic Trimmer			<u>RESISTORS</u>	
C7	220pf ±10% NPO 500V Ceramic		R1	2M Variable	300-268-18
C8	Main Tuning	301-338-1	R2	1.5K Variable	101-734-6
C9	Bandsread	301-338-2	R3	100Ω ±10% 1/2W Carbon	
C10	1.0pf ±10% 500V Composition		R4	47K ±10% 1/2W Carbon	
C11	7-100pf Ceramic Trimmer		R5	3.3M ±10% 1/2W Carbon	
C12	4-40pf Ceramic Trimmer		R6	1M ±10% 1/2W Carbon	
C13	4-40pf Ceramic Trimmer		R7	100K ±10% 1/2W Carbon	
C14	4-40pf Ceramic Trimmer		R8	4.7K ±10% 1/2W Carbon	
C15	.005μf GMV Z5U 500V Ceramic		R9	470Ω ±10% 1/2W Carbon	
C16	82pf ±10% N750 600V Ceramic		R10	270Ω ±10% 1/2W Carbon	
C17	.01μf GMV Z5U 500V Ceramic		R11	2.2M ±10% 1/2W Carbon	
C18	560pf ±5% 125V Polystyrene		R12	47K ±10% 1/2W Carbon	
C19	1800pf ±5% 125V Polystyrene		R13	470K ±10% 1/2W Carbon	
C20	3900pf ±5% 125V Polystyrene		R14	10M ±10% 1/2W Carbon	
C21	.01μf GMV Z5U 500V Ceramic		R15	270K ±10% 1/2W Carbon	
C22	.01μf GMV Z5U 500V Ceramic		R16	470K ±10% 1/2W Carbon	
C23	.01μf GMV Z5U 500V Ceramic		R17	470Ω ±10% 1/2W Carbon	
C24	SEE T3		R18	18Ω ±10% 1/2W Carbon	
C25	SEE T3		R19	250Ω ±10% 5W W.W.	
C26	.01μf GMV Z5U 500V Ceramic		R20	1K ±10% 1/2W Carbon	
C27	30pf ±5% NPO 500V Ceramic		R21	4.7K ±10% 1/2W Carbon	
C28	SEE T4		R22	1K ±10% 1/2W Carbon	
C29	SEE T4		R23	4.7K ±10% 1/2W Carbon	
C30	30pf ±5% NPO 500V Ceramic		R24	100K ±10% 1/2W Carbon	

PARTS LIST (CON'T.)

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>
<u>TRANSFORMERS</u>			<u>MISCELLANEOUS</u>		
T1	Power Transformer	500-685	M1	Dial Light	#1813
T2	Output Transformer	301-335	M2	Dial Light	#1813
T3	IF 455KC	1655-6	CR1	Diode 400PIV 500 MA.	ED-3004
T4	IF 455KC	1655-6	CR2	Diode 400 PIV 500 MA.	ED-3004
<u>COILS</u>			J1	Phone Jack	J6-2
L1	RF Band #1	301-340	SPK 1	Speaker	14826
L2	RF Band #2	301-341		Cabinet	600-173-3
L3	RF Band #3	301-342		Panel (Front)	500-787
L4	RF Band #4	301-343		Panel (Back)	500-629-2
L5	Osc. Band #1	301-344		Knob (Bandspread-Tuning)	27002-1
L6	Osc. Band #2	301-345		Knob (Band-Volume)	27002P-1
L7	Osc. Band #3	301-346		Knob (BFO)	26600P-1
L8	Osc. Band #4	301-347		Dial Glass	301-336
<u>SWITCHES</u>				Feet	100-435-11
SW1	Power Switch (On Volume Control)	300-268-18			
SW2	ANL (On - Off)	SS-32			
SW3	STBY-REC	SS-32			
SW4	BFO Switch (On BFO Control)	101-734-6			
SW5	Band Switch	301-339			

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