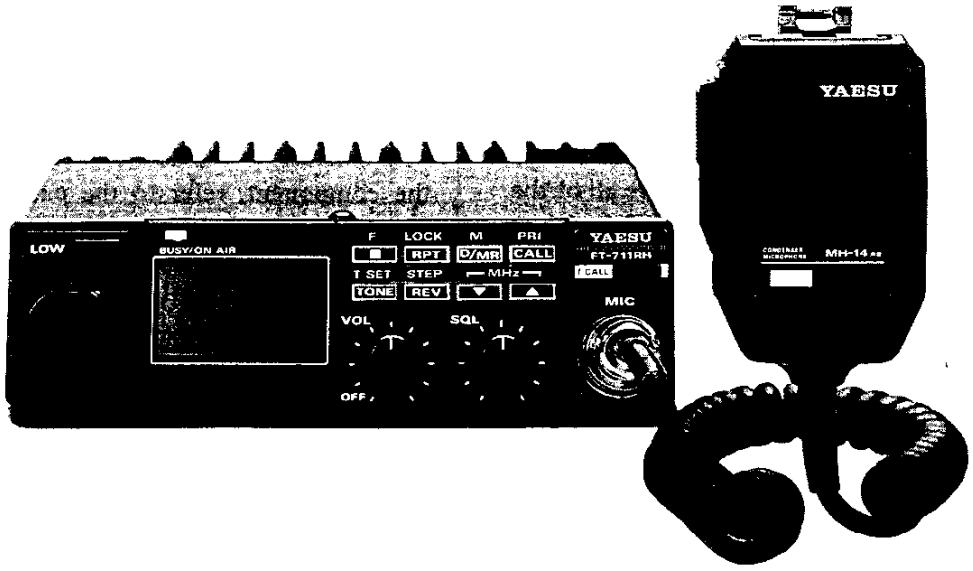
FT-711RH

TECHNICAL SUPPLEMENT

Service manual.

YAESU MUSEN CO., LTD.
C.P.O. BOX 1500
TOKYO, JAPAN

FT-711RH
TECHNICAL SUPPLEMENT



This manual is intended to serve as a supplement to the FT-711RH Operating Manual. Detailed information regarding functions, specifications, options and operation has been provided in the Operating Manual, and is not reprinted herein. Therefore, this supplement is not intended to serve as an independent reference, but to be used in conjunction with the information provided in the Operating Manual.

While we believe the technical information in this manual is correct, Yaesu assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

Yaesu Musen reserves the right to make changes in the circuitry and alignment procedures of this transceiver, in the interest of technological improvement, without notification of the owners.

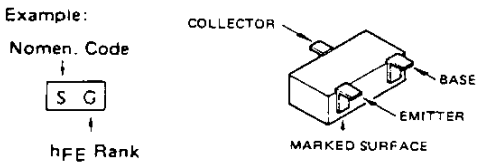
CHIP COMPONENT INFORMATION

While chip components are generally more reliable and enduring than lead components, they are much more difficult to replace. The chip placement robots at the factory set the components into place on a small spot of resin adhesive before soldering, and this adhesive provides rigid mechanical support for the component independently of the solder joints. Once the resin has been cured there is no way to remove it. Therefore, to remove a chip component, it is necessary to first remove all of the solder at each connection and then forcefully break the adhesive bond. This must be done very carefully, both to avoid overheating the board and lifting tracks when desoldering, and to avoid damaging the board or underlying tracks when breaking off the component. Removed components should never be reused, as they are bound to be unreliable after removal.

In spite of the following information on labelling, some chip components may have no markings at all (especially resistors and capacitors, indicated with asterisks "*" below). In this case, to identify the component, refer to the part location in the layout diagrams, note the location number, and then refer to the Parts List to determine the value or nomenclature and type.

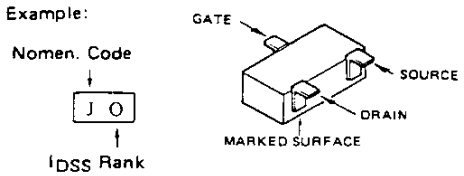
Transistors

Location	Nomenclature	Mark
Q1012,1013,304 402	2SA812	M6/M7
Q1019,403,502 602,603,604 605,702,703 801	2SC1623	L6/L7
Q1004	2SC2620	QB
Q303	2SC2712	GR/BL
Q1007,1015,302	2SC3356	R22



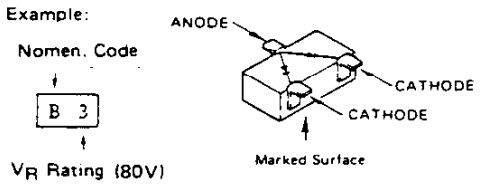
FETs

Location	Nomenclature	Mark
Q601	2SK208Y	JY

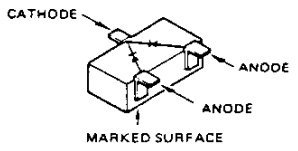


Diodes

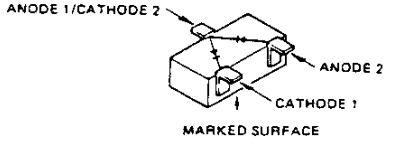
Location	Nomenclature	Mark
D701,903	1SS181	A3
D1014,902	1SS184	B3
D1004,1011,501 702	1SS226	C3



1SS181 (A3)



1SS184 (B3)

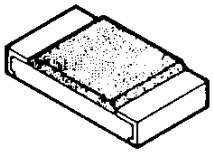


1SS226 (C3)

Resistors

Type RMC 1/10W

Marking* 100,222,473·····



473

Ten unit	One unit	Multiplier code
0	0	10^0
1	1	10^1
2	2	10^2
3	3	10^3
4	4	10^4
5	5	10^5
6	6	10^6
7	7	10^7
8	8	10^8
9	9	10^9

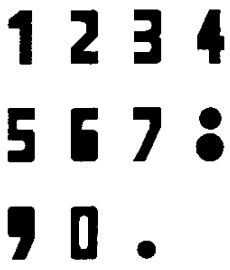
Examples:

100 = 10Ω

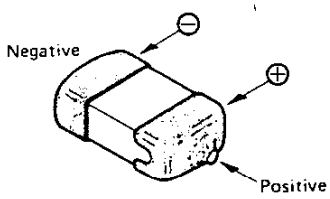
222 = 2.2kΩ

473 = 47kΩ

INDICATED LETTERS



Tantalum Capacitor



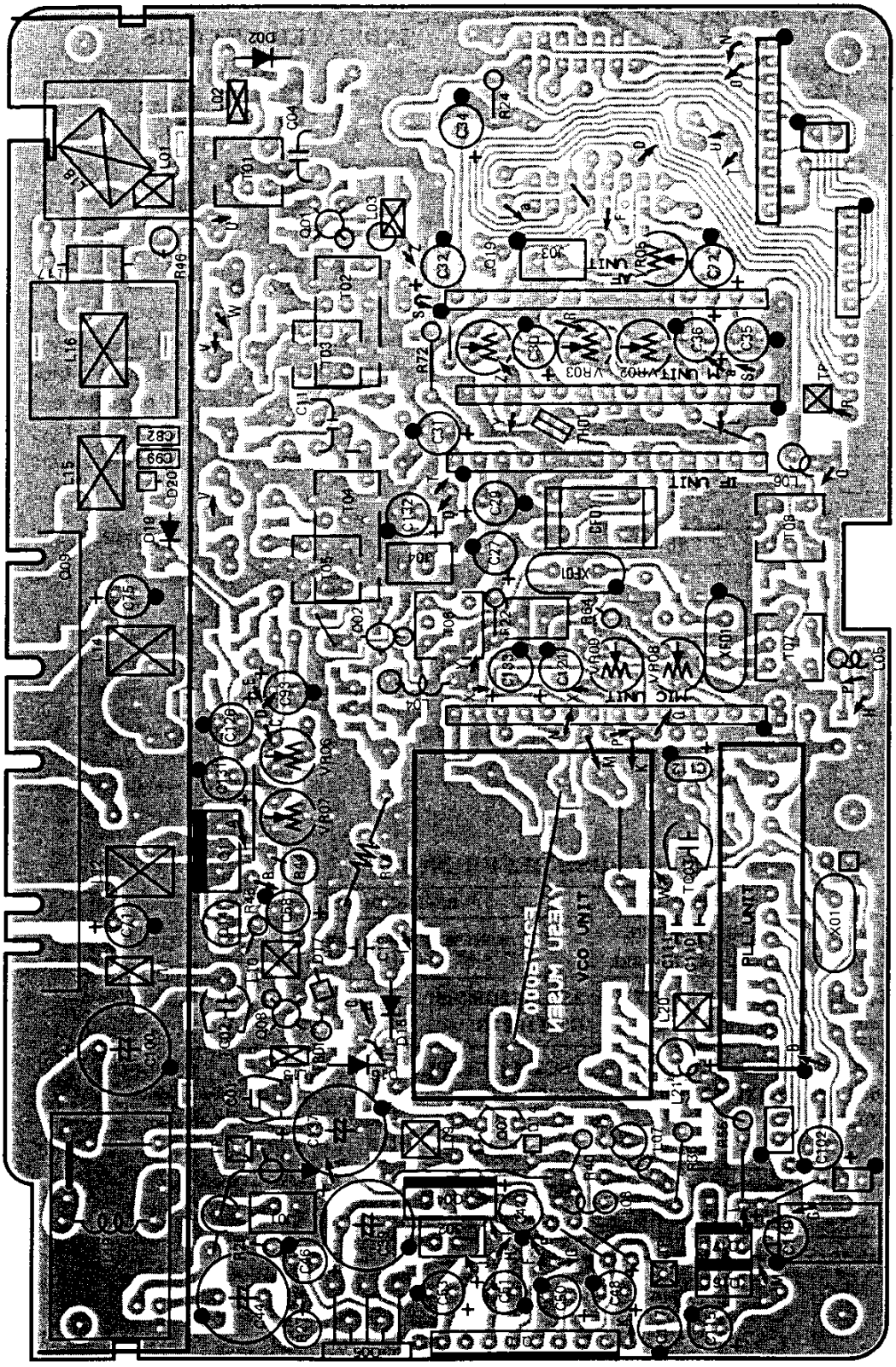
Polarized, Unmarked
(determine value from layout and Parts List)

CHIP SEMICONDUCTOR CROSS-REFERENCE

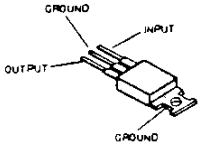
PART LOCATION NO.	ORIRINAL	REPLACEMENT	
	NOMENCLATURE (MARKING) AND PART NUMBER	NOMENCLATURE (MARKING) AND PART NUMBER	
Q1012,1013 304,402	2SA812 (M6/M7) G3108127F/G	2SA1162GR (S0) G3111627G	
Q1019,403,502 602,603,604 605,702,703 801	2SC1623 (L6/L7) G3316237F/G	2SC2712 (GR/BL) G3327127G/B	
Q303	2SC2712 (GR/BL) G3327127G/B	2SC1623 (L6/L7) G3316237F/G	

* Semiconductors not listed above may be replaced only with original types.

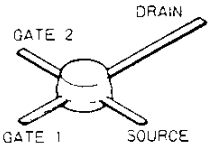
MAIN UNIT



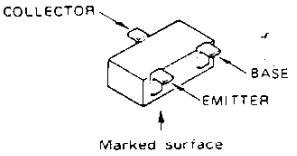
"component" side



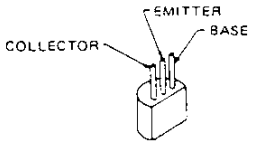
μPC7808H (Q1)



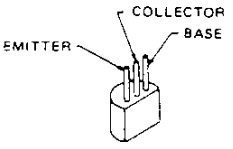
3SK121Y (Q1001)
3SK88 (Q1002,1003)



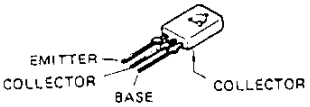
2SA812 (M6/M7) (Q1012,1013)
2SC1623 (L6/L7) (Q1019)
2SC2620 (QB) (Q1004)
2SC3356 (R22) (Q1007,1015)



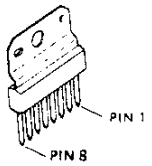
2SC3355 (Q1008)



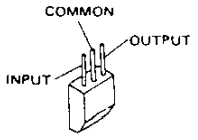
2SC2538 (Q1008)



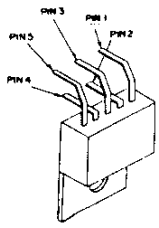
2SD882P (Q1005)



MB3756M (Q1018)

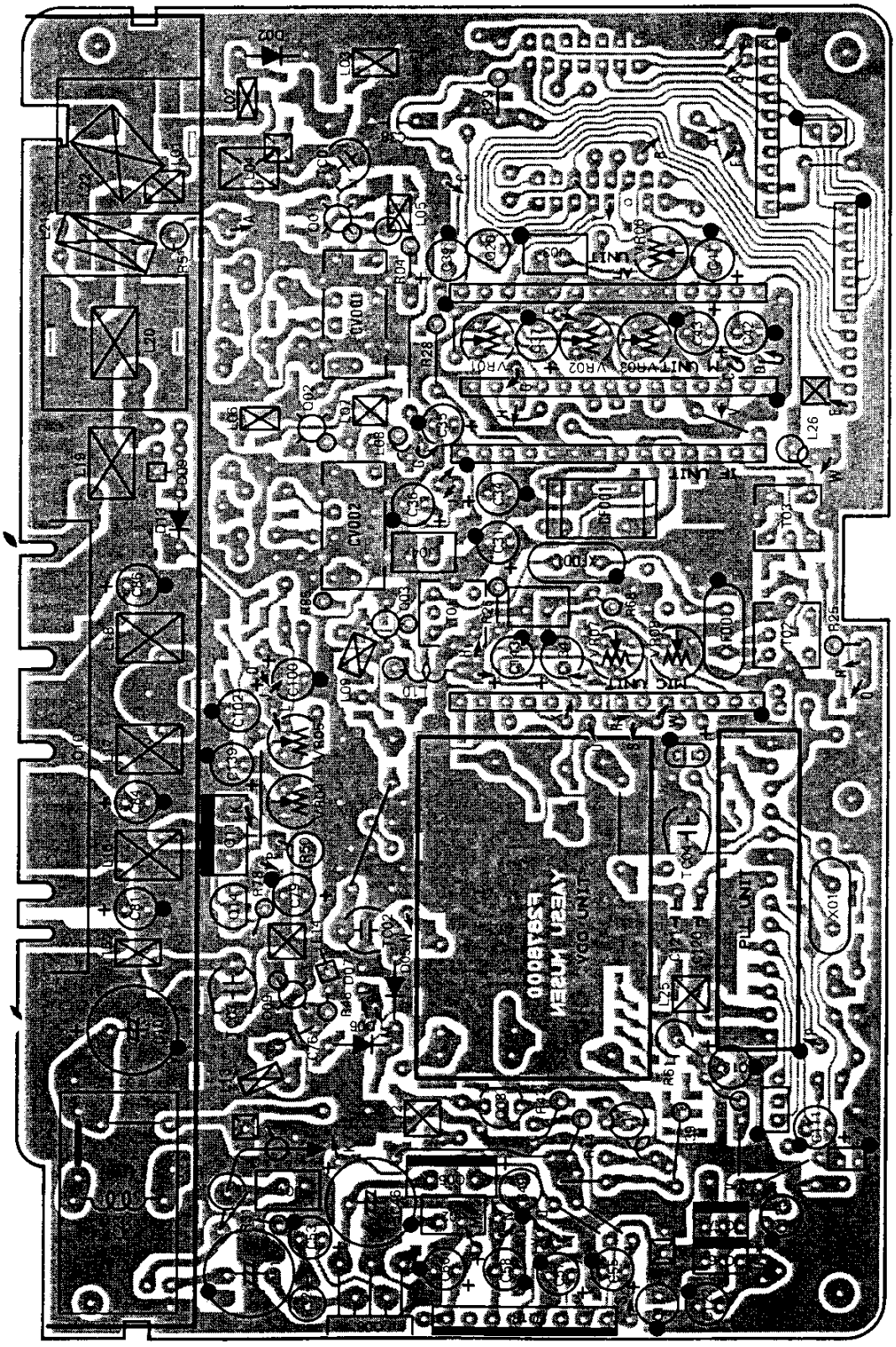


μPC78L08 (Q1016)
μPC78L05 (Q1017)

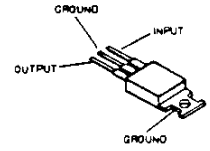


TDA2003 (Q1006)

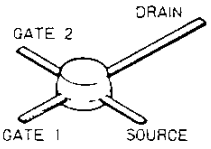
FT-711RH MAIN UNIT PARTS LAYOUT



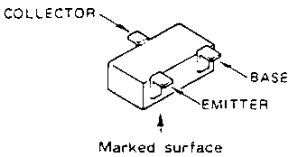
"component" side



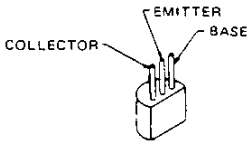
μPC7808H (Q1)



3SK121Y (Q1001)
3SK88 (Q1002,Q1003)



2SA812 (M6/M7) (Q1012,1013)
2SC1623 (L6/L7) (Q1019)
2SC2620 (QB) (Q1004)
2SC3356 (R22) (Q1007,1015)



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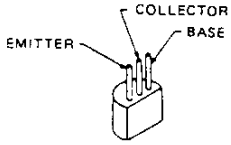

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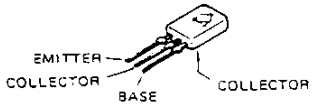
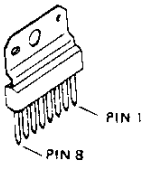
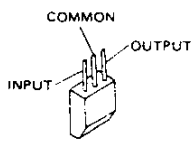


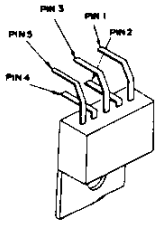
2SD882P (Q1005)



MB3756M (Q1018)



μPC78L08 (Q1016)
μPC78L05 (Q1017)



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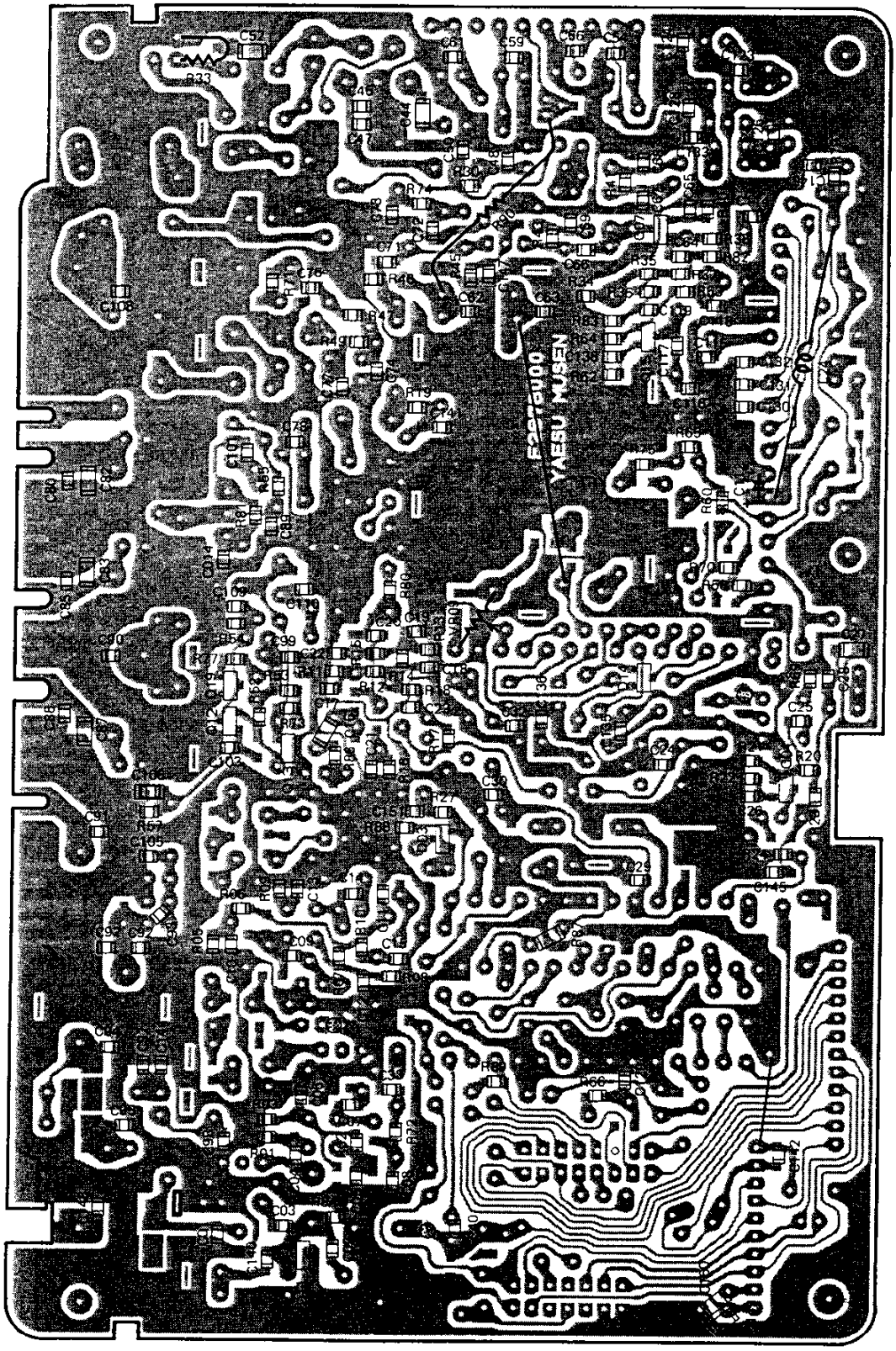
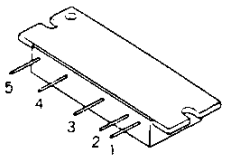
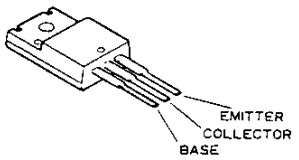


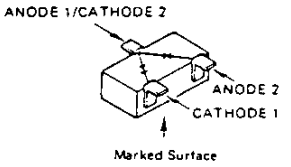
"chip" side



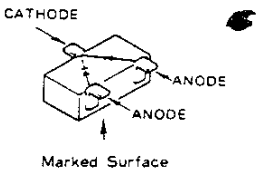
M57729(Q1010)
RF output 25W Type
M57788M (Q1010)
RF output 35W Type



2SB1134R (Q1011)
RF output 25W Type
2SB942 (Q1011)
RF output 35W Type

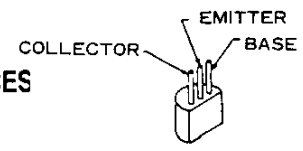


1SS226 (C3) (D1003,1011)

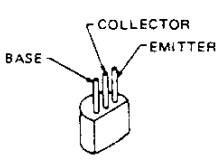


1SS184 (B3) (D1014)

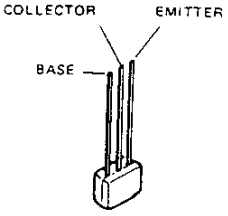
FOR SERVICE MANUALS
CONTACT:
MAURITRON TECHNICAL SERVICES
www.mauritron.co.uk
TEL: 01844 - 351694
FAX: 01844 - 352554



2SC2407 (Q1009)

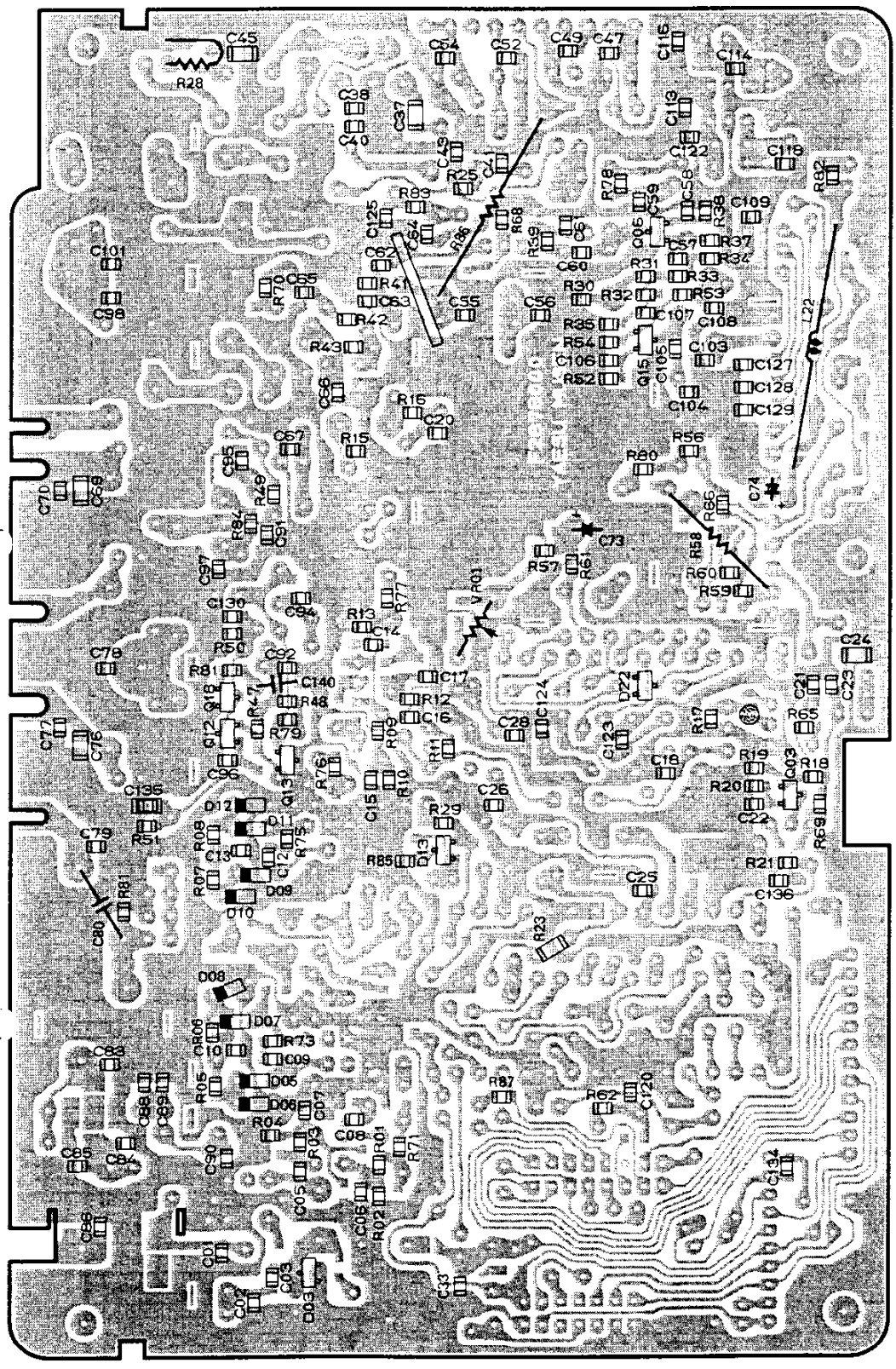


2SC945AP (Q1014)

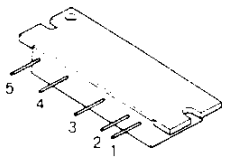


BN1A4M (Q1020)

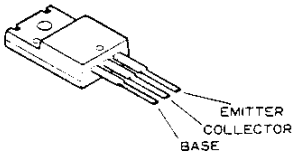
MAIN UNIT



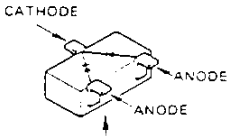
"chip" side



M57729 (Q1010)
RF output 25W
M57788M (Q1010)
RF output 35W

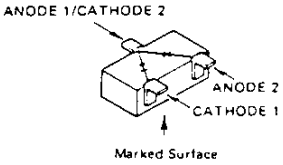


2SB1134R (Q1011)
RF output 25W Type
2SB942 (Q1011)
RF output 35W Type



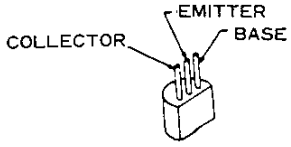
Marked Surface

1SS184 (B3) (D1014)



Marked Surface

1SS226 (C3) (D1003,1011)



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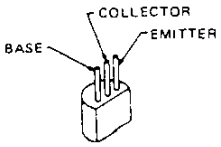

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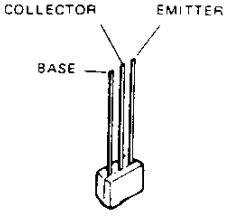

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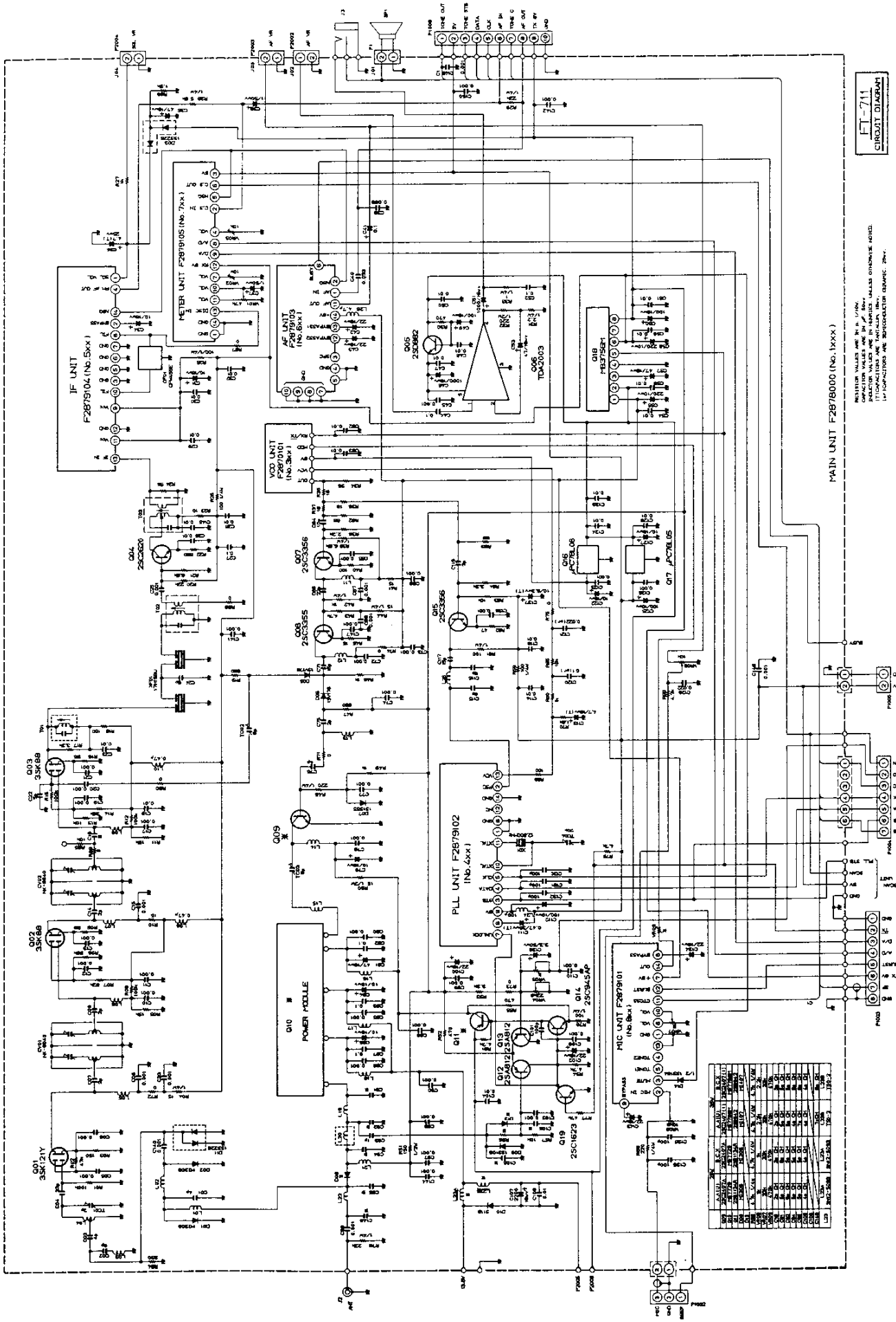

FT-711
CIRCUIT DIAGRAM
MAIN UNIT F2878000 (No.1xxx)
IF UNIT F2879104 (No.5xx)
METER UNIT F2879105 (No.7xx)
AF UNIT F2879103 (No.6xx)
VCO UNIT F2879101 (No.3xx)
PLL UNIT F2879102 (No.4xx)
MIC UNIT F2879101 (No.8xx)
POWER MODULE
Q01 3SK121Y
Q02 3SK88
Q03 3SK88
Q04 2SC3620
Q05 2SD882
Q06 TDA2003
Q07 2SC3356
Q08 2SC3355
Q09
Q10
Q11
Q12 2SA812
Q13 2SA812
Q14 2SC3453P
Q15 2SC3356
Q16 μPC78L08
Q17 μPC78L05
Q18 M57562H
Q19 2SC1623

MAIN UNIT VOLTAGE CHART

ICs

(DC VOLTS)

PIN No. / Symbol No.	1	2	3	4	5	6	7	8	REMARKS
Q1005	1.0	0.8	0	6.0	12.0	—	—	—	
Q1009	0	13.6/12.5	13.6/13.2	0	—	—	—	—	
Q1010	8.2	13.6/12.5	8.2	0	5.0/0	8.2/0.2	0	0.2/8.2	RX/TX
Q1016	8.2	0	13.5	—	—	—	—	—	
Q1017	5.1	0	13.6	—	—	—	—	—	

TRANSISTORS & FETS

(DC VOLTS)

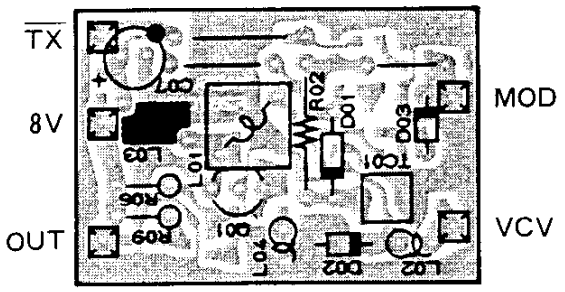
Symbol No.	E(S)	C(D)	B(G1)	G2	REMARKS
Q1001	1.2	8.1	0	1.1	
Q1002	0.3	7.8	1.0	1.4	
Q1003	1.0	8.1	1.8	—	
Q1004	12.8	13.6	13.6	—	
Q1006	1.0	8.0	1.8	—	
Q1007	0	8.0	0.6	—	
Q1008	0	0/7.2	0.3/0.5	—	RX/TX
Q1015	0.7	5.0	1.5	—	
Q1011	13.6/12.5	0/11.7	13.6/11.5	—	RX/TX
Q1012	0.3/4.6	0/4.6	0/4.0	—	RX/TX
Q1013	0.3/4.6	0	0/4.0	—	RX/TX
Q1018	0	0/4.6	0.6/0	—	RX/TX
Q1014	0/4.0	13.0/11.5	0/4.6	—	RX/TX

CONNECTORS

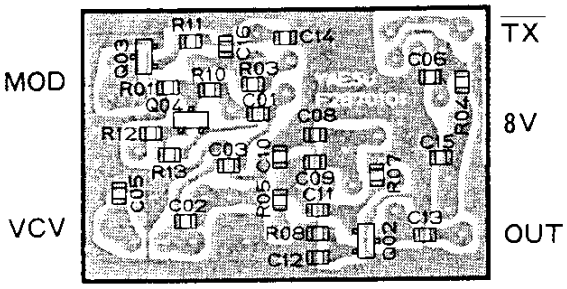
(DC VOLTS)

PIN No. / Symbol No.	1	2	3	4	5	6	7	8	9	10	REMARKS
J1001	0	0	—	—	—	—	—	—	—	—	SQL VR min~max
J1002	0	0	—	—	—	—	—	—	—	—	
J1003	0	0	—	—	—	—	—	—	—	—	
J1004	0	0	—	—	—	—	—	—	—	—	
P1002	0	0	0	—	—	—	—	—	—	—	
P1003	0/0	4.6/0	—	—	0/0	0/8.0	0/0	0/0	—	—	RX/TX
P1004	0	13.6	—	—	—	—	—	—	—	—	RX/TX
P1005	5	0	—	—	—	—	—	—	—	—	
P1006	0/0	5/5	0/0	0/0	0/0	0/0	0/0	0/0	0/8	0/0	RX/TX

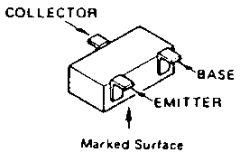
VCO UNIT



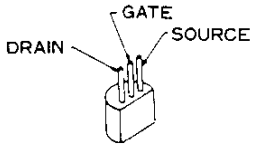
"component" side



"chip-only" side



2SA812 (M6/M7) (Q304)
2SC2712 (GR/BL) (Q303)
2SC3356 (R22) (Q302)

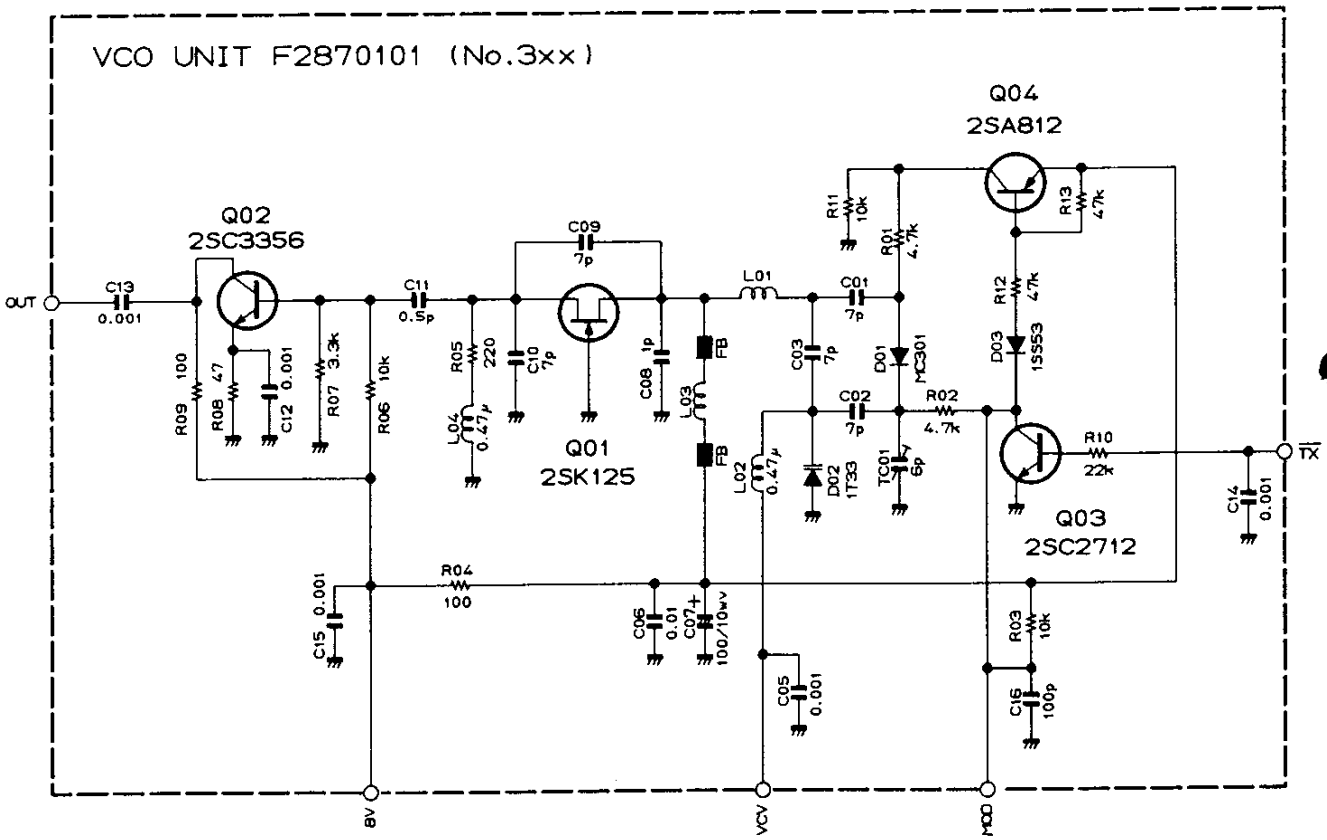


2SK125 (Q301)

VCO UNIT VOLTAGE CHART

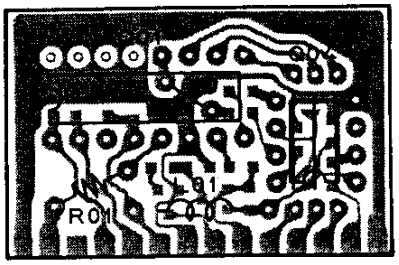
(DC VOLTS)

MOD	$\overline{TX}$	8V	REMARKS
4.5/4.5	0.1/4.15	8.1/8.1	RX/TX



RESISTOR VALUES ARE IN Ω, 1/10W:
CAPACITOR VALUES ARE IN μF, 50WV:
INDUCTOR VALUES ARE IN H:
UNLESS OTHERWISE NOTED.

PLL UNIT



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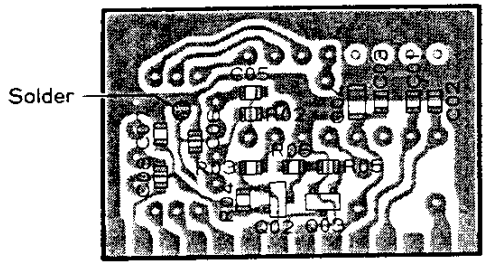
"component" side



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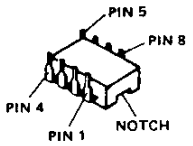
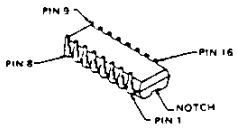
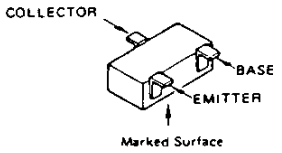
"chip-only" side



M54475P (Q404)



MC145158P (Q401)

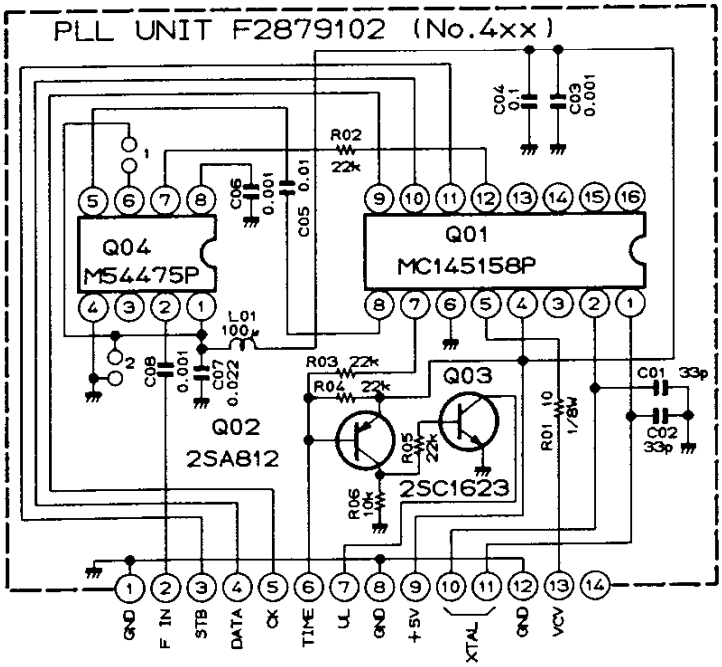


2SA812 (M6) (Q402)
2SC1623 (L6) (Q403)

PLL UNIT VOLTAGE CHART

(DC VOLTS)

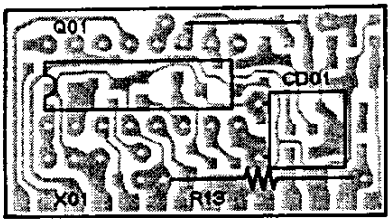
1 GND	2 F IN	3 STB(P)	4 DATA	5 CLOCK	6 TIMER	7 UNLOCK	8 GND	9 5V	10 Xtal	11 Xtal	12 GND	13 VCV	14 GND	REMARKS
0/0	—	0/0	0/0	0/0	4.6/4.6	0/0	0/0	5.0/5.0	—	—	0/0	—	0/0	RX/TX



RESISTOR VALUES ARE IN Ω, 1/10W:
CAPACITOR VALUES ARE IN μF, 50WV:
INDUCTOR VALUES ARE IN H:
UNLESS OTHERWISE NOTED.

2 : 1/128, 1/129 UHF

IF UNIT



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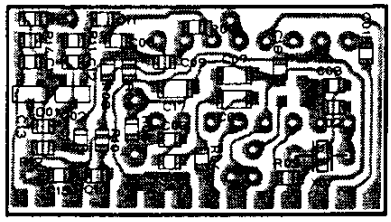
"component" side



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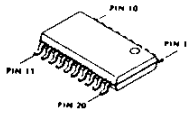
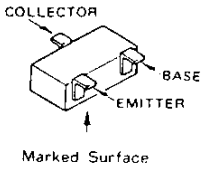
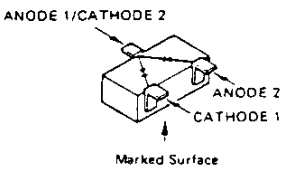
"chip-only" side



TK10420M (Q501)



2SC1623 (L6/L7) (Q502)

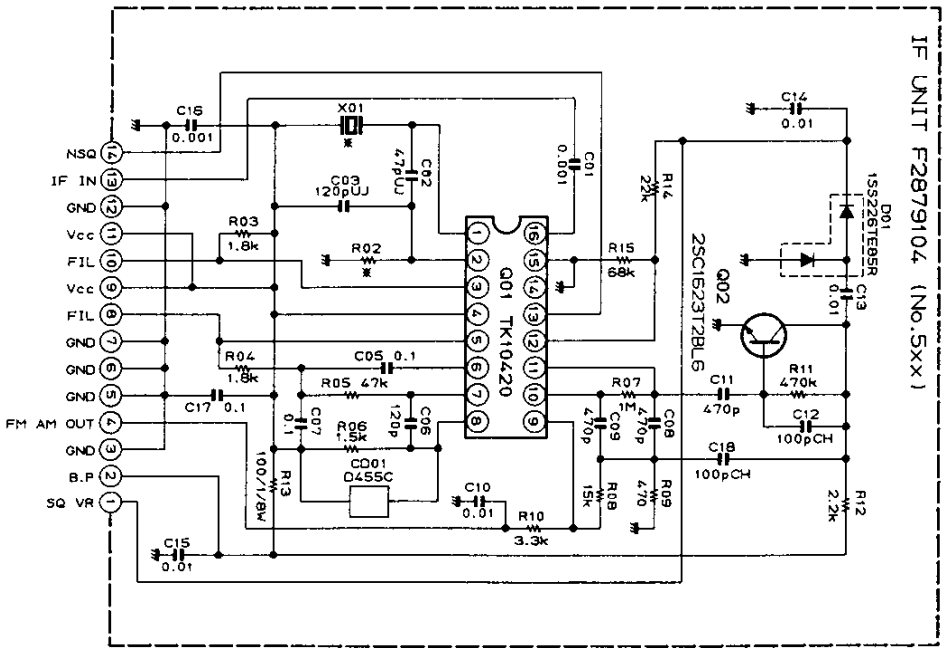


1SS226 (C3) (D501)

IF UNIT VOLTAGE CHART

(DC VOLTS)

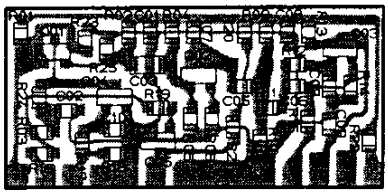
1 SQ VR	2 BYPASS	3 GND	4 FM AM OUT	5 GND	6 GND	7 GND	8 FIL	9 Vcc	10 FIL	11 Vcc	12 GND	13 IF IN	14 NSQ	REMARKS
SG OFF 04-22 70-72	8.2/0	0/0	—	0/0	0/0	0/0	—	8.4/0	8/0	8.4/0	0/0	0/0	SQ ON/SQ OFF 0/0 8.2/0	RX/TX



	X01	R02
FT-711	16.745MHz	100k

RESISTOR VALUES ARE IN Ω, 1/10W
CAPACITOR VALUES ARE IN μF

AF UNIT



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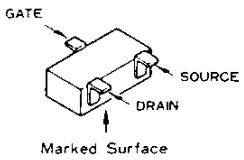
"chip-only" side



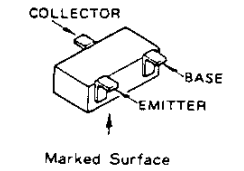
2SK208Y (JY) (Q601)

AF UNIT VOLTAGE CHART

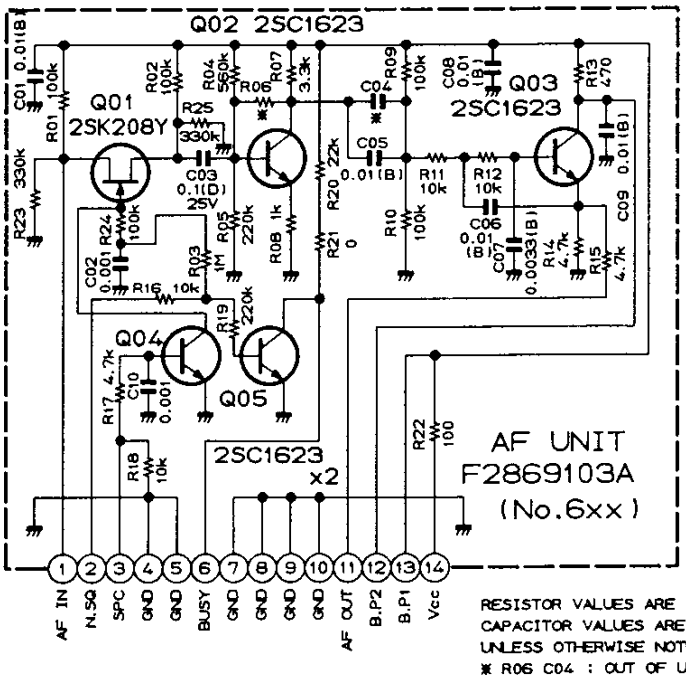
(DC VOLTS)

1 AF IN	2 NSQ	3 SPC	4 GND	5 GND	6 BUSY	7 GND	REMARKS
—	SQ ON OFF 0/0 8.2/0	SQ ON OFF 1/— 0/—	0/0	0/0	—	0/0	RX/TX

8 GND	9 GND	10 GND	11 AF OUT	12 BYPASS 2	13 BYPASS 1	14 Vcc	REMARKS
0/0	0/0	0/0	—	7.6/7.6	8/8	8.4/8.4	RX/TX

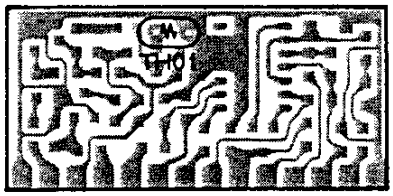


2SC1623 (L6/L7) (Q602,603,604,605)



RESISTOR VALUES ARE IN Ω. 1/10W:
CAPACITOR VALUES ARE IN μF. 50WV:
UNLESS OTHERWISE NOTED.
✱ R06 C04 : OUT OF USE

METER UNIT



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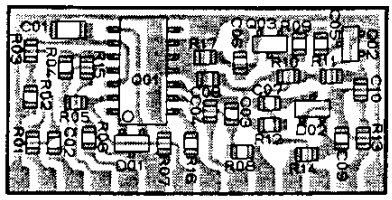
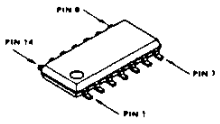
"component" side

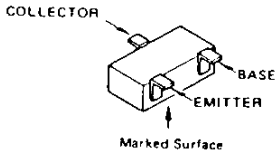


①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭

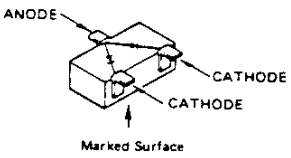
"chip-only" side



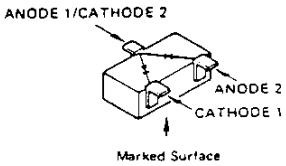
LA6324M (Q701)



2SC1623 (L6/L7) (Q702,703)



1SS181 (A3) (D701)

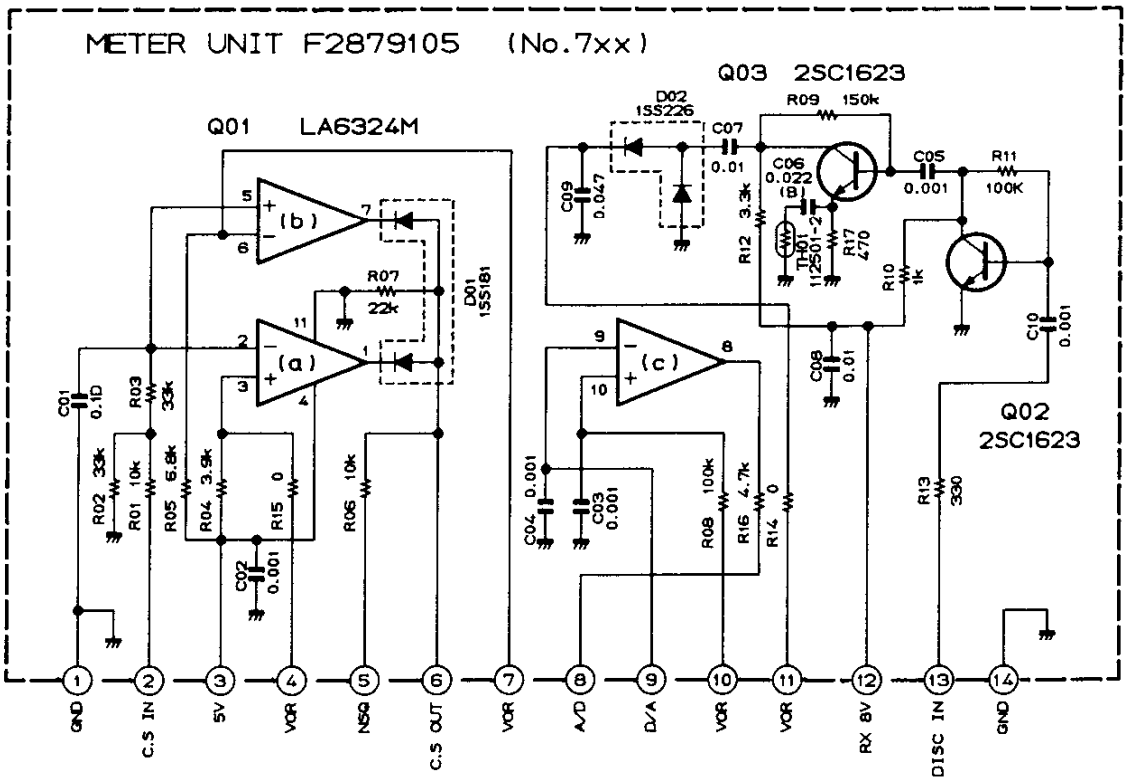


1SS226 (C3) (D702)

METER UNIT VOLTAGE CHART

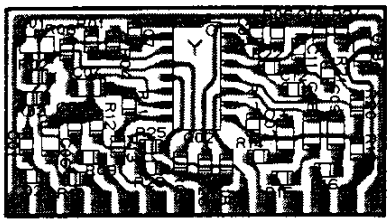
(DC VOLTS)

1 GND	2 C.S IN	3 5V	4 VOR	5 NSQ	6 C.S OUT	7 VOR	8 A/D	9 D/A	10 VOR	11 VOR	12 RX8V	13 DISC IN	14 GND	REMARKS
SQ ON SQ OFF 0/0 0/0	SQ ON SQ OFF ~/0 ~/0	SQ ON SQ OFF 5/5 5/5	3.5~0/3.5~0	SQ ON SQ OFF 0/0 7.8/0	SQ ON SQ OFF 0/0 4.7/0	2.8~0/2.8~0	-	-	-	-	7.8/0	-	0/0	RX/TX



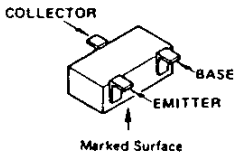
RESISTOR VALUES ARE IN Ω. 1/10W:
CAPACITOR VALUES ARE IN μF. 50WV:
UNLESS OTHERWISE NOTED.

MIC AMP UNIT



①②③④⑤⑥⑦⑧⑨⑩⑪⑫⑬⑭

"chip-only" side



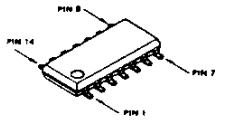
2SC1623 (L6/L7) (Q801)

MIC AMP UNIT VOLTAGE CHART

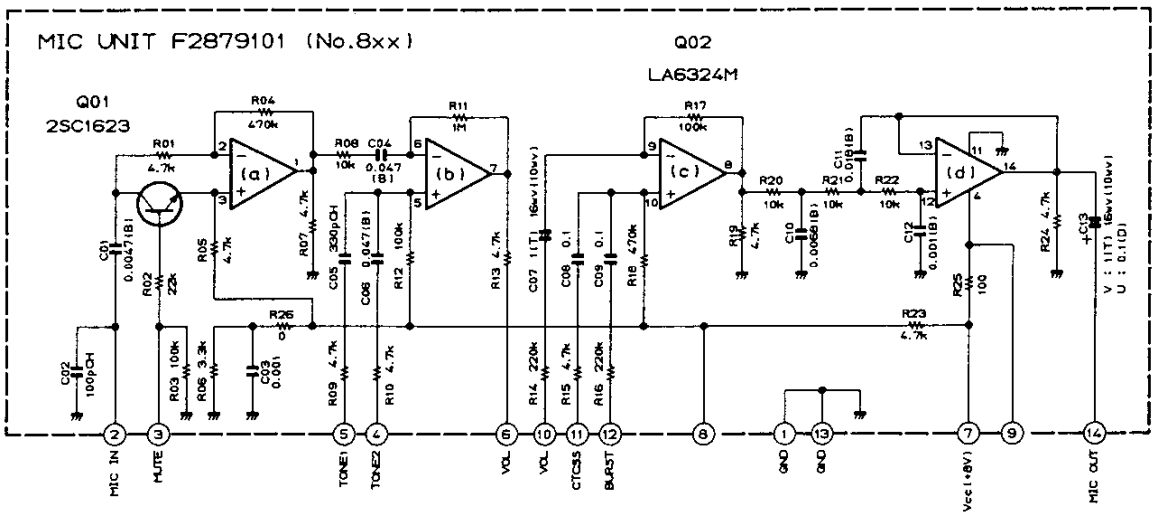
(DC VOLTS)

1 GND	2 MIC IN	3 MUTE	4 TONE 2	5 TONE 1	6 VOL	7 Vcc	REMARKS
0/0	0/0	7.9/0	0/0	0/0	3.7/3.4	8.4/8.4	RX/TX

8 BYPASS 1	9 BYPASS 2	10 VOL	11 CTCSS	12 BURST	13 GND	14 MIC OUT	REMARKS
3.7/3.4	8.0/8.0	1.0/1.0	0/0	0/0	0/0	4.5/4.5	RX/TX

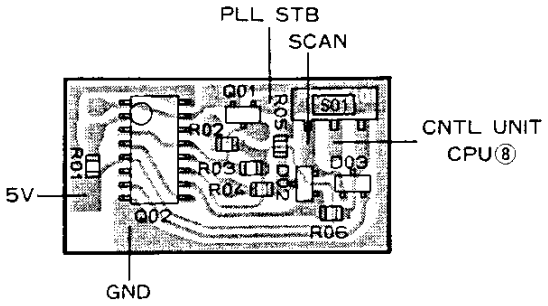


LA6324M (Q802)

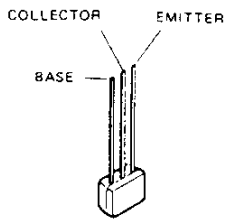


RESISTOR VALUES ARE IN Ω, 1/10W:
CAPACITOR VALUES ARE IN μF, 50VV:
UNLESS OTHERWISE NOTED.
(T)CAPACITORS ARE TANTALUM.

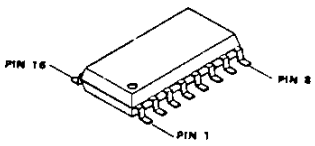
SCAN UNIT



"chip-only" side



FA1A4M-T2B (Q901)

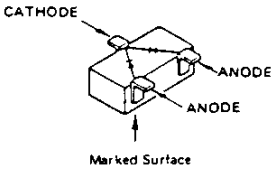


μPD4538BG (Q902)

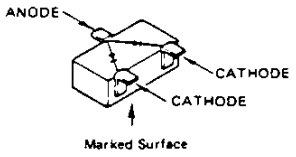
SCAN UNIT VOLTAGE CHART

(DC VOLTS)

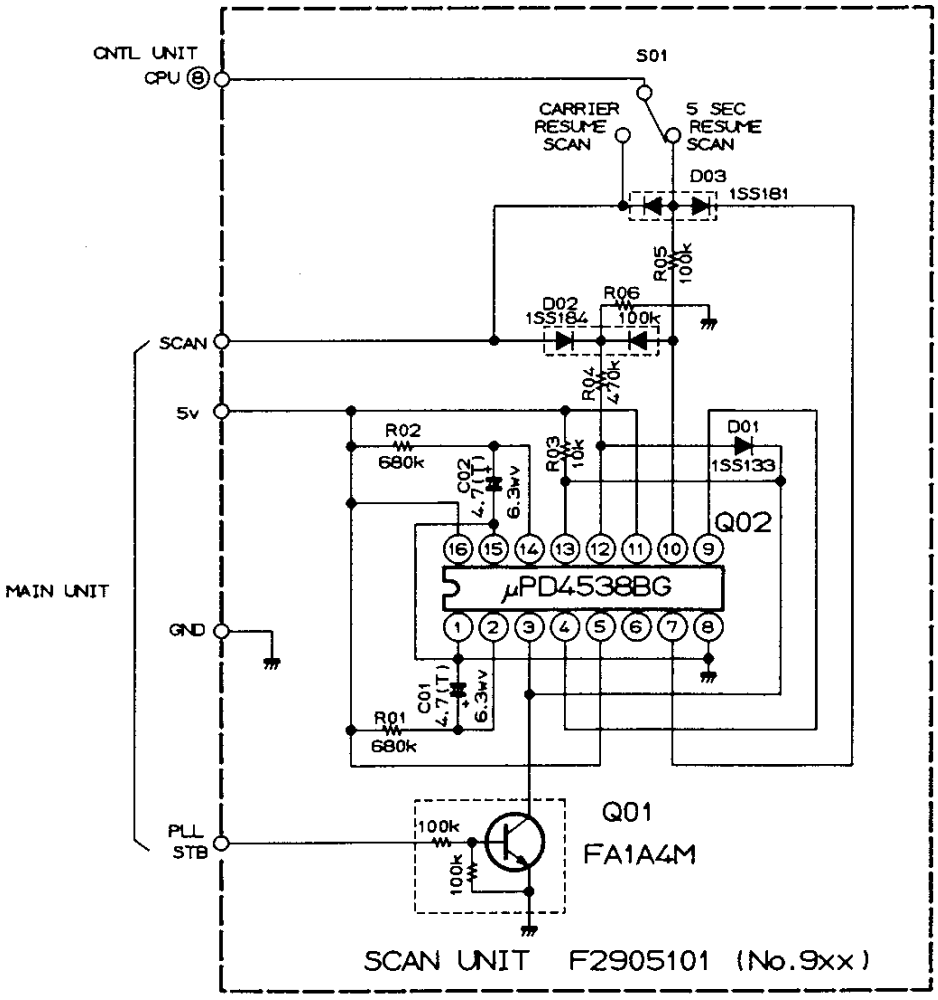
CPU ⑧	SCAN	5V	PLL STB	REMARKS
S0 ON S0 OFF 5/0 0/0	S0 ON S0 OFF 5/0 0/0	S0 ON S0 OFF 5/5 5/5	–	RX/TX



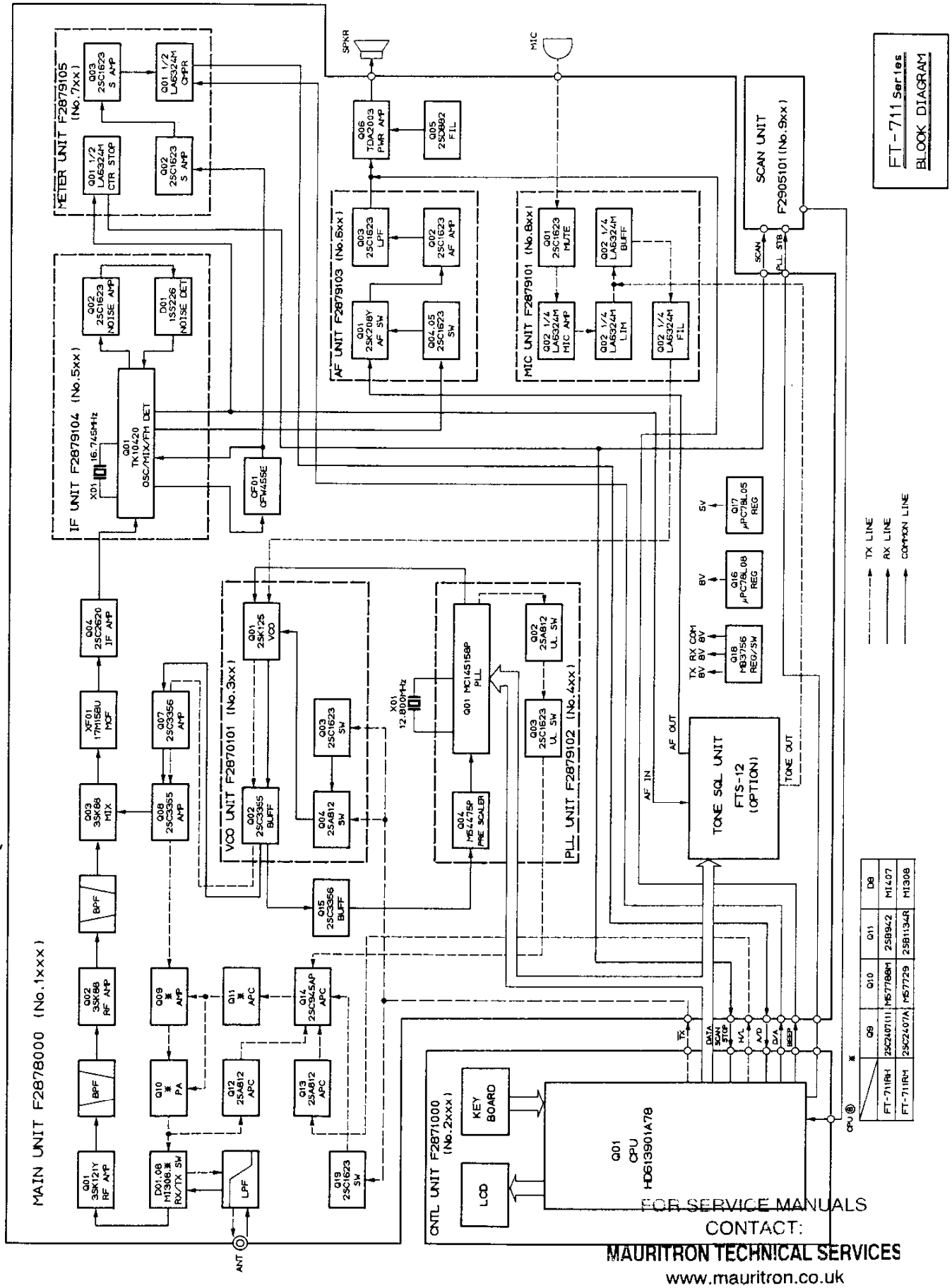
1SS184 (B3) (D902)

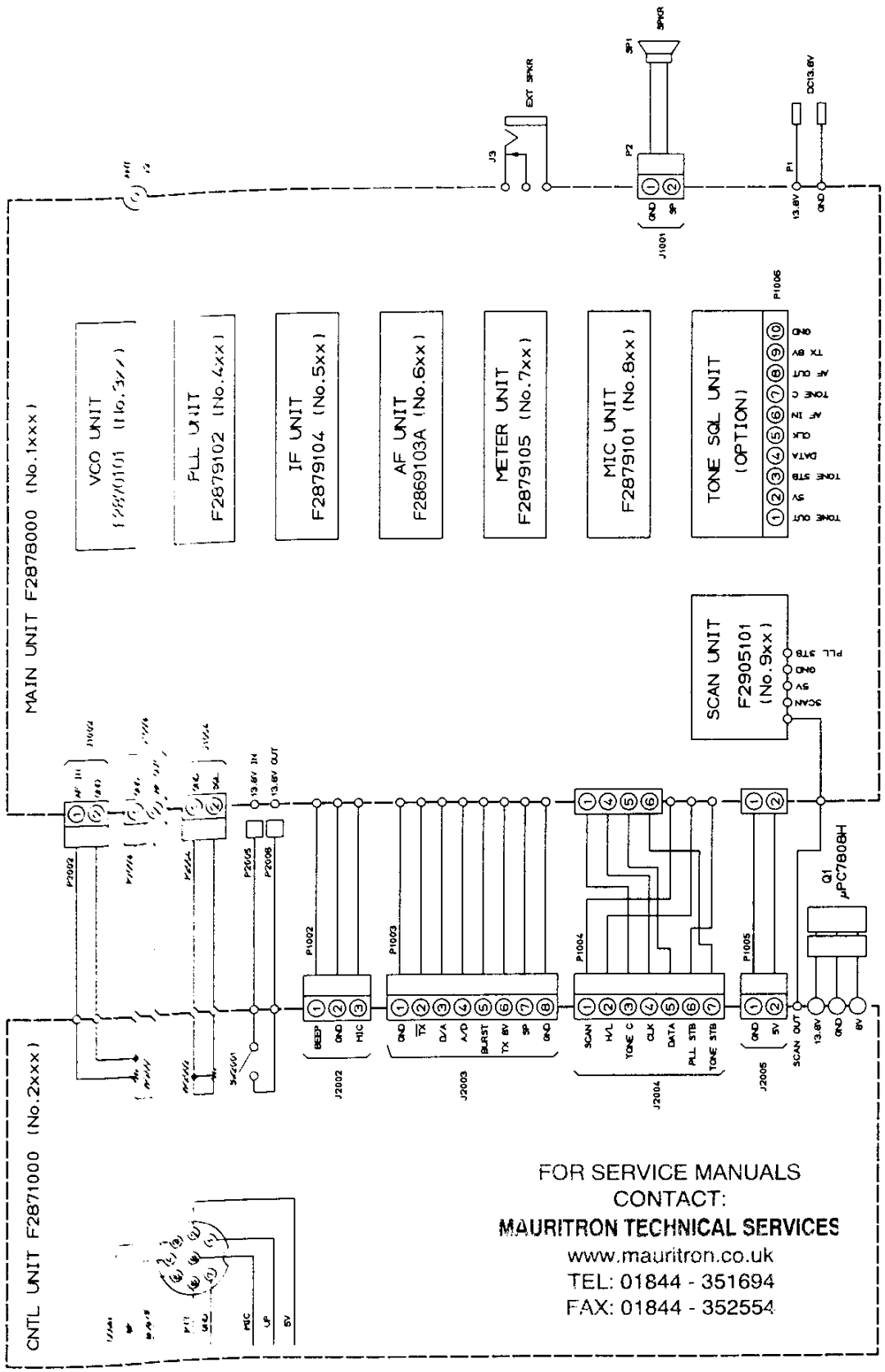


1SS181 (A3) (D903)



(T) CAPACITORS ARE TANTALUM.





FT-711RH

CONNECTION DIAGRAM

* BUSY A1.A2
BURST PTT B.C.D.E

MAINTENANCE AND ALIGNMENT

The high reliability of the chip components in the FT-711RH minimize the possibility that repair or realignment should be needed after leaving the factory. However, if damage occurs and some parts subsequently be replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

Because of the compact circuitry of this transceiver, we recommend that servicing be performed only by authorized Yaesu service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized Yaesu service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components.

Those who do undertake any of the following alignments are cautioned to proceed at their own risk. Yaesu must reserve the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners.

Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and the need for realignment determined to be absolutely necessary.

The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy.

A 50-ohm dummy load that is non-reactive up to 500 MHz is required. Correct alignment is not possible with an antenna.

Alignment Equipment

DC voltmeter (at least 20-kilohms/volt)
500 MHz standard signal generator (SSG) with calibrated level and modulation (see note below)
AF signal generator
SINAD meter (SINADDER)
FM linear detector (deviation meter)
CM coupler (directional coupler)
RF wattmeter (50W, ±5% @500MHz)
50-ohm non-reactive (@500 MHz) dummy load
Frequency counter (100Hz resolution at 500MHz)
Spectrum Analyzer
Tracking Generator (420-460 MHz)

Note: SSG levels referred to in the alignment procedure are based on 0dBu=0.5uV.

Alignment Precautions

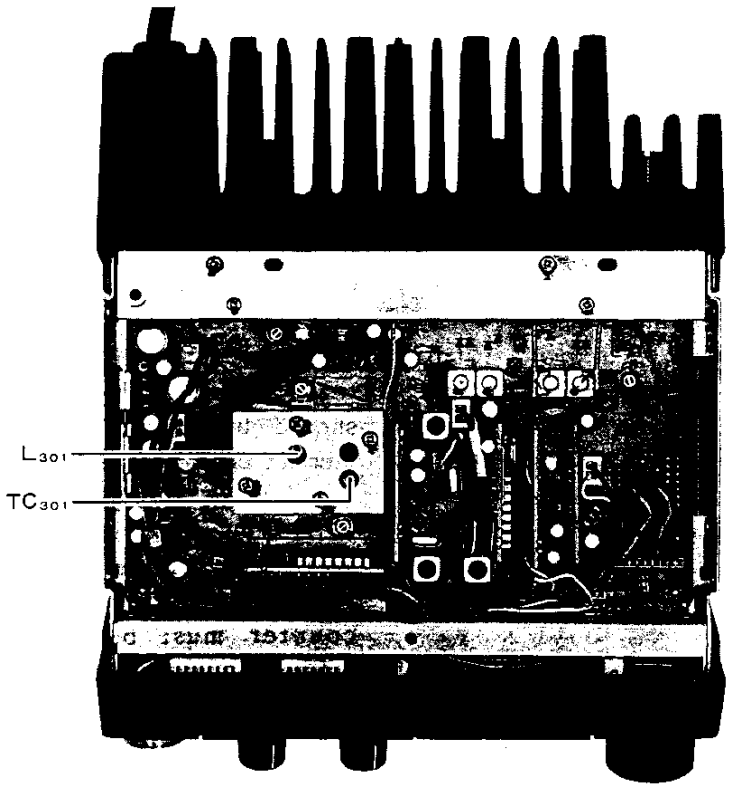
Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20 and 30 °C (68 to 86 °F). When the transceiver is brought into the shop it should be allowed at least 2 hours for thermal equalization before alignment.

Alignments must not be made unless the oscillator shields and circuit boards are firmly affixed in place. Also, the frequency counter must be thoroughly warmed up before beginning.

Supply voltage during alignment must be held constant at 12.5V DC. Use a well regulated, adjustable power supply capable of at least 10A continuous load.

A. PLL Unit

1) VCV (Varactor Control Voltage)
   a) With the dummy load connected to the ANT jack, connect the DC voltmeter (3V scale) to the VCV terminal on the VCO Unit.
   b) Tune the transceiver to the top edge of the band for the model being aligned, and while receiving, adjust TC301 on the VCO Unit for 4.0 ±0.1V.
   c) Close the PTT line and adjust L301 on the VCO Unit for 4.0 ±0.1V.
   d) Retune to the bottom edge of the band and confirm at least 1V during both receive and transmit, and then remove the voltmeter.



B. Transmitter

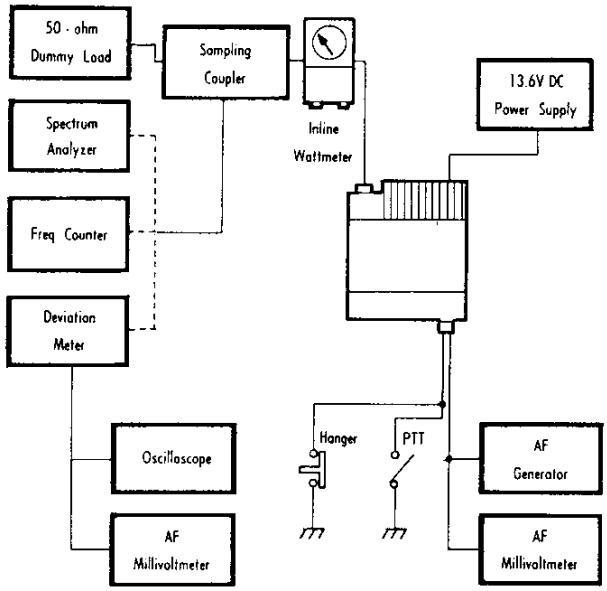
Set up the test equipment as shown in Figure 1. Close the PTT line when making adjustments. All adjustment points are on the Main Unit.

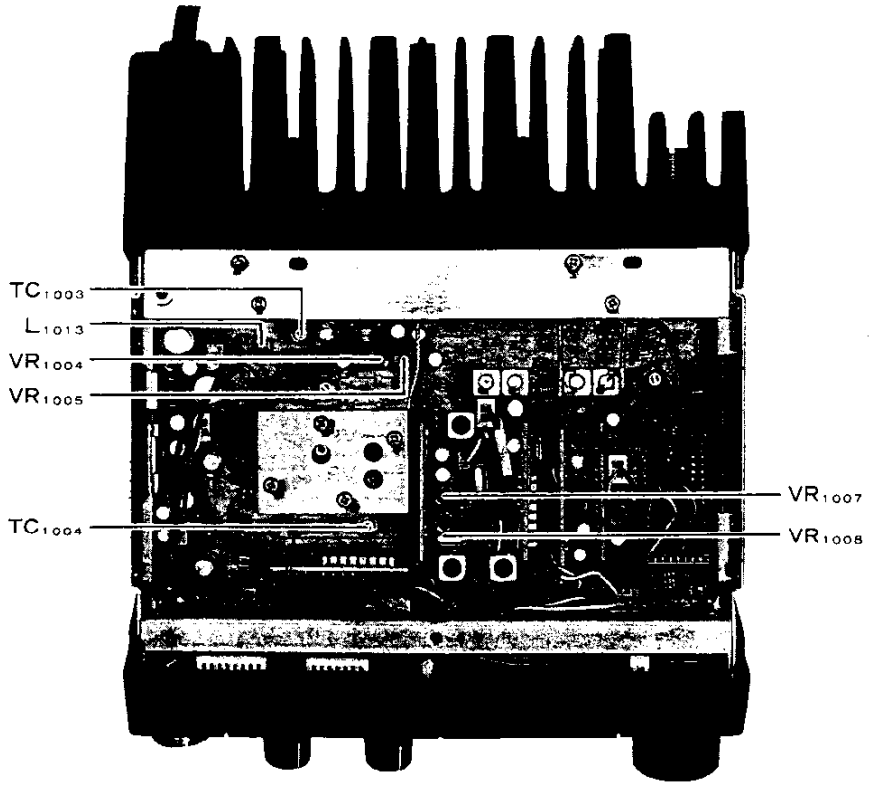
1) Early Stage Coupling
   a) With the transceiver tuned to the high band edge, set the LOW button to the high power (undepressed) position.
   b) Adjust TC1003, L1019, L1020, L1021 and L1013 for maximum power output (at least 37 watts).

2) Power Output
   a) Retune to the high band edge, and adjust VR1004 for at least 37 watts output with the LOW switch set for high power.
   b) Now press the LOW switch and adjust VR1005 for 4W output.

3) Frequency Calibration
   a) Adjust TC1004 to match the counter indication with the transceiver frequency.

4) Deviation
   a) Set the AF generator for 25mV output at 1 kHz. Adjust VR1009 for ±4.5 kHz deviation on the Deviation Meter.
   b) Reduce the AF generator level to 2.5mV and adjust VR1008 for ±3.5 kHz deviation.





C. Receiver

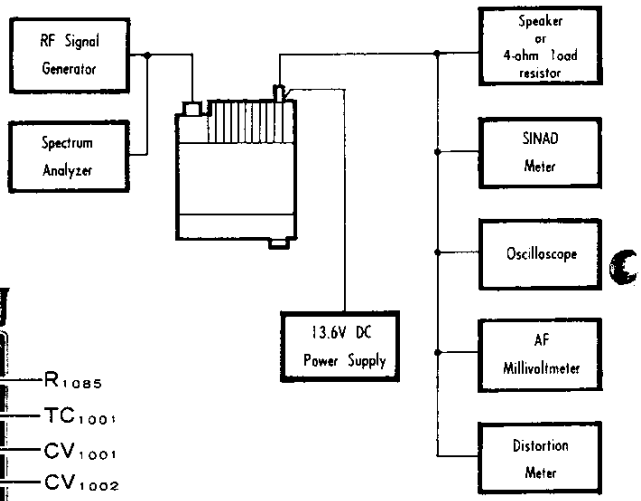
1) Bandpass Filters
   a) Connect the Tracking Generator to R1085 (10K) on the Main Unit, as shown in Figure 2.
   b) Adjust CV1001, CV1002 and TC1001 for the passband shown in Figure 3.

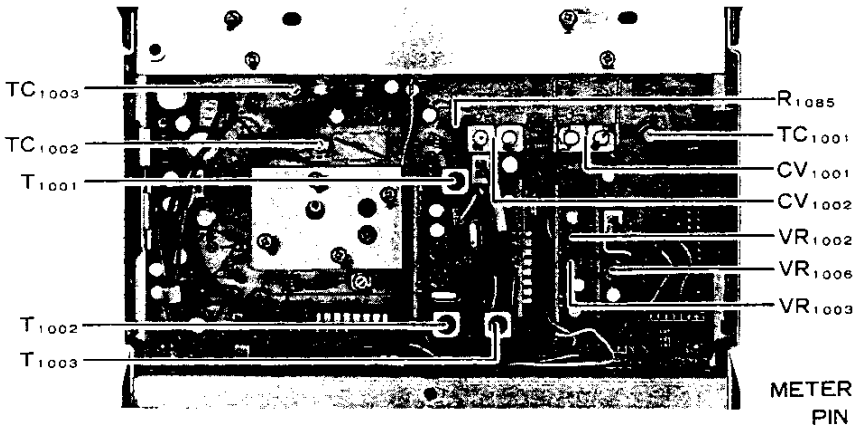
2) Interstage Transformers
   Set up the test equipment as shown in Figure 4. All adjustment points are on the Main Unit.
   a) Modulate the RF signal generator with ±3.5 kHz deviation of a 1 kHz tone.
   b) Tune the transceiver and signal generator to the same frequency at the center of the band, and set the injection level to 10dBu.
   c) Ensure that TC1002 is set for minimum capacitance (it should remain set this way), and then adjust TC1001 for best SINAD.
   d) Connect the DC voltmeter to pin 11 on the Meter Unit and adjust T1001, T1002 and T1003 for maximum voltmeter deflection.

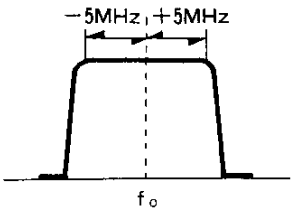
3) S-Meter Calibration
   a) At the center of the band, set the signal generator for 15dBu (2.8uV) injection with ±3 kHz deviation of a 1 kHz tone.
   b) Adjust VR1001 so that all S-meter segments are just on.
   c) Confirm that the S-meter still indicates when injection is reduced to 5dBu.

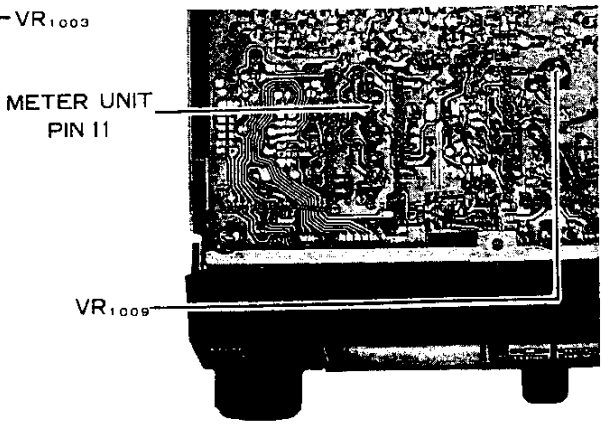
4) Scanner Center-Stop
   a) With the transceiver tuned precisely to 435.0000 or 445.0000 MHz, set the SQL to the 10 o'clock position (the BUSY lamp should be lit).
   b) Tune the signal generator 3.7 kHz above the receiver, and inject 20dBu (5uV) with ±3 kHz deviation of a 1 kHz tone.
   c) Adjust VR1003 so that the BUSY lamp just turns off.
   d) Now tune the signal generator to 3.7 kHz below the receiver and adjust VR1002 so that the BUSY lamp again just turns off.

5) Beeper Volume
   a) Adjust VR1006 as desired (this is normally set to maximum at the factory).









FT-711 PARTS LIST

MAIN UNIT			
Symbol No.	Part No.	Description	Device
	F2878000	Printed Circuit Board	
	C028780AA	PCB with Components Version A**	
	C028780AB	PCB With Components Version A***	
	C028780AC	PCB With Components Version B**	
	C028780AD	PCB With Components Version B***	
	C028780AE	PCB With Components Version C**	
	C028780AF	PCB With Components Version C***	
	C028780AG	PCB With Components Version X**	
	C028780AU	PCB With Components Version X***	
	C028780AV	PCB With Components Version F**	
	C028780AW	PCB With Components Version F***	
Q1001	G4801210Y	FET	3SK121Y
Q1002	G4800880	FET	3SK88
Q1003	G4800880	FET	3SK88
Q1004	G3326207B	Transistor	2SC2620QBTR
Q1005	G3408820	Transistor	2SD882
Q1006	G1090769	IC	TDA2003
Q1007	G3333567	Transistor	2SC3356-T2B
Q1008	G3333550	Transistor	2SC3355-T2B
Q1009	G3324071	Transistor*	2SC2407(A)
	G3324071	Transistor**	2SC2407(A)
	G3090050	Transistor***	2SC2407(1)
Q1010	G1090225	IC*	M57704M
	G1090622	IC**	M57729
	G1090799	IC***	M57788M
Q1011	G3211340R	Transistor*	2SB1134R
	G3211340R	Transistor**	2SB1134R
	G3209420	Transistor***	2SB942
Q1012	G3108127F	Transistor	2SA812-T2BM6B
Q1013	G3108127F	Transistor	2SA812-T2BM6B
Q1014	G3309451P	Transistor	2SC945AP
Q1015	G3333567	Transistor	2SC3356-T2B
Q1016	G1090080	IC	PC78L08
Q1017	G1090084	IC	PC78L05
Q1018	G1090222	IC	MB3756M
Q1019	G3316237F	Transistor	2SC1623-T2BL6
Q1020	G3090081	IC	BN1A4M
D1001	G2090337	Diode	MI308
D1002	G2090337	Diode	MI308
D1003	G2070003	Diode	1SS226TE85R
D1005	G2090344	Diode	1SV178
D1006	G2090344	Diode	1SV178
D1007	G2015550	Diode	1S1555
D1008	G2090337	Diode*,**	MI308
	G2090345	Diode***	MI407
D1009	G2090377	Diode	1SS108
D1010	G2090232	Diode	S11B
D1011	G2070003	Diode	1SS226TE85R
D1013	G2090377	Diode*	1SS108
D1014	G2070009	Diode	1SS184TE85R
X1001	H0102804	Xtal	HC-49/T 12.8MHz
XF1001	H1102101	Xtal Filter	17M15BU
CF1001	H3900200	Ceramic Filter	CFW455E

R1001	J24205104	RES Chip.	1/10W	100kΩ
R1002	J24205473	RES Chip.	1/10W	47kΩ
R1003	J24205151	RES Chip.	1/10W	150Ω
R1004	J02245150	Carbon Film RES.	1/4W	15Ω
R1005	J24205153	RES Chip.	1/10W	15kΩ
R1006	J24205104	RES Chip.	1/10W	100kΩ
R1007	J24205823	RES Chip.	1/10W	82kΩ
R1008	J24205563	RES Chip.	1/10W	56kΩ
R1009	J24205680	RES Chip.	1/10W	68Ω
R1010	J24205150	RES Chip.	1/10W	15Ω
R1011	J24205153	RES Chip.	1/10W	15kΩ
R1012	J24205104	RES Chip.	1/10W	100kΩ
R1013	J24205103	RES Chip.	1/10W	10kΩ
R1014	J24205393	RES Chip.	1/10W	39kΩ
R1015	J24205104	RES Chip.	1/10W	100kΩ
R1016	J24205560	RES Chip.	1/10W	56Ω
R1017	J24205332	RES Chip.	1/10W	3.3kΩ
R1018	J24205101	RES Chip.	1/10W	100Ω
R1019	J24205681	RES Chip.	1/10W	680Ω
R1020	J24205223	RES Chip.	1/10W	22kΩ
R1021	J24205682	RES Chip.	1/10W	6.8kΩ
R1022	J24205681	RES Chip.	1/10W	680Ω
R1023	J24205100	RES Chip.	1/10W	10Ω
R1024	J24205151	RES Chip.	1/10W	150Ω
R1025	J02245101	Carbon Film RES.	1/4W	100Ω
R1026	J02245101	Carbon Film RES.	1/4W	100Ω
R1027	J24205102	RES Chip.	1/10W	1kΩ
R1028	J02245562	Carbon Film RES.	1/4W	5.6kΩ
R1029	J02245223	Carbon Film RES.	1/4W	22kΩ
R1030	J24205471	RES Chip.	1/10W	470Ω
R1031	J02245229	Carbon Film RES.	1/4W	2.2Ω
R1032	J01275221	Carbon Film RES.	1/2W	220Ω
R1033	J02245010	Carbon Film RES.	1/4W	1Ω
R1034	J24205560	RES Chip.	1/10W	56Ω
R1035	J24205180	RES Chip.	1/10W	18Ω
R1036	J24205180	RES Chip.	1/10W	18Ω
R1037	J24205180	RES Chip.	1/10W	18Ω
R1038	J24205222	RES Chip.	1/10W	2.2kΩ
R1039	J02245682	Carbon Film RES.	1/4W	6.8kΩ
R1040	J24205101	RES Chip.	1/10W	100Ω
R1041	J24205150	RES Chip.	1/10W	15Ω
R1042	J02245102	Carbon Film RES.	1/4W	1kΩ
R1043	J24205472	RES Chip.	1/10W	4.7kΩ
R1044	J02245150	Carbon Film RES.	1/4W	15Ω
R1045	J24205150	RES Chip.	1/10W	15Ω
R1046	J24205102	RES Chip.	1/10W	1kΩ
R1047	J24205681	RES Chip.	1/10W	680Ω
R1048	J02245221	Carbon Film RES.	1/4W	220Ω
R1049	J24205102	RES Chip.	1/10W	1kΩ
R1050	J01275150	Carbon Film RES.	1/2W	15Ω
R1051	J01275151	Carbon Film RES.	1/2W	150Ω
R1052	J24205471	RES Chip.	1/10W	470Ω
R1053	J24205332	RES Chip.	1/10W	3.3kΩ
R1054	J24205472	RES Chip.	1/10W	4.7kΩ
R1055	J24205471	RES Chip.	1/10W	470Ω
R1056	J02245472	Carbon Film RES.**,***	1/4W	4.7kΩ
R1057	J24205103	RES Chip.	1/10W	10kΩ
R1058	J24205101	RES Chip.	1/10W	100Ω
R1059	J02245101	Carbon Film RES.	1/4W	100Ω
R1060	J24205102	RES Chip.	1/10W	1kΩ
R1061	J02245101	Carbon Film RES.	1/4W	100Ω
R1062	J24205470	RES Chip.	1/10W	47Ω
R1063	J24205103	RES Chip.	1/10W	10kΩ
R1064	J24205332	RES Chip.	1/10W	3.3kΩ
R1065	J24205103	RES Chip.	1/10W	10kΩ
R1066	J24205472	RES Chip.	1/10W	4.7kΩ
R1068	J02245221	Carbon Film RES.	1/4W	220Ω
R1069	J24205000	RES Chip.	1/10W	0Ω
R1070	J24205182	RES Chip.	1/10W	1.8kΩ
R1071	J24205000	RES Chip.	1/10W	0Ω
R1072	J24205000	RES Chip.	1/10W	0Ω
R1073	J24205000	RES Chip.	1/10W	0Ω
R1074	J24205000	RES Chip.	1/10W	0Ω
R1075	J24205000	RES Chip.	1/10W	0Ω
R1076	J01245223	Carbon Film RES.	1/4W	22kΩ
R1077	J24205473	RES Chip.	1/10W	47kΩ
R1078	J02245101	Carbon Film RES.	1/4W	100Ω
R1079	J24205472	RES Chip.	1/10W	4.7kΩ
R1080	J24205000	RES Chip.	1/10W	0Ω
R1081	J24205472	RES Chip.	1/10W	4.7kΩ
R1082	J24205680	RES Chip.	1/10W	68Ω

* RF output 10W Model
** RF output 25W Model
*** RF output 24W Model

R1083	J24205680	RES Chip.	1/10W	68Ω	C1063	K22170817	CAP Chip.	B	50WV 0.01μF
R1084	J24205331	RES Chip.	1/10W	330Ω	C1064	K22170211	CAP Chip.	CH	50WV 10pF
R1085	J01245103	Carbon Film RES.	1/4W	10kΩ	C1065	K22170805	CAP Chip.	B	50WV 0.001μF
R1086	J24205000	RES Chip.	1/10W	0Ω	C1066	K22170219	CAP Chip.	CH	50WV 22pF
R1087	J24205562	RES Chip.	1/10W	5.6kΩ	C1067	K22170805	CAP Chip.	B	50WV 0.001μF
R1088	J24205152	RES Chip.	1/10W	1.5kΩ	C1068	K22170805	CAP Chip.	B	50WV 0.001μF
R1089	J24205000	RES Chip.	1/10W	0Ω	C1069	K22170805	CAP Chip.	B	50WV 0.001μF
R1090	J01245473	Carbon Film RES.	1/4W	47kΩ	C1071	K22170215	CAP Chip.	CH	50WV 15pF
					C1072	K22170805	CAP Chip.	B	50WV 0.001μF
VR1001	J51745473	POT.	B	47kΩ	C1073	K22170805	CAP Chip.	B	50WV 0.001μF
VR1002	J51745103	POT.	B	10kΩ	C1074	K22170805	CAP Chip.	B	50WV 0.001μF
VR1003	J51745103	POT.	B	10kΩ	C1075	K22170203	CAP Chip.	CH	50WV 2pF
VR1004	J51745223	POT.	B	22kΩ	C1076	K02172040	Ceramic CAP.	CH	50WV 4pF
VR1005	J51745102	POT.*,**	B	1kΩ	C1077	K22170805	CAP Chip.	B	50WV 0.001μF
	J51745222	POT.***	B	2.2kΩ	C1078	K22170805	CAP Chip.	B	50WV 0.001μF
VR1006	J51745104	POT.	B	100kΩ	C1079	K40129004	AL. Electro CAP.		16WV 10μF
VR1007		See BAND Table			C1080	K22170805	CAP Chip.	B	50WV 0.001μF
VR1008	J51745103	POT.	B	10kΩ	C1081	K40129042	AL. Electro CAP.		16WV 47μF
VR1009		See BAND Table			C1082	K22141904	CAP Chip.	D	25WV 0.1μF
					C1083	K22141904	CAP Chip.	D	25WV 0.1μF
C1001	K22170205	CAP Chip.	CH	50WV 4pF	C1084	K40129004	AL. Electro CAP.		16WV 10μF
C1002	K22170210	CAP Chip.	CH	50WV 9pF	C1085	K22170805	CAP Chip.	B	50WV 0.001μF
C1003	K22170205	CAP Chip.	CH	50WV 4pF	C1086	K40129004	AL. Electro CAP.		16WV 10μF
C1004	K22170223	CAP Chip.	CH	50WV 33pF	C1087	K22141904	CAP Chip.	D	25WV 0.1μF
C1005	K22170805	CAP Chip.	B	50WV 0.001μF	C1088	K22170805	CAP Chip.	B	50WV 0.001μF
C1006	K22170805	CAP Chip.	B	50WV 0.001μF	C1089	K22170805	CAP Chip.	B	50WV 0.001μF
C1007	K22170203	CAP Chip.	CH	50WV 2pF	C1090	K22170805	CAP Chip.	B	50WV 0.001μF
C1008	K22170805	CAP Chip.	B	50WV 0.001μF	C1091		See BAND Table		
C1009	K22170203	CAP Chip.	CH	50WV 2pF	C1092		See BAND Table		
C1010	K22170805	CAP Chip.	B	50WV 0.001μF	C1093	K22170202	CAP Chip.	CH	50WV 1pF
C1011	K22170805	CAP Chip.	B	50WV 0.001μF	C1094	K22170207	CAP Chip.*	CH	50WV 6pF
C1012	K22170805	CAP Chip.	B	50WV 0.001μF		K22170206	CAP Chip.**	CH	50WV 5pF
C1013	K22170805	CAP Chip.	B	50WV 0.001μF	C1095		See BAND Table		
C1014	K22170203	CAP Chip.	CH	50WV 2pF	C1096	K10176102	Ceramic CAP.	B	50WV 0.001μF
C1015	K22170805	CAP Chip.	B	50WV 0.001μF	C1097	K22170805	CAP Chip.	B	50WV 0.001μF
C1016		See BAND Table			C1098	K22170805	CAP Chip.	B	50WV 0.001μF
C1017	K22170805	CAP Chip.	B	50WV 0.001μF	C1099	K22170805	CAP Chip.	B	50WV 0.001μF
C1018	K22170817	CAP Chip.	B	50WV 0.01μF	C1100	K40129016	AL. Electro CAP.		16WV 22μF
C1019	K22170805	CAP Chip.	B	50WV 0.001μF	C1101	K22170235	CAP Chip.	CH	50WV 100pF
C1020	K22170805	CAP Chip.	B	50WV 0.001μF	C1102	K40129016	AL. Electro CAP.		16WV 22μF
C1021	K22170805	CAP Chip.	B	50WV 0.001μF	C1103	K22170805	CAP Chip.	B	50WV 0.001μF
C1022	K22170206	CAP Chip.	CH	50WV 5pF	C1104	K22170817	CAP Chip.	B	50WV 0.01μF
C1023	K22170817	CAP Chip.	B	50WV 0.01μF	C1105	K22170208	CAP Chip.*	CH	50WV 7pF
C1024	K22170207	CAP Chip.	CH	50WV 6pF		K22170205	CAP Chip.**,***	CH	50WV 4pF
C1025	K22170805	CAP Chip.	B	50WV 0.001μF	C1106	K22170805	CAP Chip.*	B	50WV 0.001μF
C1026	K22170817	CAP Chip.	B	50WV 0.01μF	C1107	K40129050	AL. Electro CAP.		16WV 2200μF
C1027	K22141904	CAP Chip.	D	50WV 0.1μF	C1108	K22170817	CAP Chip.	B	50WV 0.001μF
C1028	K22170817	CAP Chip.	B	50WV 0.01μF	C1109	K22170805	CAP Chip.	B	50WV 0.001μF
C1029	K22170817	CAP Chip.	B	50WV 0.01μF	C1110	K22170805	CAP Chip.	B	50WV 0.001μF
C1030	K22170817	CAP Chip.	B	50WV 0.01μF	C1111	K70167474	Tantalum CAP.		35WV 0.47μF
C1031	K70107476	Tantalum CAP.		10WV 47μF	C1112	K40109001	AL. Electro CAP.		10wV 0.01μF
C1032	K22170817	CAP Chip.	B	50WV 0.01μF	C1113	K70127475	Tantalum CAP.		16wV 4.7μF
C1033	K22170805	CAP Chip.	B	50WV 0.001μF	C1114	K22170817	CAP Chip.	B	50WV 0.01μF
C1034	K40129004	AL. Electro CAP.		16WV 10μF	C1115	K22170207	CAP Chip.	CH	50WV 6pF
C1035	K70147475	Tantalum CAP.		25WV 4.7μF	C1116	K22170207	CAP Chip.	CH	50WV 6pF
C1036	K40129054	AL. Electro CAP.		16WF 47μF	C1117	K22170215	CAP Chip.	CH	50WV 15pF
C1037	K40179001	AL. Electro CAP.		50WV 1μF	C1118	K22170817	CAP Chip.	B	50WV 0.01μF
C1038	K19149023	Ceramic CAP.		25WV 0.068μF	C1119	K22170204	CAP Chip.	CH	50WV 3pF
C1039	K40179013	AL. Electro CAP.		50WV 1μF	C1120	K19149025	Ceramic CAP.		25WV 0.1μF
C1040	K22140809	CAP Chip.	B	25WV 0.033μF	C1121	K19149017	Ceramic CAP.		25WV 0.022μF
C1041	K40179016	AL. Electro CAP.		50WV 0.1μF	C1122	K40129004	AL. Electro CAP.		16WV 10μF
C1042	K40129016	AL. Electro CAP.		16WV 22μF	C1123	K22170805	CAP Chip.	B	50WV 0.001μF
C1043	K40129016	AL. Electro CAP.		16WV 22μF	C1124	K22170817	CAP Chip.	B	50WV 0.01μF
C1044	K22141904	CAP Chip.	D	25WV 0.1μF	C1125	K40109001	AL. Electro CAP.		10WV 100μF
C1045	K22170805	CAP Chip.	B	50WV 0.001μF	C1126	K22170805	CAP Chip.	B	50WV 0.001μF
C1046	K40129046	AL. Electro CAP.		16WV 1000μF	C1127	K40129004	AL. Electro CAP.		16WV 10μF
C1047	K22170817	CAP Chip.	B	50WV 0.01μF	C1128	K22170817	CAP Chip.	B	50WV 0.01μF
C1048	K22170817	CAP Chip.	B	50WV 0.01μF	C1129	K22170821	CAP Chip.	B	50WV0.0022μF
C1049	K40129042	AL. Electro CAP.		16WV 100μF	C1130	K22170235	CAP Chip.	CH	50WV 100pF
C1050	K22170817	CAP Chip.	B	50WV 0.01μF	C1131	K22170235	CAP Chip.	CH	50WV 100pF
C1051	K40129046	AL. Electro CAP.		16WV 1000μF	C1132	K22170235	CAP Chip.	CH	50WV 100pF
C1052	K22141904	CAP Chip.	D	25WV 0.1μF	C1133	K22170817	CAP Chip.	B	50WV 0.01μF
C1053	K40129054	AL. Electro CAP.		16WV 47μF	C1134	K40129016	AL. Electro CAP.		16WV 22μF
C1054	K22170817	CAP Chip.	B	50WV 0.01μF	C1135	K22170235	CAP Chip.	CH	50WV 100pF
C1055	K40109018	AL. Electro CAP.		10WV 220μF	C1136	K22170235	CAP Chip.	CH	50WV 100pF
C1056	K22170817	CAP Chip.	B	50WV 0.01μF	C1137	K70087106	Tantalum CAP.		6.3WV 10μF
C1057	K40129054	AL. Electro CAP.		16WV 47μF	C1138	K22170805	CAP Chip.	B	50WV 0.001μF
C1058	K40109018	AL. Electro CAP.		10WV 220μF	C1139	K40179011	AL. Electro CAP.		50WV 3.3μF
C1059	K22170817	CAP Chip.	B	50WV 0.01μF	C1140	K22170805	CAP Chip.	B	50WV 0.001μF
C1060	K40129042	AL. Electro CAP.		16WV 100μF	C1141	K22170805	CAP Chip.	B	50WV 0.001μF
C1061	K22170817	CAP Chip.	B	50WV 0.01μF	C1142	K22170805	CAP Chip.	B	50WV 0.001μF
C1062	K22170817	CAP Chip.	B	50WV 0.01μF	C1143	K40129016	AL. Electro CAP.		16WV 22μF

C1144	K22170805	CAP Chip.	B 50WV 0.001µF
C1145	K22170817	CAP Chip.	B 50WV 0.01µF
C1146	K22170805	CAP Chip.	B 50WV 0.001µF
C1147	K22170805	CAP Chip.	B 50WV 0.001µF
C1148		See BAND Table	
C1149	K22170805	CAP Chip.	B 50WV 0.001µF
C1150	K22170805	CAP Chip.	B 50WV 0.001µF
C1151	K22170805	CAP Chip.	B 50WV 0.001µF
TC1001	K91000060	Trimmer CAP.	2pF
TC1002	K91000055	Trimmer CAP.	6pF
TC1003	K91000055	Trimmer CAP.	6pF
TC1004	K91000030	Trimmer CAP.	40pF
L1001	L0021277	Coil	
L1002	L0020767	Coil	
L1003	L0020342	Coil	
L1004	L0020900	Coil	
L1005	L0020852	Coil	
L1006	L0021359	Coil	
L1007	L0021705	Coil	
L1008	L1190242	M.RFC	0.47µF
L1009	L0021359	Coil	
L1010	L1190242	M.RFC	0.47µF
L1011	L0021359	Coil	
L1012	L0021359	Coil	
L1013	L0021359	Coil	
L1014	L0020852	Coil	
L1015	L0021359	Coil	
L1016	L0021705	Coil	
L1017	L0021705	Coil	
L1018	L0021705	Coil	
L1019	L0021706	Coil	
L1020	L0021707	Coil	
L1021	L0021520	Coil	
L1022	L0021706	Coil	
L1023	L2190024 L0020614	AFC Toroid*,** Coil***	100µF
L1024	L1190270	M.RFC	100µF
L1025	L0021359	Coil	
T1001	L0021533	Coil	17.2MHz
T1002	L0021533	Coil	17.2MHz
T1003	L0021533	Coil	17.2MHz
CV1001	L4020070	Helical Resonator	440MHz
CV1002	L4020070	Helical Resonator	440MHz
J1001	P0090524	Connector	
J1002	P0090524	Connector	
J1003	P0090524	Connector	
J1004	P0090524	Connector	
P1002	T9205469B	Wire-Assy	
P1003	T9205470C	Wire-Assy	
P1004	T9205471B	Wire-Assy	
P1005	T9205472	Wire-Assy	
P1006	T9205473	Wire-Assy	
	T9205474	Wire-Assy	
	R0509420A	Shield Plate	
	R0509430	Shield Plate	

VCO UNIT

Symbol No.	Part No.	Description	Device
	F2870101	Printed Circuit Board	
	C028701AA	PCB With Component	
Q301	G3801250	FET	2SK125
Q302	G3333567	Transistor	2SC3356-T2B
Q303	G3327127G	Transistor	2SC2712GRTE85R
Q304	G3108127F	Transistor	2SA812-T2BM6B
D301	G2090044	Diode	MC301
D302	G2090271	Diode	1T33
D303	G2090027	Diode	1SS53
R301	J24205472	RES Chip.	1/10W 4.7kΩ
R302	J01245472	Carbon Film RES.	1/4W 4.7kΩ
R303	J24205103	RES Chip.	1/10W 10kΩ
R304	J24205101	RES Chip.	1/10W 100Ω
R305	J24205221	RES Chip.	1/10W 200Ω
R306	J02245103	Carbon Film RES.	1/4W 10kΩ
R307	J24205332	RES Chip.	1/10W 3.3kΩ
R308	J24205470	RES Chip.	1/10W 47Ω
R309	J02245101	Carbon Film RES.	1/4W 100Ω
R310	J24205223	RES Chip.	1/10W 22kΩ
R311	J24205103	RES Chip.	1/10W 10kΩ
R312	J24205473	RES Chip.	1/10W 47kΩ
R313	J24205473	RES Chip.	1/10W 47kΩ
C301	K22170208	CAP Chip.	CH 50WV 7pF
C302	K22170208	CAP Chip.	CH 50WV 7pF
C303	K22170208	CAP Chip.	CH 50WV 7pF
C305	K22170805	CAP Chip.	B 50WV 0.001µF
C306	K22170817	CAP Chip.	B 50WV 0.01µF
C307	K40109024	AL. Electro CAP.	10WV 100µF
C308	K22170202	CAP Chip.	CH 50WV 1pF
C309	K22170208	CAP Chip.	CH 50WV 7pF
C310	K22170208	CAP Chip.	CH 50WV 7pF
C311	K22170201	CAP Chip.	CH 50WV 0.5pF
C312	K22170805	CAP Chip.	B 50WV 0.001µF
C313	K22170805	CAP Chip.	B 50WV 0.001µF
C314	K22170805	CAP Chip.	B 50WV 0.001µF
C315	K22170805	CAP Chip.	B 50WV 0.001µF
C316	K22170235	CAP Chip.	CH 50WV 100pF
TC301	K91000158	Trimmer CAP.	6pF
L301	L0190134	Coil	
L302	L1190192	M.RFC	0.47µF
L303	L0021520	Coil	
L304	L1190192	M.RFC	0.47µF
	L9190001	Ferrite Beads	4A2 RI3X3-1
	L9190001	Ferrite Beads	4A2 RI3X3-1
	R0119910	Shield Cover	
	R0119920	Shield Frame	

PLL UNIT

Symbol No.	Part No.	Description	Device
	F2879102	Printed Circuit Board	
	C028792AB	PCB With Component	
Q401	G1090648	IC	MC145158P
Q402	G3108127F	Transistor	2SA812-T2BM6B
Q403	G3316237F	Transistor	2SC1623-T2BL6
Q404	G1090770	IC	M54475P
R401	J01215100	Carbon Film RES.	1/8W 10Ω
R402	J24205223	RES Chip.	1/10W 22kΩ
R403	J24205223	RES Chip.	1/10W 22kΩ
R404	J24205223	RES Chip.	1/10W 22kΩ
R405	J24205223	RES Chip.	1/10W 22kΩ
R406	J24205103	RES Chip.	1/10W 10kΩ
C401	K22170223	CAP Chip.	CH 50WV 33pF
C402	K22170221	CAP Chip.	CH 50WV 27pF
C403	K22170805	CAP Chip.	B 50WV 0.001µF
C404	K22141904	CAP Chip.	D 25WV 0.1µF
C405	K22170817	CAP Chip.	B 50WV 0.01µF
C406	K22170805	CAP Chip.	B 50WV 0.001µF
C407	K22170821	CAP Chip.	B 50WV 0.022µF
C408	K22170805	CAP Chip.	B 50WV 0.001µF
L401	L1190270	M.RFC	100µH

IF UNIT

	F2876104	Printed Circuit Board	
	C028764AB	PCB With Component	
Q501	G1090617	IC	TK10420
Q502	G3316237F	Transistor	2SC1623-T2BL6
D501	G2070003	Diode	1SS226 TE85R

X501	H0102677	XTAL	HC-49/T 16.745MHz
CD501	H7900260	Ceramic DISC	D455C
R503	J24205182	RES Chip.	1/10W 100kΩ
R504	J24205182	RES Chip.	1/10W 1.8kΩ
R505	J24205473	RES Chip.	1/10W 47kΩ
R506	J24205152	RES Chip.	1/10W 1.5kΩ
R507	J24205105	RES Chip.	1/10W 1MΩ
R508	J24205153	RES Chip.	1/10W 15kΩ
R509	J24205471	RES Chip.	1/10W 470Ω
R510	J24205332	RES Chip.	1/10W 3.3kΩ
R511	J24205474	RES Chip.	1/10W 470kΩ
R512	J24205222	RES Chip.	1/10W 2.2kΩ
R513	J01251101	Carbon Film RES.	1/8W 100Ω
R514	J24205223	RES Chip.	1/10W 22kΩ
R515	J24205683	RES Chip.	1/10W 68kΩ
C501	K22170805	CAP Chip.	B 50WV 0.001μF
C502	K22170327	CAP Chip.	UJ 50WV 47pF
C503	K22170337	CAP Chip.	UJ 50WV 120pF
C505	K22141904	CAP Chip.	D 25WV 0.1μF
C506	K22170237	CAP Chip.	CH 50WV 120pF
C507	K22141904	CAP Chip.	D 25WV 0.1μF
C508	K22170801	CAP Chip.	B 50WV 470pF
C509	K22170801	CAP Chip.	B 50WV 470pF
C510	K22170817	CAP Chip.	B 50WV 0.01μF
C511	K22170801	CAP Chip.	B 50WV 470pF
C512	K22170235	CAP Chip.	CH 50WV 100pF
C513	K22170817	CAP Chip.	B 50WV 0.01μF
C514	K22170817	CAP Chip.	B 50WV 0.01μF
C515	K22170817	CAP Chip.	B 50WV 0.01μF
C516	K22170805	CAP Chip.	B 50WV 0.001μF
C517	K22141904	CAP Chip.	D 25WV 0.1μF
C518	K22170235	CAP Chip.	CH 50WV 100pF

AF UNIT

Symbol No.	Part No.	Description	Device
	F2879103A	Printed Circuit Board	
	C028793AB	PCB With Component	
Q601	G3802087Y	FET	2SK208Y TE85R
Q602	G3316237F	Transistor	2SC1623-T2BL6
Q603	G3316237F	Transistor	2SC1623-T2BL6
Q604	G3316237F	Transistor	2SC1623-T2BL6
Q605	G3316237F	Transistor	2SC1623-T2BL6
R601	J24205104	RES Chip.	1/10W 100kΩ
R602	J24205104	RES Chip.	1/10W 100kΩ
R603	J24205105	RES Chip.	1/10W 1MΩ
R604	J24205564	RES Chip.	1/10W 560kΩ
R605	J24205224	RES Chip.	1/10W 220kΩ
R607	J24205332	RES Chip.	1/10W 3.3kΩ
R608	J24205102	RES Chip.	1/10W 1kΩ
R609	J24205104	RES Chip.	1/10W 100kΩ
R610	J24205104	RES Chip.	1/10W 100kΩ
R611	J24205103	RES Chip.	1/10W 10kΩ
R612	J24205103	RES Chip.	1/10W 10kΩ
R613	J24205471	RES Chip.	1/10W 470Ω
R614	J24205472	RES Chip.	1/10W 4.7kΩ
R615	J24205472	RES Chip.	1/10W 4.7kΩ
R616	J24205103	RES Chip.	1/10W 10kΩ
R617	J24205472	RES Chip.	1/10W 4.7kΩ
R618	J24205103	RES Chip.	1/10W 10kΩ
R619	J24205224	RES Chip.	1/10W 220kΩ
R620	J24205223	RES Chip.	1/10W 22kΩ
R621	J24205000	RES Chip.	1/10W 0Ω
R622	J24205101	RES Chip.	1/10W 100Ω
R623	J24205334	RES Chip.	1/10W 330kΩ
R624	J24205104	RES Chip.	1/10W 100kΩ
R625	J24205334	RES Chip.	1/10W 330kΩ
C601	K22170817	CAP Chip.	B 50WV 0.01μF
C602	K22170817	CAP Chip.	B 50WV 0.01μF
C603	K22141904	CAP Chip.	D 25WV 0.1μF
C605	K22170817	CAP Chip.	B 50WV 0.01μF
C606	K22170817	CAP Chip.	B 50WV 0.01μF
C607	K22170811	CAP Chip.	B 50WV 0.0033μF
C608	K22170817	CAP Chip.	B 50WV 0.01μF
C609	K22170817	CAP Chip.	B 50WV 0.01μF
C610	K22170805	CAP Chip.	B 50WV 0.001μF

METER UNIT

Symbol No.	Part No.	Description	Device
	F2879105	Printed Circuit Board	
	C028795AB	PCB With Component	
Q701	G1090559	IC	LA6324M
Q702	G3316237F	Transistor	2SC1623-T2BL6
Q703	G3316237F	Transistor	2SC1623-T2BL6
D701	G2070001	Diode	1SS181 TE85R
D702	G2070003	Diode	1SS226 TE85R
R701	J24205103	RES Chip.	1/10W 10kΩ
R702	J24205333	RES Chip.	1/10W 33kΩ
R703	J24205333	RES Chip.	1/10W 33kΩ
R704	J24205332	RES Chip.	1/10W 3.3kΩ
R705	J24205682	RES Chip.	1/10W 6.8kΩ
R706	J24205103	RES Chip.	1/10W 10kΩ
R707	J24205223	RES Chip.	1/10W 22kΩ
R708	J24205104	RES Chip.	1/10W 100kΩ
R709	J24205154	RES Chip.	1/10W 150kΩ
R710	J24205102	RES Chip.	1/10W 1kΩ
R711	J24205104	RES Chip.	1/10W 100kΩ
R712	J24205332	RES Chip.	1/10W 3.3kΩ
R713	J24205331	RES Chip.	1/10W 330Ω
R714	J24205000	RES Chip.	1/10W 0Ω
R715	J24205000	RES Chip.	1/10W 0Ω
R716	J24205472	RES Chip.	1/10W 4.7kΩ
R717	J24205471	RES Chip.	1/10W 470Ω
TH701	G9090013	Thermistor	112501-2
C701	K22141904	CAP Chip.	D 25WV 0.1μF
C702	K22170805	CAP Chip.	B 50WV 0.001μF
C703	K22170805	CAP Chip.	B 50WV 0.001μF
C704	K22170805	CAP Chip.	B 50WV 0.001μF
C705	K22170805	CAP Chip.	B 50WV 0.001μF
C706	K22170821	CAP Chip.	B 50WV 0.002μF
C707	K22170817	CAP Chip.	B 50WV 0.01μF
C708	K22170817	CAP Chip.	B 50WV 0.01μF
C709	K22171008	CAP Chip.	F 50WV 0.047μF
C710	K22170805	CAP Chip.	B 50WV 0.001μF

MIC AMP UNIT

	F2876101	Printed Circuit Board	
	C028761AB	PCB With Component	
Q801	G3316237F	Transistor	2SC1623-T2BL6
Q802	G1090559	IC	LA6324M
R801	J24205472	RES Chip.	1/10W 4.7kΩ
R802	J24205223	RES Chip.	1/10W 22kΩ
R803	J24205104	RES Chip.	1/10W 100kΩ
R804	J24205474	RES Chip.	1/10W 470kΩ
R805	J24205472	RES Chip.	1/10W 4.7kΩ
R806	J24205332	RES Chip.	1/10W 3.3kΩ
R807	J24205472	RES Chip.	1/10W 4.7kΩ
R808	J24205103	RES Chip.	1/10W 10kΩ
R809	J24205472	RES Chip.	1/10W 4.7kΩ
R810	J24205472	RES Chip.	1/10W 4.7kΩ
R811	J24205105	RES Chip.	1/10W 1MΩ
R812	J24205104	RES Chip.	1/10W 100kΩ
R813	J24205472	RES Chip.	1/10W 4.7kΩ
R814	J24205224	RES Chip.	1/10W 220kΩ
R815	J24205472	RES Chip.	1/10W 4.7kΩ
R816	J24205224	RES Chip.	1/10W 220kΩ
R817	J24205104	RES Chip.	1/10W 100kΩ
R818	J24205474	RES Chip.	1/10W 470kΩ
R819	J24205472	RES Chip.	1/10W 4.7kΩ
R820	J24205103	RES Chip.	1/10W 10kΩ
R821	J24205103	RES Chip.	1/10W 10kΩ
R822	J24205103	RES Chip.	1/10W 10kΩ
R823	J24205472	RES Chip.	1/10W 4.7kΩ
R824	J24205472	RES Chip.	1/10W 4.7kΩ

R825	J24205101	RES Chip.	1/10W 100kΩ
R826	J24205000	RES Chip.	1/10W 0Ω
C801	K22170813	CAP Chip.	B 50WV 0.0047μF
C802	K22170235	CAP Chip.	CH50WV 100pF
C803	K22170805	CAP Chip.	B 50WV 0.001μF
C804	K22141808	CAP Chip.	B 25WV 0.047μF
C805	K22170247	CAP Chip.	CH50WV 330pF
C806	K22141808	CAP Chip.	B 25WV 0.047μF
C807	K78120013	CAP Chip.	16WV 1μF
C808	K22141904	CAP Chip.	D 25WV 0.1μF
C809	K22141904	CAP Chip.	D 25WV 0.1μF
C810	K22170815	CAP Chip.	B 50WV 0.0068μF
C811	K22140806	CAP Chip.	B 25WV 0.018μF
C812	K22170805	CAP Chip.	B 50WV 0.001μF
C813	K78120013	CAP Chip.	16WV 1μF

SCAN UNIT

Symbol No.	Part No.	Description	Device
	F2905101	Printed Circuit Board	
	C029051AB	PCB With Component	
Q901	G3070001	Transistor	FA1A4M-T2B
Q902	G1090814	IC	μPD4538BG

D901	G2090389	Diode	1SS133
D902	G2070009	Diode	1SS184TE85R
D903	G2070001	Diode	1SS181TE85R
R901	J24205684	RES Chip.	1/10W 680kΩ
R902	J24205684	RES Chip.	1/10W 680kΩ
R903	J24205103	RES Chip.	1/10W 10kΩ
R904	J24205474	RES Chip.	1/10W 470kΩ
R905	J24205104	RES Chip.	1/10W 100kΩ
R906	J24205104	RES Chip.	1/10W 100kΩ
C901	K70087475	Tantalum CAP.	6.3WV 4.7μF
C902	K70087475	Tantalum CAP.	6.3WV 4.7μF
SW901	N6090051	Slide Switch	SSS-212229

CNTL UNIT

Symbol No.	Part No.	Description	Device
	Q7000061A	CNTL UNIT A •	
	Q7000062A	CNTL UNIT B ••	
	Q7000064A	CNTL UNIT D •••	
Q2001	G1090767	IC	HD613901A78
BAT2001	Q9000390	Lithium Battery	CR2032-HP4H

• Version A, A (U)
•• Version B, C
•••Version F

BAND TABLE

RF Output 25W Model							
	Version A, A(U)			Version B, C, X			
Symbol No.	Part No.	Description	Device	Part No.	Description	Device	
VR1007	J51745333	POT. B	33kΩ	J51745333	POT. B	33kΩ	
VR1009	J50750474	POT.	470kΩ	J50750474	POT.	470kΩ	
C1016	K22170203	CAP Chip. CH	50WV 2pF	K22170206	CAP Chip. CH	50WV	3pF
C1091	K22170206	CAP Chip. CH	50WV 5pF	K22170204	CAP Chip. CH	50WV	8pF
C1092	K22170207	CAP Chip. CH	50WV 6pF	K22170206	CAP Chip. CH	50WV	5pF
C1094	-	-	-	-	-	-	
C1095	K22170206	CAP Chip. CH	50WV 5pF	K22170208	CAP Chip. CH	50WV	5pF
C1148	-	-	-	-	-	-	

RF Output 35W Model							
	Version A, A(U)			Version B, C,X			
Symbol No.	Part No.	Description	Device	Part No.	Description	Device	
VR1007	J51745333	POT. B	33kΩ	J51745333	POT. B	33kΩ	
VR1009	J50750474	POT.	470kΩ	J50750474	POT.	470kΩ	
C1016	K22170203	CAP Chip. CH	50WV 2pF	K22170204	CAP Chip. CH	50WV	3pF
C1091	-	-	-	-	-	-	
C1092	-	-	-	-	-	-	
C1094	K22170205	CAP Chip. CH	50WV 4pF	K22170207	CAP Chip. CH	50WV	6pF
C1095	K22170208	CAP Chip. CH	50WV 7pF	K22170207	CAP Chip. CH	50WV	6pF
C1148	K22170208	CAP Chip. CH	50WV 7pF	K22170207	CAP Chip. CH	50WV	6pF

FTS-12 TONE SQUELCH UNIT INSTALLATION

The FTS-12 provides either encode-only or encode/decode operation with 37 front panel selectable subaudible CTCSS tones. See the "Operation" section of the Operating Manual for functional details.

(1) Disconnect the power cable at the rear of the transceiver, and remove the five screws affixing the bottom cover*. Remove the cover carefully so as not to pull on the speaker wires, and lay the set upside down.

(2) Locate the unconnected brown 11-pin connector at the front right corner on the Main Board just behind the tuning knob. Align the small tab on one side of this connector with the hole in one side of the FTS-12 connector, and mate these connectors.

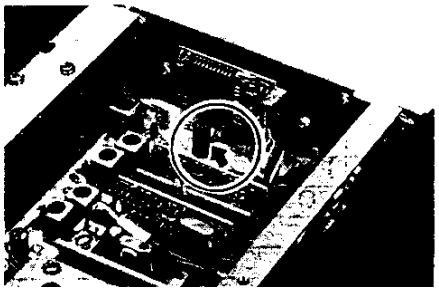
(3) Now locate the double-sided adhesive tape pre-installed on the inside of the side panel. Remove the paper covering from this tape, and press the FTS-12 against it as shown in the photo below.

(4) On the main circuit board near the FTS-12 mounting position, notice a 27-kilohm resistor (red, violet and orange bands). Cut the exposed lead of this resistor. If the FTS-12 is removed from the transceiver, this resistor must be reconnected.

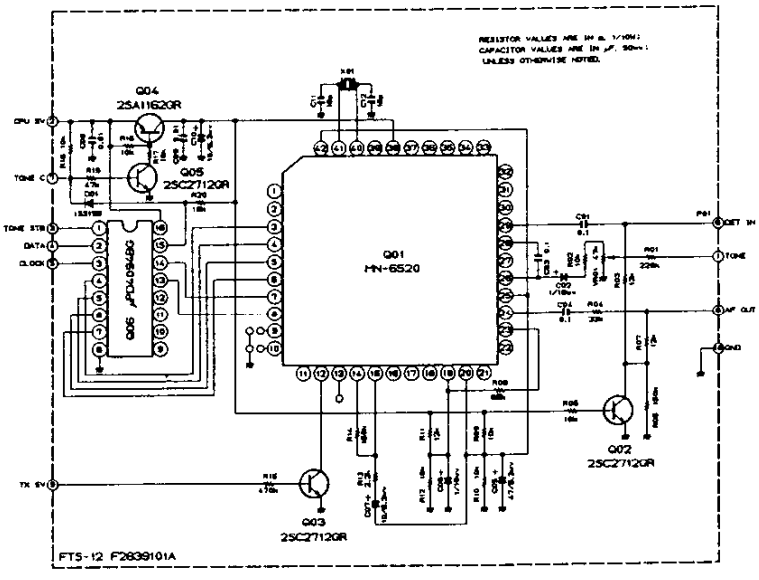
(5) Replace the bottom cover. The output tone level (VR1 on the FTS-12) is adjusted at the factory for the proper deviation, so no adjustment should be necessary.

* If the front panel has not been reversed (ie., angles upwards), the bottom panel is the larger panel which includes the loudspeaker. Otherwise, the bottom panel is the smaller one.

CTCSS Tone Frequency (Hz)			
67.0	100.0	141.3	203.5
71.9	103.5	146.2	210.7
74.4	107.2	151.4	218.1
77.0	110.9	156.7	225.7
79.7	114.8	162.2	233.6
82.5	118.8	167.9	241.8
85.4	123.0	173.8	250.3
88.5	127.3	179.9	—
91.5	131.8	186.2	—
94.8	136.5	192.8	—



Cut indicated resistor



FTS-12 PARTS LIST

FTS-12 PARTS LIST			
Symbol No.	Part No.	Description	Device
	F2839101A	Printed Circuit Board	
	C028391AA	P.C.B with Components	
Q01	G1090577	IC	MN6520
Q02	G3327127G	Transistor	2SC2712GRTE85R
Q03	G3327127G	Transistor	2SC2712GRTE85R
Q04	G3111627G	Transistor	2SA1162GRTE85R
Q05	G3327127G	Transistor	2SC2712GR
Q06	G1090696	IC	μPD4094BG
D01	G2070026	Diode	1SS196TE85R
R01	J24205224	RES Chip.	1/10W 220kΩ
R02	J24205103	RES Chip.	1/10W 10kΩ
R03	J24205123	RES Chip.	1/10W 12kΩ
R04	J24205333	RES Chip.	1/10W 33kΩ
R05	J24205103	RES Chip.	1/10W 10kΩ
R06	J24205154	RES Chip.	1/10W 150kΩ
R07	J24205123	RES Chip.	1/10W 12kΩ
R08	J24205683	RES Chip.	1/10W 68kΩ
R09	J24205103	RES Chip.	1/10W 10kΩ
R10	J24205103	RES Chip.	1/10W 10kΩ
R11	J24205153	RES Chip.	1/10W 15kΩ
R12	J24205123	RES Chip.	1/10W 12kΩ
R13	J24205222	RES Chip.	1/10W 2.2kΩ
R14	J24205154	RES Chip.	1/10W 150kΩ
R15	J24205474	RES Chip.	1/10W 470kΩ
R16	J24205103	RES Chip.	1/10W 10kΩ
R17	J24205103	RES Chip.	1/10W 10kΩ
R18	J24205103	RES Chip.	1/10W 10kΩ
R19	J24205473	RES Chip.	1/10W 47kΩ
R20	J24205103	RES Chip.	1/10W 10kΩ
R21	J24205000	RES Chip.	1/10W 0Ω
VR01	J51771503	POT.	B 50kΩ
C01	K22141809	CAP Chip.	B 25WV 0.1μF
C02	K78120013	Tantalum CAP.	16WV 1μF
C03	K22141809	CAP Chip.	B 25WV 0.1μF
C04	K22141809	CAP Chip.	B 25WV 0.1μF
C05	K78080013	Tantalum CAP.	6.3WV 47μF
C06	K78120013	Tantalum CAP.	16WV 1μF
C07	K78080003	Tantalum CAP.	6.3WV 10μF
C08	K22170817	CAP Chip.	B 50WV 0.01μF
C09	K22170817	CAP Chip.	B 50WV 0.01μF
C10	K78080003	Tantalum CAP.	6.3WV 10μF
C11	K22170217	CAP Chip.	CH 50WV 18pF
C12	K22170217	CAP Chip.	CH 50WV 18pF
X01	H0102571	XTAL	4.194304MHZ
J01	P0090600	Connector	

FT-711 EXPLODED VIEW

SCREW LIST

Ref No.	Parts No.	Description	qty
①	U10304007	TRUSS HEAD SCREW M3X4B	10
②	U30305001	FLAT HEAD SCREW M3X5	10
③	U45204001	TAPTITE SCREW M2.6X4	11
④	U25306001	TAPTITE SCREW M3X6	5
⑤	U23308001	BINDING HEAD SCREW M3X8	4
⑥	U10204007	TRUSS HEAD SCREW M2.6X4B	2
⑦	U00330007	PAN HEAD SCREW M3X30B	2
⑧	U00325007	PAN HEAD SCREW M3X25B	2
⑨	U20305001	BINDING HEAD SCREW M3X5	2

※ RPT : R3118860
D/MR : R3118861
CALL : R3118862
TONE : R3118863
REV : R3118864
▼ : R3118865
▲ : R3118866
■ : R3118867