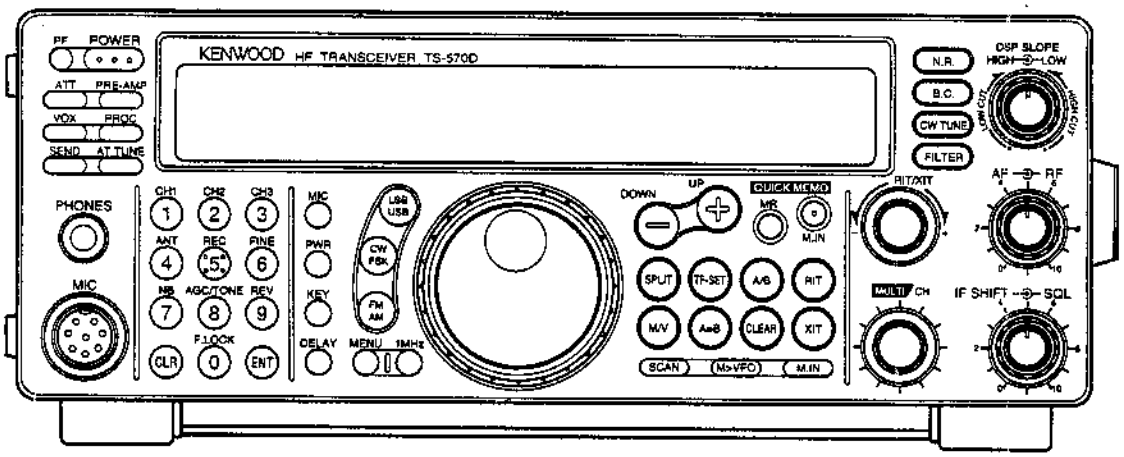
ADJUSTMENT

Preparation

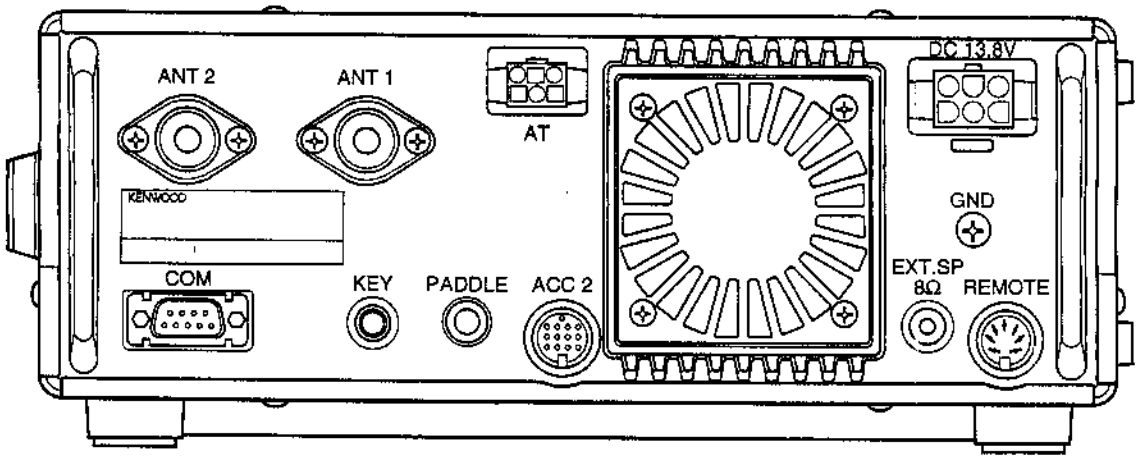
Unless otherwise specified, knobs and switches should be set as follows.

POWER	ON	SQL VR	0	AF VR	0
ATT	OFF	PRE-AMP	ON	RF VR	MAX
AGC	FAST	IF SHIFT	Center	PROC	OFF
NB	OFF	DSP SLOPE	Center		

Front Panel



Rear Panel



ADJUSTMENT

* ADJUSTMENT MENU PAGE 00
# 42 & 43 SET TO:

USB -140

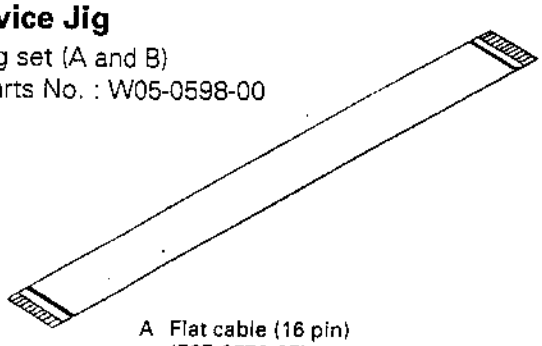
LSB -140

CARRIER COMPENSATION POINT

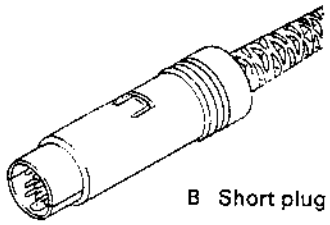
* MAKE NOTE OF SETTINGS BEFORE YOU CHANGE

Service Jig

Jig set (A and B)
Parts No. : W05-0598-00

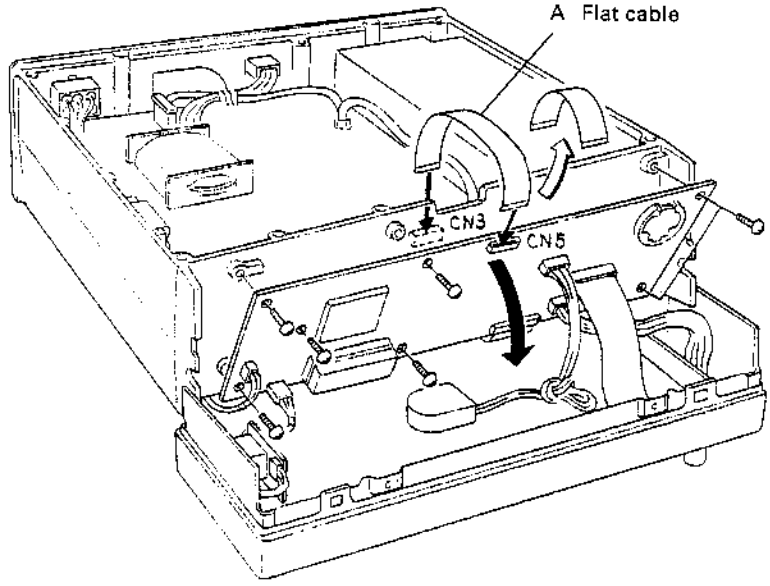


A Flat cable (16 pin)
(E37-0572-05)
About 17cm

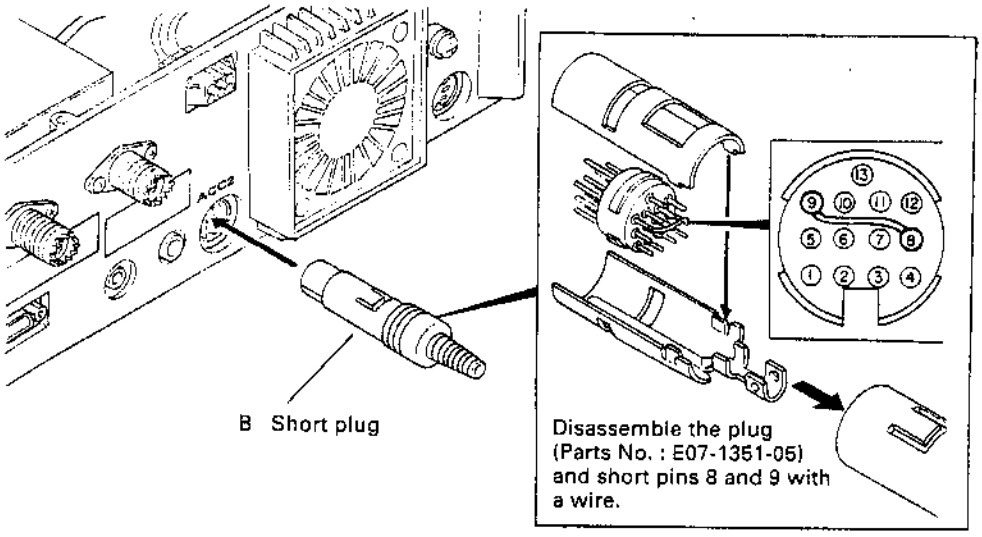


B Short plug (13 pin)

How to Use the Flat Cable



How to Use the Short Plug



ADJUSTMENT

Service Adjustment Mode

■ Outline

1. The transceiver is adjusted by the normal method and by a method using the service adjustment mode (automatic adjustment).
2. There are adjustment items of menu numbers 00 to 51 in the service adjustment mode. All adjustment data are saved in the EEPROM.
3. When the service adjustment mode is entered, data is read from the EEPROM and placed in the CPU RAM, so it can be modified.
4. The EEPROM is updated only when data is written in Menu No. 51.

■ Operation Procedure

1) Entering the service adjustment mode

1. Before turning the power on, insert the adjustment jig into the ACC2 socket.
2. Hold down the [N.R.] key and [LSB/USB] key and turn the [POWER] switch on. The display (LCD) shows "ADJUST" and then the adjustment mode menu.
3. After "ADJUST" appears, remove the short plug from the ACC2. (The transmitter cannot be adjusted without removing it.)

2) Menu number selection

When the [MULTE/CH] control is turned, the menu number changes.

3) Changing the setting data

Setting data can be changed by using the [UP] or [DOWN] key on the transceiver or the microphone.

4) Writing data

Press the [UP] or [DOWN] key on the transceiver or the microphone with MENU No.51 to write data.

5) Canceling the service adjustment mode

When the [CLR] key is pressed, the normal VFO mode display returns.

Notes:

1. The transceiver can transmit signals in the receiver adjustment mode. If a microphone is connected to the transceiver, take special care not to press the PTT key.
2. If the power is switched off during adjustment in the adjustment mode, the adjustment mode is canceled.

Service Adjustment Mode Menu

Menu No.	Function	Description
00	AGC	AGC reference voltage (14.1MHz USB)
01	ALC	ALC reference voltage (14.2MHz USB)
02	SSB SQL threshold	(14.1MHz USB)
03	S-meter (SSB)	Start level (S1) setting (14.1MHz USB)
04		S9 level setting (14.1MHz USB)
05		S9+60dB (full scale) level setting (14.1MHz USB)
06	FM SQL threshold	(29.1MHz FM)
07	S-meter (FM)	Start level (S1) setting (29.1MHz FM)
08		Full scale level setting (29.1MHz FM)
09~15	Not use	
16	SQL VR center	SQL VR center voltage reading (14.1MHz)
17	IF SHIFT center	IF SHIFT center voltage reading (14.1MHz)
18	100W protection setting	Read data at the 100W point on the RF meter (14.2MHz USB) I CHANGED THIS TO 150 WATT
19	50W protection setting	Read data at the 50W point on the RF meter (14.2MHz USB)
20	25W protection setting	Read data at the 25W point on the RF meter (14.2MHz USB)
21	10W protection setting	Read data at the 10W point on the RF meter (14.2MHz USB)
22	5W protection setting	Read data at the 5W point on the RF meter (14.2MHz USB)
23	TGC setting	1.8MHz band (100W) (1.840MHz USB)
24		3.5MHz band (100W) (3.5MHz USB)
25		7MHz band (100W) (7.0MHz USB)
26		10MHz band (100W) (10.1MHz USB)
27		14MHz band (100W) (14.2MHz USB)
28		18MHz band (100W) (18.068MHz USB)
29		21MHz band (100W) (21.0MHz USB)
30		25MHz band (100W) (24.89MHz USB)
31		28MHz band (100W) (29.69MHz USB)

ADJUSTMENT

Menu No.	Function	Description
32	Not use	
33	TGC setting	14MHz band (50W) (14.2MHz USB)
34		14MHz band (25W) (14.2MHz USB)
35		14MHz band (10W) (14.2MHz USB)
36		14MHz band (5W) (14.2MHz USB)
37	ALC meter voltage reading	Start level setting (14.2MHz USB)
38		Maximum zone level setting (14.2MHz USB)
39	CAR level setting	CW (14.2MHz CW)
40		AM (14.2MHz AM)
41	FM maximum deviation	(29.69MHz FM)
42	SSB CAR shift compensation	USB (14.2MHz USB)
43		LSB (14.2MHz LSB)
44	SSB CAR suppression	USB (14.2MHz USB)
45		LSB (14.2MHz LSB)
46	SWR protection voltage setting	(14.2MHz CW)
47	HF band SWR=3.0 reading	For display in TX (1.840MHz CW)
48	Not use	
49	Check sum display	Sum of ROM's data (14.1MHz)
50	All LCD segments light	Display checking
51	Writing into EEPROM	

Display Check

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. All reset	1) DC IN : DC 13.8V Pushing [A=8] key down, [POWER] : ON				Front panel	LCD	After displaying "HELLO", the display is reset as follows; DISP f. : 14.000.00 MODE : USB ANT : 1 METER : ALC PRE AMP	Display should be normal. Should be at the reset frequency.
2. All LCD segments light	1) Menu No. : 50	ACC2 Jig (Short plug)					Check	All LCD segments light.

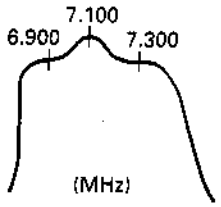
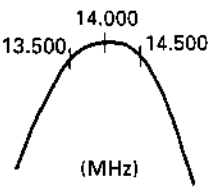
PLL Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Reference oscillation (20MHz)	1) Display f. : 14.750MHz MODE : AM	f. counter	TX-RX (PLL)	TP505	TX-RX (PLL)	TC500	20.000.000MHz	±20Hz
2. 60MHz	1) Display f. : 14.750MHz MODE : AM	Oscilloscope		TP506		L529 L530	Repeat for MAX.	
3. 65MHz BPF	1) Display f. : 14.750MHz MODE : AM			TP503		L533 L534 L535	Repeaat for MAX.	

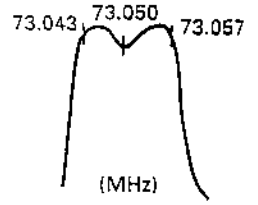
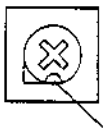
ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. Lock voltage VCO1A	1) Display f. : 30kHz MODE : AM	DC V.M	TX-RX (PLL)	TP501	TX-RX (PLL)	TC502	2.0V	±0.05V
	2) Display f. : 10.980MHz						Check	6.5V or less
5. Lock voltage VCO1B	1) Display f. : 10.990MHz MODE : AM				TX-RX (PLL)	TC503	2.0V	±0.05V
	2) Display f. : 23.980MHz						Check	6.5V or less
6. Lock voltage VCO1C	1) Display f. : 23.990MHz MODE : AM				TX-RX (PLL)	TC504	2.0V	±0.05V
	2) Display f. : 29.990MHz						Check	6.5V or less
7. LO2 VCO2 voltage	1) Display f. : 14.100MHz MODE : AM			TP504			Check	3.0~6.0V
8. LO1 level	1) Display f. : 14.100MHz MODE : AM	RF V.M		CN503			Check	0~+3dBm
9. LO2 level	Measurement condition : 50Ω terminated			CN501				0~+4dBm
10. CAR level	1) Display f. : 14.100MHz MODE : AM	Oscilloscope		CN502			Check	1.0Vp-p±0.2

Receiver Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. AGC voltage	1) Menu No. : 00 (14.100MHz USB)	DC V.M	TX-RX (RF)	TP2	Front panel	UP or DOWN key	2.9V	±0.03V
• Writing data : After item 1 has been adjusted; 1) Menu No. : 51 2) [UP] or [DOWN] key : Push once time 3) [CLR] key : Push once time.							Display "rEAdy" → "run" → "good" (If "nG" is displayed, enter data again.)	
2. BPF	1) Display f. : 7.000MHz MODE : FM PRE AMP : ON Spectrum analyzer setting Center f. : 7.100MHz Frequency span : 2MHz Output : –20dBm XdB/DIV : 2dB RBW : 30kHz VBW : 10kHz	Tracking generator Spectrum analyzer	Rear panel TX-RX (RF)	ANT CN7	TX-RX (RF)	L20 L21 L22	Repeat adjustment 2 or 3 times until the level is maximized and the waveform becomes flat.	
	2) Display f. : 14.000MHz Spectrum analyzer setting Center f. : 14.000MHz Frequency span : 5MHz					L29 L30 L31	Repeat adjustment 2 or 3 times until the level is maximized and the waveform becomes flat. Note : If dip point appear, first turn TC2 (RF) and adjust to L29.30.31.	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. RF AMP	1) Display f. : 22.000MHz MODE : FM PRE AMP : ON Spectrum analyzer setting Center f. : 26.000MHz Frequency span : 20MHz Output : –20dBm XdB/DIV : 2dB RBW : 30kHz VBW : 10kHz	Tracking generator Spectrum analyzer	Rear panel TX-RX (RF)	ANT CN7	TX-RX (RF)	L67 L68	Repeat adjustment 2 or 3 times until the level is maximized and within the range of waveform. Note : If dip point appear, first turn TC2 (RF) and adjust to L67,68.	
4. MCF (73MHz)	1) Display f. : 14.000MHz MODE : USB AGC : OFF Spectrum analyzer setting Center f. : 73.050MHz Frequency span : 70kHz ATT : 10dB Output : –20dBm XdB/DIV : 2dB RBW/VBW : 1kHz	Tracking generator Spectrum analyzer	TX-RX (RF)	CN3 CN4	TX-RX (RF)	L45 L54 L50 L51 L111	Repeat adjustment 2 or 3 times until the level is maximized and the waveform becomes flat. 1) Turn L45 and L54 to adjust to the 73.05MHz peak. (Repeat twice) 2) Turn L50, L51, and L111 to make a symmetrical waveform. 3) Make the waveform flat using L45 and L54.	
5. Trap initialize setting E,E2,E3	1) Set the TC2 position as shown right.				TX-RX (RF)	TC2	Turn TC2 180° from the default position.	TC2  Face the concave part of the knob downwards.
6. IF AMP	1) Display f. : 14.100MHz MODE : USB AGC : FAST PRE AMP : ON AF output : 0.63V/8Ω SSG frequency : 14.101MHz SSG output : –113dBm	SSG AF V.M Oscilloscope DM. SP	Rear panel	ANT EXT.SP	TX-RX (RF)	L55 L56 L61 IC15's L1,L2	Repeat adjustment 2 or 3 times until the AF output is maximized.	
7. RX MIX balance	1) Display f. : 100kHz MODE : USB PRE AMP : ON SSG output : OFF					VR1	Noise MIN	
8. IF GAIN	1) Display f. : 14.100MHz MODE : USB AGC : FAST PRE AMP : ON SSG frequency : 14.101MHz SSG output : –105dBm				Front panel	AF VR	AF output : 0.63V	
	2) SSG output : –115dBm				TX-RX (RF)	IC15's VR1	AF output : 0.4V	±0.05V
	3) SSG output : –105dBm						Check	AF output : 0.63V±0.05V
9. Trap E,E2,E3	1) Display f. : 15.200MHz MODE : USB AGC : FAST PRE AMP : ON SSG frequency : 15.201MHz SSG output : –113dBm				TX-RX (RF)	TC2	AF output : MIN	There must be a dip point.
	2) Display f. : 11.700MHz SSG frequency : 11.701MHz					TC1		

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
10. NB	1) Display f. : 14.100MHz MODE : USB AGC : FAST PRE AMP : ON SSG frequency : 14.101MHz SSG output : –103dBm	DC V.M SSG AF V.M Oscilloscope DM. SP	TX-RX (PLL) Rear panel	TP801 ANT EXT.SP	TX-RX (PLL)	L802 L803	Voltage MIN	
	2) [NB] key : ON/OFF	Noise G.		ANT			Adjust output of noise generator to S1 and S9, and check each.	Noise should disappear when NB is ON.
• Item 11 to 16 below are adjusted in the adjustment mode. To terminate the adjustment menu in the middle, save your settings with Menu No. 51.								
11. SSB SQL threshold	1) Menu No. : 02 (14.100MHz USB) SSG output : OFF	SSG AF V.M Oscilloscope DM. SP	Rear panel	ANT EXT.SP	Front panel	UP or DOWN key	1 push	
12. SSB S-meter S1	1) Menu No. : 03 (14.100MHz USB) SSG frequency : 14.101MHz SSG output : –107dBm							
S9	2) Menu No. : 04 (14.100MHz USB) SSG output : –81dBm							
Full scale	3) Menu No. : 05 (14.100MHz USB) SSG output : –21dBm							
13. FM SQL threshold	1) Menu No. : 06 (29.100MHz FM) SSG frequency : 29.100MHz SSG output : OFF							
14. FM S-meter S1	1) Menu No. : 07 (29.100MHz FM) SSG frequency : 29.100MHz SSG output : –117dBm MOD : 1kHz/3kHz							
Full scale	2) Menu No. : 08 (29.100MHz FM) SSG output : –95dBm MOD : 1kHz/3kHz							
15. SQL VR center voltage	1) Menu No. : 16 (14.100MHz USB) SSG frequency : Anything SSG output : OFF						SQL VR : Center 1 push	
16. IF SHIFT VR center voltage	1) Menu No. : 17 (14.100MHz USB) SSG frequency : Anything SSG output : OFF						IF SHIFT VR : Center 1 push	
• Writing data : After items 11 to 16 have been adjusted; 1) Menu No. : 51 2) [UP] or [DOWN] key : Push once time 3) [CLR] key : Push once time. Display "rEAdy" → "run" → "good" (If "nG" is displayed, enter data again.)								

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
17. S/N	1) Display f. : Below AF VR : 0.63V/8Ω SSG frequency : Below However, USB : +1kHz LSB : −1kHz	SSG AF V.M Oscilloscope Distortion meter DM. SP	Rear panel	ANT EXT.SP				
	Frequency / MODE / SSG output / SSG MOD / DEV							
	550kHz AM	−77dBm	1kHz	60%			S/N measurement	10dB or more
	1.550MHz AM	−77dBm	1kHz	60%				
	1.800MHz LSB	−119dBm	OFF	OFF			MAX sensitivity measurement	0.63V/8Ω or more
	3.550MHz LSB	−119dBm	OFF	OFF				
	7.100MHz LSB	−119dBm	OFF	OFF				
	10.100MHz USB	−119dBm	OFF	OFF				
	14.100MHz USB	−119dBm	OFF	OFF		←	PRE AMP : OFF	Sensitivity down 5−15dB.
	21.100MHz USB	−119dBm	OFF	OFF				
	24.800MHz USB	−123dBm	OFF	OFF				
	28.800MHz USB	−123dBm	OFF	OFF				
	29.800MHz FM	−119dBm	1kHz	3kHz		←	SINAD seisitivity	12dB SINAD or more measurement
18. ATT	1) Display f. : 14.300MHz MODE : USB AGC : FAST PRE AMP : ON SSG frequency : 14.301MHz SSG output : −113dBm	SSG AF V.M Oscilloscope DM. SP	Rear panel	ANT EXT.SP	Front panel	ATT key	1) Adjust the AF output to 1V. 2) 1 push the [ATT] key. 3) SSG output : −93dBm	 AF output down. AF output : 1V±3dB
19. VS-3 (Option)	1) Connect the VS-3 to CN16 on the TX-RX unit. AF VR : MIN [PF] key : 1 push	VS-3	TX-RX (RF)	CN16	Front panel	PF key	1 push	The displayed frequency can be heard vocally.
20. DRU-3A (Option)	1) Connect the DRU-3A to CN17 on the TX-RX unit. Connect a microphone to the MIC jack. [REC] key : 1 push	DRU-3A Microphone	TX-RX (RF) Front panel	CN17 MIC	Front panel	CH1 key	Hold down [CH1], and talk into the microphone.	Can be recorded for about 15 seconds.
							Press the [CH1] key again.	The recorded voice must be played back.

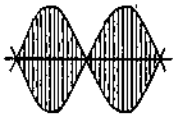
Transmitter Section

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. ALC voltage	1) Menu No. : 01 (14.100MHz USB) Transmit	DC V.M	TX-RX (RF)	TP1	Front panel	UP or DOWN key	2.7V	±0.03V
• Writing data : After item 1 has been adjusted; 1) Menu No. : 51 2) [UP] or [DOWN] key : Push once time 3) [CLR] key : Push once time. 4) [SPLIT] key : Push once time.							Display "rEAdy" → "run" → "good" (If "nG" is displayed, enter data again.)	
2. Final idling current	1) Display f. : 14.200MHz MODE : USB Final unit VR1, 2 : MIN Transmit	DC. A	Rear panel	DC IN	Final		(First adjust VR1 and VR2 for minimum)=A	
						VR1	A+250mA	
						VR2	(A+250mA)+250mA	

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
3. TX AMP	1) Display f. : 14.200MHz MODE : CW Connect to CN10 a 50Ω dummy load. Transmit	50Ω dummy Oscilloscope	TX-RX (RF)	CN10	TX-RX (RF)	L69,70 L71,72 L74,75 L76 VR3	Repeat 2 or 3 times for DRV output MAX	Reference value 2.5Vp-p or more
4. NULL	1) Display f. : 3.500MHz MODE : CW Transmit	Power meter DC V.M (Oscilloscope)	Rear panel Final	ANT CN12	Final	TC1	MIN	Reference value 0.5V or less
5. Power frequency characteristic	1) Initialize	Power meter	Rear panel	ANT	Final	VR3	Full counterclock-wide (VR MIN)	
	2) Menu No. : 18 (14.200MHz USB) Transmit				Front panel	UP or DOWN key	100W	±5.0W
	3) Writing data with Menu No. 51. [CLR] key : Push once time (Adjustment mode terminated)							
	4) Display f. : 29.699MHz MODE : CW Transmit				Final	VR3	Power MAX	95W or more
6. 14MHz TGC	1) Menu No. 27 (14.200MHz USB) Transmit	Power meter	Rear panel	ANT	Front panel	UP or DOWN key	Setting data : 050	
					TX-RX (RF)	VR9	100W	±3.0W
	2) Writing data with Menu No. 51.				Front panel	UP or DOWN key	1 push	
• Item 7 to 17 below are adjusted in the adjustment mode. To terminate the adjustment menu in the middle, save your settings with Menu No. 51.								
7. Power 100W	1) Menu No. : 18 (14.200MHz USB) Transmit	Power meter	Rear panel	ANT	Front panel	UP or DOWN key	100W	±5.0W
50W	2) Menu No. : 19 (14.200MHz USB) Transmit						50W	±2.5W
25W	3) Menu No. : 20 (14.200MHz USB) Transmit						25W	±1.0W
10W	4) Menu No. : 21 (14.200MHz USB) Transmit						10W	±1.0W
5W	5) Menu No. : 22 (14.200MHz USB) Transmit						5W	±1.0W
8. TGC 1.9MHz	1) Menu No. : 23 (1.840MHz USB) Transmit						100W **K,M2,E,E3** 10W **E2**	±5W **K,M2,E,E3** ±1.0W **E2**
3.5MHz	2) Menu No. : 24 (3.500MHz USB) Transmit						100W	±5W Note : Skip 14MHz
7.0MHz	3) Menu No. : 25 (7.00MHz USB) Transmit							
10MHz	4) Menu No. : 26 (10.100MHz USB) Transmit							

ADJUSTMENT

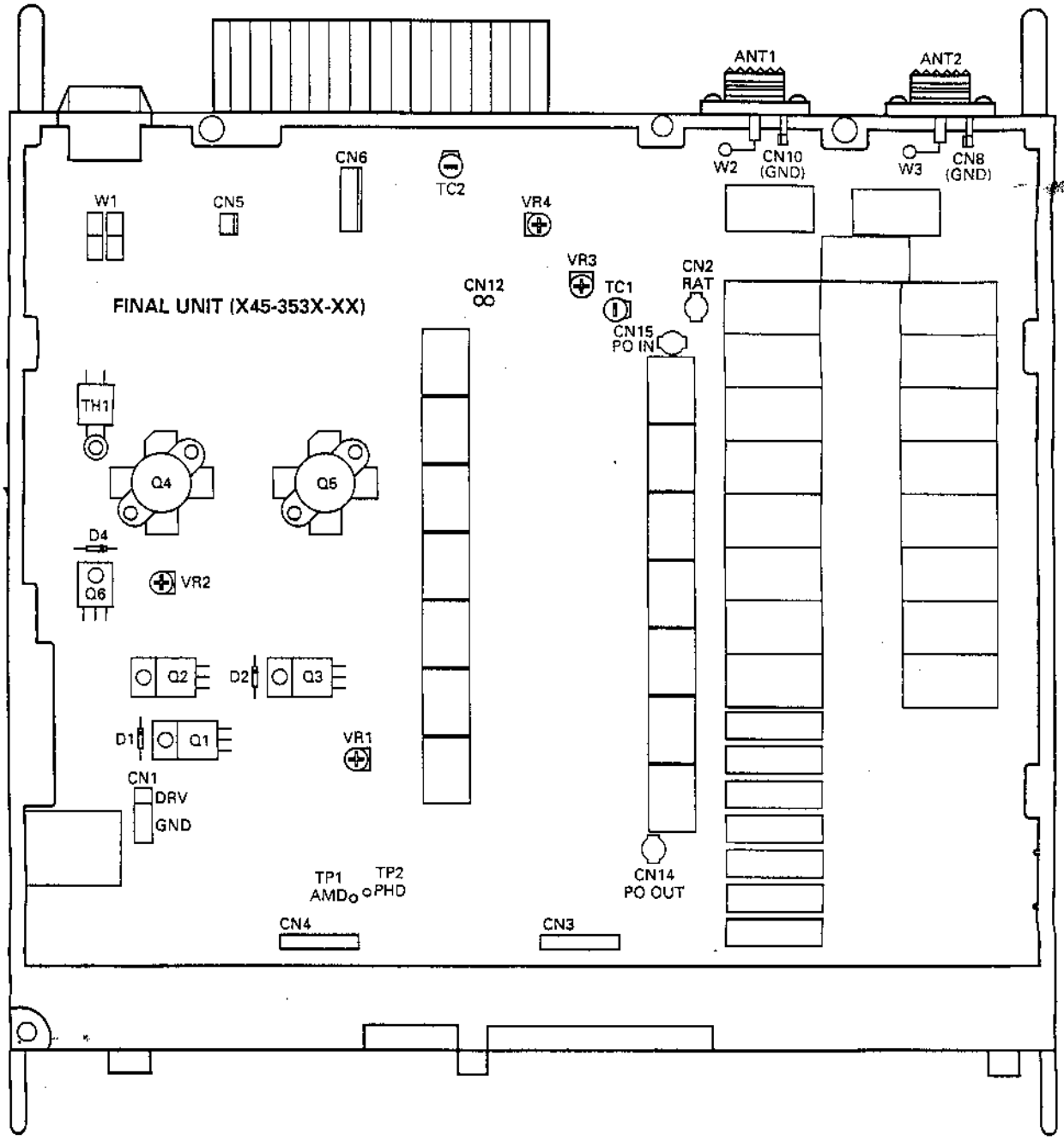
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
8. TGC 18MHz	5) Menu No. : 28 (18.068MHz USB) Transmit	Power meter	Rear panel	ANT	Front panel	UP or DOWN key	100W	±5W
21MHz	6) Menu No. : 29 (21.000MHz USB) Transmit							
25MHz	7) Menu No. : 30 (24.890MHz USB) Transmit							
28MHz	8) Menu No. : 31 (29.690MHz USB) Transmit							
9. Power TGC 50W	1) Menu No. : 33 (14.200MHz USB) Transmit						50W	±2.5W
25W	2) Menu No. : 34 (14.200MHz USB) Transmit						25W	±1.0W
10W	3) Menu No. : 35 (14.200MHz USB) Transmit						10W	±1.0W
5W	4) Menu No. : 36 (14.200MHz USB) Transmit						5W	±1.0W
10. ALC meter Start point	1) Menu No. : 37 (14.200MHz USB) Transmit						1 push	
Zone MAX	2) Menu No. : 38 (14.200MHz USB) Transmit							
11. CW carrier level	1) Menu No. : 39 (14.200MHz CW) Transmit						ALC meter zone MAX	
12. AM carrier level	1) Menu No. : 40 (14.200MHz AM) Transmit							
13. FM MAX deviation	1) Menu No. : 41 (29.690MHz FM) Transmit	Power meter Linear detector					±4.5kHz According to the larger +, −.	±0.1kHz
14. SSB carrier point USB	1) Menu No. : 42 (14.200MHz USB) Transmit	Power meter Oscilloscope					Waveform cross	OK  NG 
LSB	2) Menu No. : 43 (14.200Mhz LSB) Transmit							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
15. SSB carrier suppression USB LSB	1) Menu No. : 44 (14.200MHz USB) Transmit 2) Menu No. : 45 (14.200MHz LSB) Transmit	Power meter Oscilloscope	Rear panel	ANT	TX-RX (RF)	VR4 VR5	Carrier level MIN	60dB or less (Repeat check both LSB and USB.)
16. SWR protection	1) Menu No. : 46 (14.200MHz CW) Transmit	150Ω dummy Through type power meter			Front panel	UP or DOWN key	40W	±1.0W
17. SWR meter (SWR : 3.0)	1) Menu No. : 47 (1.840MHz CW) Transmit	150Ω dummy					1 push	
• Writing data : After items 7 to 17 have been adjusted; 1) Menu No. : 51 2) [UP] or [DOWN] key : Push once time Display "rEAdy" → "run" → "good" (If "nG" is displayed, enter data again.) 3) [CLR] key : Push once time.								
18. Spurious	1) Display f. : 24.900MHz MODE : CW Transmit	Power meter Spectrum analyzer	Rear panel	ANT	TX-RX (RF)	VR2	±1.650MHz Spurious level MIN	60dB or less
19. AT amplitude	1) Display f. : 29.690MHz MODE : CW Transmit Power : 10W	Power meter Oscilloscope	Rear panel Final	ANT TP1	Final	VR4	Turn the VR to the point where the waveform on the oscilloscope changes from high to low. (Threshold point)	
20. AT phase	1) Display f. : 29.690MHz MODE : CW Transmit Power : 10W			TP2		TC2	Turn the VC to the point where the waveform on the oscilloscope changes from high to low.	
21. MIC sensitivity SSB	1) Display f. : 14.200MHz MODE : USB AG : 1kHz/5mV Transmit	Power meter AG VTVM	Rear panel Front panel	ANT MIC			Check	90W or more
FM	1) Display f. : 29.000MHz MODE : FM AG : 1kHz/3mV **E,E2,E3** 1kHz/5mV **K,M2** Transmit	Power meter Linear detector AG VTVM	Rear panel Front panel	ANT MIC				DEV : ±2.7~3.3kHz
	2) AG : 1kHz/30mV **E,E2,E3** 1kHz/50mV **K,M2** Transmit	Oscilloscope						DEV : ±4.0~5.0kHz
22. Transmit frequency characteristic	1) Display f. : 14.200MHz MODE : USB/LSB AG : 1kHz/5mV 400Hz/5mV 2.6kHz/5mV Transmit	Power meter AG AF V.M	Rear panel Front panel	ANT MIC			Set AG to 1.0kHz and turn the [MULTI/CH] knob to set to 50W. Change the AG frequency and measure the difference between the power levels at 1.0kHz and at another frequency. Take a measurement for each USB and LSB.	Within 6dB

ADJUSTMENT

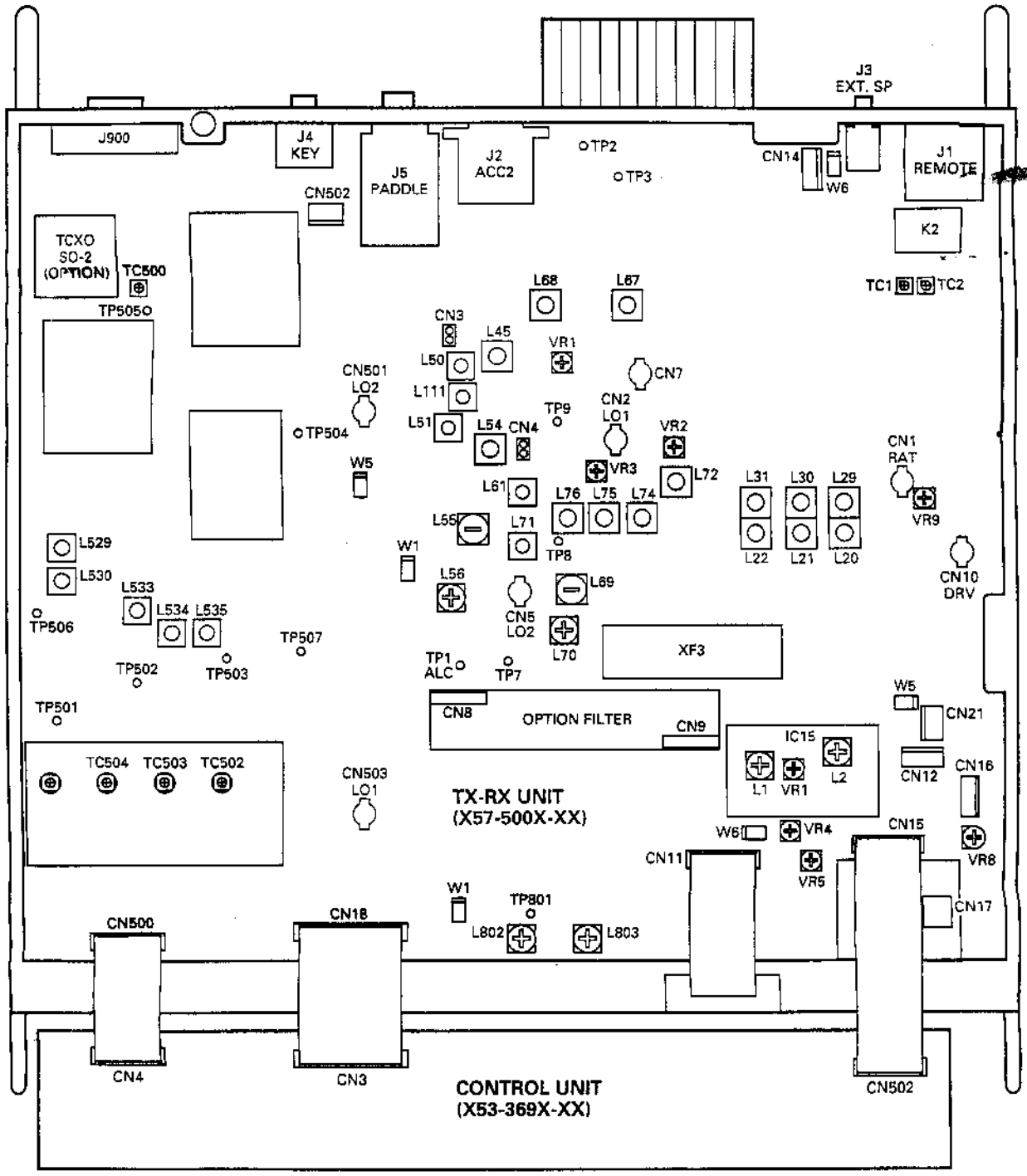
Adjustment Points (Top)



VR1,2 : Final idling current
VR3 : Power frequency characteristic
VR4 : AT amplitude
TC1 : NULL
TC2 : AT phase

ADJUSTMENT

Adjustment Points (Bottom)



TC1,2 : Trap **E,E2,E3**
TC2 : Trap initialize setting **E,E2,E3**
TC500 : Reference oscillation
TC502 : Lock voltage (VCO1A)
TC503 : Lock voltage (VCO1B)
TC504 : Lock voltage (VCO1C)

L20~22,29~31 : BPF
L45,50,51,54,111 : MCF (73MHz)
L55,56,61 : IF AMP
L67,68 : RF AMP
L69~72,74~76 : TX AMP
L529,530 : 60MHz
L533~535 : 65MHz BPF
L802,803 : NB

VR1 : RX MIX balance
VR2 : Spurious
VR3 : TX AMP
VR4 : SSB carrier suppression (USB)
VR5 : SSB carrier suppression (LSB)
VR9 : 14MHz TGC
IC15's VR1 : IF GAIN
IC15's L1,2 : IF AMP
*VR8 : VS-3 voice output level

TERMINAL FUNCTION

CN No.	Pin No.	Name	I/O	Function
FINAL UNIT (X45-353X-XX)				
CN1	Coaxial	DRV	I	Drive input
CN2	Coaxial	RAT	O	RX signal output
CN3	1	GND	–	GND
	2	TT	O	AT-300 control signal
	3	TS	O	AT-300 control signal
	4	PSC	I	Power supply relay control signal
	5	BOVR	O	Over voltage detection signal
	6	THV	O	Thermal protect detection voltage
	7	PHD	O	Phase compare detection signal
	8	AMD	O	Amplitude compare detection signal
	9	14V	O	13.8V (Usually)
	10	14S	O	13.8V (When power switch on)
	11	10A	O	10V
	12	8A	O	8A
	13	UDA	I	Final unit serial data
	14	UCK	I	Final unit serial clock
	15	FEN	I	Final unit enable
	16	GND	–	GND
CN4	1	GND	–	GND
	2	GND	–	GND
	3	SPG	–	Speaker GND
	4	SP	I	Speaker input
	5	14AG	–	AF amplifier GND
	6	14AF	O	AF amplifier 14V
	7	14S	O	14V when power switch on
	8	14S	O	14V when power switch on
	9	8A	O	Analog 8V
	10	8A	O	Analog 8V
	11	5A	O	Analog 5V
	12	TXB	I	TX 8V
	13	VSF	O	Forward waveform detection voltage
	14	VSR	O	Relfected waveform detection voltage
	15	GND	–	GND
	16	GND	–	GND
CN5	1	FAN+		Fan motor drive +
	2	FAN–		Fan motor drive –
CN6	1	14S	O	13.8V
	2	AGND	–	Analog GND
	3	TT	O	AT-300 control
	4	TS	I	AT-300 control
	5	GND	–	GND
CN13	1	SP	O	Speaker output
	2	SPG	–	Speaker GND
CN14	Coaxial		O	Filter detection circuit (Relay)
CN15	Coaxial		I	Filter detection circuit (Relay)
CONTROL UNIT (X53-369X-XX)				
CN1	1	GND	–	GND
	2	NC		NC
	3	SS	I	Standby switch
	4	MD	I	MIC down signal
	5	MU	I	MIC up signal
	6	BLANK	O	LED goes off control signal
	7	8A	O	MIC 8V
	8	GND	–	GND
	9	5A	O	5V
	10	LDA	O	LCD serial data
	11	LCK	O	LCD serial clock
	12	LEN1	O	LCD enable (IC1)
	13	LEN2	O	LCD enable (IC2)
	14	LEN3	O	LCD enable (IC3)
	15	K0	I	Key input 0
	16	K1	I	Key input 1
	17	K2	I	Key input 2
	18	K3	I	Key input 3
	19	5C	O	Usually 5V (For power switch)
	20	PSW	I	Power switch input signal
	21	CENA	I	MULTI/CH encoder pulse A
	22	CENB	I	MULTI/CH encoder pulse B
	23	RENA	I	RIT/XIT encoder pulse A
	24	RENB	I	RIT/XIT encoder pulse B
	25	PB	O	LCD lamp (10V)
	26	GND	–	GND
CN2	1	5A	O	Volume power supply (5V)
	2	VAF	I	AF VR analog voltage
	3	VRF	I	RF VR analog voltage
	4	VSFT	I	SHIFT VR analog voltage
	5	VSQL	I	SQL VR analog voltage
	6	VHC	I	HC VR analog voltage
	7	VLC	I	LC VR analog voltage
	8	GND	–	GND
CN3	1	TXC	O	TX control signal
	2	NC		NC
	3	CKY	O	Keying signal
	4	KEY	I	Key down signal
	5	KYS	I	Key jack judgement signal
	6	PKS	I	Standby switch when PKD input
	7	RCK	O	TX-RX unit serial clock
	8	RDA	O	TX-RX unit serial data
	9	REN1	O	TX-RX unit IC11 enable
	10	NC		NC
	11	VEN	O	TX-RX unit IC6 enable
	12	SS	I	Standby switch
	13	ALM	I	ALC meter input
	14	SM	I	S-meter input
	15	VSFM	I	Forward waveform detection voltage
	16	VSRM	I	Reflected waveform detection voltage
	17	REN2	O	TX-RX unit IC14 enable
	18	TXD	I	RX deta from personal computer
	19	RXD	O	TX data to personal computer
	20	CTS	O	Data transmit inhibit signal to personal computer
	21	RTS	I	Data transmit inhibit signal from personal computer
	22	5C	O	Usually 5V
	23	AMU	O	AF mute signal
	24	DOT	I	Electronic kyer dot signal
	25	DASH	I	Electronic keyer dash signal
	26	GND	–	GND
CN4	1	GND	–	GND
	2	VCS	O	VS-3 voice synthesize start signal
	3	NAR	I	"H" : Data input enable to VS-3
	4	RST	O	VS-3 reset signal
	5	FSQL	I	FM SQL signal
	6	NC		NC
	7	NC		NC
	8	GND	–	GND
	9	DEN2	O	DDS IC enable (CAR)
	10	DEN1	O	DDS IC enable (LO1)
	11	ULK	I	Unlock detection
	12	PEN2	O	PLL IC enable (LO2)
	13	PEN1	O	PLL IC enable (LO1)
	14	PDA	O	PLL serial data
	15	PCK	O	PLL serial clock
	16	GND	–	GND
CN5	1	GND	–	GND
	2	FEN	I	Final unit enable
	3	UCK	I	Final unit serial clock
	4	UDA	I	Final unit serial data

KENWOOD

ASI-0029

SUPPLEMENTARY INFO.

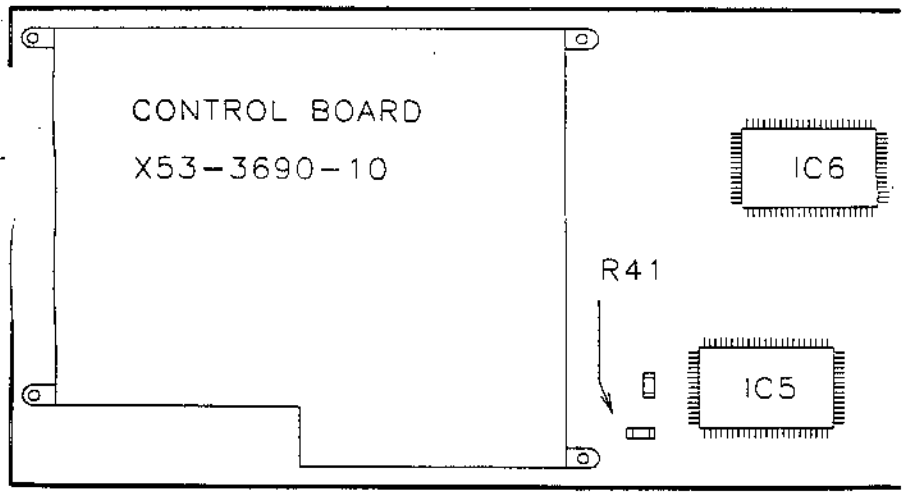
Amateur Radio Division

SUBJECT: TS-570D MARS/CAP MODIFICATION INFORMATION DATE: 10/11/96

This modification is provided "as is", and is subject to change without notice. Kenwood Service Corporation makes no warranty of any kind with regard to this modification procedure, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Kenwood Service Corporation shall not be liable for any error or for incidental or consequential damage in conjunction with the furnishing, performance, or use of this modification procedure.

It is illegal to operate outside the limits of your class license or permits.

1. Disconnect the power cord and antenna coax from the transceiver.
2. Remove the top and bottom covers.
3. Remove the top screw from each side of the front panel assembly.
4. Loosen the bottom screw from each side of the front panel assembly.
5. Carefully rotate the front panel forward to gain access to the Control board (X53-3690-10). This board is mounted vertically against the body of the transceiver. It is not the board that is mounted in the front panel assembly.
6. Locate and remove resistor R41 from the Control board.
7. Assemble the transceiver then perform the CPU reset procedure by holding the A=B button depressed as power is turned on.



This modification requires soldering equipment rated for CMOS type circuits. It also requires familiarity with surface mount soldering techniques. If you do not have the proper equipment or knowledge, do not attempt this modification. Seek qualified assistance

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