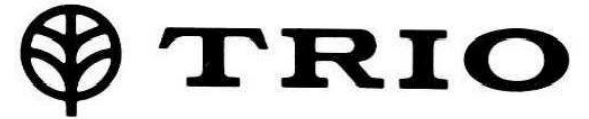


Frequency Counter

FC-754A

FC-756

SERVICE MANUAL



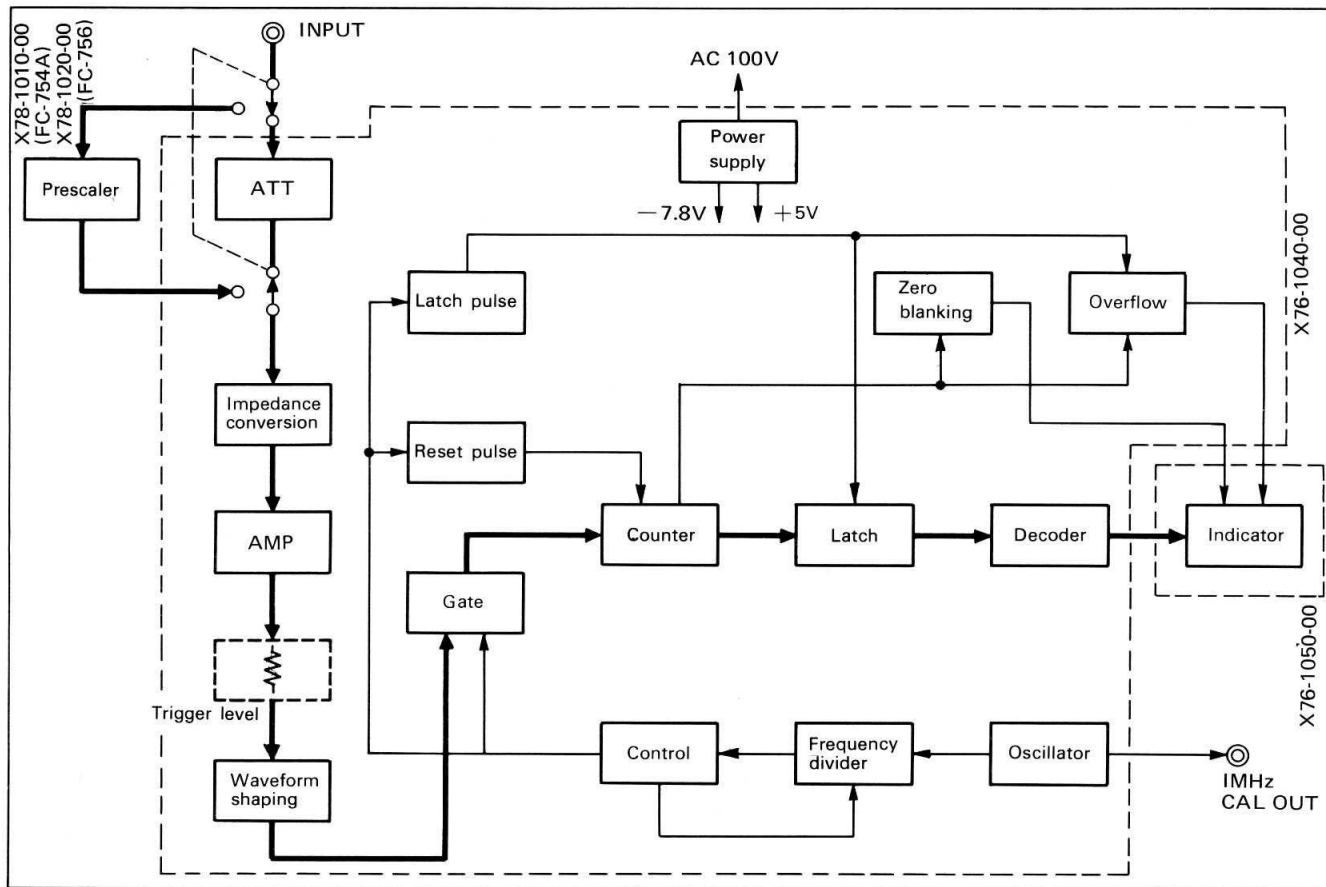


Fig. 1 Block Diagram

Parts List of FC-754A, FC-756

Ref. No.	Parts No.	Description
—	A01-0198-13	Case 1
—	A01-0199-13	Case 2
—	A10-0477-21	Chassis
—	A20-0997-03	Panel
—	B01-0064-23	Escutcheon
—	B07-0105-04	Bush escutcheon
—	B19-0187-04	Filter
—	E30-1824-05	BNC cord
—	B40-0765-04	Name plate
—	B41-0094-14	Caution plate (Power supply 220V~240V)
—	B41-0111-04	Caution plate (Power supply 110V~120V)
—	B50-1450-00	Instruction manual
—	E04-0251-05	BNC receptacle
—	E13-0102-05	1P pin jack
—	E23-0018-04	Solder lug
—	E23-0015-04	Grounding lug
J1	E30-0559-05	Lead with 10P connector
K4	E30-0560-05	Lead with 12P connector
J5	E30-0561-05	Lead with 11P connector
—	E30-0545-05	Line cord with plug
—	F01-0232-04	Heat sink
—	F07-0305-04	Heat sink cover
—	F05-5013-05	Fuse (0.5A)
—	F05-1023-05	Fuse (1.0A)
—	F19-0207-04	Blind plate
—	F20-0066-05	Mica plate

Ref. No.	Parts No.	Description
—	G13-0702-04	Cushion
—	H01-1496-04	Packing case
—	H10-0701-13	Packing material, foamed styrene
—	H20-0343-04	Protection cover
—	H25-0029-04	Polyethylene bag
—	J03-0003-04	Rubber leg
—	J19-0275-04	Line cord winding
—	J40-0016-04	Bush
—	J41-0006-00	Line cord bushing
—	J61-0049-05	Cable wrapping band
—	K01-0061-03	Grip
—	K21-0807-04	Knob
—	K23-0147-04	Knob
—	L02-0077-05	Power transformer
S5	S44-1006-05	Toggle switch
Q001	2SD188	Transistor
—	X76-1040-22	Counter amplifier unit
—	X76-1050-00	Indicator unit
—	X77-1010-00	Switch unit
—	X78-1010-00	Pre-scaler unit (FC-754A)
—	X78-1020-00	Pre-scaler unit (FC-756)

Parts List of X78-1010-00 (FC-754A)

Ref. No.	Parts No.	Description
RESISTOR		
R401	RD14BY2H560J	Carbon 56Ω ±5% 1/2W
R402	RD14BY2H220J	Carbon 22Ω ±5% 1/2W
R403	RD14BB2E153J	Carbon 15kΩ ±5% 1/4W
R404	RD14BB2E271J	Carbon 270Ω ±5% 1/4W
R405	RD14BB2E123J	Carbon 12kΩ ±5% 1/4W
R406	RD14BB2E103J	Carbon 10kΩ ±5% 1/4W
R407,408	RD14BB2E101J	Carbon 100Ω ±5% 1/4W
R409	RD14BB2E391J	Carbon 390Ω ±5% 1/4W
R410	RD14BB2E331J	Carbon 330Ω ±5% 1/4W
R411	RD14BB2E472J.	Carbon 4.7kΩ ±5% 1/4W
R412	RD14BB2E121J	Carbon 120Ω ±5% 1/4W
R413	RD14BB2E221J	Carbon 220Ω ±5% 1/4W
CAPACITOR		
C401	CK45D2H102M	Cermic 1000pF ±20%
C402	CC45SL1H101J	Ceramic 100pF ±5%
C403	CC45SL1H150J	Ceramic 15pF ±5%
C404	CC45SL1H221J	Ceramic 220pF ±5%
C405,406	CC45SL1H100D	Ceramic 10pF ±0.5pF
C407~411	CQ93M1H103M	Mylar 0.01μF ±20%
SEMICONDUCTOR		
IC401		Integrated circuit, 95H90DC
Q401~403		Transistor, 2SC387A
Q404		Transistor, 2SA495Y
D401,402		Diode, 1N60

Ref. No.	Parts No.	Description
MISCELLANEOUS		
VR401	R12-0004-05	Semi-fixed resistor
—	R92-0150-05	Jumper resistor
TH401,402		Thermister, SDT-20

Parts List of X78-1020-00 (FC-756)

Ref. No.	Parts No.	Description
RESISTOR		
R401	RD14BB2E560J	Carbon 56Ω ±5% 1/4W
R402	RD14BB2E220J	Carbon 22Ω ±5% 1/4W
R403	RD14BB2E272J	Carbon 2.7kΩ ±5% 1/4W
R404	RD14BB2E332J	Carbon 3.3kΩ ±5% 1/4W
R405	RD14BB2E151J	Carbon 150Ω ±5% 1/4W
R406	RD14BB2E271J	Carbon 270Ω ±5% 1/4W
R407	RD14BB2E272J	Carbon 2.7kΩ ±5% 1/4W
R408	RD14BB2E182J	Carbon 1.8kΩ ±5% 1/4W
R409,410	RD14BB2E221J	Carbon 220Ω ±5% 1/4W
R411	RD14BB2E331J	Carbon 330Ω ±5% 1/4W
R412	RD14BB2E123J	Carbon 12kΩ ±5% 1/4W
R413	RD14BB2E102J	Carbon 1kΩ ±5% 1/4W
R414	RD14BB2E221J	Carbon 220Ω ±5% 1/4W
R415	RD14BB2E560J	Carbon 56Ω ±5% 1/4W
R416	RD14BB2E151J	Carbon 150Ω ±5% 1/4W

Ref. No.	Parts No.	Description
CAPACITOR		
C401	CC45SL2H030D	Ceramic 3pF ±0.5pF
C402	CC45SL2H101K	Ceramic 100pF ±10%
C403	CC45SL2H220J	Ceramic 22pF ±5%
C404	CK45D1H332M	Ceramic 3300pF ±20%
C405~407	CC45SL1H101K	Ceramic 100pF ±10%
C408	CK45D1H103M	Ceramic 0.01μF ±20%
C409	CC45SL1H101K	Ceramic 100pF ±10%
C410	CK45D1H103M	Ceramic 0.01μF ±20%
C411	CK45D1H102M	Ceramic 1000pF ±20%
C412	CC45SL1H101K	Ceramic 100pF ±10%
C413~415	CK45D1H103M	Ceramic 0.01μF ±20%
C416	CE04W1E100	Electrolytic 10μF 25WV
C417	CK45D1H103M	Ceramic 0.01μF ±20%
C418	CC45SL1H010D	Ceramic 1pF ±0.5pF
SEMICONDUCTOR		
IC401		Integrated circuit MC12013P
Q401~403		Transistor 2SC2026
D401,402		Diode 1SS16
MISCELLANEOUS		
	E23-0046-04	Terminal
	J25-2826-03	Printed circuit board

Parts List of X77-1010-00

Ref. No.	Parts No.	Description
R201	PD14BB2E560J	Carbon resistor, $56\Omega \pm 5\%$ 1/4W
C201	C90-0021-05	Mylar capacitor 0.1 μ F 600V
J1	E30-0559-15	Lead wire w/10P connector
—	J25-1328-13	Printed circuit board
S3	S36-2026-15	Lever switch
S4.5	S37-2006-05	Lever switch

Parts List of X76-1050-00

Ref. No.	Parts No.	Description
D301		Light emitting diode TLR-104
D30~307		Light emitting diode TLR-313
P301~303	E40-1211-05	12P connector
P304	E40-1111-05	11P connector
—	J25-1327-13	Printed circuit board

Parts List of X76-1040-22

Ref. No.	Parts No.	Description
RESISTOR		
R101	RN14BK2H994F	Metal film 990k Ω \pm 1% 1/2W
R102	RN14BK2H1012F	Metal film 10.1k Ω \pm 1% 1/2W
R103	RD14BY2E100J	Carbon 10 Ω \pm 5% 1/4W
R104	RN14BK2H904F	Metal film 900k Ω \pm 1% 1/2W
R105	RN14BK2H1113F	Metal film 111k Ω \pm 1% 1/2W
R106	RD14BB2E100J	Carbon 10 Ω \pm 5% 1/4W
R107	RD14BB2E105F	Metal film 1M Ω \pm 1% 1/2W
R108	RD14BB2E154J	Carbon 150k Ω \pm 5% 1/4W
R109	RD14BB2E470J	Carbon 47 Ω \pm 5% 1/4W
R110	RD14BB2E222J	Carbon 2.2k Ω \pm 5% 1/4W
R111	RD14BB2E332J	Carbon 3.3k Ω \pm 5% 1/4W
R112,113	RD14BB2E101J	Carbon 100 Ω \pm 5% 1/4W
R114	RD14BB2E331J	Carbon 330 Ω \pm 5% 1/4W
R115	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R116	RD14BB2E151J	Carbon 150 Ω \pm 5% 1/4W
R117	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R118	RD14BB2E222J	Carbon 2.2k Ω \pm 5% 1/4W
R119	RD14BB2E182J	Carbon 1.8k Ω \pm 5% 1/4W
R120	RD14BB2E562J	Carbon 5.6k Ω \pm 5% 1/4W
R121	RD14BB2E331J	Carbon 330 Ω \pm 5% 1/4W
R122	RD14BB2E151J	Carbon 150 Ω \pm 5% 1/4W
R123	RD14BB2E681J	Carbon 680 Ω \pm 5% 1/4W
R124	RD14BB2E100J	Carbon 10 Ω \pm 5% 1/4W
R125	RD14BB2E331J	Carbon 330 Ω \pm 5% 1/4W
R126	RD14BB2E271J	Carbon 270 Ω \pm 5% 1/4W
R127,128	RD14BB2E681J	Carbon 680 Ω \pm 5% 1/4W
R129	RD14BB2E122J	Carbon 1.2k Ω \pm 5% 1/4W
R130	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R131	RD14BB2E152J	Carbon 1.5k Ω \pm 5% 1/4W

Ref. No.	Parts No.	Description
R132	RD14BB2E182J	Carbon 1.8k Ω \pm 5% 1/4W
R133	RD14BB2E512J	Carbon 5.1k Ω \pm 5% 1/4W
R134	RD14BB2E101J	Carbon 100 Ω \pm 5% 1/4W
R135	RD14BB2E330J	Carbon 33 Ω \pm 5% 1/4W
R136	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R137	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R138	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R139	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R140	RD14BB2E102J	Carbon 1k Ω \pm 5% 1/4W
R141,142	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R143~145	RD14BB2E331J	Carbon 330 Ω \pm 5% 1/4W
R146	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R147	RD14BB2E472J	Carbon 4.7k Ω \pm 5% 1/4W
R148	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R149	RD14BB2E121J	Carbon 120 Ω \pm 5% 1/4W
R150	RD14BB2E103J	Carbon 10k Ω \pm 5% 1/4W
R151	RD14BB2E182J	Carbon 1.8k Ω \pm 5% 1/4W
R152	RD14BB2E221J	Carbon 220 Ω \pm 5% 1/4W
R153	RD14BB2E561J	Carbon 560 Ω \pm 5% 1/4W
R154~159	R90-0109-05	Composite 330 Ω \pm 10%
R160	RD14BB2E122J	Carbon 1.2k Ω \pm 5% 1/4W
R161	RD14BB2E100J	Carbon 10 Ω \pm 5% 1/4W

CAPACITOR

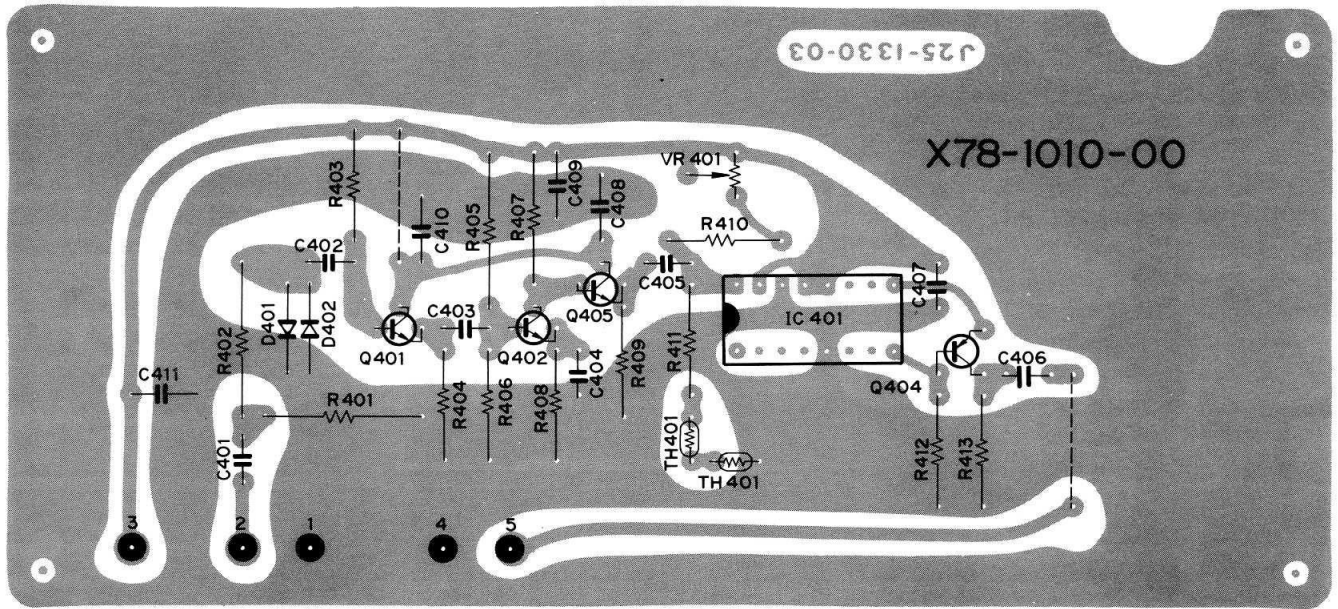
C101	CC45SL2H030D	Ceramic 3pF \pm 0.5pF
C102	CK45D1H122M	Ceramic 1200pF \pm 20%
C103	CC45SL2H030D	Ceramic 3pF \pm 0.5pF
C104	CC45SL1H680J	Ceramic 68pF \pm 5%
C105	CK45D2H331M	Ceramic 330pF \pm 20%
C106	CE04W1A470	Electrolytic 47 μ F 10WV
C107~109	CK45D1H103M	Ceramic 0.01 μ F \pm 20%
C110	CE04W1A470	Electrolytic 47 μ F 10WV

Ref. No.	Parts No.	Description		
C111	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C112	CE04W1H3R3	Electrolytic	3.3 μ F	50WV
C113	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C114	CE04W1A470	Electrolytic	47 μ F	10WV
C115	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C116	CE04W1A470	Electrolytic	47 μ F	10WV
C117	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C118	CE04W1A470	Electrolytic	47 μ F	10WV
C119~121	CK45D3D103M	Ceramic	0.01 μ F	\pm 20% (2000V)
C122	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C123	CE04W1C102	Electrolytic	1000 μ F	16WV
C124	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C125	CE04W1C221	Electrolytic	220 μ F	16WV
C126	CK45D1H222M	Ceramic	2200pF	\pm 20%
C127	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C128	CE04W1H010	Electrolytic	1 μ F	50WV
C129	CE04W1A101	Electrolytic	100 μ F	10WV
C130	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C131,132	CE02W1C222	Electrolytic	2200 μ F	10WV
C133	CK45D1H102M	Ceramic	1000pF	\pm 20%
C134	CE02W1A101	Electrolytic	100 μ F	10WV
C135	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C136	CE04W1A101	Electrolytic	100 μ F	10WV
C137	CK45D1H103M	Ceramic	0.01 μ F	\pm 20%
C138	CE04W1H010	Electrolytic	1 μ F	50WV
C139	CK45D1H331M	Ceramic	330pF	\pm 20%
C140	CQ93M1H103K	Mylar	0.01 μ F	\pm 10%
C141	CK45D1H102M	Ceramic	1000pF	\pm 20%
C142	CQ93M1H332K	Mylar	3300pF	\pm 10%

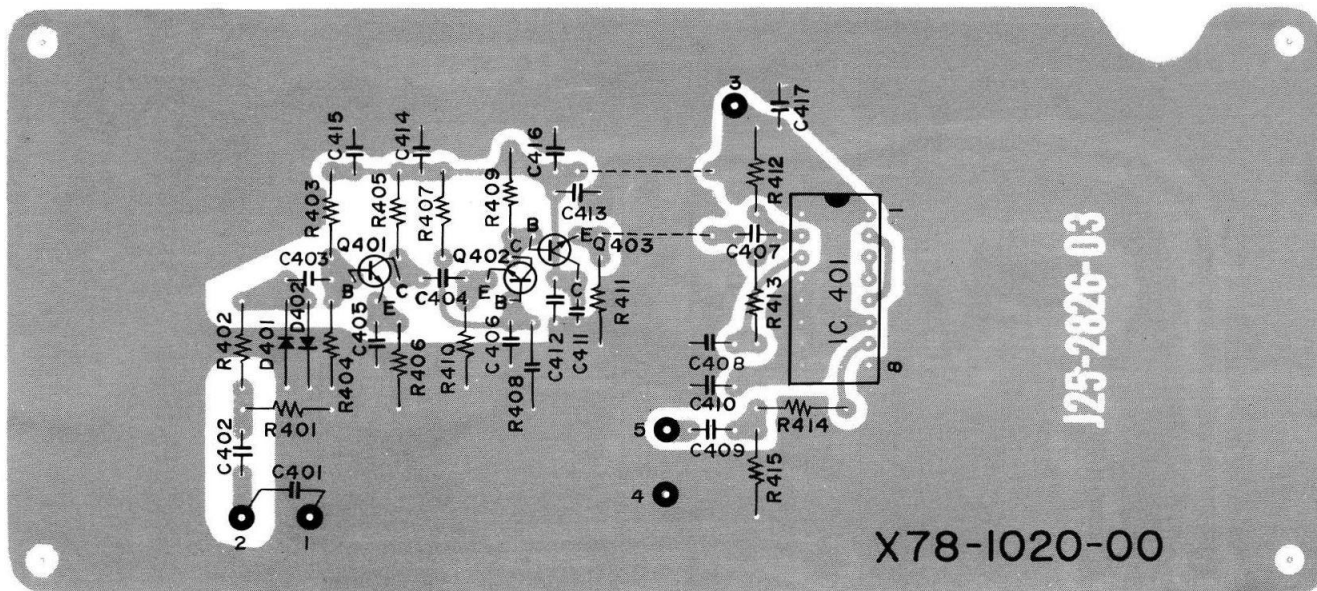
Ref. No.	Parts No.	Description
C143,144	CK45D1H331M	Ceramic 330pF ±20%
C145	CE04W1A101	Electrolytic 100μF 10WV
SEMICONDUCTOR		
Q101		FET 2SK19GR
Q102~106		Transistor 2SC387A
Q107		Transistor 2SA755
Q108		Transistor 2SA733(Q)
Q109		Transistor 2SD235(Y)
Q110		Transistor 2SC458(C)
D101~103		Diode 1S1555
D104,105		Diode U05B
D106,107		Diode V06B
TH101,102		Thermister SDT-20
IC101		Integrated circuit SN74S00N
IC102		Integrated circuit SN74S112N
IC103		Integrated circuit SN74H103N
IC104		Integrated circuit M53204P
IC105		Integrated circuit M53200P
IC106		Integrated circuit M53273P
IC107		Integrated circuit M53275P
IC108		Integrated circuit M53247P
IC109~113		Integrated circuit SN74143N
IC114		Integrated circuit SN7432N
IC115		Integrated circuit SN74H73N
IC116		Integrated circuit M53321P
IC117		Integrated circuit M53200P
IC118~123		Integrated circuit M53290P

Ref. No.	Parts No.	Description
IC124		Integrated circuit SN7474N
IC125		Integrated circuit RC723T
MISCELLANEOUS		
—	E02-2401-05	IC socket
P101	E40-1011-05	10P connector
P102	E40-0803-05	8P connector
P103	E40-0703-05	7P connector
P104	E40-1211-05	12P connector
P105	E40-1111-05	11P connector
J101,102	E40-1216-05	12P socket
—	E23-0046-04	Terminal
—	E30-0436-05	1P lead wire
—	F05-1023-05	Fuse (1A)
—	F05-5013-05	Fuse (0.5A)
—	J25-1326-22	Printed circuit board
L101	L33-0263-05	Line filter
L102 ~ 105	L40-1525-04	Ferri-inductor
—	L77-0233-05	Crystal oscillator
S2	S42-3009-05	Push switch
VR101	R12-1003-05	Semi-fixed resistor 2.2k Ω
VR102	R12-0003-05	Semi-fixed resistor 470 Ω
TC101	C05-0013-15	Trimmer capacitor

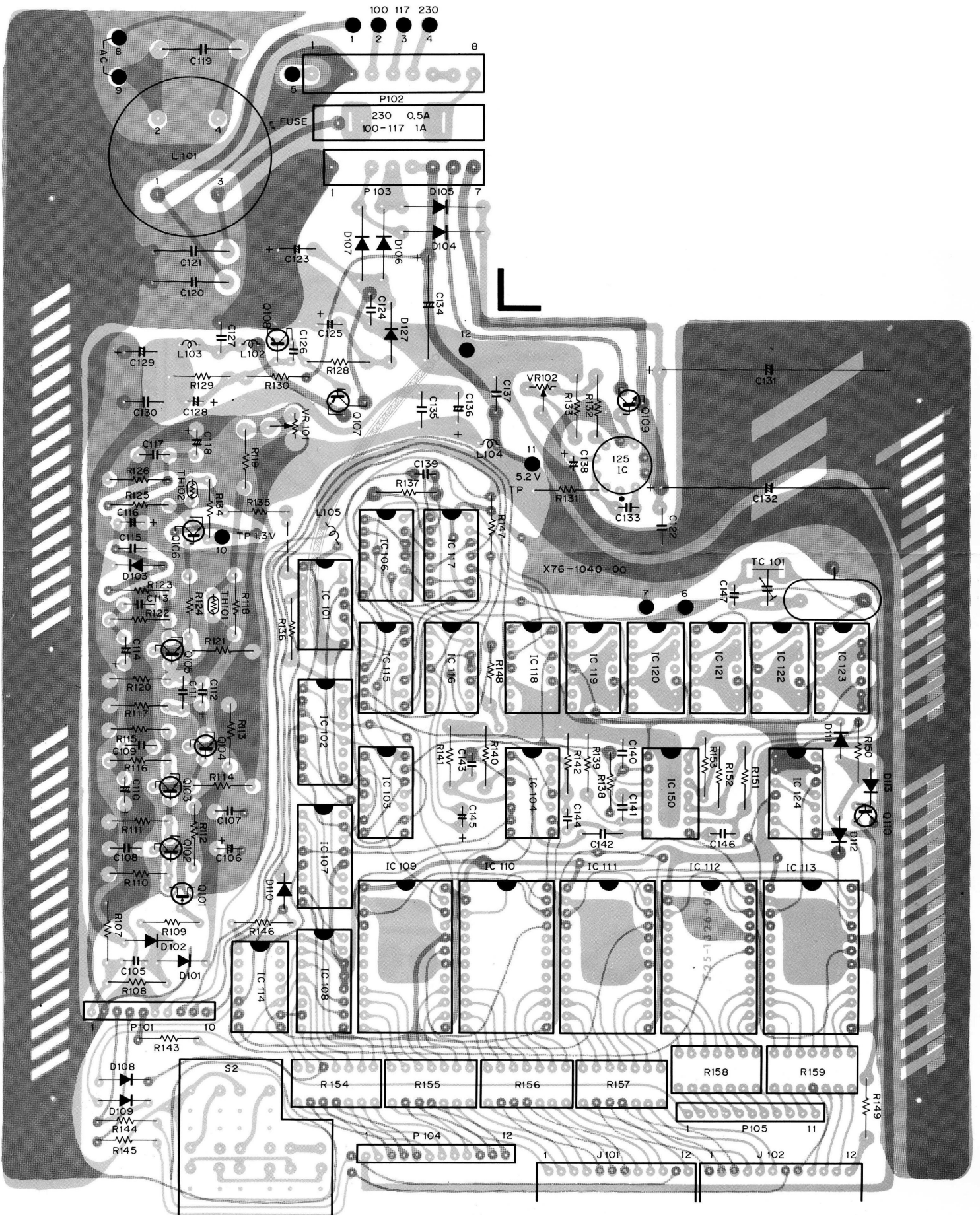
PC BOARD (X78-1010-00) (FC-754A)



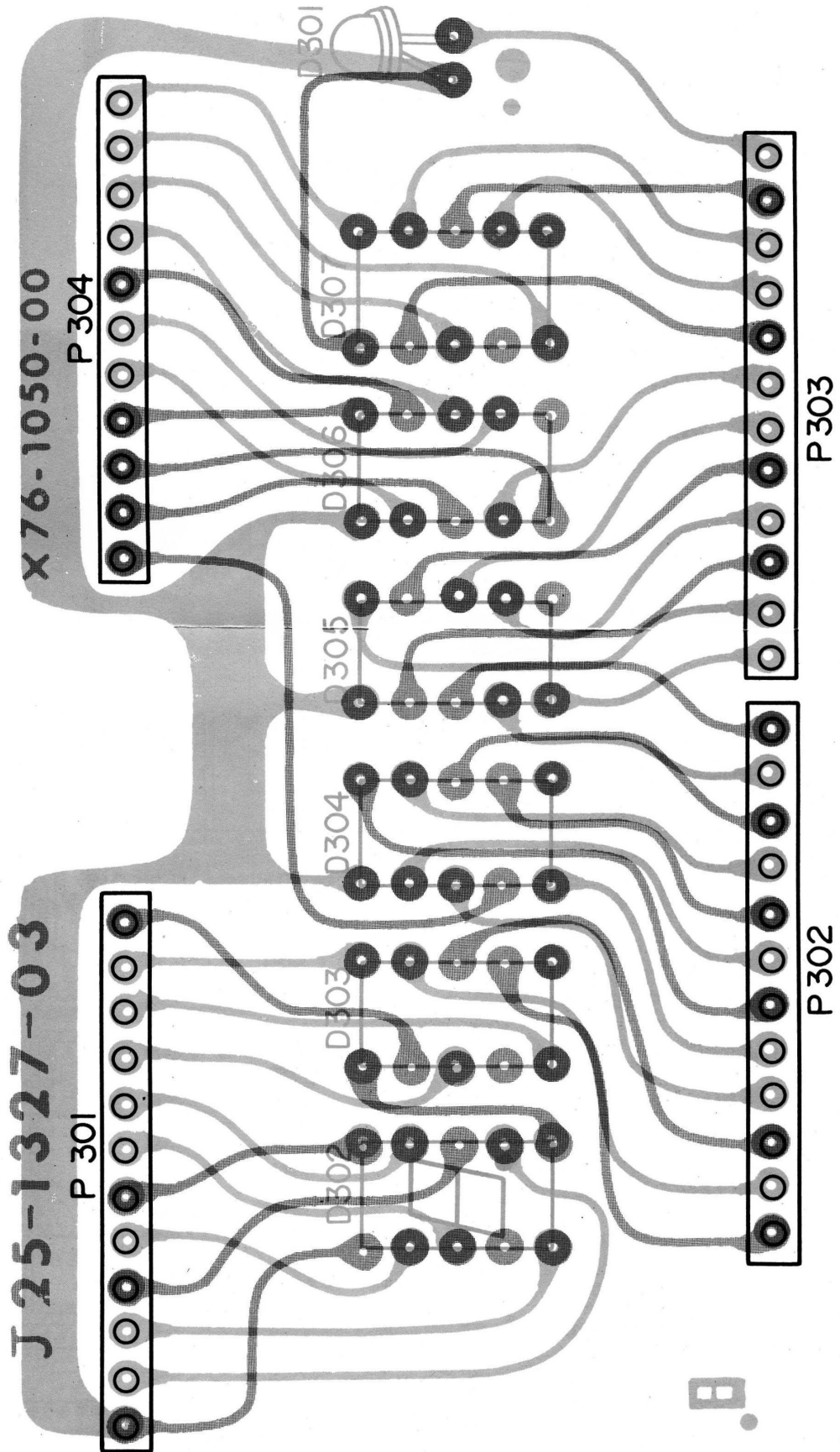
PC BOARD (X78-1020-00) (FC-756)



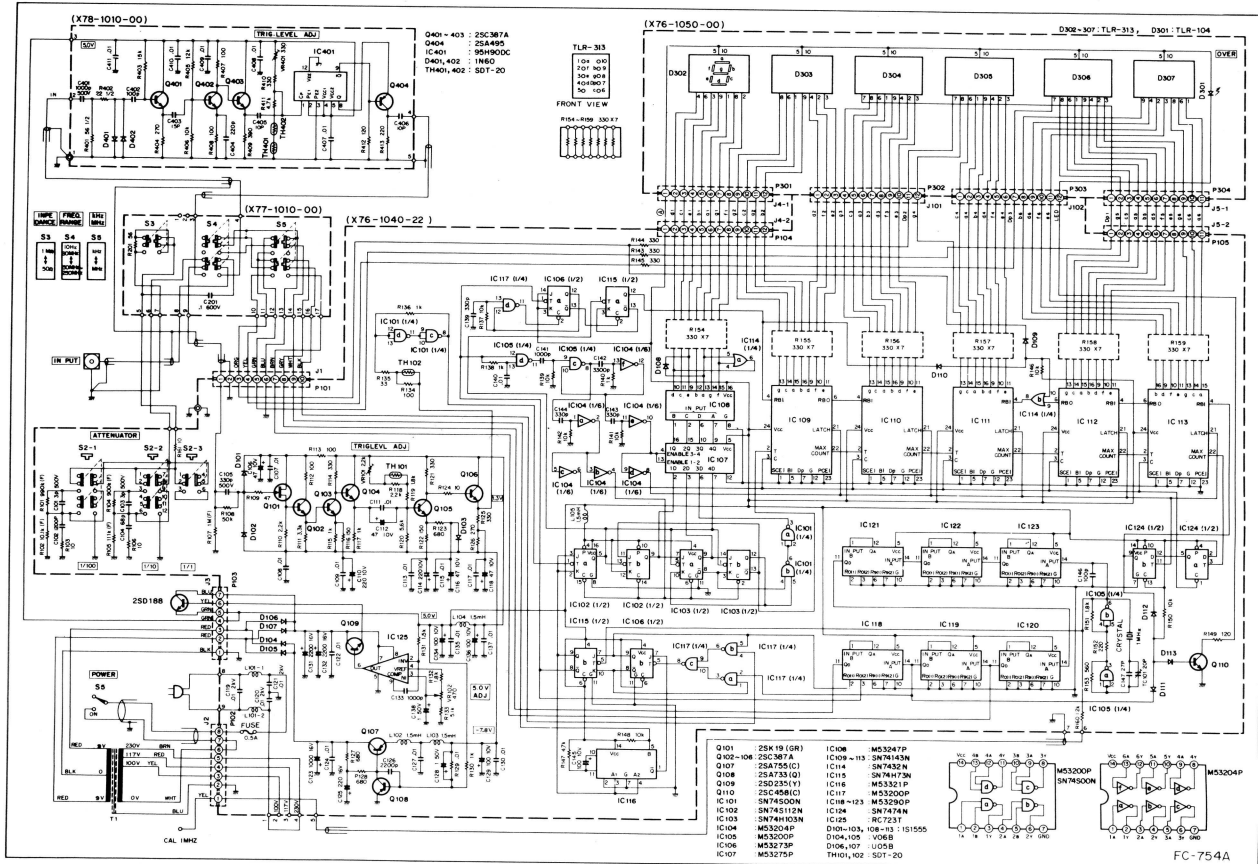
PC BOARD (X76-1040-21)



PC BOARD (X76-1050-00)



SCHEMATIC DIAGRAM (FC-754A)



* The above schematic diagram is subject to change without notice for further improvement.

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