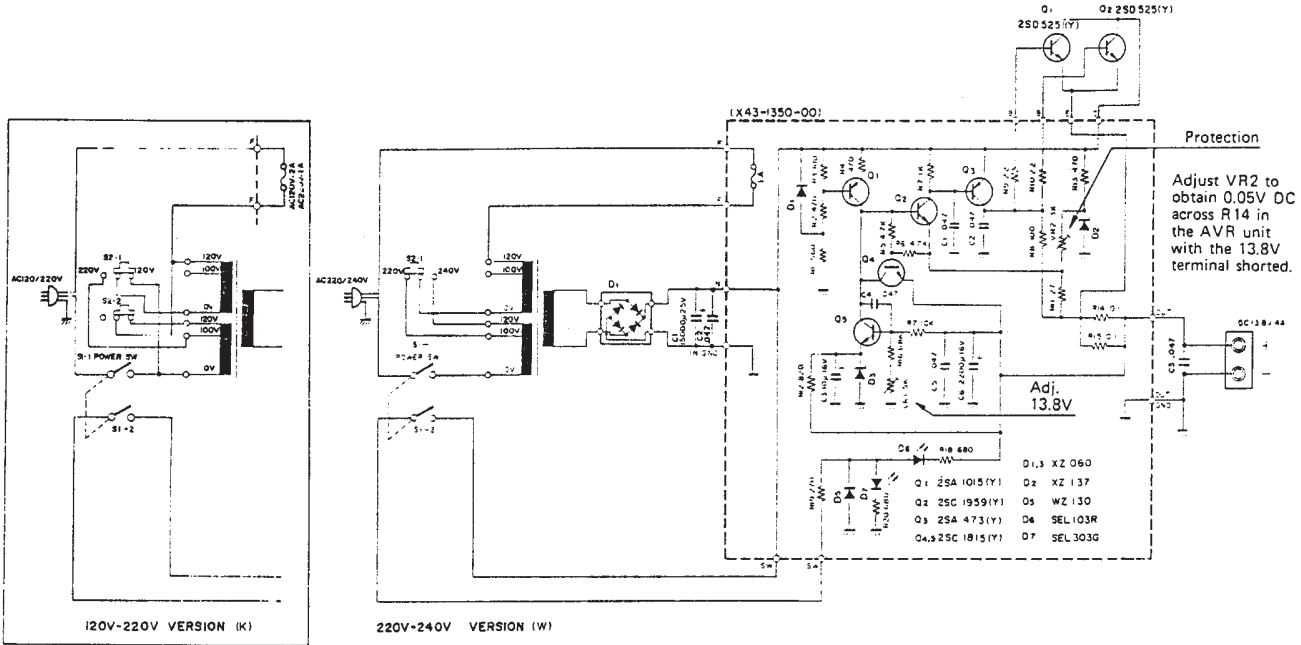


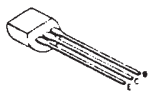
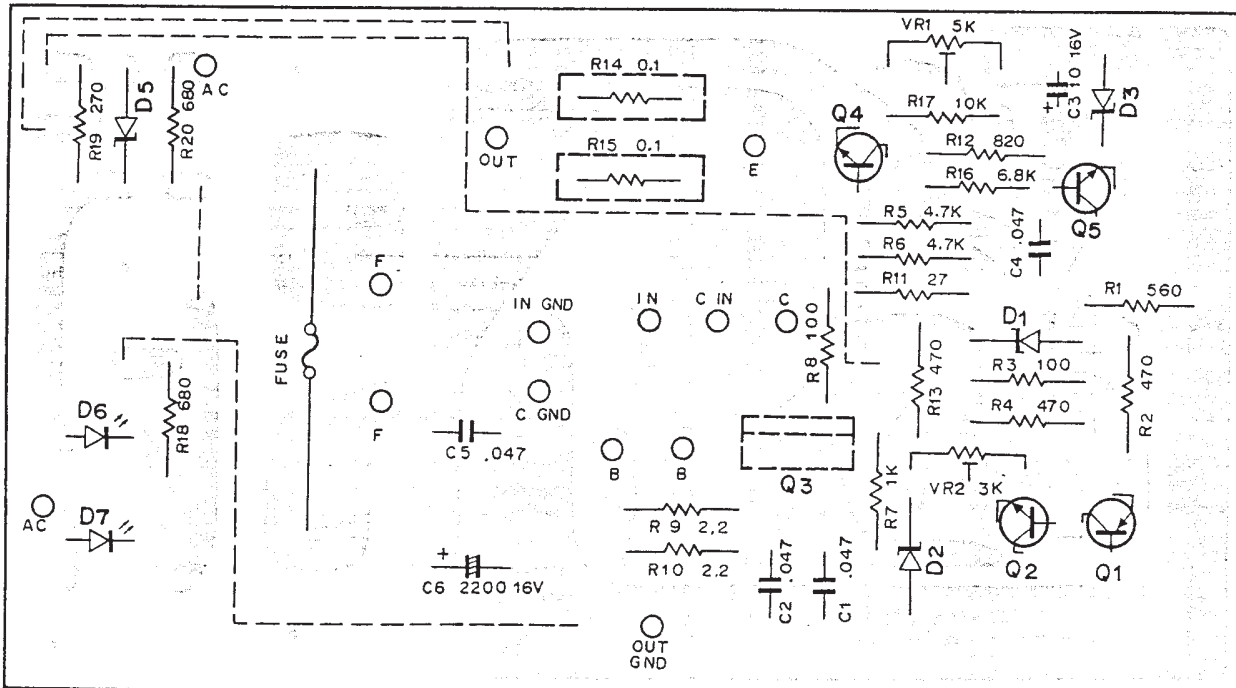
# PS-20

## PS-20 SCHEMATIC DIAGRAM

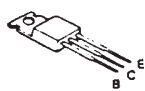


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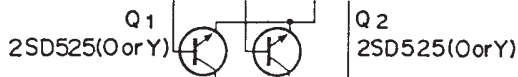
## PS-20 PC BOARD ▼ AVR UNIT (X43-1350-00)



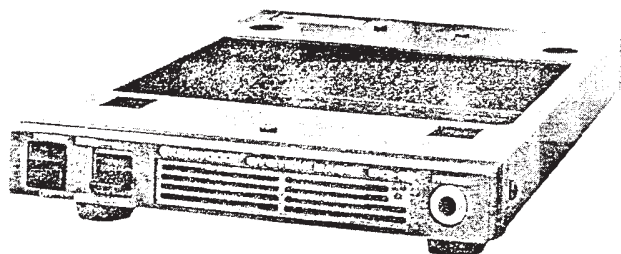
2SA1015(Y)  
 2SC1815(Y)  
 2SC1959(Y)



2SA473(Y)  
 2SD525(Y)

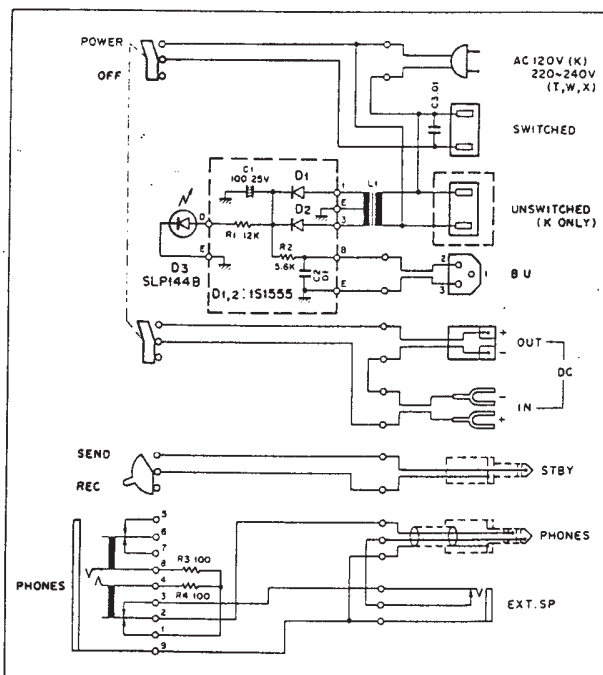


# SYSTEM BASE BO-9



## BO-9 SPECIFICATIONS

Input voltage ..... AC120V (K)  $\pm 10\%$ . 50 ~ 60 Hz  
 220~240V(T)(W)(X)  
 Buck up output ..... DC13.8V, 1.5 mA  
 AC outlet output ..... AC120V (K) 200W (MAX)  
 220~240V(T)(W)(X)  
 Dimensions ..... 170 (6-11/16") x 25 (1") x 232 (9-9/64") mm  
 (inch)  
 Weights ..... Approx. 1.0 kg (2.2 lbs)



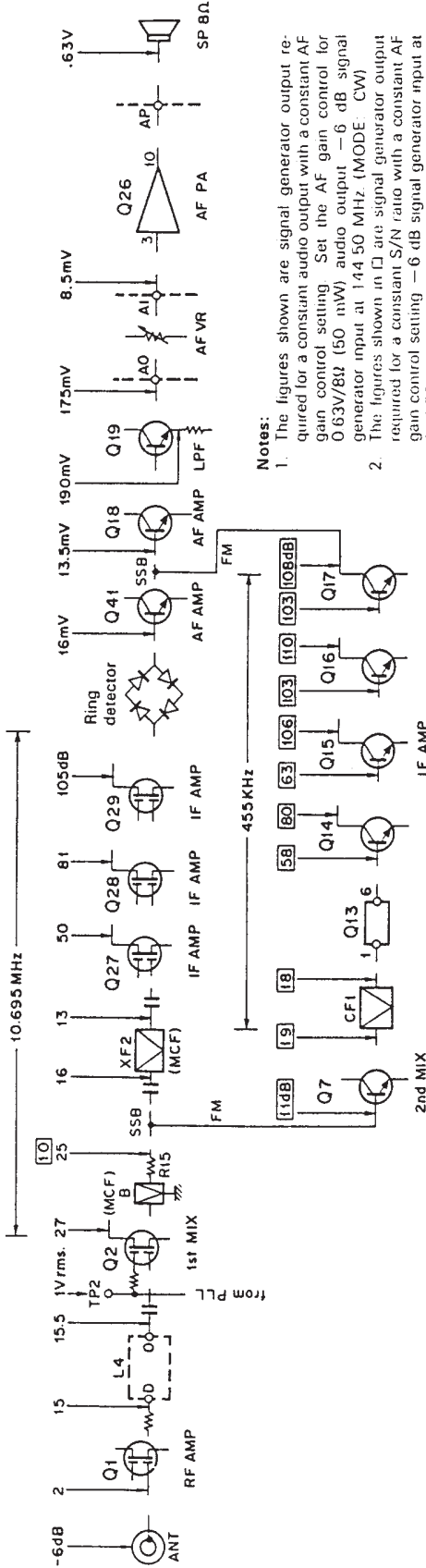
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## BO-9 PARTS LIST

Ref. No.	Parts No.	Description	Re- marks
C1	CE04W1E101Q	E 100 $\mu$ F 25V	
C2.3	CK45F1H103Z	C 0.01 $\mu$ F +80,-20%	
R3.4	RC05GF2H101J	Solid 100 $\Omega$ $\pm 5\%$ 1/2W	
D1.2	V11-0076-05	Diode 1S1555	
D3	V11-6172-56	LED SLP144B	
-	A01-0767-02	Case (upper)(K)	☆
-	A01-0768-03	Case (bottom)	☆
-	A01-0769-02	Case (upper)(W)(T)(X)	☆
-	A20-2374-05	Panel (T)	☆
-	A20-2375-05	Panel (K)(W)(X)	☆
-	B46-0058-00	Warranty card (K)	
-	B50-2708-00	Operating manual (K)	☆
-	B50-2709-00	Operating manual (W)(T)(X)	☆
-	E03-0153-05	AC Outlet	☆
-	E03-0154-05	AC Plug (W)(T)(X)	☆
-	E11-0404-05	Phone jack	
-	E11-0410-05	Phone jack	☆
-	E22-0306-05	Lug plate	
-	E30-0181-05	AC cord (K)	
-	E30-0185-05	AC cord (X)	
-	E30-0585-05	AC cord (W)	
-	E30-0602-05	AC cord (T)	
-	E30-1653-15	DC cord	☆
-	E30-1654-05	Cord with $\phi 2.5$ plug	☆
-	E30-1655-05	Cord with ST plug	☆
-	E30-1656-05	DC cord ass'y	☆
-	E30-1657-05	3P power cord BACK UP	☆
-	H01-2665-04	Carton (inside)(T)	☆
-	H01-2667-04	Carton (inside)(K)(W)(X)	☆
-	H10-2532-04	Cushion foam x 4	☆
-	H12-0467-03	Cushion	☆
-	H25-0029-04	Protective bag (W)(T)(X)	
-	H25-0103-04	Protective bag 125 x 250 mm	
-	H25-0106-04	Protective bag 250 x 350 mm	
-	J02-0323-05	Foot x 4	
-	J19-1325-04	Stopper plate x 4	
-	J25-2732-04	PC board	☆
-	J41-0006-05	Cord bush	
-	L01-0150-05	Transformer (K)	
-	L01-8022-05	Transformer (W)(T)(X)	☆
-	N35-3004-45	Bind screw	
-	N35-3006-45	Bind screw	
-	S36-2405-05	Power switch	☆
-	S44-2404-05	STBY switch	☆

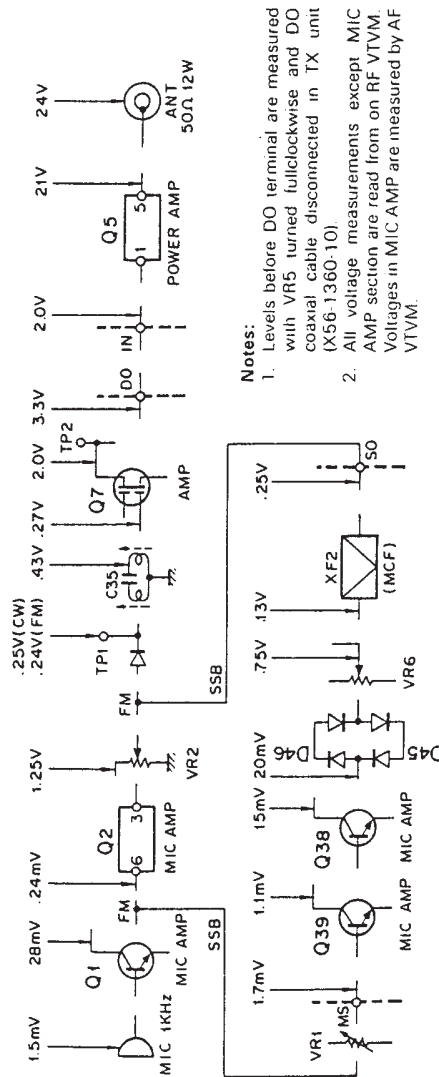
# LEVEL DIAGRAM

## < RECEIVER SECTION >



- Notes:**
- The figures shown are signal generator output required for a constant audio output with a constant AF gain control setting. Set the AF gain control for 0.63V/8Ω (50 mW) audio output -6 dB signal generator input at 144.50 MHz (MODE: CW)
  - The figures shown in □ are signal generator output required for a constant S/N ratio with a constant AF gain control setting -6 dB signal generator input at 144.50 MHz (MODE: FM)
  - The figures shown after the ring detector are audio output levels
  - To inject signal generator output connect a 0.01 μF 500V capacitor between the signal generator and the check point.

## < TRANSMITTER SECTION >



- Notes:**
- Levels before DO terminal are measured with VR5 turned fullclockwise and DO coaxial cable disconnected in TX unit (X56-1360-10).
  - All voltage measurements except MIC AMP section are read from on RF VTVM. Voltages in MIC AMP are measured by AF VTVM.

## < REFERENCE >

Japanese "SG"	American "SG"
-6 dB	0.25 μV
0 dB	0.5 μV
6 dB	1 μV
12 dB	2 μV
24 dB	8 μV
30 dB	15.8 μV
40 dB	50 μV
50 dB	158 μV
60 dB	500 μV
70 dB	1.58 mV
80 dB	5 mV
90 dB	15.8 mV
100 dB	50 mV
120 dB	0.5 V

## ADJUSTMENTS

### < Test Equipment >

1. Tester
    - Input: Sufficient
  2. RF VTVM (RF V.M.)
    - Input impedance: 1 M $\Omega$  and less than 2 pF
    - Voltage range: F.S. = 10 mV to 300V
    - Frequency range: 150 MHz or greater
  3. Frequency counter (F count)
    - Minimum input voltage: 50 mV
    - Frequency range: 150 MHz or greater
  4. DC power supply
    - Voltage 10V to 17V variable
    - Current: 6A min
  5. RF Dummy Load
    - Dissipation: 20W
    - Impedance: 50 $\Omega$
    - Frequency range: 144 MHz
  6. AF VTVM (AF V.M.)
    - Input impedance: 1 M $\Omega$  or greater
    - Voltage range: F.S = 1 mV to 30V
    - Frequency range: 50 Hz to 10 kHz
  7. AF Generator (AG)
    - Frequency range: 100 Hz to 10 kHz
    - Output: 0.5 mV to 1V
  8. Linear detector
    - Frequency range: 144 MHz
  9. Field strength tester
    - Frequency range: 144 MHz
  10. Directional coupler
  11. Oscilloscope
    - With horizontal input and high sensitivity
  12. Standard signal generator (SSG)
    - Frequency range: 144 ~ 149 MHz
    - Modulation: amplitude and frequency modulation
    - Output: -20 dB ~ 100 dB
  13. AF Dummy load
    - 8 $\Omega$ . 5W (approx.)
- Noise generator
- Must generate ignition-like noise containing harmonics beyond 144 MHz
15. Sweep generator
    - Frequency range: 144 ~ 149 MHz

### < Preparation >

Unless otherwise specified, set the controls as follows.

POWER/VOL SW	ON
SEND/REC	REC
RF GAIN VOL	MAX (Full Clockwise)
SQUELCH VOL	MIN
MODE SW	USB
VFO A/B SW	A
TX OFF SET SW	S
HI/LOW SW	HI
RIT VOL	Centered
RIT SW	OFF
NB SW	OFF
SCAN SW	OFF
D.STEP/SEARCH	OFF
MR	OFF

### Notes:

- When adjusting the trimmers or coils, use a non-induced adjusting rod of bakelite, etc
- When adjusting the RX section never transmit to prevent SSG damage.
- Connect MIC connector as shown in Fig. 18.

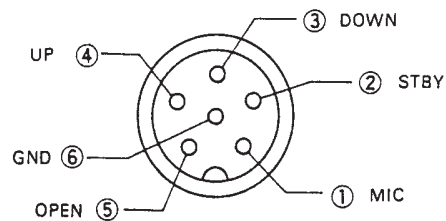


Fig. 18 MIC terminals  
(view from front panel side)

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## ADJUSTMENTS

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
1. Voltage check in RX mode.	1 8C	DC V.M	TX	8C				7.7~8.3V	Check
	2 8R			8R				7.9~8.9V	
	3 9T			9T				Less than 0.1V	
	4 -6 Mode SW : FM1			-6				-5.8~-6.2V 0V (Voltage drops)	
	5 5C			PLL	5C				
2. Voltage check in TX mode	• Disconnect TX unit DO-E cable  • Set in transmit mode.	DC V.M	TX	9T	TX	VR6	Set to 9.0±0.1V		Check
	2 8R			8R				Less than 0.5V	
	3 DB		Final	DB				11.7~12.1V	
3. Back up voltage check	1 POWER/VOL SW: OFF	DC V.M	TX	MB	TX	VR7	Set to 5.2±0.1V		
4. PLL	1 MODE SW: FM1 VFO dial: 8.99 (K.X) 5.98 (W.T)	RF V.M	PLL	TP3	PLL	L5,6,7	MAX		Reference 0.5V
	2 VFO dial: 4.00 (W.T) 8.99 (K.X)	DC V.M	PLL	TP2	PLL	TC1	2.0V (W.T) 7.0V (K.X)	±0.05V	
	3 VFO dial: 8.99 (K.X) 5.98 (W.T)	RF V.M	PLL	TP3	PLL	L5,6,7	MAX		Readjust 1
	4 VFO dial: 5.98 (W.T) 4.00 (K.X)	DC V.M	PLL	TP2				3.5~4.5V (W.T) More than 2.0V (K.X)	Check
	5 VFO dial: 5.00 Set in transmit mode MODE SW: USB	RF V.M	PLL	TP1	PLL	L4	MAX		Reference 0.2V
5. HET frequency adjustment	1 Set in receive mode. MODE SW: FM2 VFO dial: 6,000.0 (K.X) 5,000.0 (W.T)	F.counter	PLL	TP1	Switch	VR2	135,305 MHz (K.X) 134,305 MHz (W.T)	±20 Hz	
	2 MODE SW: USB VFO dial: 6,000.0 (K.X) 5,000.0 (W.T)	F. counter	PLL	TP1	Switch	VR3	135,306.5 MHz (K.X) 134,306.5 MHz (W.T)	±10 Hz	
	3 VFO dial: 5,999.9 (K.X) 4,999.9 (W.T)	F.counter	PLL	TP1	PLL	VR1,2	135,306.4 MHz (K.X) 134,306.4 MHz (W.T)	±10 Hz	VR1: Coarse VR2: Fine
	4 MODE SW: LSB VFO dial: 6,000.0 (K.X) 5,000.0 (W.T)	F.counter	PLL	TP1	Switch	VR1	135,303.5 MHz (K.X) 134,303.5 MHz (W.T)	±20 Hz	
6. RIT	1 MODE SW: LSB VFO dial: 5,000.0 RIT SW: ON	F.counter	PLL	TP1	Switch	VR4	134,303.5 MHz	±10 Hz	
	2 MODE SW: USB	F.counter	PLL	TP1	Switch	VR5	134,306.5 MHz	±10 Hz	
	3 RIT control: Full clockwise RIT control: Full counterclockwise	F.counter	PLL	TP1				More than 134,307.5 MHz Less than 134,305.5 MHz	More than ±1.0 kHz Less than -1.0 kHz
	4 RIT SW: OFF RIT control: Centered	DC V.M	PLL	RIT				5.0±0.3V	Check

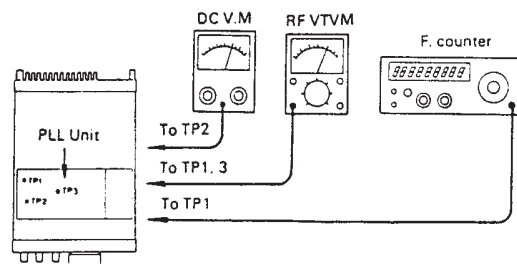


Fig. 19 4. PLL, 5. HET, 6. RIT

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# ADJUSTMENTS

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
7. CAR	1 Set knobs in Table 10.	RF V.M	CAR	TP	CAR	L4	MAX		Reference 0.28V
	2	F.counter	CAR	TP	CAR	TC1	10.693.5 MHz	±50 Hz	
	3 MODE SW: CW	F.counter	CAR	TP				Same frequency as 2	Check
	4 Set in transmit mode.	F.counter	CAR	TP	CAR	TC2	10.694.3 MHz	±50 Hz	
	5 Set in receive mode. MODE SW: LSB	F.counter	CAR	TP	CAR	TC3	10.696.5 MHz	±50 Hz	

## < RX SECTION >

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
1. RG1 voltage	1 MODE SW: FM2 VFO dial: 6,000.0 (K.X) 5,000.0 (W.T)	DC V.M	RX	RG1	RX	VR1	4.0V		
2. Helical	1 VFO dial: 5,000.0 (W.T)	RF V.M	RX	TP2	RX	L3	MAX	146 MHz(K.X) 145 MHz(W.T) 148 MHz(K.X) 146 MHz(W.T)	Reference 1.0V
	2 ANT terminal on rear panel: Connect sweep generator. TP1 on RF unit: Connect detector. LR-E connector: Disconnect. Reconnect after adjustment.	Oscilloscope < Detector > To RF unit TP1      To Oscilloscope vertical		RX	L1.2	TC101 102.103	Repeat		

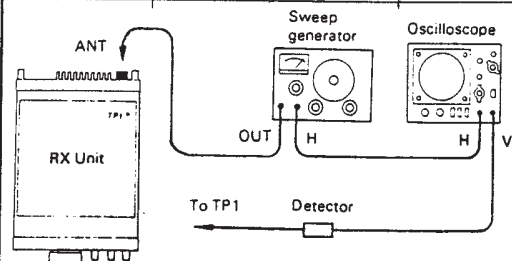


Fig. 20 RX 2. Helical

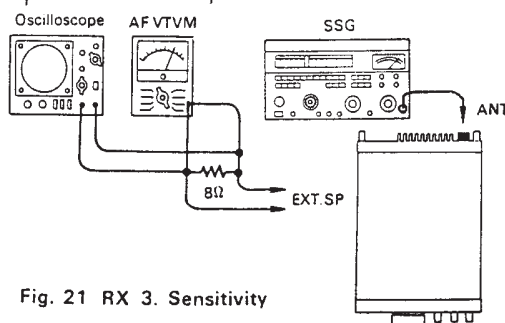


Fig. 21 RX 3. Sensitivity

3. Sensitivity adjustment	1 ANT terminal on rear panel: Connect SSG. VFO dial: 6,005.0 (K.X) 5,005.0 (W.T) Set SSG to 146,005 MHz (K.X), 145,005 MHz (W.T), 10 dBμ (unmodulated). Adjust the level so that the S meter deflects. AF GAIN: 0.63V/8Ω (50 mW)	S meter or AF V.M.	Rear panel	EXT.SP	RX	L5,6,8,19	MAX (Repeat)		Repeat this adjustment as L6, 8 and 19 interact.
	2	AF V.M.	Rear panel	EXT.SP	RX	L8	Turn core counter-clockwise to reduce AF output by 2 dB.		
	3	AF V.M.	Rear panel	EXT.SP	RX	L19,20 21,22	MAX		
	4 SSG OUT: -8 dBμ	AF V.M.	Rear panel	EXT.SP				S/N more than 10 dB	Check
	5 MODE: FM2 VFO dial: 6,005.0 (K.X) 5,005.0 (W.T) Adjust SSG signal so the S meter indicates "3"	S meter or AF V.M.	Rear panel	EXT.SP	RX	L3,5~7	MAX (Repeat)		Repeat this adjustment as L6 and 7 interact.

## ADJUSTMENTS

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
	6 SSG OUT: 50 dB $\mu$	AF V.M.	Rear panel	EXT.SP	RX	L17	MAX		
	7 SSG OUT: -7 dB $\mu$	AF V.M.	Rear panel	EXT.SP				S/N more than 20 dB	Check
	8 SSG OUT: 40 dB $\mu$	AF V.M.	Rear panel	EXT.SP				S/N more than 50 dB	Check
4. S meter	1 MODE SW: FM2 SSG OUT: 30 dB $\mu$	S meter			RX	VR2	Set RF meter to "10"		Lower scale
	2 MODE SW: USB No signal	S meter			RX	VR4	Set RF meter to "0"		Lower scale
	3 VFO dial: 4.500.0 SSG OUT: 20 dB $\mu$	S meter			RX	VR5	Set S meter to "9"		Upper scale
	4 SSG OUT: 0 dB $\mu$	S meter			RX	L21	After adjusting to MAX, turn the core counter-clockwise to set S meter to "1"		Upper scale
	5 Again SSG OUT: 20 dB $\mu$	S meter			RX	VR5	Set S meter to "9"		Upper scale
5. NB	1 SSG OUT: 20 dB	DC V.M.	RX	TP3	RX	L12.14	MIN (Repeat)		When TP3 voltage is less than 5V adjust L14 counter-clockwise to get 5V.
	2 Pulse noise							Pulse noise should be reduced.	Check

### < TX SECTION >

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
1. CAR level	1 TX unit VR5: Full clockwise (ALC OFF) DO terminal: Disconnect coaxial cable. VFO dial: 5.005.0 Set in transmit mode.	RF V.M.	RX	SO	RX	L25	MAX		
					RX	VR7	0.25V		
2. FM  10.695 MHz	1 Follow the above procedures.	RF V.M.	TX	TP1	TX	L5	MAX		Reference 0.25V
	2 MODE SW: FM1	RF V.M.	TX	TP1	TX	L4	MAX		Reference 0.25V
	3	F.counter	TX	TP1	TX	TC1	10.695 MHz	$\pm 200$ Hz	
3. Drive adjustment.	1 Follow the above procedures.	RF V.M.	TX	TP2	TX	L8~11	MAX (Repeat)		Reference 2.3V
4. Power adjustment.	1 ANT terminal on rear panel: Connect power meter. DO terminal: Connect coaxial cable. Set in transmit mode.	Power meter or DC A.M.			TX	L11 TC2	MAX (Repeat)		
					TX	TC3	MAX		More than 15W

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## ADJUSTMENTS

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
	2	DC V.M	Final	TP	Final	VR3	MIN		Reference 0.3V
	3	Power meter			TX	VR5	Set to 11W		
5. RF meter	1 Follow the above procedures.	RF meter			Final	VR1	Set RF meter to "8".		Lower scale
6. LOW power	1 Follow the above procedures. HI/LOW SW: LOW MODE SW: FM1-FM2-CW	Power meter			TX	VR4	Set to 1.2W		
7. Protection	1 MODE SW: FM1 HI/LOW SW: HI ANT terminal on rear panel: open	DC V.M	TX	PC	Final	VR2	1.25V	Current less than 1.8A	RF meter deflection should be below that at 50 ohm termination.
	2 Current above 1.8A.				Final	VR2	Set to 1.8A.		
8. FM deviation	1 MODE SW: FM1 MIC terminal: Connect AG signal of 1 kHz, 15mV.	Linear detector			TX	VR2	Set to 5 kHz		
	2 AG: Adjust AG output to obtain 3.5 kHz deviation.	AF,V.M.						AG output: less than 3 mV	Check

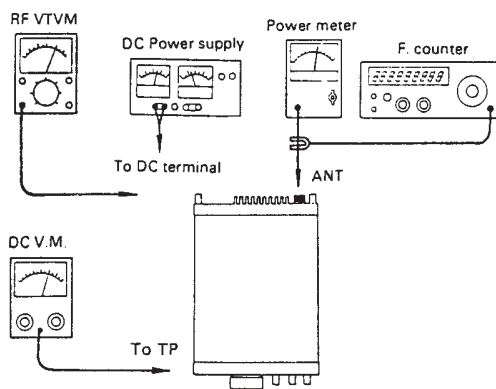


Fig. 22 TX 4. Power adjustment

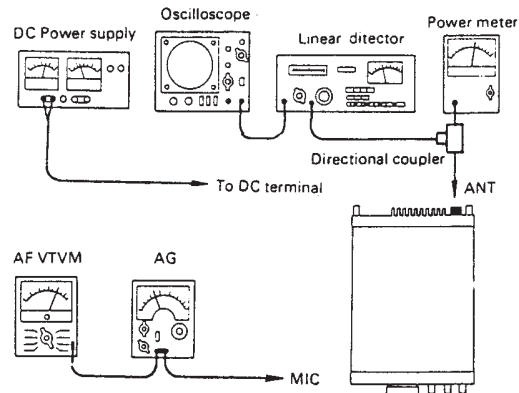


Fig. 23 TX 8. FM deviation

9. SSB MIC gain	1 MODE SW: USB VFO dial: 4,500.0 AG: 1.5 kHz, 1.5 mV	Power meter			TX	VR1	10W	$\pm 0.5W$	
10. Carrier point	1 Adjust AUDIO output level for 5W of transmit output	Power meter							
	2 AG: 400 Hz or 2,600 Hz	Power meter			CAR	TC1	400/2,600 Hz alternate	Same output	
	3 MODE SW: LSB	Power			CAR	TC3	400/2,600 Hz alternate	Same output	
11. CAR Suppression	1 MODE SW: USB MIC terminal: Terminated with 470 ohm	Field strength meter			RX	TC1 VR6	Adjust alternately to minimize the field strength meter deflection.	Less than -40 dB	
12. Side tone level	1 MODE SW: CW AFVOL: Centered Key jack: Connect key and depress.	AF V.M		EXT.SP	RX	VR3	50 mW (0.63V/8 $\Omega$ )		
Check of operating frequency.	1 MODE SW: FM2 VFO dial: 6,000.0 (K,X) 5,000.0 (W,T)	F.counter	PLL	TP1				135,305.0 MHz $\pm 20$ Hz (K,X) 134,305.0 MHz $\pm 20$ Hz (W,T)	Check



## ADJUSTMENTS

Item	Condition	Measurement			Adjustment			Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
Check of operating frequency	2 MODE SW: USB VFO dial: 6.000.0 (K,X) 5.000.0 (W,T)	F.counter	PLL	TP1				135.306.5 MHz ±10 Hz (K,X) 134.306.5 MHz ±10 Hz (W,T)	Check
	3 MODE SW: LSB VFO dial: 6.000.0 (K,X) 5.000.0 (W,T)	F.counter	PLL	TP1				135.303.5 MHz ±10 Hz (K,X) 134.303.5 MHz ±10 Hz (W,T)	Check
	4 VFO dial: 5.999.9 (K,X) 4.999.9 (W,T)	F.counter	PLL	TP1				135.303.4 MHz ±10 Hz (K,X) 134.303.4 MHz ±10 Hz (W,T)	Check
	5 Set in receive mode								

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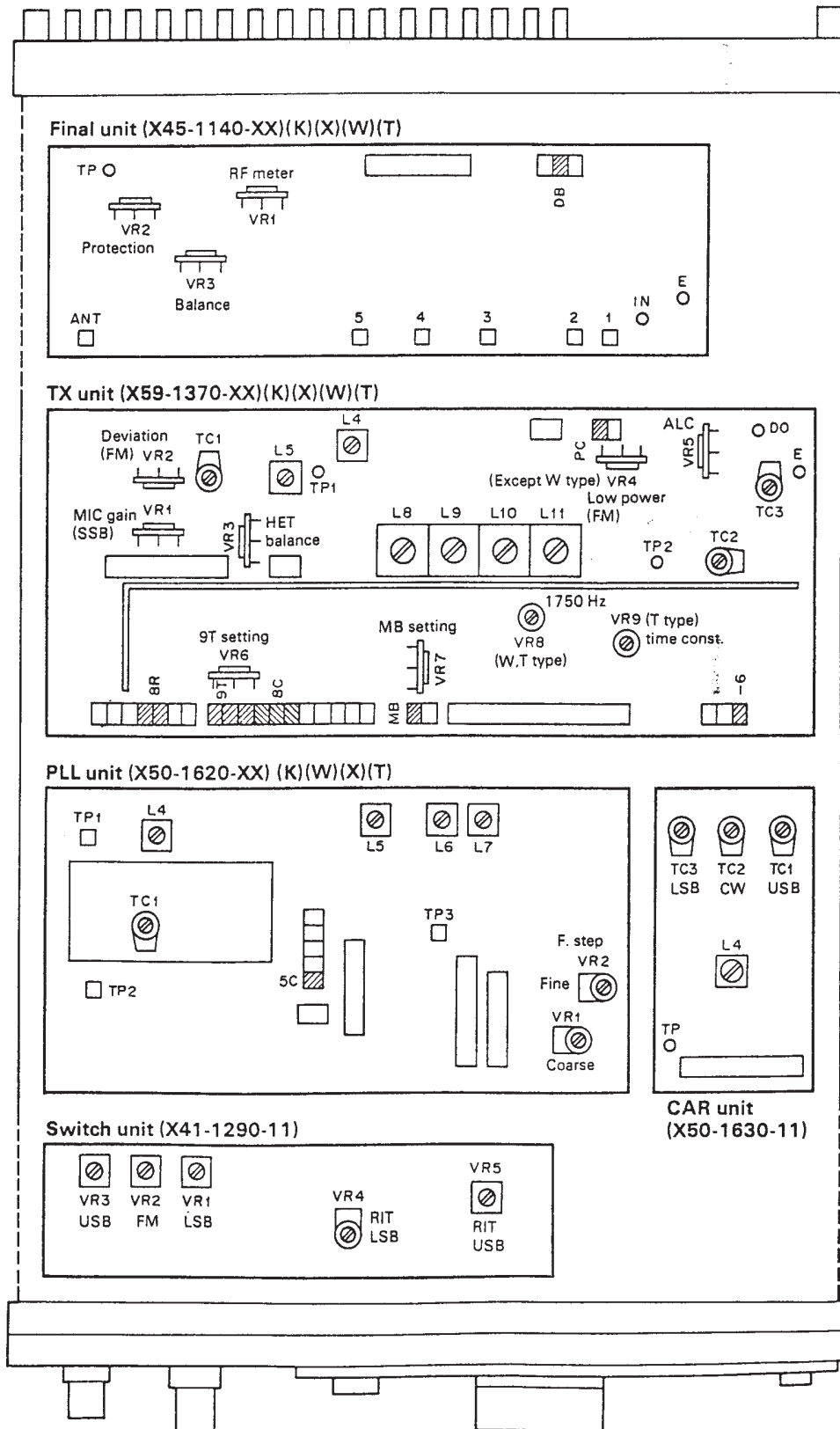
### < Micro-computer operational check >

Control functions		Micro-computer functions			
1. VFO A/B 1 Disconnect power plug and re-connect after a 20 second delay. 2 VFO A/B SW: B  3 MR SW: ON MEMORY: 1 ~ 5 4 VFO A/B SW: A MR SW: OFF  2. Dial step and indicator digits		Indicates 6.000.0 (K,X) Indicates 5.000.0 (W,T) Indicates 4.000.0. VFO B indicator lights. Indicates 4.000.0.			
Destination	K	X	W	T	
MODE SW: USB-CW-LSB-FM2 Turn VFO dial	5 digits indication Indication changes in 100 Hz steps.	←	←	←	
MODE SW: FM2 D STEP SW: ON Turn VFO dial.	4 digits indication Indication changes in 5 kHz steps.	←	4 digits indication Indication changes in 12.5 kHz steps	←	
MODE SW: FM1 D STEP SW: ON, OFF Turn VFO dial.	3 digits indication Indication changes in 10 kHz steps.		4 digits indication Indication changes in 25 kHz steps	←	
3. Memory 1 Write Set the controls as in Table 10. MEMORY SW: 1 ~ 5 2 Call MEMORY SW: 1 ~ 5 3 MEMORY SW: <span style="border: 1px solid black; padding: 0 2px;">5</span>		By pressing M SW, tone should be heard and the 5-digit data indicated should be stored in memory. By pressing MR SW, the 5-digit frequency should be displayed. Transmit and receive frequencies should be stored and called individually.			

Control functions		Micro-computer functions	
4. UP/DOWN 1 Set the controls as in Table 10.		Press the MIC UP/DOWN switch once, the tone should be heard and the frequency will shift up or down step by step. Press and hold the switch, and the frequency will change rapidly with continuous tone.	
5. Search 1 MODE SW: USB-CW-LSB D. STEP SW: ON(SEARCH) 2 Turn VFO dial.  3 Set in transmit mode. 4 D. STEP SW: OFF Set in receive mode.		The frequency is searched between 0 and 9.9 kHz in 100 Hz steps. The frequency is shifted up or down in 10 kHz steps (quick shift). The search function stops.	
6. Scan 1 MODE SW: FM2 Squelch control: ON SCAN SW: ON 2 D. STEP SW: ON (SEARCH)  3 Squelch control: Turn counterclockwise. 4 Squelch control: F.S. 5 Set in transmit mode. 6 Set in receive mode.		The frequency is shifted up in 100 Hz steps.  The frequency is shifted up in 5 kHz (K,X), 12.5 kHz (W,T) steps. BUSY indicator lights. Scan stops.  Scan restarts. Scan stops.	

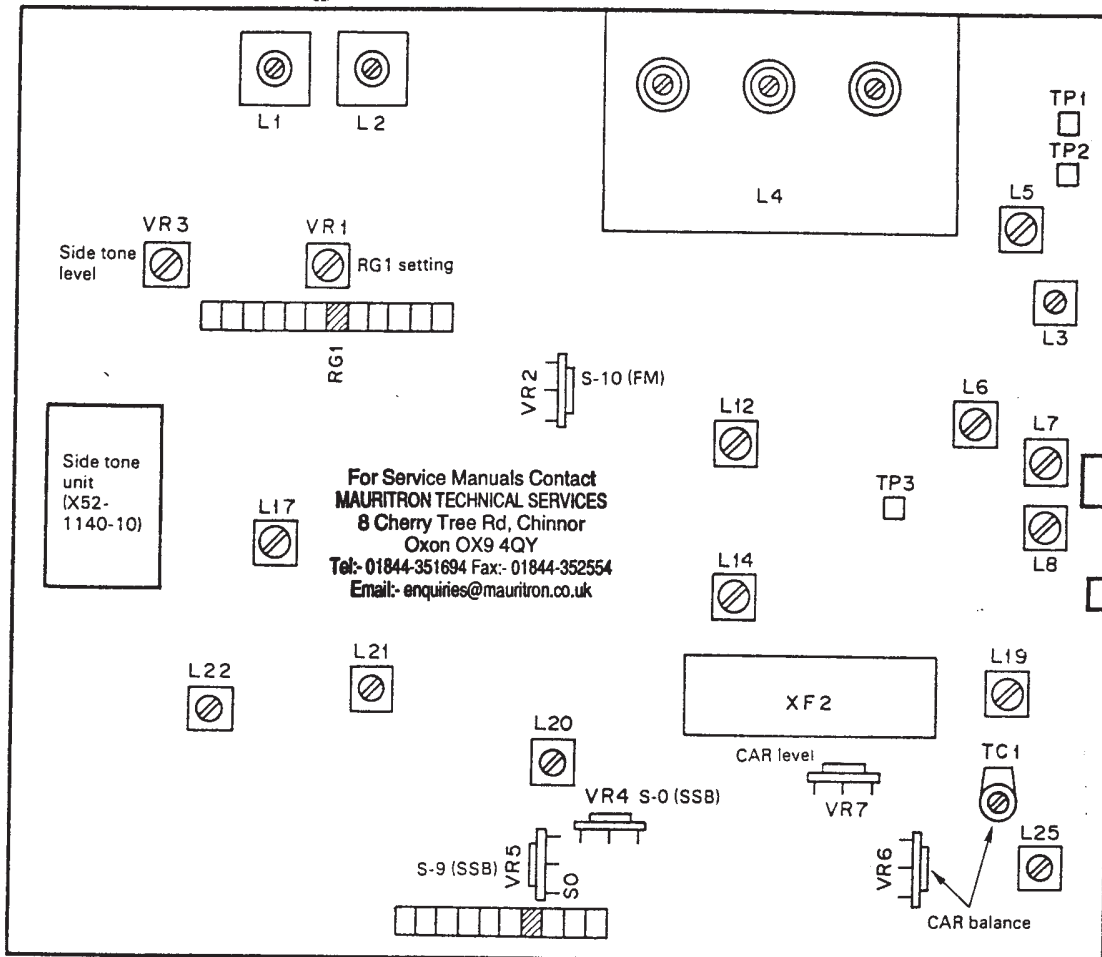
# ADJUSTMENTS

< TOP INTERNAL VIEW >

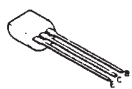


# ADJUSTMENTS

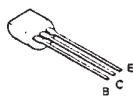
RX unit (X55-1260-XX)(K)(X)(W)(T)



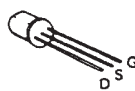
2SC1815(Y) 2SA1015(Y)  
2SC2240(GR) 2SC1775(E)



2SC2538



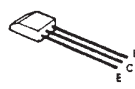
2SK19(GR)



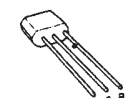
2SK30A(GR)  
2SK30A(O)



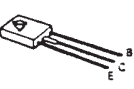
2SC460(B)



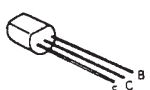
2SC2603(E)



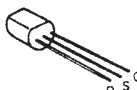
2SC496(Y)



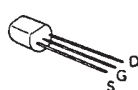
2SC1923(O)



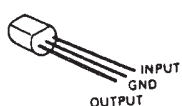
2SK61(GR)



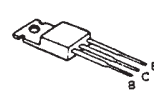
2SK125



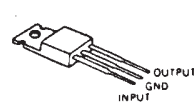
NJM78L06K



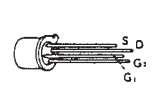
2SA671(B)



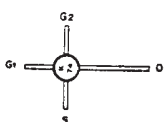
FS7808C



3SK76



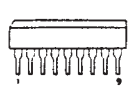
3SK74(L)  
3SK74(M)



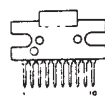
TA7061P  
TA7302P



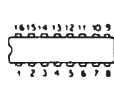
TC5081P  
TC5082P-GL



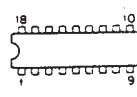
HA1366W



TC5022BP  
MN1201A



TC9122P



μPD650C-021



# WIRE HARNESS (K) TYPE

Symbol color  
 BLU Blue  
 BRN Brown  
 GRN Green  
 ORA Orange  
 VLT Violet  
 GRY Gray  
 ORA Orange  
 VLT Violet  
 WHT White  
 YLW Yellow

Conne- ter No.	Termi- nal No.	Destination		Color	Remarks	Conne- ter No.	Termi- nal No.	Destination		Color	Remarks	Conne- ter No.	Termi- nal No.	Destination		Color	Remarks	
		Conne- tor	Termi- nal					Conne- tor	Termi- nal					Conne- tor	Termi- nal			
1	1	26	5	YLW	RB	14	3	H	10	VLT/WHT	BOD	29	1	-	-	-	SS	
	2	41	1	Coaxial	RA		4	F	7	BLK/WHT	BO		2	-	-	-	TO	
	3	41	2	cable	E		5	6	10	BLU	SCR		3	-	-	-	E	
	4	6	5	GRN	RM		6	6	6	VLT	NB		4	E	4	RED/WHT	FMT	
	5	27	10	VLT/WHT	9T		6	6	6	RED/WHT	OFF		5	5	2	RED/WHT	FMT	
	6	H	1	RED/WHT	PC		15	1	21	3	VLT		RV1	6	32	3	RED/WHT	FMT
2	1	3	3	YLW	BA	3	2	J	3	VLT	OCB	7	7	-	-	-	FMT	
	2	3	2	RED	DB		3	E	15	WHT	FMC		8	A	9	BRN	FMC	
	3	3	1	BLU	B		4	E	1	BRN	SCB		9	C	7	BRN	FMC	
3	1	2	3	BLU	E	4	6	E	10	GRN	CCB	10	10	4	2	BRN	FMC	
	2	2	2	RED	C		7	32	1	GRN	CCB		11	32	6	2	BRN	FMC
	3	2	1	YLW	B		8	J	5	ORA	RV3		12	E	2	BRN	FMC	
4	1	27	3	RED	CB	16	1	H	11	BLU/WHT	B3D	30	1	4	5	BLU	TO	
	2	29	10	BRN	FMC		2	F	10	ORA	B3		2	4	6	3	YLW	E
	3	D	1	YLW	AI		3	K	3	WHT	B20		3	A	3	YLW	STS	
	4	D	2	-	E		4	K	2	BLK/WHT	E3		4	A	1	YLW/WHT	KEY	
	5	30	1	BLU	SI		5	F	9	RED	B2		5	32	2	YLW/WHT	KEY	
	6	30	2	-	E		6	H	3	BLU	B3R		6	1	15	7	GRN	CCB
	7	G	1	GRN	SQ		7	H	4	VLT	B2R		7	2	30	5	YLW/WHT	KEY
5	1	-	-	-	FMT	17	1	F	1	GRN	MC5	31	1	8	3	VLT	-6	
	2	29	5	RED/WHT	FMT		2	E	8	GRY/WHT	FM2		2	-	-	-	-	-
	3	24	4	BRN	ULB		3	E	7	VLT/WHT	FM1		3	27	2	RED	CB	
	4	9	7	GRY	8C		4	F	2	BLK/WHT	80		4	10	8	GRN	CCB	
	5	27	8	GRY	8C		5	F	3	BRN	B1		5	10	7	GRN	KEY	
	6	A	4	GRN/WHT	AP		6	F	4	RED	B2		6	29	11	BRN	FMC	
	7	J	1	YLW	RG1		7	F	5	ORA	B3		7	A	11	ORA	E	
	8	A	5	WHT	SP		8	F	4	RED	B2		8	A	10	Coaxial	T1	
	9	-	-	-	FMR		9	F	5	ORA	B3		1	36	3	cable	LT	
	10	E	8	BRN/WHT	BD		10	E	23	YLW/WHT	S8T		2	36	4	cable	E	
	11	40	4	ORA/WHT	SS		11	F	5	ORA	S8T		3	4	2	ORA	CV	
	12	G	3	ORA	SS		18	1	1	1	BLK		E	1	24	2	BLU/WHT	TL
6	1	26	4	GRY/WHT	BR	19	2	1	2	GRN	5CE	32	2	40	2	ORA	TL	
	2	D	3	GRN	E		3	1	3	BRN	A1		1	42	2	RED/WHT	AL	
	3	D	4	-	AO		4	1	4	BLK/WHT	AO		2	8	2	BRN/WHT	AG	
	4	9	3	GRN	M		5	23	2	YLW/WHT	35		3	9	8	BLK/WHT	SCT	
	5	1	4	GRN	M		6	23	3	ORA/WHT	33		4	9	1	BLK/WHT	CG	
	6	14	6	VLT	NS		7	23	4	RED/WHT	32		5	A	7	ORA/WHT	ST	
	7	-	-	-	-		8	23	5	BRN/WHT	31		6	37	1	Coaxial	LR	
	8	E	14	GRN/WHT	CRB		9	23	6	GRY	24		7	37	2	cable	E	
	9	E	21	VLT	BRS		10	23	7	BLU	23		1	33	1	Coaxial	LT	
	10	14	5	BLU	SCR		20	1	22	2	BLU		22	4	33	2	cable	E
7	1	25	2	Coaxial	RO	21	2	22	3	GRN	21	33	1	36	1	Coaxial	LR	
	2	25	1	cable	E		3	22	4	YLW	14		2	36	2	cable	E	
	1	J	2	BLU	RG2		4	22	5	ORA	13		1	9	5	Coaxial	E	
	2	35	2	BRN/WHT	AG		5	22	6	RED	12		2	9	4	cable	SI	
	3	31	1	VLT	-6		6	22	7	BRN	11		1	11	8	Coaxial	CAR	
8	1	10	9	Coaxial	E	22	7	21	5	WHT	HCV	34	1	11	7	Coaxial	E	
	5	10	10	cable	CT		1	27	7	GRY	8C		2	11	7	cable	TL	
	1	35	4	ORG/WHT	CG		2	J	4	GRN	RIT		3	34	2	BLU/WHT	TL	
	2	H	8	GRN	M		3	15	1	VLT	OFF		4	5	11	ORA/WHT	BD	
	3	8	4	GRN	M		4	15	9	YLW	ON		5	5	11	ORA/WHT	BD	
	4	38	2	Coaxial	SO		5	20	7	WHT	HCV		6	5	11	GRN	RIT	
	5	38	1	-	-		6	-	-	-	-		7	-	-	-	-	-
	6	-	-	-	-		8	5	23	5	BRN/WHT		31	1	37	1	Coaxial	LR
	7	5	4	GRY	8C		9	23	6	GRY	24		2	37	2	cable	E	
	8	35	3	BLK/WHT	SCT		10	23	7	VLT	23		3	33	1	Coaxial	LT	
9	1	11	6	VLT	SCC	23	1	19	7	VLT	23	35	1	1	2	Coaxial	RA	
	2	11	5	WHT	OCB		2	20	1	BLU	22		2	1	3	cable	E	
	3	E	25	GRY	BTS		3	20	2	GRN	21		1	H	2	ORA/WHT	PC	
	4	E	12	BLU/WHT	CTB		4	20	3	YLW	14		2	35	1	RED/WHT	ALC	
	5	A	7	GRN	SCB		5	20	4	ORA	13		1	30	4	YLW/WHT	KEY	
	6	E	9	GRN	SCC		6	20	5	RED	12		2	10	5	GRN	CCB	
	7	32	5	GRN	MS		7	20	6	BRN	11		3	30	3	YLW	STS	
	8	32	4	GRN	E		8	20	7	GRN/WHT	35		4	5	6	GRN/WHT	AP	
	9	8	4	Coaxial	E		9	20	8	YLW/WHT	34		5	5	8	WHT	SP	
	10	8	5	cable	CT		10	20	9	ORA/WHT	33		6	D	7	YLW	B	
10	1	E	13	GRN/WHT	CRB	24	1	12	2	GRN	5C	36	1	30	4	YLW/WHT	KEY	
	2	E	19	BLU	SCB		2	34	1	ORA	VC		2	10	5	GRN	CCB	
	3	E	11	BLU/WHT	CTB		3	13	11	RED	UL		3	30	3	YLW	STS	
	4	E	16	WHT	OCB		4	5	3	BRN	ULB		4	5	6	GRN/WHT	AP	
	5	9	10	WHT	OCB		5	19	3	ORA/WHT	33		5	5	8	WHT	SP	
	6	9	9	VLT	SCC		6	19	4	RED/WHT	32		6	D	7	YLW	B	
	7	39	2	Coaxial	E		7	19	5	BRN/WHT	31		7	35	5	ORA	ST	
	8	39	1	cable	CAR		8	19	6	GRY	24		8	C	6	ORA	ST	
11	1	27	4	RED	CB	25	1	7	2	Coaxial	E	37	1	11	8	Coaxial	CAR	
	2	24	1	GRN	5C		2	7	1	Coaxial	RO		2	11	7	cable	E	
	3	28	2	ORA	MB		3	7	2	Coaxial	E		1	9	5	Coaxial	E	
	4	-	-	-	-		4	22	6	RED	12		1	9	4	Coaxial	E	
	5	9	10	WHT	OCB		5	22	7	BRN	11		2	9	5	Coaxial	E	
	6	9	9	VLT	SCC		6	22	8	WHT	HCV		3	11	8	Coaxial	CAR	
	7	39	2	Coaxial	E		7	21	5	WHT	HCV		4	11	7	cable	E	
	8	39	1	cable	CAR		8	21	6	GRY	24		5	11	7	cable	E	
12	1	27	4	RED	CB	26	1	-	-	-	ST	38	1	11	8	Coaxial	CAR	
	2	24	1	GRN	5C		2	C	3	ORA	ST		1	11	7	cable	E	
	3	28	2	ORA	MB		3	E	24	ORA/WHT	BR		2	35	1	RED/WHT	ALC	
	4	-	-	-	-		4	8	1	GRY/WHT	BR		3	26	2	ORA	ST2	
	5	9	10	WHT	OCB		5	1	1	YLW	RB		4	13	7	VLT	UP4	
	6	9	9	VLT	SCC		6	C	2	WHT	E		5	13	8	BLU	DN3	
	7	39	2	Coaxial	E		7	C	1	YLW	RB		6	A	8	ORA	ST2	
	8	39	1	cable	CAR		8	C	2	WHT	MIC		7	29	9	BRN	FMC5	
	9	27	4	RED	CB		9	29	8	BRN	FMC		8	32	8	ORA	T1	
	10	24	1	GRN	5C		10	32	8	ORA	T1		9	32	7	ORA	E	
	11	28	2	ORA	MB		11	32	7	ORA	E		10	32	7	ORA	E	
13	1	-	-	-	F3	27	1	D	8	YEL	B	39	1	D	5	RED	B	
	2	F	6	ORA/WHT	F3D		2	31	3	RED	CB		1	26	7	WHT	MIC1	
	3	K	4	BLK/WHT	E3		3	4	1	RED	CB		2	26	6	WHT	E6	
	4	H	5	YLW/WHT	E2		4	12	1	RED	CB		3	26	2	ORA	ST2	
	5	H	12	BRN	E1		5	-										

## WIRE HARNESS (K) TYPE

Connector No.	Terminal	Destination		Color	Remarks	
		Connector	Terminal			
E	9	10	6	GRN	CCB	
	10	15	6	GRN	CCB	
	11	11	3	BLU/WHT	CTB	
	12	10	2	BLU/WHT	CTB	
	13	11	1	GRN/WHT	CRB	
	14	6	8	GRN/WHT	CRB	
	15	15	3	WHT	OCB	
	16	11	4	WHT	OCB	
	17	10	3	BLU	SCB	
	18	15	5	BLU	SCB	
	19	11	2	BLU	SCB	
	20	-	-	-	-	
	21	6	9	VLT	8RS	
	22	27	6	ORA	S8C	
	23	15	10	YLW/WHT	S8T	
	24	26	3	ORA/WHT	S8R	
	25	10	1	GRY	S8S	
	26	K	1	BLK/WHT	E3	
	F	1	17	1	GRN	MC5
		2	17	4	BLK/WHT	B0
		3	17	5	BRN	B1
		4	17	6	RED	B2
		5	17	7	ORA	B3
		6	13	2	ORA/WHT	F3D
		7	14	4	BLK/WHT	B0
		8	14	1	BRN	B1
9		16	5	RED	B2	
10		16	2	ORA	B3	
G	1	4	7	GRN	SQ	
	2	J	8	BLK	E	
	3	5	12	ORA	FS	
	4	13	10	ORA/WHT	FS	
H	1	1	6	RED/WHT	PC	
	2	42	1	ORA/WHT	PC	
	3	16	6	BLU	3R	
	4	16	7	VLT	2R	
	5	13	4	YLW/WHT	E2	
	6	14	2	YLW/WHT	E2	
	7	10	4	ORA	SOC	
	8	9	2	GRN	M	
	9	-	-	-	-	
	10	14	3	VLT/WHT	B0D	
	11	16	1	BLU/WHT	B3D	
	12	13	5	BRN	E1	
	13	K	6	BRN/WHT	A/B D	
	14	D	8	YLW	CB	
	15	-	-	-	-	
	16	K	5	YLW	B	
	17	K	8	BLK	E	
I	1	18	1	BLK	E	
	2	18	2	GRN	SCE	
	3	18	3	BRN	A1	
	4	18	4	BLK/WHT	A0	
J	1	5	7	YLW	RG1	
	2	8	1	BLU	RG2	
	3	15	2	VLT	RIT VR1	
	4	21	2	GRN	RIT VR2	
	5	15	8	ORA	RIT VR3	
	6	J	7	BLK	E	
	7	J	8	BLK	E	
	8	G	2	BLK	E	
K	1	E	26	BLK/WHT	E3	
	2	18	4	BLK/WHT	E3	
	3	18	3	WHT	B2D	
	4	13	3	BLK/WHT	E3	
	5	H	16	YLW	B	
	6	H	13	BRN/WHT	A/B D	
	7	-	-	-	-	
	8	H	17	BLK	E	

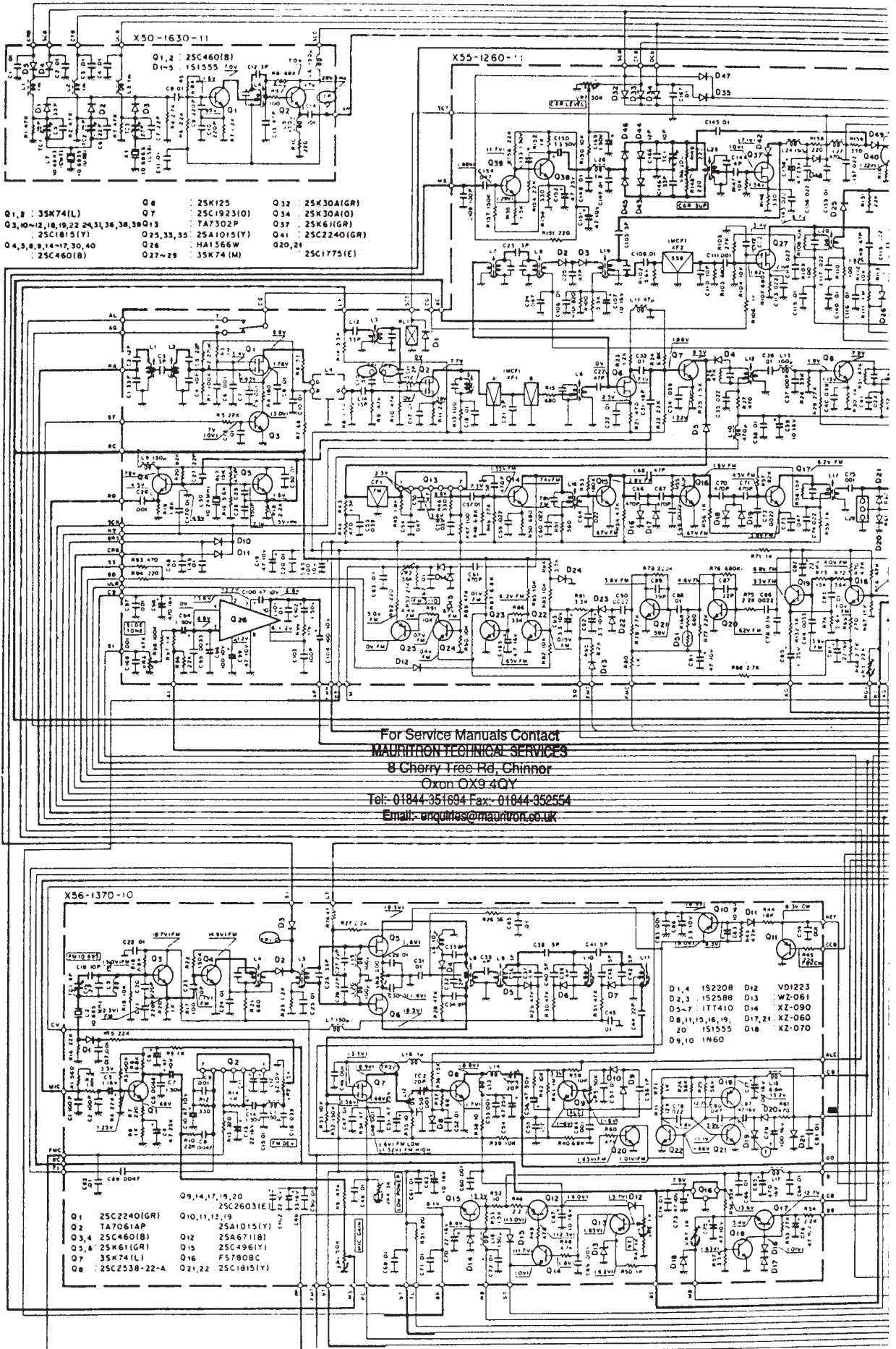
Connector No.	PC Bound/Parts
1, 2	FINAL UNIT (X45-1140)
3	Q101: 2SA671 (B)
4 ~ 10	RX UNIT (X55-1260)
11	CAR UNIT (X50-1630)
12, 13	CONTROL UNIT (X53-1160)
14 ~ 16, 40	SWITCH UNIT (X41-1290)
17 ~ 20	CONTROL UNIT (X53-1160)
21 ~ 25, 36	PLL UNIT (X50-1620)
26 ~ 29,	TX UNIT (X56-1360)
31 ~ 34	
30	SIDE TONE UNIT (X52-1140)
35	RX UNIT (X55-1260)
	PLL UNIT (X50-1620)
37	RX UNIT (X55-1260)
38	TX UNIT (X56-1360)
39	RX UNIT (X55-1260)
41	RX UNIT (X55-1260)
42	TX UNIT (X56-1360)
A	EXT.SP. KEY, TONE PAD, EXT. STBY SW
B	BUCK UP, POWER SUPPLY
E	
C	MIC CONNECTOR
D	VOLUME, POWER SW
E	MODE SW
F	MEMORY SW
G	SQUELCH
H	SCAN SW, SHIFT, METER, HI/LO
I	ENCODER
J	RIT, RF GAIN
K	A/B SW

### < Wireharness Parts >

Parts No.	Parts
E40-0275-05	Mini connect wafer <u>2P</u>
E40-1275-05	Mini connect wafer <u>12P</u>
E23-0410-05	Mini connect pin
E40-0205-05	Mini connect housing <u>2P</u>
E40-1205-05	Mini connect housing <u>12P</u>

For Service Manuals Contact  
**MAURITRON TECHNICAL SERVICES**  
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 Tel: 01844-351694 Fax: 01844-352554  
 Email: enquiries@mauritron.co.uk

Signal      Control      Common DC line

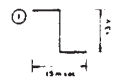
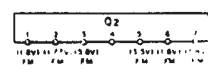


- |  |                          |                      |
|--|--------------------------|----------------------|
| Q1, 8 : 3SK74(L)   | Q6 : 2SK125              | Q32 : 2SK30A(IGR)    |
| Q3, 10-12, 18, 19, 22, 24, 31, 36, 38, 39, 41 : 25C1923(O) | Q7 : 7A7302(F)           | Q34 : 2SK30A(O)      |
| 25C1815(Y)   | Q25, 33, 35 : 2SA1015(Y) | Q37 : 2SK61(IGR)     |
| Q4, 5, 6, 14, 17, 30, 40 : 25C460(B)                       | Q24 : HA1366(W)          | Q41 : 25C2240(IGR)   |
|  | Q27-29 : 3SK74(M)        | Q20, 21 : 25C1775(E) |

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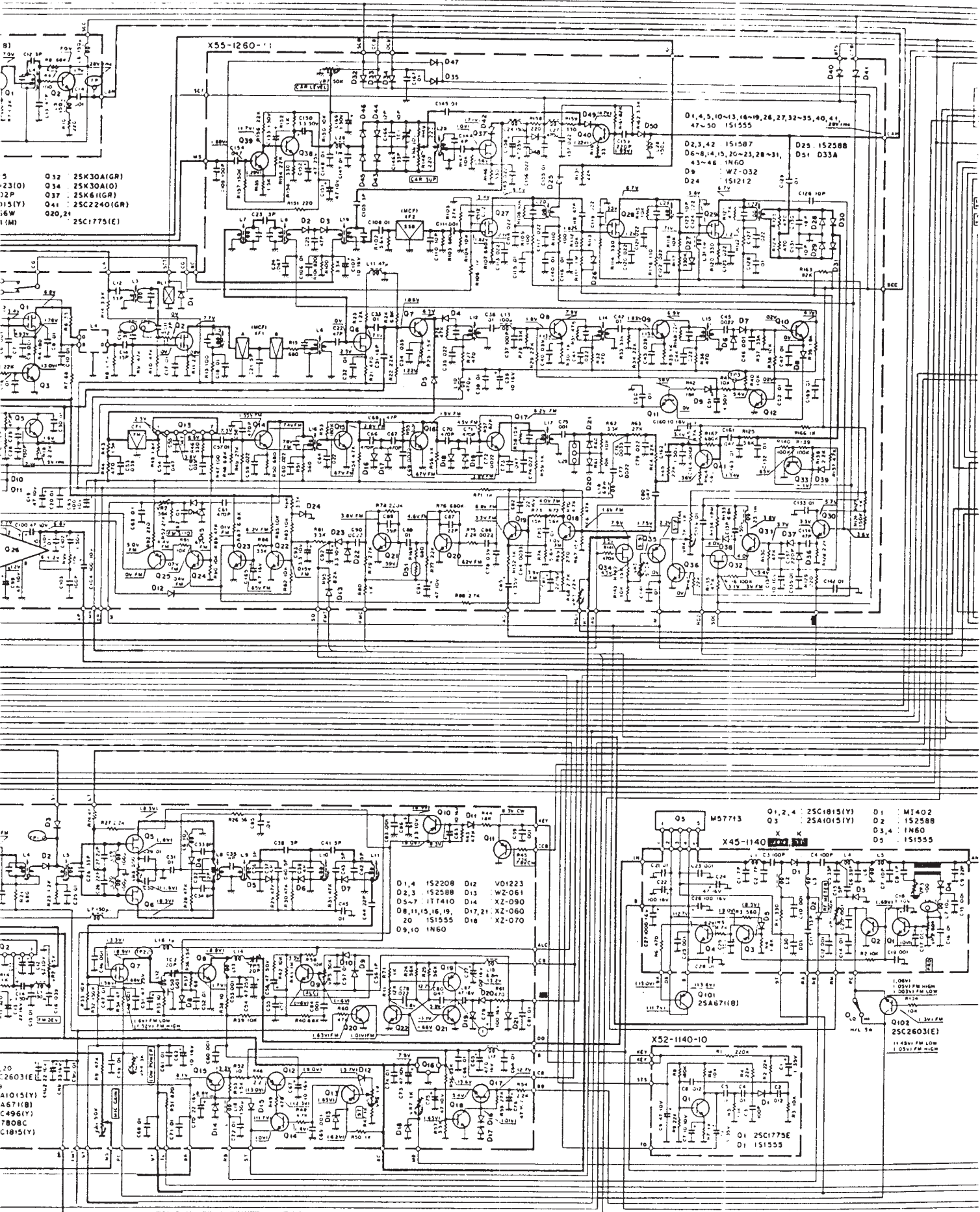
- |                                     |              |
|-------------------------------------|--------------|
| D1, 4 : 1S2208                      | D12 : VD1223 |
| D2, 3 : 1S2588                      | D13 : WZ-061 |
| D5-7 : 1T7410                       | D14 : XZ-090 |
| D8, 11, 15, 16, 19, 17, 21 : XZ-060 |              |
| 20 : 1S1555                         | D18 : XZ-070 |
| D9, 10 : 1N60                       |              |

- |                    |                                 |
|--------------------|---------------------------------|
| Q1 : 25C2240(IGR)  | Q9, 14, 17, 19, 20 : 25C2603(E) |
| Q2 : TA7061AP      | Q10, 11, 12, 19 : 25A1015(Y)    |
| Q3, 4 : 25C460(B)  | Q12 : 2SA671(B)                 |
| Q5, 6 : 25K61(IGR) | Q15 : 25C496(Y)                 |
| Q7 : 3SK74(L)      | Q16 : F5780BC                   |
| Q8 : 25C2538-22-A  | Q21, 22 : 25C1815(Y)            |



Control

Common DC line



- Q32 25K30A(IGR)
- Q34 25K30A(I)
- Q37 25K6(IGR)
- Q41 25C2240(IGR)
- Q42 25C1775(E)

- D1,4,5,10-13,16-19,26,27,32-35,40,41,47-50 151555
- D2,3,42 151587
- D6-8,14,15,20-23,28-31,43-46 1N60
- D9 WZ-032
- D24 151212
- D25 152588
- D51 D33A

- D1,4 152208
- D2,3 152588
- D5-7 1T1410
- D8,11,15,16,19,17,21 XZ-060
- D9,10 1N60
- D12 V01223
- D13 WZ-061
- D14 XZ-090
- D17,21 XZ-060
- D18 XZ-070

- Q1,2,4 25C1815(Y)
- Q3 25A1015(Y)
- Q1 MI402
- Q2 152588
- Q3,4 1N60
- Q5 151555

- Q1 25C1775E
- Q2 151555

- Q101 25A671(B)
- Q102 25C2603(E)
- C1 1.06V
- C2 1.05V FM HIGH
- C3 1.05V FM LOW
- C4 1.05V FM HIGH

15mm