

TM-701A/E

SERVICE MANUAL

KENWOOD

Comm. Pte. Inc.

1057 East 2100 South

P.O. Box 6338

Salt Lake City, UT 84106

© 1989-6 PRINTED IN JAPAN

B51-8004-00 (C) 1346 (801) 457-8573

Knob (VFO, MR, MHz)
(K27-3035-04) X3

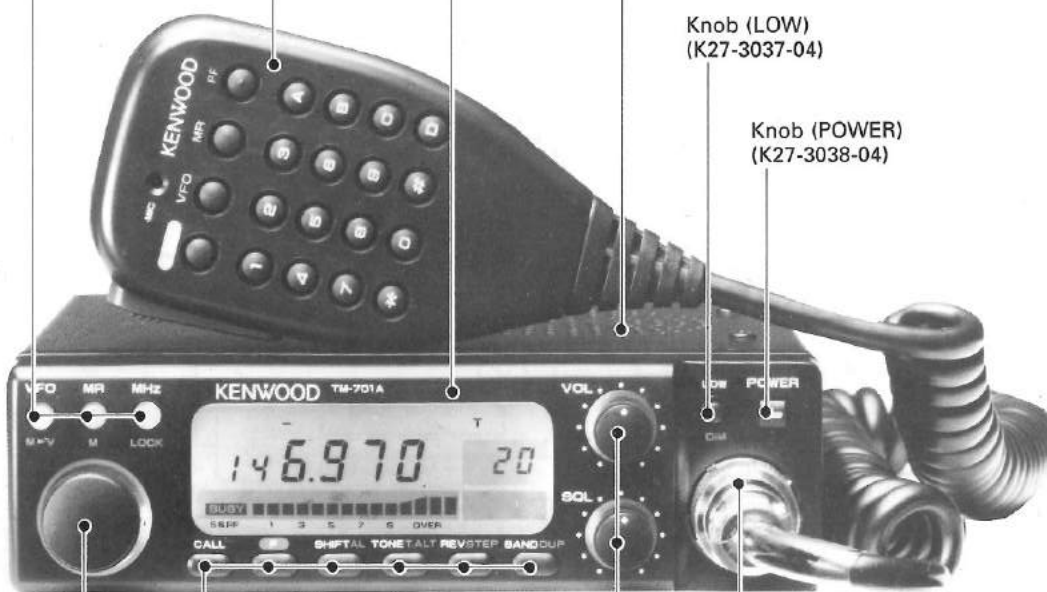
Microphone*
(T91-)

Panel ass'y*
(A20-)

Metallic cabinet
(A01-1067-03)

Knob (LOW)
(K27-3037-04)

Knob (POWER)
(K27-3038-04)



Knob (MAIN)
(K29-3156-04)

Knob (CALL, F, SHIFT, TONE, REV, BAND)
(K27-3036-04) X6

Knob (VOL, SQL)
(K29-3157-04) X2

Cylindrical receptacle (MIC)
(E06-0858-15)

Photo is TM-701A.

*Refer to parts list on page 18.

CONTENTS

CIRCUIT DESCRIPTION	2	ELE VOL (X59-3620-00)	44
DESCRIPTION OF COMPONENTS	12	TX RX UNIT (X57-3350-XX)	46
SEMICONDUCTOR DATA	17	SCHEMATIC DIAGRAM	51
PARTS LIST	18	TERMINAL FUNCTIONS	54
EXPLODED VIEW	32	BLOCK DIAGRAM	55
PACKING	33	LEVEL DIAGRAM	57
ADJUSTMENT	34	MC-44 (MULTI FUNCTION MICROPHONE)	58
PC BOARD VIEWS/CIRCUIT DIAGRAM		MC-44DM/MC-44DME	
LCD ASS'Y (B38-0311-05)	39	(MULTI FUNCTION MICROPHONE WITH AUTOPATCH) ..	59
430PLL (X58-3480-01)	40	MC-44E (MULTI FUNCTION MICROPHONE)	60
144PLL(X58-3500-00)	42	TSU-6 (CTCSS UNIT)	61
MIC AMP (X59-3610-00)	44	SPECIFICATIONS	BACK COVER

CIRCUIT DESCRIPTION

Frequency Configuration

The TM-701A/E incorporates a PLL synthesizer that works with a digital VFO and allows channel steps of 5, 10, 12.5, 15, 20, or 25kHz to be selected.

In the 144MHz-band receiver, an incoming signal is down converted to the 1st IF of 30.825MHz using a 1st local oscillator frequency of from 113.175 to 114.170 MHz (T,W) and 113.175 to 117.170MHz (K,M,M2). The 1st IF signal is then mixed with the 2nd local oscillator frequency of 30.37MHz to produce the 2nd IF of 455 kHz.

In the 430MHz-band receiver, an incoming signal is

down converted to the 1st IF of 30.825MHz using a 1st local oscillator frequency of 399.175 to 409.175MHz (M,M2,T,W) and 407.175 to 419.170MHz(K). The 1stIF signal is further mixed with the 2nd local oscillator frequency of 30.37MHz to produce the 2nd IF of 455kHz.

Both the 144MHz and 430MHz-band receivers are double-conversion.

The transmitter consists of a PLL circuit, which allows direct modulation and direct frequency division in both bands. Signals from the PLL circuit are amplified by a power amplifier for transmission.

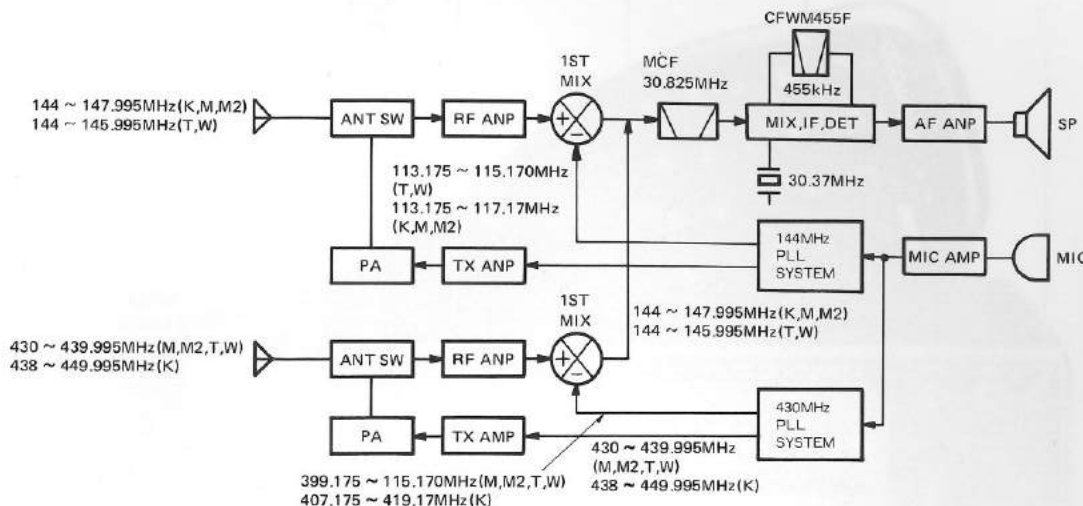


Fig. 1 Frequency configuration

Receiving System

• General

Separate receiver circuitry is provided from the antenna connector to the 1 mixer for both bands of the TM-701A/E.

• 144 MHz band

Incoming 144MHz-band signals from the antenna are passed through a low-pass filter in the final block of the transmitter system, and are then switched to the front-end of the receiver system via a transmit/receive switching diode. This signal is then passed through an antenna matching coil and amplified by a GaAs FET. Undesirable components are removed from the signal by the bandpass filter that utilizes three varactor diodes. The resulting signal

is fed to the 1st mixer, which mixes the signal with the 1st local oscillator signal in order to obtain the 1st IF (30.825MHz). This signal is then passed through two monolithic crystal filters (MCFs). The signal from the MCFs is used as the 1st IF signal.

The 1st IF signal is amplified and fed into IC3 (KCD01) in the FM IF HIC (HIC =Highbret IC). The IF signal is mixed with the 2nd local oscillator signal of 30.37MHz to produce the 2nd IF of 455kHz. The 455kHz signal is then passed through an FM ceramic filter and fed into IC3 again for amplification. The output signal from IC3 is then fed into a power amplifier via the audio volume control and sent to the speaker.

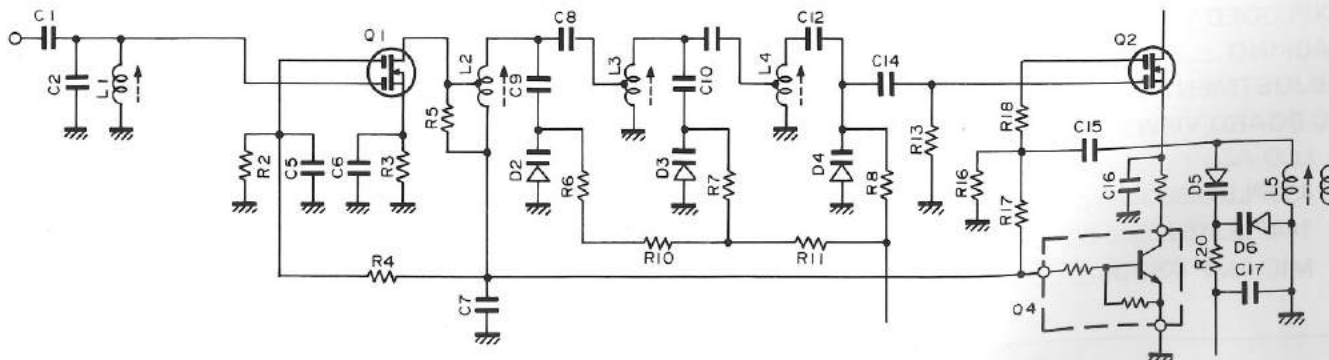


Fig. 2 144 MHz front-end (varactor diode tuning)

CIRCUIT DESCRIPTION

• 430MHz band

Incoming 430MHz-band signals from the antenna are passed through a low-pass filter in the final block of the transmitter system and switched to the front-end of the receiver system via a transmit/receive switching diode. This signal is then passed through an antenna matching coil in the front-end and amplified by a GaAs FET and a junction-type FET. The signal is then fed into a two-pole helical resonator and fed into the 1st mixer. The 1st mixer combines the signal with the 1st local oscillator signal from the PLL and converts it to the 1st IF (30.825 MHz). The signal path is now the same as previously described for the 144MHz section.

Item	Rating
Nominal center frequency	30.825MHz
Pass band width	±7.5kHz or more at 3dB
Attenuation band width	±28kHz or less at 40dB
Ripple	1.5dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within ±1MHz (Spurious : 40dB or more)
Terminating impedance	1.4kΩ/1pF

Table 1 MCF (L71-0263-05) (TX-RX unit XF1)

Item	Rating
Nominal center frequency	455kHz ± 1kHz
6dB bandwidth	±6kHz or more (from 455kHz)
50dB bandwidth	±12.5kHz or less (from 455kHz)
Ripple (within ±4kHz of 455kHz)	3dB or less
Insertion loss	6dB or less
Guaranteed attenuation (within ±100kHz of 455kHz)	35dB or more
I/O matching impedance	2.0kΩ

Table 2 Ceramic filter CFWM455F (L72-0372-05)

• S-meter circuit

The S-meter control voltage from IC3 (KCD01) in the FM IF HIC is fed into the control unit. The CPU digitizes the analog voltage to operate the LCD bar meter.

• AF unit and volume control switching

The audio signal detected by the FM IF HIC is passed through the preamplifier and audio volume control, amplified by the AF power amplifier, and fed to the speaker for output. Normally, the analog switch (MN4066BS) functions so that the level can be adjusted with the volume control on the panel. When the remote control unit is used, the shift register (MC14094BF) operates according to the data from the CPU, and the analog switch is switched to allow the electronic volume control (LC7532M) to adjust the level.

• Shift register

The following control is executed by sending serial data from the CPU to the shift register (MC14094BF) in the electronic volume control module (X59-3620-00).

Pin No.	Pin name	Function
1	Strobe	Enable input
2	Data	Serial data input
3	Clock	Clock input
4	Q1	TX power switching : "H" in LOW mode, "L" in HIGH mode
5	Q2	TX power switching : "L" in HIGH or LOW mode
6	Q3	"H" for AF MUTE
7	Q4	
8	Vss	GND
9	Qs	
10	Q's	
11	Q8	"H" when electronic volume control is not used
12	Q7	"H" when electronic volume control is used
13	UP	"H" when electronic volume control is UP
14	DWN	"H" when electronic volume control is DOWN
15	Output Enable	5V (Power)
16	VDD	5V (Power)

Table 3

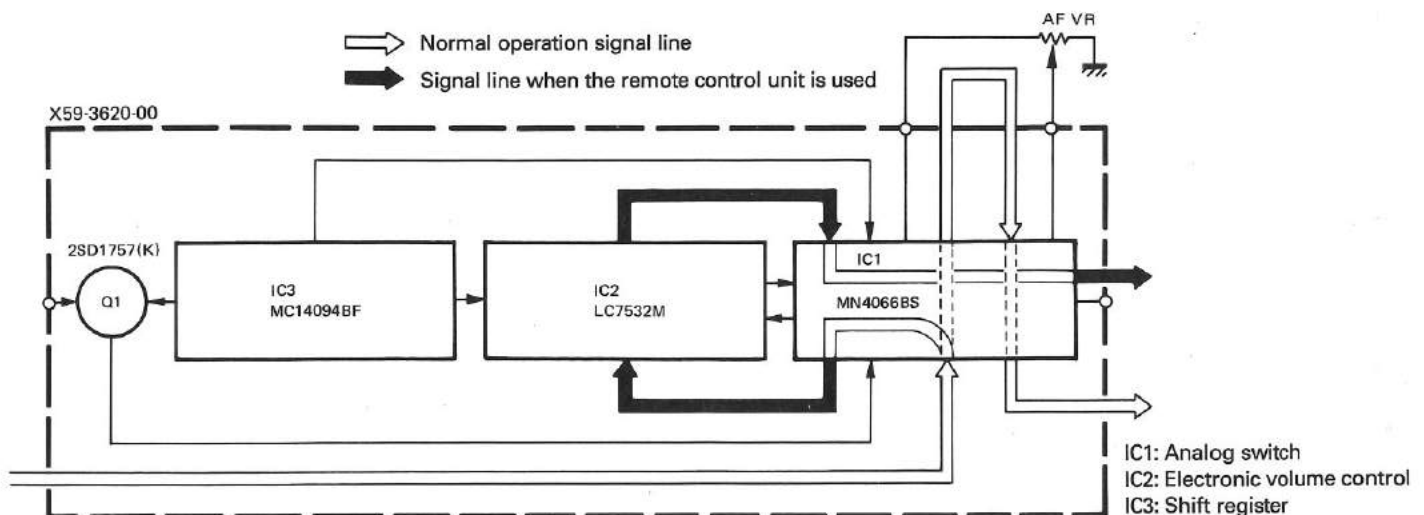


Fig. 3 Block diagram of electronic volume control

CIRCUIT DESCRIPTION

Transmitting System

• General

Separate circuits are provided for the 2 meter and 70 cmeter bands, except for the mic amplifier and APC circuits.

• Modulation circuit

Audio signals from the microphone are fed into the mic amplifier for amplification, and then into two operational amplifiers. The operational amplifiers form a splatter filter and provide pre-emphasis, amplification, limiting, and removal of undesirable high-frequency components.

The modulation circuit directly frequency-modulates the VCO (Voltage Controlled Oscillator) signals for both the 144MHz and 430MHz bands using a varactor diode.

• Preamplifier circuit

The output signal from the VCO is applied to drive HIC IC9 (KCB05; two-stage linear amplifier) for the 144MHz band, and drive HIC IC10 (KCB04; three-stage linear amplifier) for the 430MHz band.

This amplifier is designed to cover a wide range of frequencies, and can produce stable output without adjustment. The APC controls the collector voltage from the last stage of the amplifier.

• Power amplifier circuit

The drive signal is amplified to the required level by the power module. The signal is passed through a transmit/receive diode switch and filter, and output to the antenna.

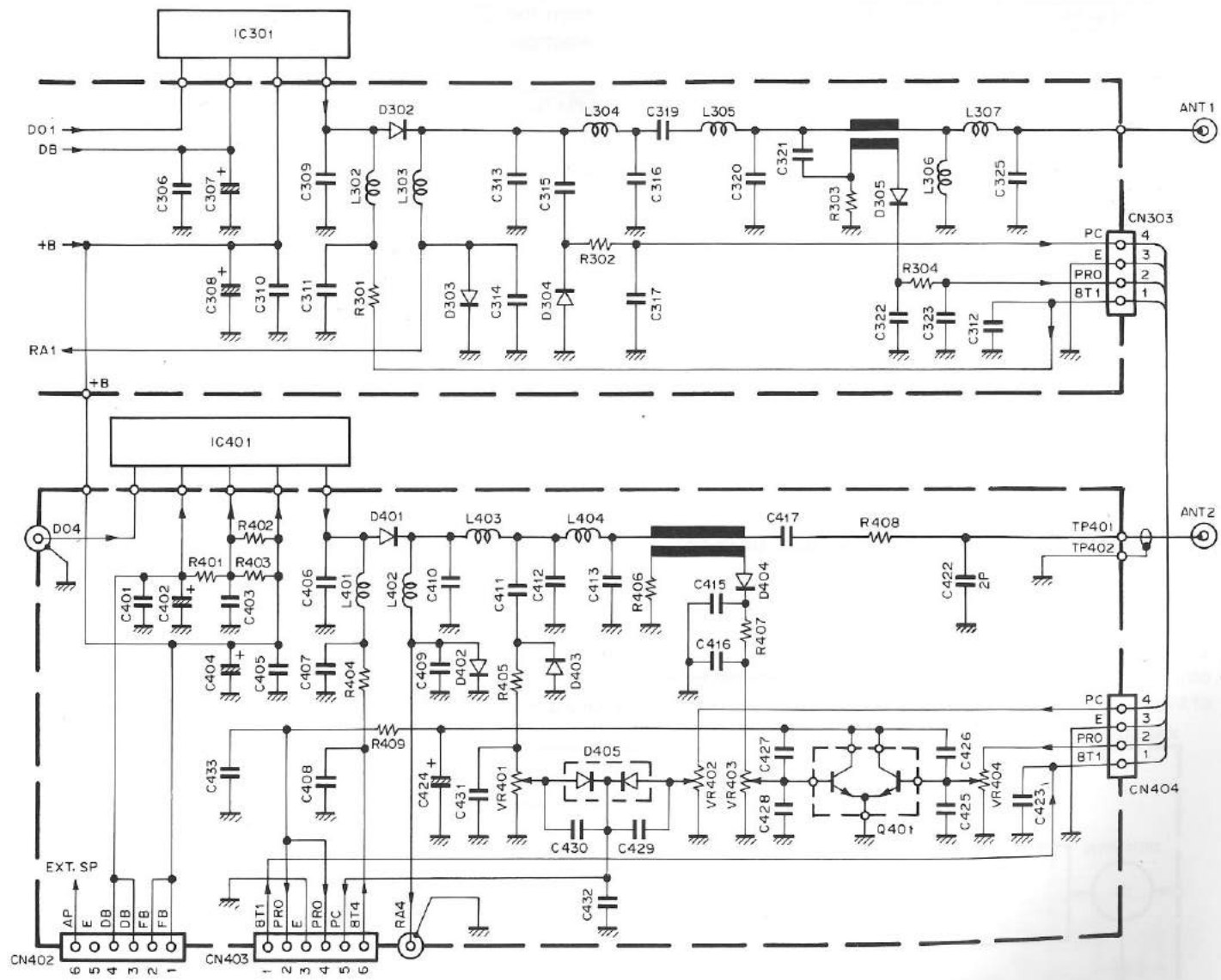


Fig. 4 Transmitting circuit

CIRCUIT DESCRIPTION

• APC (Automatic Power Control) and SWR (Standing Wave Ratio) protection circuits

The SWR protection circuit detects any reflected power produced by a mismatch in the antenna with a CM (CM =Capacitance matching) coupler and amplifies it. This circuit reduces the output control voltage and the gain to protect the power module.

The APC circuit detects a portion of the power module output and amplifies it to obtain a control voltage for output

control. Since the output control voltage is inversely proportional to the output of the power module, the output is kept constant.

The power switching circuit uses the output of the shift register (MC14094BF) in the electronic volume control module (X59-3620-00). When the LOW switch on the panel is pressed and LOW is indicated, an "H" signal is output from pin 4 of the shift register(MC14094BF); this turns Q33 of the TX-RX unit on, selecting LOW power.

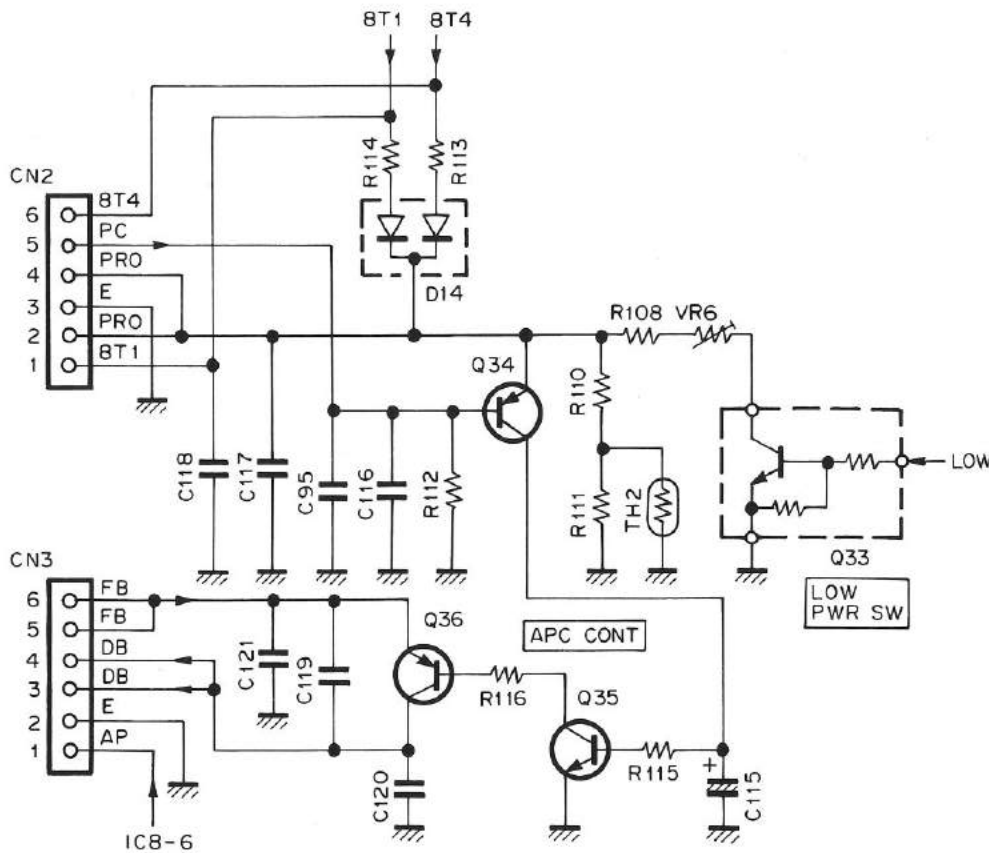


Fig. 5 LOW power selection circuit

CIRCUIT DESCRIPTION

PLL Synthesizer Block

The TM-701A/E PLL system is implemented as a sub-unit divided into upper VCO and lower PLL blocks. The 144MHz-band PLL block is independent of the 430 MHz-band PLL block. The sub-unit is shielded to prevent external interference.

Two reference frequencies, 6.25kHz and 5kHz, are provided in order to allow 5, 10, 12.5, 15, 20, and 25 kHz step operation by dividing the reference oscillator frequency of 12.8MHz by 2048 and 2506.

The VCO directly generates the target frequency. This

signal is amplified once and then fed into a pulse-swallow PLL IC for frequency division and phase comparison.

The 144MHz-band PLL system has two VCOs, one for transmission and one for reception. Using a signal ("H" in transmit mode) from pin 10 of the PLL IC (M54959FP), the LPF is deactivated by Q105 only for the instant when the TM-701A/E enters transmit mode. This helps produce a more rapid PLL lock-up.

The 430MHz-band PLL system has a single VCO for transmission and reception. Using Q5 as a switch, it reduces the PLL lock-up time in the same way as for the 144MHz section.

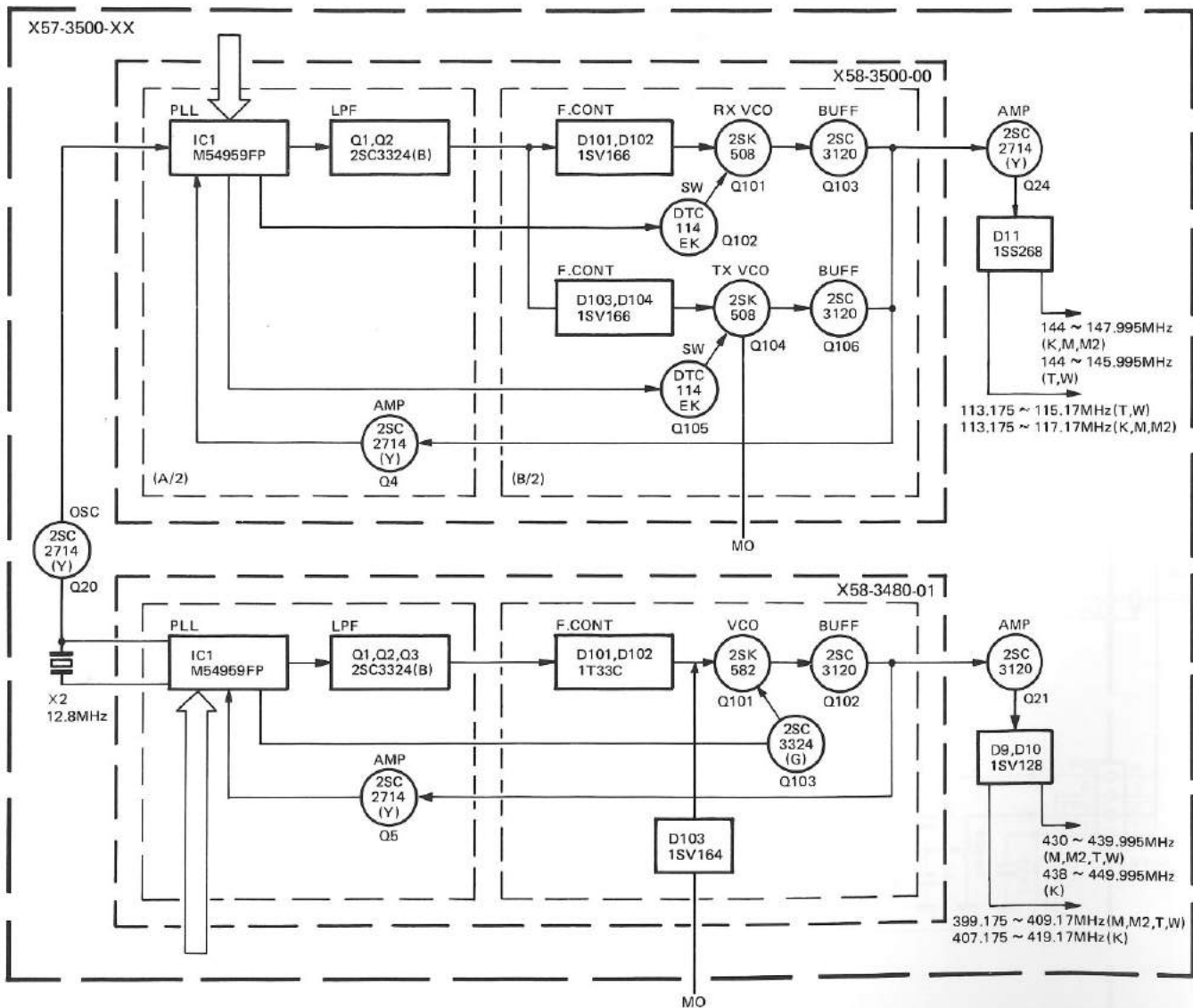


Fig. 6 PLL block diagram

CIRCUIT DESCRIPTION

• 8T (transmit 8 V) switching and unlock circuits

1) 8T switching circuit

During 430MHz/144MHz transmission, T4 and T1 of IC5 in the HIC go to the "L" level (0 V). As a result, Q26 and Q29 turn off, digital transistors Q27, Q30, Q28, and Q31 turn on, and 8T4 and 8T1 are supplied with 8 V from the 8C line.

During receive, T4/T1 is at the "H" level (5 V), and Q26 and Q29 turn on and Q27, Q30, Q28, and Q31 turn off. 8V is not supplied to 8T4 and 8T1.

2) Unlock circuit

Unlock data pin LD of the PLL sub-unit is normally at the "L" level (0V). When the 8T switching circuit operates, the transmit circuit is supplied with 8V.

When the PLL is unlocked, pin LD goes to the "H" level (5V), and Q26 and Q29 turn on. This turns Q27, Q30, Q28, and Q31 off, removing 8V from 8T4 and 8T1. Thus, no transmit signal is generated.

Digital Control Unit

• Overview

The digital control unit consists of a keyboard, a rotary encoder input, a display, a reset circuit, a back-up circuit, and a tone generator.

• Key and rotary encoder input circuits

The keys on the panel are arranged in a matrix. Key input is fed into the CPU, using a key scan technique. Output from the rotary encoder is fed directly into the CPU.

• Microphone key input circuit

The UP and DOWN keys and the other function keys for the microphone are connected directly to their corresponding analog input pins on the CPU. The function for each key is activated by a voltage produced when the corresponding key is pressed.

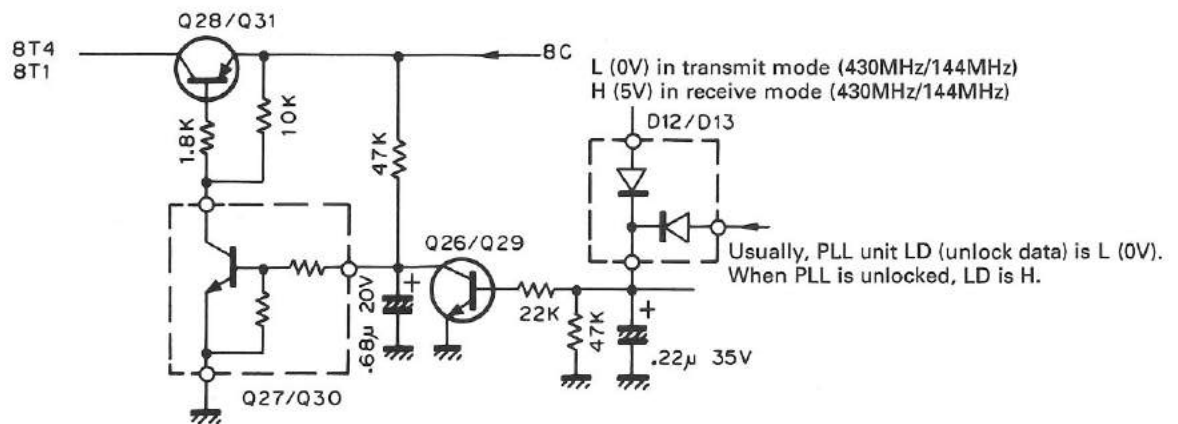


Fig.7 8T switching and unlock circuits

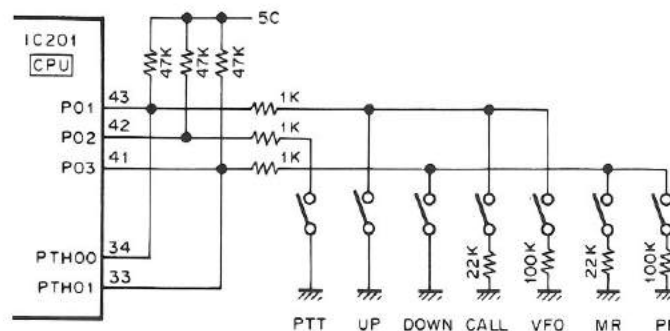


Fig. 8 Microphone key input circuit

CIRCUIT DESCRIPTION

• Reset and back-up circuits

When the power is turned on, the reset circuit sends an "L" level reset pulse to the RESET pin of the CPU for approx. 3 ms. This initiates the power on reset sequence.

When the power is turned off, the back-up circuit detects a voltage drop in the 13.8 V line and pulls the CPU INT4 pin to a "H" level. This causes the CPU to enter the back-up state.

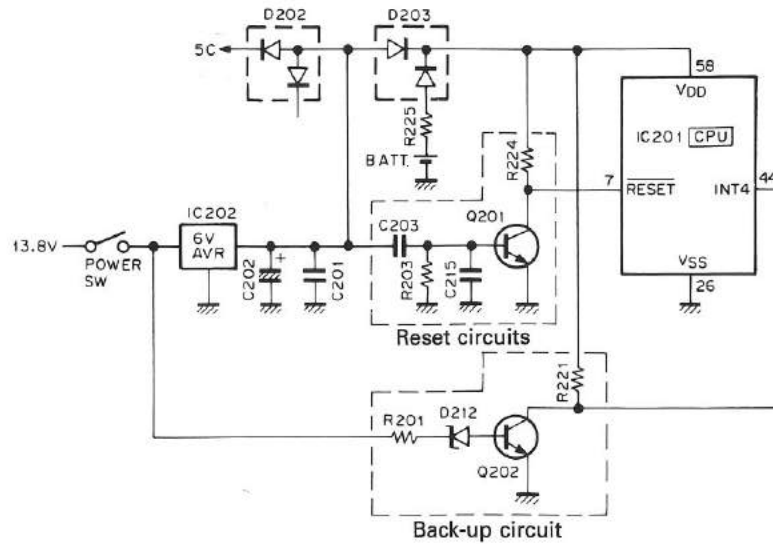


Fig. 9 Reset and back-up circuits

• Display circuit

The display circuit is contained in the LCD assembly. It consists of a LCD driver, its peripheral circuits, and an LCD. The LCD is dynamically operated with a 50% duty cycle. The LCD driver receives LCD data from P33, P141, and P140 of the CPU.

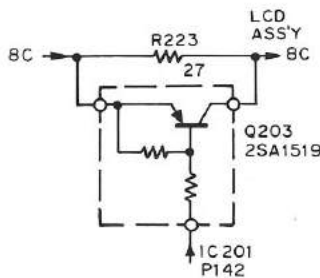


Fig. 10 Dimmer circuit

• Shift register circuit

The following control is executed by sending serial data from the CPU to the shift register (MB88307PF) in IC5 (KCC03).

Pin No.	Pin name	Function
1	SO	
2	LOAD	Enable input
3	O0	Normally, "H"
4	O1	Normally, "H"
5	O2	Normally, "H"
6	O3	"L" in receive mode (144MHz band)
7	SC / \overline{SC}	Clock input
8	Vss	GND
9	OE	GND
10	O4	"L" in receive mode (430MHz band)
11	O5	"L" in receive mode, "H" in transmit mode
12	O6	"L" in transmit mode (144MHz band)
13	O7	"L" in transmit mode (430MHz band)
14	SI	Serial data input
15	RESET	5V (Power)
16	Vcc	5V (Power)

Table 4

CIRCUIT DESCRIPTION

• Tone generator circuit

IC203 (ladder resistor network) receives analog signals from P40 thru P43 and P50 thru P53 of the CPU and digitizes them to produce 38 different tones from 67.0Hz to 250.3 Hz. Figure 11 shows the internal configuration of IC203.

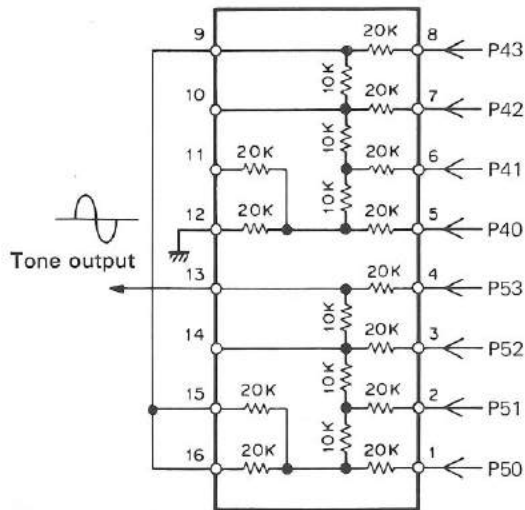


Fig. 11 Internal configuration of ladder resistor network KRR-C001 (TX-RX unit IC203)

• PLL data output

PLL data is sent from P21 (CK), P22 (DT), P61 (ACL), and P23 (EN1) of the CPU. Figure 12 is a timing chart for PLL data transfer, and Figure 13 shows the format of PLL data.

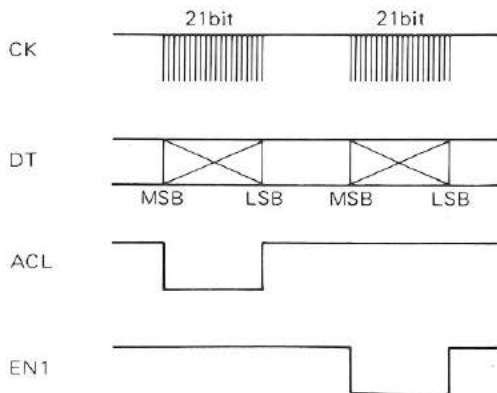
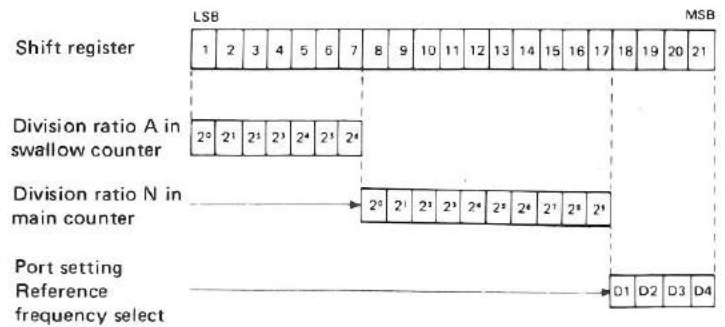


Fig. 12 Timing chart for PLL data transfer



The 21-bit data is made up of the following:

1. Division ratio data A and N (17 bits)

F (display - 10.7MHz in RX mode)

$$= ((N \times 128) + A) \times 12.8\text{MHz} / \text{ref}$$

N : Division ratio set in 10-bit-main counter (binary)

A : Division ratio set in 7-bit swallow counter (binary)

2. Reference frequency (ref) select (2 bits)

Data		Phase reference frequency	
D1	D2		
L	L	5kHz	5, 10, 15, 20, 25kHz step mode
H	L	6.25kHz	12.5kHz step mode

3. Switch select (2 bits)

Data		Output port		
D3	D4	SW1	SW2	
L	H	L	H	RX mode
H	L	H	L	TX mode

Fig. 13 PLL data format

CIRCUIT DESCRIPTION

• Power switching circuit

The power switching circuit is an HIC that consists of a shift register (MB88307PF), 3-pin regulator (TA78L05F) that supplies 5V to the main unit, and three digital transistors.

The eight output pins of the shift register are controlled according to data from the CPU, and the power supply is switched depending on the state of the shift register.

	8R1	8R0	8R3	8R4	$\overline{T1}$	8R8	8R	$\overline{T4}$
RX 144MHz band	H	L	L	L	H	L	H	H
TX 144MHz band	L	L	L	L	L	L	L	H
RX 430MHz band	L	L	L	H	H	L	H	H
TX 430MHz band	L	L	L	L	H	L	L	L

H : 8V, L : 0V

Table 5

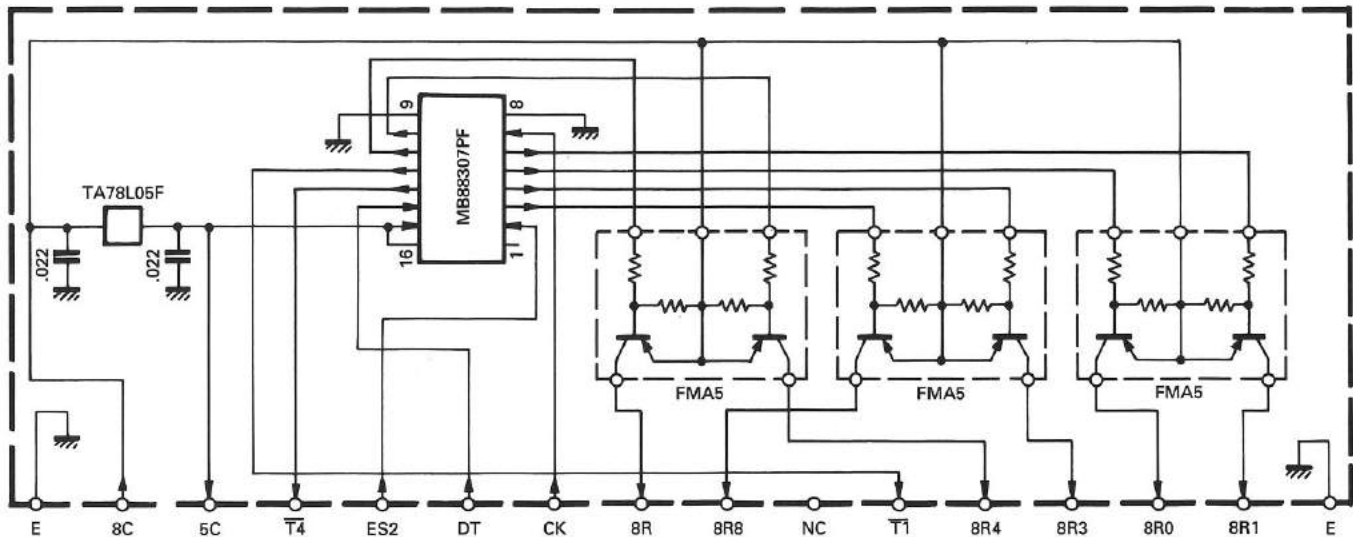


Fig. 14 Power switching circuit

• Input and output of CTCSS unit (option)

The optional CTCSS unit receives data from P21, P22, and P73 of the CPU. Figure 15 is a timing chart for CTCSS data transfer, and Figure 16 shows the format of CTCSS data. When a tone from the CTCSS unit is detected, an "H" level signal is input to P63 of the CPU, opening the squelch.

• Input and output of the remote control unit (option)

When the optional remote control unit is connected, an "H" level signal is input to INT0 of the CPU, changing the function of the following pins.

- P03 → S1 : Serial data input pin
- P02 → S2 : Serial data output pin
- P01 → SCK : Serial clock I/O pin

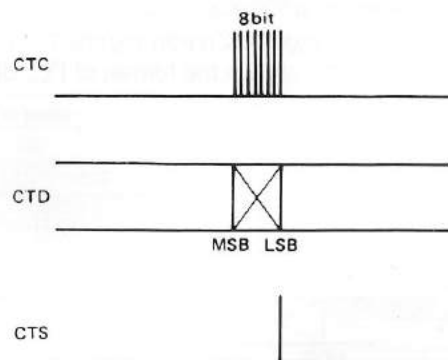


Fig. 15 Timing chart for CTCSS data transfer

Tone frequency select data for CTCSS unit

D1	D2	D3	D4	D5	D6
----	----	----	----	----	----

Example : 88.5Hz L H L H H H

Fig. 16 CTCSS data format

CIRCUIT DESCRIPTION

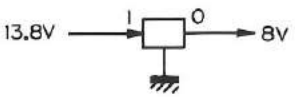
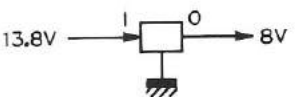
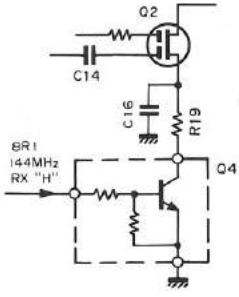
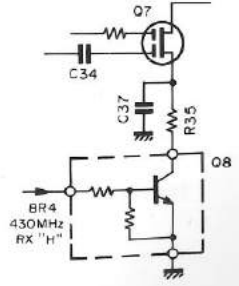
Pin No.	Pin name	I/O	Logic	Function	Pin No.	Pin name	I/O	Logic	Function	
1	P41	O	-	D/A digital output (tone).	33	PTH01	I	-	Mic DOWN input.	
2	P40	O	-		34	PTH00	I	-	Mic UP input.	
3	P53	O	-		35	T11	-	L	Not used.	
4	P52	O	-		36	T10	-	L	Not used.	
5	P51	O	-		37	P23	O	L	PLL IC enable output.	
6	P50	O	-		38	P22	O	-	PLL IC data output.	
7	RESET	I	L	Reset input.	39	P21	O	-	PLL IC clock output.	
8	X2	-	-	4.194304MHz crystal oscillator.	40	P20	O	-	Beeper output.	
9	X1	-	-		41	P03/SI	I/I	L/-	Mic DOWN/serial data input.	
10	P63	I	H	CTCSS tone matching input.	42	P02/SO	I/O	L/-	Mic PTT input/serial data output.	
11	P62	O	H	Power switch.	43	P01/SCK	I/-	L/-	Mic UP input/serial clock I/O.	
12	P61	O	-	Not used.	44	INT4	I	H	Back-up detect input.	
13	P60	I	-	Not used.	45	P123	I	L	CALL, VFO	
14	P73	O	H	CTCSS unit enable output.	46	P122	I	L	F, MR/M	
15	P72	O	H	Shift register enable output.	47	P121	I	L	SHIFT, MHz	Destination, key input.
16	P71	O	H	Shift register enable output.	48	P120	I	L	TONE	
17	P70	-	-	Not used.	49	P133	I	L	REV	
18	P83	-	-	Not used.	50	P132	I	L	LOW, BAND	
19	P82	-	L	Not used.	51	P131	I	L	Transmit power select.	
20	P81	-	L	Not used.	52	P130	I	L	Busy input.	
21	P80	-	L	Not used.	53	P143	O	L	Squelch control.	
22	P93	-	L	Not used.	54	P142	O	H	Dimmer control.	
23	P92	-	L		55	P141	O	-	LCD driver clock output.	
24	P91	-	L		56	P140	O	-	LCD driver data output.	
25	P90	-	L		57	NC	-	-	Not used.	
26	Vss	-	-	GND.	58	VDD	-	-	Power supply pin.	
27	INT3	-	L	Not used.	59	P33	O	-	LCD driver enable output.	
28	INT2	I	-	Encoder input.	60	P32	O	L	Distination output.	
29	INT1	I	-		61	P31	O	L	Key output.	
30	INT0	I	H	Remote connect detect input.	62	P30	O	L		
31	PTH03	I	-	S-meter analog input.	63	P43	O	-	D/A digital output (tone).	
32	PTH02	I	-	Not used.	64	P42	O	-		

Table 6 75108G-E19-1B terminal functions (TX-RX unit IC201)

TM-701A/E

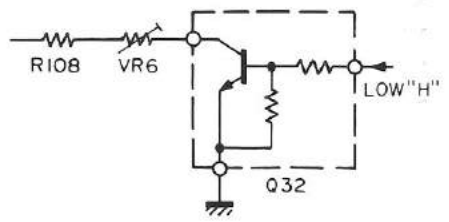
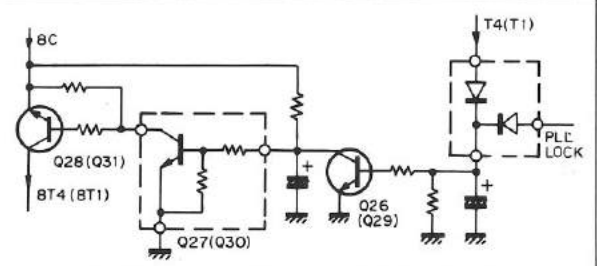
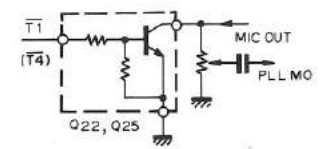
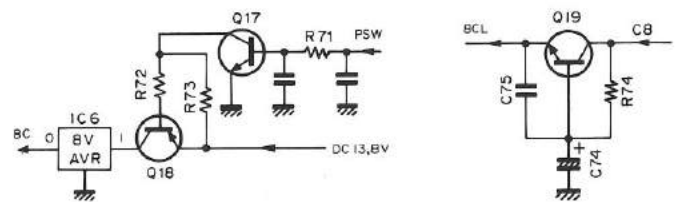
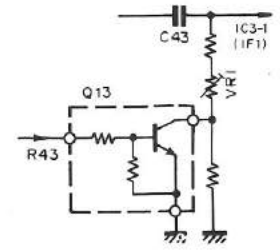
DESCRIPTION OF COMPONENTS

TX-RX UNIT (X57-3350-XX) -11:TM-701A (K), -21:TM-701A (M), -22:TM-701A (M2), -61:TM-701E (T,W)

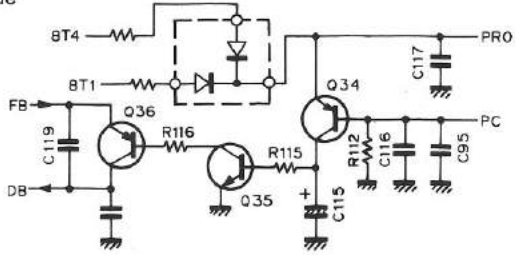
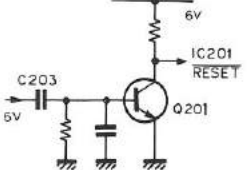
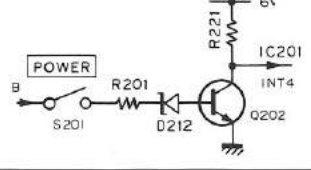
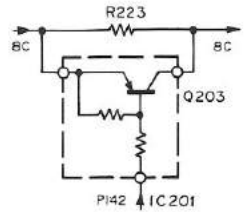
Component	Use/Function	Operation/Condition/Compatibility
IC3	2nd local oscillator, mixer, IF amplifier, detector, low-frequency amplifier, noise amplifier, noise detector, squelch switch	① 1st IF signal oscillator (30.825MHz) ③ ④ 2nd local oscillator (30.37MHz) ⑨ Scan control, busy signal, busy : 0V ⑩ Noise detection voltage output (DC) ⑪ S-meter output ⑫ Detection output ⑭ RD output ⑮ AF output
IC5	Power switching	② 8V in receive mode (144MHz band) ⑬ 5V output ⑤ 8V in receive mode (430MHz band) ⑭ 8V input ⑥ 0V in transmit mode (144MHz band) ⑧ 8V in receive mode ⑫ 0V in transmit mode (430MHz band)
IC6	8V AVR	3-pin regulator 
IC7	10V AVR	② 10V output ⑦ 13.8V input
IC8	AF amplification	① AF input ⑥ AF output
IC9	144MHz-band transmit driver	Operates in transmit mode, 144 to 146MHz (K, M, M2) 144 to 148MHz (T,W) ① Output ⑪ Input
IC10	430MHz-band transmit driver	Operates in transmit mode, 430 to 440MHz (M, M2, T, W) 438 to 450MHz (K) ① Output ⑪ Input
IC201	Microprocessor	See Circuit Description
IC202	6V AVR	3-pin regulator 
IC203	Tone A / D converter	① ~ ⑧ Input ⑮ Output
IC301	Power amplification	144MHz band M57737R
IC401	Power amplification	430MHz band M57729
Q1	High-frequency amplification	Operates in receive mode, 144MHz-band
Q2	1st mixer	Operates in receive mode 
Q4	Receive band switching	On in receive mode, 144MHz-band
Q5, 6	High-frequency amplification	Operates in receive mode, 430MHz band
Q7	1st mixer	Operates in receive mode 
Q8	Receive band switching	In receive mode, 430MHz band

DESCRIPTION OF COMPONENTS

Component	Use/Function	Operation/Condition/Compatibility
Q12	1st IF amplification	Operates in receive mode, 30.825MHz
Q13	1st IF gain switching	Off in receive mode (144MHz band) On in receive mode (430MHz band)
Q17, 18	Power switch	When power switch is ON, Q17 and Q18 are ON When power switch is OFF, Q17 and Q18 are OFF
Q19	PLL 8V ripple filter	
Q20	Buffer amplification	12.8MHz
Q21	430MHz band PLL output amplification	399.175 to 409.17MHz (M, M2, T, W), 407.175 to 419.17MHz(K) in receive mode, 430 to 440MHz (M, M2, T, W), 438 to 450MHz (K) in transmit mode
Q22	Mic line mute	On in receive mode (430MHz band)
Q23	CV line buffer	144MHz band
Q24	144MHz band PLL output amplification	113.175 to 115.17MHz (K, M, M2), 113.175 to 117.17MHz (T, W) in receive mode, 144 to 146MHz (T, W), 144 to 148MHz (K, M, M2) in transmit mode
Q25	Mic line mute	On in receive mode, 144MHz band
Q26 ~ 28	430MHz band 8T swicting	In receive mode, Q29 : OFF Q27 and Q28 : ON
Q29 ~ 31	144MHz band 8T switching	In receive mode, Q29 : OFF Q30 and Q31 : ON
Q33	LOW power switch	ON in LOW power mode



DESCRIPTION OF COMPONENTS

Component	Use/Function	Operation/Condition/Compatibility
Q34 ~ 36	APC control	Operates in transmit mode 
Q201	Reset switch	On for approx. 3 ms when system power is turned on ; usually OFF 
Q202	Back-up switch	On when S201 power switch is turned on, Off when S201 power switch is turned off 
Q203	Dimmer switch	Off in DIM mode 
Q401	Protection switch	Adjust 430MHz with VR403, and 144MHz with VR404
D2 ~ 6	Variable capacitance diode tuning	144MHz band
D7	430MHz band transmit / receive switch	OFF in receive mode
D9	430MHz band PLL output switch	
D10	430MHz band PLL output switch	
D11	144MHz band PLL output switch	
D12 ~ 14	Reverse current prevention	
D201, 202		
D203	Reverse current prevention, lithium battery switching	Lithium battery provides power when power is off
D204,205	Microprocessor protection	
D206 ~209	Destination setting	
D212	Back-up detection	
D301	Power reverse connection prevention	
D302	144MHz band transmit /receive switching	MI407
D303	144MHz band transmit/receive switching	
D304	144MHz band power detection	APC, RF meter
D305	144MHz band reflected wave detection	Adjust with VR404, ANT : open 3A
D401	430MHz band transmit/receive switching	MI407
D402	430MHz band transmit/receive switching	
D403	430MHz band power detection	APC, RF meter
D404	430MHz band reflected wave detection	Adjust with VR403, ANT short : 3A
D405	Temperature compensation	APC

DESCRIPTION OF COMPONENTS

430PLL (X58-3480-01)

Component	Use/Function	Operation/Condition/Compatibility
IC1	PLL	① VOC input 399.175 ~ 409.17MHz (M, M2, T, W) 407.175 ~ 419.17MHz (K) in receive mode 430 ~ 440MHz (M, M2, T, W) 438 ~ 450MHz (K) in transmit mode ⑩ "H" in transmit mode ⑪ "H" in receive mode ⑬ Phase comparison output ⑭ "H" when PLL unlocked ⑲ Reference oscillation input
Q1 ~ 3	LPF	
Q4	Transmit switch	
Q5	VCO output amplification	399.175 ~ 409.17MHz (M, M2, T, W), 407.175 ~ 419.17MHz(K) in receive mode 430 ~ 440MHz (M, M2, T, W), 438 ~ 450MHz (K) in transmit mode
Q101	VCO	
Q102	VCO output buffer	On when operated (430MHz band)
Q103	VCO switch	
D1		
D101, 102	VCO voltage control	
D103	Varactor diode for modulation in transmit mod	

144PLL (X58-3500-00)

Component	Use/Function	Operation/Condition/Compatibility
IC1	PLL	① VCO input 113.175 ~ 115.17MHz (T, W), 113.175 ~ 177.17MHz (K, M, M2) in receive mode 144 ~ 146MHz (T, W), 144 ~ 148MHz (K, M, M2) in transmit mode ⑩ "H" in transmit mod ⑪ "H" in receive mode ⑬ Phase comparison output ⑭ "H" when PLL unlocked ⑲ Reference oscillation input
Q1,2	LPF	
Q3	Transmit switch	

DESCRIPTION OF COMPONENTS

Component	Use/Function	Operation/Condition/Compatibility
Q4	VCO output amplification	113.175 ~ 115.17MHz (T, W), 113.175 ~ 117.17MHz (K, M, M2) in receive mode 114 ~ 146MHz(T, W), 144 ~ 148MHz (K, M, M2) in transmit mode
Q101	Receive VCO	113.175 ~ 115.17MHz (T, W), 113.175 ~ 117.17MHz (K, M, M2)
Q102	Receive VCO switch	On in receive mode
Q103	Receive VCO output buffer	113.175 ~ 115.17MHz (T, W), 113.175 ~ 117.17MHz (K, M, M2)
Q104	Transmit VCO	144 ~ 146MHz (T, W), 144 ~ 148MHz (K, M, M2)
Q105	Transmit VCO switch	On in transmit mode
Q106	Transmit VCO output buffer	144 ~ 146MHz (T, W), 144 ~ 148MHz (K, M, M2)
D101, 102	VCO voltage control	Receive
D103	VCO voltage control / varactor diode for modulation in transmit mode	
D104	VCO voltage control	Transmission

MIC AMP (X59-3610-00)

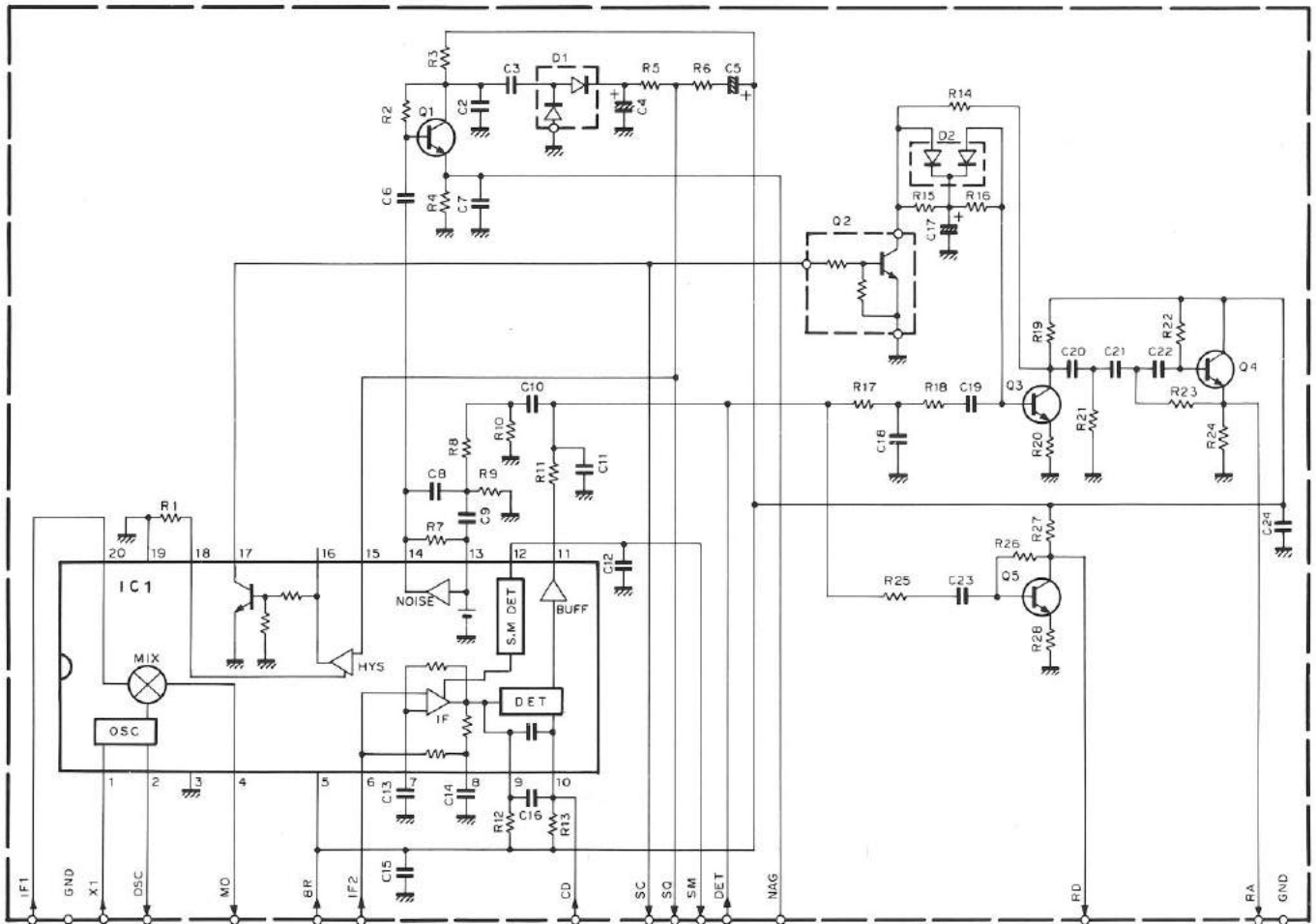
Component	Use/Function	Operation/Condition/Compatibility
IC1 (1/2)	Limited amplification	
IC1 (2/2)	LPF	
Q1	Low-frequency amplification	

ELECTRONIC VOLUME CONTROL (X59-3620-00)

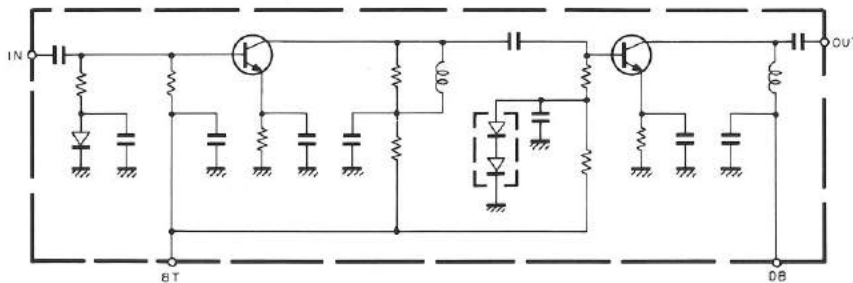
Component	Use/Function	Operation/Condition/Compatibility
IC1	Electronic volume control (IC2) switching	During normal operation, ⑤ ⑥ "H" level, ⑫ ⑬ "L" level ON between ③ and ④, and ⑧ and ⑨ OFF between ① and ②, and ⑩ and ⑪ RC-10 and RC-20 remote operation ⑤ ⑥ "L" level, ⑫ ⑬ "H" level OFF between ③ and ④, and ⑧ and ⑨ ON between ① and ②, and ⑩ and ⑪
IC2	Electronic volume control	② Output ⑦ Input ⑧ Initial pin "L" level volume step 6 ⑨ "L" level volume up ⑩ "L" level volume down
IC3	Shift register	① Enable input ② Data input ③ Clock input ④ "H" for transmit LOW power ⑥ "H" during AF mute (⑦ "L" when repeater operates) ⑪ ⑫ Electronic volume control switching : remote operation ⑪ "L" ⑫ "H" ⑬ Electronic volume control up output : Up operation "L" ⑭ Electronic volume control down output : Down operation "L"
Q1	AF mute	Operated in transmit mode, in AL, in 1-channel receive mode, when CTCSS ON, when BELL ON, when squelch ON

SEMICONDUCTOR DATA

FM IF H.IC KCD01 (TX-RX UNIT IC3)

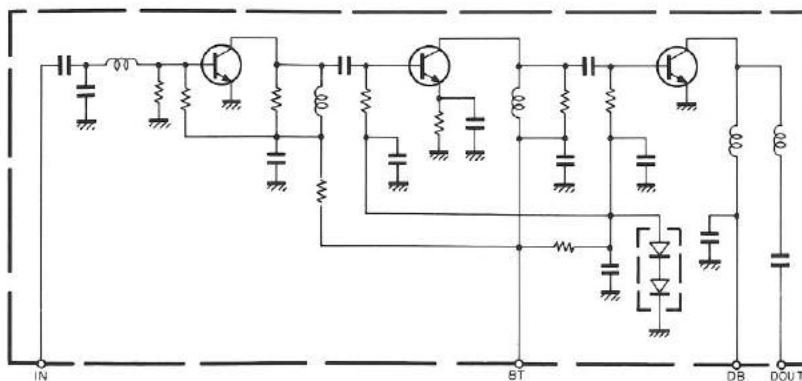


H.IC KCB05 (TX-RX UNIT IC9)



Tr1 : 25C3357 D1 : 1SS196
 Tr2 : 25C2954 D2 : 1SS226

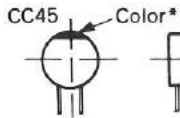
H.IC KCB06 (TX-RX UNIT IC10)



PARTS LIST

CAPACITORS

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



Capacitor value

1 0 3 = 0.01μF

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

- 0 1 0 = 1pF
- 1 0 0 = 10pF
- 1 0 1 = 100pF
- 1 0 2 = 1000pF = 0.001μF

2 2 0 = 22pF
 1st number | Multiplier
 2nd number

Temperature Coefficient

1st Word	C	L	P	R	S	T	U
Color*	Black	Red	Orange	Yellow	Green	Blue	Violet
ppm/°C	0	-80	-150	-220	-330	-470	-750

2nd Word	G	H	J	K	L
ppm/°C	± 30	± 60	± 120	± 250	± 500

Example CC45TH = -470±60 ppm/°C

Tolerance

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

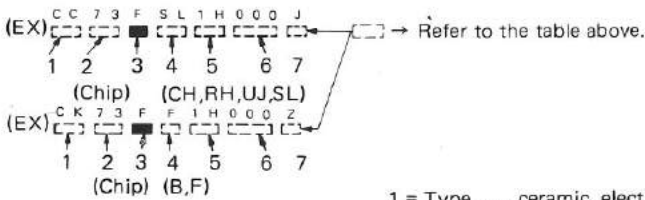
Code	B	C	D	F	G
(pF)	± 0.1	± 0.25	± 0.5	± 1	± 2

Less than 10 pF

Rating voltage

2nd word											
1st word	A	B	C	D	E	F	G	H	J	K	V
0	1.0	1.25	1.6	2.0	2.5	3.15	4.0	5.0	6.3	8.0	-
1	10	12.5	16	20	25	31.5	40	50	63	80	35
2	100	125	160	200	250	315	400	500	630	800	-
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	-

Chip capacitors



Dimension

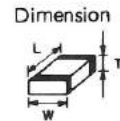
Dimension code	L	W	T
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
E	3.2 ± 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25

Dimension

Dimension code	L	W	T	Wattage
E	3.2 ± 0.2	1.6 ± 0.2	0.57	2B
F	2.0 ± 0.3	1.25 ± 0.2	0.45	2A

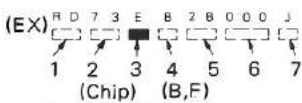
Rating wattage

Cord	Wattage	Cord	Wattage	Cord	Wattage
2A	1/10W	2E	1/4W	3A	1W
2B	1/8W	2H	1/2W	3D	2W
2C	1/6W				



RESISTORS

Chip resistor (Carbon)



Carbon resistor (Normal type)



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

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名/規格	Desti- nation 仕向	Re- marks 備考
TM-701A/E						
1	1B	*	A01-1067-03	METALLIC CABINET (UPSIDE)		
2	3B	*	A01-1068-03	METALLIC CABINET (BOTTOM)		
3	2B	*	A10-1294-01	CHASSIS CALKED ASSY		
4	2A, 3A	*	A20-2697-02	PANEL ASSY	KMM2	
4	2A, 3A	*	A20-2698-02	PANEL ASSY	TW	
5	2A, 2B		A22-0760-13	SUB PANEL		
6	2A		B11-0462-08	FILTER		
7	2A		B30-0870-05	LAMP		
8	2A, 2B		B38-0311-05	LCD ASSY		
		*	B40-3888-04	MODEL NAME PLATE	K	
		*	B40-3889-04	MODEL NAME PLATE	MM2	
		*	B40-3927-04	MODEL NAME PLATE	TW	
-			B42-2454-04	LABEL (PACKING)		
9	1B		B42-2455-04	LABEL (M4X8 MAX)		
-			B42-3322-14	LABEL (ANT)		
-			B42-3343-04	LABEL (MODEL)		
-		*	B42-3369-04	LABEL (DC13.8V, EXT.SP)		
-			B46-0410-20	WARRANTY CARD	K	
-			B46-0419-00	WARRANTY CARD	W	
-		*	B50-8269-00	INSTRUCTION MANUAL		
			E23-0435-05	TERMINAL (ANT)		
10	1B		E30-2105-05	ANT CABLE (M)		
11	2B		E30-2106-05	ANT CABLE (N)	TW	
11	2B		E30-2107-05	ANT CABLE (M)	KMM2	
			E30-2111-05	DC CORD		
12	1B		E30-2137-05	DC CORD		
			E31-3346-05	CONNECTING WIRE(SP)		
		*	E31-6011-05	CONNECTING CABLE(6P)		
			F05-2036-05	FUSE (20A)		
13	1B		F05-8021-05	FUSE (8A)		
15	2B		F12-0415-04	CONDUCTIVE SHEET		
16	2B		F20-0521-04	INSULATING BOARD(LITHIUM BATT)		
17	2B		F20-0587-04	INSULATING SHEET(LITHIUM BATT)		
18	2B		G02-0576-14	FLAT SPRING		
20	2A		G09-0405-05	KNØB FIXED SPRING		
21	1B		G10-0651-04	NON-WOVEN FABRIC(SP)		
22	1B	*	G10-0684-04	NON-WOVEN FABRIC(130X10)		
23	2B		G13-0639-04	CUSHION (15X6X5)		
24	2A		G13-0906-04	CUSHION (3 KEY)		
25	2A		G13-0907-04	CUSHION (6 KEY)		
26	1B	*	G13-0910-14	CONDUCTIVE CUSHION(UPSIDE)		
27	3B		G13-0932-04	CONDUCTIVE CUSHION		
			G13-0926-04	CUSHION		
-			H11-0822-04	POLYSTYRENE PLATE		
-			H13-0814-04	PROTECTION BOARD(BRACKET)		
-		*	H01-8233-04	ITEM CARTON BOX	K	
-		*	H01-8234-04	ITEM CARTON BOX	MM2	
-		*	H01-8235-04	ITEM CARTON BOX	TW	
-		*	H10-2656-02	POLYSTYRENE FOAMED FIXTURE		
-			H25-0029-04	PROTECTION BAG(MIC HOOK, SCREW)	K	
-			H25-0049-03	PROTECTION BAG(DC CORD)		
-			H25-0720-04	PROTECTION BAG(TM-701)		


E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

TM-701A : K, M, M2

TM-701E : T, W

 indicates safety critical components.

PARTS LIST

* New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
29	1B		J20-0319-24	MIC HOOK	K	
30	2A		J21-2717-14 J21-4147-14 J21-4256-08 J29-0436-03	MOUNTING HARDWARE(SP) STACKING PLATE MOUNTING HARDWARE(LCD ASSY) BRACKET		
32	2A		K27-3035-04	KNØB (VFO, MR, MHZ)		
33	2A, 3A		K27-3036-04	KNØB (CALL, F, ETC)		
34	2A, 2B		K27-3037-04	KNØB (LOW)		
35	2B		K27-3038-04	KNØB (POWER)		
36	3A		K29-3156-04	KNØB (MAIN)		
37	3A		K29-3157-04	KNØB (VOL, SQL)		
A	1B, 2B		N09-0626-04	SCREW		
B	2B		N09-0650-05	SCREW		
C	1B, 3B		N33-2606-45 N46-3010-46	ØVAL HEAD MACHINE SCREW PAN HEAD TAPPING SCREW	K	
D	1B, 2B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW		
E	2A		N88-2606-46 N99-0331-05	FLAT HEAD TAPTITE SCREW SCREW SET		
39	1B		T07-0246-05 T91-0379-15 T91-0380-15 T91-0382-15	LOUDSPEAKER(FULLRANGE) MICROPHONE MICROPHONE MICROPHONE	MM2 K TW	
IC1			LC7582	IC(LCD DRIVER)		
41	2B		W01-0414-04 W09-0326-05	WRENCH LITHIUM BATTERY		
42	1B, 2B	*	X57-3350-11	TX-RX UNIT	K	
42	1B, 2B	*	X57-3350-21	TX-RX UNIT	M	
42	1B, 2B	*	X57-3350-22	TX-RX UNIT	M2	
42	1B, 2B	*	X57-3350-61	TX-RX UNIT	TW	
TX-RX UNIT (X57-3350-XX) -11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)						
C413			CM73F2H100D	CHIP C 10PF D		
C424			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		
C436			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		
C1			CC73FCH1H040C	CHIP C 4.0PF C		
C2			CC73FCH1H060D	CHIP C 6.0PF D		
C5 -7			CK73FB1H102K	CHIP C 1000PF K		
C8			CC73FCH1H0R5C	CHIP C 0.5PF C		
C9 ,10			CC73FCH1H680J	CHIP C 68PF J		
C11			CC73FCH1H0R5C	CHIP C 0.5PF C		
C12			CC73FCH1H680J	CHIP C 68PF J		
C13			CK73FB1H102K	CHIP C 1000PF K		
C14			CC73FCH1H150J	CHIP C 15PF J		
C15			CC73FCH1H030C	CHIP C 3.0PF C		
C16 -18			CK73FB1H102K	CHIP C 1000PF K		
C19			CC73FCH1H030C	CHIP C 3.0PF C		
C21			CC73FCH1H040C	CHIP C 4.0PF C		
C22 ,23			CK73FB1H102K	CHIP C 1000PF K		
C24			CK73FB1H471K	CHIP C 470PF K		
C25			CK73FB1H102K	CHIP C 1000PF K		
C26			CK73FB1E223K	CHIP C 0.022UF K		
C27			CK73FB1H102K	CHIP C 1000PF K		
C28			CC73FCH1H010C	CHIP C 1.0PF C		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

▲ indicates safety critical components.

PARTS LIST

※ New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C29			CK73FB1H471K	CHIP C 470PF K		
C30			CC73FCH1H390J	CHIP C 39PF J		
C31 ,32			CK73FB1H102K	CHIP C 1000PF K		
C33			CC73FCH1HR75C	CHIP C 0.75PF C		
C34			CC73FCH1H390J	CHIP C 39PF J		
C35			CC73FCH1H030C	CHIP C 3.0PF C	K	
C35			CC73FCH1H050C	CHIP C 5.0PF C	MM2TW	
C36 ,37			CK73FB1H102K	CHIP C 1000PF K		
C38			CK73FB1H471K	CHIP C 470PF K		
C39			CK73FB1H102K	CHIP C 1000PF K		
C40			CK73FB1H103K	CHIP C 0.010UF K		
C41			CC73FCH1H080D	CHIP C 8.0PF D		
C42			CK73FB1H103K	CHIP C 0.010UF K		
C43			CK73FB1H102K	CHIP C 1000PF K		
C44			CK73EB1E104K	CHIP C 0.10UF K		
C45			CK73FB1E223K	CHIP C 0.022UF K		
C46			CE04EW1C470M	ELECTRO 47UF 16WV		
C47			CC73FCH1H120J	CHIP C 12PF J		
C127			CC73FCH1H120J	CHIP C 12PF J		
C48			CC73FCH1H330J	CHIP C 33PF J		
C49			CK73FB1H102K	CHIP C 1000PF K		
C50			C92-0502-05	CHIP-TAN 0.33UF 35WV		
C51			CK73EF1C105Z	CHIP C 1.0UF Z		
C53			CK73EF1C105Z	CHIP C 1.0UF Z		
C64			CK73FB1H102K	CHIP C 1000PF K		
C65 ,66			CC73FSL1H101J	CHIP C 100PF J		
C67 -70			CK73FB1H102K	CHIP C 1000PF K		
C71			CK73FB1H103K	CHIP C 0.010UF K		
C72			CE04EW1A101M	ELECTRO 100UF 10WV		
C73			CK73FB1H102K	CHIP C 1000PF K		
C74			CE04EW1A221M	ELECTRO 220UF 10WV		
C75			CK73FB1H102K	CHIP C 1000PF K		
C76			CK73FB1H103K	CHIP C 0.010UF K		
C77			CE04EW1A221M	ELECTRO 220UF 10WV		
C78			CK73EB1E104K	CHIP C 0.10UF K		
C79			CK73FB1H102K	CHIP C 1000PF K		
C80			CE04EW1A221M	ELECTRO 220UF 10WV		
C81			CK73FB1E223K	CHIP C 0.022UF K		
C82			CK73FB1E333K	CHIP C 0.033UF K		
C83 -85			CE04EW1C470M	ELECTRO 47UF 16WV		
C86			CQ92M1H154K	MYLAR 0.15UF K		
C87			CE04EW1A471M	ELECTRO 470UF 10WV		
C88			CE04EW1C101M	ELECTRO 100UF 16WV		
C89			CK73FB1H103K	CHIP C 0.010UF K		
C90			CC73FCH1H050C	CHIP C 5.0PF C		
C91			CK73FB1E223K	CHIP C 0.022UF K		
C92			CK73FB1H102K	CHIP C 1000PF K		
C93			CK73EF1C105Z	CHIP C 1.0UF Z		
C94			CK73EB1E104K	CHIP C 0.10UF K		
C96			CE04EW1C470M	ELECTRO 47UF 16WV		
C97			CC73FCH1H060D	CHIP C 6.0PF D		
C98			CK73FB1H102K	CHIP C 1000PF K		
C99			CC73FCH1H060D	CHIP C 6.0PF D		
C100			CK73EF1C105Z	CHIP C 1.0UF Z		
C101			CK73FB1H103K	CHIP C 0.010UF K		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnes dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C102			CC73FCH1H220J	CHIP C 22PF J		
C103			CK73FB1H102K	CHIP C 1000PF K		
C104			CK73FB1H471K	CHIP C 470PF K		
C125, 126			CK73FB1H471K	CHIP C 470PF K		
C105			CK73EF1C105Z	CHIP C 1.0UF Z		
C112			CK73EF1C105Z	CHIP C 1.0UF Z		
C106			C92-0002-05	CHIP-TAN 0.22UF 35WV		
C107			C92-0504-05	CHIP-TAN 0.68UF 20WV		
C108			C92-0002-05	CHIP-TAN 0.22UF 35WV		
C109			C92-0504-05	CHIP-TAN 0.68UF 20WV		
C110, 111			CK73FB1H102K	CHIP C 1000PF K		
C113, 114			CE04EW1C100M	ELECTR0 10UF 16WV		
C115			C92-0005-05	CHIP-TAN 2.2UF 6.3WV		
C116-122			CK73FB1H102K	CHIP C 1000PF K		
C123			C90-2092-05	ELECTR0 1800UF 16WV		
C201			CK73FB1H103K	CHIP C 0.010UF K		
C202			CE04CW1C100M	ELECTR0 10UF 16WV		
C203			CK73FB1E223K	CHIP C 0.022UF K		
C204, 205			CK73FB1H102K	CHIP C 1000PF K		
C206, 207			CC73FCH1H330J	CHIP C 33PF J		
C208, 209			CK73FB1H103K	CHIP C 0.010UF K		
C210-215			CK73FB1H102K	CHIP C 1000PF K		
C301-303			CK73FB1H102K	CHIP C 1000PF K		
C305, 306			CK73FB1H102K	CHIP C 1000PF K		
C307, 308			CE04EW1C100M	ELECTR0 10UF 16WV		
C309			CC45SL2H330J	CERAMIC 33PF J		
C310-312			CK73FB1H102K	CHIP C 1000PF K		
C313			CC45SL2H220J	CERAMIC 22PF J		
C314			CC73FCH1H180J	CHIP C 18PF J		
C315			CC73FCH1H010C	CHIP C 1.0PF C		
C316			CC45SL2H390J	CERAMIC 39PF J		
C317			CK73FB1H102K	CHIP C 1000PF K		
C319			CK45B2H102K	CERAMIC 1000PF K		
C320			CC45SL2H330J	CERAMIC 33PF J		
C321			CC73FCH1H020C	CHIP C 2.0PF C		
C322, 323			CK73FB1H102K	CHIP C 1000PF K		
C325			CC45SL2H220J	CERAMIC 22PF J		
C401			CK73FB1H471K	CHIP C 470PF K		
C402			CE04CW1C100M	ELECTR0 10UF 16WV		
C403			CK73FB1H471K	CHIP C 470PF K		
C404			CE04CW1C100M	ELECTR0 10UF 16WV		
C405			CK73FB1H471K	CHIP C 470PF K		
C406			CM73F2H080D	CHIP C 8.0PF D	K	
C406			CM73F2H090D	CHIP C 9.0PF D	MM2TW	
C407, 408			CK73FB1H471K	CHIP C 470PF K		
C409			CC73FCH1H050C	CHIP C 5.0PF C		
C410			CC45SL2H030C	CERAMIC 3.0PF C		
C411			CC73FCH1H010C	CHIP C 1.0PF C		
C412			CM73F2H140J	CHIP C 14PF J		
C415, 416			CK73FB1H471K	CHIP C 470PF K		
C417			CK45B2H102K	CERAMIC 1000PF K		
C422			CM73F2H020C	CHIP C 2.0PF C		
C423			CK73FB1H102K	CHIP C 1000PF K		
C425			CK73FB1H102K	CHIP C 1000PF K		
C426, 427			CK73FB1H472K	CHIP C 4700PF K		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnes dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
C428-430 C431 C432-435 TC1 -3			CK73FB1H102K CK73FB1H471K CK73FB1H102K C05-0346-05	CHIP C 1000PF K CHIP C 470PF K CHIP C 1000PF K TRIMMING CAP 6PF		
W402 W201 CN1 CN2 ,3 CN4		*	E31-6013-05 E31-6003-25 E04-0154-05 E40-5209-05 E04-0154-05	CONNECTING WIRE (RA) CONNECTING WIRE (CTCSS) RF COAXIAL CABLE RECEPTACLE PIN CONNECTOR (6P) RF COAXIAL CABLE RECEPTACLE		
CN5 ,6 CN201, 202 CN203, 204 CN301 CN302			E40-5202-05 E40-5203-05 E40-5204-05 E40-3249-05 E40-3246-05	PIN CONNECTOR (13P) PIN CONNECTOR (13P) PIN CONNECTOR (3P) PIN CONNECTOR (5P) PIN CONNECTOR (2P)		
CN303 CN401 CN402, 403 CN404 J201		*	E40-3483-05 E40-0274-05 E40-5208-05 E40-5210-05 E06-0858-15	PIN CONNECTOR (4P) PIN CONNECTOR (2P) PIN CONNECTOR (6P) PIN CONNECTOR (4P) CYLINDRICAL RECEPTACLE		
J401 TP1 TP2 TP301 TP401, 402			E11-0425-05 E40-0211-05 E23-0464-05 E23-0465-05 E23-0465-05	PHONE JACK PIN CONNECTOR (2P) TERMINAL TERMINAL TERMINAL		
W1 W2 W301 W401		*	E31-6009-05 E31-6010-05 E31-3350-05 E31-2066-05	CONNECTING WIRE (2P) CONNECTING WIRE (5P) CONNECTING WIRE (FB) CONNECTING WIRE (00)		
			J30-0545-05	SPACER		
CD1 CF1 L1 -4 L5 L6		*	L79-0855-05 L72-0372-05 L34-4080-05 L34-4113-05 L40-1872-80	CERAMIC DISCRI. CERAMIC FILTER COIL COIL SMALL FIXED INDUCTOR (18NH)		
L7 L8 ,9 L10 L11 L12			L40-1272-48 L79-0690-05 L40-1872-48 L40-1872-48 L34-2157-05	SMALL FIXED INDUCTOR (12NH) HELICAL BLOCK SMALL FIXED INDUCTOR (18NH) SMALL FIXED INDUCTOR (18NH) TUNING COIL		
L13 L13 L14 L15 L16			L40-3972-48 L40-2772-48 L40-1092-48 L40-2272-48 L40-1092-48	SMALL FIXED INDUCTOR (39NH) SMALL FIXED INDUCTOR (27NH) SMALL FIXED INDUCTOR (1UH) SMALL FIXED INDUCTOR (22UH) SMALL FIXED INDUCTOR (1UH)	MM2TW k	
L302 L303 L304 L305 L306		*	L34-1260-05 L34-0895-05 L34-0742-05 L34-0499-05 L34-1260-05	COIL COIL COIL COIL COIL		
L307 L401 L402 L403 L404			L34-0499-05 L34-1239-05 L34-1185-05 L34-1040-05 L34-1226-05	COIL COIL COIL COIL COIL		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
X1			L77-1312-05	CRYSTAL RESONATOR 30.37MHZ		
X2		*	L77-1405-05	CRYSTAL RESONATOR 12.8MHZ		
X201			L77-1397-05	CRYSTAL RESONATOR 4.19MHZ		
XF1			L71-0263-05	MCF 30.825MH	Z	
R410			R92-0150-05	JUMPER REST 0 OHM		
R2			RK73FB2A103J	CHIP R 10K J 1/10W		
R3			RK73FB2A101J	CHIP R 100 J 1/10W		
R4			RK73FB2A274J	CHIP R 270K J 1/10W		
R5 -8			RK73FB2A103J	CHIP R 10K J 1/10W		
R9			RK73FB2A101J	CHIP R 100 J 1/10W		
R10 ,11			R92-0670-05	CHIP R 0 OHM		
R13			RK73FB2A473J	CHIP R 47K J 1/10W		
R15			RK73FB2A104J	CHIP R 100K J 1/10W		
R16			RK73FB2A473J	CHIP R 47K J 1/10W		
R17			RK73FB2A274J	CHIP R 270K J 1/10W		
R18 ,19			RK73FB2A470J	CHIP R 47 J 1/10W		
R20			RK73FB2A104J	CHIP R 100K J 1/10W		
R21 ,22			R92-0670-05	CHIP R 0 OHM		
R23			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R24			RK73FB2A104J	CHIP R 100K J 1/10W		
R25			RK73FB2A333J	CHIP R 33K J 1/10W		
R26 ,27			RK73FB2A101J	CHIP R 100 J 1/10W		
R28			RK73FB2A470J	CHIP R 47 J 1/10W		
R29			RK73FB2A270J	CHIP R 27 J 1/10W		
R30			RK73FB2A471J	CHIP R 470 J 1/10W		
R31 ,32			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R33			RK73FB2A223J	CHIP R 22K J 1/10W		
R34			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R35			RK73FB2A221J	CHIP R 220 J 1/10W		
R37			R92-0670-05	CHIP R 0 OHM		
R39			R92-0670-05	CHIP R 0 OHM		
R40			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R41			RK73FB2A101J	CHIP R 100 J 1/10W		
R42			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R43			RK73FB2A224J	CHIP R 220K J 1/10W		
R44			RK73FB2A473J	CHIP R 47K J 1/10W		
R45			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R46			RK73FB2A103J	CHIP R 10K J 1/10W		
R47			RK73FB2A104J	CHIP R 100K J 1/10W		
R48			RK73FB2A224J	CHIP R 220K J 1/10W		
R49			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R56			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R57 ,58			RK73FB2A473J	CHIP R 47K J 1/10W		
R59			RK73FB2A123J	CHIP R 12K J 1/10W		
R60			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R61			RK73FB2A272J	CHIP R 2.7K J 1/10W	KMM2	
R62			RK73FB2A472J	CHIP R 4.7K J 1/10W	KMM2	
R61			R92-0670-05	CHIP R 0 OHM	TW	
R62			RK73FB2A682J	CHIP R 6.8K J 1/10W	TW	
R63			R92-0670-05	CHIP R 0 OHM		
R64			RK73FB2A223J	CHIP R 22K J 1/10W		
R66			RK73FB2A823J	CHIP R 82K J 1/10W		
R67			RK73FB2A103J	CHIP R 10K J 1/10W		
R68			RK73FB2A154J	CHIP R 150K J 1/10W		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.


Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
R69			RK73FB2A223J	CHIP R 22K J 1/10W		
R70			R92-0670-05	CHIP R 0 ΩHM		
R71			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R72			R92-1215-05	CHIP R 470 1/2W		
R73			RK73FB2A103J	CHIP R 10K J 1/10W		
R74			RK73FB2A122J	CHIP R 1.2K J 1/10W		
R75 ,76			RK73FB2A101J	CHIP R 100 J 1/10W		
R77			RK73FB2A473J	CHIP R 47K J 1/10W		
R78			RK73FB2A471J	CHIP R 470 J 1/10W		
R79			RK73FB2A470J	CHIP R 47 J 1/10W		
R406			RK73FB2A470J	CHIP R 47 J 1/10W		
R80			RK73FB2A471J	CHIP R 470 J 1/10W		
R81			RK73FB2A103J	CHIP R 10K J 1/10W		
R82 ,83			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R84			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R85			RK73FB2A471J	CHIP R 470 J 1/10W		
R86			RK73FB2A104J	CHIP R 100K J 1/10W		
R87			RK73FB2A471J	CHIP R 470 J 1/10W		
R88			RK73FB2A103J	CHIP R 10K J 1/10W		
R89 ,90			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R91		*	R92-1217-05	CHIP R 0 ΩHM		
R92			RK73FB2A223J	CHIP R 22K J 1/10W		
R93 ,94			RK73FB2A473J	CHIP R 47K J 1/10W		
R95			RK73FB2A103J	CHIP R 10K J 1/10W		
R96			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R97			R92-0670-05	CHIP R 0 ΩHM		
R98			RK73FB2A223J	CHIP R 22K J 1/10W		
R99 ,100			RK73FB2A473J	CHIP R 47K J 1/10W		
R101			RK73FB2A103J	CHIP R 10K J 1/10W		
R102			RK73FB2A182J	CHIP R 1.8K J 1/10W		
R103			R92-0679-05	CHIP R 0 ΩHM		
R104			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R105			R92-0685-05	CHIP R 22 J 1/2W		
R106			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R108			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R110			RK73FB2A273J	CHIP R 27K J 1/10W		
R111			RK73FB2A333J	CHIP R 33K J 1/10W		
R112-114			RK73FB2A223J	CHIP R 22K J 1/10W		
R115			RK73FB2A103J	CHIP R 10K J 1/10W		
R116			RK73FB2A471J	CHIP R 470 J 1/10W		
R117			RK73FB2A271J	CHIP R 270 J 1/10W		
R118 ,119			RK73FB2A473J	CHIP R 47K J 1/10W		
R123			RK73FB2A473J	CHIP R 47K J 1/10W		
R120			RK73FB2A821J	CHIP R 820 J 1/10W		
R121			RK73FB2A5R6J	CHIP R 5.6 J 1/10W		
R122			RK73FB2A821J	CHIP R 820 J 1/10W		
R124			RK73FB2A223J	CHIP R 22K J 1/10W		
R125			RK73FB2A471J	CHIP R 470 J 1/10W		
R126			RK73FB2A120J	CHIP R 12 J 1/10W		
R127			RK73FB2A821J	CHIP R 820 J 1/10W		
R201			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R203			RK73FB2A563J	CHIP R 56K J 1/10W		
R204			RK73FB2A103J	CHIP R 10K J 1/10W		
R205			R92-0670-05	CHIP R 0 ΩHM		
R206			RK73FB2A105J	CHIP R 1.0M J 1/10W		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

 indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
R208-210			RK73FB2A473J	CHIP R 47K J 1/10W		
R211-213			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R214			R92-0670-05	CHIP R 0 ΩHM		
R215			RK73FB2A105J	CHIP R 1.0M J 1/10W		
R216, 217			RK73FB2A104J	CHIP R 100K J 1/10W		
R237			RK73FB2A104J	CHIP R 100K J 1/10W		
R218			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R219			RK73FB2A473J	CHIP R 47K J 1/10W		
R220			RK73FB2A332J	CHIP R 3.3K J 1/10W		
R221			RK73FB2A474J	CHIP R 470K J 1/10W		
R222			RK73FB2A473J	CHIP R 47K J 1/10W		
R223			R92-1212-05	CHIP R 27 J 1/2 W		
R224			RK73FB2A474J	CHIP R 470K J 1/10W		
R238			RK73FB2A474J	CHIP R 470K J 1/10W		
R225			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R235, 236			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R226-228			R92-0670-05	CHIP R 0 ΩHM		
R230, 232			R92-0670-05	CHIP R 0 ΩHM		
R234			R92-0670-05	CHIP R 0 ΩHM		
R301			R92-1214-05	CHIP R 120 J 1/2 W		
R302			RK73FB2A223J	CHIP R 22K J 1/10W		
R303			RK73FB2A220J	CHIP R 22 J 1/10W		
R304			RK73FB2A103J	CHIP R 10K J 1/10W		
R402, 403			R92-0670-05	CHIP R 0 ΩHM		
R410			R92-0670-05	CHIP R 0 ΩHM		
R404			R92-1214-05	CHIP R 120 J 1/2 W		
R405			RK73FB2A103J	CHIP R 10K J 1/10W		
R407			RK73FB2A103J	CHIP R 10K J 1/10W		
R408			R92-0679-05	CHIP R 0 ΩHM		
R409			RK73FB2A270J	CHIP R 27 J 1/10W		
TH1			R92-1216-05	THERMISTOR 10K		
VR1		*	R12-6431-05	TRIMMING POT. 220K		
VR2		*	R12-6427-05	TRIMMING POT. 47K		
VR3		*	R12-6452-05	TRIMMING POT. 100K		
VR4		*	R12-6427-05	TRIMMING POT. 47K		
VR6		*	R12-6423-05	TRIMMING POT. 10K		
VR201			R05-3441-05	POTENTIOMETER 10K(A)		
VR202			R05-4420-05	POTENTIOMETER 50K(B)		
VR401		*	R12-6450-05	TRIMMING POT. 47K		
VR402-404		*	R12-6427-05	TRIMMING POT. 47K		
S201			S40-2458-05	PUSH SWITCH		
S202-211			S40-1086-05	TAKT SWITCH		
Q18			2SB1302(S)	CHIP TRANSISTOR		
D2 -4			1SV164	CHIP DIODE		
D5 ,6			1SV166	CHIP DIODE		
D7			HSK277	CHIP DIODE		
D9 ,10			1SV128	CHIP DIODE		
D11			1SS268	CHIP DIODE		
D12 -14			1SS184	CHIP DIODE		
D201			DLS1585	CHIP DIODE		
D202			1SS181	CHIP DIODE		
D203			1SS184	CHIP DIODE		
D204			1SS187	CHIP DIODE		
D205			1SS196	CHIP DIODE		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.


Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
D206			1SS181	CHIP DIODE	KMTW MM2TW KMM2 MM2TW	
D207			1SS181	CHIP DIODE		
D208			1SS181	CHIP DIODE		
D209			MA141A	CHIP DIODE		
D212			02CZ7.5(X)	CHIP ZENER DIODE		
D301			DSA3A1	DIODE		
D302			MI407	DIODE		
D303			MI308	DIODE		
D304			1SS101	DIODE		
D305			1SS184	CHIP DIODE		
D401			MI407	DIODE		
D402			MI308	DIODE		
D403			1SS101	DIODE		
D404			MA716	CHIP DIODE		
D405			1SS184	CHIP DIODE		
IC3			KCD01	H.IC		
IC5		*	KCC03	H.IC		
IC6			UPC78M08H	IC(VOLTAGE REGULATOR/ +8V)		
IC7			LA5010M	IC(LOW SATURATION REGULATOR)		
IC8			UPC1241H	IC		
IC9			KCB05	H.IC		
IC10			KCB06	H.IC		
IC201		*	75108G-E19-1B	IC(MICROPROCESSOR)		
IC202			NJM78L06UA	IC(VOLTAGE REGULATOR/ +6V)		
IC203			KRR-C001	IC(CHIP NETWORK)		
IC301		*	M57729	IC(POWER MODULE)		
IC401		*	M57737R	IC(POWER MODULE)		
Q1			3SK184(S)	CHIP FET		
Q2			3SK131(V12)	CHIP FET		
Q4			DTC114EK	DIGITAL TRANSISTOR		
Q5			3SK184(S)	CHIP FET		
Q6			2SK582	FET		
Q7			3SK184(S)	CHIP FET		
Q8			DTC114EK	DIGITAL TRANSISTOR		
Q12			2SC2714(Y)	CHIP TRANSISTOR		
Q13			DTC114EK	DIGITAL TRANSISTOR		
Q17			2SC2712(Y)	CHIP TRANSISTOR		
Q19			2SC2712(Y)	CHIP TRANSISTOR		
Q20			2SC2714(Y)	CHIP TRANSISTOR		
Q21			2SC3120	CHIP TRANSISTOR		
Q22			DTC114EK	DIGITAL TRANSISTOR		
Q23			2SK208(O)	CHIP FET		
Q24			2SC2714(Y)	CHIP TRANSISTOR		
Q25			DTC114EK	DIGITAL TRANSISTOR		
Q26			2SC2712(Y)	CHIP TRANSISTOR		
Q27			DTC114EK	DIGITAL TRANSISTOR		
Q28			2SB1119S	CHIP TRANSISTOR		
Q29			2SC2712(Y)	CHIP TRANSISTOR		
Q30			DTC114EK	DIGITAL TRANSISTOR		
Q31			2SB1119S	CHIP TRANSISTOR		
Q33			DTC114EK	DIGITAL TRANSISTOR		
Q34			2SA1162(Y)	CHIP TRANSISTOR		
Q35			2SC2712(Y)	CHIP TRANSISTOR		
Q36			2SA1307(Y)	TRANSISTOR		
Q37			2SD1757(K)	CHIP TRANSISTOR		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

 indicates safety critical components.

PARTS LIST

* New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
Q201, 202 Q203 Q401 TH2			2SC2712(Y) 2SA1519 FMW1 112-202-2	CHIP TRANSISTOR DIGITAL TRANSISTOR DIGITAL TRANSISTOR THERMISTOR(2K)		
S212			W02-0388-05	ENCODER		
		*	X58-3480-01	SUB UNIT(430 PLL)		
		*	X58-3500-00	SUB UNIT(144 PLL)		
		*	X59-3610-00	MODULE UNIT(MIC AMP)		
		*	X59-3620-00	MODULE UNIT(BLE VOL)		
430PLL (X58-3480-01)						
C106, 107 C109 C104 C16 ,17 C1			CC73FCH1HR75C CC73FCH1H090D CC73FCH1H120J CC73FSL1H101J CK73FB1H223K	CHIP C CHIP C CHIP C CHIP C CHIP C	0.75PF 9.0PF 12PF 100PF 0.022UF	C D J J K
C2 C2 C4 C5 C6 ,7			CC73FUJ1H220J CC73FCH1H180J CK73FB1H102K CK73EB1H683K CK73FB1H223K	CHIP C CHIP C CHIP C CHIP C CHIP C	22PF 18PF 1000PF 0.068UF 0.022UF	J J K K K
C8 ,9 C10 C11 C12 C13			C92-0007-05 C92-0002-05 CK73FB1H223K CC73FCH1H100D CK73FB1H223K	CHIP TAN CHIP TAN CHIP C CHIP C CHIP C	2.2UF 0.22UF 0.022UF 10PF 0.022UF	20WV 35WV K D K
C14 C15 C101 C102 C103			CC73FCH1H040C CK73FB1H102K CK73FB1H102K CK73FB1H471K CC73FCH1H470J	CHIP C CHIP C CHIP C CHIP C CHIP C	4.0PF 1000PF 1000PF 470PF 47PF	C K K K J
C105 C110 C108, 111 C112 C113-115			CC73FCH1H080D CC73FCH1H080D CC73FCH1H0R5C CC73FCH1H040C CK73FB1H102K	CHIP C CHIP C CHIP C CHIP C CHIP C	8.0PF 8.0PF 0.5PF 4.0PF 1000PF	D D C C K
CN102 CN101 CN1		*	E40-0311-05 E40-0411-05 E40-5201-05	PIN CONNECTOR (3P) PIN CONNECTOR (4P) PIN CONNECTOR		
			F11-1122-04	SHIELDING COVER		
L1 L101, 102 L103 L104 L105		*	L40-3972-80 L40-8282-19 L34-2333-05 L40-5682-19 L40-3382-19	SMALL FIXED INDUCTOR(39NH) SMALL FIXED INDUCTOR(0.82UH) COIL SMALL FIXED INDUCTOR(0.56UH) SMALL FIXED INDUCTOR(0.33UH)		
L106			L40-3972-80	SMALL FIXED INDUCTOR(39NH)		
R4			RK73FB2A332J RK73FB2A682J	CHIP R CHIP R	3.3K 6.8K	J 1/10W J 1/10W
R103 R1 ,2			RK73FB2A683J RK73FB2A473J	CHIP R CHIP R	68K 47K	J 1/10W J 1/10W

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

⚠ indicates safety critical components.

PARTS LIST

× New Parts

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.


Telle ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕向	Re- marks 備考
R3			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R5			RK73FB2A221J	CHIP R 220 J 1/10W		
R6			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R7			RK73FB2A474J	CHIP R 470K J 1/10W		
R8 ,9			RK73FB2A822J	CHIP R 8.2K J 1/10W		
R10 -13			RK73FB2A473J	CHIP R 47K J 1/10W		
R14			RK73FB2A331J	CHIP R 330 J 1/10W		
R15			RK73FB2A472J	CHIP R 4.7K J 1/10W		
R16			RK73FB2A222J	CHIP R 2.2K J 1/10W		
R18 ,19			RK73FB2A103J	CHIP R 10K J 1/10W		
R101			R92-0670-05	CHIP R 0 ΩHM		
R102			RK73FB2A102J	CHIP R 1.0K J 1/10W		
R104			RK73FB2A470J	CHIP R 47 J 1/10W		
R105			RK73FB2A560J	CHIP R 56 J 1/10W		
R107			RK73FB2A470J	CHIP R 47 J 1/10W		
R108			RK73FB2A392J	CHIP R 3.9K J 1/10W		
R109			RK73FB2A103J	CHIP R 10K J 1/10W		
R110			RK73FB2A101J	CHIP R 100 J 1/10W		
R111			RK73FB2A103J	CHIP R 10K J 1/10W		
D101,102			IT33C	CHIP VARI-CAP DIODE		
D1			1SS184	CHIP DIODE		
D103			1SV164	CHIP VARI-CAP DIODE		
IC1			M54959FP	IC(FREQ SYNTHESIZER PLL)		
Q1 -3			2SC3324(B)	TRANSISTOR		
Q4			DTC144EK	DIGITAL TRANSISTOR		
Q5			2SC2714(Y)	TRANSISTOR		
Q101			2SK582	FET		
Q102			2SC3120	TRANSISTOR		
Q103			2SC3324(G)	TRANSISTOR		
144PLL (X58-3500-00)						
C1			CK73FB1E223K	CHIP C 0.022UF K		
C2 ,3			CK73FB1H102K	CHIP C 1000PF K		
C4			CK73FB1E223K	CHIP C 0.022UF K		
C5			CK73FB1H471K	CHIP C 470PF K		
C6 ,7			C92-0507-05	CHIP TAN 4.7UF 6.3WV		
C8			C92-0003-05	CHIP TAN 0.47UF 25WV		
C9			CK73EB1E473K	CHIP C 0.047UF K		
C10			CC73FCH1H050C	CHIP C 5.0PF C		
C11 ,12			CK73FB1H102K	CHIP C 1000PF K		
C13 ,14			CK73FB1E223K	CHIP C 0.022UF K		
C101			CK73GB1E103K	CHIP C 0.010UF K		
C102			CC73GCH1H010C	CHIP C 1.0PF C		
C103,104			CK73GB1E103K	CHIP C 0.010UF K		
C105			CC73GCH1H010C	CHIP C 1.0PF C		
C106			CC73GCH1H220J	CHIP C 22PF J		
C107,108			CK73GB1H102K	CHIP C 1000PF K		
C109,110			CK73GB1E103K	CHIP C 0.010UF K		
C111			CC73GCH1H020C	CHIP C 2.0PF C		
C112,113			CK73GB1E103K	CHIP C 0.010UF K		
C114			CC73GCH1H010C	CHIP C 1.0PF C		
C115			CC73GCH1H220J	CHIP C 22PF J		
C116			CK73GB1H102K	CHIP C 1000PF K		
CN1			E40-5201-05	PIN CONNECTOR (7P)		
CN101			E40-0411-05	PIN CONNECTOR (4P)		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

 indicates safety critical components.

PARTS LIST

* New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnes dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
CN102			E40-0311-05	PIN CONNECTOR (3P)		
			F11-1122-14	SHIELDING COVER		
L1			L40-3391-19	SMALL FIXED INDUCTOR(3.3UH)		
L101,102			L40-4791-19	SMALL FIXED INDUCTOR(4.7UH)		
L103		*	L34-2331-05	COIL (RX)		
L104-106			L40-4791-19	SMALL FIXED INDUCTOR(4.7UH)		
L107		*	L34-2332-05	COIL (TX)		
L108			L40-4791-19	SMALL FIXED INDUCTOR(4.7UH)		
R1-5			RK73FB2A473J	CHIP R 47K J 1/10W		
R14			RK73FB2A473J	CHIP R 47K J 1/10W		
R6			RK73GB1J152J	CHIP R 1.5K J 1/16W		
R8			RK73GB1J392J	CHIP R 3.9K J 1/16W		
R7 ,9			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R10 ,11			RK73GB1J103J	CHIP R 10K J 1/16W		
R13			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R15			RK73GB1J223J	CHIP R 22K J 1/16W		
R16			RK73GB1J103J	CHIP R 10K J 1/16W		
R17			RK73GB1J221J	CHIP R 220 J 1/16W		
R101			RK73GB1J101J	CHIP R 100 J 1/16W		
R102			RK73GB1J470J	CHIP R 47 J 1/16W		
R103			RK73GB1J101J	CHIP R 100 J 1/16W		
R104			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R105			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R106			RK73GB1J471J	CHIP R 470 J 1/16W		
R107			RK73GB1J101J	CHIP R 100 J 1/16W		
R108			RK73GB1J470J	CHIP R 47 J 1/16W		
R109			RK73GB1J682J	CHIP R 6.8K J 1/16W		
R110			RK73GB1J470J	CHIP R 47 J 1/16W		
R111			RK73GB1J101J	CHIP R 100 J 1/16W		
R112			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R113			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R114			RK73GB1J471J	CHIP R 470 J 1/16W		
D101-104			1SV166	CHIP VARI-CAP DIODE		
IC1			M54959FP	IC(FREQ SYNTHESIZER PLL)		
Q1 ,2			2SC3324(B)	CHIP TRANSISTOR		
Q3			2SC2712(Y)	CHIP TRANSISTOR		
Q4			2SC2714(Y)	CHIP TRANSISTOR		
Q101			2SK508NV(K52)	CHIP FET		
Q102			DTC114EK	DIGITAL TRANSISTOR		
Q103			2SC3120	CHIP TRANSISTOR		
Q104			2SK508NV(K52)	CHIP FET		
Q105			DTC114EK	DIGITAL TRANSISTOR		
Q106			2SC3120	CHIP TRANSISTOR		
MIC AMP (X59-3610-00)						
C1			CK73FF1E104Z	CHIP C 0.10UF Z		
C7			CK73GB1H681K	CHIP C 680PF K		
C2			CK73GB1H102K	CHIP C 1000PF K		
C11			CK73GB1H102K	CHIP C 1000PF K		
C8			CK73FB1E333K	CHIP C 0.033UF K		
C3			CK73FB1E333K	CHIP C 0.033UF K		
C4			CC73GCH1H270J	CHIP C 27PF J		
C5			C92-0004-05	CHIP TAN 1UF 16WV		

E: Scandinavia & Europe K: USA P: Canada W: Europe

U: PX(Far East, Hawaii) T: England M: Other Areas

UE: AAFES(Europe) X: Australia

△ indicates safety critical components.

PARTS LIST

× New Parts


Parts without Parts No. are not supplied.

Les articles non mentionnés dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

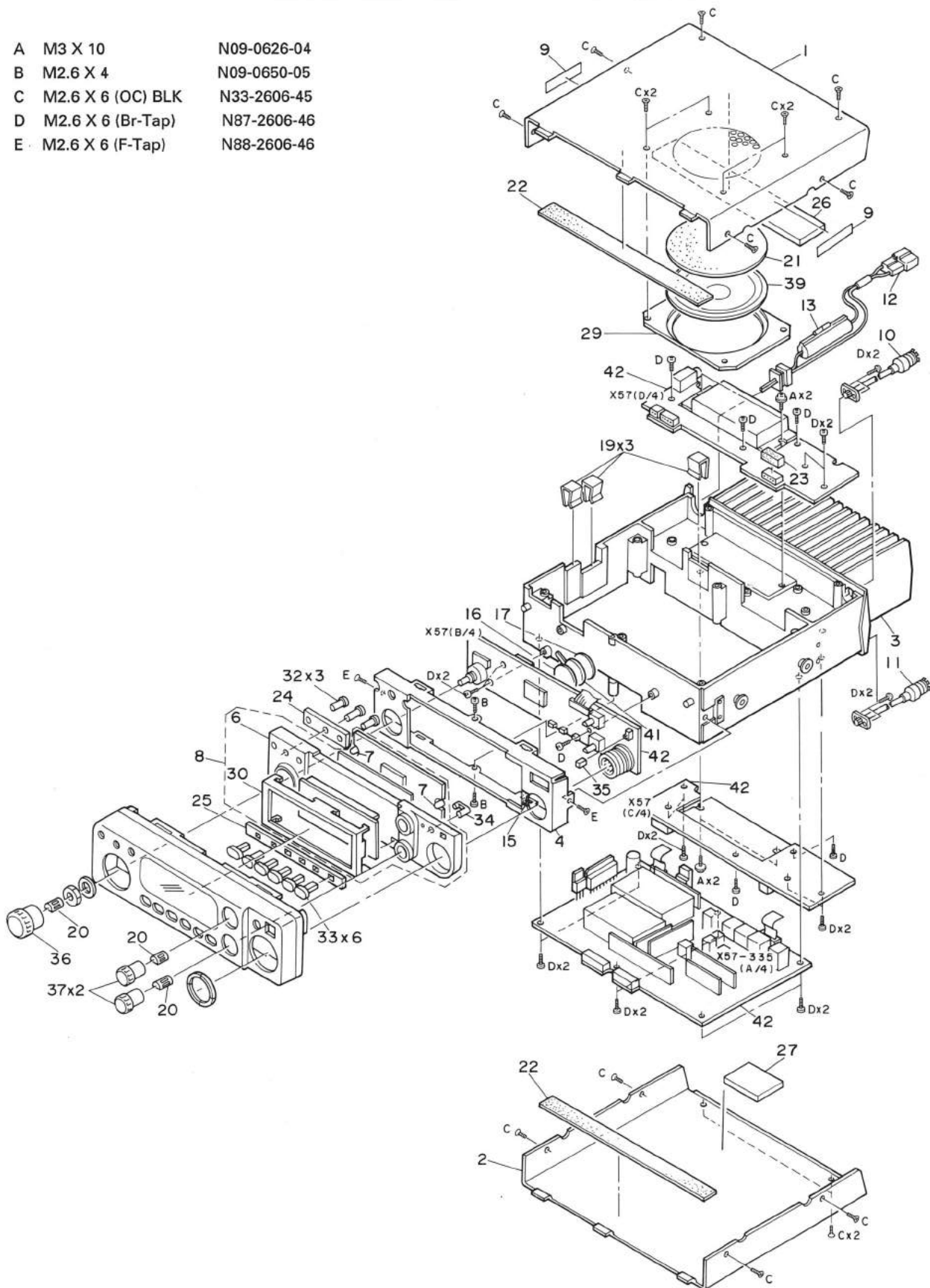
Ref. No. 参照番号	Address 位置	New Parts 新	Parts No. 部品番号	Description 部品名 / 規格	Desti- nation 仕 向	Re- marks 備考
C6 C9 C10			CK73FB1E333K CC73GCH1H820J CC73GCH1H101J	CHIP C 0.033UF K CHIP C 82PF J CHIP C 100PF J		
			E23-0471-05	TERMINAL		
11 7 R1 R2 R3			RK73FB2A473J RK73GB1J394J RK73GB1J223J RK73GB1J104J RK73GB1J561J	CHIP R 47K J 1/10W CHIP R 390K J 1/16W CHIP R 22K J 1/16W CHIP R 100K J 1/16W CHIP R 560 J 1/16W		
R4 R5 R6 R8 R9			RK73GB1J470J RK73GB1J561J RK73GB1J000J RK73GB1J224J RK73GB1J184J	CHIP R 47 J 1/16W CHIP R 560 J 1/16W CHIP R 0.0 J 1/16W CHIP R 220K J 1/16W CHIP R 180K J 1/16W		
R10 R12 R13 R16	-15	*	RK73GB1J333J RK73GB1J224J RK73GB1J823J RK73GB1J000J	CHIP R 33K J 1/16W CHIP R 220K J 1/16W CHIP R 82K J 1/16W CHIP R 0.0 J 1/16W		
IC1 Q1		*	NJM4558M 2SC4116(Y)	IC(OP AMP X2) CHIP TRANSISTOR		
ELE VOL (X59-3620-00)						
C1 C2 C3			CK73FF1E104Z C92-0004-05 C92-0005-05	CHIP C 0.10UF Z CHIP-TAN 1UF 16WV CHIP-TAN 2.2UF 6.3WV		
			E23-0471-05	TERMINAL		
R1 R3	,2		RK73FB2A104J RK73FB2A223J	CHIP R 100K J 1/10W CHIP R 22K J 1/10W		
IC1 IC2 IC3 Q1			MN4066BS LC7532M MC14094BF 2SD1757(K)	IC(QUAD ANALOG SWITCH) IC(BILATERAL SWITCH) IC(8-ST SHIFT/STORE REGISTER) CHIP TRANSISTOR		

E: Scandinavia & Europe K: USA P: Canada W: Europe
 U: PX(Far East, Hawaii) T: England M: Other Areas
 UE: AAFES(Europe) X: Australia

 indicates safety critical components.

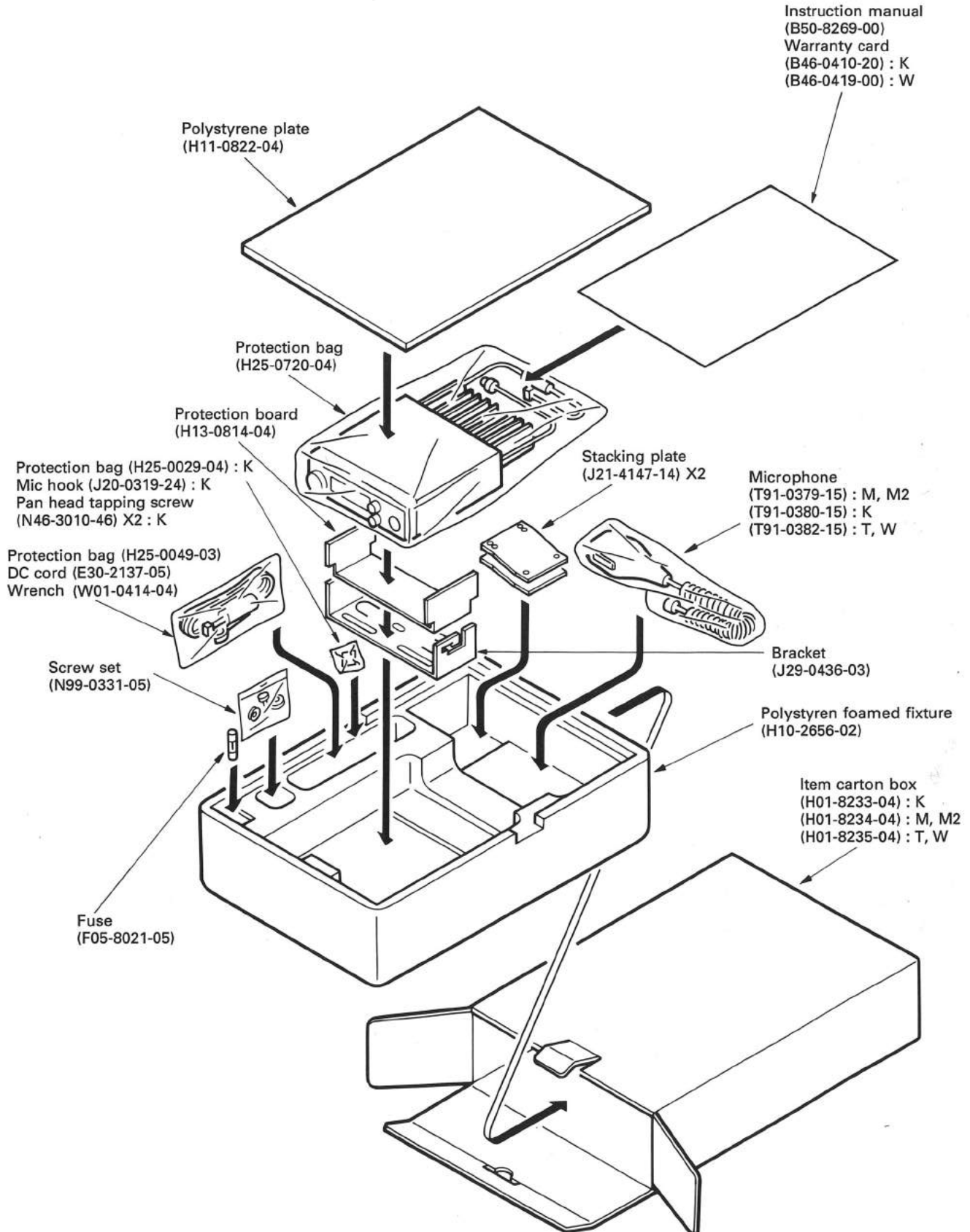
EXPLODED VIEW

A	M3 X 10	N09-0626-04
B	M2.6 X 4	N09-0650-05
C	M2.6 X 6 (OC) BLK	N33-2606-45
D	M2.6 X 6 (Br-Tap)	N87-2606-46
E	M2.6 X 6 (F-Tap)	N88-2606-46



Parts with the exploded numbers larger than 700 are not supplied.

PACKING



ADJUSTMENT

REQUIRED TEST EQUIPMENT

- 1. DC V.M and Tester**
 - 1) High input impedance
- 2. RF VTVM (RF V.M)**
 - 1) Input impedance : 1M Ω min., 2pF max.
 - 2) Voltage range : F.S = 10mV to 300V
 - 3) Frequency range : Up to 450MHz
- 3. Frequency Counter (f. counter)**
 - 1) Input sensitivity : Approx. 50mV
 - 2) Frequency range : Up to 450MHz
- 4. DC Power Supply**
 - 1) Voltage : 10V to 17V, variable
 - 2) Current : 6A min.
- 5. Power Meter**
 - 1) Measurement range : Approx. 30W, 3W, 1W
 - 2) Input impedance : 50 Ω
 - 3) Frequency range : 450MHz
- 6. AF VTVM (AF V.M)**
 - 1) Input impedance : 1M Ω min.
 - 2) Voltage range : F.S = 1mV to 30V
 - 3) Frequency range : 50Hz to 10kHz
- 7. AF Generator (AG)**
 - 1) Output frequency : 100Hz to 10kHz
 - 2) Output voltage : 0.5mV to 1V
- 8. Linear Detector**
 - 1) Frequency range : 450MHz
- 9. Spectrum Analyzer**
 - 1) Frequency range : 450MHz
- 10. Directional Coupler**
- 11. Oscilloscope**
 - 1) High sensitivity oscilloscope with horizontal input terminal
- 12. SSG**
 - 1) Frequency range : 144MHz band
 - 2) Modulation: AM and FM MOD.
 - 3) Output level : -20dB μ ~ 100dB μ
- 13. Dummy Load**
 - 1) 8 Ω , 5W (approx.)
- 14. Noise Generator**
 - 1) Must generate ignition-like noise containing harmonics beyond 450MHz.

15. Sweep Generator

- 1) Sweep range : 144MHz bands

16. Tracking Generator

PREPARATION

- 1) Unless otherwise specified, knobs and switches should be set as follows **Table 7**.

POWER SW	ON	CALL SW	OFF
AF VOL VR	MIN	SHIFT/AL	OFF
SQL VOL VR	MIN	TONE/T. ALT	OFF
LOW SW	OFF	REV/STEP	OFF
VFO, MR / M	VFO	BAND / DUP	OFF

Table 7

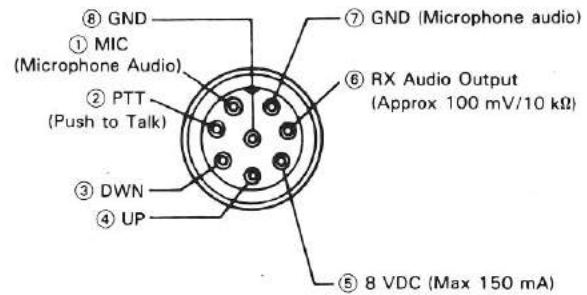


Fig. 17 MIC terminals (view from front panel side)

- 2) Use an insulated adjusting rod to adjust trimmers and coils.
- 3) To prevent damaging SSG, never set the stand by switch to SEND while adjusting the receiver section.
- 4) Be sure to turn the power switch OFF, before connecting the power cable to a power source.
- 5) SSG output levels are those at the time the output terminal is open.
- 6) Meter and display section should be set as follows

Fig. 18

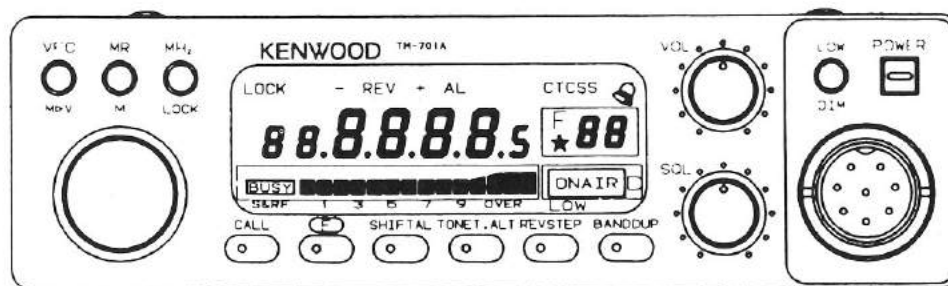


Fig. 18

ADJUSTMENT

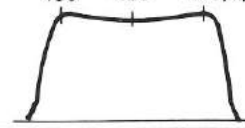
COMMON SECTION ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	1) Source voltage : DC 13.8V POWER SW : OFF VOL SW : OFF SQL VR : MAX							
2. Reset	1) Turn POWER SW ON while holding down MR/M.							Display 144.000 Display 430.000 M,M2,T,W 440.000 K

PLL SECTION ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. VCO voltage	1) FREQ. : 144.975 T,W FREQ. : 146.000 K,M,M2 Receive	DC V.M	TX-RX	TP5			Check	2.5V or more.
	2) Transmit	Power meter	Rear panel	ANT1 (144M)				4.5~ 6.5V "ON AIR" light on.
	3) FREQ. : 435.000 M,M2,T,W FREQ. : 445.000 K Receive		TX-RX	TP4				2.5V or more.
	4) Transmit	Rear panel	ANT2 (430M)					6.0V "ON AIR" light off.

RECEIVER SECTION ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks						
		Test-equipment	Unit	Terminal	Unit	Parts	Method							
1. Helical (430MHz)	1) FREQ. : 435.050 M,M2,T,W FREQ. : 445.050 K Connect the tracking generator to ANT2. Connect the spectrum analyzer to TP1.	Tracking generator Spectrum analyzer	Rear panel TX-RX	ANT2 (430M) TP1	TX-RX	TC1,2 LB,9	Check whether required band obtained at max. gain.	<table style="display: inline-table; border: none;"> <tr> <td style="text-align: center;">440</td> <td style="text-align: center;">445</td> <td style="text-align: center;">450(K)</td> </tr> <tr> <td style="text-align: center;">430</td> <td style="text-align: center;">435</td> <td style="text-align: center;">440(M,T,W)</td> </tr> </table> 	440	445	450(K)	430	435	440(M,T,W)
440	445	450(K)												
430	435	440(M,T,W)												
2-1. GAIN (144MHz)	1) FREQ. : 145.050 T,W FREQ. : 146.050 K,M,M2 SSG output : 0.5μV (-113dBm) SSG MOD : 1kHz SSG DEV : 3kHz	SSG	Rear panel	ANT1 (144M)	TX-RX	L1~5	MAX.	All S-meter light on.						
		DC V.M	TX-RX	TP2										
2-2. GAIN (430MHz)	1) FREQ. : 435.050 M,M2,T,W FREQ. : 445.050 K SSG output : 0.5μV (-113dBm) SSG MOD : 1kHz SSG DEV : 3kHz	SSG	Rear panel	ANT2 (430M) TP2		L12								
3. Squelch	1) SQL VR : Threshold point	AF V.M	Rear panel	SP	Front panel	SQL VR	Turn the SQL VR clockwise to the point at which squelch just close.	8 : 00 ~ 11 : 00 0.6A or less.						
	2) Tight squelch FREQ. : 435.050 M,M2,T,W FREQ. : 445.050 K SSG output : 0.25μV (-119dBm) SSG MOD : 1kHz SSG DEV : 3kHz SQL VR : MAX	SSG AF V.M SP Ammeter	Rear panel Front	ANT2 (430M) EXT.SP	TX-RX	VR1 (CCW)	Set to the point at which squelch just open.							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. S-meter	1) FREQ. : 435.050 M,M2,T,W FREQ. : 445.050 K SSG output : 4 μ V (-95dBm) SSG MOD : 1kHz SSG DEV : 3kHz	SSG S-meter	Rear panel Front panel	ANT2 (430M)	TX-RX	VR2 (CCW)	Last S-meter segment off.	
	2) SSG output : OFF	S-meter	Front panel				Check	S-meter off.

COMMON TRANSMITTER SECTION ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Transmit frequency	1) FREQ. : 435.000 M,M2,T,W FREQ. : 445.000 K Transmit	f.counter Power meter	Rear panel	ANT2 (430M)	TX-RX	TC3	435.000.0MHz M,M2,T,W 445.000.0MHz K	\pm 100Hz

144MHz TRANSMITTER SECTION ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Power	1) HI POWER FREQ. : 144.975 T,W FREQ. : 146.000 K,M,M2 HI/LOW SW : HI Transmit.	Power meter Ammeter	Rear panel	ANT1 (144M)	430 FINAL	VR402 (CCW)	MAX Read RF meter	30W or more. All RF meter on. "ON AIR" light on.
	2) APC Transmit.					VR402	28W	\pm 4W 6.9A or less.
	3) LOW POWER HI/LOW SW : LOW Transmit						Check Read RF meter	3 ~ 8W 6 RF meter on.
2. Protection (Current)	1) FREQ. : 144.975 T,W FREQ. : 146.000 K,M,M2 ANT : Open 430 final unit VR404 : \emptyset Transmit.	Ammeter			430 FINAL	VR404 (CCW)	3A M,M2,T,W 4A K	\pm 0.2A
3. DEV	1) FREQ. : 145.100 T,W FREQ. : 146.100 K,M,M2 AG : 1kHz, 28mV T,W AG : 1kHz, 50mV K,M,M2 LOW SW : ON Transmit.	Linear detector Oscilloscope Power meter	Rear panel	ANT1 (144M)	TX-RX	VR4	\pm 4.6kHz	\pm 200Hz Check for detected waveform. • Linear detector LPF : OFF HPF : 20kHz De-emphasis : OFF
	2) MIC GAIN AG : 1kHz, 2.8mV T,W AG : 1kHz, 5.0mV K,M,M2 Transmit.						Check	\pm 2.4 ~ 3.6kHz
4. TONE	1) FREQ. : 145.250 T,W FREQ. : 145.260 K,M,M2 LOW SW : ON Transmit.						Check	DEV : \pm 0.5 ~ 1.2kHz • Linear detector LPF : 50Hz HPF : 3kHz De-emphasis : OFF
5. TONE T,W type	1) FREQ. : 144.975 LOW SW : ON Transmit.						MIC TONE SW : ON	DEV : \pm 2.5kHz or more.

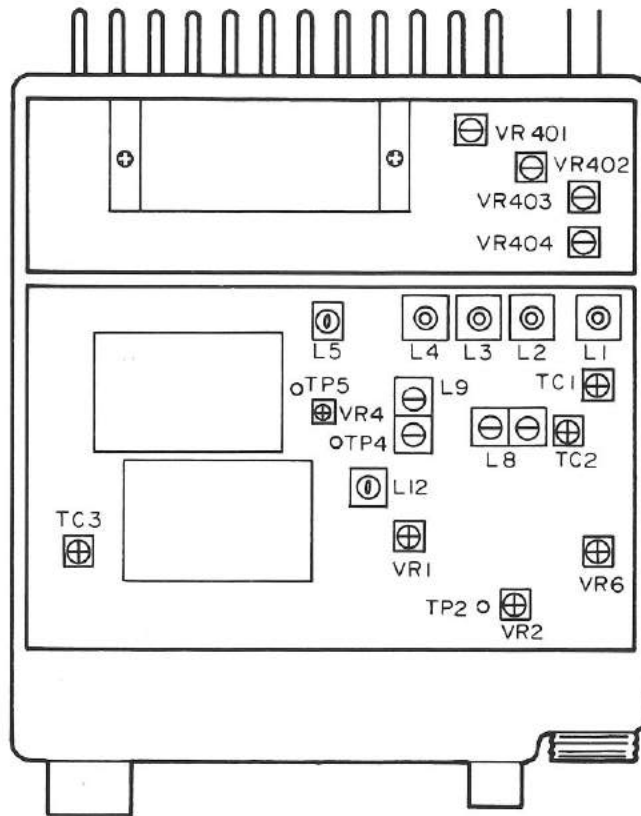
ADJUSTMENT

430MHz TRANSMITTER SECTION ADJUSTMENT

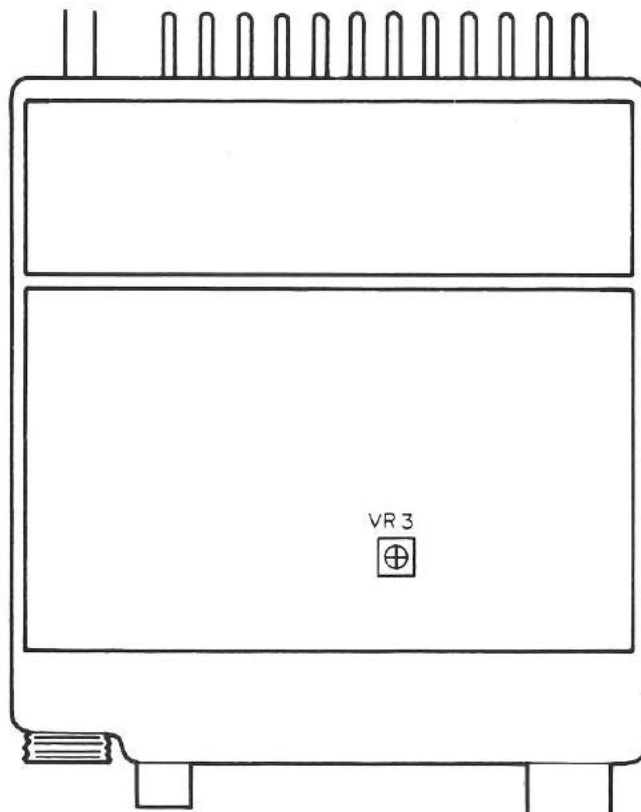
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Power	1) HI POWER FREQ. : 435.000 M,M2,T,W FREQ. : 445.000 K HI/LOW SW : HI Transmit.	Power meter Ammeter	Rear panel	ANT2 (430M)	430 FINAL	VR401 (CCW)	MAX	30W or more. All RF meter on. "ON AIR" light on.
	Read RF meter							
	2) APC Transmit.					VR401	28W	
	3) LOW POWER HI/LOW SW : LOW Transmit.				TX-RX	VR6	6W Read RF meter	±2W 6 RF meter on.
2. Protection (Current)	1) FREQ. : 435.000 M,M2,T,W FREQ. : 445.000 K ANT : Short 430 final unit VR403 : ø Transmit.	Ammeter			430 FINAL	VR403 (CCW)	3.0A	±0.2A
3. DEV	1) FREQ. : 434.960 M,M2,T,W FREQ. : 444.960 K AG : 1kHz, 28mV M,M2,T,W AG : 1kHz 50mV K LOW SW : ON Transmit.	Linear detector Oscilloscope Power meter	Rear panel	ANT2 (430M)	TX-RX	VR3	±4.6kHz	±200Hz Check for detected waveform. • Linear detector LPF : OFF HPF : 20kHz De-emphasis : OFF
	2) MIC GAIN AG : 1kHz, 2.8mV M,M2,T,W AG : 1kHz, 5.0mV K						Check	
4. TONE	1) FREQ. : 435.250 M,M2,T,W FREQ. : 445.250 K LOW SW : ON Transmit.						Check	DEV : ±0.5 ~ 1kHz • Linear detector LPF : 50Hz HPF : 3kHz De-emphasis : OFF
5. TONE T,W type	1) FREQ. : 435.000 LOW SW : ON Transmit.						MIC TONE SW : ON	DEV : ±2.5kHz or more.
6. DTMF K type	1) FREQ. : 445.100 MIC A and B key : Push at the same time. Transmit.						Check	DEV : 2.8 ~ 4.5kHz

ADJUSTMENT

Adjustment point Layout Top of set



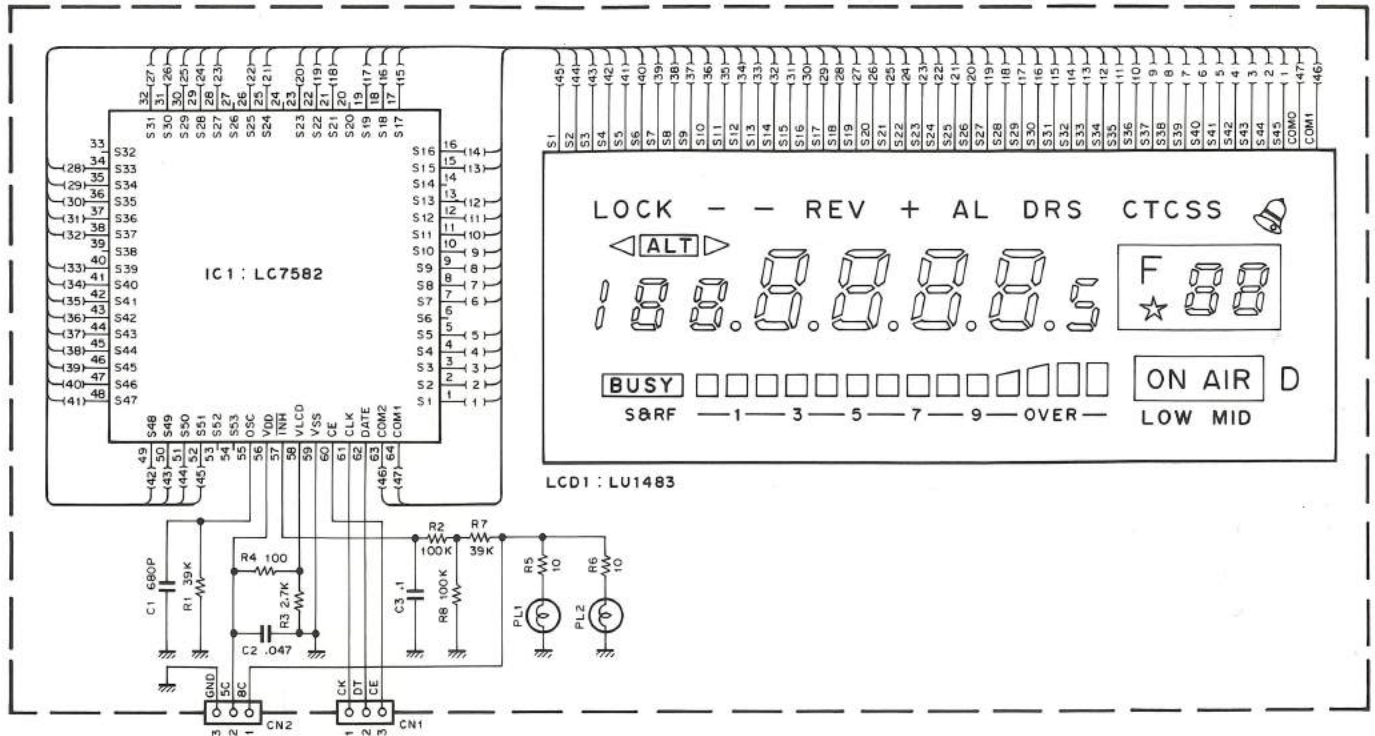
Bottom of set



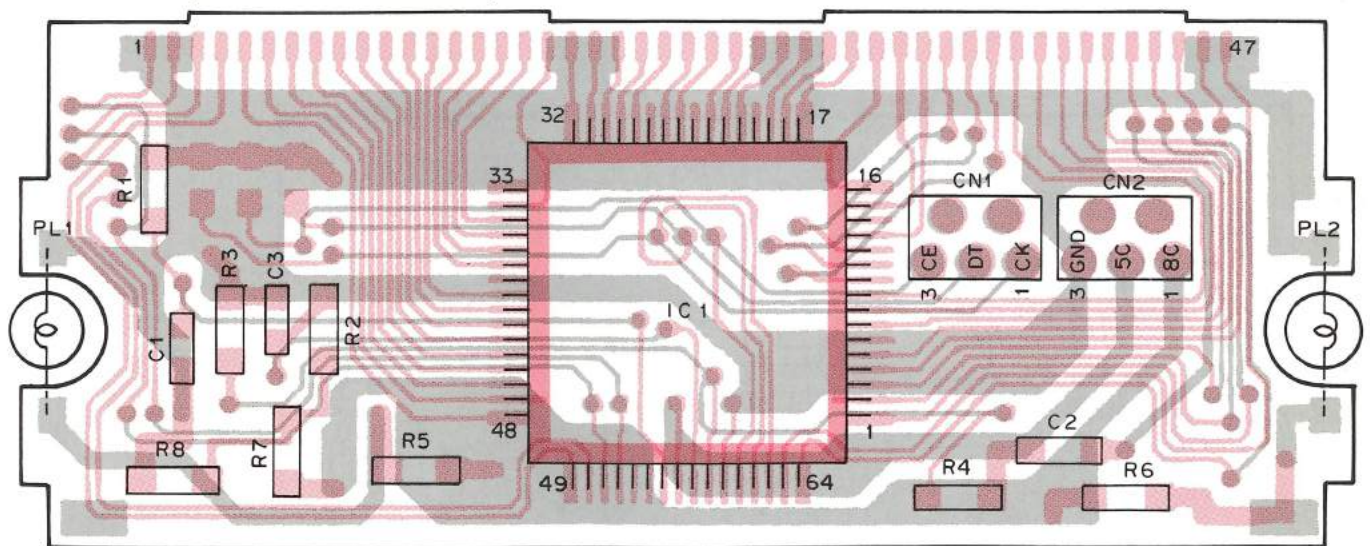
- TX-RX unit (X57-3350-XX)**
 VR1: Squelch
 VR2: S-eter
 VF3: DEV
 VR4: TONE DEV 1kHz,
 2.8mV±4.6 kHz (M, T, W)
 5.0mV±4.6kHz (K)
 VR5, VR6, VR401, VR402
 : Transmit output
 VR403, VR404: Protection
 L1~L5: Gain (144MHz)
 L8, L9: Helical (430MHz)
 L12: Gain (430MHz)
 TC1, TC2: Helical (430MHz)
 TC3: Transmit frequency

PC BOARD VIEW/CIRCUIT DIAGRAM TM-701A/E

LCD ASS'Y (B38-0311-05)



LCD ASS'Y (B38-0311-05) Component side view



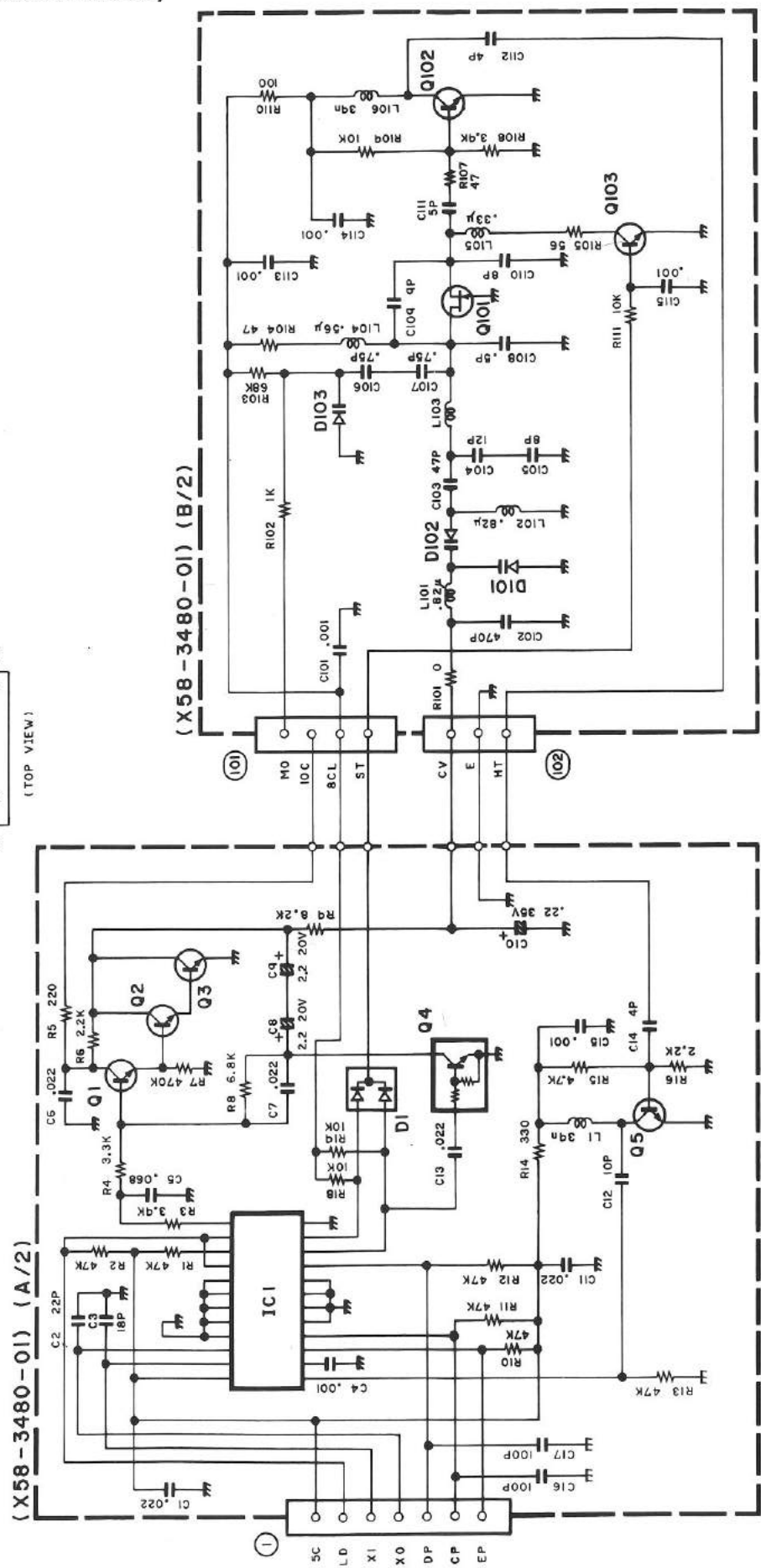
IC1 : LC7582 LCD1 : LU1483

TM-701A/E CIRCUIT DIAGRAM

430PLL (X58-3480-01)

5C	○
LD	○
X1	○
X0	○
DP	○
CP	○
EP	○
MO	○
IOC	○
8CL	○
ST	○
CV	○
E	○
HT	○

(TOP VIEW)



- (X58-3480-01) (B/2)
- Q101 : 2SK582
 - Q102 : 2SC3120
 - Q103 : 2SC3324 (G)
 - D101, 102 : 1T33C
 - D103 : 1SV164

- (X58-3480-01) (A/2)
- IC 1 : M54959FP
 - Q1~3 : 2SC3324 (B)
 - Q4 : DTC144EK
 - Q5 : 2SC2714 (Y)
 - D1 : 1SS164
- Unused numbers
- C18-100
 - R17, 20-100, 106

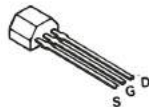
DTC114EK
 DTC144EK
 2SC2712(Y)
 2SC2714(Y)
 2SC3120
 2SC3324(B,G)



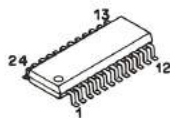
2SK508NV(K52)



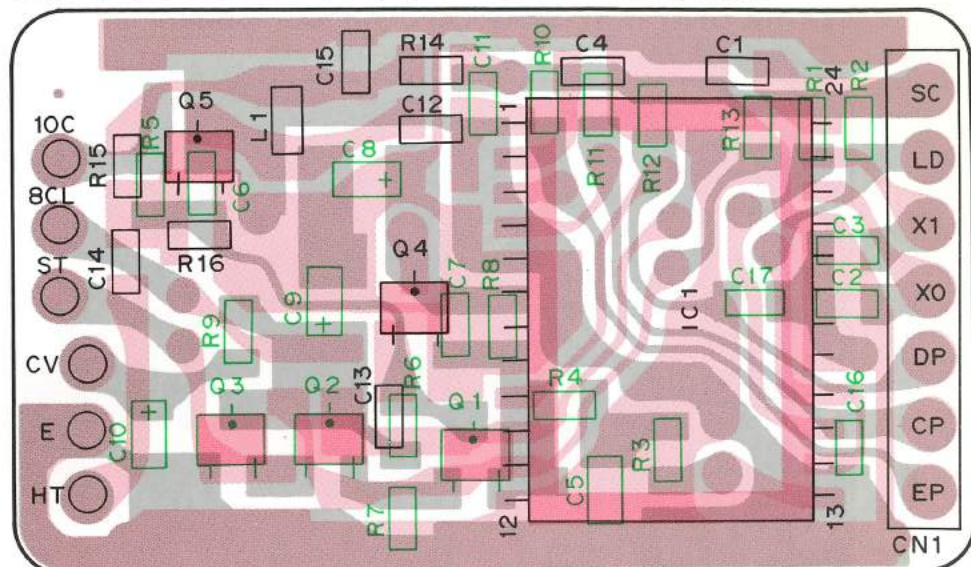
2SK582



M54959FP

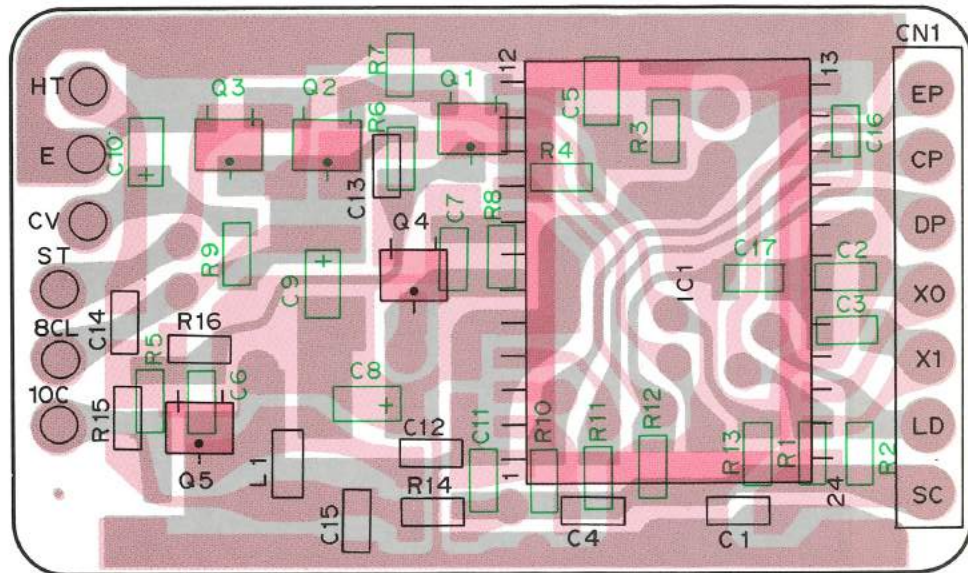


430PLL (X58-3480-01) (A/2) Component side view

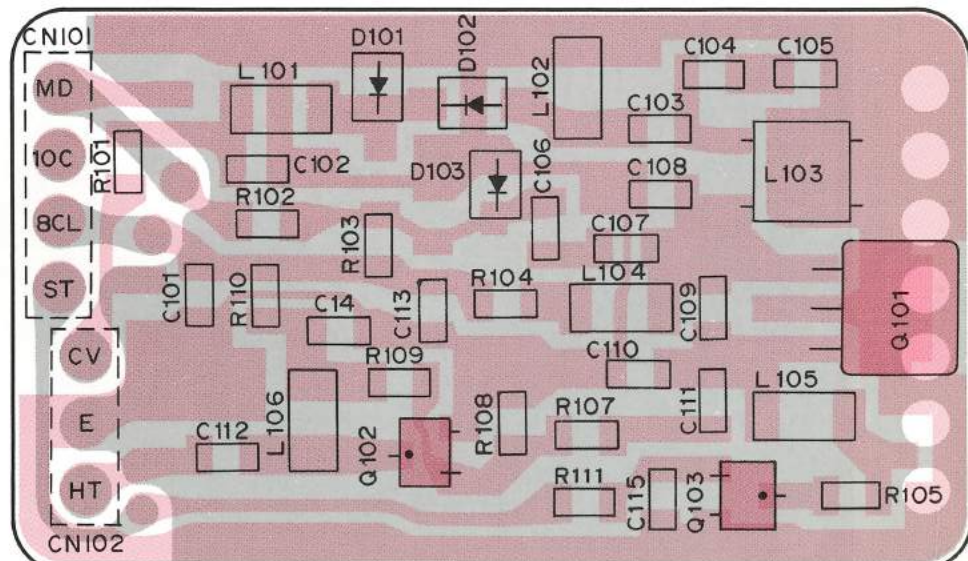


IC1 : M54959FP Q1~3 : 2SC3324 (B) Q4 : DTC144EK Q5 : 2SC2714 (Y) D1 : 1SS184

430PLL (X58-3480-01) (A/2) Foil side view



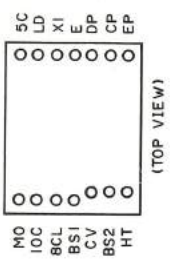
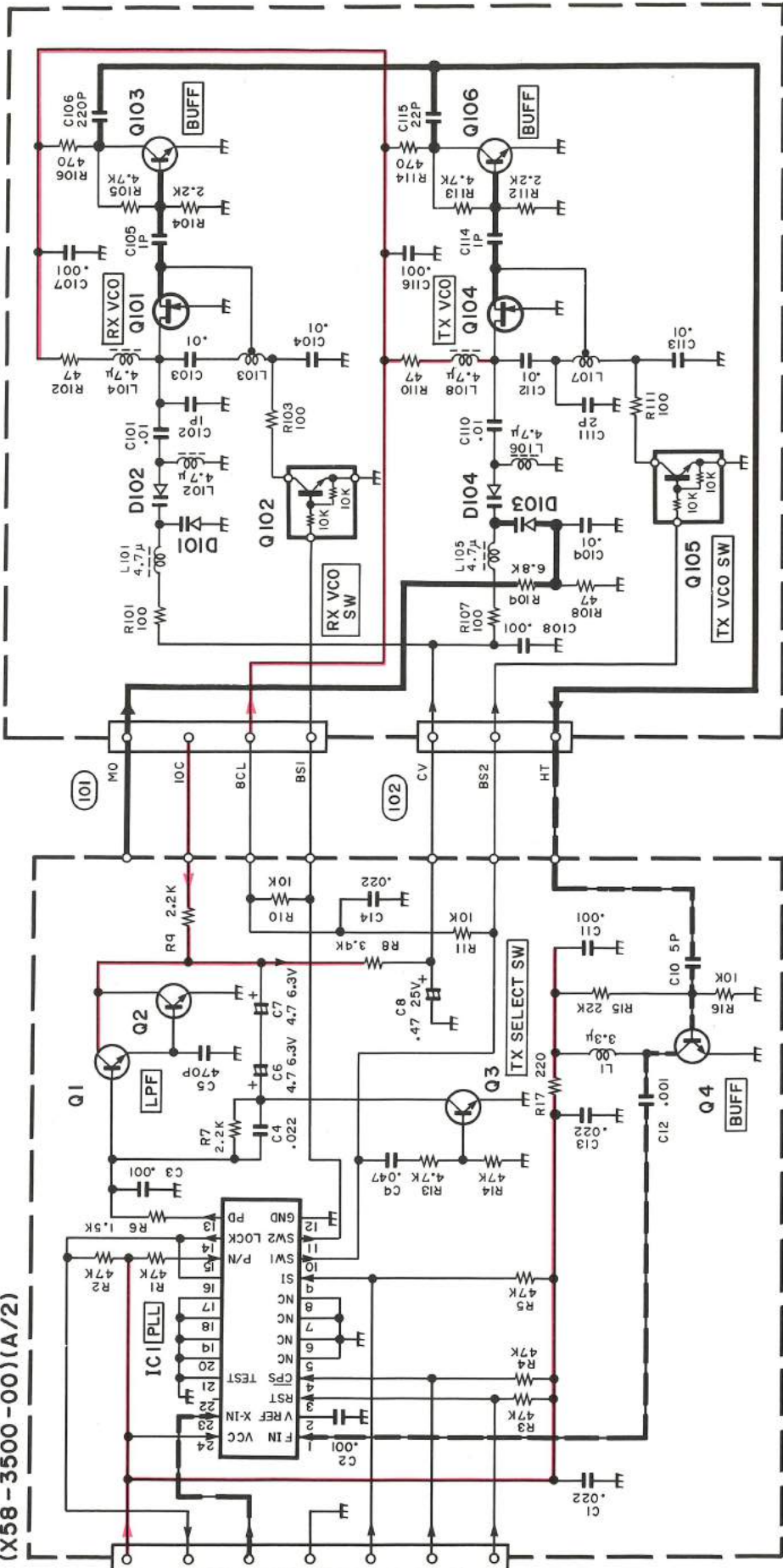
430PLL (X58-3480-01) (B/2) Component side view



Q101 : 2SK582 Q102 : 2SC3120 Q103 : 2SC3324 (G) D101,102 : 1T33C D103 : 1SV164

144PLL (X58-3500-00)

(X58-3500-00) (B/2)



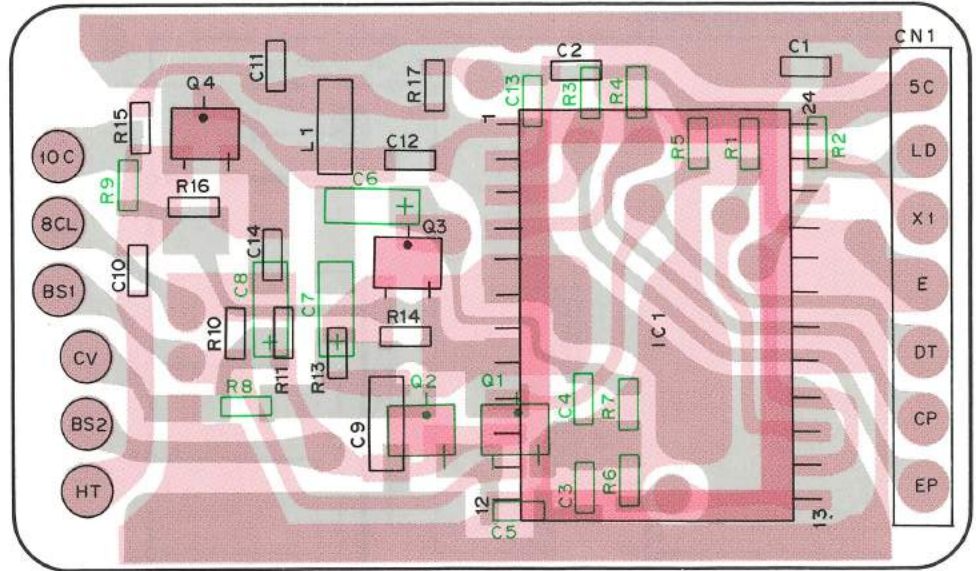
- (X58-3500-00)(B/2)
- Q101,104 : 2SK508NV(K52)
- Q102,105 : DTC114EK
- Q103,106 : 2SC3120
- D101 ~ 104 : ISV166

- Unused numbers
- C15-100
- R12,18-100

- (X58-3500-00)(A/2)
- IC1 : M54959FP
- Q1,2 : 2SC3324(B)
- Q3 : 2SC2712(Y)
- Q4 : 2SC2714(Y)

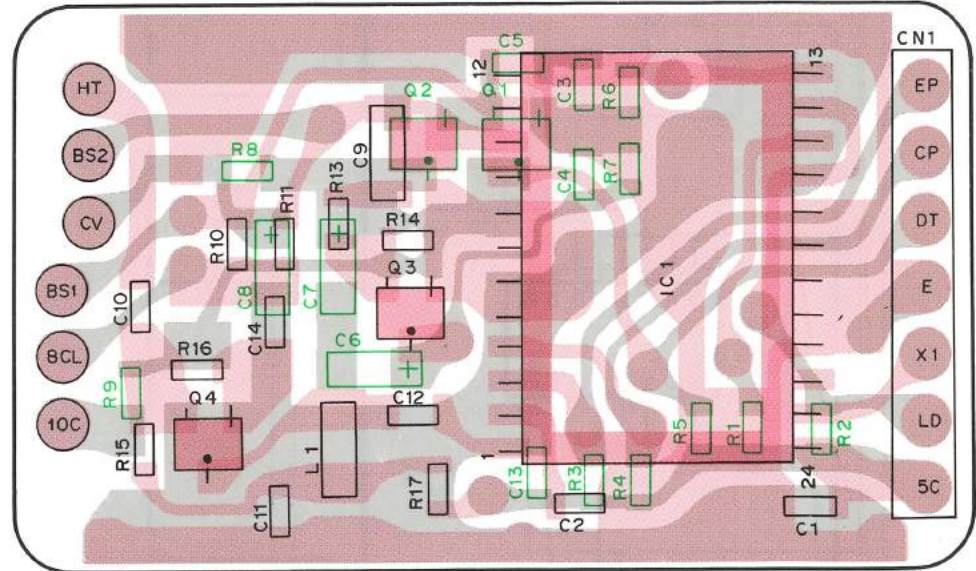
PC BOARD VIEWS/CIRCUIT DIAGRAMS TM-701A/E

▼PLL (X58-3500-00) (A/2) 部品面

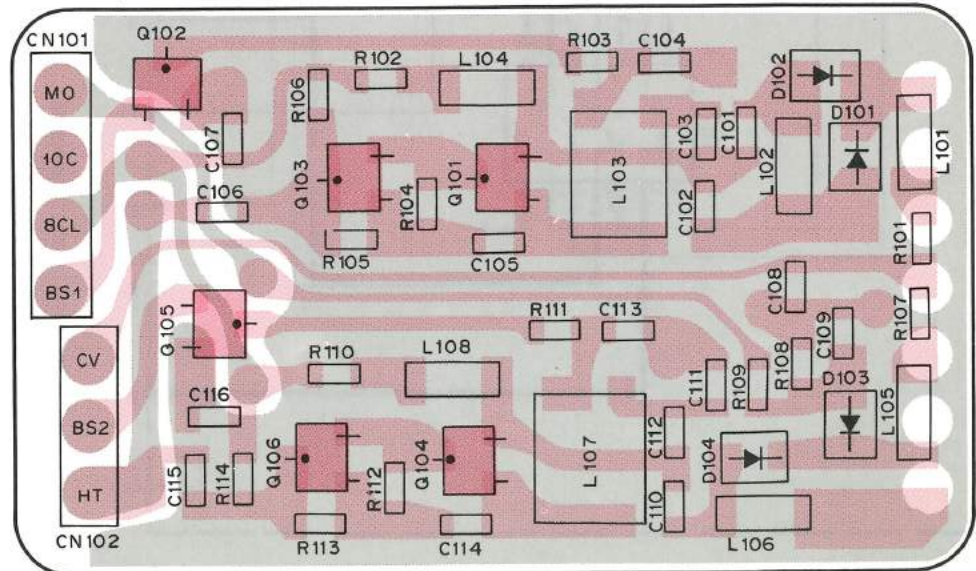


IC1 : M54959FP Q1,2 : 2SC3324 (B) Q3 : 2SC2712 (Y) Q4 : 2SC2714 (Y)

▼PLL (X58-3500-00) (A/2) ハンダ面



▼PLL (X58-3500-00) (B/2) 部品面



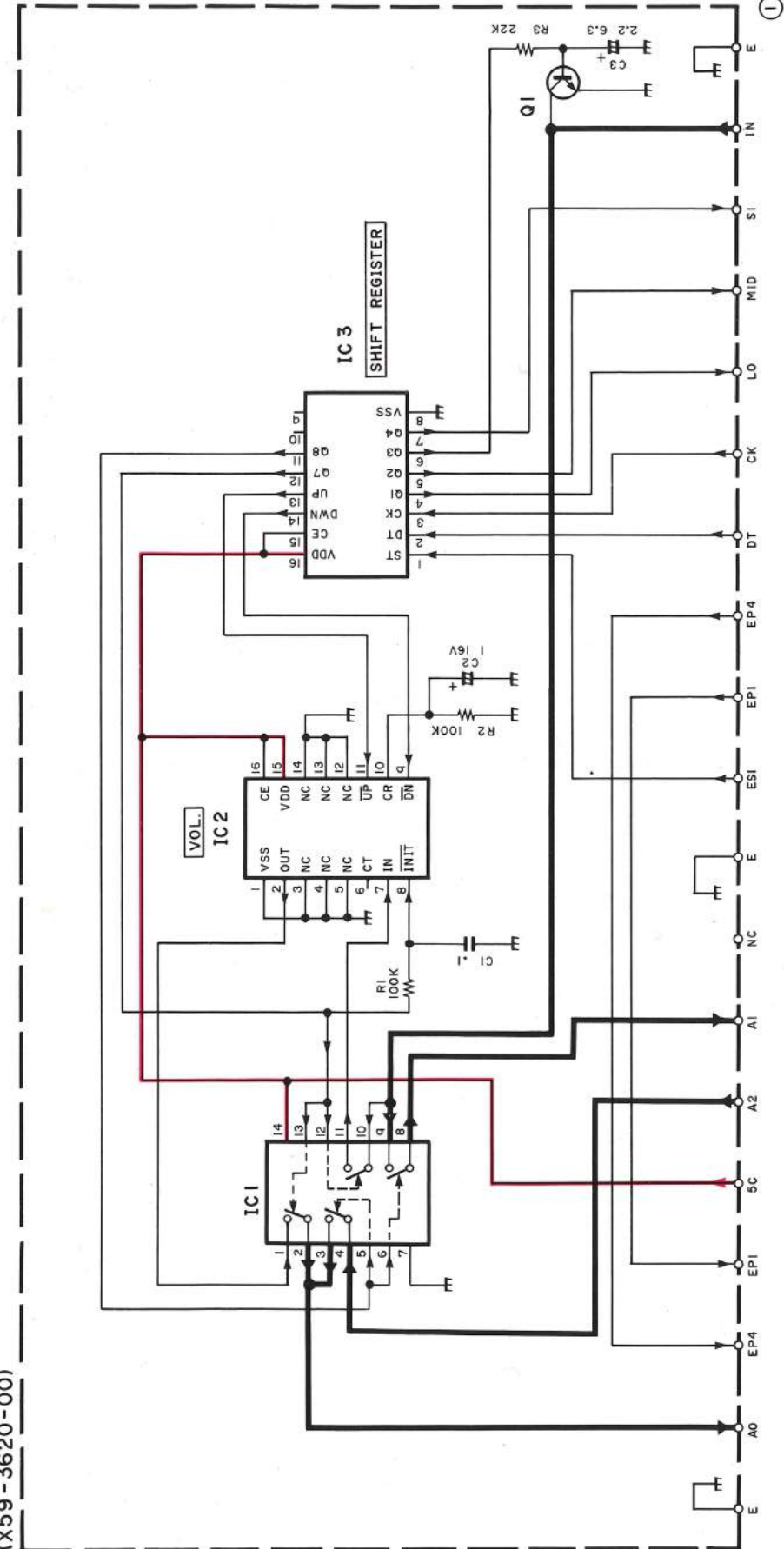
Q101,104 : 2SK508NV (K52) Q102,105 : DTC114EK Q103,106 : 2SC3120 D101~104 : 1SV166

D101 ~ 104 : 1SV166

: 2SC2712 (Y)
: 2SC2714 (Y)

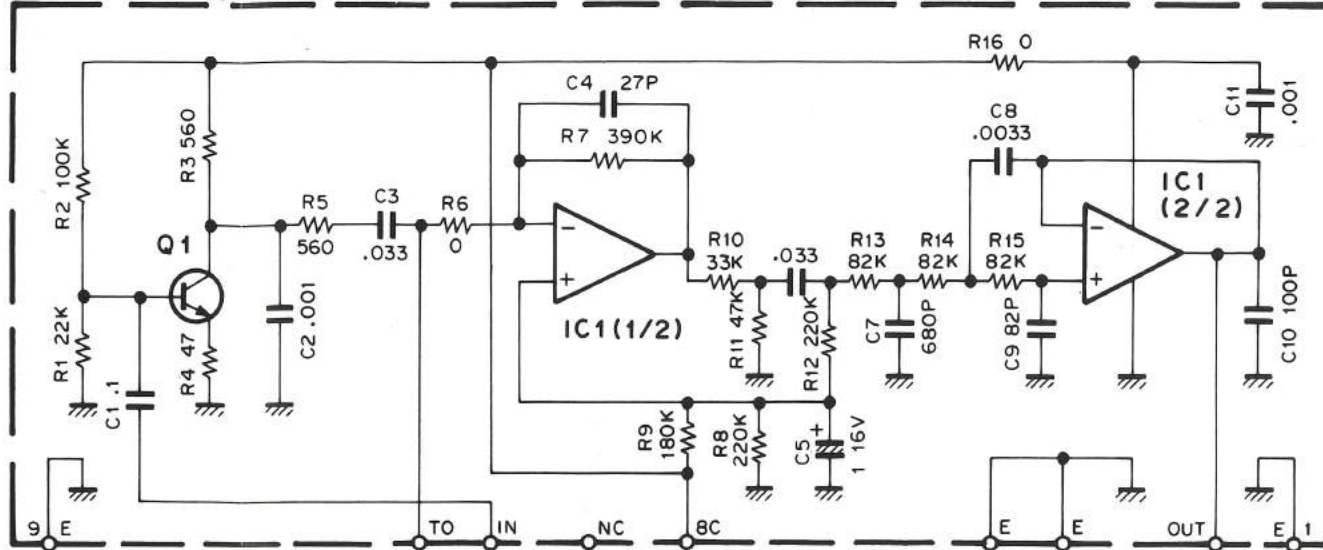
TM-701A/E PC BOARD VIEWS/CIRCUIT DIAGRAMS

ELE VOL (X59-3620-00)



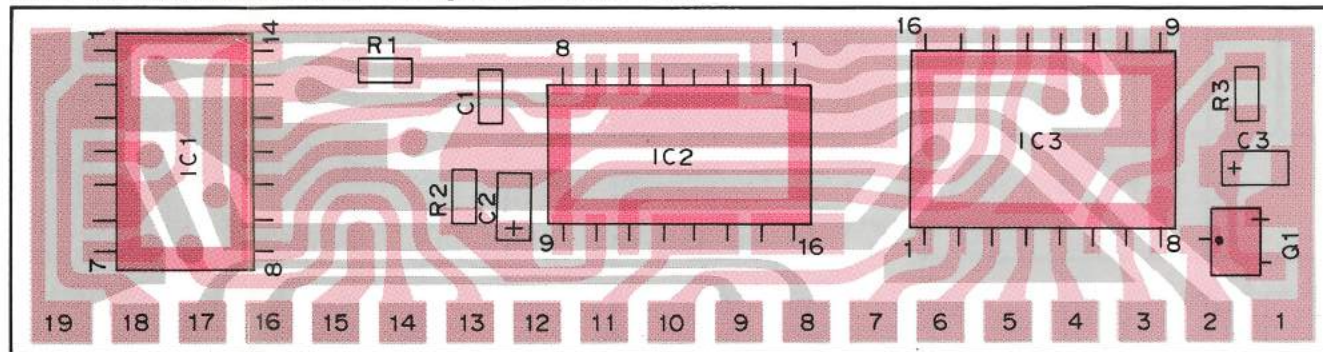
(X59-3620-00)

MIC AMP (X59-3610-00)
MIC AMP (X59-3610-00)



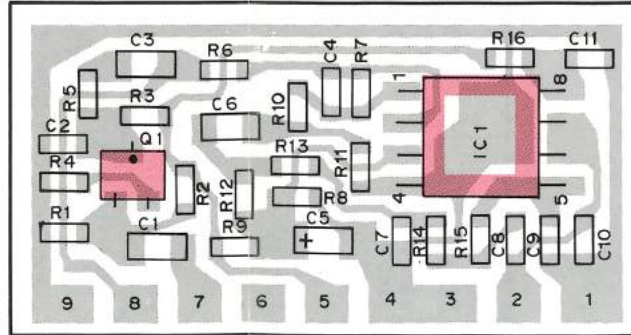
Q1 : 2SC4116(Y) IC1 : NJM4558M

ELE VOL (X59-3620-00) Component side view



IC1 : MN4066BS IC2 : LC7532M IC3 : MC14094BF Q1 : 2SD1757(K)

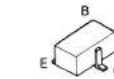
MIC AMP (X59-3610-00) Foil side view



Q1 : 2SC4116(Y) IC1 : NJM4558M

Q1 : 2SD1757K
IC1 : MN4066BS
IC2 : LC7532M
IC3 : MC14094BF

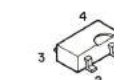
DTC114EK
2SA1162(Y)
2SC2712(Y)
2SC2714(Y)
2SC3120
2SC4116(Y)
2SD1757(K)



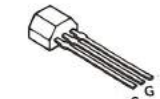
2SK208(O)



3SK131(V12)
3SK184(S)



2SK582



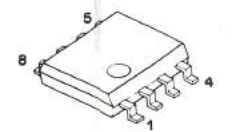
2SB1119S
2SB1302S



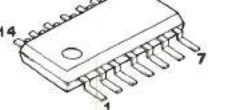
2SA1307



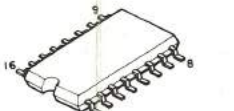
LA5010M
NJM4558M



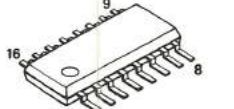
MN4066BS



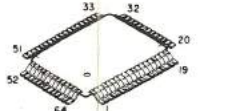
MC14094BF



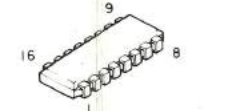
LC7532M



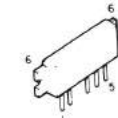
75108G-E19-1B



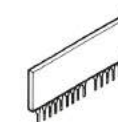
KRR-C001



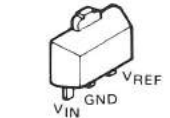
M57737R



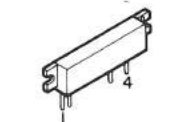
KCC03



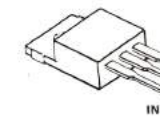
NJM78L06UA



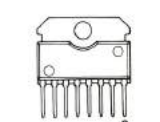
M57729



μPC78M08H



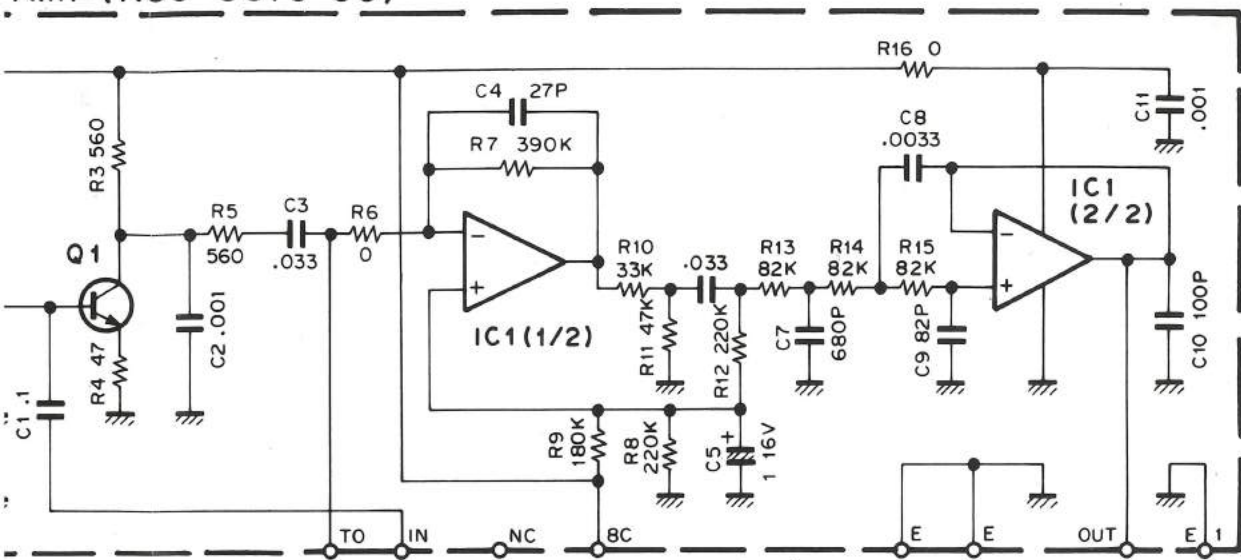
μPC1241H



TX-RX
-11 : K, -21

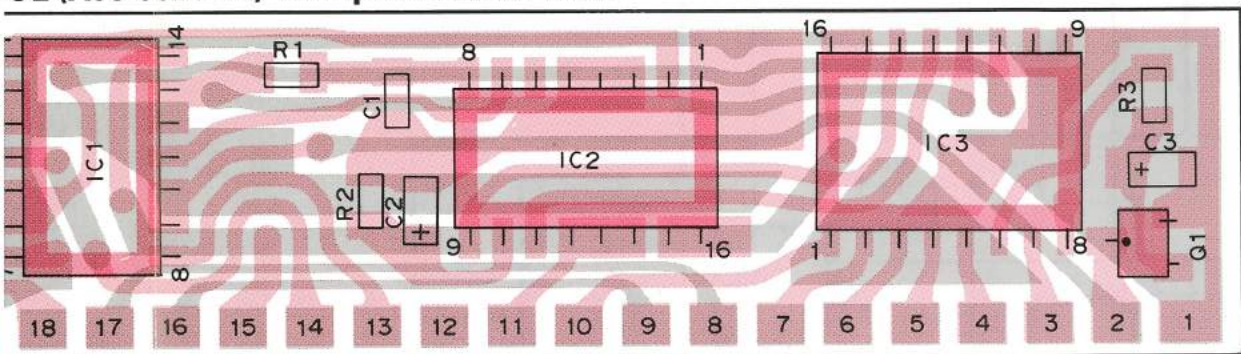


AMP (X59-3610-00)
AMP (X59-3610-00)



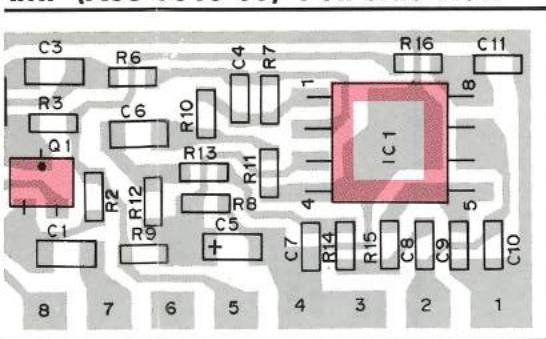
Q1 : 2SC4116(Y) IC1 : NJM4558M

AMP (X59-3620-00) Component side view



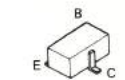
Q1 : 2SD1757(K) IC2 : LC7532M IC3 : MC14094BF

AMP (X59-3610-00) Foil side view

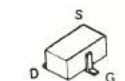


Q1 : 2SC4116(Y) IC1 : NJM4558M

DTC114EK
2SA1162(Y)
2SC2712(Y)
2SC2714(Y)
2SC3120
2SC4116(Y)
2SD1757(K)



2SK208(O)



3SK131(V12)
3SK184(S)



2SK582



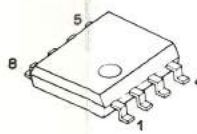
2SB1119S
2SB1302S



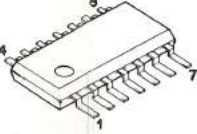
2SA1307



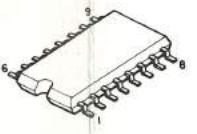
LA5010M
NJM4558M



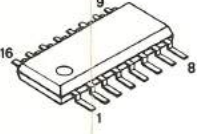
MN4066BS



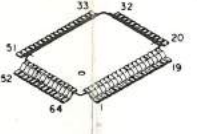
MC14094BF



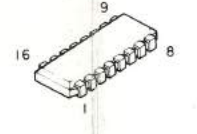
LC7532M



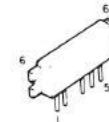
75108G-E19-1B



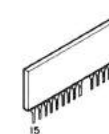
KRR-C001



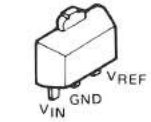
M57737R



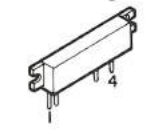
KCC03



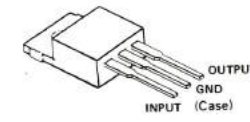
NJM78L06UA



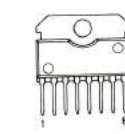
M57729



μPC78M08H

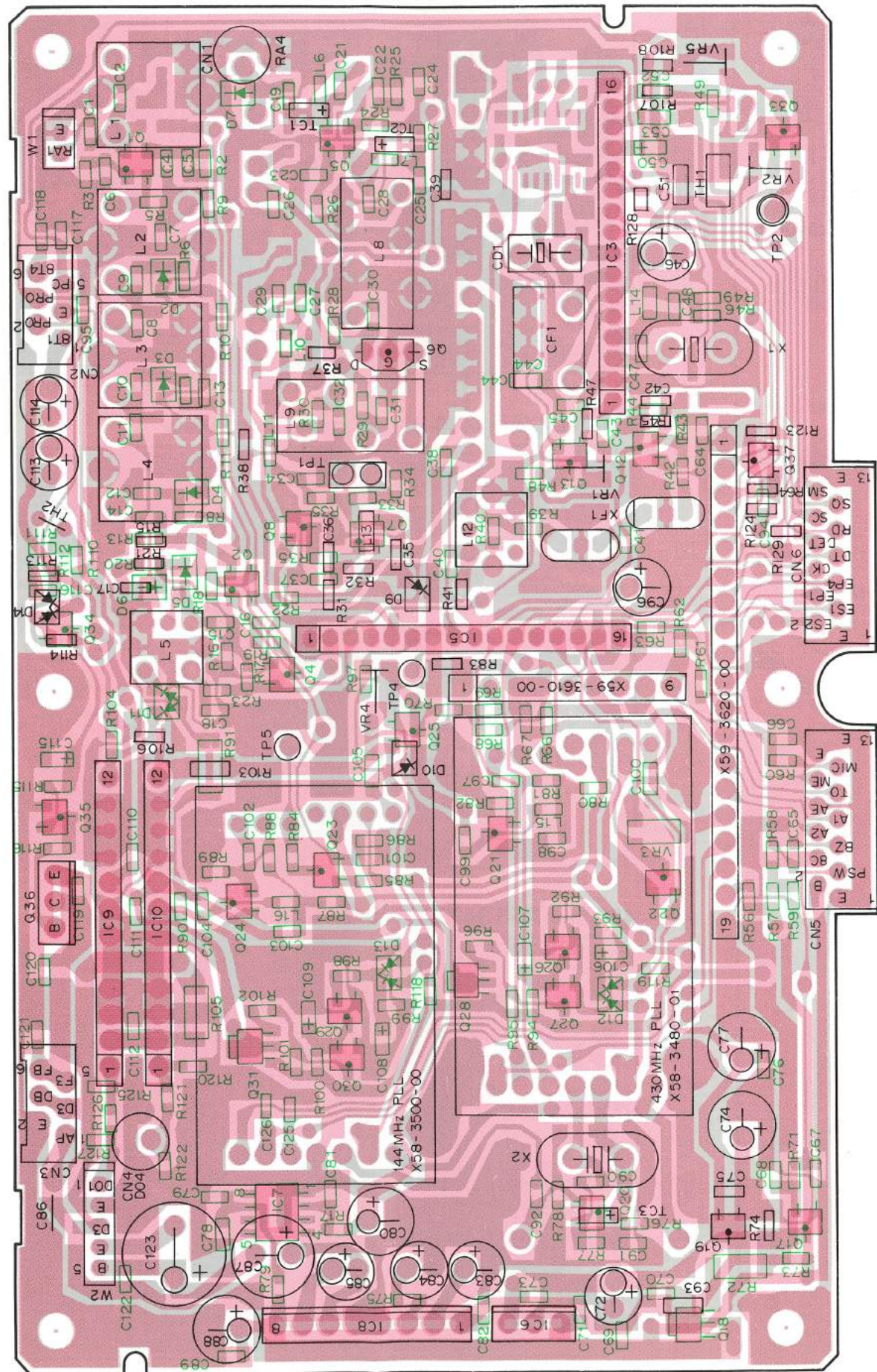


μPC1241H



TX-RX UNIT (X57-3350-XX) (A/4) Component side view

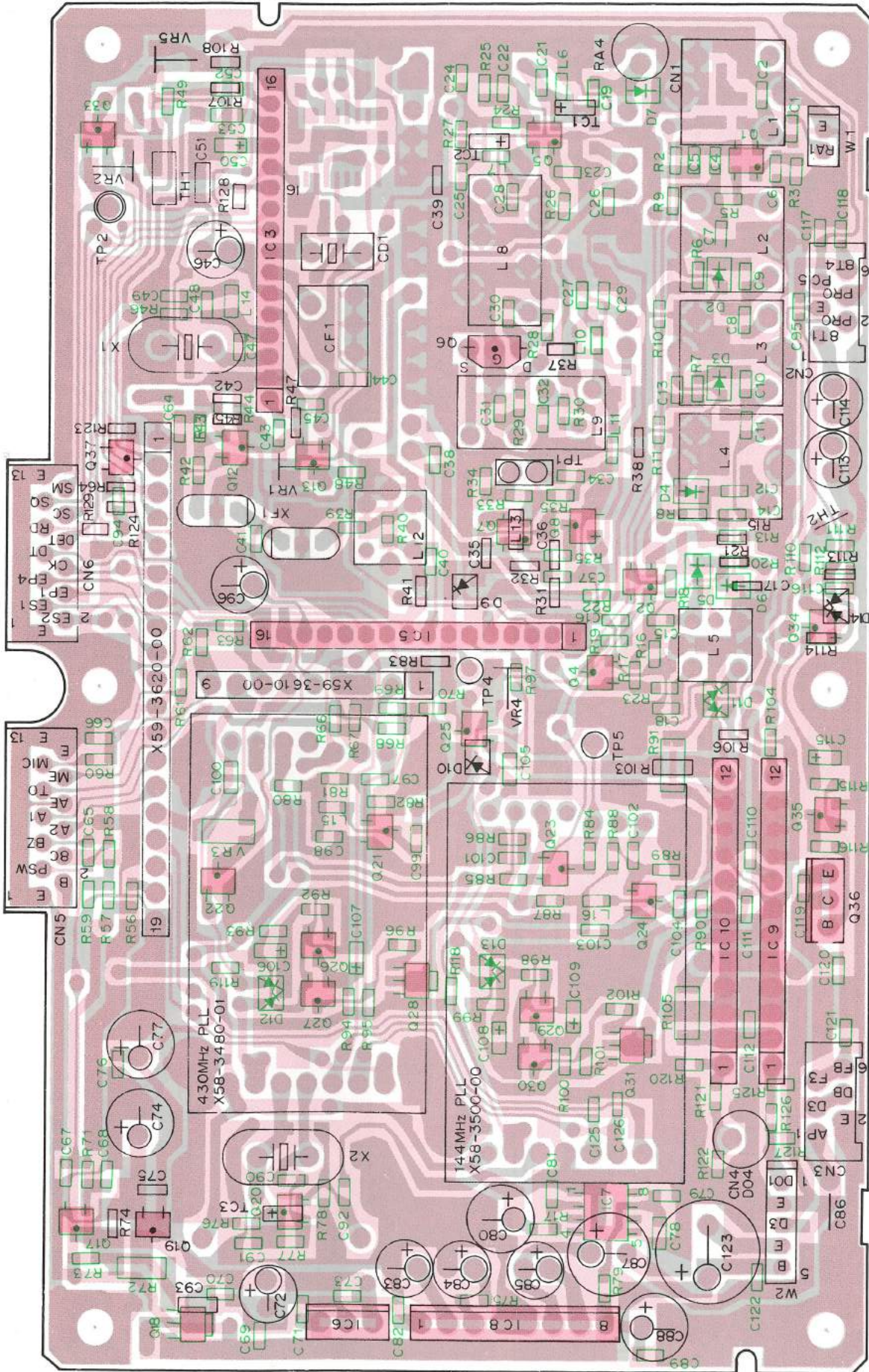
-11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)



PC BOARD VIEWS TM-701A/E

TX-RX UNIT (X57-3350-XX)(A/4) Foil side view

-11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)



IC3 : KCD01 IC5 : KCC03 IC6 : μPC78M08H IC7 : LA5010M IC8 : μPC1241H IC9 : KCB05 IC10 : KCB06 Q1, 5, 7 : 3SK184(S) Q2 : 3SK131(V12) Q4, 8, 13, 22, 25, 27, 30, 33 : DTC114EK Q6 : 2SK582 Q12, 20, 24 : 2SC2714(Y) Q17, 19, 26, 29, 35 : 2SC2712(Y) Q18 : 2SB1302(S) Q21 : 2SC3120 Q23 : 2SK208(O) Q28, 31 : 2SB1119S Q34 : 2SA1162(Y) Q36 : 2SA1307(Y) Q37 : 2SD1757(K) D2 ~ 4 : 1SV164 D5, 6 : 1SV166 D7 : HSK277 D9, 10 : 1SV128 D11 : 1SS268 D12 ~ 14 : 1SS184

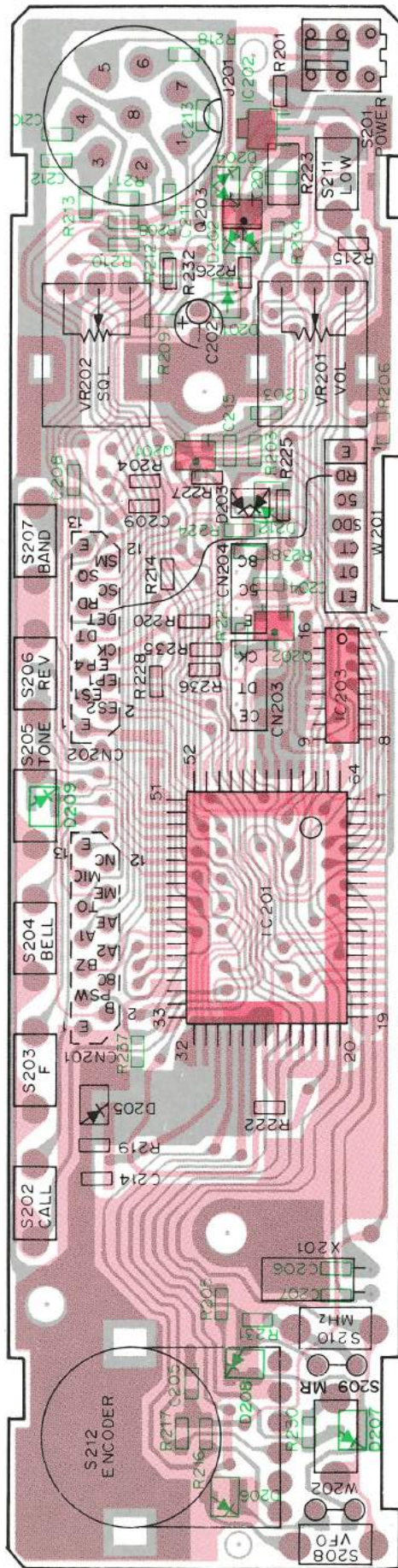
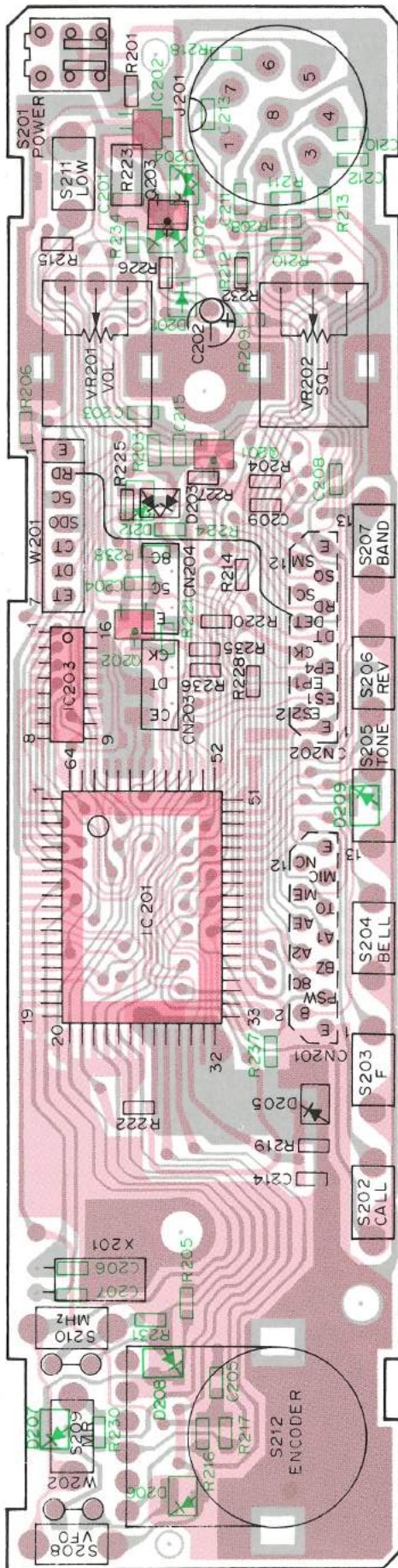
TM-701A/E PC BOARD VIEWS

TX-RX UNIT (X57-3350-XX)(B/4)

-11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)

Component side view

Foil side view



IC201 : 75108G-E19-1B IC202 : NJM78L06UA IC203 : KRR-C001 Q201, 202 : 2SC2712(Y) Q203 : 2SA1519 D201 : DLS1585 D202, 206 ~ 208 : 1SS181 D203 : 1SS184 D204 : 1SS187 D205 : 1SS196 D209 : MA141A D212 : 02CZ.5(X)

PC BOARD VIEWS TM-701A/E

TX-RX UNIT (X57-3350-XX)(C/4)

-11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)

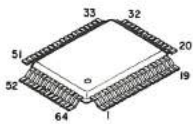
Component side view

Foil side view

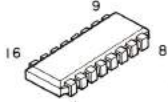
2SA1519
2SC2712(Y)



75108G-E19-1B



KRR-C001



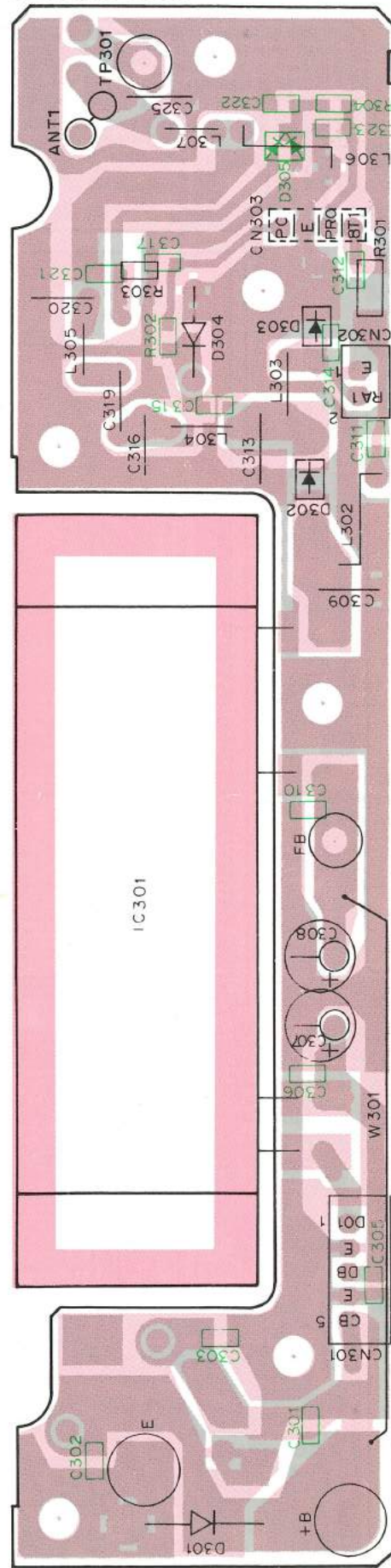
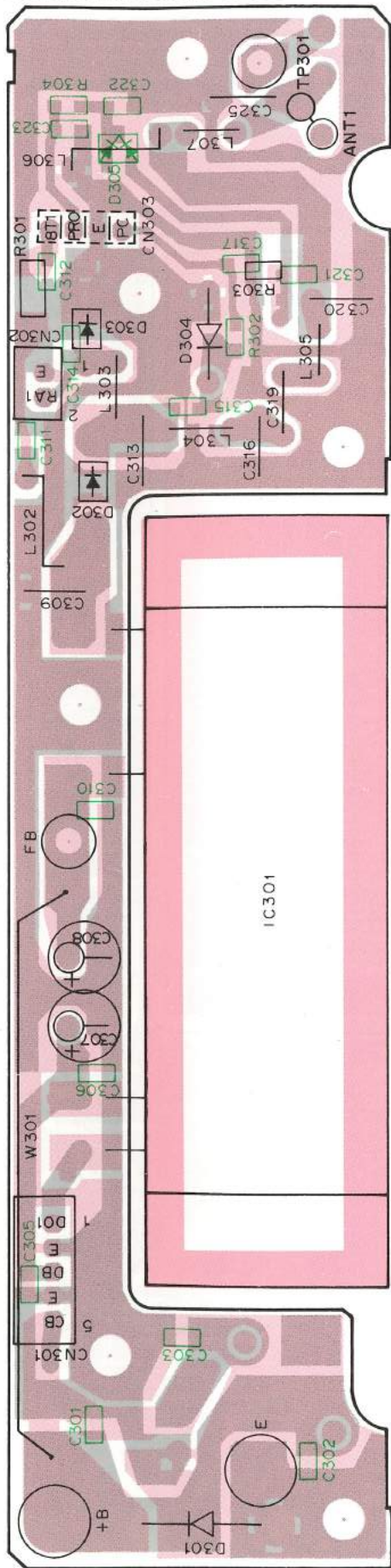
NJM78L06UA



M57729

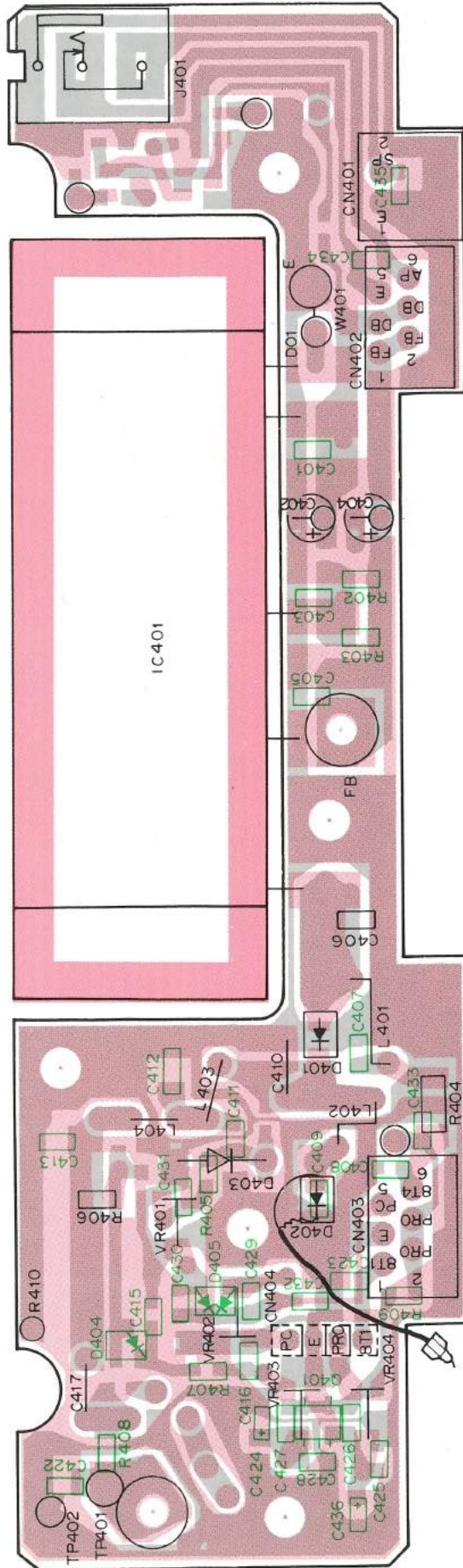
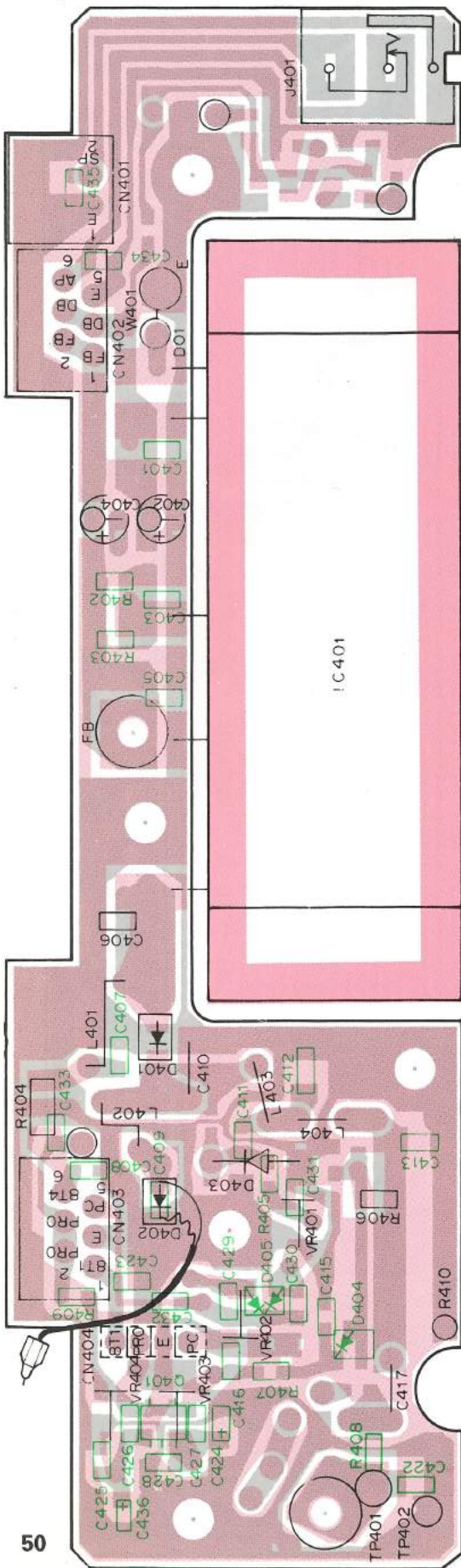


IC301 : M57729 D301 : DSA3A1 D302 : M1407 D303 : M1308 D304 : 1SS101 D305 : 1SS184

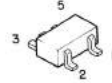


TM-701A/E PC BOARD VIEWS

TX-RX UNIT (X57-3350-XX)(D/4) -11 : K, -21 : M, -22 : M2, (TM-701A) -61 : T, W (TM-701E)
 Component side view Foil side view



FMW1

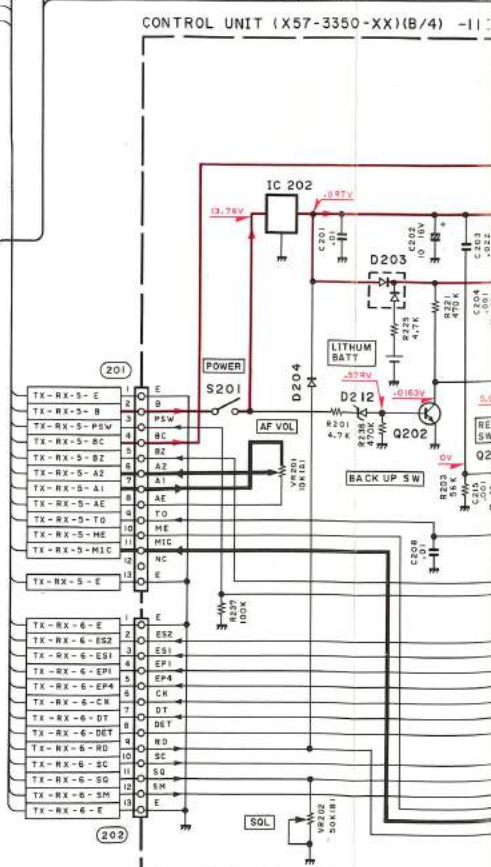
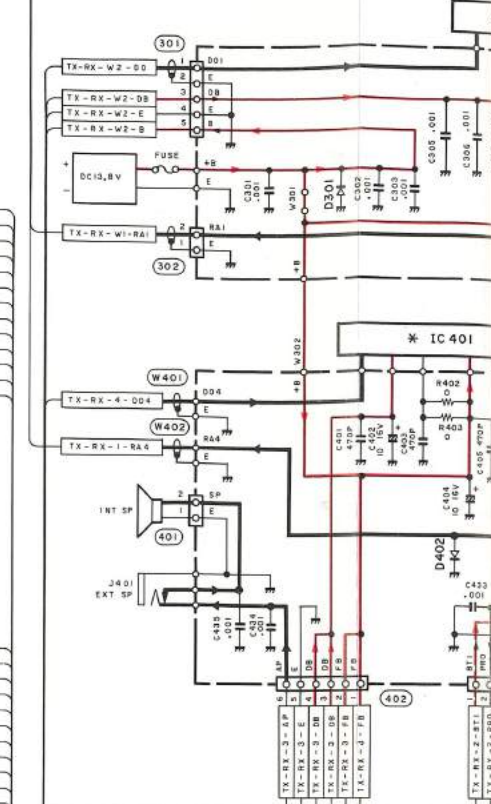
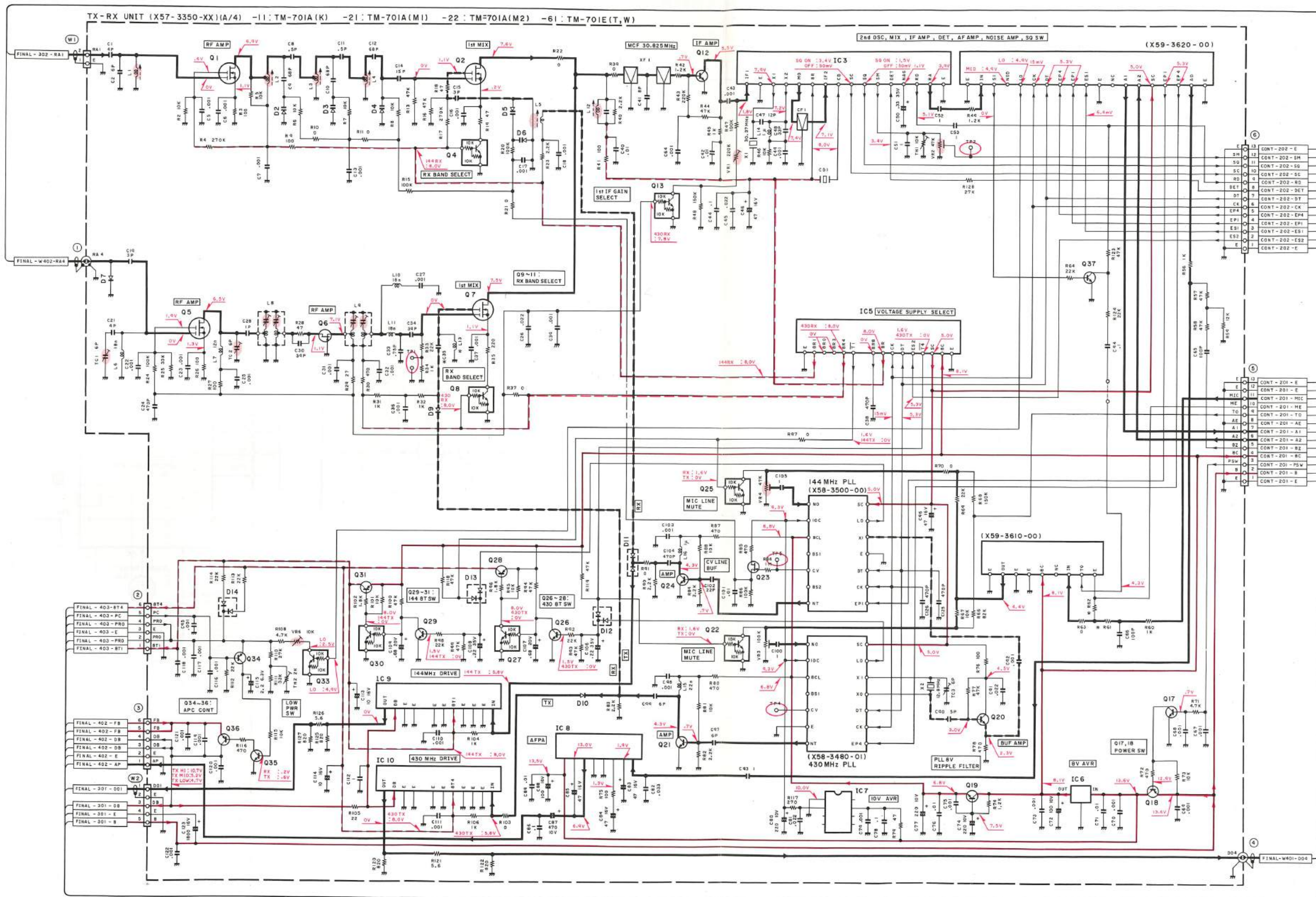


M57737R



IC401 : M57737R Q401 : FMW1 D401 : MI407 D402 : M1308 D403 : 1SS101 D404 : MA716 D405 : 1SS184

— Signal line - - - Control line — Common DC line



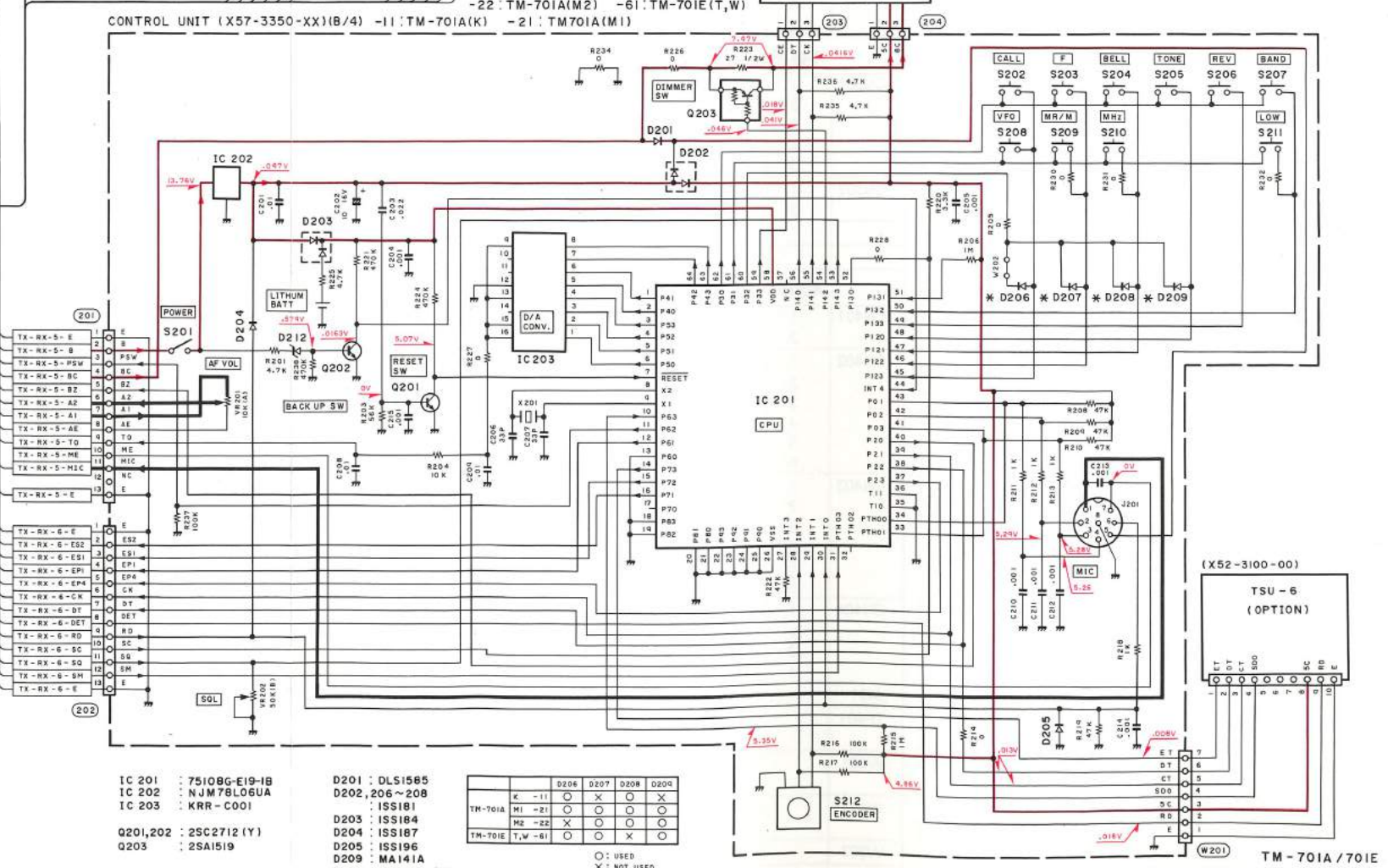
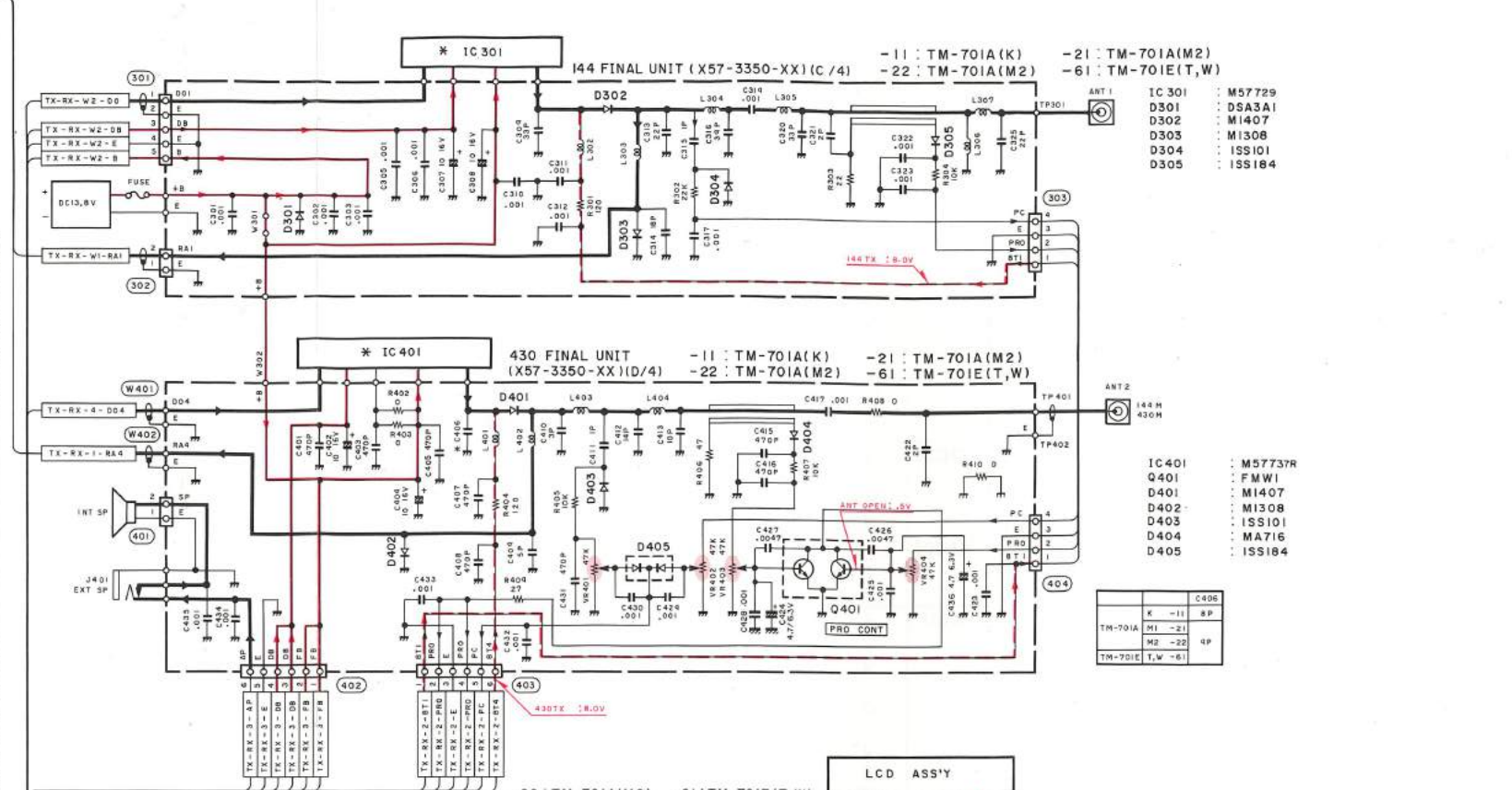
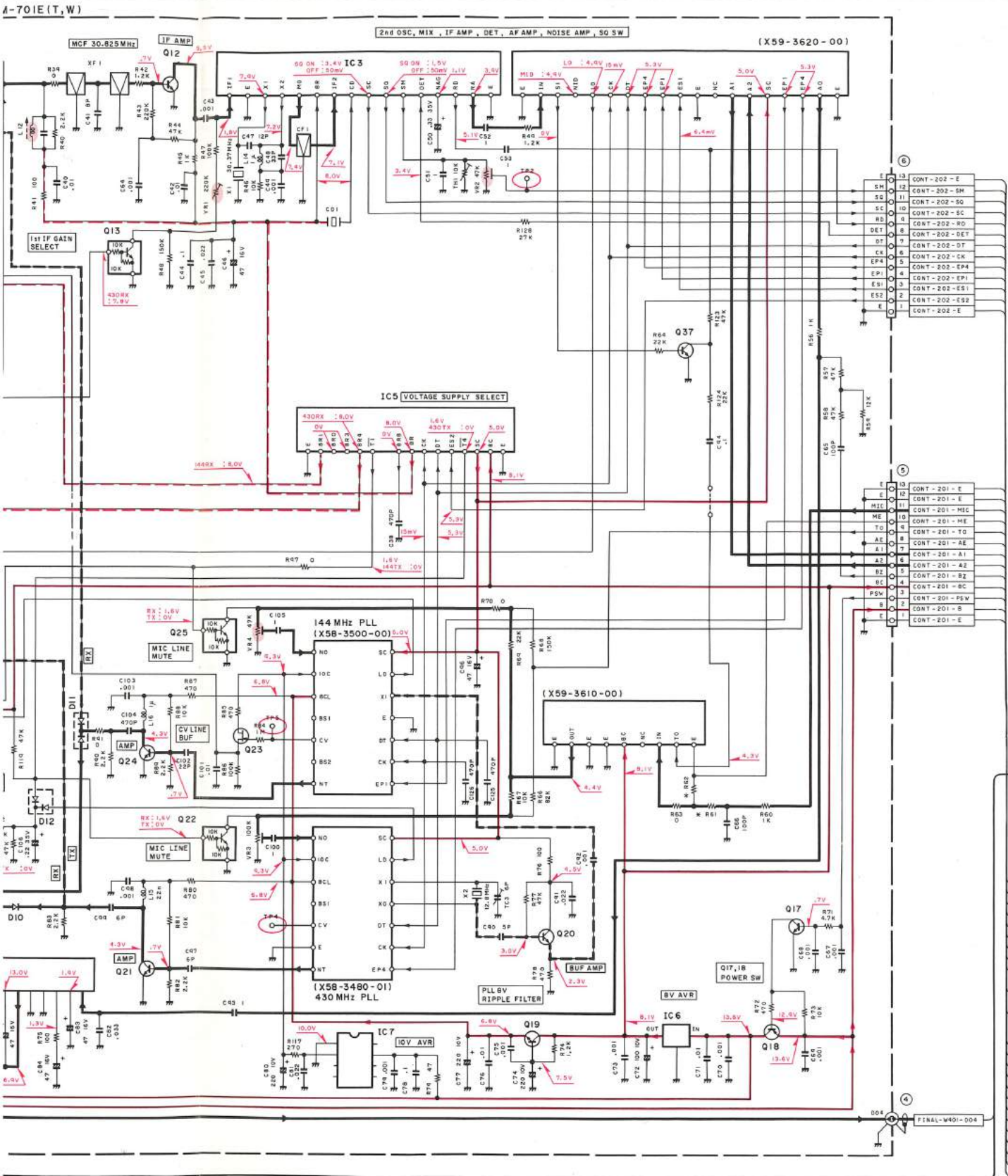
- IC3 : KCD01
- IC5 : KCC03
- IC6 : μ PC78M06H
- IC7 : LAS10M
- IC8 : μ PC124IH
- IC9 : KCB05
- IC10 : KCB06
- Q1, 5, 7 : 3SK184(S)
- Q2 : 3SK131(VI2)
- Q4, 8, 13, 22, 25, 27, 30, 35 : 2SA1142(Y)
- Q6 : DTC114EK
- Q12, 20, 24 : 2SC2714(Y)
- Q17, 19 : 2SC2712(Y)
- Q26, 29, 35 : 2SC2712(Y)
- Q18 : 2SB1302S
- Q21 : 2SC3120
- Q23 : 2SK208(O)
- Q28, 31 : 2SB1195
- Q34 : 2SA1142(Y)
- Q36 : 2SA1307(Y)
- Q37 : 2SC1757(K)
- D2 ~ 4 : ISV164
- D5, 6 : ISV166
- D7 : HSK277
- D9, 10 : ISV128
- D11 : ISS268
- D12 ~ 14 : ISS184

	L13	R61	R62	C35
TM-701A	K-11	27K	2.7K	4.7K 3P
	M1-21	39K	2.7K	4.7K 5P
	M2-22	39K	2.7K	4.7K 5P
TM-701E	TW-61	39K	0.6K	5P

Unused numbers (X57-3350-XX)
 C3, 4, 20, 54 ~ 63, 95, 124, 128 ~ 200, 216 ~ 300, 304, 324, 326 ~ 400, 414, 418 ~ 421
 R1, 12, 14, 36, 38, 50 ~ 55, 65, 107, 109, 129, 200, 202, 207, 229, 233, 239 ~ 300, 305 ~ 401

- IC 201 : 75106E-19-1B
- IC 202 : NJM78L06UA
- IC 203 : KRR-COO1
- Q201, 202 : 2SC2712(Y)
- Q203 : 2SA1519
- D201 : DLS159
- D202, 206 ~ 208 : ISS180
- D203 : ISS184
- D204 : ISS187
- D205 : ISS196
- D209 : MA141
- D212 : O2C7

SCHEMATIC DIAGRAM TM-701A/E



Unused numbers (X57-3350-XX)
 C3, 4, 20, 54 ~ 63, 95, 124, 128 ~ 200, 216 ~ 300, 304, 324, 326 ~ 400, 414, 418 ~ 421
 R1, 12, 14, 36, 38, 50 ~ 55, 65, 107, 109, 129, 200, 202, 207, 229, 233, 239 ~ 300, 305 ~ 401

- IC 201 : 75108G-E19-IB
- IC 202 : NJM78L06UA
- IC 203 : KRR-C001
- Q201,202 : 2SC2712 (Y)
- Q203 : 2SA1519
- D201 : DLS1585
- D202,206~208 : ISS181
- D203 : ISS184
- D204 : ISS187
- D205 : ISS196
- D208 : MA141A
- D212 : O2CZ7.5(X)

	D206	D207	D208	D209
TM-701A	-11	X	X	X
M1-21	X	X	X	X
M2-22	X	X	X	X
TM-701E T,W-61	X	X	X	X

○ : USED
 X : NOT USED

	K	-11	L13	R61	R62	C35
TM-701A	M1	-21	38A	2.7K	4.7K	3P
M2	-22	38A	2.7K	4.7K	5P	
TM-701E T,W-61	38A	O	6.8K	5P		

- 11 : TM-701A(K)
- 21 : TM-701A(M2)
- 22 : TM-701A(M2)
- 61 : TM-701E(T,W)
- IC 301 : M57729
- D301 : DSA3A1
- D302 : M1407
- D303 : M1308
- D304 : ISS101
- D305 : ISS184
- IC 401 : M57737R
- Q401 : FMW1
- D401 : M1407
- D402 : M1308
- D403 : ISS101
- D404 : MA716
- D405 : ISS184

TERMINAL FUNCTIONS

Connector No.	Terminal No.	Terminal Name	Terminal Function
TX-RX UNIT (X57-3350-XX) (A4)			
CN1	1	RA4	430MHz ANT input
CN2	1	8T4	8V in transmit mode (430MHz)
	2	PC	APC input
	3	PRO	Protection input
	4	E	GND
	5	PRO	Protection
	6	8T1	8V in transmit mode (144MHz)
CN3	1	AP	Audio output (from AF PA IC)
	2	E	GND
	3	DB	Drive + B
	4	DB	Drive + B
	5	FB	Final + B (13.8V)
	6	FB	Final + B (13.8V)
CN4	1	DO4	430MHz drive output
CN5	1	E	GND
	2	B	+13.8V
	3	PSW	Power switch control output (from microprocessor)
	4	8C	Common + 8V
	5	BZ	Beeper output (from microprocessor)
	6	A2	AF output (from AF VOL)
	7	A1	AF output (from electronic VOL)
	8	AE	GND
	9	TO	Tone output (from ladder resistor network IC IC203)
	10	ME	MIC GND
	11	MIC	MIC output
	12	E	GND
	13	E	GND
CN6	1	E	GND
	2	ES2	430MHz shift register enable (from microprocessor)
	3	ES1	144MHz shift register enable (from microprocessor)
	4	EP1	144MHz shift register enable (to 144MHz PLL)
	5	EP4	430MHz shift register enable (to 430MHz PLL)
	6	CK	PLL clock
	7	DT	PLL data
	8	NC	
	9	RD	Audio output (from IC3 KCD01)
	10	SC	Busy control output (from IC3 KCD01)
	11	SQ	Squelch output (from IC3 KCD01)
	12	SM	S-meter output (from IC3 KCD01)
	13	E	GND
W1	1	E	GND
	2	RA1	144MHz receive ANT input
W2	1	DO1	144MHz transmit drive output
	2	E	GND
	3	DB	Drive + B
	4	E	GND
	5	B	13.8V
CONTROL UNIT (X57-3350-XX) (B/4)			
CN201	1	E	GND
	2	B	+ 13.8V (to power switch)
	3	PSW	Power switch control output (from microprocessor IC)
	5	BZ	Beeper output (from microprocessor P20)
	6	AZ	Audio output (from AF VOL)
	7	A1	Audio input (from electronic VOL)
	8	AE	GND (AF VOL)
	9	TO	Tone output (from ladder register network IC203)
	10	ME	MIC GND
	11	MIC	MIC output (from mic jack)
	12	NC	
	13	E	GND

Connector No.	Terminal No.	Terminal Name	Terminal Function
CN202	1	E	GND
	2	ES2	430MHz shift register enable output
	3	ES1	144MHz shift register enable output
	4	EP1	144MHz PLL enable output
	5	EP4	430MHz PLL enable output
	6	CK	PLL clock
	7	DT	PLL data
	8	NC	
	9	RD	Audio output (to microprocessor INT0)
	10	SC	Busy control output (to microprocessor P130)
	11	SQ	Squelch output
	12	SM	S-meter output (to microprocessor TPH03)
	13	E	GND
CN203	1	CE	LCD driver enable output (from microprocessor P33)
	2	DT	LCD driver data (from microprocessor P140)
	3	CK	LCD driver clock (from microprocessor P141)
CN204	1	E	GND
	2	5C	Common + 5V
	3	8C	Common + 8V
W201	1	ET	CTCSS unit enable output (from microprocessor P73)
	2	DT	CTCSS unit data output (from microprocessor P22)
	3	CT	CTCSS unit clock output (from microprocessor P21)
	4	SDD	CTCSS tone matching input
	5	5C	+5V
	6	RD	Audio demodulation output (to CTCSS unit)
	7	E	GND
144 FINAL UNIT (X57-3350-XX) (C/4)			
CN301	1	DO1	144MHz transmit drive output
	2	E	GND
	3	DB	Transmit drive stage + B
	4	E	GND
	5	B	13.8V
CN302	1	E	GND
	2	RA1	144MHz receiver ANT input
+		+ B	13.8V (from fuse holder)
		E	GND
430FINAL UNIT (X57-3350-XX) (D/4)			
CN401	1	SP	Speaker output (to speaker)
	2	E	GND
CN402	1	FB	+13.8V
	2	FB	+13.8V
	3	DB	Module transmit drive stage + B
	4	DB	Module transmit drive stage + B
	5	E	GND
	6	AP	AF output (to EXT SP jack)
CN403	1	8T1	+8V in transmit mode (430MHz)
	2	PRO	Protection input
	3	E	GND
	4	PRO	Protection input
	5	PC	APC input
	6	8T4	+8V in transmit mode (430MHz)
CN404	1	8T1	+8V in transmit mode (144MHz) (to 144final unit)
	2	PRO	Protection input (from final unit)
	3	E	GND
	4	PC	APC input (from 144final unit)
J401			EXT. SP jack
TP401		ANT2	ANT connector
		E	GND
W401		DO4	430MHz drive output
		E	GND
W402		RA4	430MHz receive ANT output
		E	GND
W302		+B	+13.8V

144 ~ 148MHz
(K, M, M2)
144 ~ 146MHz
(T, W)

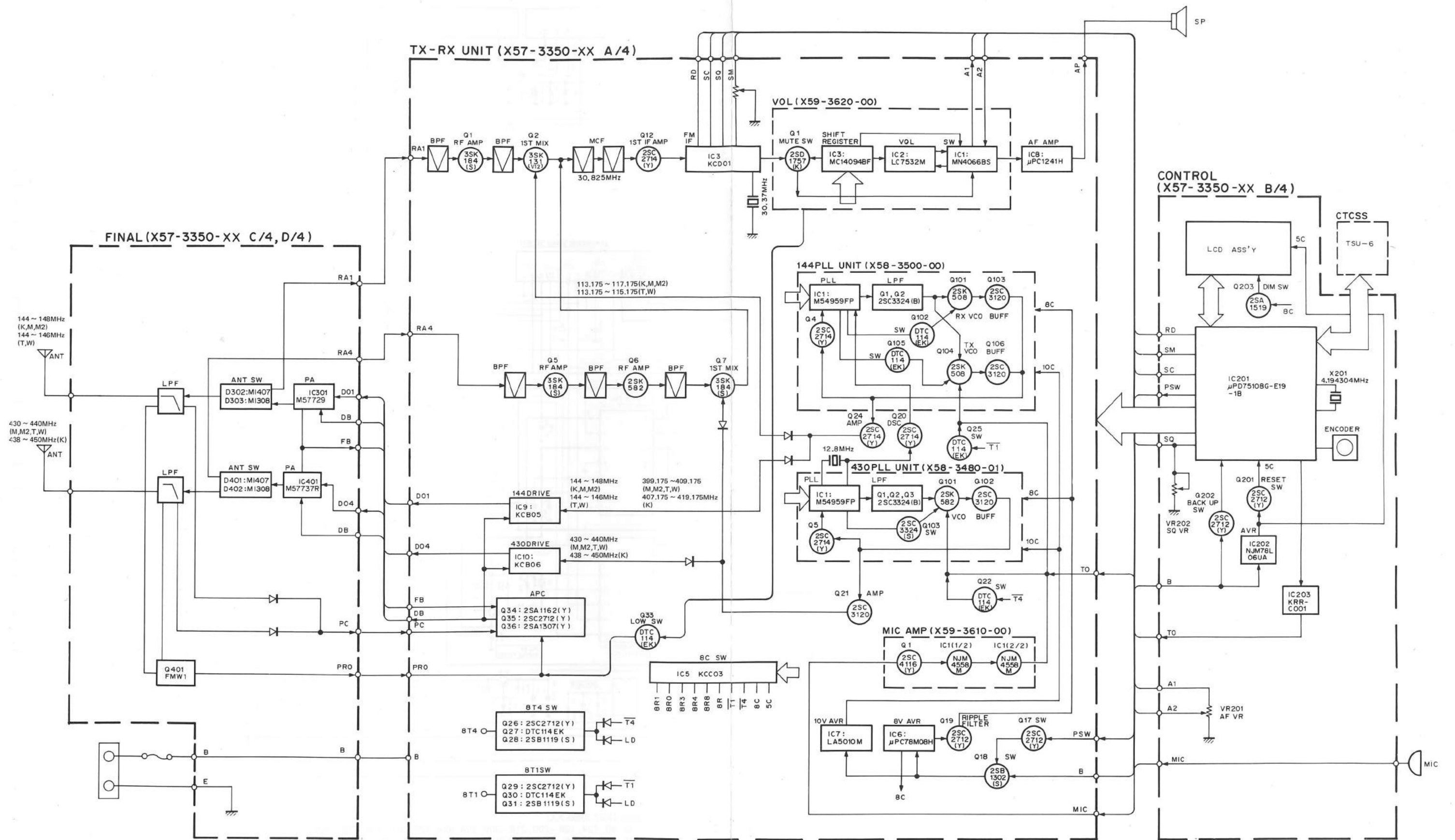
ANT

430 ~ 440MHz
(M, M2, T, W)
438 ~ 450MHz (K)

ANT

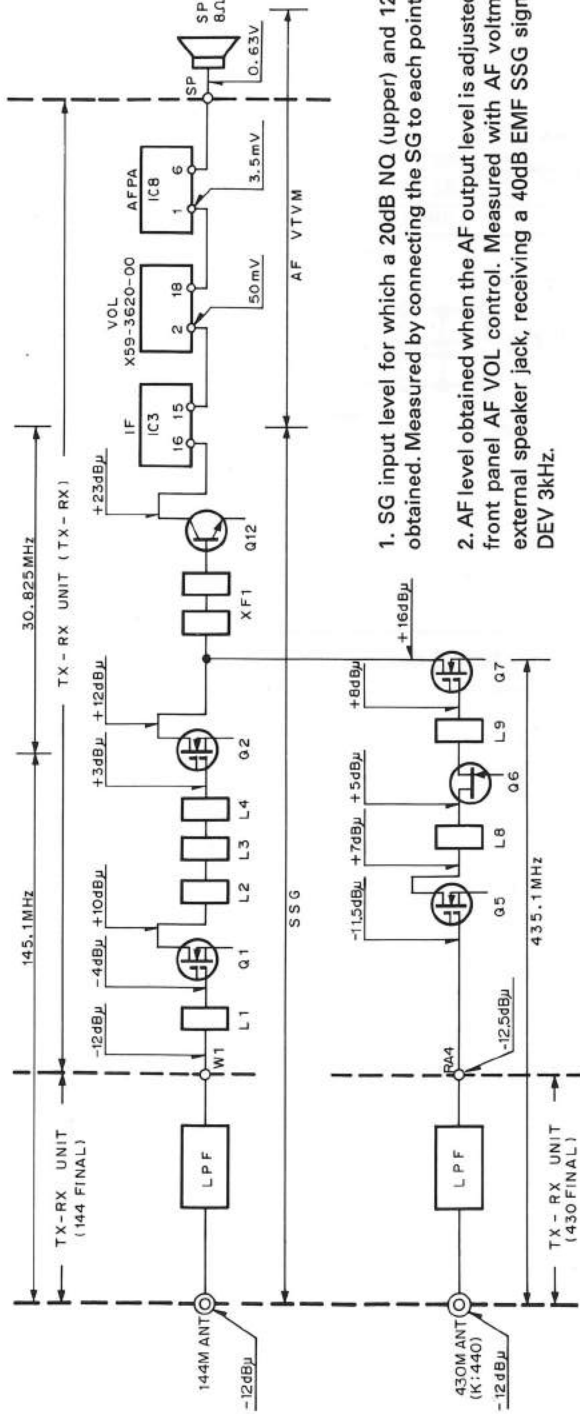
TM-701A/E TM-701A/E

BLOCK DIAGRAM



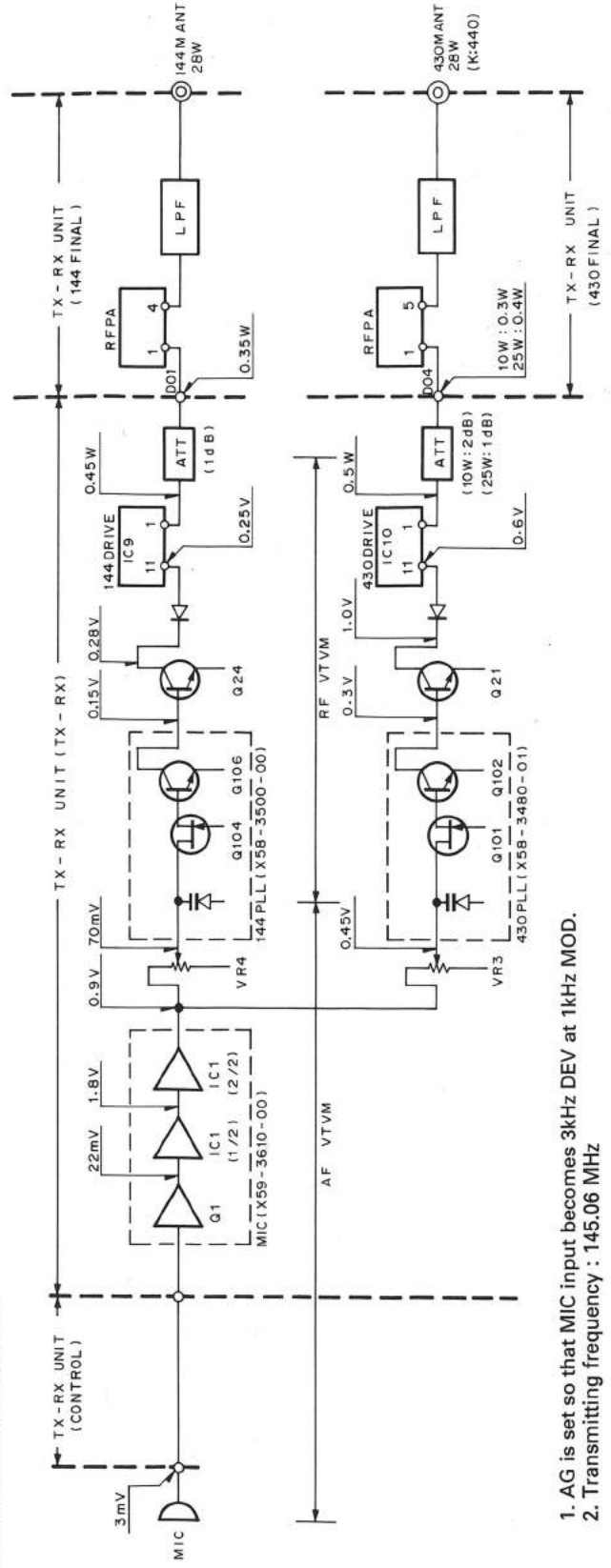
LEVEL DIAGRAM

Receiver section



1. SG input level for which a 20dB NQ (upper) and 12dB SINAD (lower) are obtained. Measured by connecting the SG to each point via a $0.01\mu\text{F}$ capacitor.
2. AF level obtained when the AF output level is adjusted for $0.63\text{V}/8\Omega$ with the front panel AF VOL control. Measured with AF voltmeter connected to the external speaker jack, receiving a 40dB EMF SSG signal modulated at 1kHz, DEV 3KHz.

Transmitter section

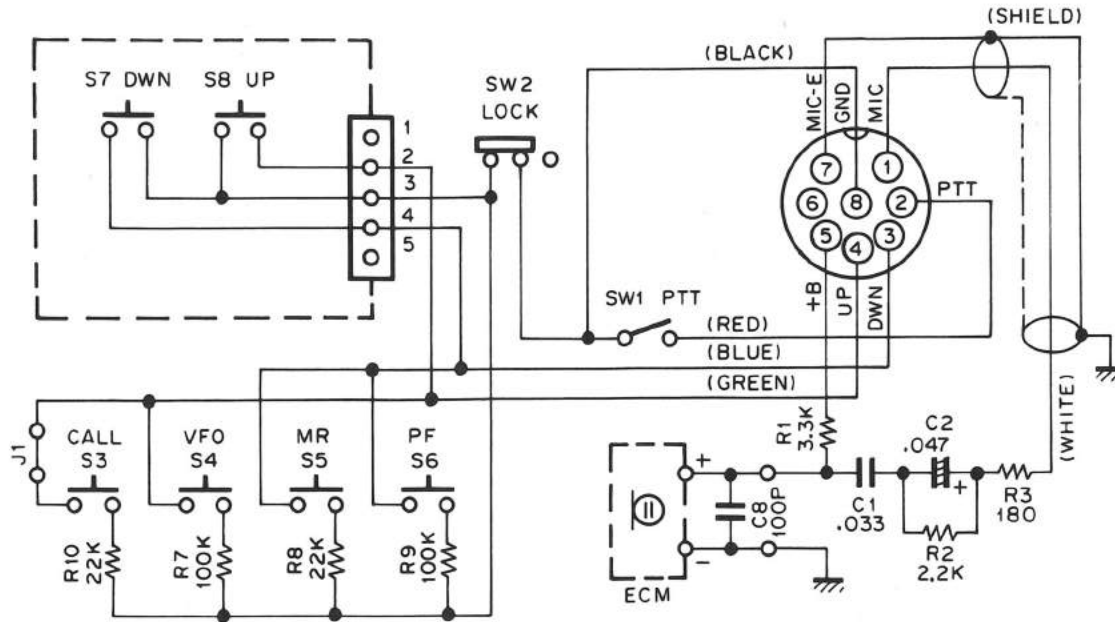


1. AG is set so that MIC input becomes 3kHz DEV at 1kHz MOD.
2. Transmitting frequency : 145.06 MHz

TM-701A/E

MC-44 (MULTI FUNCTION MICROPHONE)

MC-44 SCHEMATIC DIAGRAM



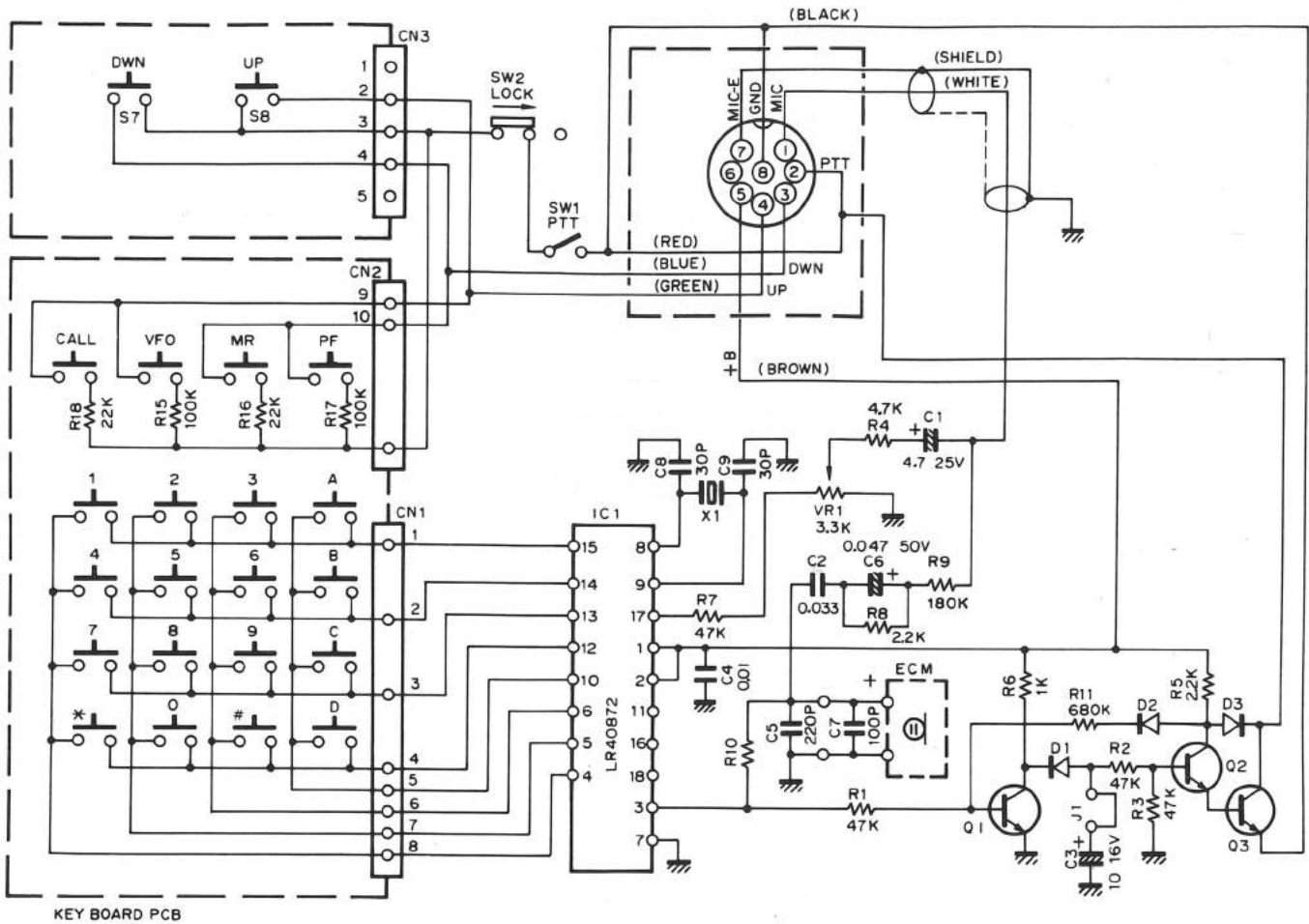
MC-44 PARTS LIST

Ref. No.	New parts	Parts No.	Description
	*	A02-0896-08	Case (Front)
	*	A02-0900-08	Case (Rear)
	*	B50-8293-08	Instruction manual
		E30-2149-08	Curl cord
	*	K29-3165-08	Knob PTT
	*	K29-3168-08	Knob UP
	*	K29-3169-08	Knob DOWN
	*	K29-3170-08	Knob CALL, VFO, MR, PF
SW2	*	S31-1422-08	Slide switch LOCK
SW1	*	S50-1431-08	Micro switch PTT
S7, 8	*	S59-1409-08	Switch UP, DOWN
	*	T91-0383-08	Microphone element (Condenser microphone)

MC-44DM/44DME (MULTI FUNCTION MICROPHONE WITH AUTOPATCH)

TM-701A/E

MC-44DM/MC-44DME SCHEMATIC DIAGRAM



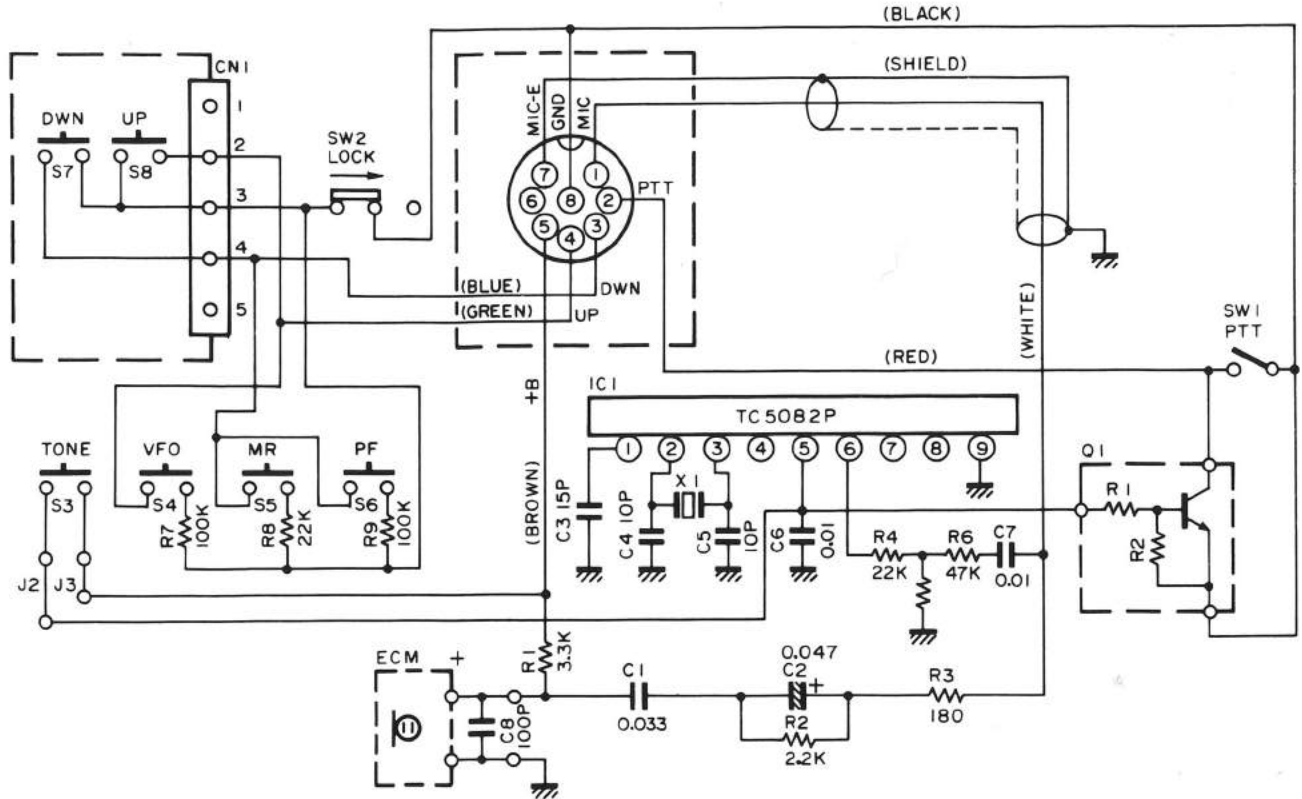
MC-44DM/MC-44DME PARTS LIST

Ref. No.	New parts	Parts No.	Description		
	*	A02-0898-08	Case (Front)	DTMF	M W
	*	A20-0899-08	Case (Front)	DTMF (With TONE)	
	*	A02-0901-08	Case (Rear)	DTMF	
	*	B50-8293-08	Instruction manual		
		E30-2149-08	Curl cord		
		K29-3165-08	Knob	PTT	
	*	K29-3167-08	Key top	DTMF	
	*	K29-3168-08	Knob	UP	
	*	K29-3169-08	Knob	DOWN	
SW2	*	S31-1422-08	Slide switch	LOCK	
SW1	*	S50-1431-08	Micro switch	PTT	
S7, 8	*	S59-1409-08	Switch	UP, DOWN	
	*	T91-0383-08	Microphone element (Condenser microphone)		

TM-701A/E

MC-44E (MULTI FUNCTION MICROPHONE)

MC-44E SCHEMATIC DIAGRAM

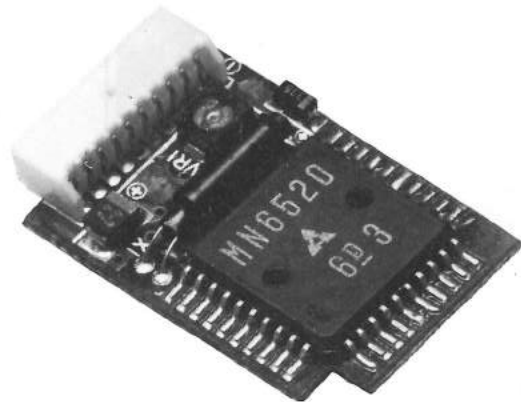


MC-44E PARTS LIST

Ref. No.	New parts	Parts No.	Description
	*	A02-0897-08	Case (Front) With TONE
	*	A02-0900-08	Case (Rear)
	*	B50-8293-08	Instruction manual
	*	E30-2149-08	Curl cord
	*	K29-3165-08	Knob PTT
	*	K29-3168-08	Knob UP
	*	K29-3169-08	Knob DOWN
	*	K29-3170-08	Knob 1750, VFO, MR, PF
SW2	*	S31-1422-08	Slide switch LOCK
SW1	*	S50-1431-08	Micro switch PTT
S7, 8	*	S59-1409-08	Switch UP, DOWN
	*	T91-0383-08	Microphone element (Condenser microphone)

TSU-6 (CTCSS UNIT)

TSU-6 EXTERNAL VIEW



TSU-6 REFERENCE DATA

TH-25's condition and MN4094BS (IC2) relationship

CTCSS switch	TONE switch	TX/RX	MN4094BS terminal		
			Q5	Q6	Q1 ~ 4, 7, 8
OFF	OFF	TX	L	H	L
		RX	L	H	L
	ON	TX	L	L	See table 2
		RX	L	H	L
ON	OFF	TX	L	L	See table 2
		RX	H	L	
	ON	TX	L	L	
		RX	H	L	

Q1 ~ 4, 7, 8 : Tone frequency setting

Q5 : TX/RX switch for MN6520 (IC1). "H" : RX, "L" : TX.

Q6 : Power switch for MN6520 (IC1). "H" : OFF, "L" : ON.

Table 1

Tone frequency and MN6520 (IC1) relationship

Tone frequency (Hz)	MN6520 terminal					
	S6	S5	S4	S3	S2	S1
	MN4094BS terminal					
	Q1	Q2	Q3	Q4	Q7	Q8
67.0	L	H	H	H	L	H
71.9	L	H	H	H	L	L
74.4	L	H	H	L	H	H
77.0	L	H	H	L	H	L
79.7	L	H	H	L	L	H
82.5	L	H	H	L	L	L
85.4	L	H	L	H	H	H
88.5	L	H	L	H	H	L
91.5	L	H	L	H	L	H
94.8	H	H	H	L	L	H
100.0	H	H	H	L	L	L
103.5	H	H	L	H	H	H
107.2	H	H	L	H	H	L
110.9	H	H	L	H	L	H
114.8	H	H	L	H	L	L
118.8	H	H	L	L	H	H
123.0	H	H	L	L	H	L
127.3	H	H	L	L	L	H
131.8	H	H	L	L	L	L
136.5	H	L	H	H	H	H
141.3	H	L	H	H	H	L
146.2	H	L	H	H	L	H
151.4	H	L	H	H	L	L
156.7	H	L	H	L	H	H
162.2	H	L	H	L	H	L
167.9	H	L	H	L	L	H
173.8	H	L	H	L	L	L
179.9	H	L	L	H	H	H
186.2	H	L	L	H	H	L
192.8	H	L	L	H	L	H
203.5	H	L	L	H	L	L
210.7	H	L	L	L	H	H
218.1	H	L	L	L	H	L
225.7	H	L	L	L	L	H
233.6	H	L	L	L	L	L
241.8	L	H	H	H	H	H
250.3	L	H	H	H	H	L

Table 2

TSU-6 PARTS LIST

* : New Parts

Ref. No.	New Parts	Parts No.	Description
CTCSS UNIT (X52-3100-00)			
C1		CK73FB1H102K	Chip C 1000pF K
C2		C92-0010-05	Tantal 6.8μF 6.3WV
C3	*	C92-0006-05	Tantal 3.3μF 4.0WV
C4, 5		CK73EB1E104K	Chip C 0.1μF K
C6		CK73EB1H223K	Chip C 0.022μF K
C7		CK73EB1E104K	Chip C 0.1μF K
C8, 9		CC73FCH1H150J	Chip C 15pF J
C10		CK73FB1H102K	Chip C 1000pF K
C11		CK73EB1E104K	Chip C 0.1μF K
C12		C92-0507-05	Chip tan. 4.7μF 6.3WV
C13	*	C92-0510-05	Chip tan. 3.3μF 4.0WV
	*	E40-5121-05	Pin connector (10P)
X1		L77-1313-05	X'tal resonator 4.194304MHz
R1-10		RK73FB2A000J	Chip resistor
R12-14		RK73FB2A000J	Chip resistor
VR1	*	R12-3460-05	Trimming pot. 33kΩ
Q1		DTC144TK	Digital transistor
Q2		DTA114EK	Digital transistor
Q3		2SC2712(GR)	Chip transistor
IC1		MN6520	IC
IC2		MN4094BS	IC

TSU-6 FINE ADJUSTMENT OF TONE FREQUENCY

The tone frequency can be fine adjusted with an interval of 0.5% step over the range of 0 to +1.5%. Ground the T1 (pin 10) and T2 (pin 9) of IC1 to obtain the desired frequency.

	T1	T2
0%	X	X
+0.5%	○	X
+1.0%	X	○
+1.5%	○	○

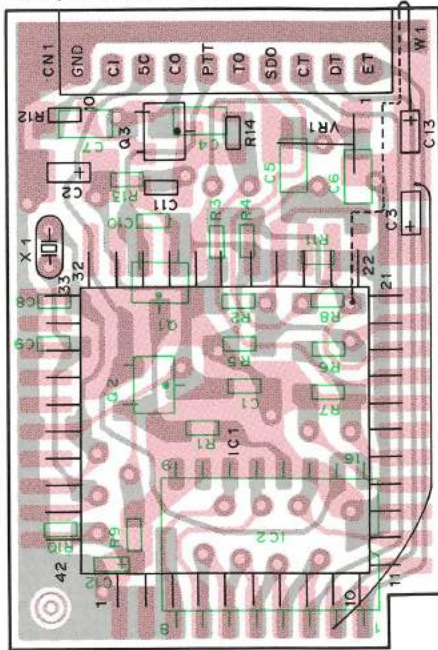
○ : GND, X : OPEN

Table 3

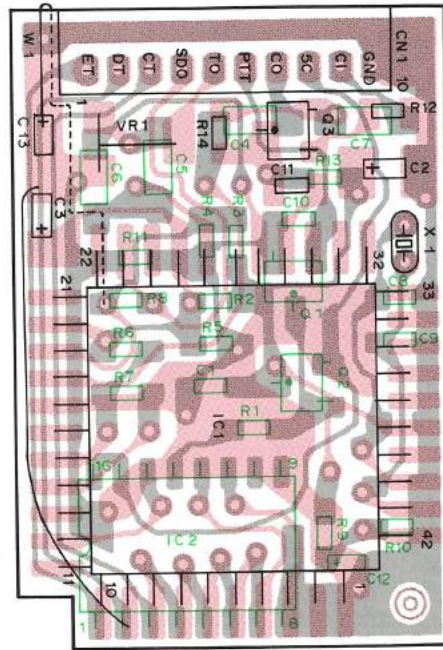
TSU-6 (CTCSS UNIT)

TSU-6 PC BOARD VIEWS

Component side view



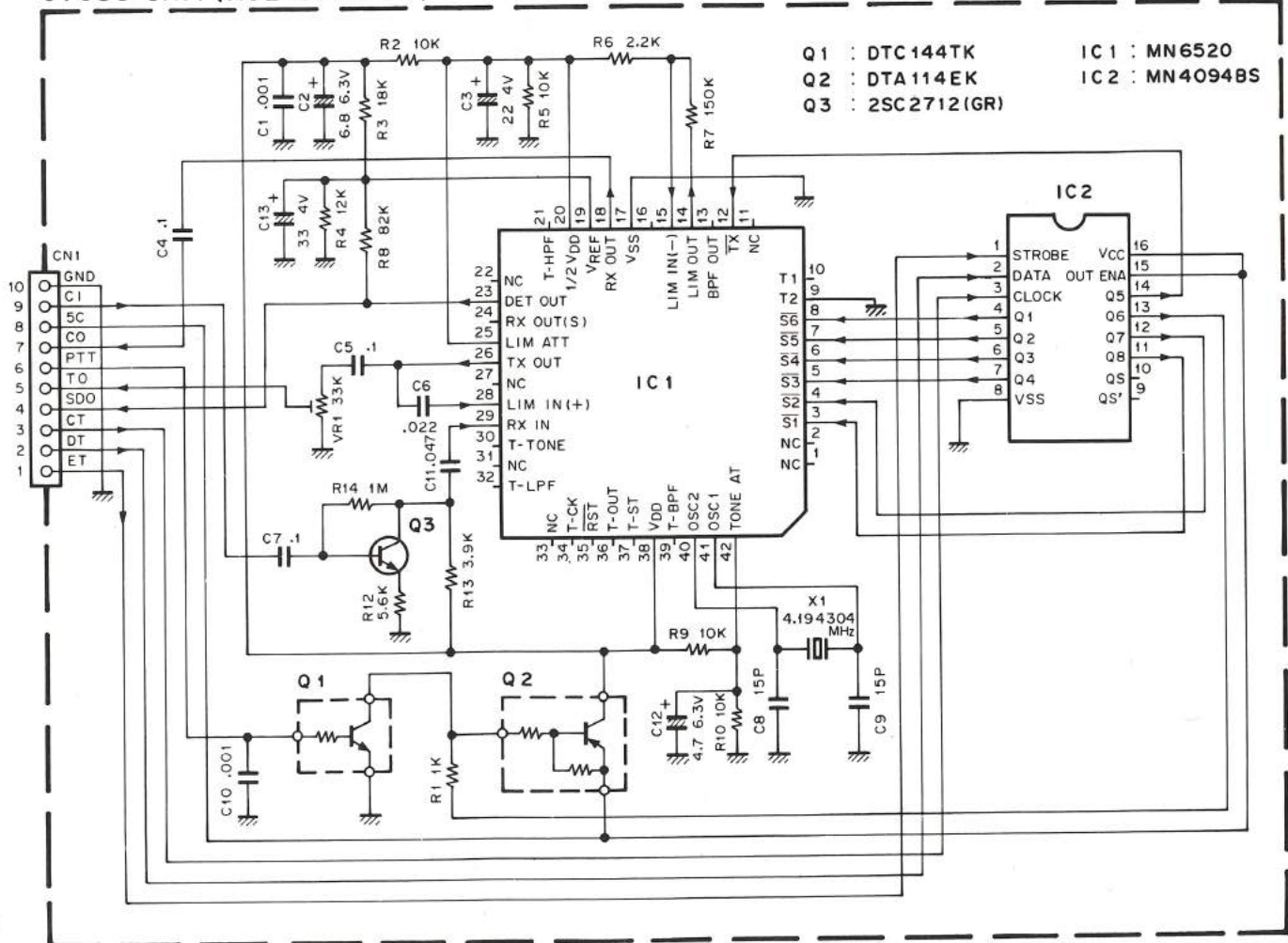
Foil side view



■ : Component side
 ■ : Foil side

TSU-6 CIRCUIT DIAGRAM

CTCSS UNIT (X52-3100-00)



SPECIFICATIONS

General

Frequency range	144 to 146MHz : T, W 144 to 148MHz : K, M, M2
.....	430 to 440MHz : M, M2, T, W 438 to 450 : K
Mode	F3E (FM)
Antenna impedance	50Ω
Power requirements	13.8V DC ±15% (11.7 to 15.8)
Ground	Negative
Frequency stability	Less than ±10ppm
Current drain	
Transmit mode	Less than 6.9A
Receiver mode with no signal	Less than 0.6A
Operating temperature	-20°C to +60°C (-4°F to +140°F)
Dimensions (W x H x D)	140 x 40 x 200 mm (5-1/2" x 1-37/64" x 7-7/8")
(Projection included)	141 x 42 x 212 mm (5-9/16" x 1-21/32" x 8-11/32")
Weight	1.4kg (3.1lbs)

Transmitter

Output power*	
HI	25W
LOW	Approx. 5W
Modulation	Reactance modulation
Spurious radiation	Less than -60dB
Maximum frequency deviation	±5kHz
Audio distortion (at 60% modulation)	Less than 3% (300 to 3000Hz)
Microphone impedance	500 to 600Ω

Receiver

Circuitry	Double conversion superheterodyne
Intermediate frequency (1st/2nd)	30.825MHz/455kHz
Sensitivity (12dB SINAD)	Less than 0.16μV
Selectivity	
-6dB	More than 12kHz
-60dB	Less than 24kHz
Spurious response	Better than 60dB
Squelch sensitivity	Less than 0.1μV
Output (5% distortion)	More than 2W across 8Ω loads
External speaker impedance	8Ω

Notes :

1. Circuit and ratings are subject to change without notice due to advancements in technology.
2. Recommended duty cycle : 1 minute Transmit, 3 minutes Reception.

KENWOOD CORPORATION

Shionogi Shibuya Building, 17-5, 2-chome Shibuya, Shibuya-ku, Tokyo 150, Japan

KENWOOD U.S.A. CORPORATION

COMMUNICATIONS & TEST EQUIPMENT GROUP

P.O. BOX 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745, U.S.A.

KENWOOD ELECTRONICS DEUTSCHLAND GMBH

Rembrücker Str. 15, 6056 Heusenstamm, West Germany

KENWOOD ELECTRONICS BENELUX N.V.

Mechelsesteenweg 418 B-1930 Zaventem, Belgium

TRIO-KENWOOD FRANCE S.A.

13, Boulevard Ney, 75018 Paris, France

KENWOOD LINEAR S.P.A.

20125, Milano-via Arbe, 50, Italy

KENWOOD ELECTRONICS AUSTRALIA PTY. LTD.

(INCORPORATED IN N.S.W.)

4E, Woodcock Place, Lane Cove, N.S.W. 2066, Australia

KENWOOD & LEE ELECTRONICS, LTD.

Wang Kee Building, 5th Floor, 34-37, Connaught Road, Central, Hong Kong

KENWOOD ELECTRONICS CANADA INC.

P.O. BOX 1075, 959 Gana Court, Mississauga, Ontario, Canada L4T 4C2