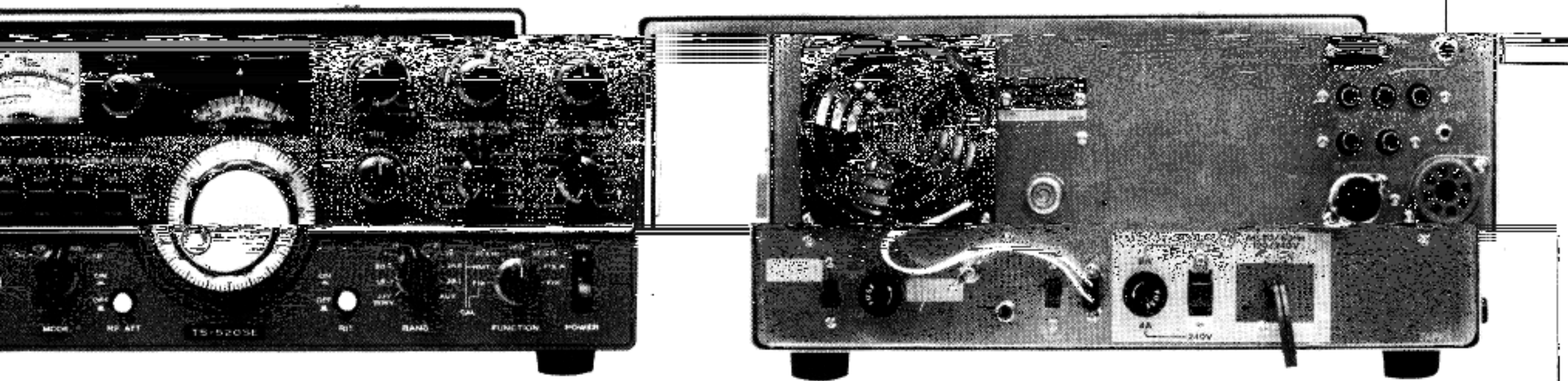


**KENWOOD**

**SERVICE MANUAL**

**Model TS-520SE**



**SSB TRANSCEIVER**

# NOTICE

converter have been eliminated.

(For DC-DC converter.)

to item 1.)

V).

inated.

switching function include

R

AC, or 220/240 VAC 50/60 Hz operation
for SSB operation for CW operation

on: Better than 40 db

ssion: Better than 50 db

n: Better than 40 dB.

tivity: -60 db (-50 db maximum)

0 to 2,600 Hz, within -6db

0.5 db

-60 db

-2 db

-3 db

reference still recommended

more than 50 db

load, with less than 10% distortion)

ance: 4 to 16 ohms

of the DC power function

- 1) The power transformer has been changed. (Windings for the coil)
  - 2) The 12P concent plug has been eliminated.
  - 3) The 10P terminal board and its bracket have been eliminated.
2. Modification for the elimination of the X-verter function
    - 1) The 12P connector has been eliminated. (For X-verter)
    - 2) The slide switch and stopper have been eliminated.
    - 3) Two 1P jacks have been eliminated. (X-verter, IN/OUT)
    - 4) The rear panel has been modified. (This modification is related
  3. FIXCH.AVR unit modifications to eliminate the DC-DC converter (-6)
    - 1) The oscillation transformer has been eliminated.
    - 2) The oscillation transistor, Capacitor and Resistor have been elim
    - 3) A connecting wire kit and solid resistor have been newly added.
  4. The marker unit has been redesigned to New circuit.
  5. Modifications for the new introduction of the CW NARROW/WIDE sw
    - 1) The switch name plate
    - 2) The connecting wire kit to suit wiring modifications
    - 3) The paddle switch

## SPECIFICATIONS

### GENERAL

#### Frequency Range:

- 160 meter band - 1.80 to 2.00 MHz
- 80 meter band - 3.50 to 4.00 MHz
- 40 meter band - 7.00 to 7.30 MHz
- 20 meter band - 14.00 to 14.35 MHz
- 15 meter band - 21.00 to 21.45 MHz
- 10 meter band - 28.00 to 28.50 MHz (A)
- 28.50 to 29.10 MHz (B)
- 29.10 to 29.70 MHz (C)
- WWV - 15.0 MHz (receive only)

Mode: SSB ((USB, LSB) or CW

Antenna Impedance: 50 ~ 75 ohms

Frequency Stability:

±1 MHz during the first hour after 1 minute of warm-up

#### Tubes and Semiconductors:

- Tubes: 3
- Transistors: 10
- Diodes: 16
- ICs: 1
- Resistors: 25

#### Power Requirements:

	120/220 VAC, or 220/240 VAC 50/60 Hz operation
Receive	45 watts
Transmit	280 watts (maximum)

#### Dimensions:

333 (13-1/8" wide x 153 (6.0") high x 335 (13-3/16") deep

Weight: 16 kg (35.2 lbs)

### TRANSMITTER

#### RF Input Power:

120/220 VAC 50/60 Hz
200 watts PEP 160 watts DC

#### Carrier Suppression:

#### Side Band Suppression:

#### Spurious Radiation:

#### Audio Input Sensitivity:

#### AF Response: 40 dB

### RECEIVER

#### Sensitivity:

#### Selectivity:

#### SSB:

#### AF:

#### Image Ratio:

#### Image Ratio: Better

#### IF Rejection: Better

#### AF Output Power:

#### AF Output Impedance:

# PARTS LIST

**Note 1:**

K: U.S.A.    W: Europe    T: Britain

**Note 2:**

Only special type of resistors (example: cement, metal film, etc.) and capacitors (example: electrolytic, tantalum, mylar, temp. coeff. capacitors) are detailed in the PARTS LIST. For the value of all common type components, refer to the schematic diagram of the PC board illustration. Resistors not otherwise detailed are carbon type (1/4 or 1/8W).

Order carbon resistors and capacitors according to the following example:

A carbon resistor's part number is RD14BY 2E222J.

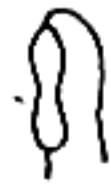
A ceramic capacitor's number is CK45F1H103Z, CC45TH1H220J.

**RESISTOR**

**1. Type of the carbon resistor**



RD14BY

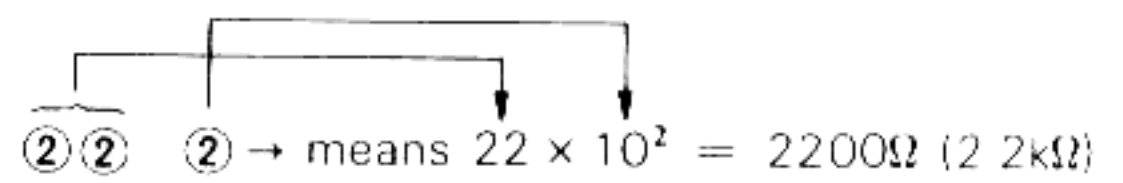


RD14CY

**2. Warrage**

1/4W → 2E  
1/8W → 2B

**3. Resistance value**



Significant figure

Multiplier

Example: 221 → 220 Ω      224 → 220 kΩ  
222 → 2.2 kΩ      225 → 2.2 MΩ  
223 → 22 kΩ

**4. Tolerance**

J = ±5% (Gold)  
K = ±10% (Silver)

**CAPACITORS**

**Type I**

CK	45	F	1H	103	Z
1	2	3	4	5	6

**Type II**

CC	45	TH	1H	220	J
1'	2	3'	4	5	6

- 1 = Type .... ceramic, electrolytic, etc.
- 2 = Shape ... round, square, etc.
- 3 = Temp. range
- 3' = Temp. coefficient
- 4 = Voltage rating
- 5 = Value
- 6 = Tolerance

**6 = Tolerance**

Cord	C	D	G	J	K	M	X	Z	P	No cord
(%)	±0.25	±0.5	±2	±5	±10	±20	+40 -20	+80 -20	+100 -0	More than 10μF -10 ~ +50 Less than 4.7μF -10 ~ +75

**Less than 10 pF**

Cord	B	C	D	F	G
(pF)	±0.1	±0.25	±0.5	±1	±2

**3 = CK45F**

Ceramic capacitor (type I) 3

Cord	B	D	E	F
Operating temperature °C	-30 +85	-30 +85	-30 +85	-10 +70

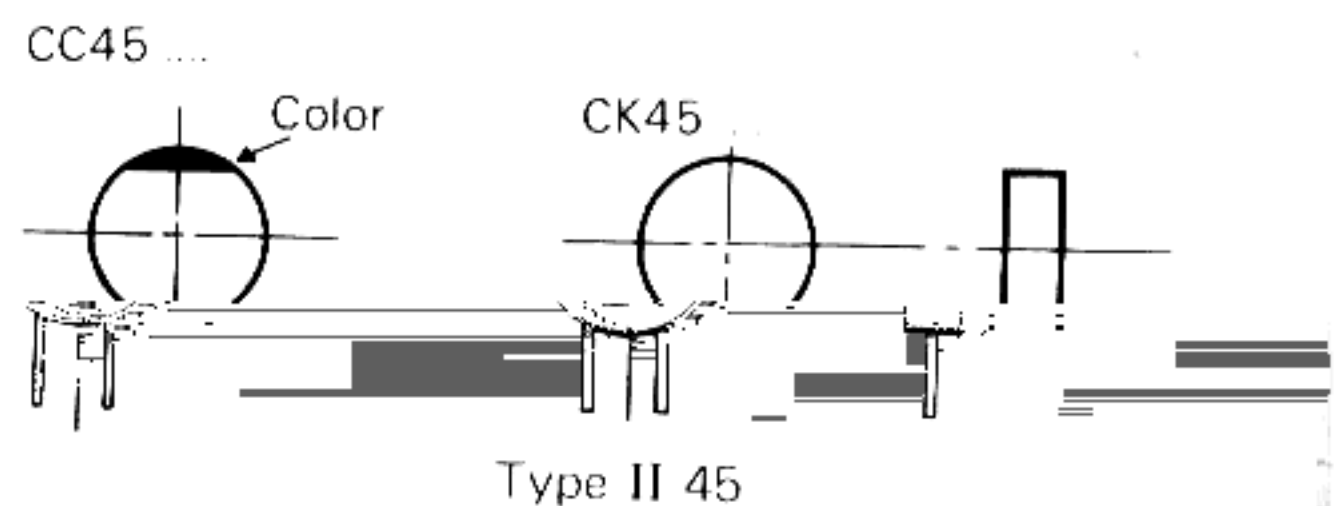
**3' = CC4500 ....**

Ceramic capacitor (type II) temperature coeff. capacitor 1' 3'.

Color	CH	JH	PH	PH	SH	TH	TH
ppm/°C	0	-80	-150	-220	-330	-470	-750

**5 = Capacitor value**

Example: 010 → 1 pF  
100 → 10 pF  
101 → 100 pF  
102 → 1000 pF = 0.001 μF  
103 → 0.01 μF



Type II 45



# PARTS LIST

Ref. No.	Parts No.	Description	Re- marks
-	G11-0044-04	Cushion Rubber, relay	
-	H01-2650-04	Carton (Inside) K, W	☆
-	H03-1729-04	Carton (Outside) K, W	☆
-	H10-0931-12	Front packing fixture (F)	
-	H10-0932-22	Rear packing fixture (R)	
-	H10-1276-04	Accessory box	
-	H10-1393-04	Cushion SIDE	
-	H12-0405-04	Cushion FRONT	
-	H20-0439-03	Protective cover	
-	H25-0016-00	Polyethylene bag	
-	H25-0036-00	Polyethylene bag	
-	J02-0022-05	Foot (Small) × 4	
-	J02-0049-14	Foot (Large) × 6	
-	J13-0033-15	Fuse holder × 2	
-	J19-0004-04	SW stopper toggle type	
-	J19-1301-04	Diode holder × 3	
-	J21-0392-04	Lead holder	
-	J21-0934-15	Handle retainer × 2	
-	J21-1155-04	Fix ch. retainer	
-	J21-1497-04	Bobbin angle × 2	
-	J32-0074-04	Hex. boss × 6	
-	J32-0182-04	Hex. boss × 4	
-	J32-0220-04	Hex. boss × 6	
-	J32-0709-04	Hex. boss 4 mm	
-	J32-1030-14	Round boss × 2	
-	J41-0020-04	Knob bushing × 2	
-	J41-0006-05	Cord bushing K	
-	J41-0024-15	Cord bushing W	
-	J59-0001-05	Grummet × 2 (Quick release catch)	
-	J59-0002-05	Plunger × 2 (Quick release catch)	
-	J61-0402-05	Free up belt W	
-	K01-0049-15	Handle LEATHER	

Ref. No.	Parts No.	Description	Re- marks
D1	V11-0053-05	Diode SD111 (Varicap)	
D2,3	V11-0051-05	Diode 1N60	
<b>VC/COIL</b>			
TC1	C03-0001-05	Variable capacitor (Small)	
TC2	C05-0013-15	Ceramic trimmer	
VC	C01-0001-25	Variable capacitor	
L1	L32-0098-05	OSC COIL	
L2~4	L40-1021-03	Ferri-inductor 1mH	
L5	L40-2201-03	Ferri-inductor 22μH	
L6,7	L40-1021-03	Ferri-inductor 1mH	
<b>MISCELLANEOUS</b>			
-	D22-0011-05	Shaft coupling	
-	D40-0099-25	Gear mechanism	
-	E08-0204-05	2P polarized socket	
-	E13-0101-05	1P phone jack	
-	E22-0207-05	Lug strips	
-	E23-0021-04	Wire-wrap terminal × 5	
-	G03-0009-04	Spring	

## RECTIFIER UNIT (X43-1090-02)

Ref. No.	Parts No.	Description	Re- marks
<b>CAPACITOR</b>			
C1,2	CE02W2C330	Electrolytic 33μF 160WV	
<b>RESISTOR</b>			
R5,6	RS14AB3D471J	Metal film 470Ω ±5% 2W	
<b>SEMICONDUCTOR</b>			
D1~6	V11-0282-05	Diode V081	

D7	V11-0285-05	Diode V06E	
D8~11	V11-0290-05	Diode V03C	

## FIX CH. AVR UNIT (X43-1100-03)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
Q1~3	V03-0079-05	Transistor 2SC4	
Q4	V01-0048-05	Transistor 2SA6	
Q5~6	V03-0099-05	Transistor 2SC3	
D1,2	V11-0051-05	Diode 1N	
D3	V11-0243-05	Zener diode W2	
D8	V11-0243-05	Zener diode W2	

### POTENTIOMETER

VR1	R12-0047-05	Se
VR2	R12-3036-05	Se
VR3	R12-4020-05	Se

## VFO UNIT (X40-1070-01)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
Q1	V09-0020-05	FET 2SK22 (M)	
Q2	V09-0011-05	FET 2SK19 (Y)	
Q3,4	V03-0079-05	Transistor 2SC460 (B)	

TC1~4	C05-0030-15	
TC5	C05-0015-15	

L1	L40-1001-03	
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### MISCELLANEOUS

-	E18-0401-05	4 Crystal sock
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Description	Re- marks
60 (B)	
06 (L)	
72	
60	
Z-061	
Z-061	

10kΩ (B)	
50kΩ (B)	

Ceramic trimmer 20pF (Blue)	
Ceramic trimmer 40pF (Brown)	

Ferri-inductor 10μH	
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cket ass'y	
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# PARTS LIST

## OSC COIL UNIT (X44-1160-00)

Ref. No.	Parts No.	Description	Re- marks
<b>CRYSTAL</b>			
X1	L77-0725-05	Crystal 10.695MHz 1.9MHz	
X2	L77-0742-15	Crystal 15.895MHz 2MHz	
X3	L77-0743-15	Crystal 22.895MHz 1.4MHz	
X6	L77-0145-15	Crystal 36.895MHz 28MHz A	
X7	L77-0146-15	Crystal 37.395MHz 28MHz B	
X8	L77-0143-15	Crystal 37.895MHz 28MHz C	

## DRIVE COIL UNIT (X44-1190-00)

Ref. No.	Parts No.	Description	Re- marks
<b>COIL</b>			
L1	L34-0625-05	Tuning coil 1.9MHz	
L2	L31-0032-05	Tuning coil 7MHz	
L3	L31-0033-05	Tuning coil 14MHz	
L4	L31-0034-05	Tuning coil 21MHz	
L5	L31-0209-05	Tuning coil 28MHz	
L6	L31-0209-05	Tuning coil 28MHz	
L7	L40-4711-05	Ferr. inductor 470uH	

<b>COIL</b>			
L1	L32-0005-05	OSC coil	1.9MHz
L2,3	L31-0032-05	OSC coil	3.5, 7MHz
L4	L31-0033-05	OSC coil	14MHz
L5	L32-0011-05	OSC coil	21MHz
L6	L32-0138-15	OSC coil	28MHz (A)
L7	L32-0012-05	OSC coil	28MHz (B)
L8	L33-0025-05	Choke coil	1uF

### MISCELLANEOUS

-	S01-1403-05	Rotary switch wafer
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## RF UNIT (X44-1200-00)

Ref. No.	Parts No.	Description
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### TUBE/SEMICONDUCTOR

Q1,2	V09-0057-05	FET 3SK
Q3	V09-0058-05	FET 3SK
Q4	V09-0023-05	FET 3SK
Q5,6	V09-0012-05	FET 2SK
Q7~9	V04-0079-05	Transistor
Q10	V03-0450-05	Transistor
Q11	V03-0123-05	Transistor
D1~3	V11-0240-05	Zener diode
D4	V11-0414-05	Diode
D5,6	V11-0370-05	Diode
D7	V11-0076-05	Diode
D8,9	V11-0219-05	Diode
D10	V11-0076-05	Diode
D11,12	V11-0414-05	Diode
D13	V11-0240-05	Zener diode
D14,15	V11-0219-05	Diode
D16	V11-0370-05	Diode
D17	V11-0076-05	Diode

## ANTENNA COIL UNIT (X44-1170-00)

Ref. No.	Parts No.	Description	Re- marks
<b>COIL</b>			
L1	L34-0620-05	Tuning coil 1.9MHz	
L2	L34-0621-05	Tuning coil 3.5MHz	
L3	L31-0032-05	Tuning coil 7MHz	
L4	L31-0033-05	Tuning coil 14MHz	
L5	L31-0034-05	Tuning coil 21MHz	
L6	L31-0209-05	Tuning coil 28MHz	
<b>MISCELLANEOUS</b>			
-	S01-1403-05	Rotary switch wafer	
-	S01-1404-05	Rotary switch wafer (for terminal)	
-	D21-0801-05	Band switch shaft	
-	E23-0006-04	Wire-wrap, Edge x 6 terminal	
-	E23-0015-04	Grand lug x 2	

### POTENTIOMETER

VR1	R12-1012-05	Semi-fixed
VC~3	C01-0127-15	Variable cap

## MIXER COIL UNIT (X44-1180-00)

Ref. No.	Parts No.	Description	Re- marks
<b>COIL</b>			
L1	L34-0619-05	Tuning coil 1.9MHz	
L2	L34-0621-05	Tuning coil 3.5MHz	
L3	L31-0032-05	Tuning coil 7MHz	
L4	L31-0033-05	Tuning coil 14MHz	

L1	L40-4711-03	Ferr. inductor
L2~4	L40-1021-03	Ferr. inductor
L5	L40-4711-03	Ferr. inductor
L6	L40-1021-03	Ferr. inductor
L7	L40-1511-03	Ferr. inductor
L8	L33-0074-05	Heat sink
L9	L40-4711-03	Ferr. inductor
L10	L40-1511-03	Ferr. inductor

### MISCELLANEOUS

-	S01-1403-05	Rotary switch wafer
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41 (L) or 3SK40 (L)  
 35 (GR)  
 22 (GR)  
 19 (GR)  
 2SC460 (S)  
 2SC1515 (K)  
 2SC733 (Y)  
 WZ-090 9.0V W  
 1S2588  
 1S1587  
 1S1555  
 V06B  
 1S1555  
 1S2588  
 WZ-090 9.0V W  
 V06B  
 1S1587  
 1S1555

### R/VC

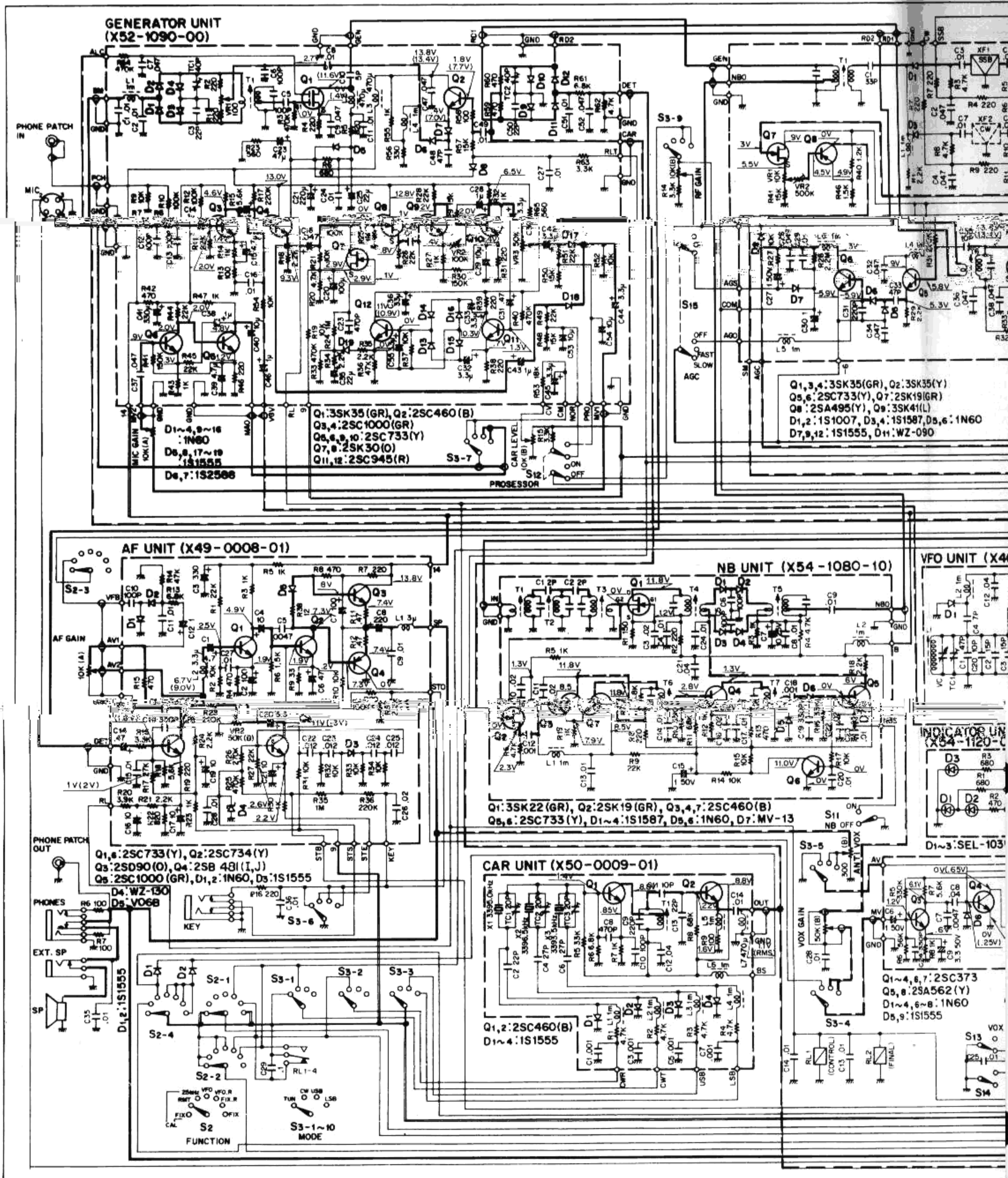
Resistor 1kΩ  
 Capacitor

### CRYSTAL

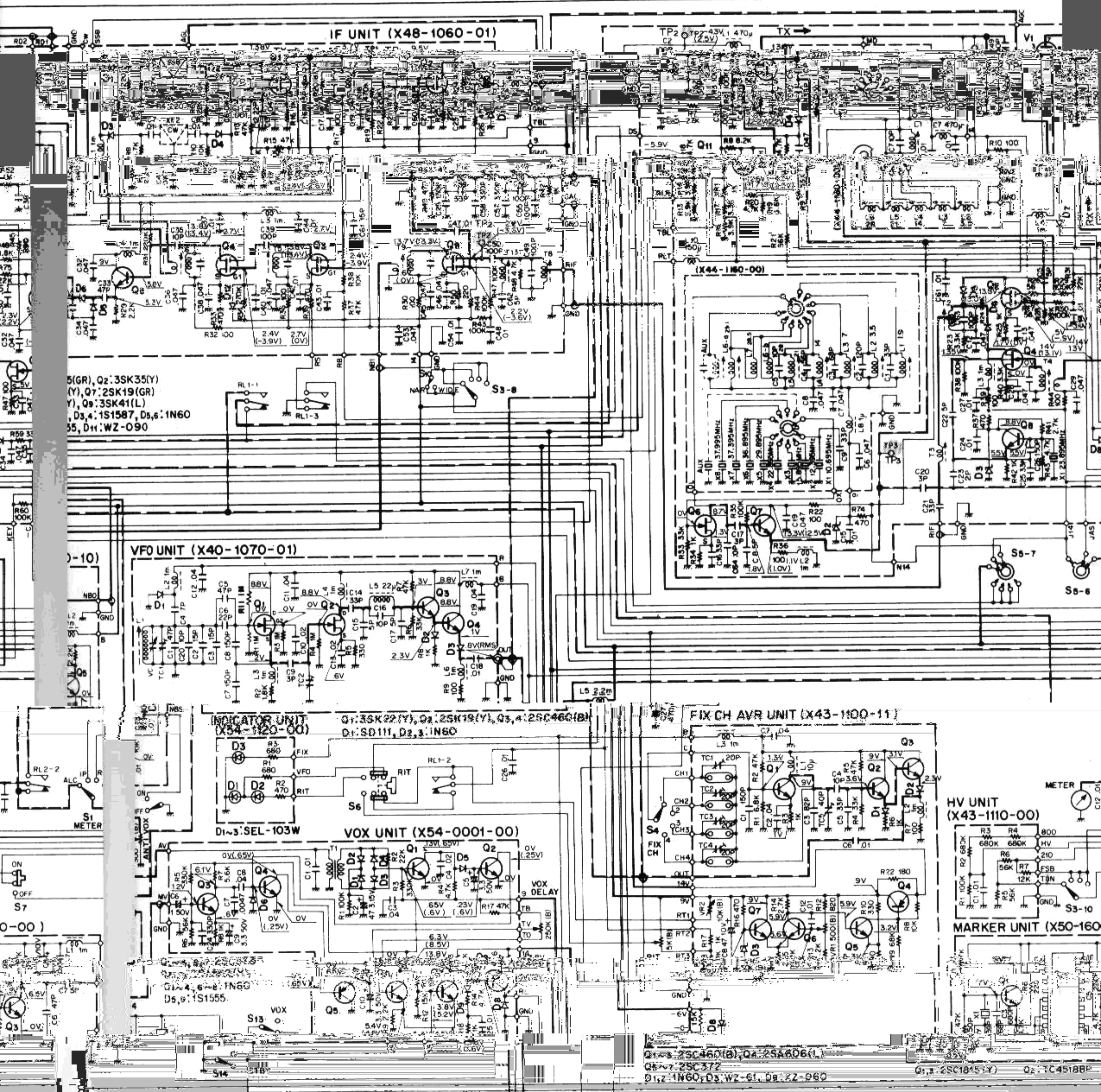
Ferr. inductor 470uH  
 Ferr. inductor 1mH  
 Ferr. inductor 470uH  
 Ferr. inductor 1mH  
 Ferr. inductor 150uH  
 Ferr. choke 0.22uH  
 Ferr. inductor 470uH  
 Ferr. inductor 150uH

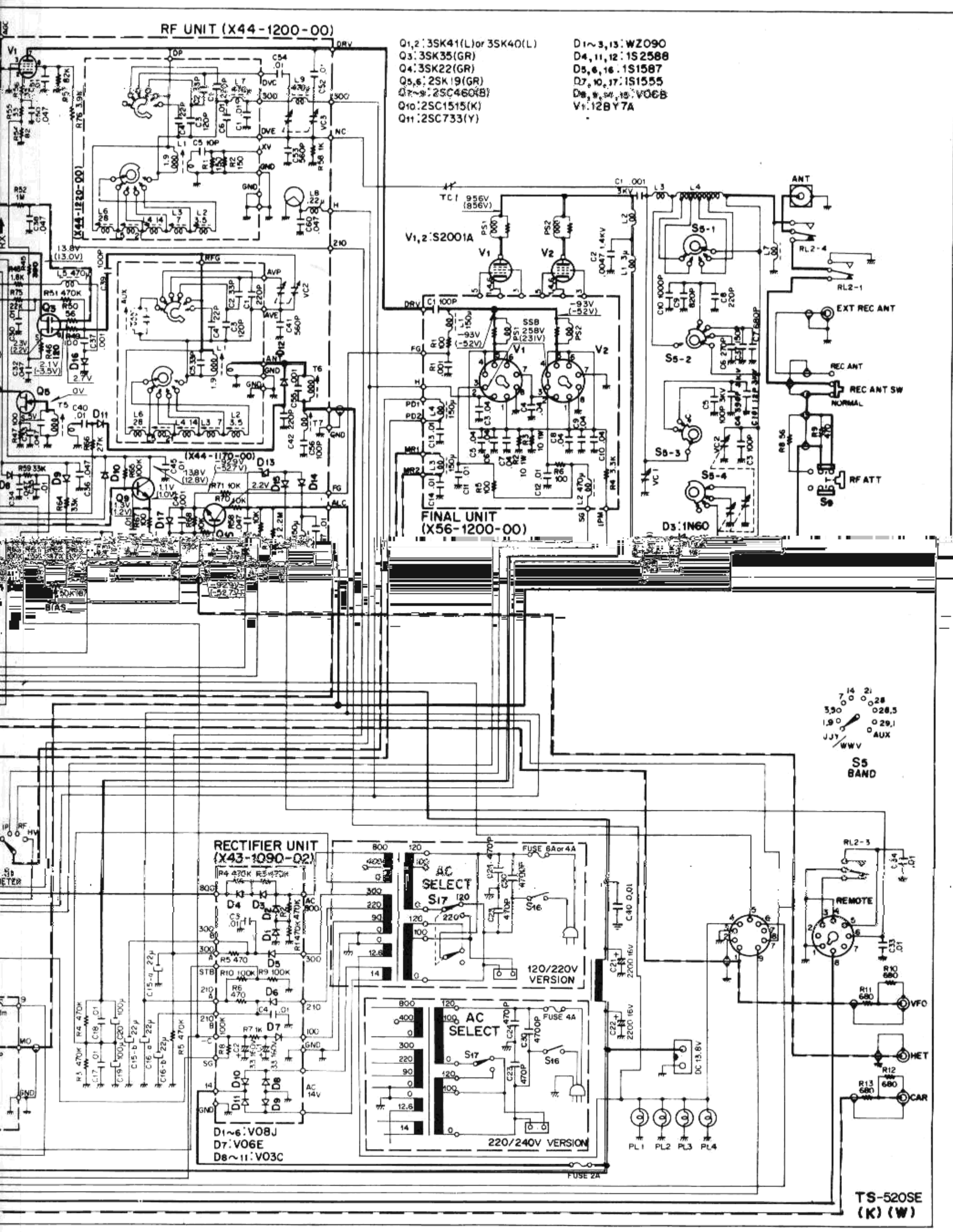
L2	L30-0008-05	SPF coil
L3	L30-0009-05	SPF coil
L4,5	L34-0622-05	Tuning coil 15MHz WWV
T6	L31-0010-05	Trap coil 8.6MHz
T7	L31-0011-05	Trap coil 8.5MHz
X1	L77-0180-05	Crystal 23.895MHz WWV

— Signal Line — — — Control Line — Voltage Line ( ) TX Voltage



# SCHEMATIC DIAGRAM





- Q1,2: 3SK41(L) or 3SK40(L)
- Q3: 3SK35(GR)
- Q4: 3SK22(GR)
- Q5,6: 2SK19(GR)
- Q7~9: 2SC460(B)
- Q10: 2SC1515(K)
- Q11: 2SC733(Y)
- D1~3,13: WZ090
- D4,11,12: 1S2588
- D5,6,16: 1S1587
- D7,10,17: 1S1555
- D8,9,14,15: V06B
- V1: 12BY7A

V1,2: 2S001A

FINAL UNIT (X56-1200-00)



TS-520SE (K) (W)

# PARTS LIST

Ref. No.	Parts No.	Description	Re- marks
<b>CRYSTAL/TRIMMER/COIL</b>			
X1	L77-0851-05	Crystal 2.5MHz	
TC1	C05-0029-05	Ceramic trimer 50pF	
L1	L40-1021-05	Ferri-inductor 1mH	

## GENERATOR UNIT (X52-1090-00)

Ref. No.	Parts No.	Description	Re- marks
<b>RESISTOR</b>			
R1~65	RD14CY2B000J	Carbon 000Ω ±5% 1/8W	
<b>SEMICONDUCTOR</b>			
Q1	V09-0036-05	FET 3SK35 (GR)	
Q2	V03-0079-05	Transistor 2SC460 (B)	
Q3,4	V03-0355-05	Transistor 2SC1000 (GR)	
Q5,6	V03-0123-05	Transistor 2SC733 (Y)	

Q7	V09-0023-05	FET 3SK22 (GR)	
Q8	V09-0012-05	FET 2SK19 (GR)	
Q9,10	V03-0079-05	Transistor 2SC460 (B)	
Q11,12	V03-0123-05	Transistor 2SC733 (Y)	
Q13	V03-0079-05	Transistor 2SC460 (B)	
D1~4	V11-0370-05	Diode 1S1587	
D5	V11-0051-05	Diode 1N60	
D6,7	V21-0041-05	Varister MV-13	

POTENTIOMETER			
VR1	R12-0401-05	Semi-fixed resistor 100Ω (B)	
VR2	R12-5401-05	Semi-fixed resistor 100kΩ (B)	
VR3	R12-4503-05	Semi-fixed resistor 50Ω (B)	

No.	Parts No.	Description	Re- marks
<b>COIL</b>			
	L40-1511-03	Ferri-inductor 150μH	
	L40-4711-03	Ferri-inductor 470μH	
	L40-1511-03	Ferri-inductor 150μH	
2	L33-0110-05	Parastic suppressor	
<b>MISCELLANEOUS</b>			
	E01-0801-05	8P (OCTAL) socket	

## NB UNIT (X54-1080-10)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
Q1	V09-0023-05	FET 3SK22 (GR)	
Q2	V09-0012-05	FET 2SK19 (GR)	
Q3,4	V03-0079-05	Transistor 2SC460 (B)	
Q5,6	V03-0123-05	Transistor 2SC733 (Y)	
Q7	V03-0079-05	Transistor 2SC460 (B)	
D1~4	V11-0370-05	Diode 1S1587	
D5,6	V11-0051-05	Diode 1N60	
D7	V21-0041-05	Varister MV-13	
<b>COIL</b>			
L1,2	L40-1021-03	Ferri-inductor 1mH	
T1~3	L30-0010-05	IFT 3395kHz	
T4	L31-0286-05	NB coil (A) 3395kHz	
T5	L31-0287-05	NB coil (B) 3395kHz	
T6	L30-0010-05	IFT 3395kHz	
T7	L30-0021-05	IFT 3395kHz	

## INDICATOR UNIT (X54-1280-00)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
D1~3	V11-0304-05	LED SEL-103W	
<b>MISCELLANEOUS</b>			

TRIMMER/COIL			
TC1,2	C05-0015-15	Ceramic trimmer 40pF	
L1	L40-1021-03	Ferri-inductor 1mH	
L2,3	L40-4711-03	Ferri-inductor 470μH	
L4	L40-1021-03	Ferri-inductor 1mH	
T1	L30-0021-05	IFT 3395kHz	

## OX UNIT (X54-0001-00)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
Q1~4	V03-0042-05	Transistor 2SC373	
Q5	V01-0038-05	Transistor 2SA562 (Y)	
Q6,7	V03-0042-05	Transistor 2SC373	
Q8	V01-0038-05	Transistor 2SA562 (Y)	
D1~4	V11-0051-05	Diode 1N60	
D5	V11-0076-05	Diode 1S1555	
D6~8	V11-0051-05	Diode 1N60	
D9	V11-0076-05	Diode 1S1555	
<b>MISCELLANEOUS</b>			
T1	L13-0001-05	Input transformer 500Ω : 20kΩ	

# PARTS LIST

## AF UNIT (X49-0008-01)

Ref. No.	Parts No.	Description	Re- marks
<b>MISCELLANEOUS</b>			
	D13-0032-03	Sprocket x 3	
	D16-0033-04	Chain ass'y x 3	
	E08-0406-05	FET socket x 3	
	E10-1902-05	9P tube socket	
Q1	V03-0123-05	Transistor 2SC733 (Y)	
Q3	V04-0008-05	Transistor 2SD90 (Y) or (G)	
Q4	V02-0481-16	Transistor 2SB481 (I,J)	
Q5	V03-0355-05	Transistor 2SC1000 (GR)	
Q6	V03-0123-05	Transistor 2SC733 (Y)	
D1,2	V11-0051-05	Diode 1N60	
D3	V11-0076-05	Diode 1S1555	
D4	V11-0297-05	Zener diode WZ-130	
D5	V11-0219-05	Diode V06B	

<b>POTENTIOMETER/COIL</b>			
VR1	R12-4015-05	Semi-fixed resistor 10kΩ (B)	
L1	L33-0032-05	Heater choke 3μH	
L2	L40-3391-03	Ferri-inductor 3.3μH	

## CARRIER UNIT (X50-0009-01)

Ref. No.	Parts No.	Description	Re- marks
Q1,2	V03-0079-05	Transistor 2SC460 (B)	

<b>TRIMMER/COIL</b>			
TC1,2	C05-0012-15	Crystal trimmer 300F	

Ref. No.	Parts No.	Description	Re- marks
X1	L77-0123-05	Crystal, CW T13-98 3395.0kHz	
X2	L77-0122-05	Crystal, USB T13-97 3396.5kHz	
X3	L77-0120-05	Crystal, LSB T13-95 3393.5kHz	
L1~6	L40-1021-03	Ferri-inductor 1mH	
L7	L40-4711-03	Ferri-inductor 470μH	
T1	L32-0003-05	OSC coil	

## MARKER UNIT (X50-1600-00) NEW PC BOARD

Ref. No.	Parts No.	Description	Re- marks
<b>CAPACITOR</b>			
C1	CC45CH1H390J	Ceramic 39pF ±5%	
C2	CC45CH1H680J	Ceramic 68pF ±5%	
C3	CK45B1H681K	Ceramic 680pF ±10%	
C5	CC45SL1H221J	Ceramic 220pF ±5%	
C6	CC45CH1H470J	Ceramic 47pF ±5%	
C7	CC45CH1H050C	Ceramic 5pF ±0.25pF	
C8	C90-0456-05	Ceramic 0.047μF 25V	
C9	CW04W1A470Q	Electrolytic 47μF 10WV	
<b>RESISTOR</b>			
R1~10	RD14CY2E000J	Carbon 000Ω ±5% 1/4W	
<b>SEMICONDUCTOR</b>			
Q1	V03-1815-06	Transistor 2SC1815 (Y)	
Q2	V30-1039-06	IC TC4518BP	
Q3	V03-1815-06	Transistor 2SC1815 (Y)	

Ref. No.	Parts No.	Description	Re- marks
<b>MISCELLANEOUS</b>			
	D13-0032-03	Sprocket x 3	
	D16-0033-04	Chain ass'y x 3	
	E08-0406-05	FET socket x 3	
	E10-1902-05	9P tube socket	

## F UNIT (X48-1060-01)

Ref. No.	Parts No.	Description	Re- marks
<b>SEMICONDUCTOR</b>			
Q1	V09-0036-05	FET 3SK35 (GR)	
Q2	V09-0086-05	FET 3SK35 (Y)	
Q3,4	V09-0036-05	FET 3SK35 (GR)	
Q5,6	V03-0123-05	Transistor 2SC733 (Y)	
Q7	V01-0012-05	FET 2SK19 (GR)	
Q8	V01-0037-05	Transistor 2SA495 (Y)	
Q9	V09-0057-05	FET 3SK41 (L)	
D1,2	V11-4160-66	Diode 1S1007	
D3,4	V11-0370-05	Diode 1S1587	
D5,6	V11-0051-05	Diode 1N60	
D7	V11-0076-05	Diode 1S1555	
D8	NOT USED		
D9	V11-0076-05	Diode 1S1555	
D10	NOT USED		
D11	V11-0240-05	Zener diode WZ-090 9.0V W	
D12	V11-0076-05	Diode 1S1555	

<b>POTENTIOMETER</b>			
VR1	R12-04		
VR2	R12-54		
VR3	R12-45		
VR1	R12-3025-05	Semi-fixed resistor 10kΩ (B)	
VR2	R12-7013-05	Semi-fixed resistor 500kΩ (B)	

<b>FILTER/COIL</b>			
TC1,2	C05-00		
L1	L40-10		
L2,3	L40-47		
L4	L40-10		
T1	L30-00		
XF1	L71-0018-05	Crystal filter, SSB	
XF2	L71-0017-05	Crystal filter, CW	
L1~6	L40-1021-03	Ferri-inductor 1mH	Option
L2	NOT USED		
T1	L30-0263-05	IFT	
T2	L30-0010-05	IFT	
T3	L30-0008-05	BPF coil	
T4	L30-0009-05	BPF coil	
T5	L30-0010-05	IFT	
T6	L30-0021-05	IFT	
T7			
T8	L30-0008-05	BPF coil	
T9	L30-0010-05	IFT	
T10	L31-0284-05	Filter coil (Blue)	
T11	L31-0252-05	Filter coil (Green)	
T12	L31-0251-05	Filter coil (White)	
T13	L31-0012-05	Trap coil 12.395MHz	

## OX UNIT (X)

Ref. No.	Parts No.	Description	Re- marks
Q1~4	V03-00		
Q5	V01-00		
Q6,7	V03-00		
Q8	V01-00		
D1~4	V11-00		
D5	V11-00		
D6~8	V11-00		
D9	V11-00		
T1	L13-00		