

TERMINAL FUNCTIONS

Connector No.	Terminal No.	Terminal name	Function
	1	7 A	7 MHz BAND information
	2	21 A	21 MHz BAND information
	3	28 A	28 MHz BAND information
	4	50 A	50 MHz BAND information
	5	14	14 V input
	6	ABB	7, 21, 28, 50 MHz BAND USE = "H" (about 11.5 V)
	1	PB	PLL 8 V output
	2	VC2	VCO output to CONT UNIT
	3	PG	PLL GND
	4	GND	GND
	5	CV	VCO control voltage
	1	CV	VCO control voltage
	2	GND	GND
	1	GCV	VCO input from GC-10
	1	TIF	TX 8.83 MHz input
	2	GND	GND
	1	GND	GND
	2	FMT	FM TX 8.83 MHz input
	1	TXB	TX +8.8 V
	2	G2	Gain control voltage on TX
	1	GCO	RF input from GC-10
	2	GND	GND
IF UNIT (X48-1390-00)			
	1	RIF	RX IF signal input
	2	GND	
	1	NC	
	2	AMF	AM Frequency shift signal
	1	AMC	Filter switch signal AM common
	2	CWN	Filter switch signal YK-88C
	3	AMW	Filter switch signal YK-88A
	4	CWW	Filter switch signal YK-88S
	5	AMN	Filter switch signal YK-88S
	6	SCC	Filter switch signal SSB, CW common
	1	SSB	SSB: 7 V
	2	CWB	CW: 7 V
	3	AMB	AM: 7 V
	4	NC	
	5	FMB	FM: 8 V
	1	TXB	TX: 8.8 V
	2	RXB	RX: 9 V
	1	TXB	TX: 8.8 V
	2	G2	RF UNIT TX FET AMP G2 Control voltage
	1	MV2	MIC VR 2
	2	GND	
	3	GND	
	4	MV3	MIC VR 3
	1	GND	
	2	FMC	FM UNIT MIC ANP output
	1	MIC	MIC input
	2	GND	
	1	PCV	Power control VR signal
	2	MIN	Power control MIN power set
	1	GND	
	2	SP	SPEAKER

Connector No.	Terminal No.	Terminal name	Function
	1	SPO	
	2	GND	
	3	SPJ	
	1	TBL	CW key down about 8 V
	2	CWB	CW, about 7 V
	3	RXB	RX, about 9 V
	1	RL	TX about 13 V Relay control voltage
	2	RAL	Remote ALC input
	1	VO	Voice synthesizer signal
	2	GND	
	3	8 V	DC 8 V
	1	TIF	TX output
	2	GND	
	1	ALC	ALC signal
	2	PCL	power control DC signal
	3	RL	TX about 13 V Relay control voltage
	4	FMB	FM about 8 V
	5	8 V	DC 8 V
	1	GND	
	2	SPO	
	1	SM	S meter signal
	2	NC	
	1	GND	
	2	FAF	FM AF signal
	3	FMB	FM about 8 V
	4	FSQ	FM SQ
	5	TXB	TX about 8.8 V
	6	FSM	FM S meter signal
	7	ALC	FM ALC signal
	1	8 V	DC 8 V
	2	-6	DC -6 V
	3	14 A	14 V after choke coil
	4	5 V	DC 5 V
	1	GND	
	2	11 V	DC 11 V Display
	1	14 A	14 V after choke coil
	2	14	14 V input
	1	RFG	RF gain control signal DC
	2	NC	
	1	AGC	AGC LINE
	2	8 V	DC 8 V
	3	-6	DC -6 V
	4	14 A	14 V after choke coil
	1	GND	
	2	BZ	BEEP TONE ON
	1	AV2	AF VR 2
	2	GND	
	3	GND	
	4	AV3	AF VR 3
	1	SSQ	SSB SQ VR
	2	FSQ	FM SQ VR
	1	GND	
	2	CAR	8.83 MHz Carrier input
	1	NC	
	2	CWD	CW Brake in time constant control

TS-670

TERMINAL FUNCTIONS

Connector No.	Terminal No.	Terminal name	Function
	1	CGD	GND at control UNIT
	2	CSS	Stand By signal to control UNIT
	1	BUZ	BEEP TONE output
	2	GND	
	1	RL	TX of 13 V Relay control
	2	BUZ	BEEP Tone input
	3	GND	
IP	1	STS	KEY DOWN to SIDETONE ON
IP	1	SS	STAND BY
IP	1	8 V	DC 8 V
IP	1	CWB	CW about 7 V
FILTER UNIT (X51-1320-00)			
	1	SW	ANT switch: ON = 50B
	2	50B	50 MHz BAND Relay Source
	1	RL	TX about 13 V Relay control
	2	FMB	FM: about 8 V
	3	RXB	RX: about 9 V
	4	PCL	Power control VR change about 0.4 ~ 3 V
	5	ALC	ALC LINE: NO ALC about 2.7 V
	6	8 V	DC 8 V LINE
	7	TXB	TX about 8.8 V DC LINE
	1	RFM	RF meter control
	2	ALM	ALC meter control
	1	RA	RX ANT input
	2	E	GND
	1	ABB	AMATEUR BAND HAM = "H", ETC = "L"
	2	50	50 MHz BAND information
	3	28	28 BAND information
	4	21	21 BAND information
	5	7	7 BAND information
	6	14 V	14 V LINE
COAX		IN	Power input from FINAL
COAX		50	50 MHz ANT output
COAX		750	7 ~ 50 MHz ANT output
IP		TXB	TX about 8.8 V DC LINE
CONTROL UNIT (X53-1370-00)			
	1	MHS	1 MHz STEP by touch to GND
	2	BD	1 BAND or 1 MHz STEP DOWN by touch to GND
	3	BU	1 BAND or 1 MHz STEP UP by touch to GND
	1	MU	MIC UP by GND
	2	MU	MIC DOWN by GND
	1	SS	STAND BY
	2	GND	GND
	1	GND	GND
	2	EN2	Encoder input
	3	EN1	
	4	5 V	5 V for Encoder

Connector No.	Terminal No.	Terminal name	Function
	1	CWB	CW MODE information + B
	2	USB	USB MODE information + B
	3	LSB	LSB MODE information + B
	1	FMB	FMB MODE information + B
	2	AMB	AM MODE information + B
	3	CWB	CW MODE information + B
	4	SSB	SSB MODE information + B
	1	7 A	7 MHz BAND information operate "L"
	2	21 A	21 MHz BAND information operate "L"
	3	28 A	28 MHz BAND information operate "L"
	4	50 A	50 MHz BAND information operate "L"
	1	05 A	0.5 MHz BAND information operate "L"
	2	2 A	2 MHz BAND information operate "L"
	3	4 A	4 MHz BAND information operate "L"
	i	12 A	12 MHz BAND information operate "L"
	5	10 A	10 MHz BAND information operate "L"
	6	8 A	8 MHz BAND information operate "L"
	7	16 A	16 MHz BAND information operate "L"
	1	PS0	VS-1 voice synthesizer address signal
	2	PS3	VS-1 voice synthesizer address signal
	3	PB2	VS-1 voice synthesizer address signal
	4	PS1	VS-1 voice synthesizer address signal
	5	5 V	5 V output
	6	GND	GND
	1	14 A	14 V input
	2	AMF	AM Frequency shift control
	1	(NC)	—
	2	VSC	VS-1 operate by GND
	1	IFS	IF shift control voltage input
	2	RIT	RIT control input
	1	SBK	RX Blanking pulse input at PLL switch
	2	(GND)	—
	1	PS4	VS-1 voice synthesizer address signal
	2	SR	Voice synthesizer start signal
	3	BY	Voice synthesizer ON = "H"
	1	dp	"d.p." data for display
	2	g	"g" data for display
	1	f	"f" data for display
	2	e	"e" data for display
	3	5 V	5 V output
	1	GND	GND
	2	P20	expander control output
	3	P21	
	4	P22	
	5	P23	
	6	PLG	clock output
	7	CS	chip selector output
	1	GS	GC-10 installation sencer
	2	GC	GC-10 installation sencer
	1	BZ	BEEP TONE control "L" = BEEP
	2	GND	GND
	1	5 V	5 V input
	2	8 V	8 V input

TERMINAL FUNCTIONS

Connector No.	Terminal No.	Terminal name	Function
	1	PB	PLL 8 V input
	2	PG	PLL GND
	3	CV	VCO control voltage output
	1	VC2	VCO RF voltage input
	2	GND	GND
	1	CAR	carrier output
	2	GND	GND
	1	RL	TX about + 12 Relay control
	2	(GND)	—
	1	RC	RIT switch RIT works when toucher RC
	2	RS	and RS
	1	C2	MATRIX input of KEY BOARD
	2	C3	
	3	C4	
	4	C5	
	5	C1	
	1	PGS	Program scan IND output
	2	MS	Memory scan IND output
	3	HLD	Hold IND output
	1	LOK	lock IND output
	2	STP	Step IND output
	1	D6	MATRIX input of KEY BOARD
	2	D5	
	3	D4	
	4	D3	
	5	D2	
	6	D1	
	1	5 V	5 V output
	2	GND	GND
	1	OAD	"ON AIR" display
	2	5 V	5 V output
DISPLAY UNIT (X54-1880-00)			
	1	11 V	11 V LINE (DC-DC CONVERTER SOURCE)
	2	GND	0 V (DC-DC CONVERTER)
	3	—6	—6 V LINE (DC-DC CONVERTER output)
	1	f	"f" data for display
	2	g	"g" data for display
	1	5 V	5 V LINE
	2	dp	"d.p." (dot point) data for display
	3	e	"e" data for display
	1	CS	chip select input
	2	PRG	clock input
	3	P23	expander control output
	4	P22	
	5	P21	
	6	P20	
	7	GND	GND

TS-670

OPTION (GC-10)

GC-10 CIRCUIT DESCRIPTION

The GC-10 is an optional unit to be attached to the TS-670 to permit reception of 0.5 to 30 MHz (excluding certain frequencies).

The GC-10 consists of RF amp and 6 sets of BPFs, and six VCOs.

The RF signal is fed from the TS-670 via the RF attenuator, then each band is selected by switching diodes D1 to D12 (IS2588) and amplified by RF amp Q1 (3SK74), then fed

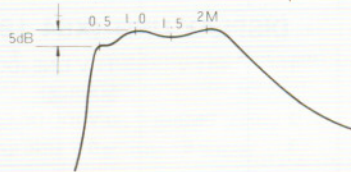
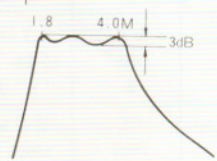
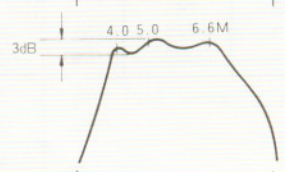
through buffer amp Q2 before being input to the reception mixer of the TS-670.

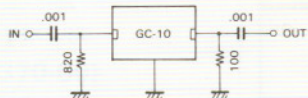
Excluding the 0.5 to 1.8 MHz band, the medium frequency trap for other bands is inserted at the input.

The VCO output for each band is fed through buffer amps Q3 and Q4, then output to the reception mixer of the TS-670.

D31 is a circuit which permits the control unit to detect that the GC-10 is attached to the TS-670.

ADJUSTMENT

Item	Condition	Measurement				Adjustment		Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
1. VCO adjustment	Voltage adjustment MODE: FM 0.500MHz 1.790MHz 3.990MHz 1.800MHz 6.590MHz 4.000MHz 11.990MHz 8.000MHz 9.900MHz 11.990MHz 12.000MHz 15.990MHz 16.000MHz 20.990MHz	DC VM	GC	CV	GC				
						L34		6.0V	
								1.8 ~ 2.8V	Confirm
						L36		6.5V	
								1.8V $\pm$ 0.5V	Confirm
						L38		6.5V	
								1.9V $\pm$ 0.5V	Confirm
						L40		6.5V	
								1.7V $\pm$ 0.5V	Confirm
								2V $\pm$ 0.5V	
								5.7V $\pm$ 0.5V	Confirm
						L43		6.5V	
								1.5V $\pm$ 0.5V	Confirm
						L45		6.5V	
								1 ~ 1.9V	Confirm
2. RX BPF adjustment	(1) Display: 1MHz (0.5 ~ 1.799MHz) MODE: FM •Connect the sweep output to RF U 2 connector. •Connect the detector to the RF U D3 cathode.	SWEEP SCOPE DETECTOR	RF	D3 (cathode)	GC	L5,6,7	Adjust as shown on the right.		
	(2) Display: 2MHz (1.8 ~ 3.999MHz)					L8,9,10			
	(3) Display: 5MHz (4 ~ 6.599MHz)					L11,12 13			



OPTION (GC-10)

ADJUSTMENT

Item	Condition	Measurement				Adjustment		Specification	Remarks
		Test equipment	Unit	Terminal	Unit	Parts	Method		
3. RX BPF adjustment	(4) Display: 10MHz (8 ~ 11.999MHz)	SWEEP SCOPE DETECT- OR	RF	D3 (cathode)	GC	L14,15 16			
	(5) Display: 14MHz (12 ~ 15.999MHz)					L17,18 19			
	(6) Display: 18MHz (16 ~ 20.999MHz)					L20,21 22			

GC-10 SPECIFICATIONS

- Reception frequency range : 500 kHz ~ 30 MHz
(Except around 8.83MHz)
- Image ratio : 40 dB or more*
- IF disturbance ratio : 40 dB or more*

* Except 7.0 ~ 7.1 MHz, 21.0 ~ 21.45MHz and 28 ~ 29.7 MHz

• Sensitivity

Frequency	Mode	SSB, CW (10 dB S/N)	AM (10 dB S/N)
0.5 ~ 1.8MHz		6 dBμ (2μV) or less	24 dBμ (16μV) or less
1.8 ~ 7MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less
* 7 ~ 7.1MHz		-12 dBμ (0.25μV) or less	6 dBμ (2μV) or less
7.1 ~ 8.3MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less
9.5 ~ 21MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less
* 21 ~ 21.45MHz		-12 dBμ (0.25μV) or less	6 dBμ (2μV) or less
21.45 ~ 23MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less
23 ~ 24.8MHz		4 dBμ (1.6μV) or less	22 dBμ (12.5μV) or less
* 24.8 ~ 28MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less
28 ~ 29.7MHz		-12 dBμ (0.25μV) or less	6 dBμ (2μV) or less
29.7 ~ 30MHz		-6 dBμ (0.5μV) or less	12 dBμ (4μV) or less

* TS-670

• Dimensions

: 71 mm width
23 mm height
135 mm depth

• Weight

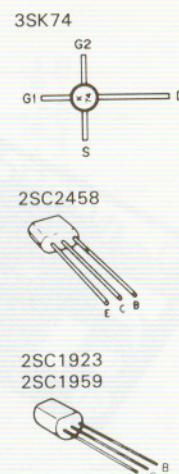
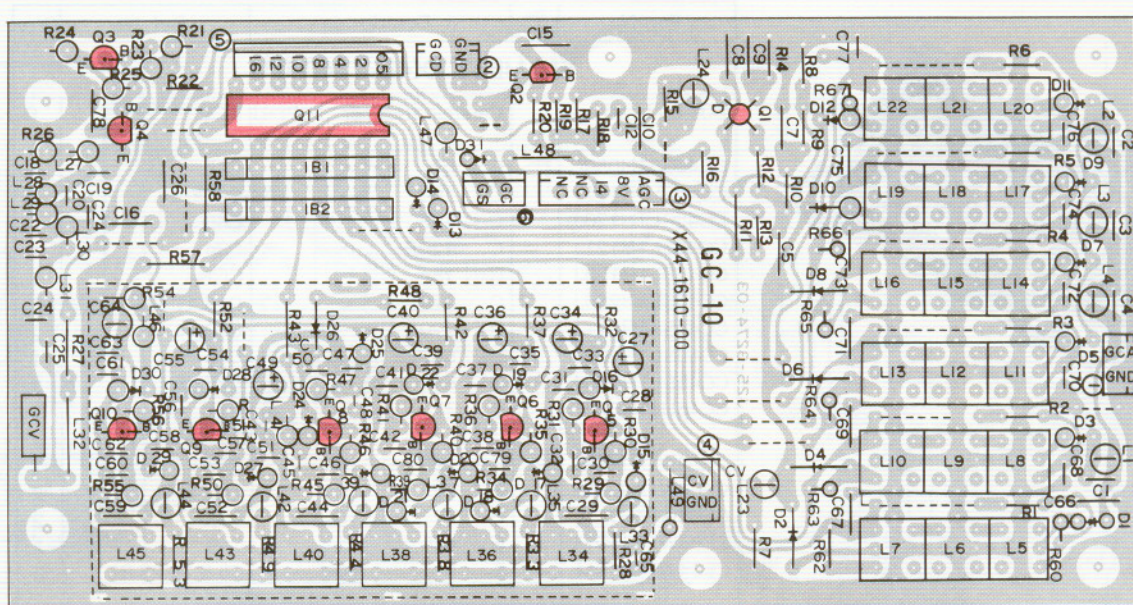
: Approx. 100 g

Parts No.	Re- marks	Description	Q'ty	Ref No.
GC-10				
B50-4140-00		OPERATING MANUAL	1	
H01-4567-03		CARTON (INSIDE)	1	
H03-2193-04		PACKING CASE OUTSIDE	110	
H12-1365-04		BUFFER	1	
J61-0408-05		VINYL TIE	3	
N87-3012-46		TAPPING SCREW	6	
X44-1610-00		GC UNIT	1	
GC-10 UNIT (X44-1610-00)				
CC45RH1H050C		CERAMIC 5P 50V	1	C , 38
CC45TH1H060D		CERAMIC 6P 50V	1	C , 53
CC45TH1H070D		CERAMIC 7P 50V	1	C , 60
CC45SL1H820J		CERAMIC 82P 50V	2	C , 22, 24
CC45RH1H100D		CERAMIC 10P 50V	3	C , 30, 32, 42
CC45SL1H101J		CERAMIC 100P 50V	2	C , 12, 16
CC45RH1H120J		CERAMIC 12P 50V	2	C , 37, 45
CC45TH1H150J		CERAMIC 15P 50V	1	C , 46
CC45SL1H151J		CERAMIC 150P 50V	1	C , 23
CC45RH1H180J		CERAMIC 18P 50V	1	C , 41
CC45RH1H220J		CERAMIC 22P 50V	1	C , 79
CC45UJ1H330J		CERAMIC 33P 50V	1	C , 80
CC45RH1H470J		CERAMIC 47P 50V	1	C , 29
CC45RH1H560J		CERAMIC 56P 50V	1	C , 31
CC45UJ1H100D		CERAMIC 10P 50V	2	C , 56, 61
CC45UJ1H150J		CERAMIC 15P 50V	4	C , 47, 48, 57, 62
CC45UJ1H470J		CERAMIC 47P 50V	3	C , 44, 52, 59
CE04W1A470M		ELECTRO 47 10V	7	C , 27, 34, 36, 40, 49, 55, 64
CK45F1H103Z		CERAMIC 0.01 50V	3	C , 5, 7, 26
CQ92M1H122K		MYLAR 1200P 50V	1	C , 4
CQ92M1H272K		MYLAR 2700P 50V	1	C , 3
CQ92M1H472K		MYLAR 4700P 50V	1	C , 2
CQ92M1H682K		MYLAR 6800P 50V	1	C , 1
C91-0117-05		CERAMIC CAP 0.01	12	C , 25, 28, 33, 35, 39, 43, 50
C91-1008-05		CERAMIC 0.022	6	C , 51, 54, 58, 63, 65
C91-0119-05		CERAMIC 0.047 25V	11	C , 68, 70, 72, 74, 76, 77
				C , 8, 9, 10, 15, 66, 67, 69
				C , 71, 73, 75, 78
E31-2170-05		JUMPER WIRE	13	
E40-0273-05		MINI CONNECTOR 2P	4	
E40-0573-05		MINI CONNECTOR 5P	1	
E40-0773-05		PIN ASS'Y 7P	1	
F11-0867-04		SHIELDING CASE	1	
ITT310TE		VARI-CAP DIODE	8	D , 15, 17, 18, 20, 21, 23, 27
				D , 29
J31-0502-04		COLLAR	6	
J42-0428-05		BUSHING	6	
L32-0195-05		OSCILLATING COIL	2	L , 40, 43
L32-0197-05		OSCILLATING COIL 21,28MHZ	1	L , 45
L32-0668-05	N	OSCILLATING COIL	1	L , 34
L32-0669-05	N	OSCILLATING COIL	1	L , 36
L32-0670-05	N	OSCILLATING COIL	1	L , 38
L34-3106-05	N	BPF COIL 05A	1	L , 5
L34-3107-05	N	BPF COIL 05B	1	L , 6
L34-3108-05	N	BPF COIL 05C	1	L , 7
L34-3109-05	N	BPF COIL 2A	1	L , 8
L34-3110-05	N	BPF COIL 2B	1	L , 9
L34-3111-05	N	BPF COIL 2C	1	L , 10
L34-3112-05	N	BPF COIL 4A	1	L , 11
L34-3113-05	N	BPF COIL 4B	1	L , 12
L34-3114-05	N	BPF COIL 4C	1	L , 13
L34-3115-05	N	BPF COIL 8A	1	L , 14

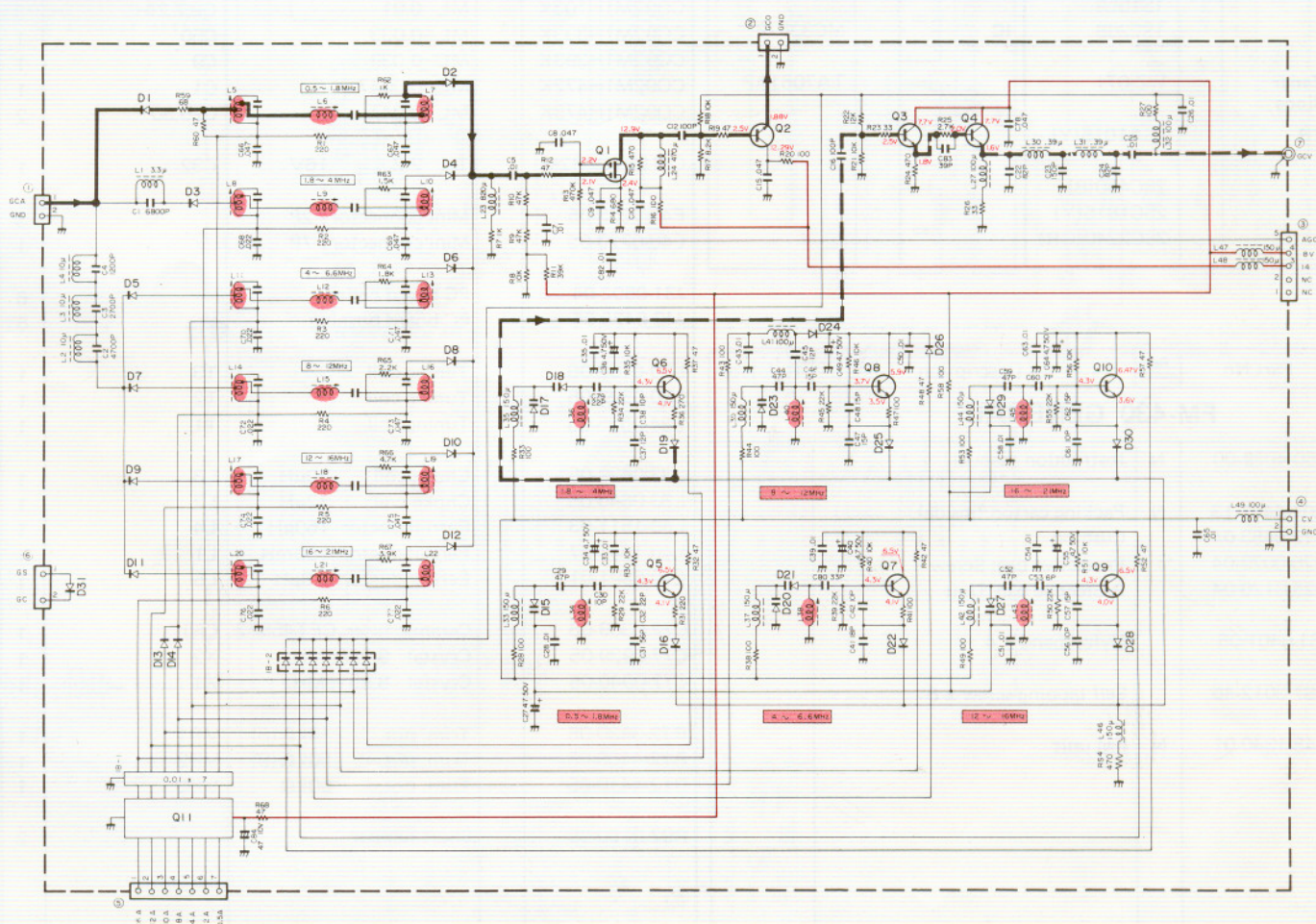
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L34-3116-05	N	BPF COIL 8B	1	L , 15
L34-3117-05	N	BPF COIL 8C	1	L , 16
L34-3118-05	N	BPF COIL 12A	1	L , 17
L34-3119-05	N	BPF COIL 123B	1	L , 18
L34-3120-05	N	BPF COIL 12C	1	L , 19
L34-3121-05	N	BPF COIL 16A	1	L , 20
L34-3122-05	N	BPF COIL 16B	1	L , 21
L34-3123-05	N	BPF COIL 16C	1	L , 22
L40-3392-02		INDUCTOR 3.3 UH	1	L , 1
L40-1001-02		INDUCTOR 10 UH	3	L , 2, 3, 4
L40-1511-03		INDUCTOR 150 UH	6	L , 33, 35, 37, 39, 42, 44
L40-4711-03		INDUCTOR 470 UH	1	L , 24
L40-8211-07	N	INDUCTOR 820 UH	1	L , 23
L40-3982-14		INDUCTOR 0.39UH	2	L , 30, 31
L40-1011-14		INDUCTOR 100 UH	6	L , 27, 32, 41, 47, 48, 49
L40-1511-14		INDUCTOR 150 UH	1	L , 46
R90-0576-05	N	CAPACITOR BLOCK 0.01UF X 7	1	IB , 1
R90-0577-05	N	DIODE BLOCK 1S1555 X 7	1	IB , 2
R92-0150-05		JUMPER WIRE	7	
UPA80C		IC	1	Q , 11
1S1555		DIODE	4	D , 13, 14, 26, 31
1S1587		DIODE	6	D , 16, 19, 22, 25, 28, 30
1S2588		DIODE	13	D , 1, 2, 3, 4, 5, 6, 7
				D , 8, 9, 10, 11, 12, 24
2SC1923(D)	TR		1	Q , 3
2SC1959(Y)	TR		1	Q , 4
2SC2458(Y)	TR	OR 2SC2603(E)	7	Q , 2, 5, 6, 7, 8, 9, 10
3SK74(L)	FET		1	Q , 1

TS-670 OPTION (GC-10)

OPTION (GC-10)



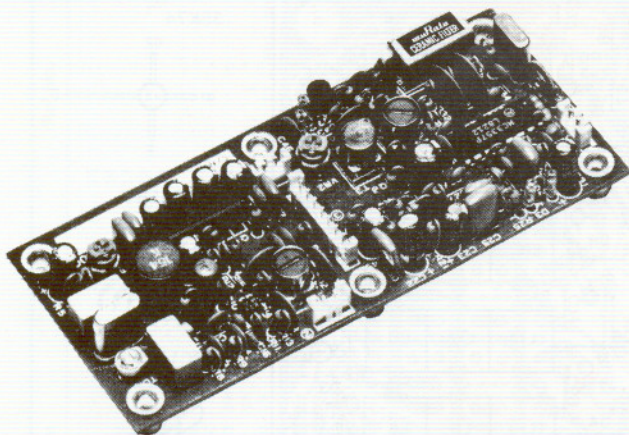
Q1 : 3SK74(L) Q2, 5 ~ 10 : 2SC2458(Y) Q3 : 2SC1923(O) Q4 : 2SC1959(Y) Q11 : μ PC80C D1 ~ 12, 24 : 1S2588 D13, 14, 26, 31 : 1S1555 D15, 17, 18, 20, 21, 23, 27, 29 : 1TT310TE D16, 19, 22, 25, 28, 30 : 1S1587



TS-670

OPTION (FM-430)

OUTSIDE VIEW



PARTS LIST

SEMICONDUCTOR

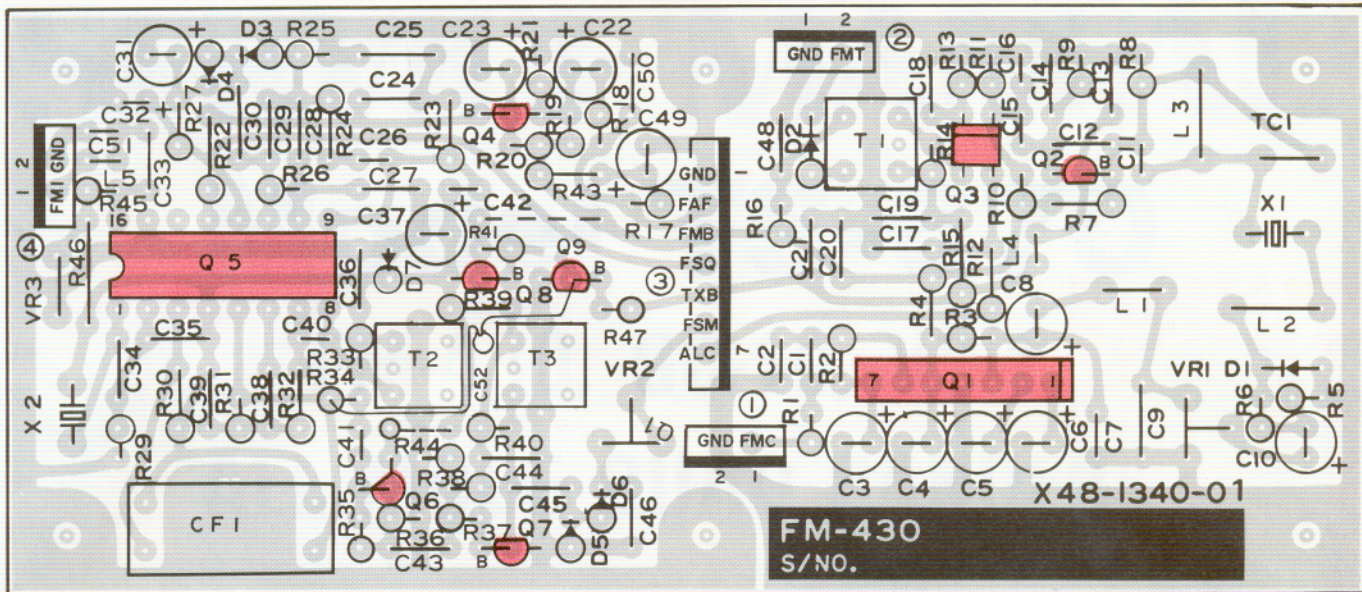
N : New parts

Item	Re- marks	Name	Item	Re- marks	Name
Diode		1N60	FET		3SK73(GR)
		1S1555			
		1S2208	IC		MC3357P
Zener diode		WZ-071			TA7061AP
TR		2SA1015(Y)			
		2SC460(B)			
		2SC1815(Y)			
		2SC2240(GR)			

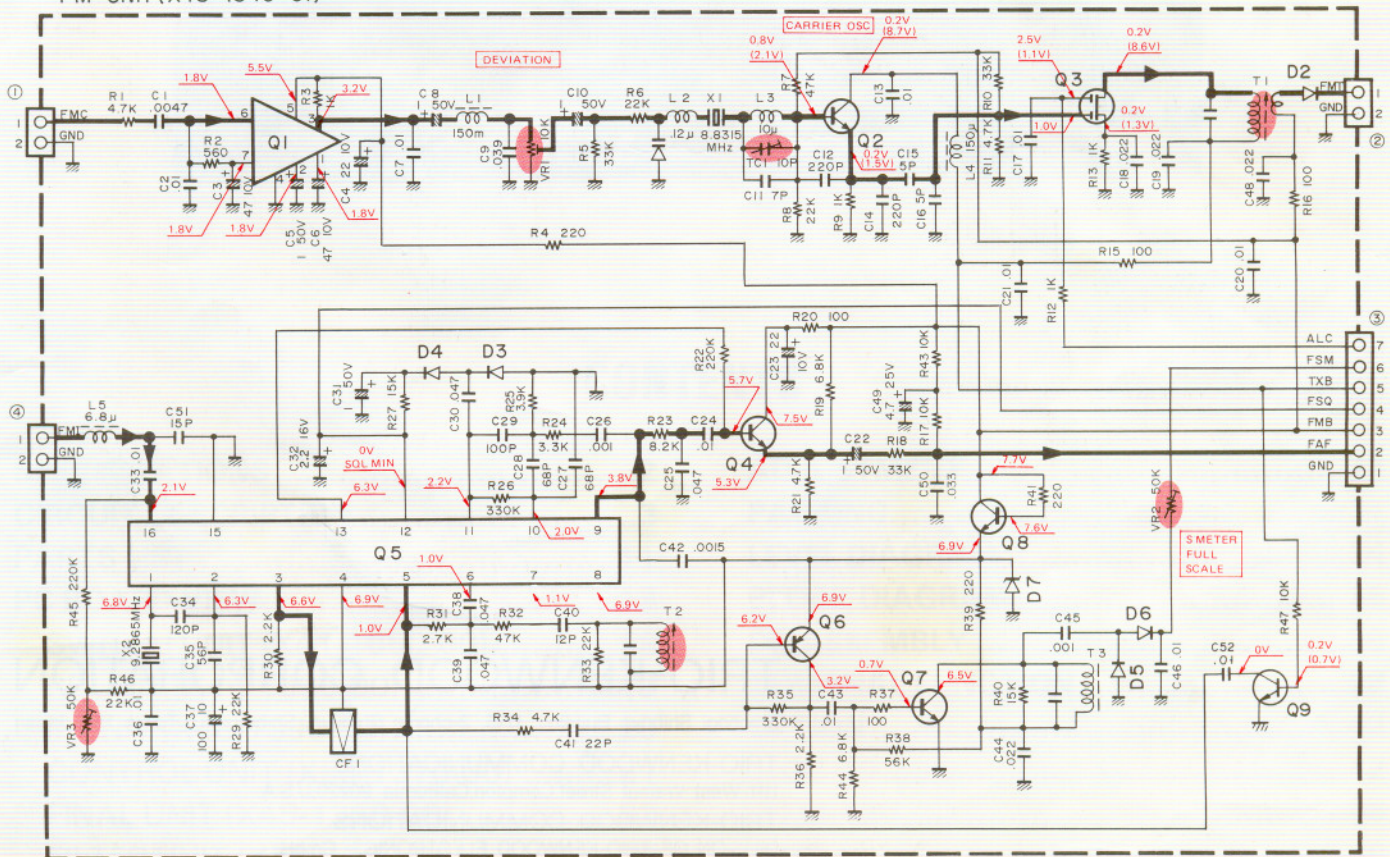
Part No.	Re- marks	Description	Ref. No.
FM-430 GENERAL			
B50-4029-00	N	Instruction manual	
H01-4471-13	N	Packing carton (inside)	
H12-0483-04		Cushion	
H25-0029-04		Protective bag, Screw	
H25-0120-04		Protective bag, Unit	
J61-0401-05		Nylon band x 4	
N87-3012-46		Self tapping screw x 6	
X48-1340-01	N	FM unit	

Part No.	Re- marks	Description	Ref. No.	Q'ty
FM UNIT (X48-1340-01)				
C05-0031-15		Ceramic trimmer 10P	TC1	1
CC45SL1H050C	C	5P	C15	1
CC45SL1H101J	C	100P	C29	1
CC45SL1H120J	C	12P	C40	1
CC45SL1H121J	C	120P	C34	1
CC45SL1H150J	C	15P	C51	1
CC45SL1H220J	C	22P	C16,41	2
CC45SL1H221J	C	220P	C12,14	2
CC45SL1H560J	C	56P	C35	1
CC45SL1H680J	C	68P	C27,28	2
CC45UJ1H070D	C	7P	C11	1
CE04W1A101M	E	100 10V	C37	1
CE04W1A220M	E	22 10V	C4,23	2
CE04W1A470M	E	47 10V	C3,6	2
CE04W1E4R7M	E	4.7 25V	C49	1
CE04W1H010M	E	1 50V	C5,8,10,22,31	5
CK45B1H102K	C	0.001	C26,45	2
CK45B1H152K	C	0.0015	C42	1
CK45F1H103Z	C	0.01	C13,17,20,21,33,36,43,46	8
CK45F1H223Z	C	0.022	C18,19,44,48	4
CK45F1H473Z	C	0.047	C38,39	2
CQ92M1H103K	ML	0.01	C2,7,24	3
CQ92M1H333K	ML	0.033	C50	1
CQ92M1H393K	ML	0.039	C9	1
CQ92M1H472K	ML	0.0047	C1	1
CQ92M1H473K	ML	0.047	C25,30	2
CS15E1C2R2M	T	2.2 16V	C32	1
E40-0273-05		Mini connector 2P		3
E40-0773-05		Mini connector 7P		1
J31-0502-04		PC board collar		6
J42-0428-05		PC board bushing		6
L30-0199-06		Tuning coil	T3	1
L30-0503-05		Tuning coil	T2	1
L34-0535-05		Tuning coil	T1	1
L33-0639-05		Choke coil 10μH	L3	1
L33-0640-05		Choke coil 12μH	L2	1
L40-1511-03		Ferri-inductor 150μH	L4	1
L40-1541-27		Ferri-inductor 150mH	L1	1
L40-6891-01		Ferri-inductor 6.8μH	L5	1
C72-0309-06		Ceramic filter CFT455F2	CF1	1
C77-0939-05		Crystal 9.2865MHz	X2	1
C77-0940-05		Crystal 8.8315MHz	X1	1
R12-3430-05		Trim. pot. 10kΩ(B)	VR1	1
R12-4408-05		Trim. pot. 50kΩ(B)	VR2	1
R12-4410-05		Trim. pot. 50kΩ	VR3	1
R92-0150-05		Short jumper		2

OPTION (FM-430)



FM UNIT (X48-1340-01)



- 2SA1015 2SC1815
2SC2240

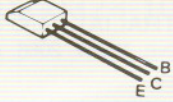
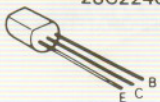
2SC460

TA7061AP

- Q1 : TA7061AP
Q2 : 2SC460(B)
Q3 : 3SK73(GR)
Q4 : 2SC2240(GR)

- Q5 : MC3357P
Q6 : 2SA1015(Y)
Q7~9: 2SC1815(Y)

- D1 : IS2208
D2 : IS1555
D3 ~ 6 : IN60
D7 : MTZ7.5JA



TS-670

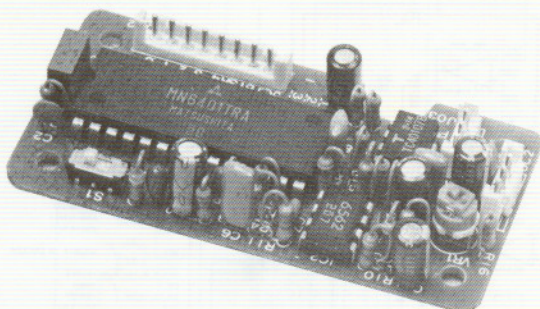
OPTION (VS-1 Voice synthesizer unit)

SPECIFICATIONS

Dimensions: W 70mm
H 15mm
D 35mm

Weight: 20g

OUTSIDE VIEW



PARTS LIST

Part No.	Re- marks	Description	Ref. No.
B50-4035-00	N	Instruction manual	
CC45SL1H121J	C	120P x 2	C2,3
CE04W1A470M	E	47 10V	C1,14,15
CE04W1C100M	E	10 16V	C11
CE04W1HR22M	E	0.22 50V	C12
CK45B1H221K	C	220P x 2	C7,10
CQ92M1H332K	ML	0.0033 x 3	C6,8,9
CS15E1E010M	T	1 25V	C4
CS15E1V0R1M	T	0.1 35V	C5
C91-0131-05	C	0.01 (SP)	C13
E40-0273-05	Δ	Mini connector 2P W	M
E40-0373-05	Δ	Mini connector 3P W	M
E40-0373-05	Δ	Mini connector x 2 3P	T
E40-0873-05	Δ	Mini connector 8P W	
E40-5083-45	N	Mini connector 3P B	
H01-4481-03	NΔ	Packing carton (inside)	M
H01-4501-03	NΔ	Packing carton (inside)	T
H25-0029-04		Protective bag x 2	
L78-0006-05	N	Ceramic OSC	X1
N89-3006-46		Tapping screw x 4	
R12-4408-05		Trim. pot. 50kΩ	VR1
S31-1411-05	N	Slide switch	S1
AN6562	N	IC	IC2
MN6401TRA	N	IC	IC1
TC40107BP	N	IC	IC3

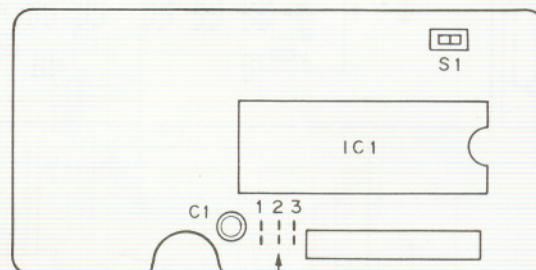
TALK SPEED SELECTION

Speed is factory set at "standard" talk speed. Three different speeds can be selected.

Note: When placing the jumper, solder carefully.

Speed	Std. speed	30% more than Std.	60% more than Std.
Jumper place			
1	X	X	○
2	X	X	○
3	X	○	X

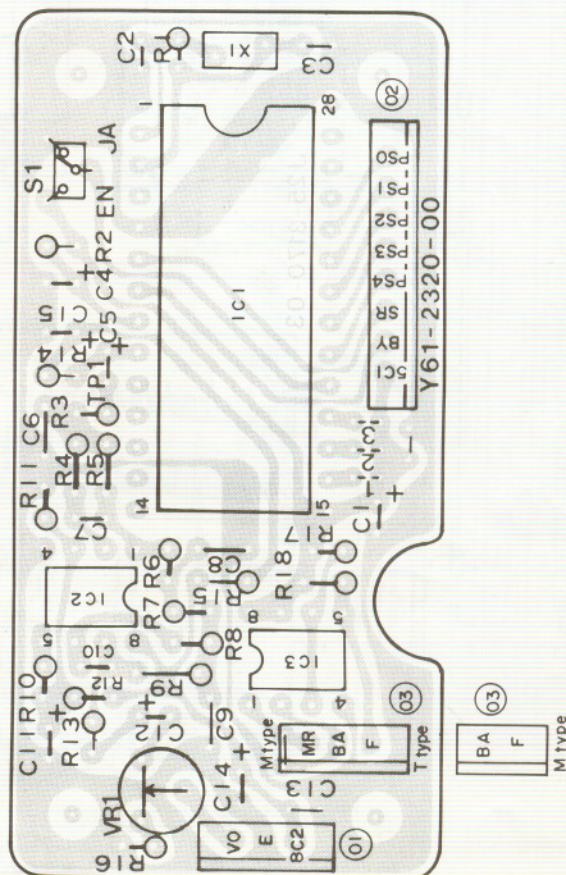
Symbol ○, denotes the place in which a jumper wire is placed.



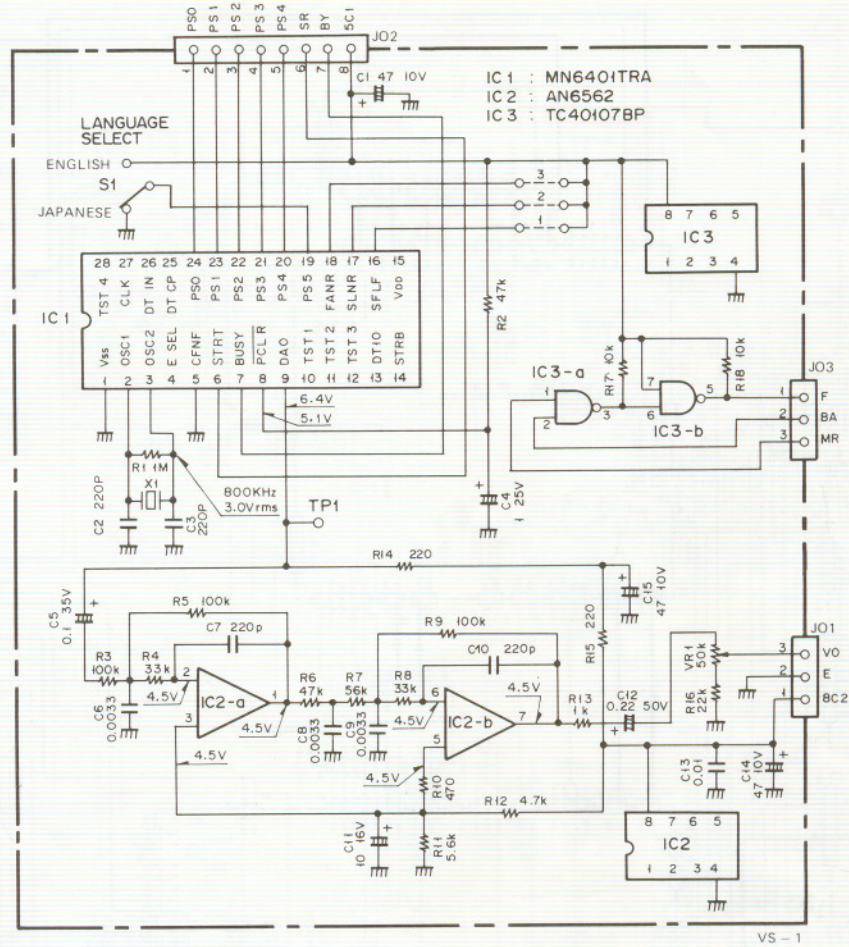
The place which a jumper wire to be placed.

PC BOARD VIEW

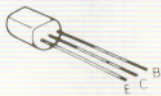
Component side view



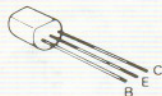
OPTION (VS-1)



2SA1015 2SC1923
2SC1775 2SC1959
2SC1815 2SC2240



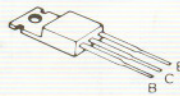
2SC2026
2SC2407
2SC2671



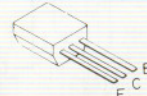
2SC2538



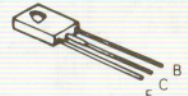
2SA1012



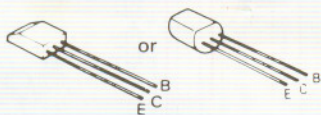
2SC2458
2SC2603



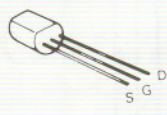
2SC496



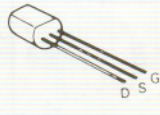
2SC460



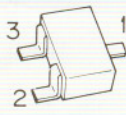
2SK30A
2SK125



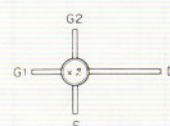
2SK192A



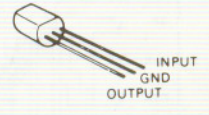
2SC2406TS



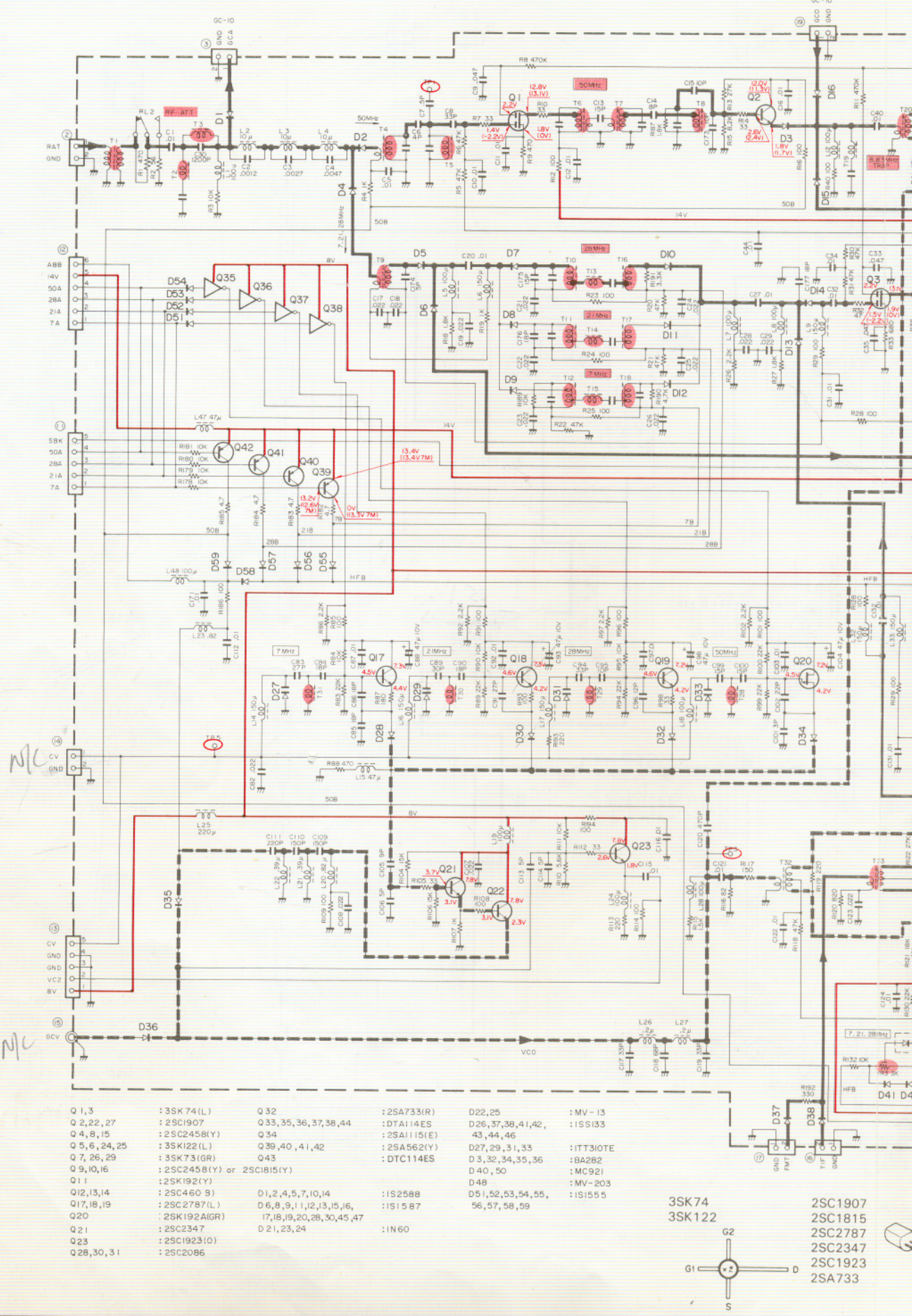
3SK74
3SK97
3SK114



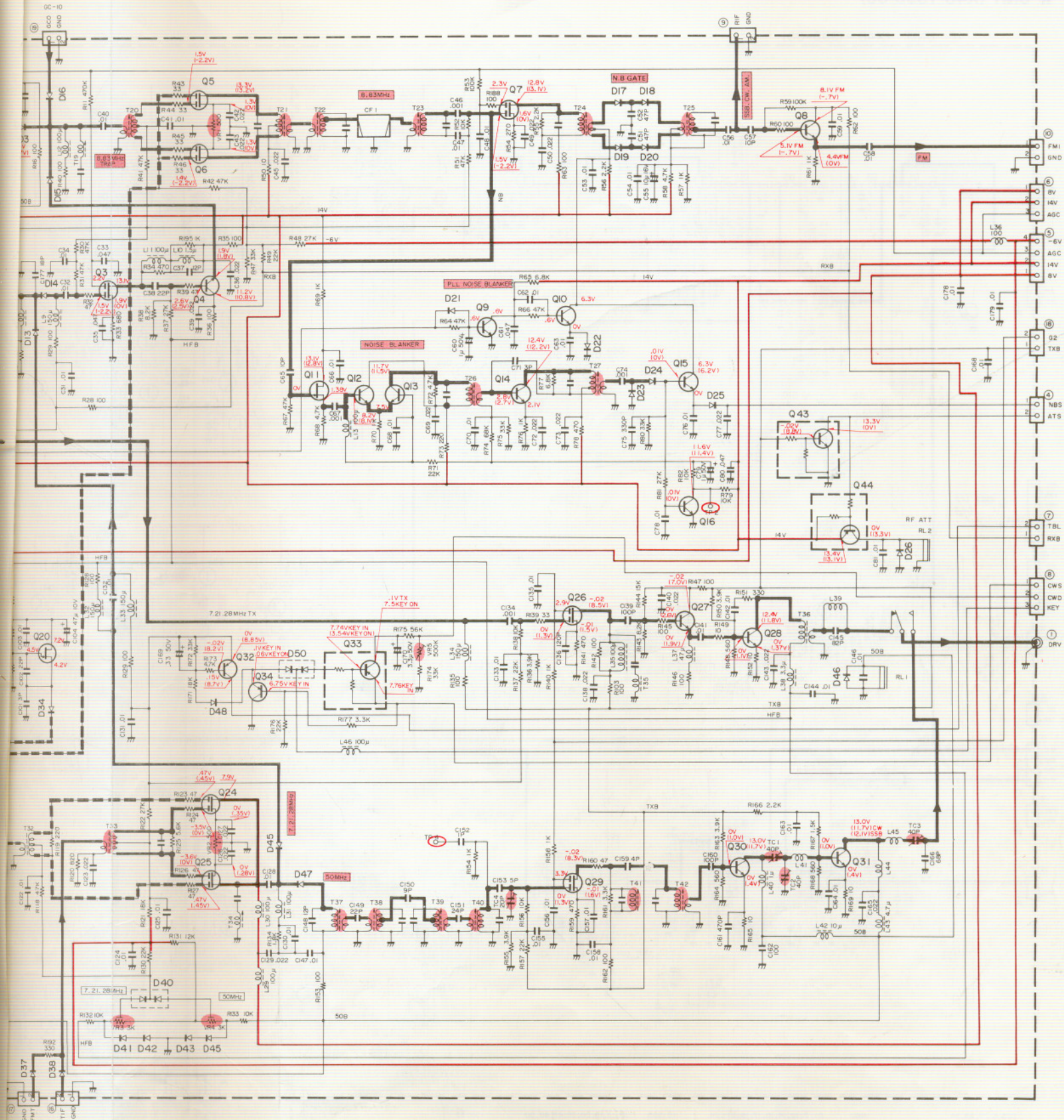
NJM78L06A



RF UNIT (X44-1580-00)



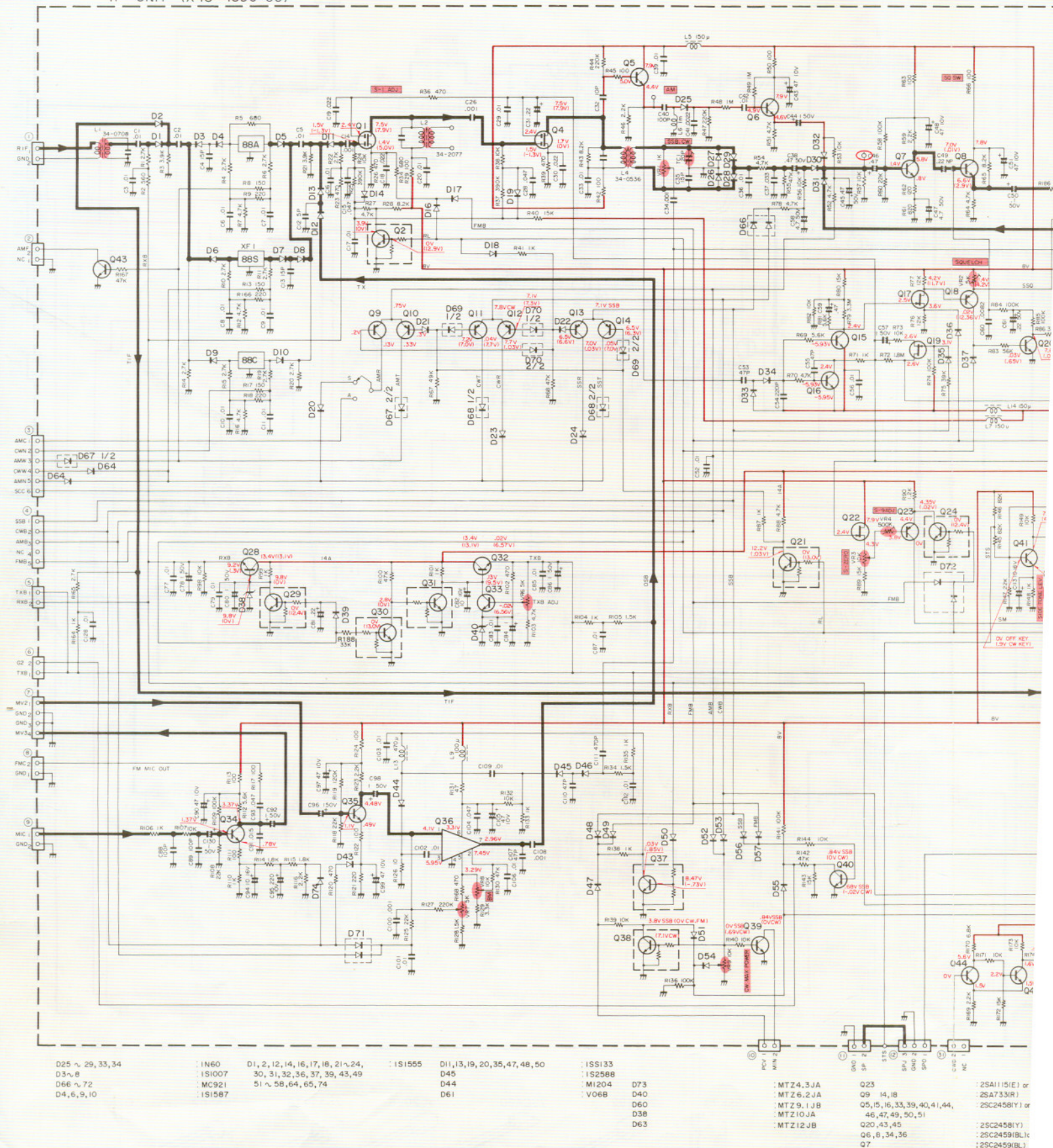
SCHEMATIC DIAGRAM TS-670

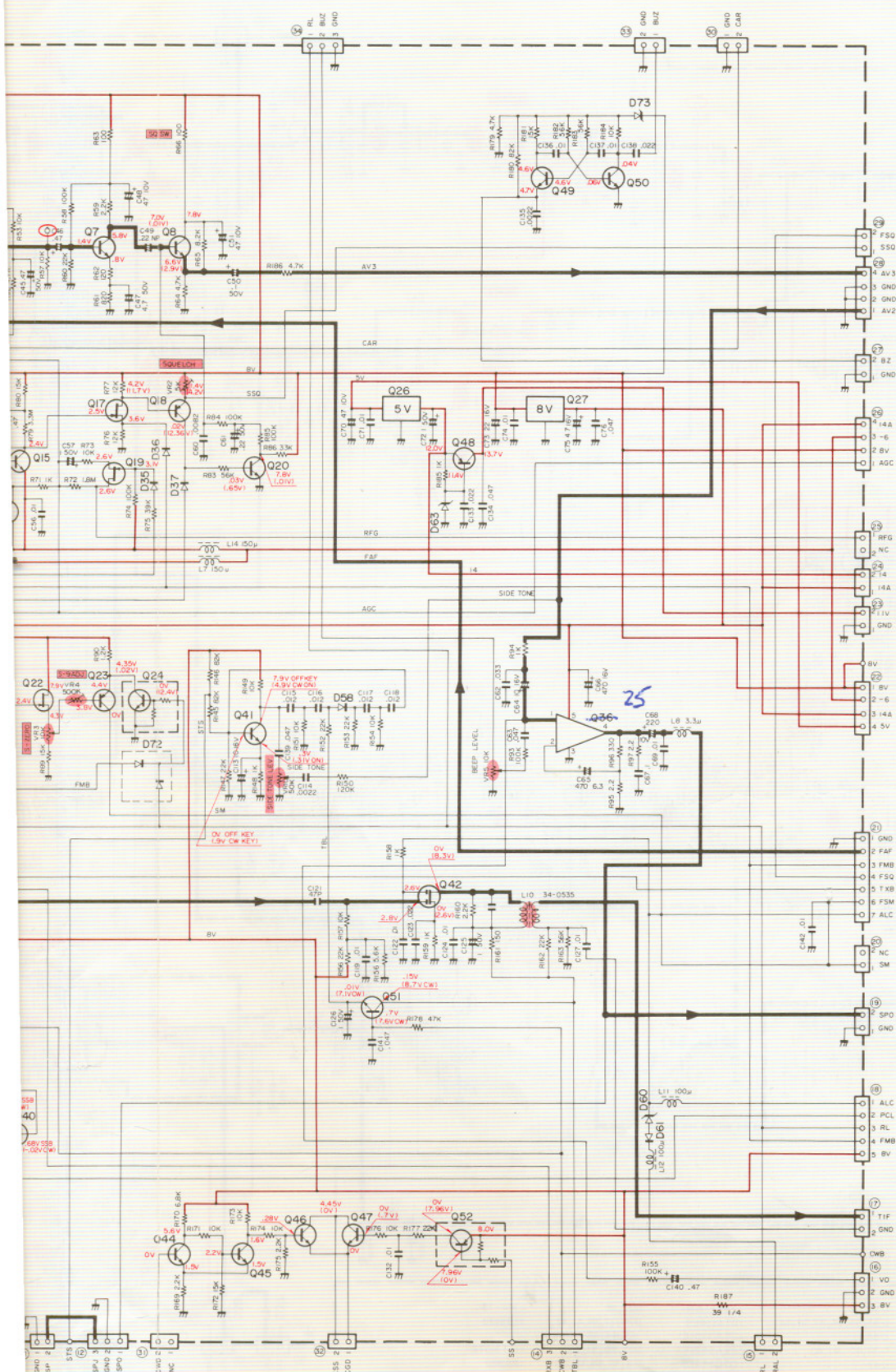


- | | | | | | | | | |
|---------|---------|-------|--------|--------|---------|---------|--------|----------|
| 25C1907 | 25C2458 | 3SK73 | 25K192 | 25C460 | 25C2086 | 25A1115 | 25A562 | DTA114ES |
| 25C1815 | | | | | | | | DTC114ES |
| 25C2787 | | | | | | | | |
| 25C2347 | | | | | | | | |
| 25C1923 | | | | | | | | |
| 25A733 | | | | | | | | |

IF UNIT (X48-1390-00)

IF UNIT (X48-1390-00)

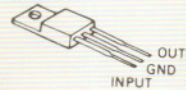




3SK73



AN7805
AN7808



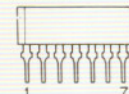
DTA114ES
DTC114ES



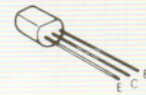
2SD880



AN612



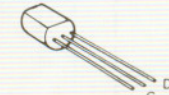
2SC2459
2SC2458



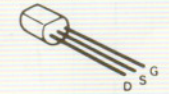
2SA2703
2SA733
2SC2240
2SC1815
2SA1015



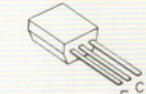
2SK30



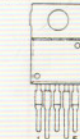
2SK192



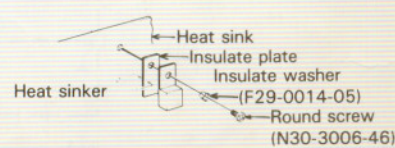
2SA1115



μPC2002V



Q32 Attachment method



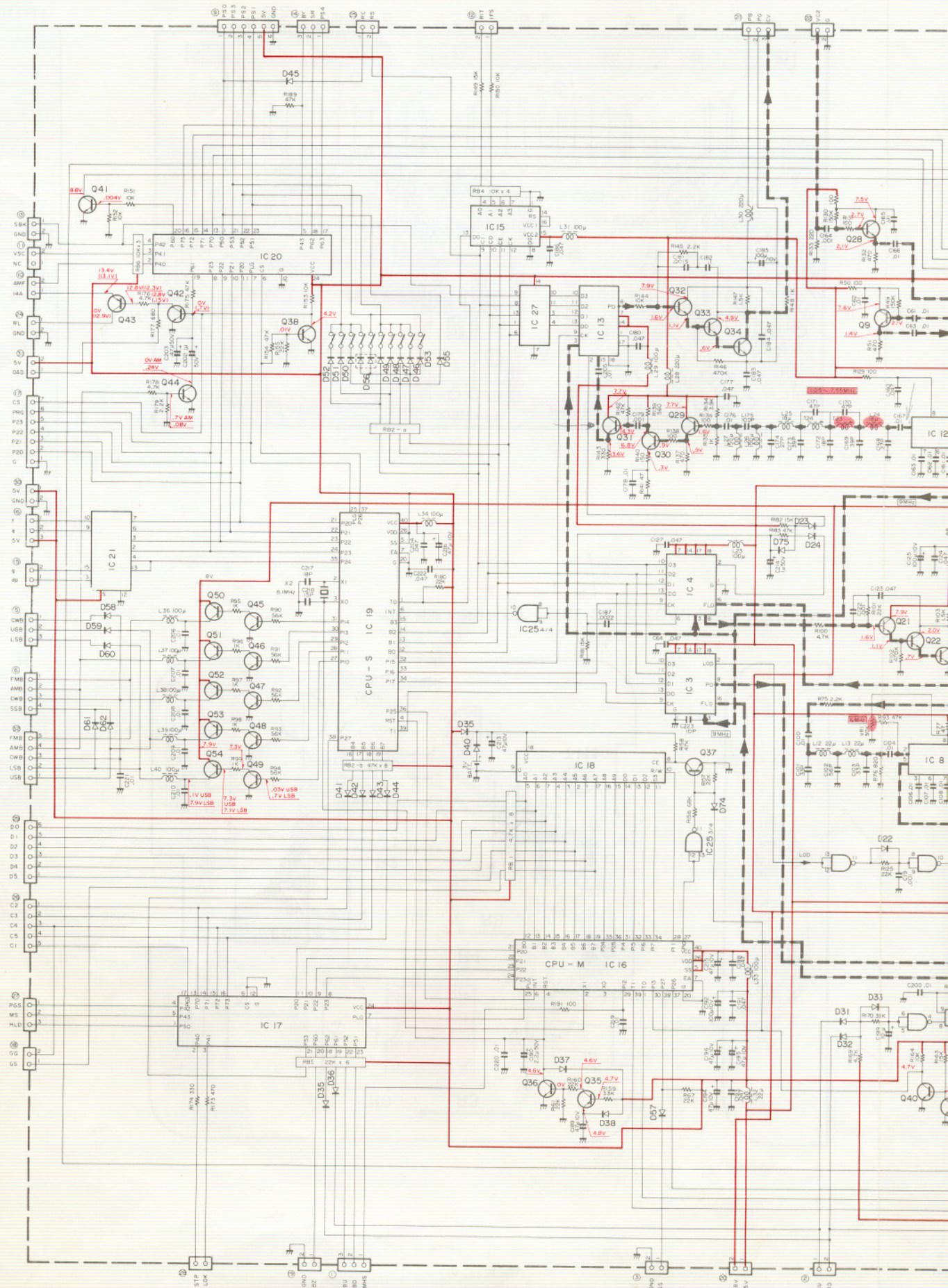
Q23 : 2SA1115(E) or 2SA1015(Y)
Q9 : 14, 16
Q5, 5, 16, 33, 39, 40, 41, 44,
46, 47, 49, 50, 51
Q20, 43, 45
Q6, 8, 34, 36
Q7 : 2SC2459(BL) or 2SC2240(GR)
2SC2459(BL)

Q28, 48
Q32 : 2SC2703(GY)
Q26 : 2SD880(Y)
Q17, 19
Q1, 4, 42
Q2, 21, 24, 29, 30, 31, 37, 38

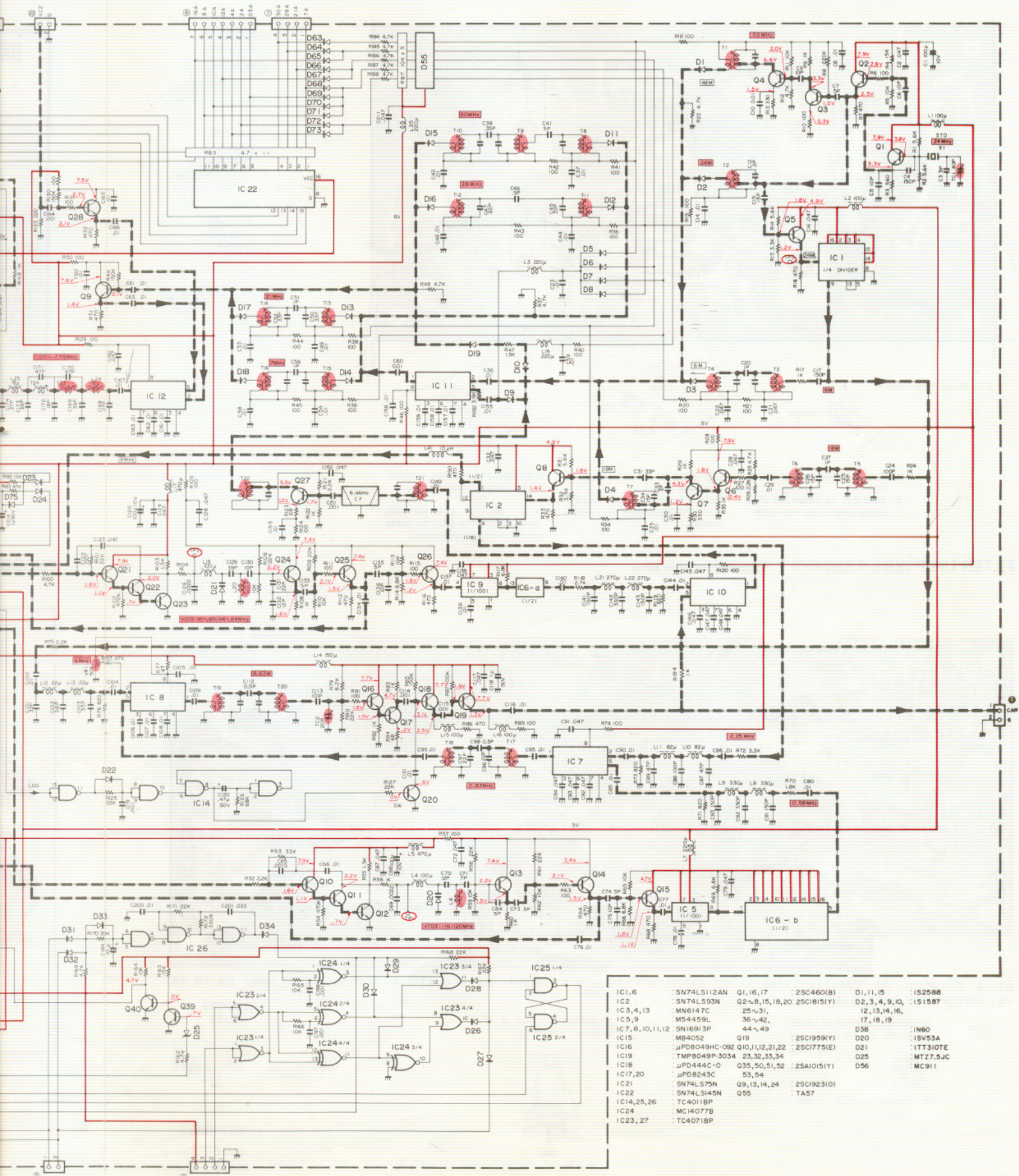
Q52 : 2SC2703(GY)
Q36 : 2SD880(Y)
Q26 : 2SK192(A)(GR)
Q27 : 2SK30A(O)
Q25 : 3SK73(GR)
DTC114ES

DTA114ES
AN612
AN7805
AN7808
μPC2002V

CONTROL UNIT (X53-1370-00)



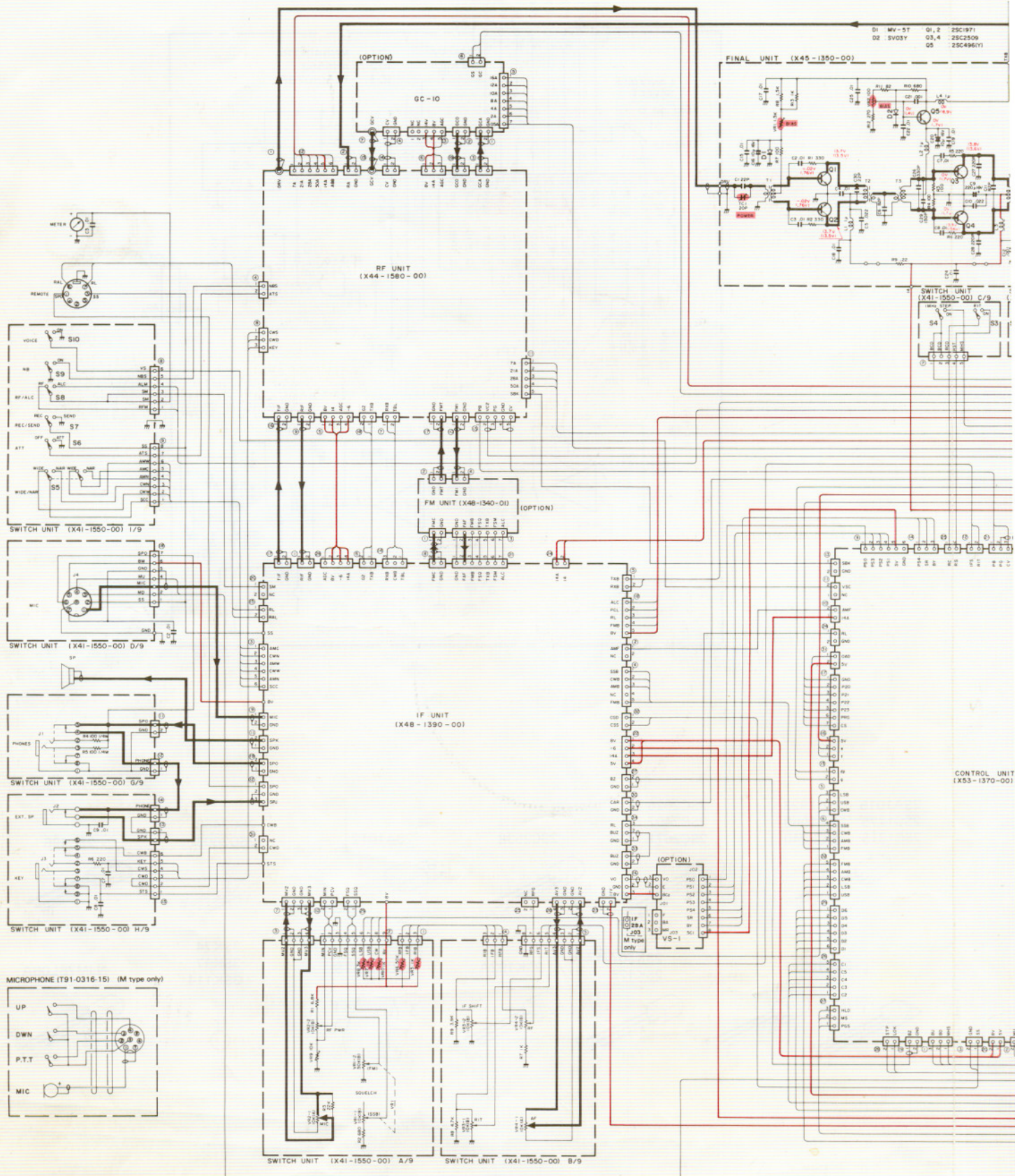
SCHEMATIC DIAGRAM TS-670



Signal Line

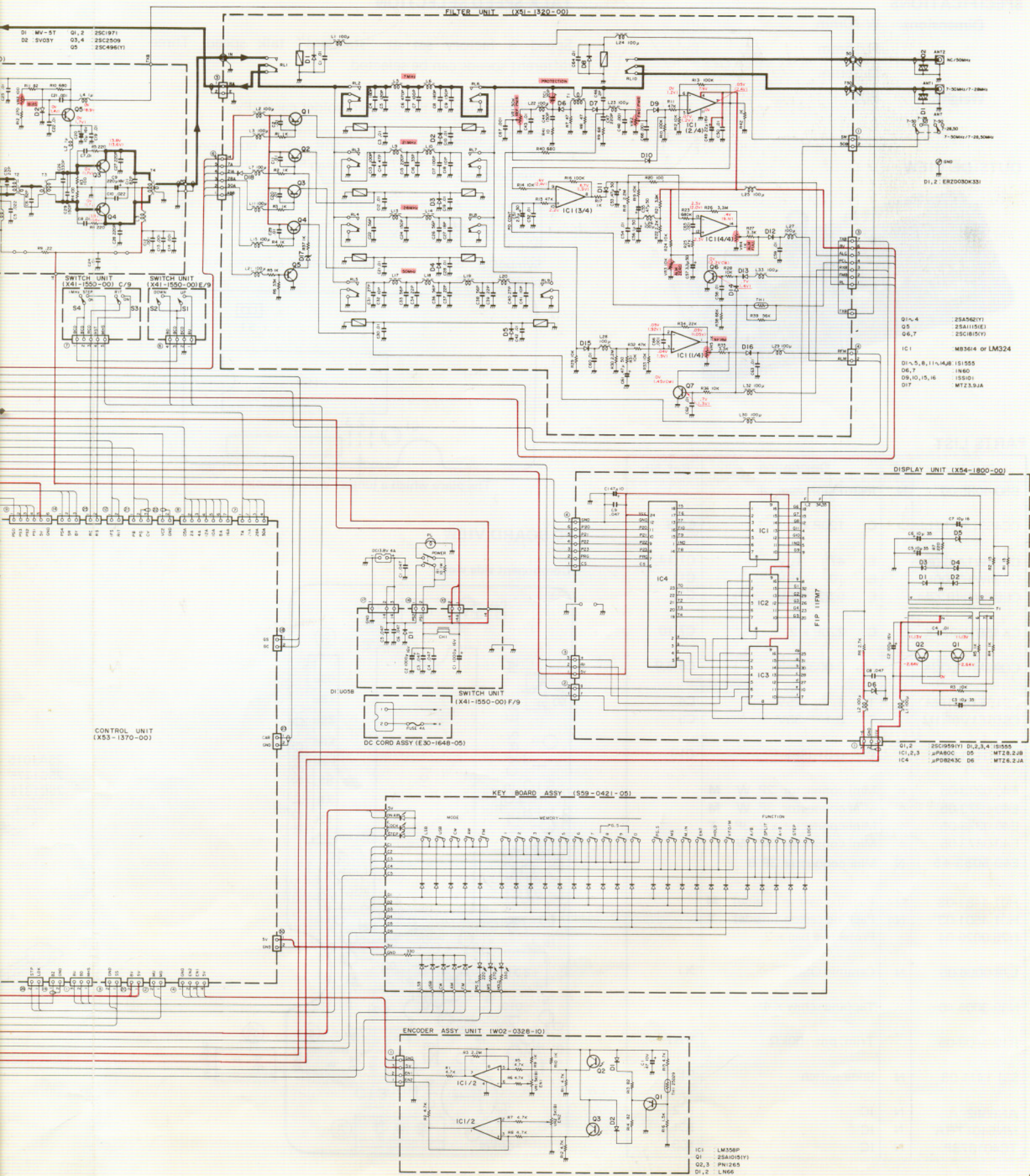
Control Line

Common



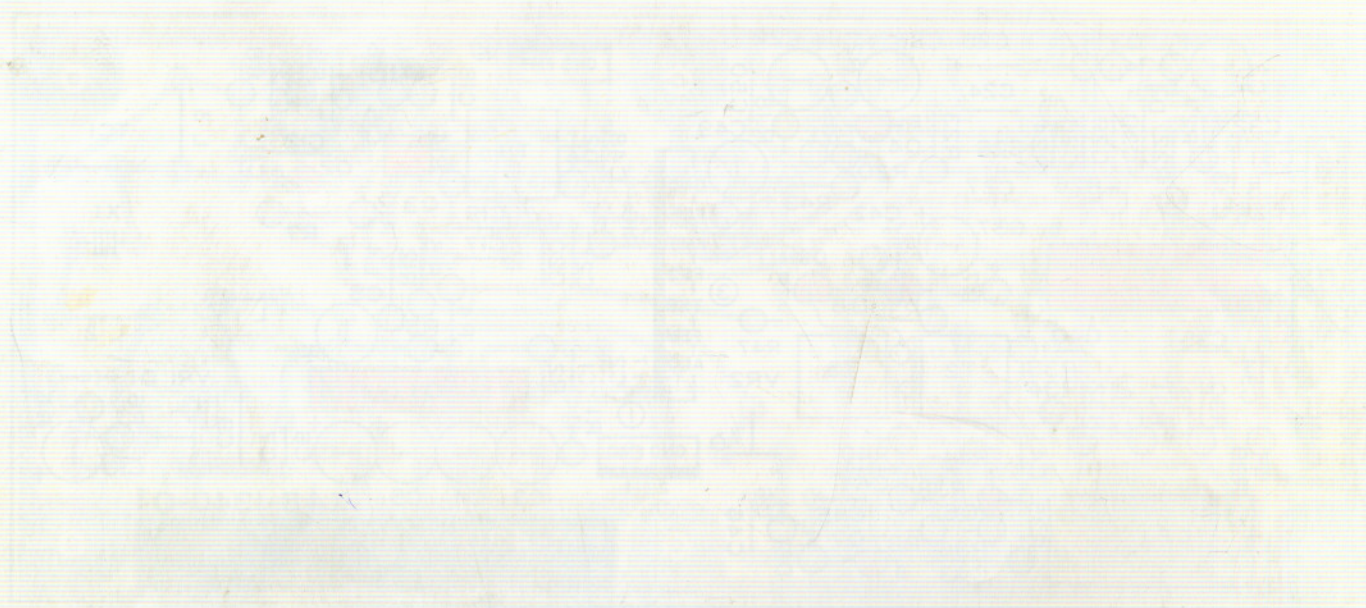
SCHEMATIC DIAGRAM TS-670

Common DC Line



TS-670

OPTION ITEM 430



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