AKAI

SECTION 4

SCHEMATIC DIAGRAM

MODEL F-7/L (FD-7/L, FP-7)

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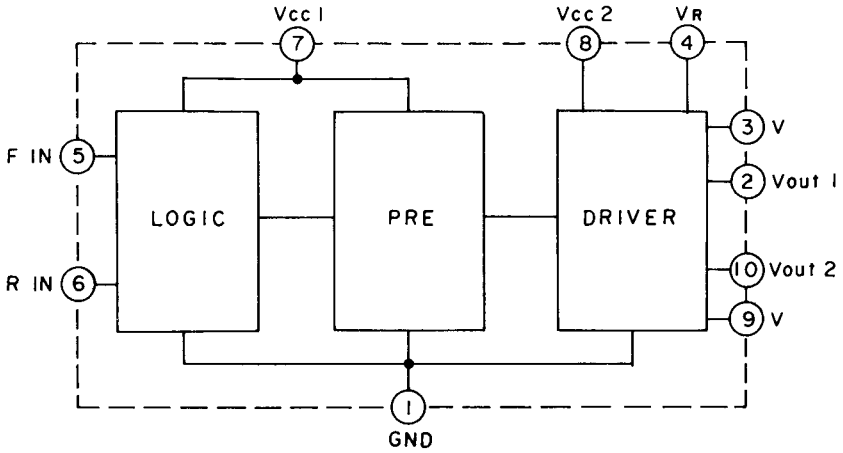
BA6109



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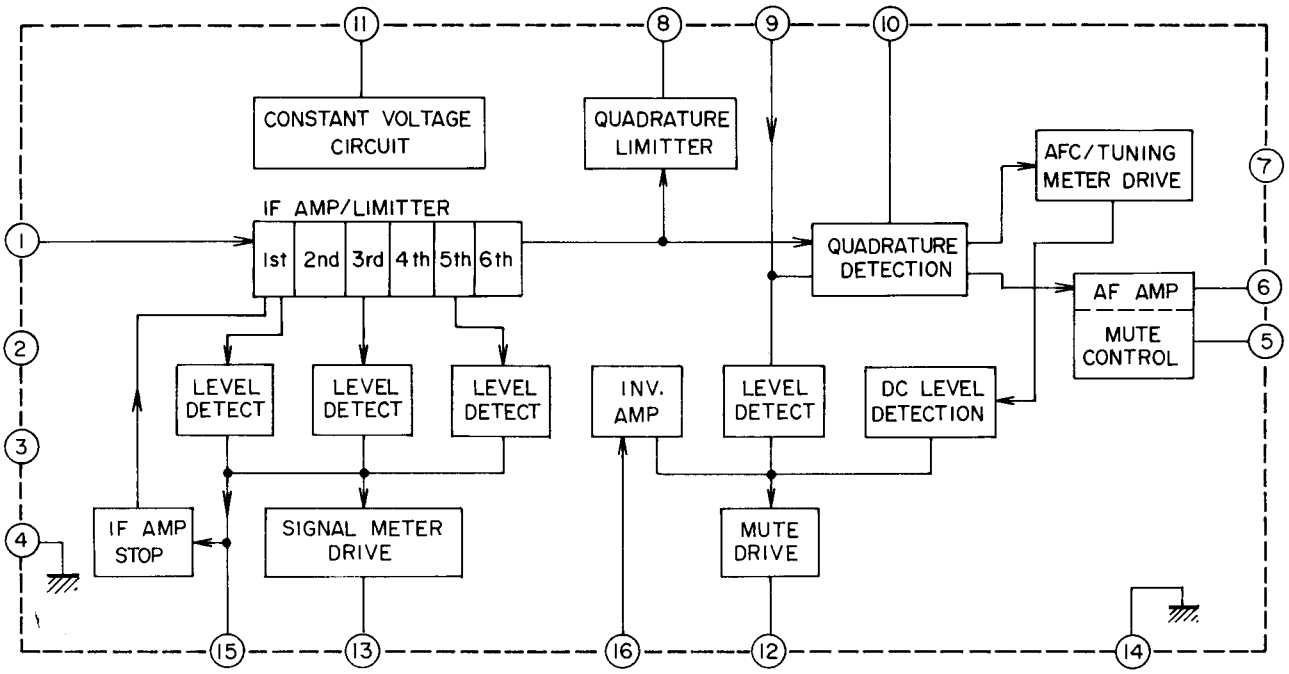

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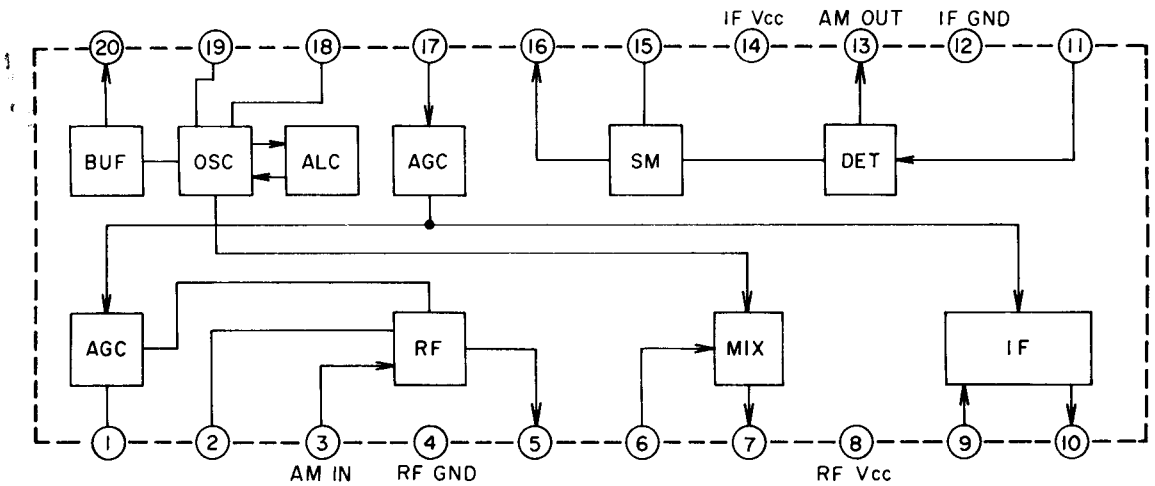

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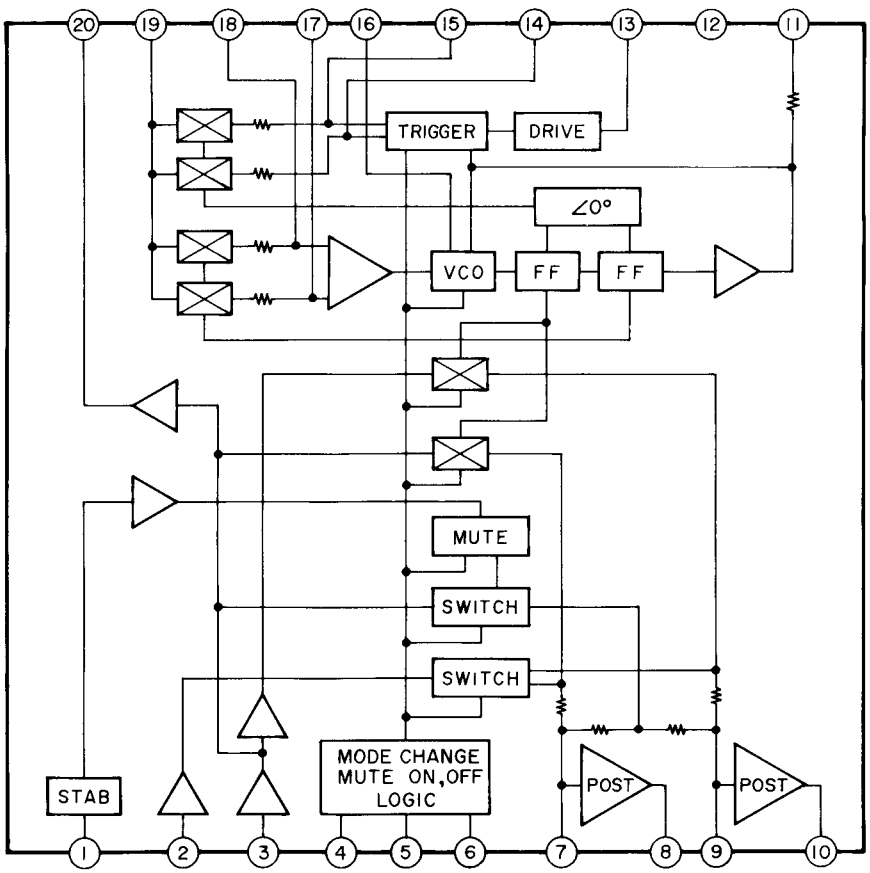

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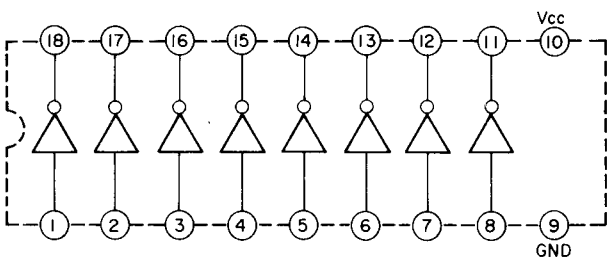

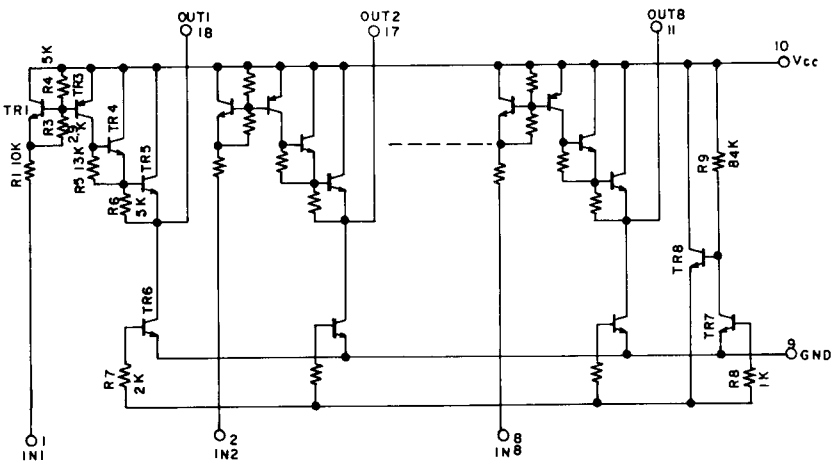

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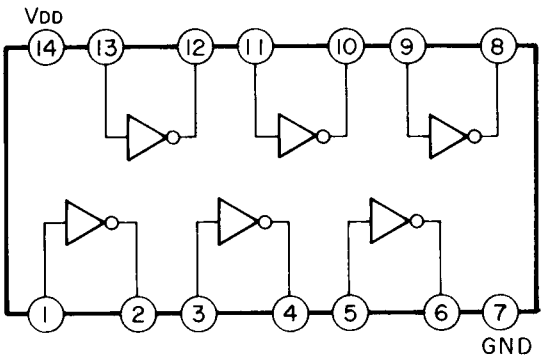

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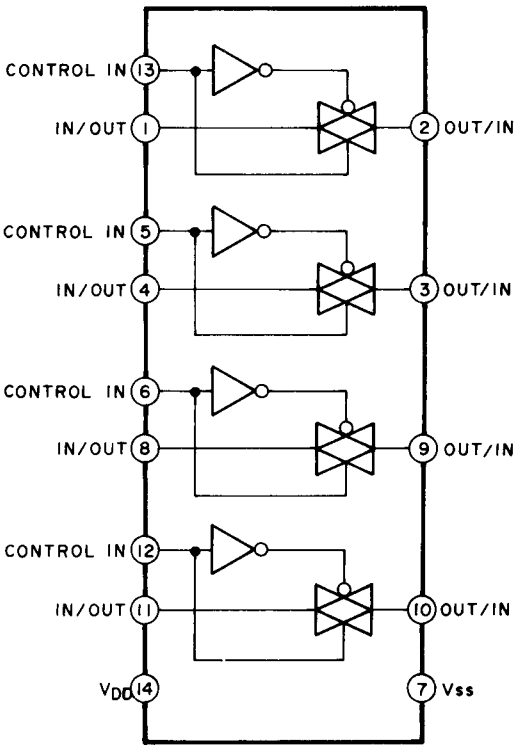

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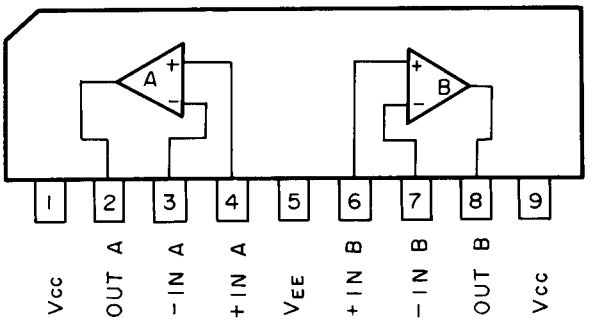
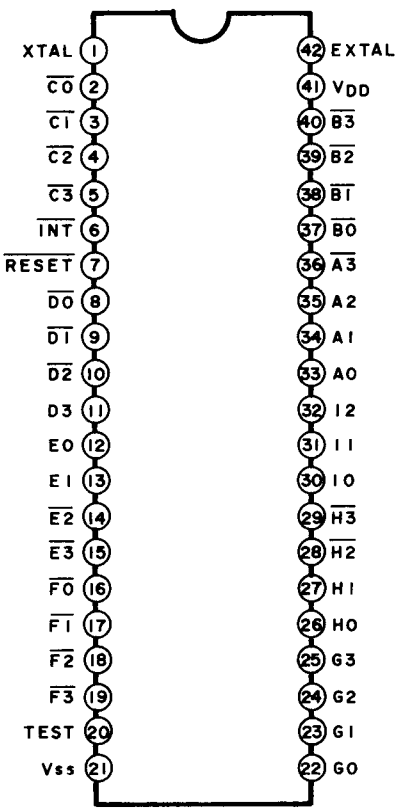


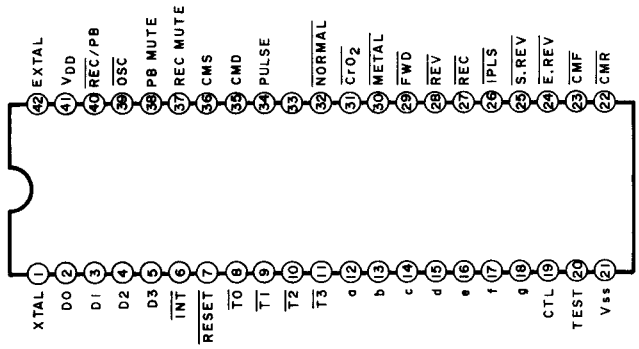
LM6402A-121



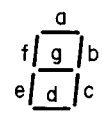
LM6402A-121

Pin No.	Symbol	Description
1	X TAL	400 kHz Crystal Oscillator input
2	$\overline{C0}$	ANTI SKATING, Active at "L"
3	$\overline{C1}$	LOW VOLTAGE / HIGH VOLTAGE } TONE ARM UP/DOWN PLUNGER DRIVE Active at "L" (HIGH DRIVE → 3 SEC)
4	$\overline{C2}$	
5	$\overline{C3}$	RECORD SENSOR ILLUMINATOR LAMP DRIVE, Active at "L"
6	$\overline{INT}$	Initialize terminal, Initialize at "L"
7	$\overline{RESET}$	Reset terminal, Reset at "L"
8	$\overline{D0}$	SPEED SERVO / FWD / REV / SLOW } ARM MOTOR CONTROL signal output D0, 1, 2: Active at "L" D3 : Active at "H"
9	$\overline{D1}$	
10	$\overline{D2}$	
11	D3	
12	E0	MAIN MOTOR SPEED (33-1/3 / 45 rpm) control output, 33 at "L", 45 at "H"
13	E1	MAIN MOTOR ON/OFF (PLAY/STOP) signal output, ON at "L", OFF at "H"
14	$\overline{E2}$	SLIDE MOTOR DRIVE (OPEN) output / SLIDE MOTOR DRIVE (CLOSE) output } Active at "L"
15	$\overline{E3}$	
16	$\overline{F0}$	33-1/3 / 45 rpm / REPEAT } LED DRIVE output, Active at "L"
17	$\overline{F1}$	
18	$\overline{F2}$	
19	$\overline{F3}$	DISK END signal output, END at "H"
20	TEST	} Connected to ground
21	Vss	
22	G0	} Not used (open)
23	G1	
24	G2	
25	G3	
26	H0	
27	H1	Not used (Connected to ground)
28	$\overline{H2}$	17 cm Record Size Detection input / 30 cm Record Size Detection input } Active at "L"
29	$\overline{H3}$	
30	I0	Arm Location Sensor 1 input / Arm Location Sensor 2 input / Arm Location Sensor 3 input } Active at "H"
31	I1	
32	I2	
33	A0	CABINET Location Detection (OPEN) input / CABINET Location Detection (CLOSE) input } Active at "H"
34	A1	
35	A2	Arm UP/DOWN Detection input, UP at "H", DOWN at "L"
36	$\overline{A3}$	CABINET OPEN/CLOSE signal input, Active at "L"
37	$\overline{B0}$	START/CUT signal input, Active at "L"
38	$\overline{B1}$	CUE (ARM UP/DOWN) signal input, Active at "L"
39	$\overline{B2}$	REPEAT signal input, Active at "L"
40	$\overline{B3}$	SPEED (33/45) Selection signal input, Active at "L"
41	VDD	+5 V
42	EX TAL	400 kHz Crystal Oscillator input

LM6402H-155



LM6402H-155, 190

Pin No.	Symbol	Description
1	X TAL	Crystal oscillator terminal
2	D0	CONTROL DATA INPUT
3	D1	
4	D2	
5	D3	
6	$\overline{INT}$	Cam Motor Rotation Pulse input
7	$\overline{RESET}$	Reset terminal
8	T0	11G
9	T1	10G
10	T2	9G
11	T3	8G — FLD Digit Designation output & Matrix Digit output
12	a	7 Segment Data output 
13	b	
14	c	
15	d	
16	e	
17	f	
18	g	
19	CTL	Input IC selection signal output
20	TEST	Connected to ground
21	Vss	
22	$\overline{CMR}$	Reverse turn — Cam Motor control output, Active at "L"
23	$\overline{CMF}$	Forward turn
24	$\overline{E.REV}$	Eternal (Continuous) Reverse — FLD Drive output, Active at "L"
25	$\overline{S.REV}$	Single Reverse
26	$\overline{IPLS}$	IPLS
27	$\overline{REC}$	Record
28	$\overline{REV}$	Reverse
29	$\overline{FWD}$	Forward
30	$\overline{METAL}$	METAL tape — FL Display Drive output & PRE AMP EQ Control output Active at "L"
31	$\overline{CrO_2}$	CrO_2 tape
32	$\overline{NORMAL}$	Normal tape

Pin No.	Symbol	Description
33		
34	PULSE	Reel Rotation Pulse input
35	CMD	Cam Motor Direction signal input
36	CMS	Cam Motor STOP Detection signal input
37	REC MUTE	Recording Mute at "H"
38	PB MUTE	Playback Mute at "H"
39	$\overline{OSC}$	Oscillator Drive at "L"
40	$\overline{REC}$/PB	Recording at "L", Playback at "H"
41	V_{DD}	+5 V
42	EXTAL	Crystal Oscillator terminal

KEY MATRIX (INPUT EXPANDER)

IC3 (LM6402H) Symbol			T3	T2	T1	T0	CTL
	IC3 Pin No.		11	10	9	8	19
		IC4, 5 (LC7800) Pin No.	19	20	21	22	27
D3	5	23	EJECT (STOP) ①			COUNTER RESET ⑮	H
D2	4	24	FWD	REW			H
D1	3	25	REV	AUTO MUTE	REV SELECT ⑪		H
D0	2	26	REC	REC CANCEL	IPLS ⑫		H

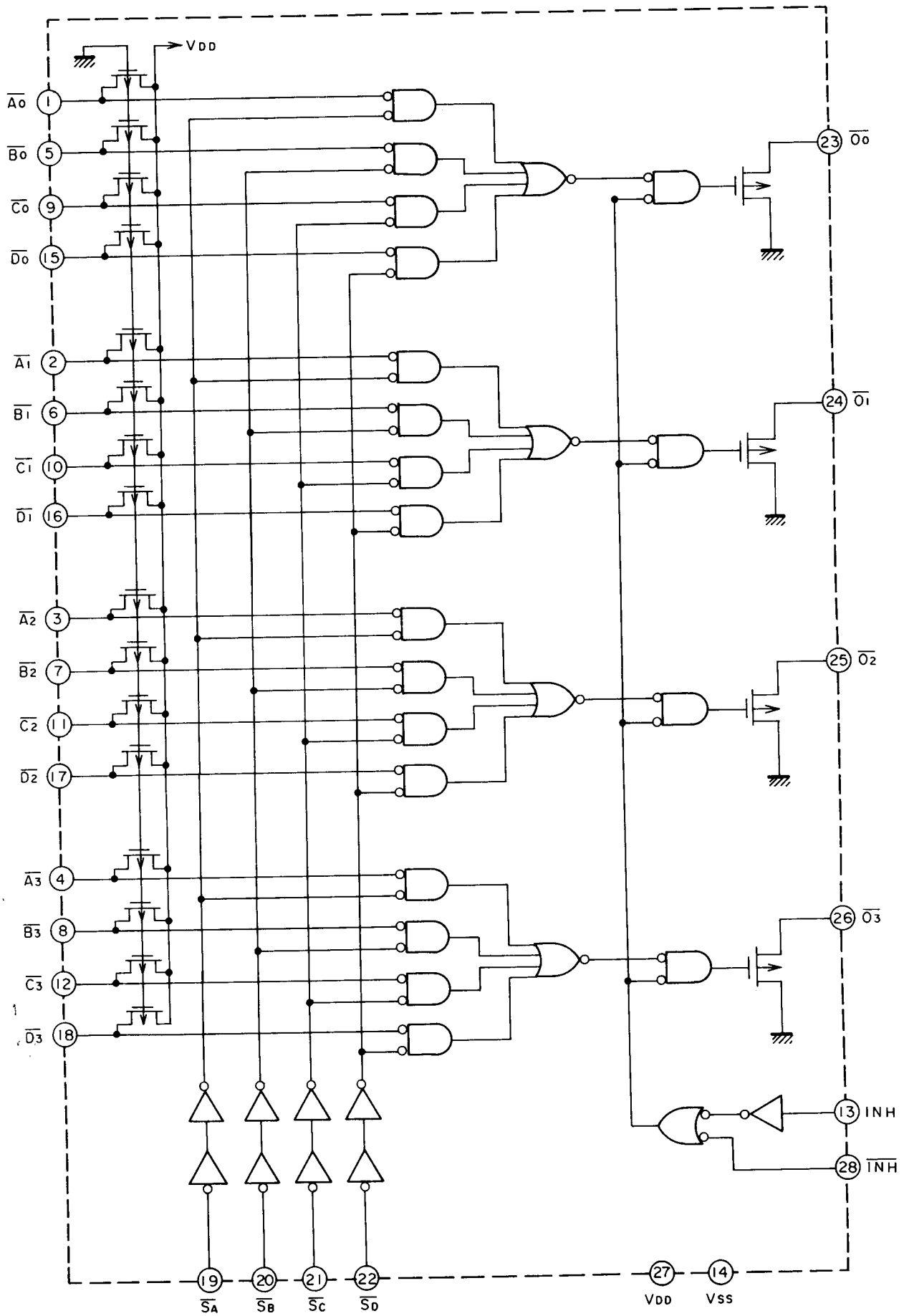
* ○ = IC4 Pin No.

IC3 (LM6402H) Symbol			T3	T2	T1	T0	CTL
	IC3 Pin No.		11	10	9	8	19
		IC4, 5 (LC7800) Pin No.	19	20	21	22	13
D3	5	23	CAM DIRECTION ①	CrO_2 ⑤	* ⑨	IPLS ⑮	L
D2	4	24	FWD/REV ②	METAL ⑥	* ⑩	QUICK REV ⑯	L
D1	3	25	A.R FWD ③	TIMER PLAY	* ⑪		L
D0	2	26	A.R REV ④	TIMER REC	* ⑫		L

* OPERATION DATA = Refer to CONTROL DATA chart indicated next.
* ○ = IC5 Pin No.

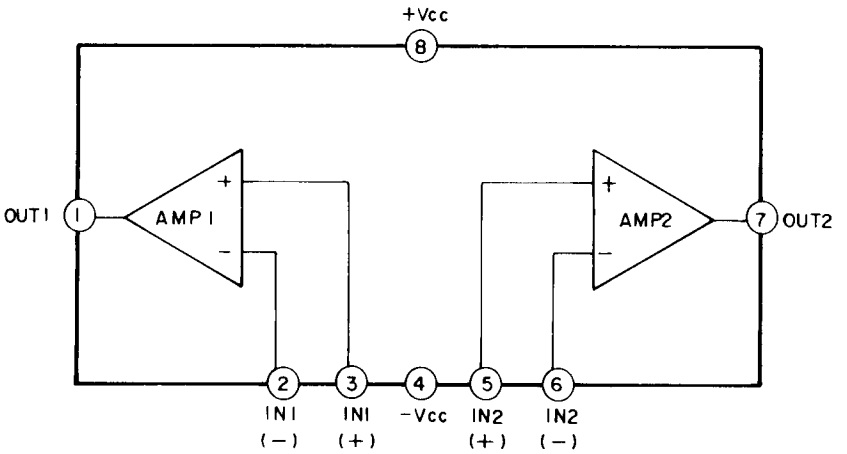
CONTROL DATA

Mode	Control Data Input				Mode	Control Data Input			
	D3	D2	D1	D0		D3	D2	D1	D0
STOP	0	0	0	0	AUTO MUTE	0	1	0	1
FF	0	0	0	1	REC FWD	0	1	1	0
REW	0	0	1	0	REV	1	0	1	1
FWD	0	0	1	1	REC REV	1	1	1	0
REC	0	1	0	0	NO OPERATION	1	1	1	1

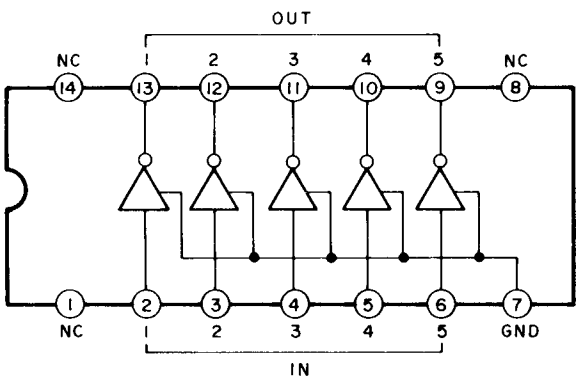


SCHEMAIC DIAGRAM FD-7/L, FP-7

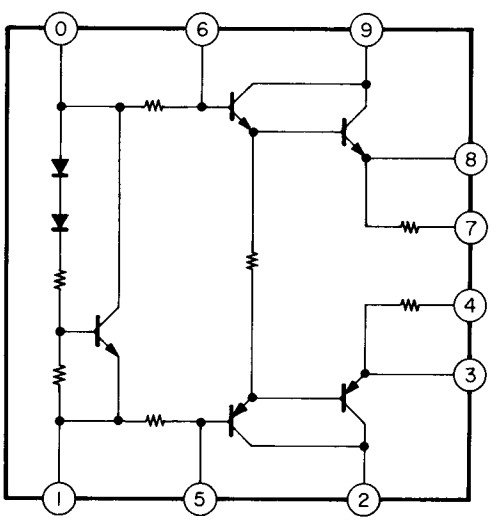
M5218LO, M5218P-21



M54516



STK1050



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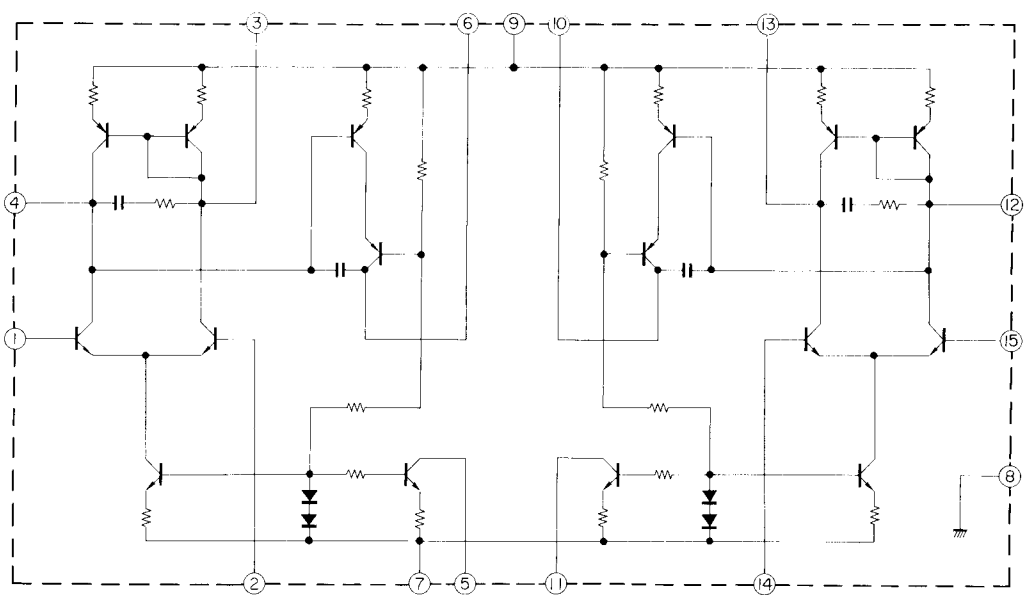
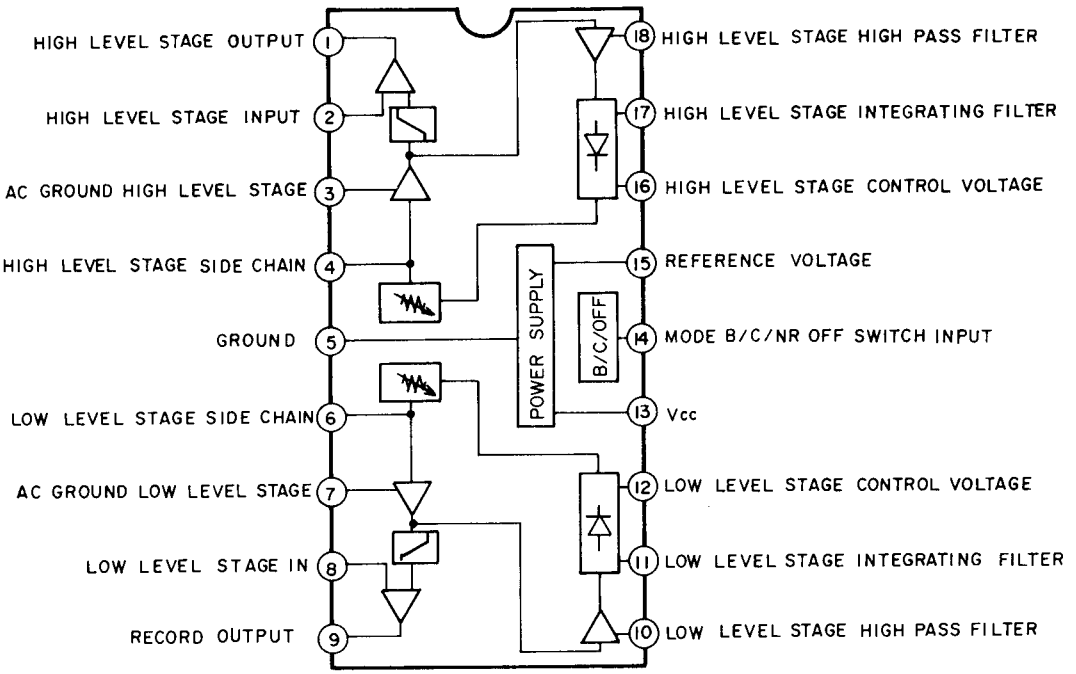
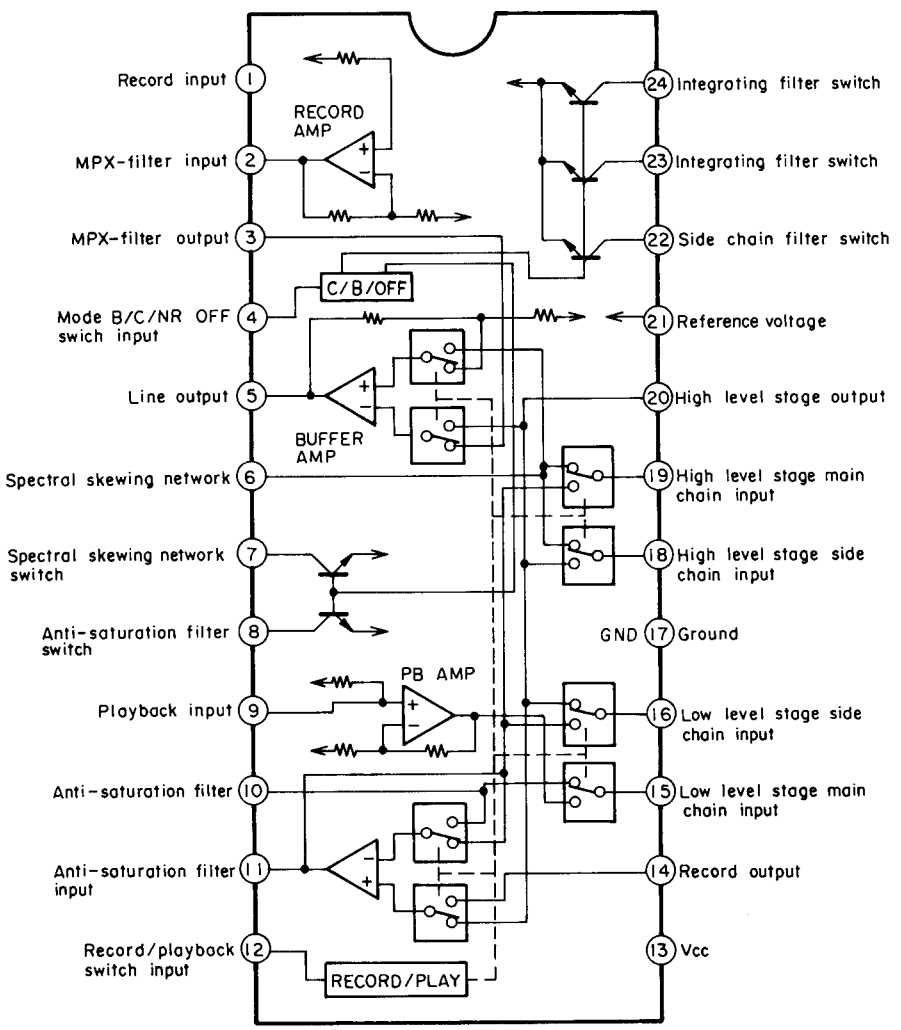


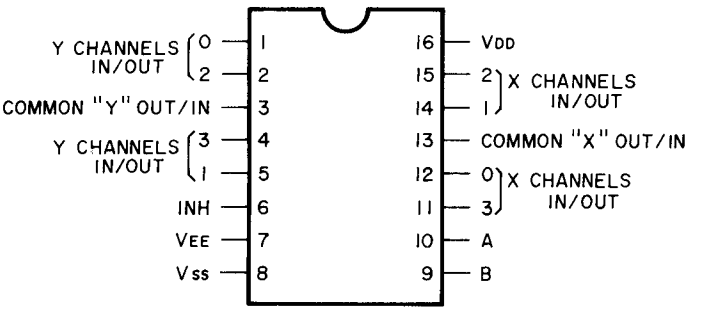
NE652


HIGH LEVEL STAGE OUTPUT 1
HIGH LEVEL STAGE INPUT 2
AC GROUND HIGH LEVEL STAGE 3
HIGH LEVEL STAGE SIDE CHAIN 4
GROUND 5
LOW LEVEL STAGE SIDE CHAIN 6
AC GROUND LOW LEVEL STAGE 7
LOW LEVEL STAGE IN 8
RECORD OUTPUT 9
18 HIGH LEVEL STAGE HIGH PASS FILTER
17 HIGH LEVEL STAGE INTEGRATING FILTER
16 HIGH LEVEL STAGE CONTROL VOLTAGE
15 REFERENCE VOLTAGE
14 MODE B/C/NR OFF SWITCH INPUT
13 Vcc
12 LOW LEVEL STAGE CONTROL VOLTAGE
11 LOW LEVEL STAGE INTEGRATING FILTER
10 LOW LEVEL STAGE HIGH PASS FILTER
POWER SUPPLY
B/C/OFF

NE654

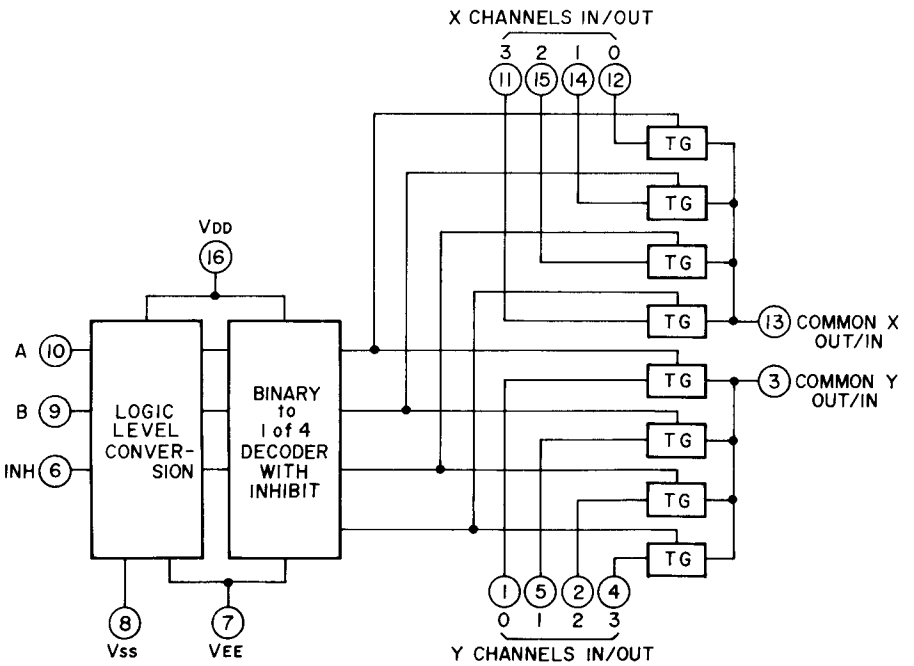

Record input 1
MPX-filter input 2
MPX-filter output 3
Mode B/C/NR OFF swich input 4
Line output 5
Spectral skewing network 6
Spectral skewing network switch 7
Anti-saturation filter switch 8
Playback input 9
Anti-saturation filter 10
Anti-saturation filter input 11
Record/playback switch input 12
RECORD AMP
BUFFER AMP
PB AMP
C/B/OFF
RECORD/PLAY
24 Integrating filter switch
23 Integrating filter switch
22 Side chain filter switch
21 Reference voltage
20 High level stage output
19 High level stage main chain input
18 High level stage side chain input
GND 17 Ground
16 Low level stage side chain input
15 Low level stage main chain input
14 Record output
13 Vcc

TC4052BP



INHIBIT (6)	A (10)	B (9)	"ON" CHANNEL
L	L	L	0X, 0Y
L	H	L	1X, 1Y
L	L	H	2X, 2Y
L	H	H	3X, 3Y
H	X	X	NONE

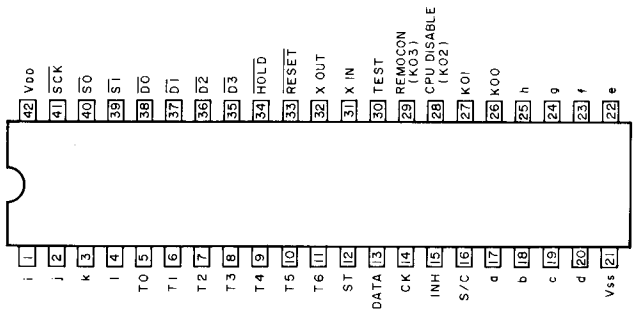
X=DON'T CARE



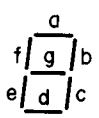
FUNCTION (Analogue SW IC TC4052BP) Selection Signal

Function \ Output	A	B
PHONO	1	0
TUNER	0	1
AUX	1	1
TAPE	0	0

TC47C21P (NH-100)



TERMINAL DESCRIPTION OF IC1 TC47C21P (NH-100)

Pin No.	Symbol	Description
1	i	FLD Segment Data output
2	j	
3	k	
4	l	
5	T0	1G
6	T1	2G
7	T2	3G
8	T3	4G
9	T4	5G
10	T5	6G
11	T6	7G
		FLD Digit Designation output & Matrix Digit output
12	ST	Strobe Pulse
13	DATA	Data Pulse
14	CK	Clock Pulse
		for Electronic Volume (IC2: TC9154P) Control
15	INH	Key Input Inhibit signal input
16	S/C	START/CUT, produces a pulse when PHONO button is depressed.
17	a	FLD 7 Segment Data output
18	b	
19	c	
20	d	
		
21	Vss	Connected to ground
22	e	FLD 7 Segment Data output
23	f	
24	g	
25	h	FLD Segment Data
26	K00	Key Matrix input
27	K01	
28	DISABLE (K02)	Key Input Inhibit signal output for IC2 TC47C20P (NH-20D)
29	REMOCON (K03)	Remote Control Data Pulse input
30	TEST	Connected to ground
31	XIN	X'tal oscillator (X1: 4.2 MHz) terminals
32	XOUT	

Pin No.	Symbol	Description
33	$\overline{RESET}$	Reset terminal
34	$\overline{HOLD}$	Back up Detection input
35	$\overline{D3}$	Control Data output for IC3 LM6402H-155, 190
36	$\overline{D2}$	
37	$\overline{D1}$	
38	$\overline{D0}$	
39	$\overline{SI}$	Input — Serial Data between IC2 TC47C20P (NH-200)
40	$\overline{SO}$	Output
41	$\overline{SCK}$	Clock
42	V_{DD}	+5 V

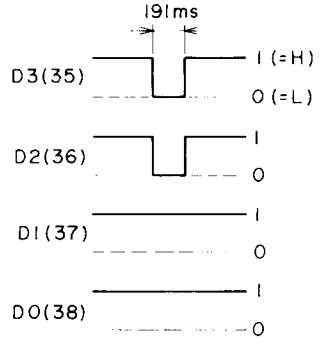
KEY INPUT MATRIX (FLD DIGIT Designation & Matrix Digit output)

Symbol (Pin No.) / Symbol (Pin No.)	T6 (11)	T5 (10)	T4 (9)	T3 (8)	T2 (7)	T1 (6)	T0 (5)
K0 (26)	REC/PB	DISK END	FWD/REV	24h/12h	MIN	HOUR	TIMER ON/OFF
K1 (27)	SLEEP	TUNER REC	TAPE PLAY	TUNER PLAY	ON TIMER-SET	OFF TIMER-SET	CLOCK SET

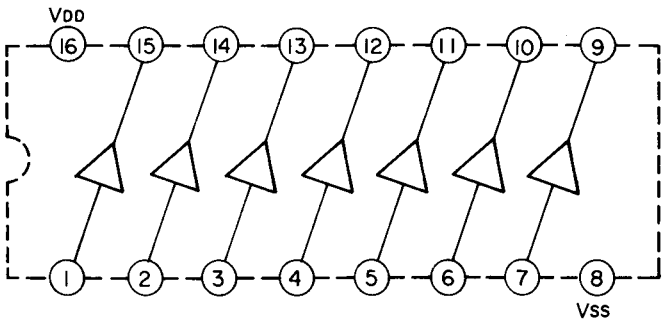
CONTROL DATA for IC3 LM6402H-155, 190

Function / IC Pin & Symbol	35 D3	36 D2	37 D1	38 D0
STOP	0	0	0	0
FF	0	0	0	1
RWD	0	0	1	0
FWD	0	0	1	1
REC	0	1	0	0
REC MUTE	0	1	0	1
REC PWD	0	1	1	0
REV	1	0	1	1
REC REV	1	1	1	0

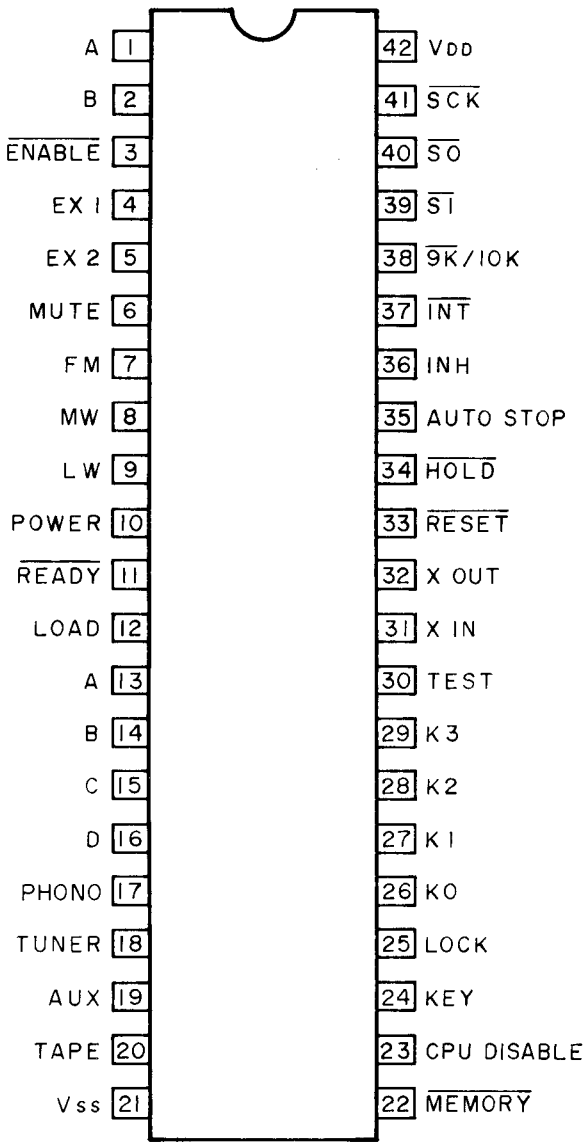
(ex) FWD



TC5066BP



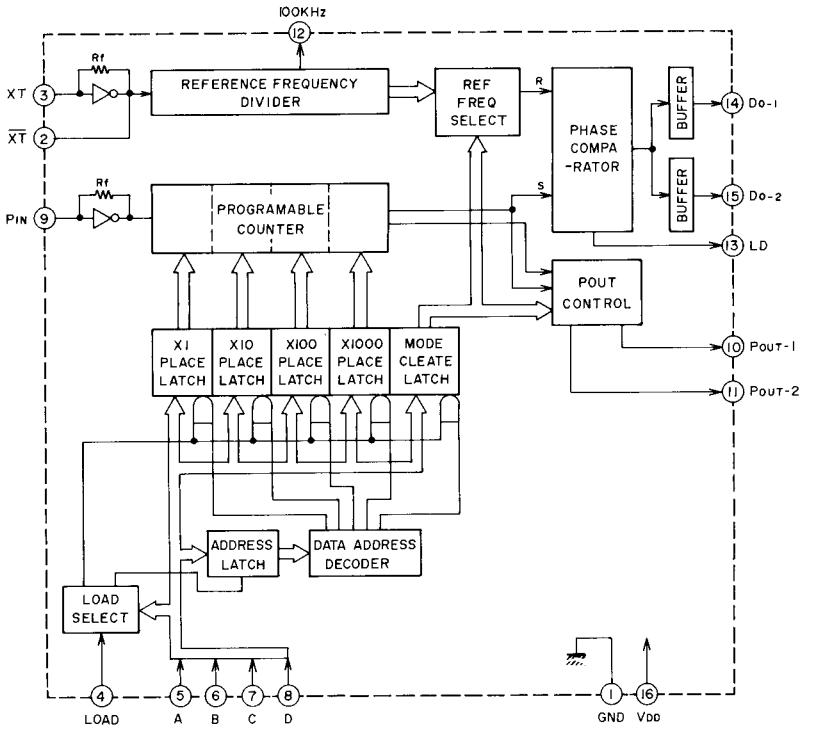
TC47C21P (NH-200)



TERMINAL DESCRIPTION OF IC2 TC47C20P (NH-200)

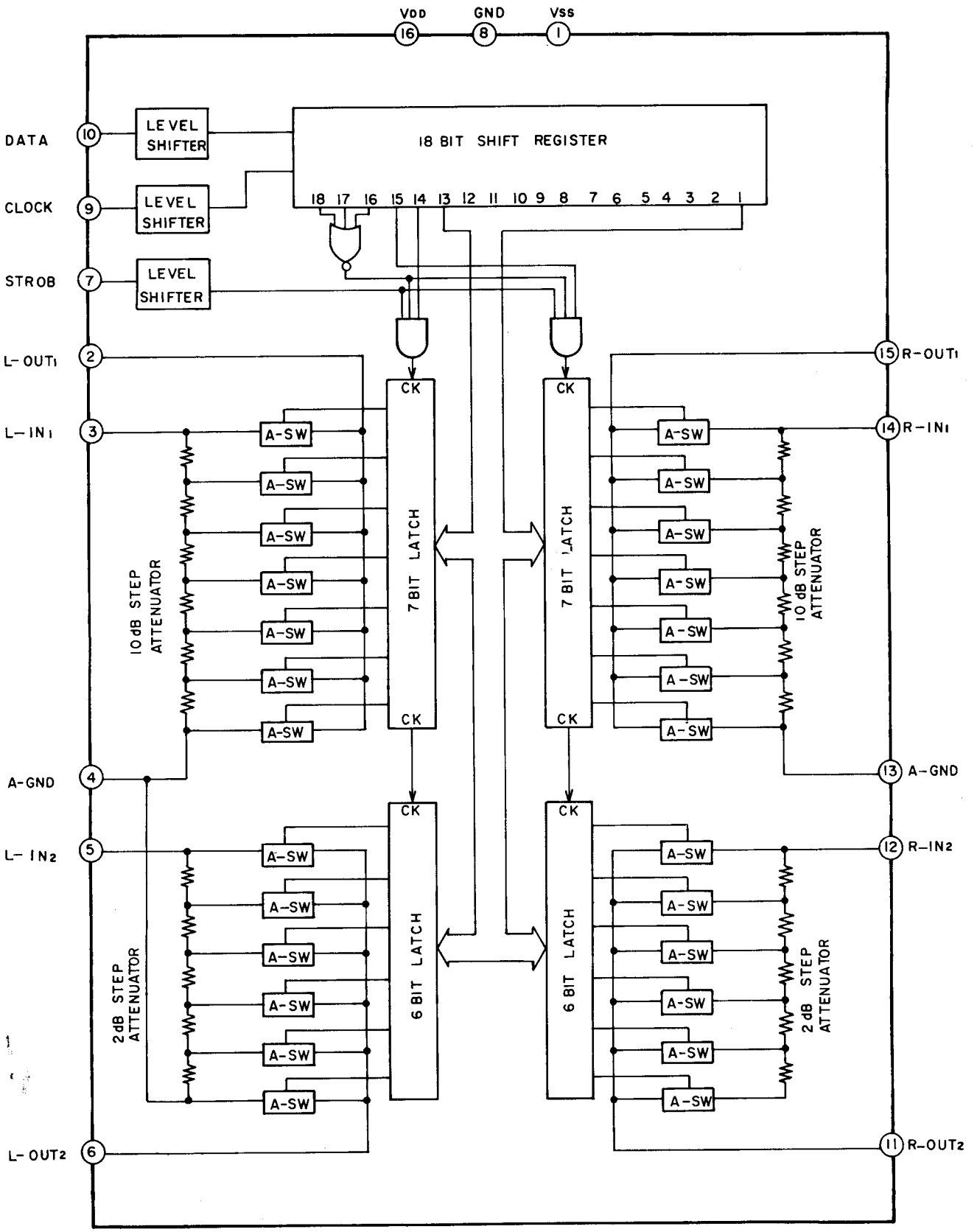
Pin No.	Symbol	Description
1	A	Function (Analogue SW) Selection signal output for IC2 (TC4052BP)
2	B	
3	$\overline{\text{ENABLE}}$	Not used and connected to +5 V line
4	EX1	Not used and connector to +5 V line
5	EX2	
6	MUTE	Tuner Section Audio Mute output, active at "H"
7	FM	Band Selection Data output, active at "H"
8	MW	
9	LW	
10	POWER	Power Relay (RL1) Drive output, active at "H"
11	$\overline{\text{READY}}$	Not used and connected to +5 V line
12	LOAD	PLL Data Write signal (PLL Load signal)
13	A	PLL Frequency Data output for PLL IC (IC5: TC9125BP)
14	B	
15	C	
16	D	
17	PHONO	Function Display, lit at "H"
18	TUNER	
19	AUX	
20	TAPE	
21	VSS	Connected to ground
22	$\overline{\text{MEMORY}}$	MEMORY (FLD) Display Drive, lit at "L"
23	DISABLE	Key Input inhibit signal output for IC1 TC47C21P (NH-101) active at "H"
24	KEY	Key Input Common signal output
25	LOCK	Key Input Lock [K0 (2/3 Band), K2 (FM Band Upper/Lower), K3 (FM Step 50kHz/100kHz)]
26	K0	DOWN
27	K1	UP
28	K2	BAND
29	K3	MEMORY
		Key Input, active at "H"
30	TEST	Connected to ground
31	XIN	X'tal oscillator terminals
32	XOUT	
33	$\overline{\text{RESET}}$	Reset terminal
34	$\overline{\text{HOLD}}$	Back-up Detection
35	AUTO STOP	AUTO STOP Detection input, AUTO STOP at "H"
36	INH	Key Input inhibit signal input, active "H"
37	$\overline{\text{INT}}$	Connected to 5V line
38	$\overline{\text{9K}}$/10K	AM 9 kHz/10 kHz STEP Selection input, 9 kHz at "L" & 10 kHz at "H"
39	$\overline{\text{SI}}$	Input
40	$\overline{\text{SO}}$	Output
41	$\overline{\text{SCK}}$	Clock
		Serial Data between IC1 TC47C21P (NH-100)
42	VDD	+5 V

TC9125BP

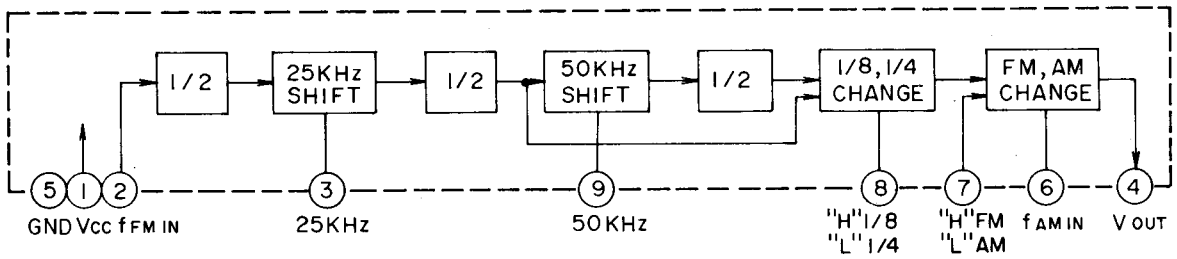


TERMINAL DESCRIPTION OF IC5 TC9125BP

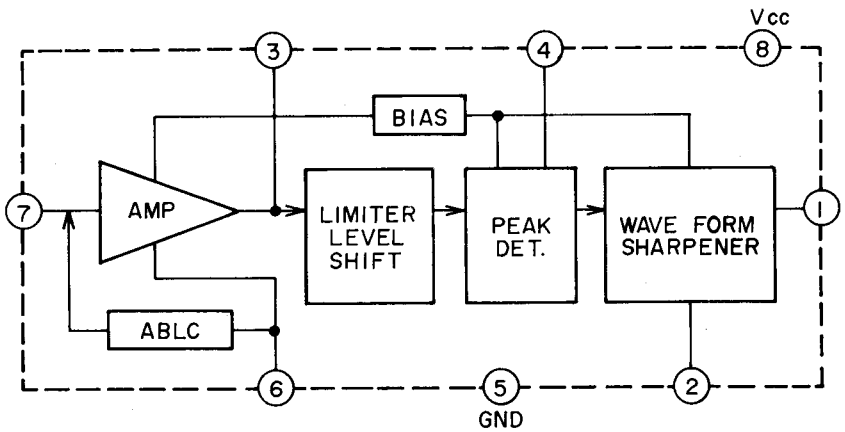
Pin No.	Symbol	Designation of terminal	Description of functions and operations
1	GND	Earth terminal	
2	$\overline{XT}$	Crystal oscillator connection terminal	Connection of 9.0MHz crystal oscillator.
3	XT		
4	LOAD	Load input terminal	Data reading instruction input terminal for A, B, C and D. Data is read when this terminal is at "H" level, but when at "L" level, the previous data is held regardless of other inputs.
5	A	Program/data input terminals	Input terminal for reference frequency selection data and programmable counter division digit data.
6	B		
7	C		
8	D		
9	PIN	Programmable counter input terminals	
10	POUT-1	Programmable counter output terminal	To be connected to the prescaler TD6102P for fine adjustment of IF frequency in FM or for 50 kHz shift in Europe. The signal of Pout-1 and Pout-2 is output at the point of different phase. * Pout-2 is not used (No connection)
11	POUT-2		
12	100 kHz	100 kHz clock output terminal	Not used (No connection)
13	LD	Lock-out detection terminal	Not used (No connection)
14	Do-1	Phase comparator output terminal	To be connected to low-pass filter.
15	Do-2		
16	VDD	Power terminal	+5 V

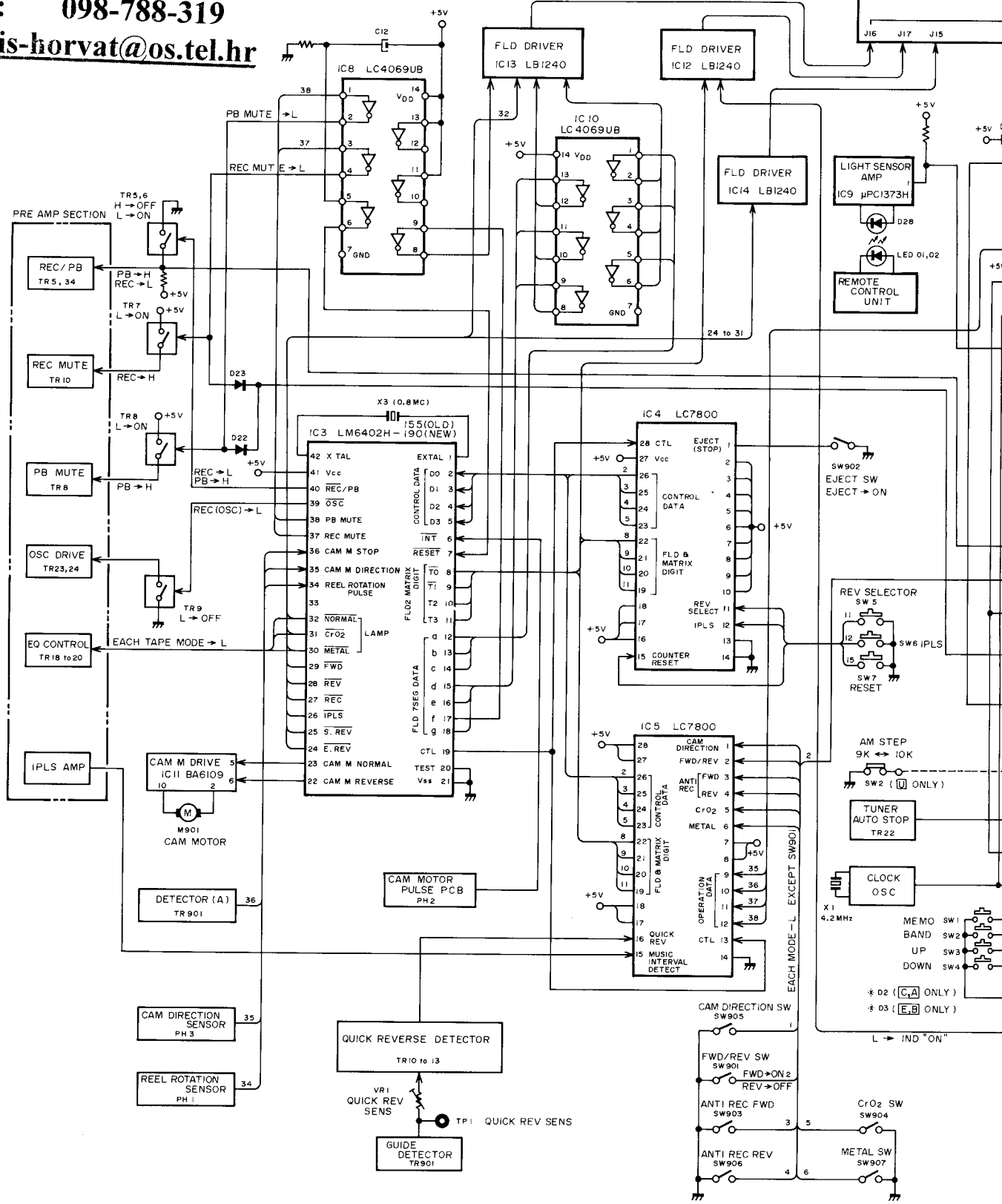

VDD
GND
VSS
16
8
1
DATA
10
CLOCK
9
STROB
7
LEVEL SHIFTER
LEVEL SHIFTER
LEVEL SHIFTER
18 BIT SHIFT REGISTER
18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
L-OUT1
2
L-IN1
3
A-GND
4
L-IN2
5
L-OUT2
6
R-OUT1
15
R-IN1
14
A-GND
13
R-IN2
12
R-OUT2
11
CK
7 BIT LATCH
6 BIT LATCH
A-SW
10 dB STEP ATTENUATOR
2 dB STEP ATTENUATOR

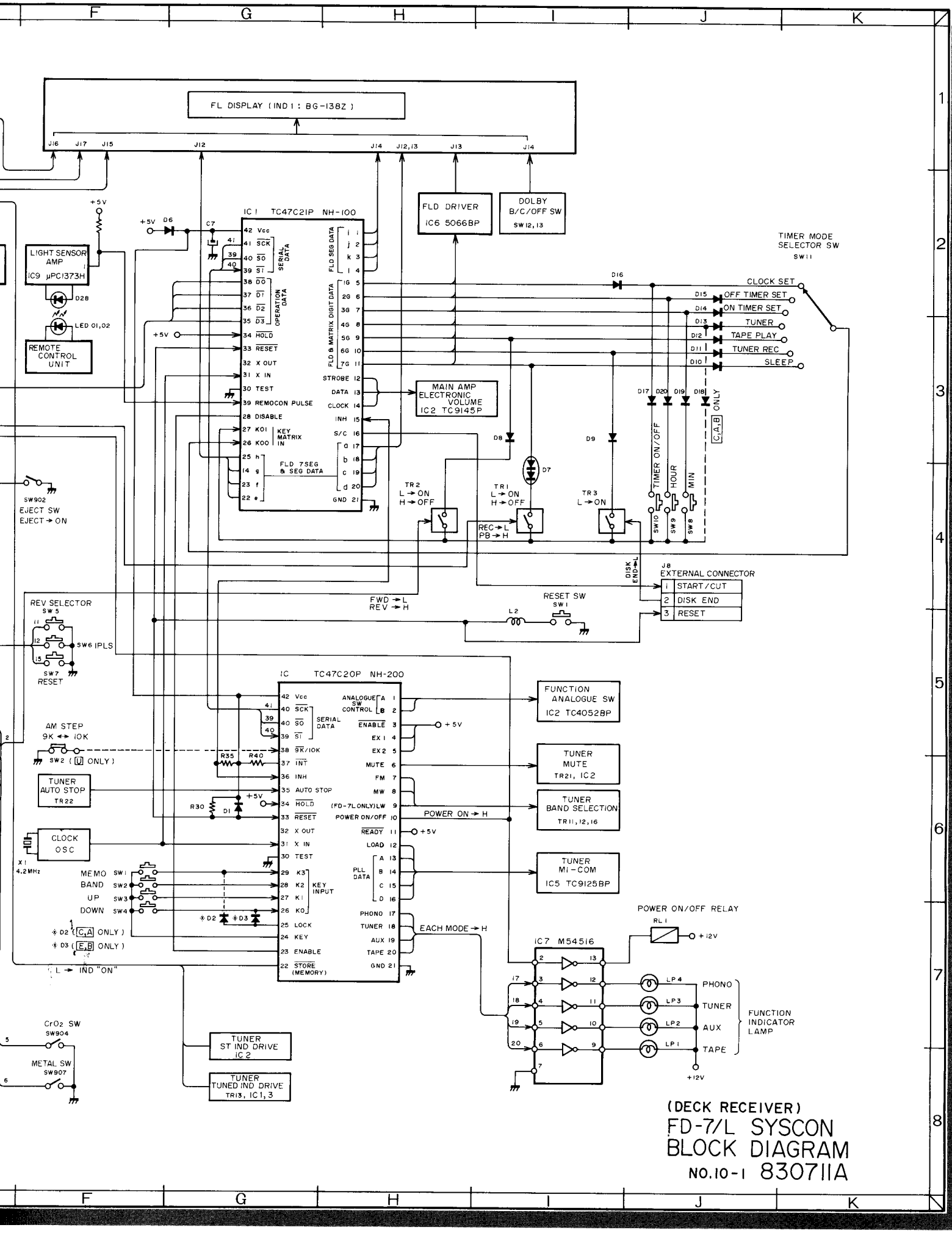
TD6102P



μPC1373H





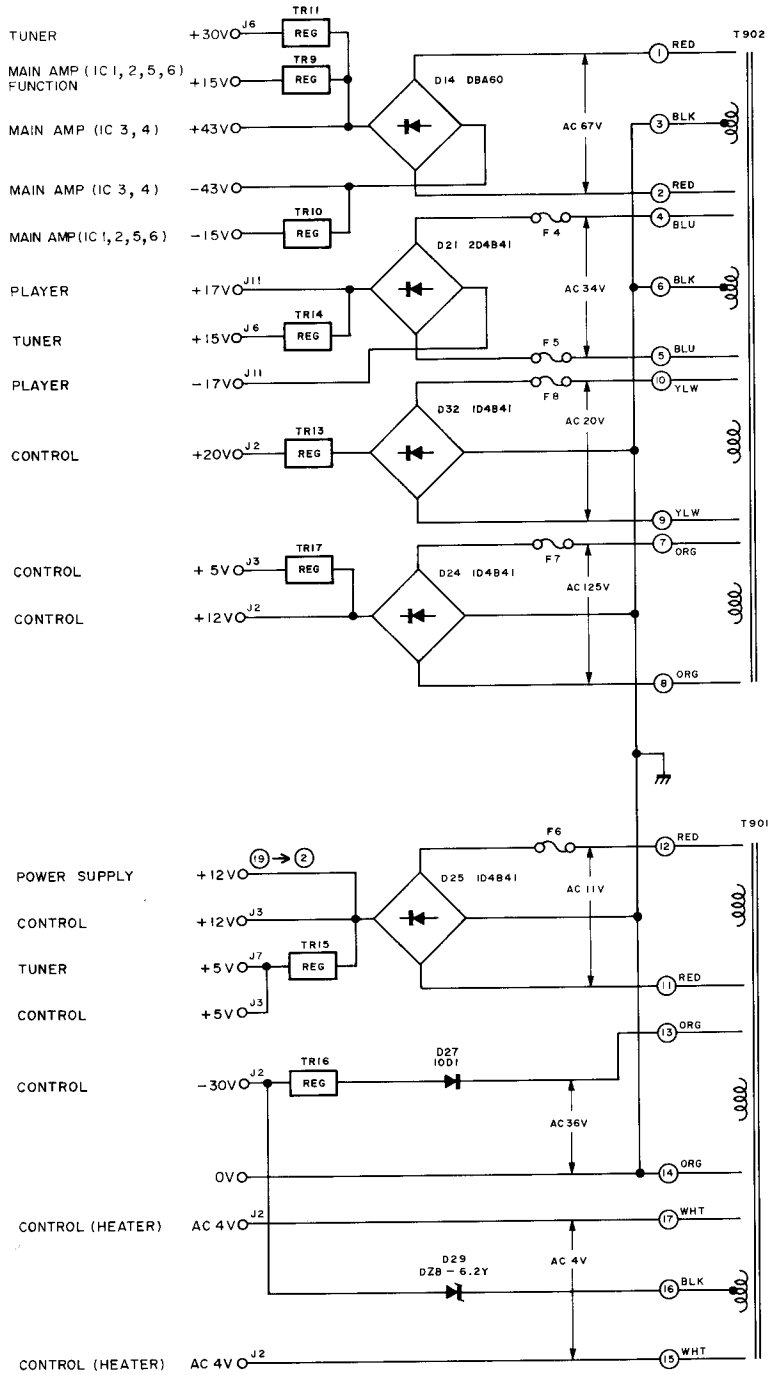


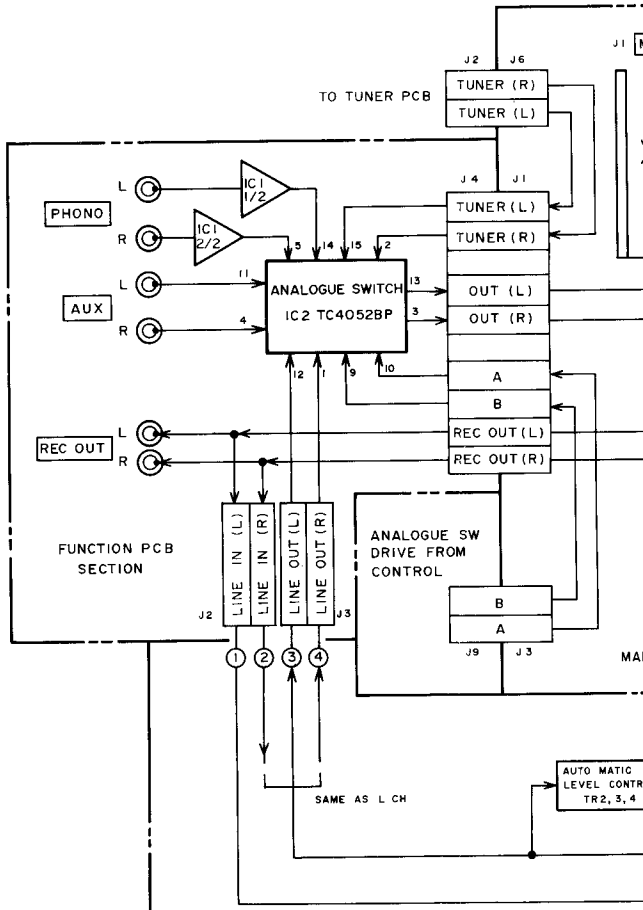
(DECK RECEIVER)

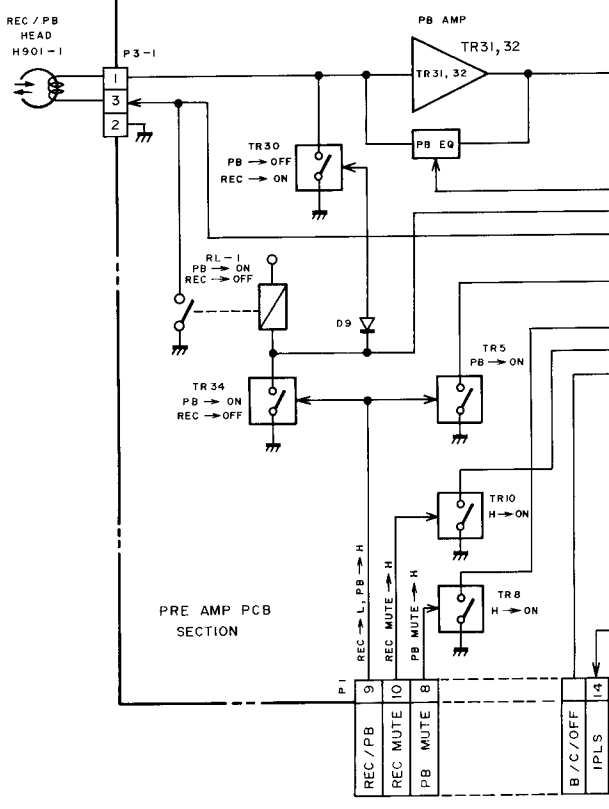
FD-7/L SYSCON BLOCK DIAGRAM

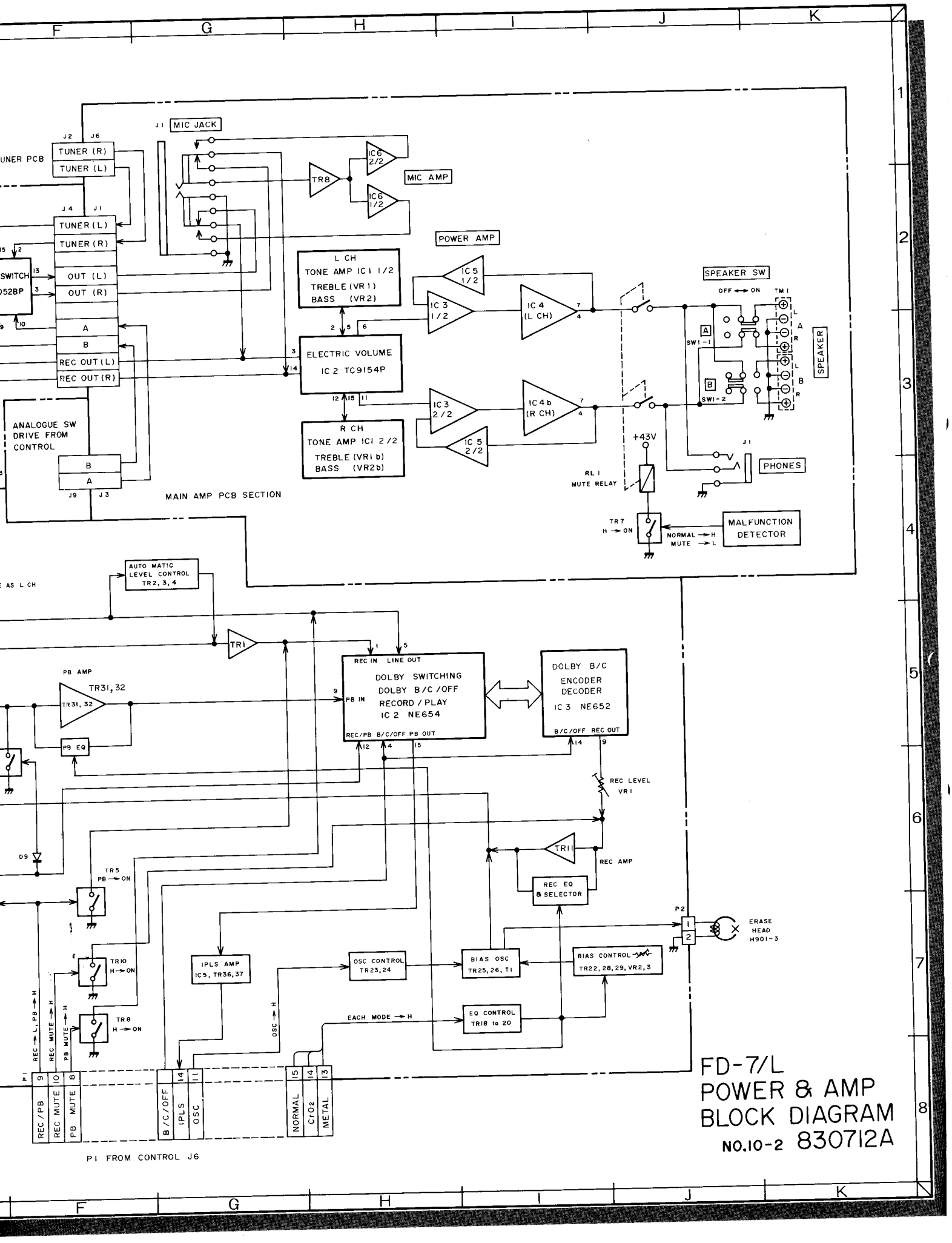
NO.10-1 830711A

FD-7/L


TUNER
+30V
TR11
REG
MAIN AMP (IC 1, 2, 5, 6) FUNCTION
+15V
TR9
REG
MAIN AMP (IC 3, 4)
+43V
MAIN AMP (IC 3, 4)
-43V
MAIN AMP(IC 1, 2, 5, 6)
-15V
TR10
REG
PLAYER
+17V
TUNER
+15V
TR14
REG
PLAYER
-17V
CONTROL
+20V
TR13
REG
CONTROL
+ 5V
TR17
REG
CONTROL
+12V
D14 DBA60
D21 2D4B41
D32 1D4B41
D24 1D4B41
AC 67V
AC 34V
AC 20V
AC 25V
F4
F5
F8
F7
T902
RED
BLK
RED
BLU
BLK
BLU
YLW
YLW
ORG
ORG
POWER SUPPLY
+12V
CONTROL
+12V
TUNER
+5V
TR15
REG
CONTROL
+5V
CONTROL
-30V
TR16
REG
D27 1OD1
CONTROL (HEATER)
AC 4V
D29 DZB-6.2Y
CONTROL (HEATER)
AC 4V
D25 1D4B41
AC 11V
AC 36V
AC 4V
F6
T901
RED
RED
ORG
ORG
WHT
BLK
WHT

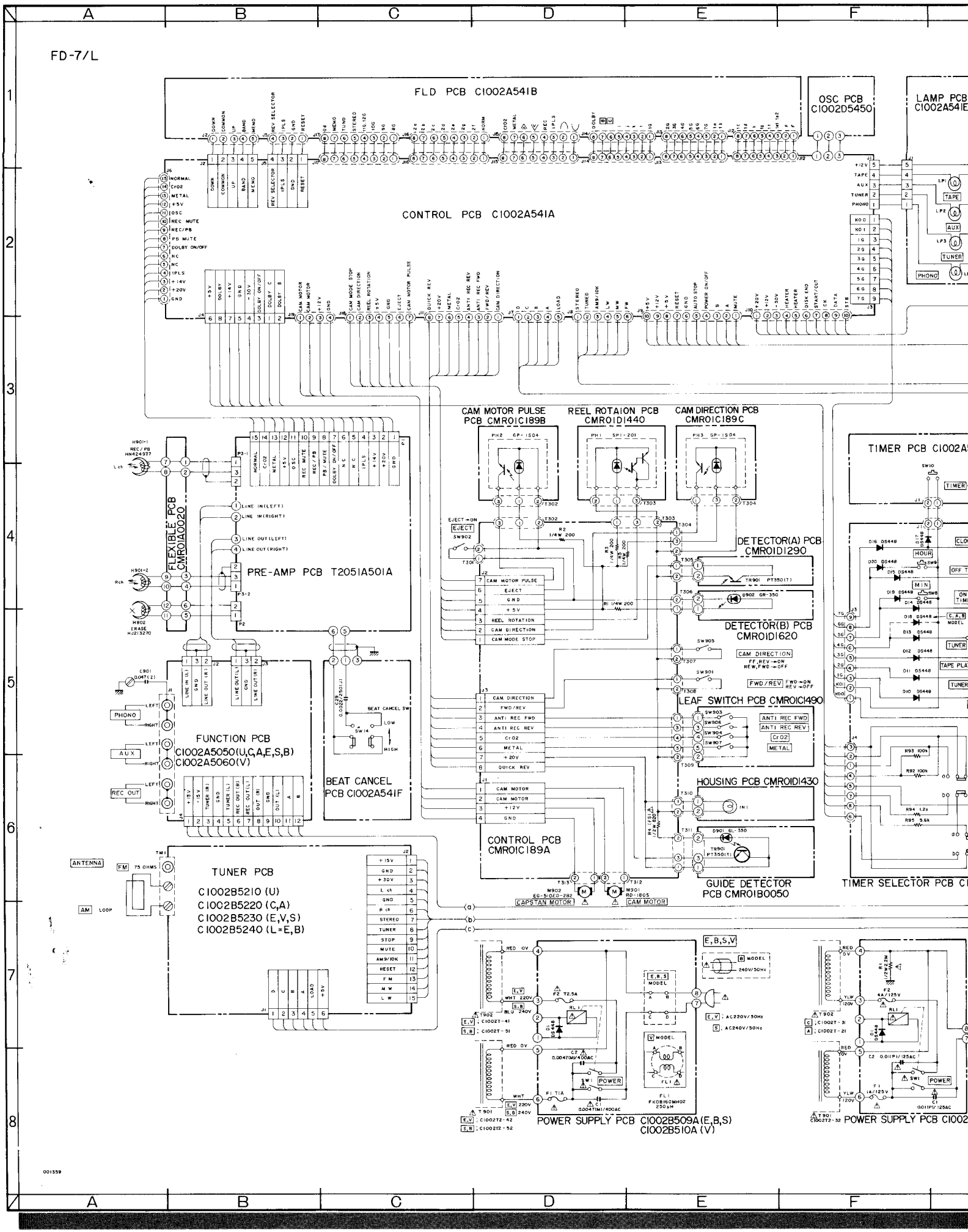

TO TUNER PCB
TUNER (R)
TUNER (L)
PHONO
AUX
REC OUT
IC1 1/2
IC1 2/2
ANALOGUE SWITCH IC2 TC4052BP
TUNER (L)
TUNER (R)
OUT (L)
OUT (R)
A
B
REC OUT (L)
REC OUT (R)
FUNCTION PCB SECTION
LINE IN (L)
LINE IN (R)
LINE OUT (L)
LINE OUT (R)
ANALOGUE SW DRIVE FROM CONTROL
SAME AS L CH
AUTO MATIC LEVEL CONTR
TR2, 3, 4

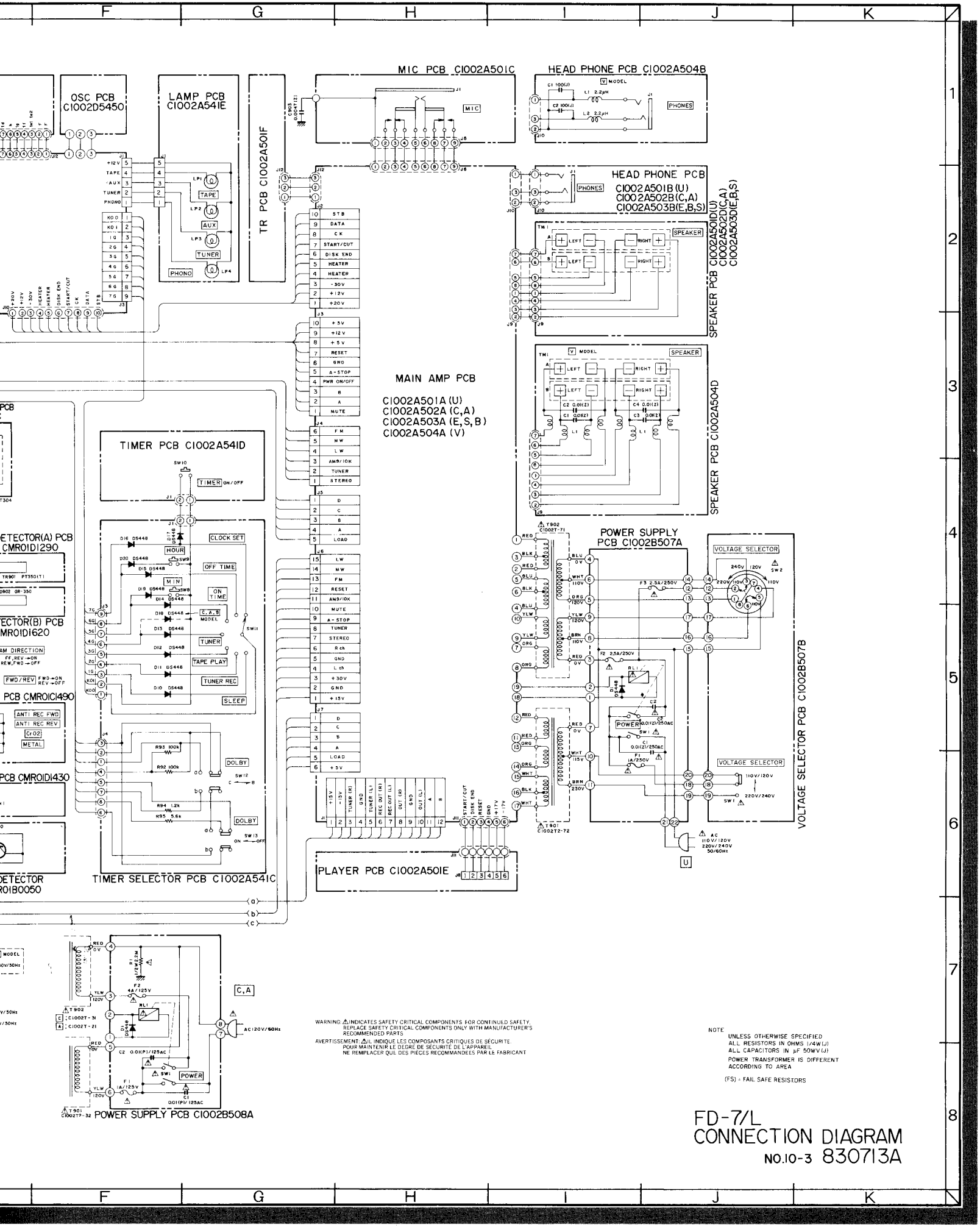

REC / PB HEAD H901-1
P3-1
PB AMP
TR31, 32
PB EQ
TR30
PB → OFF
REC → ON
RL-1
PB → ON
REC → OFF
D9
TR5
PB → ON
TR34
PB → ON
REC → OFF
TR10
H → ON
TR8
H → ON
PRE AMP PCB SECTION
REC → L, PB → H
REC MUTE → H
PB MUTE → H
P1
REC / PB
REC MUTE
PB MUTE
B / C / OFF
IPLS
P1 FROM CONTROL



FD-7/L
POWER & AMP BLOCK DIAGRAM
NO.10-2 830712A

FD-7/L


FLD PCB C1002A541B
OSC PCB C1002D5450
LAMP PCB C1002A541E
CONTROL PCB C1002A541A
CAM MOTOR PULSE PCB CMR01C189B
REEL ROTAION PCB CMR01D1440
CAM DIRECTION PCB CMR01C189C
TIMER PCB C1002A
FLEXIBLE PCB CMR01A0020
PRE-AMP PCB T2051A501A
DETECTOR(A) PCB CMR01D1290
DETECTOR(B) PCB CMR01D1620
LEAF SWITCH PCB CMR01C1490
HOUSING PCB CMR01D1430
CONTROL PCB CMR01C189A
GUIDE DETECTOR PCB CMR01B0050
TIMER SELECTOR PCB C
FUNCTION PCB C1002A5050(U,C,A,E,S,B) C1002A5060(V)
BEAT CANCEL PCB C1002A541F
TUNER PCB
C1002B5210 (U)
C1002B5220 (C,A)
C1002B5230 (E,V,S)
C1002B5240 (L=E,B)
POWER SUPPLY PCB C1002B509A(E,B,S) C1002B510A (V)
POWER SUPPLY PCB C1002
CAPSTAN MOTOR
CAM MOTOR



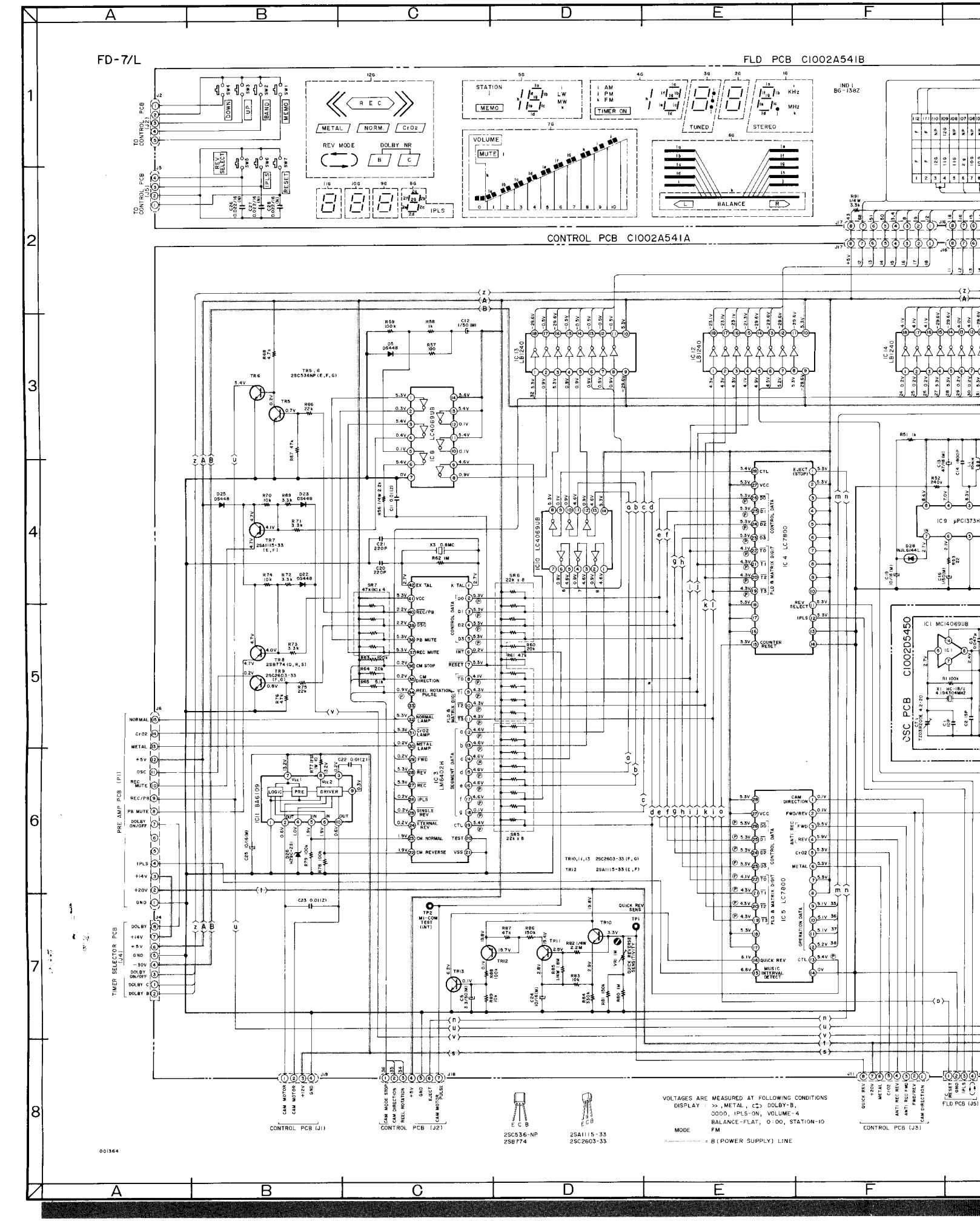
WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

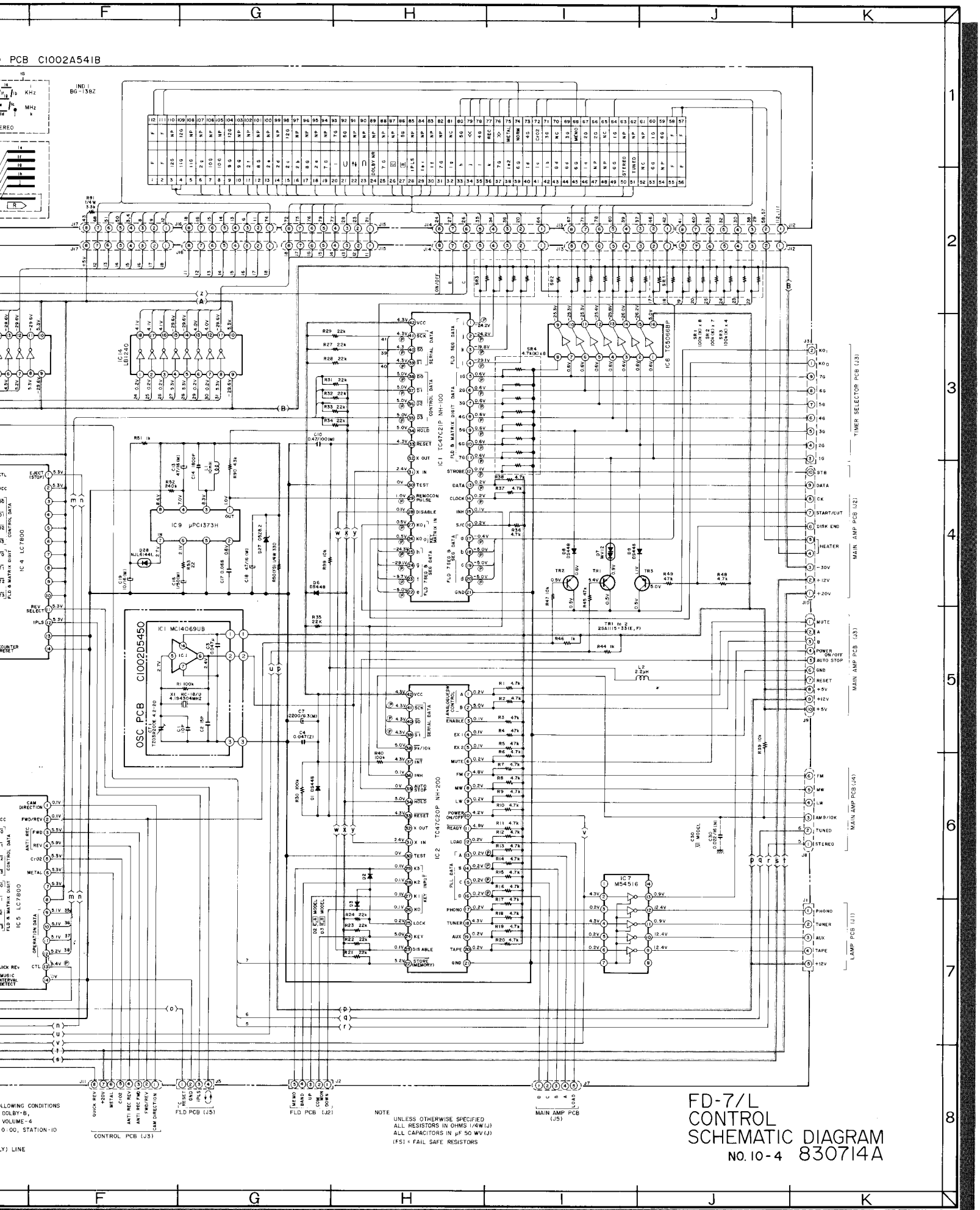
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA
(FS) = FAIL SAFE RESISTORS

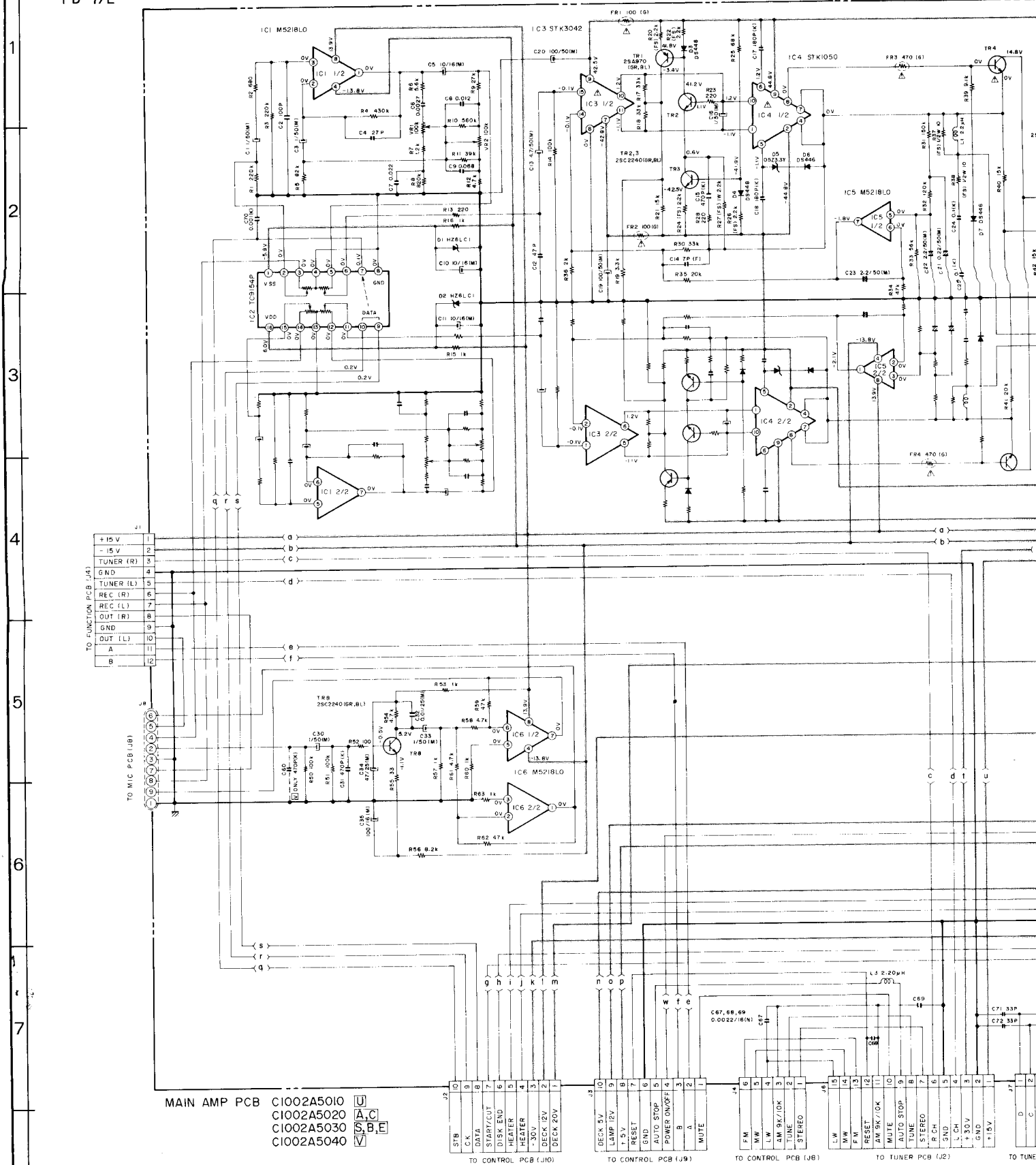
FD-7/L
CONNECTION DIAGRAM
NO.10-3 830713A

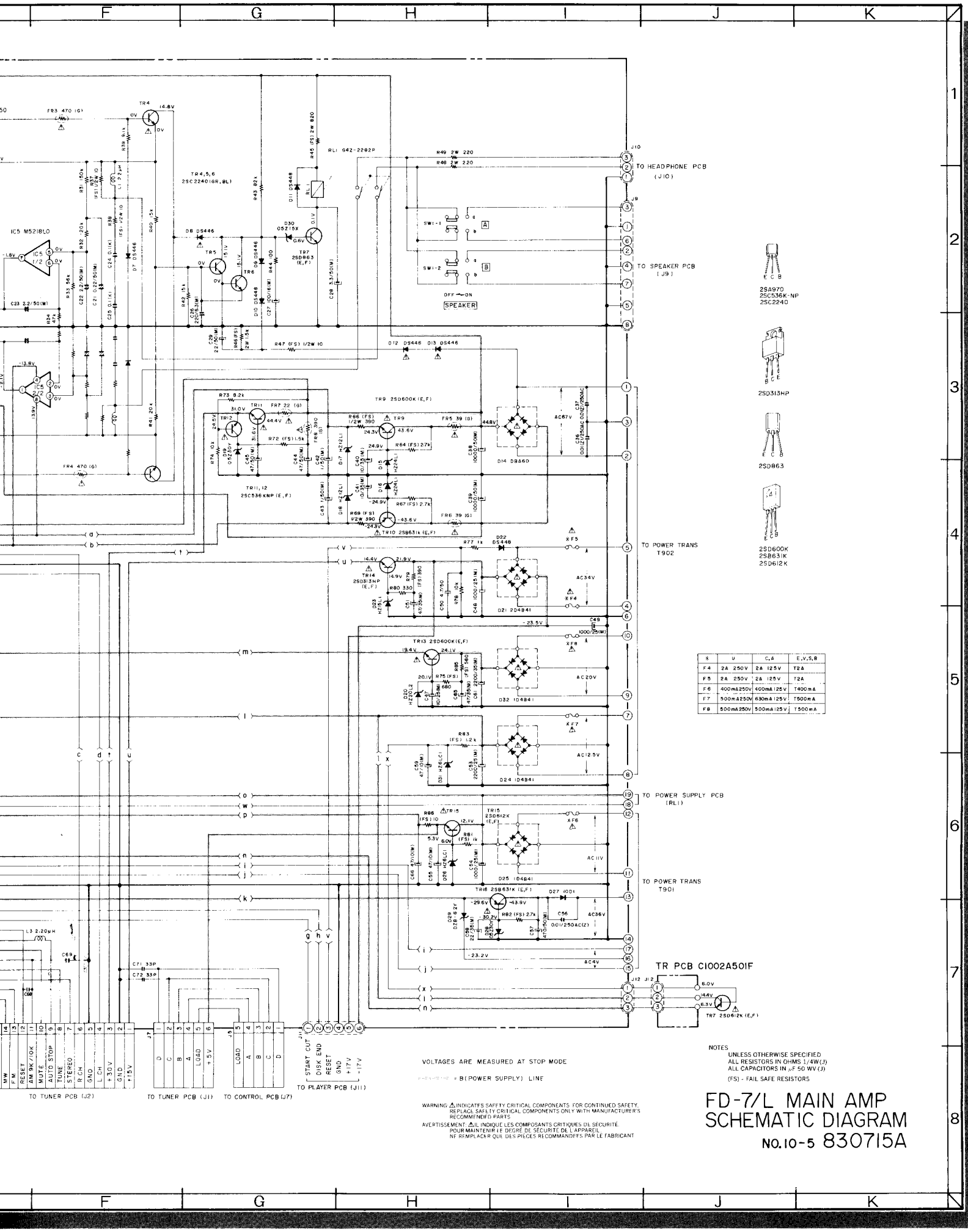
FD-7/L


FLD PCB C1002A541B
CONTROL PCB C1002A541A
OSC PCB C1002D5450
PRE AMP PCB (P1)
TIMER SELECTOR PCB (J4)
CONTROL PCB (J1)
CONTROL PCB (J2)
CONTROL PCB (J3)
FLD PCB (J5)
VOLTAGES ARE MEASURED AT FOLLOWING CONDITIONS
DISPLAY : >> , METAL , DOLBY-B,
0000, IPLS-ON, VOLUME-4
BALANCE-FLAT, 0:00, STATION-10
MODE FM
= B (POWER SUPPLY) LINE
2SC536-NP
2SB774
2SA1115-33
2SC2603-33


PCB C1002A541B
OSC PCB C1002D540
IC1 MC14069UB
IC2 TC47C20P NH-200
IC1 TC47C21P NH-100
IC4 LC7800
IC5 LC7800
IC6 TC5068BP
IC7 M54516
IC9 μPC1373H
IC14 LB1240
CONTROL PCB (J3)
FLD PCB (J5)
FLD PCB (J2)
MAIN AMP PCB (J5)
TIMER SELECTOR PCB (J3)
MAIN AMP PCB (J2)
MAIN AMP PCB (J3)
MAIN AMP PCB (J4)
LAMP PCB (J1)
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) : FAIL SAFE RESISTORS
FD-7/L
CONTROL
SCHEMATIC DIAGRAM
NO. 10-4 830714A

FD-7/L


IC1 M5218LO
IC3 STK3042
IC4 STK1050
IC5 M5218LO
IC6 M5218LO
IC2 TC9154P
TR8 2SC2240(GR,BL)
TO FUNCTION PCB (J4)
+15V
-15V
TUNER (R)
GND
TUNER (L)
REC (R)
REC (L)
OUT (R)
GND
OUT (L)
A
B
TO MIC PCB (J8)
MAIN AMP PCB C1002A5010 U
C1002A5020 A,C
C1002A5030 S,B,E
C1002A5040 V
STB
CK
DATA
START/CUT
DISK END
HEATER
HEATER
-30V
DECK 12V
DECK 20V
TO CONTROL PCB (J10)
DECK 5V
LAMP 12V
+5V
RESET
GND
AUTO STOP
POWER ON/OFF
B
A
MUTE
TO CONTROL PCB (J9)
FM
MW
LW
AM 9K/10K
TUNE
STEREO
TO CONTROL PCB (J8)
LW
MW
FM
RESET
AM 9K/10K
MUTE
AUTO STOP
TUNE
STEREO
R-CH
GND
L-CH
+30V
GND
+15V
TO TUNER PCB (J2)
TO TUNE



X	U	C,A	E,V,S,B
F4	2A 250V	2A 125V	T2A
F5	2A 250V	2A 125V	T2A
F6	400mA250V	400mA 125V	T400mA
F7	500mA250V	630mA 125V	T500mA
F8	500mA250V	500mA 125V	T500mA

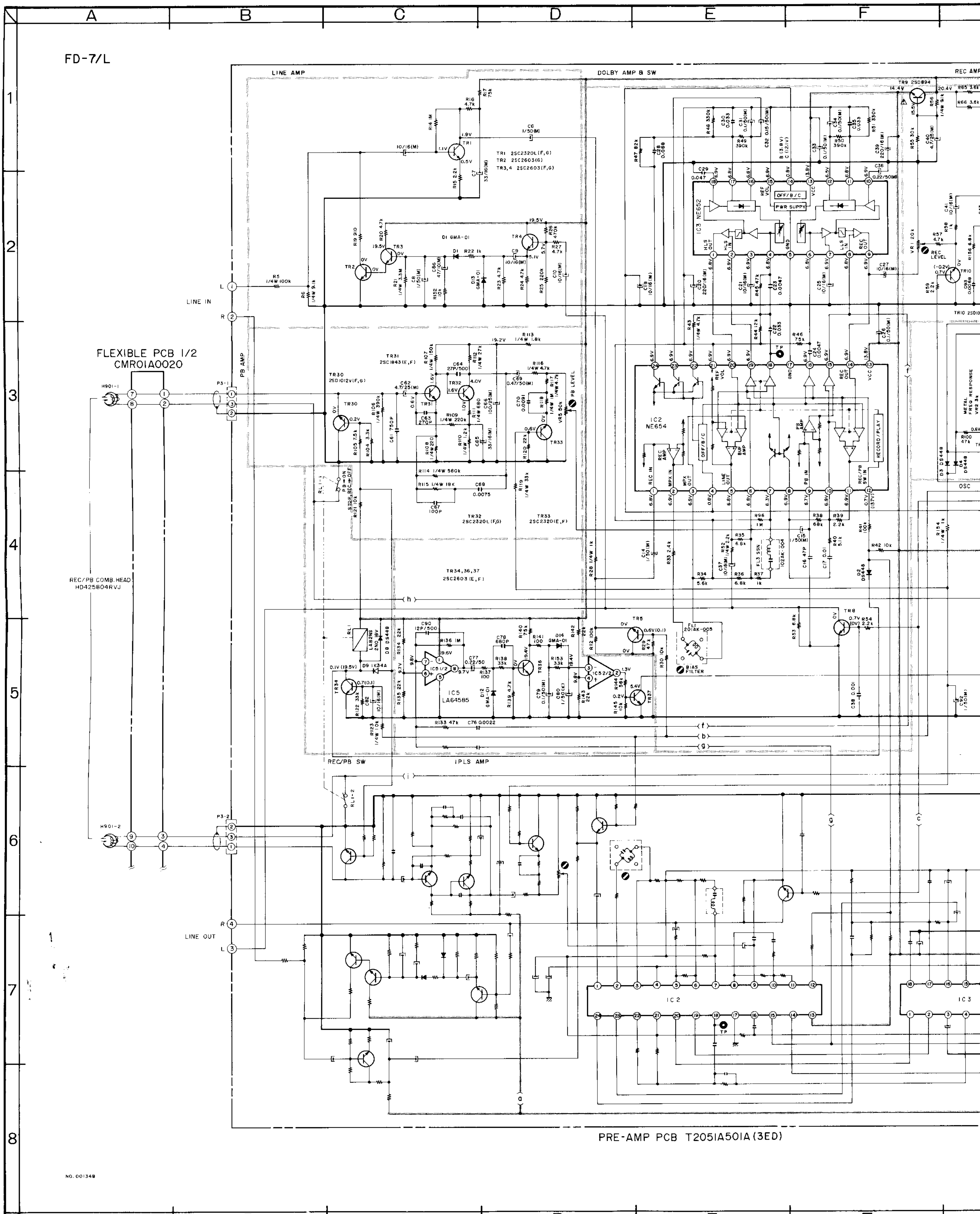
VOLTAGES ARE MEASURED AT STOP MODE

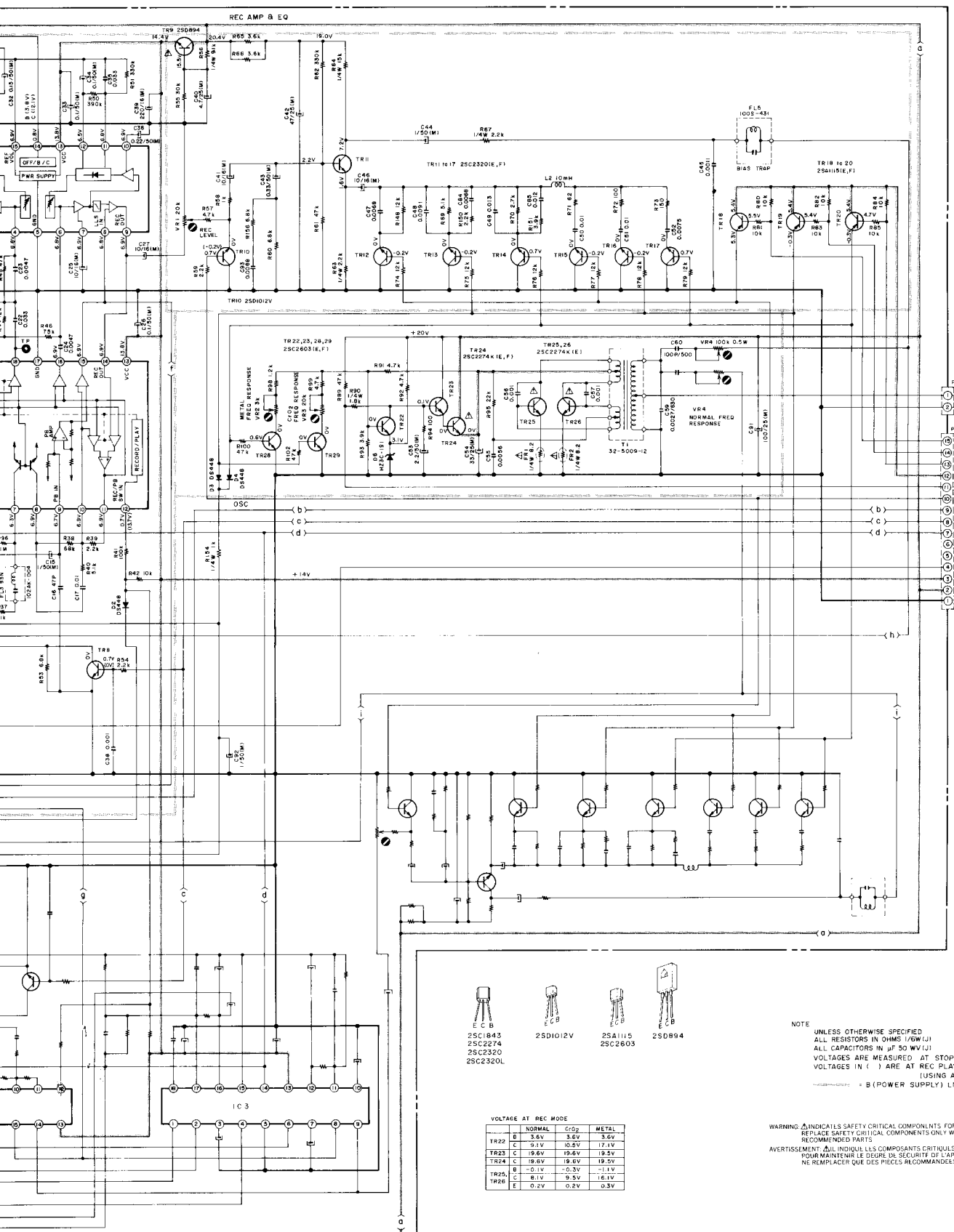
+B(POWER SUPPLY) LINE

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DU SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

NOTES
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) - FAIL SAFE RESISTORS

FD-7/L MAIN AMP SCHEMATIC DIAGRAM
NO.10-5 830715A


FD-7/L
LINE AMP
DOLBY AMP & SW
REC AMP
LINE IN
FLEXIBLE PCB 1/2
CMR01A0020
PB AMP
REC/PB COMB. HEAD
HD425804RVJ
REC/PB SW
IPLS AMP
LINE OUT
IC3 NE652
IC2 NE654
IC5 LA6458S
TR1 2SC2320L(F,G)
TR2 2SC2603(G)
TR3,4 2SC2603(F,G)
TR30 2SD1012V(F,G)
TR31 2SC1843(E,F)
TR32 2SC2320L(F,G)
TR33 2SC2320(E,F)
TR34,36,37 2SC2603(E,F)
TR9 2SD894
BIAS FILTER
PB LEVEL
REC LEVEL
OSC
PRE-AMP PCB T2051A501A(3ED)
NO. 001348



VOLTAGE AT REC MODE

		NORMAL	CrO_2	METAL
TR22	B	3.6V	3.6V	3.6V
	C	9.1V	10.6V	17.1V
TR23	C	19.6V	19.6V	19.5V
TR24	C	19.6V	19.6V	19.5V
	B	−0.1V	−0.3V	−1.1V
TR25, TR26	C	8.1V	9.5V	16.1V
	E	0.2V	0.2V	0.3V

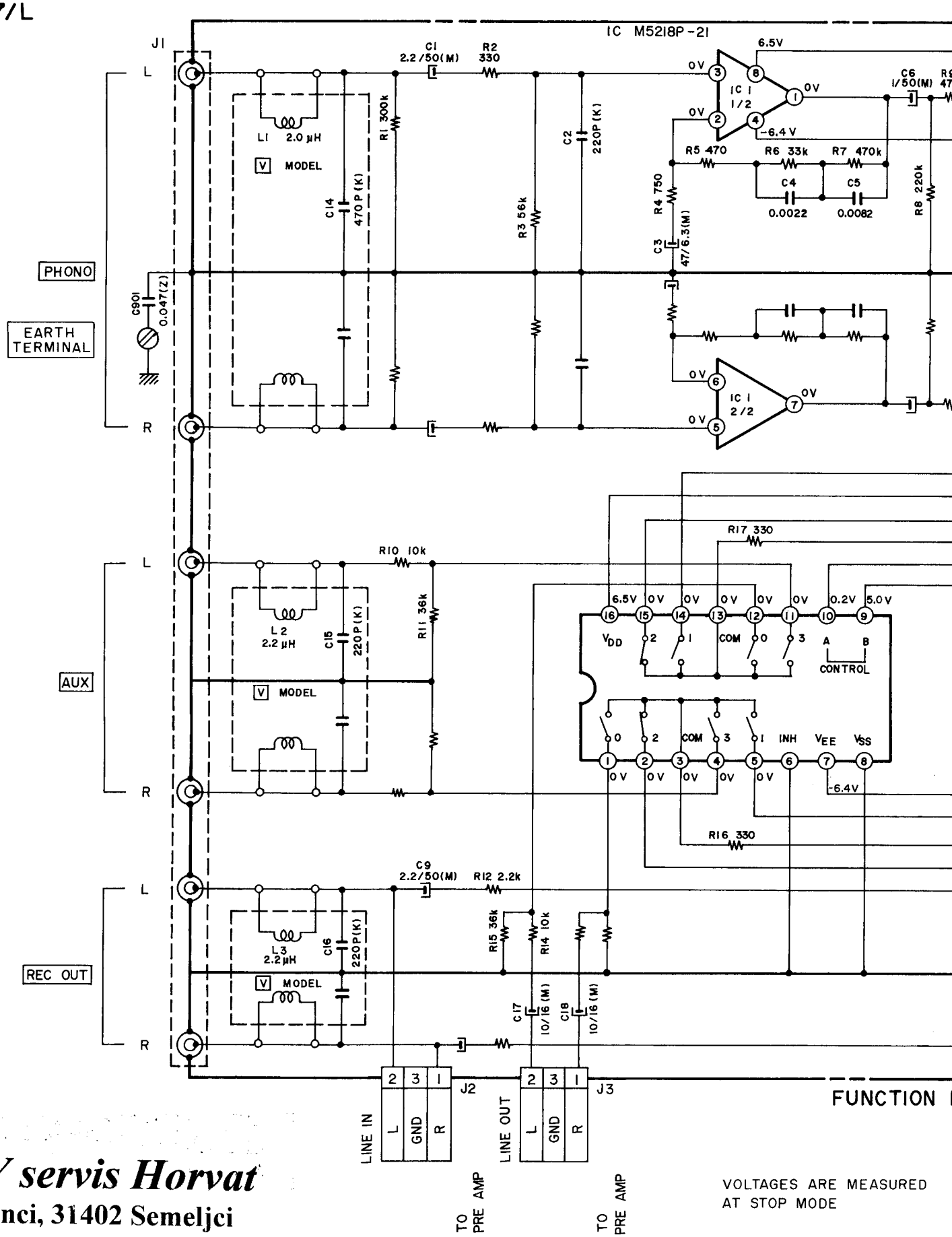
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS (Ω)/W(J)
ALL CAPACITORS IN μF 50 WV(J)
VOLTAGES ARE MEASURED AT STOP MODE.(W/OUT CASS TAPE)
VOLTAGES IN ( ) ARE AT REC PLAY MODE.
(USING A NORMAL TAPE)
= B(POWER SUPPLY) LINE

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SECURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

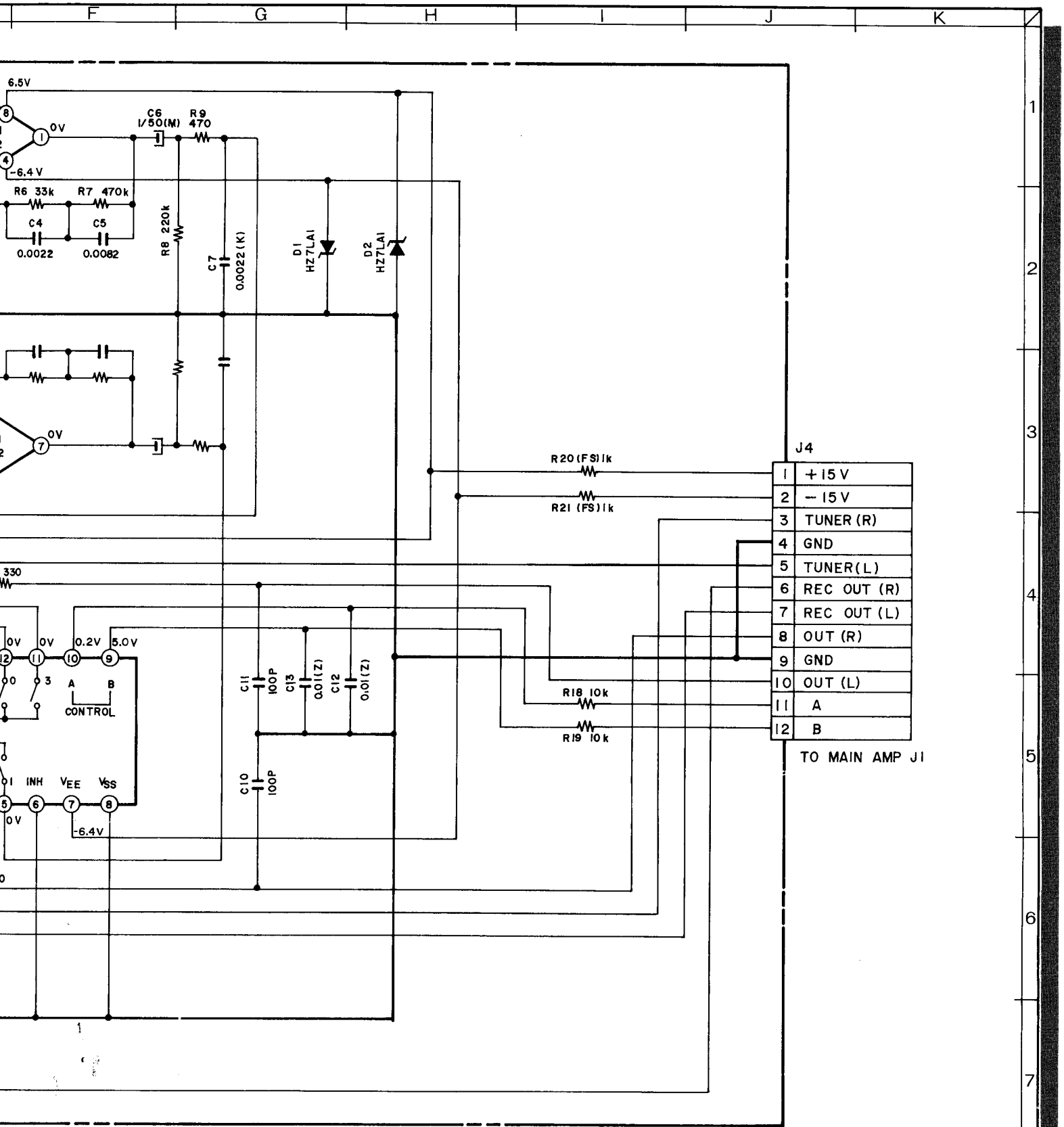
FD-7/L PRE AMP SCHEMATIC DIAGRAM

NO.10-6 830331B

FD-7/L



VOLTAGES ARE MEASURED AT STOP MODE

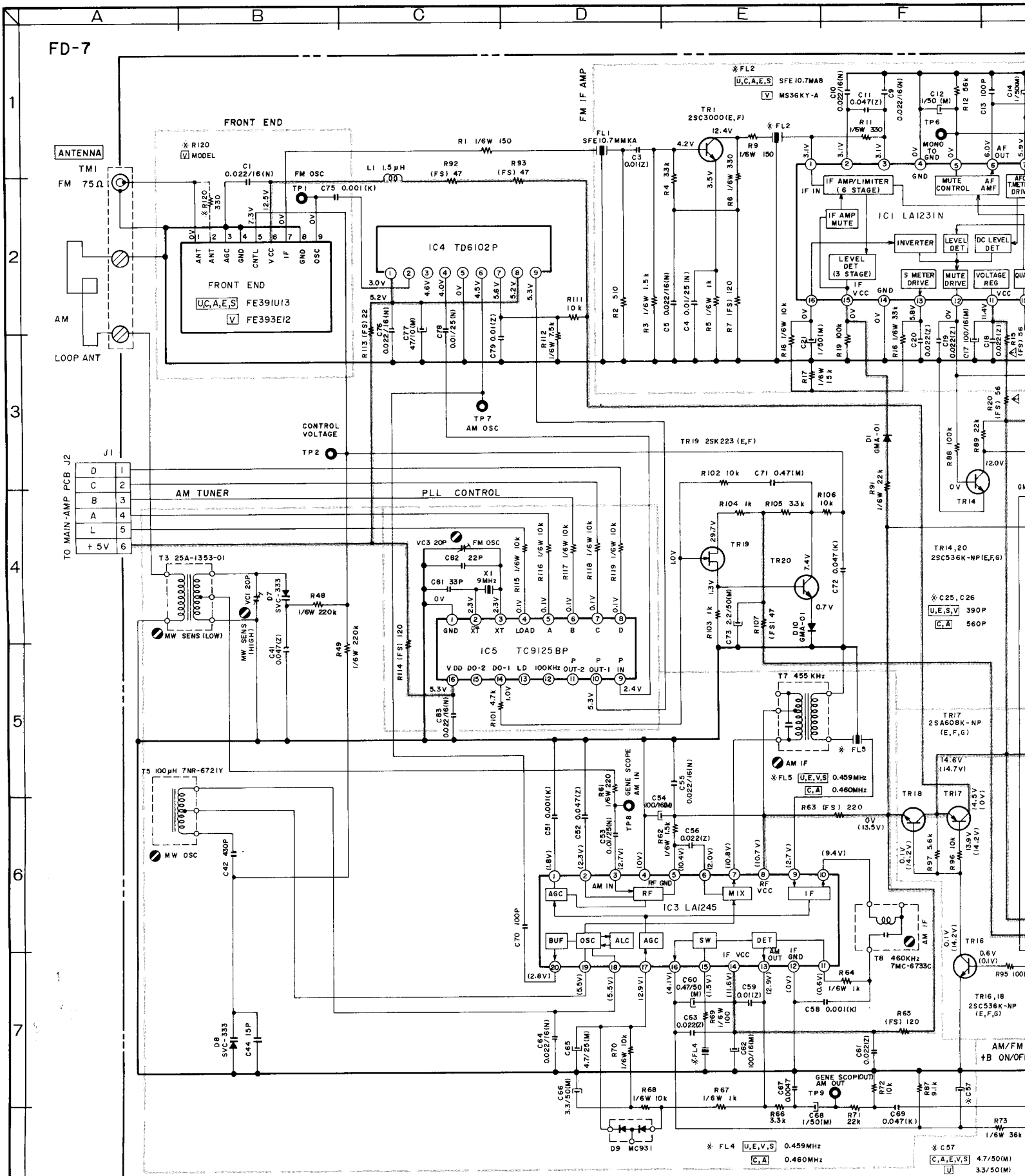


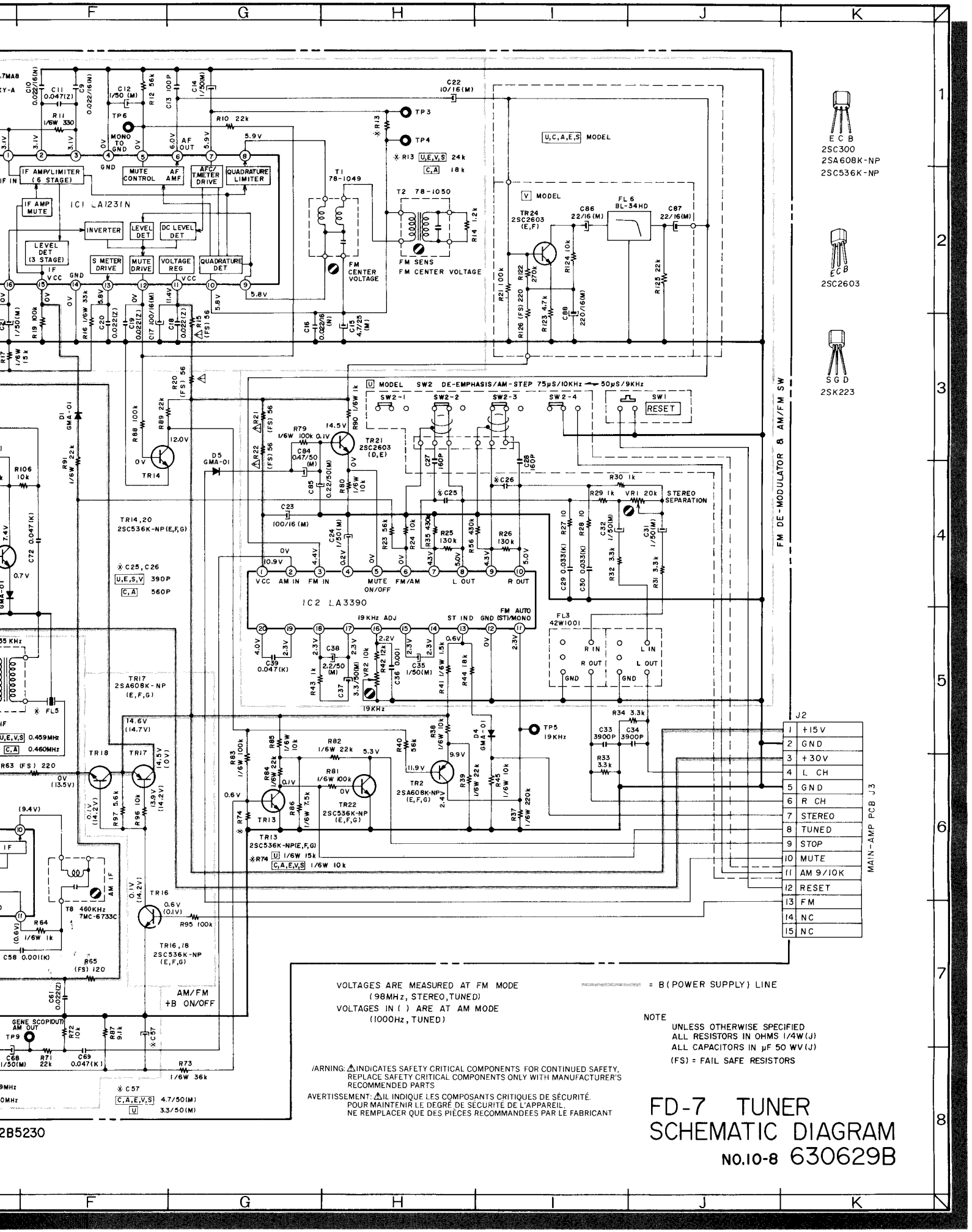
FUNCTION PC.BOARD C1002A5050(2ED) C,A,U,E,S,B
C1002A5060(2ED) V

LTAGES ARE MEASURED
STOP MODE

NOTES
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) = FAIL SAFE RESISTORS

FD-7/L FUNCTION SCHEMATIC DIAGRAM
NO.10-7 830628B


FD-7
FRONT END
ANTENNA
TM1
FM 75Ω
AM
LOOP ANT
FM IF AMP
IC1 LA1231N
IC3 LA1245
IC4 TD6102P
IC5 TC9125BP
TR1 2SC3000(E,F)
TR19 2SK223(E,F)
TR14,20 2SC536K-NP(E,F,G)
TR17 2SA608K-NP (E,F,G)
TR16,18 2SC536K-NP (E,F,G)
AM TUNER
PLL CONTROL
CONTROL VOLTAGE
TO MAIN-AMP PCB J2
T3 25A-1353-01
T5 100μH 7NR-6721Y
T7 455KHz
T8 460KHz 7MC-6733C
MW OSC
MW SENS (LOW)
MW SENS (HIGH)
AM IF
FM OSC
AM OSC
GENE SCOPE AM IN
GENE SCOPE(OUT) AM OUT
D9 MC931
TUNER PCB U C1002B5210, C,A C1002B5220, E,V,S C1002B5230



VOLTAGES ARE MEASURED AT FM MODE (98MHz, STEREO, TUNED)
VOLTAGES IN ( ) ARE AT AM MODE (1000Hz, TUNED)

= B(POWER SUPPLY) LINE

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) = FAIL SAFE RESISTORS

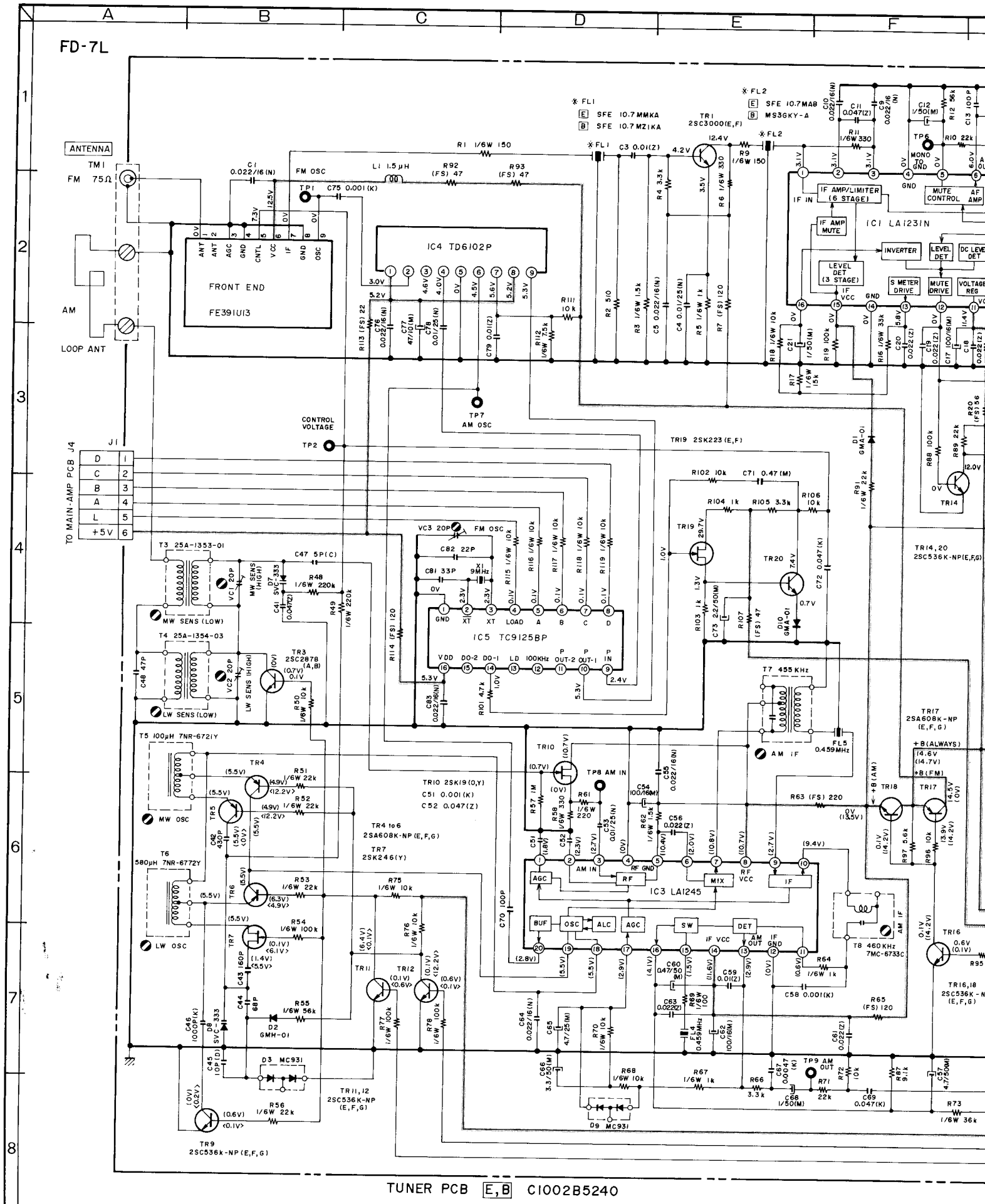
/ARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

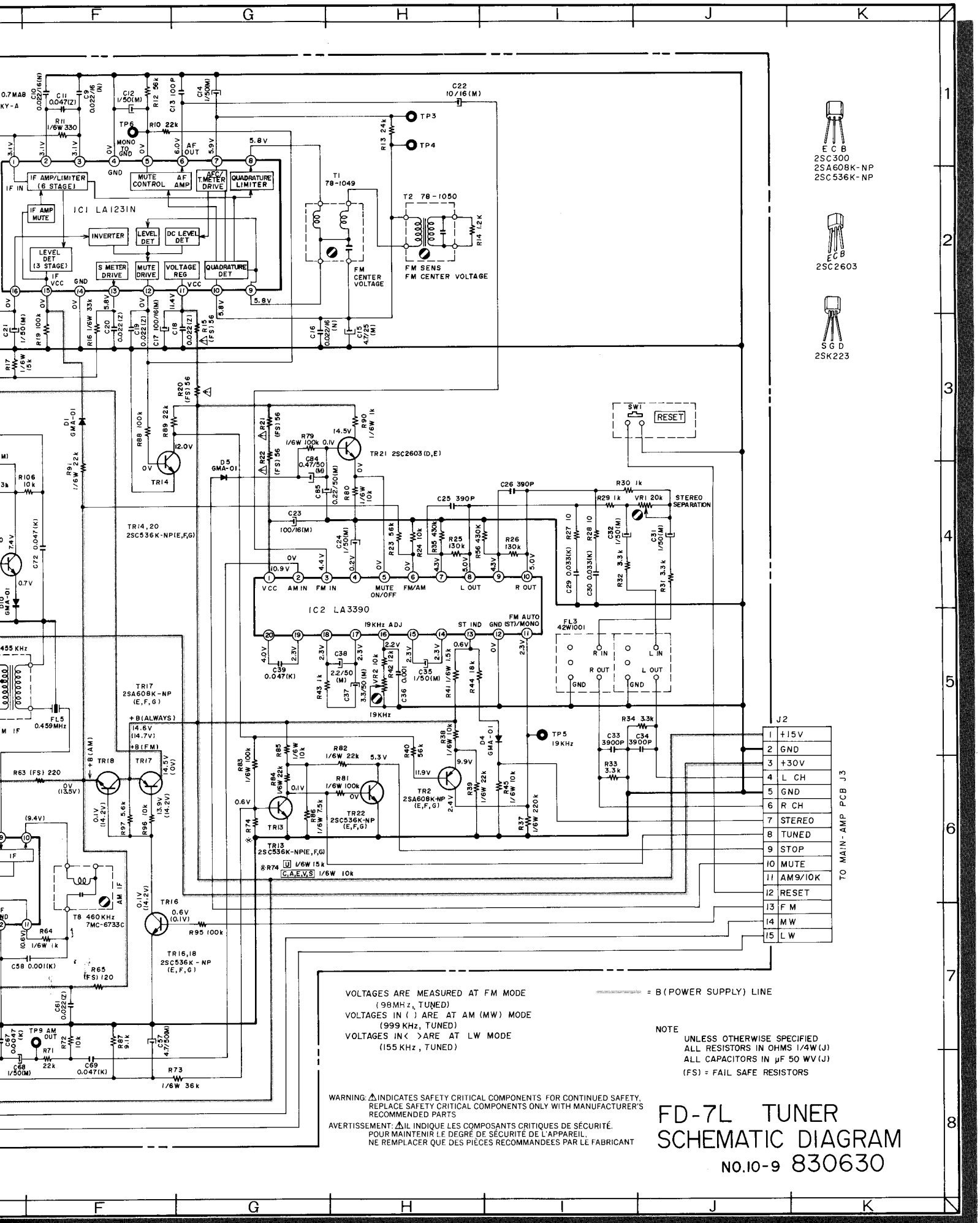
AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

FD-7 TUNER SCHEMATIC DIAGRAM

NO.10-8 630629B

2B5230


FD-7L
ANTENNA
TM1
FM 75Ω
AM
LOOP ANT
FRONT END
FE391UI3
IC4 TD6102P
IC1 LA1231N
IC5 TC9125BP
IC3 LA1245
TR1 2SC3000(E,F)
TR2 2SK19(O,Y)
TR3 2SC2878(A,B)
TR4 2SA608K-NP(E,F,G)
TR7 2SK246(Y)
TR9 2SC536K-NP(E,F,G)
TR11,12 2SC536K-NP(E,F,G)
TR14,20 2SC536K-NP(E,F,G)
TR16,18 2SC536K-NP(E,F,G)
TR17 2SA608K-NP(E,F,G)
TR19 2SK223(E,F)
TR20
T3 25A-1353-01
T4 25A-1354-03
T5 100μH 7NR-6721Y
T6 580μH 7NR-6772Y
T7 455KHz
T8 460KHz 7MC-6733C
FL1 SFE 10.7MMKA / SFE 10.7MZ1KA
FL2 SFE 10.7MA8 / MS36KY-A
FL5 0.459MHz
TP1
TP2
TP5
TP6
TP7 AM OSC
TP8 AM IN
TP9 AM OUT
CONTROL VOLTAGE
TO MAIN-AMP PCB J4
J1
D 1
C 2
B 3
A 4
L 5
+5V 6
FM OSC
MW OSC
LW OSC
MW SENS (LOW)
LW SENS (LOW)
MW SENS (HIGH)
LW SENS (HIGH)
AM IF
IF IN
IF AMP/LIMITER (6 STAGE)
IF AMP MUTE
LEVEL DET (3 STAGE)
INVERTER
LEVEL DET
DC LEVEL DET
S METER DRIVE
MUTE DRIVE
VOLTAGE REG
MUTE CONTROL
AF AMP
MONO TO GND
+B(ALWAYS)
+B(FM)
+B(AM)
D1 GMA-01
D2 GMH-01
D3 MC931
D9 MC931
D10 GMA-01
TUNER PCB E,B C1002B5240



VOLTAGES ARE MEASURED AT FM MODE (98MHz, TUNED)
VOLTAGES IN ( ) ARE AT AM (MW) MODE (999KHz, TUNED)
VOLTAGES IN < > ARE AT LW MODE (155KHz, TUNED)

= B(POWER SUPPLY) LINE

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV(J)
(FS) = FAIL SAFE RESISTORS

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

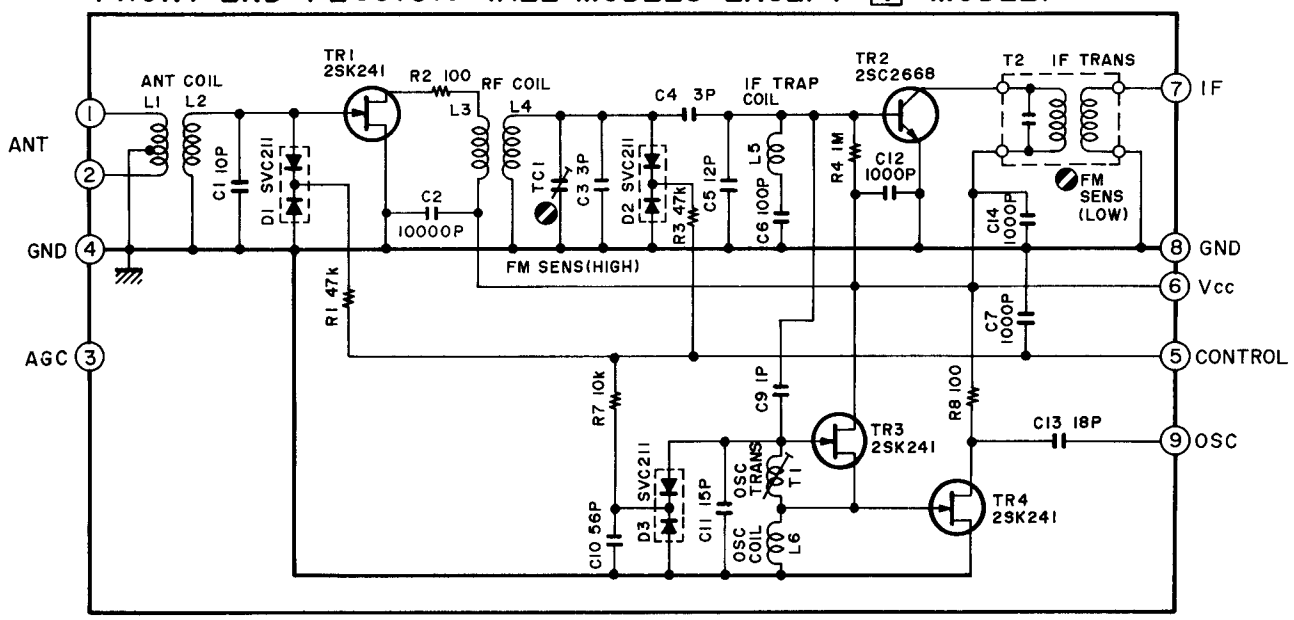
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

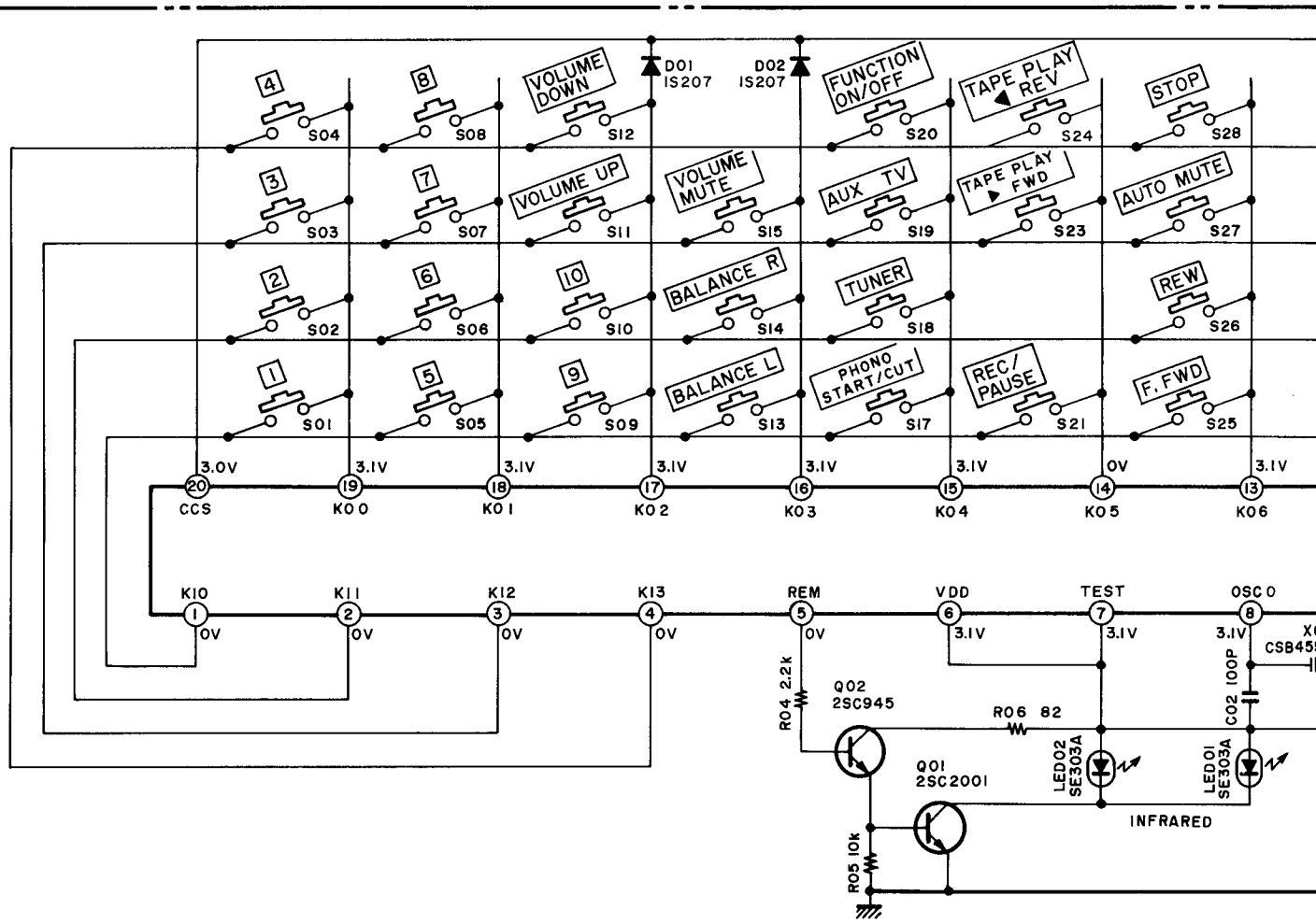
FD-7L TUNER SCHEMATIC DIAGRAM

NO.10-9 830630

FD-7/L

FRONT END FE391UI3 (ALL MODELS EXCEPT [V] MODEL)

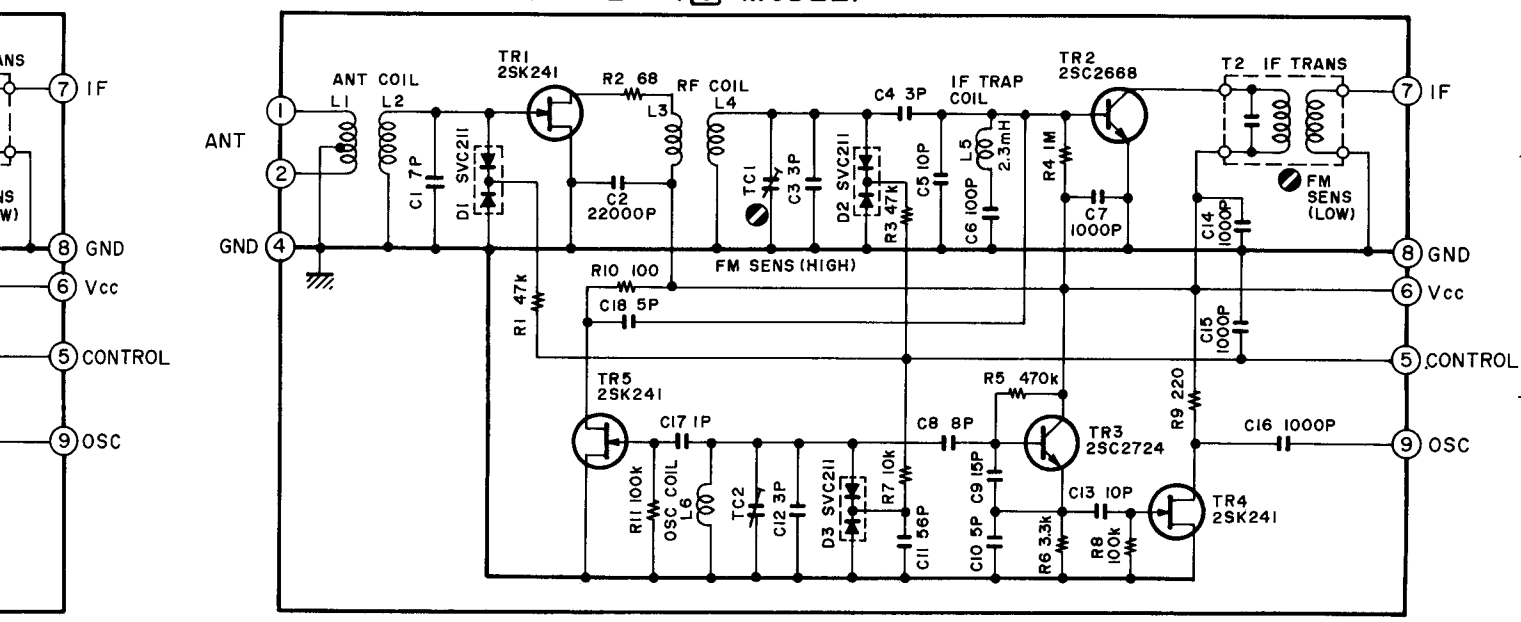


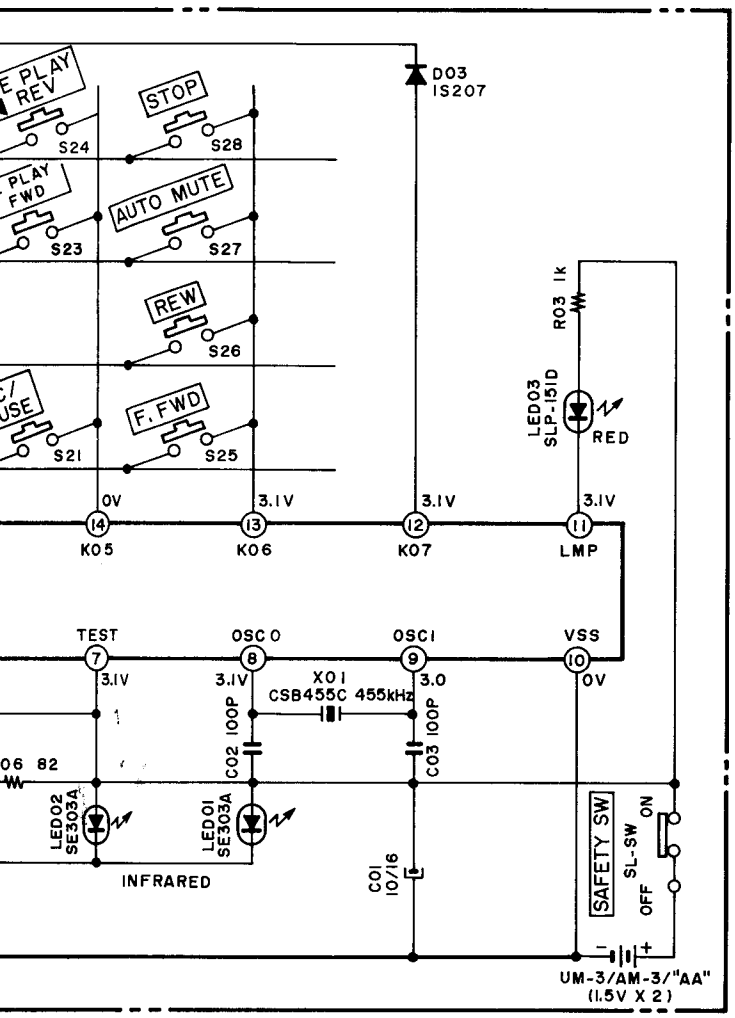


REMOTE CONTROL P.C.B 12KH107A

(FD-7/L REMOTE CONTROL UNIT KHHFA032)

FRONT END FE393E12 (V MODEL)





RTV servis Horvat

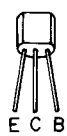
Kešinci, 31402 Semeljci

Tel : 031-856-637

Tel / fax : 031-856-139

Mob : 098-788-319

rtv-servis-horvat@os.tel.hr

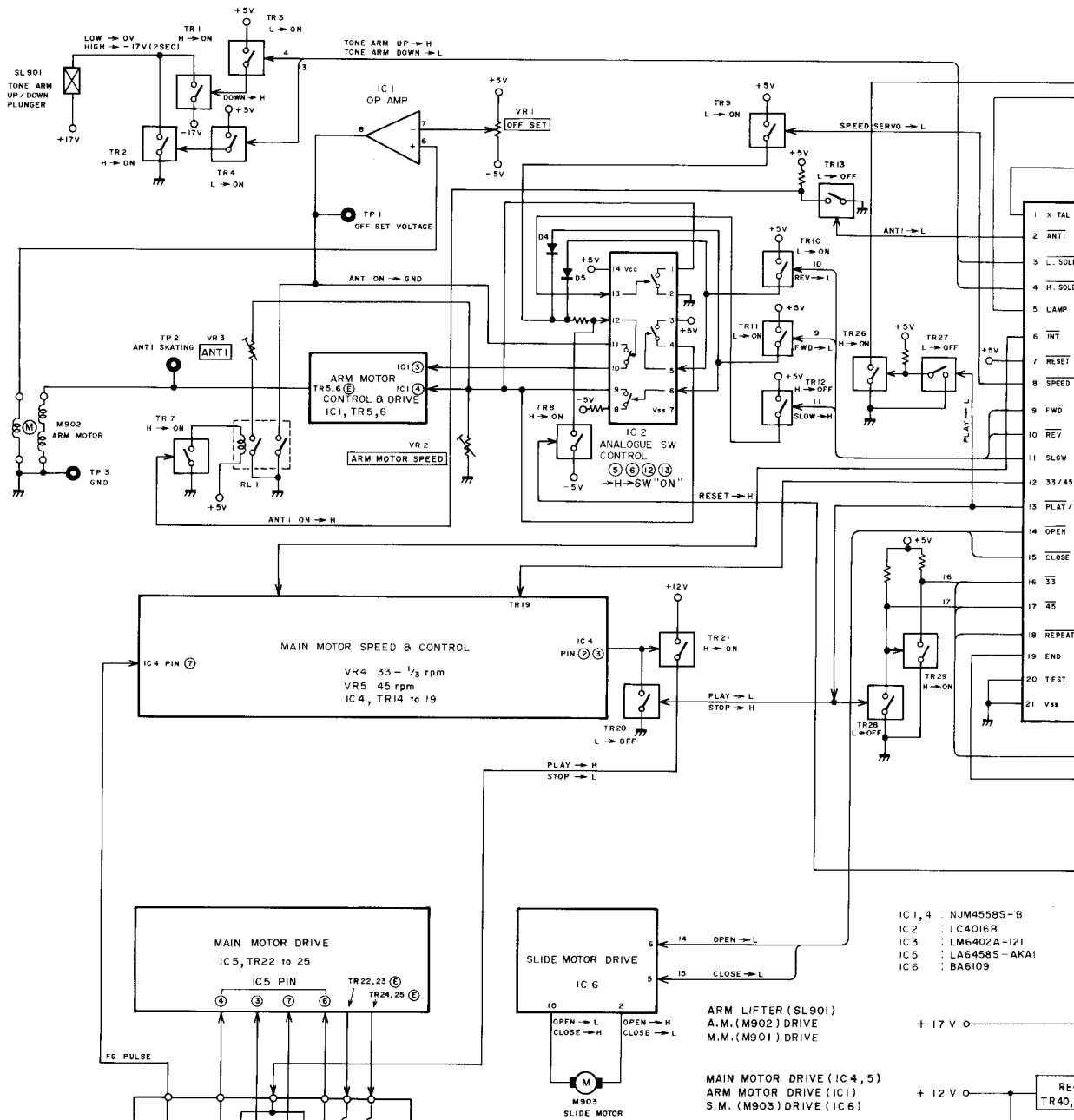


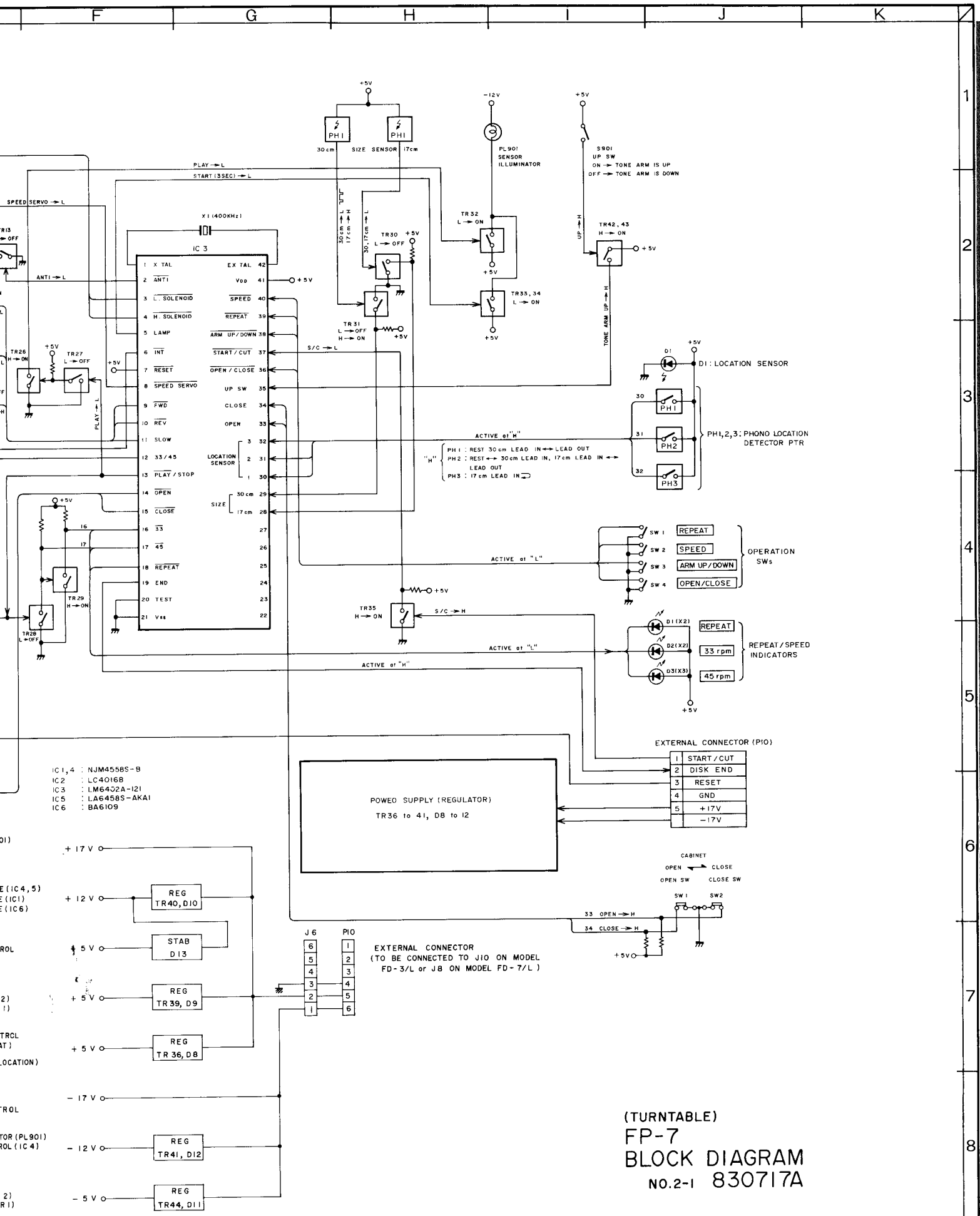
2SC945
2SC2001

NOTES
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50 WV (J)

FD-7/L
FRONT END/REMOCON SCHEMATIC DIAGRAM
NO.10-10 830633B

FP-7

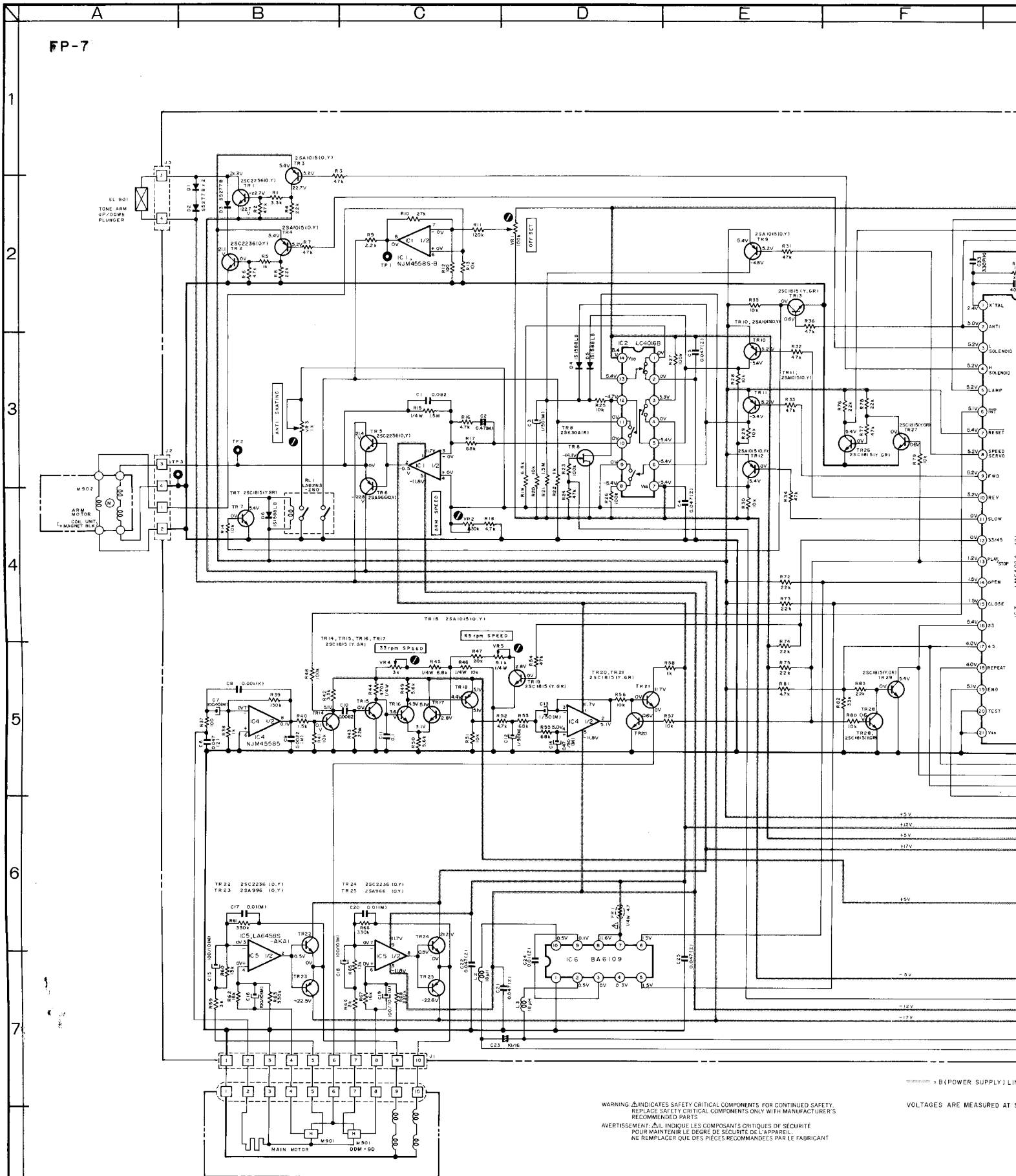

SL901
TONE ARM UP / DOWN PLUNGER
LOW → 0V
HIGH → −17V (2SEC)
+17V
TR1 H → ON
TR2 H → ON
TR3 L → ON
TR4 L → ON
DOWN → H
TONE ARM UP → H
TONE ARM DOWN → L
IC1 OP AMP
VR1 OFF SET
TP1 OFF SET VOLTAGE
ANT ON → GND
TP2 ANTI SKATING
VR3 ANTI
M902 ARM MOTOR
TP3 GND
TR7 H → ON
RL1
ARM MOTOR CONTROL & DRIVE IC1, TR5,6
VR2 ARM MOTOR SPEED
ANTI ON → H
IC2 ANALOGUE SW CONTROL
⑤⑥⑫⑬ →H→SW "ON"
TR8 H → ON
TR9 L → ON
SPEED SERVO → L
TR13 L → OFF
ANTI → L
TR10 L → ON
REV → L
TR11 L → ON
FWD → L
TR12 H → OFF
SLOW → H
TR26 H → ON
TR27 L → OFF
PLAY → L
RESET → H
TR19
MAIN MOTOR SPEED & CONTROL
VR4 33 − 1/3 rpm
VR5 45 rpm
IC4, TR14 to 19
IC4 PIN ⑦
IC4 PIN ②③
TR21 H → ON
TR20 L → OFF
PLAY → L
STOP → H
PLAY → H
STOP → L
TR28 L → OFF
TR29 H → ON
MAIN MOTOR DRIVE
IC5, TR22 to 25
IC5 PIN
TR22,23 Ⓔ
TR24,25 Ⓔ
FG PULSE
M901 MAIN MOTOR (DDM-9D)
SLIDE MOTOR DRIVE
IC6
OPEN → L
CLOSE → L
OPEN → L
CLOSE → H
OPEN → H
CLOSE → L
M903 SLIDE MOTOR
IC1,4 : NJM4558S-B
IC2 : LC4016B
IC3 : LM6402A-121
IC5 : LA6458S-AKA1
IC6 : BA6109
ARM LIFTER (SL901)
A.M. (M902) DRIVE
M.M. (M901) DRIVE
+17V
MAIN MOTOR DRIVE (IC4,5)
ARM MOTOR DRIVE (IC1)
S.M. (M903) DRIVE (IC6)
+12V
M.M. SPEED CONTROL
+5V
MI-COM (IC3)
ANALOGUE SW (IC2)
OFF SET VOL (VR1)
+5V
ARM LIFTER CONTROL
LED (33/45, REPEAT)
SENSOR
(SIZE & PHONO LOCATION)
+5V
M.M. DRIVE
A.M. DRIVE (IC1)
M.M. LIFTER CONTROL
−17V
SENSOR ILLUMINATOR (PL901)
M.M. SPEED CONTROL (IC4)
M.M. DRIVE (IC5)
A.M. DRIVE (IC1)
−12V
ANALOGUE SW (IC2)
OFF SET VOL (VR1)
−5V
1 X TAL
2 ANTI
3 L. SOLE
4 H. SOLE
5 LAMP
6 INT
7 RESET
8 SPEED
9 FWD
10 REV
11 SLOW
12 33/45
13 PLAY
14 OPEN
15 CLOSE
16 33
17 45
18 REPEAT
19 END
20 TEST
21 Vss

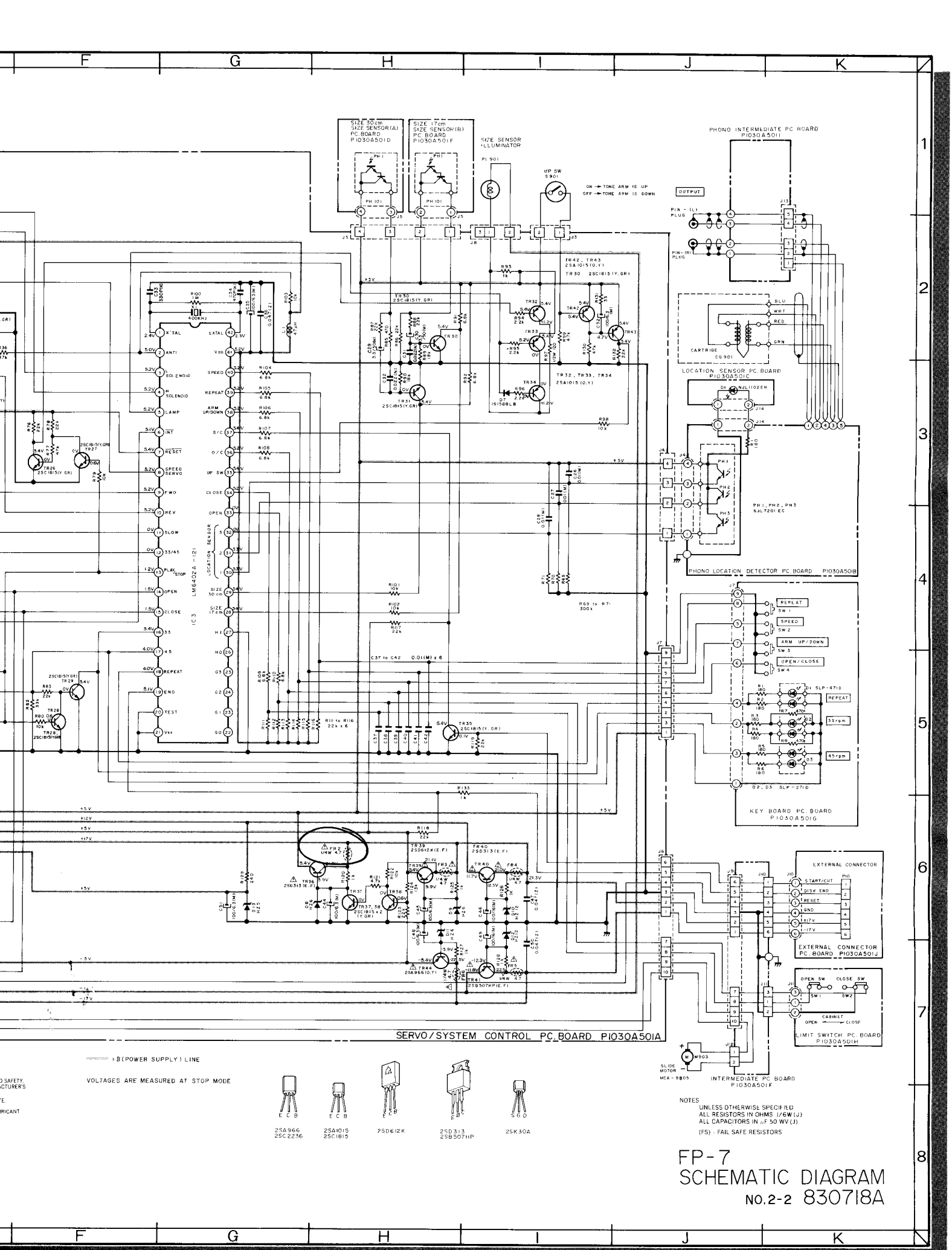


(TURNTABLE)

FP-7 BLOCK DIAGRAM

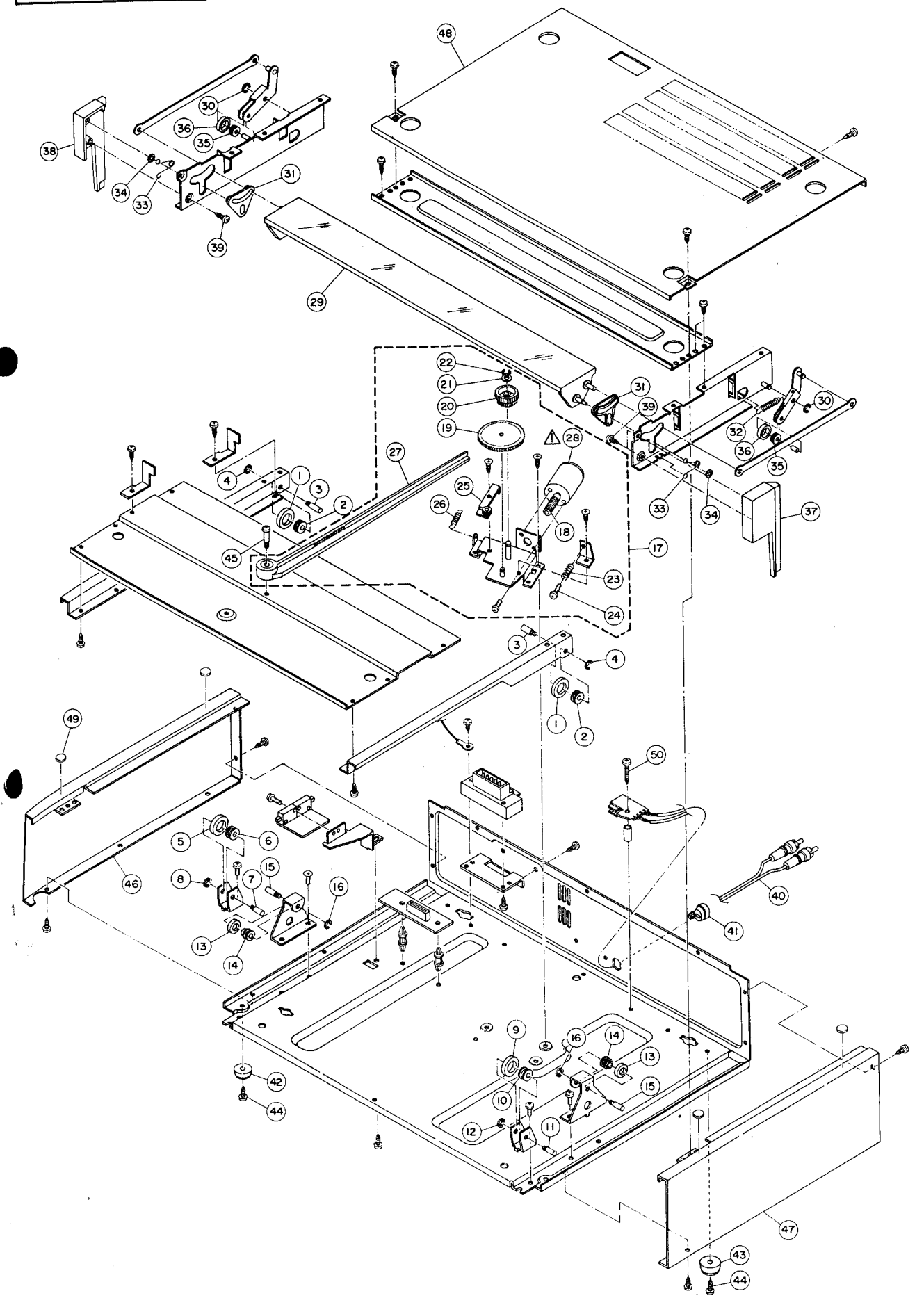
NO.2-1 830717A


A
B
C
D
E
F
1
2
3
4
5
6
7
8
SL 901
TONE ARM UP/DOWN PLUNGER
M902
ARM MOTOR
COIL UNIT
MAGNET BLK
ANTI SKATING
ARM SPEED
OFF SET
45rpm SPEED
33rpm SPEED
IC1 1/2
IC2 LC4016B
IC4 NJM4558S
IC5 LA6458S -AKA1
IC6 BA6109
MAIN MOTOR
M901
ODM-90
X'TAL
ANTI
SOLENOID
R SOLENOID
LAMP
INT
RESET
SPEED SERVO
FWD
REV
SLOW
33/45
PLAY/STOP
OPEN
CLOSE
S3
45
REPEAT
END
TEST
Vss
+5V
+12V
+5V
+17V
-5V
-12V
-17V
WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.
VOLTAGES ARE MEASURED AT S

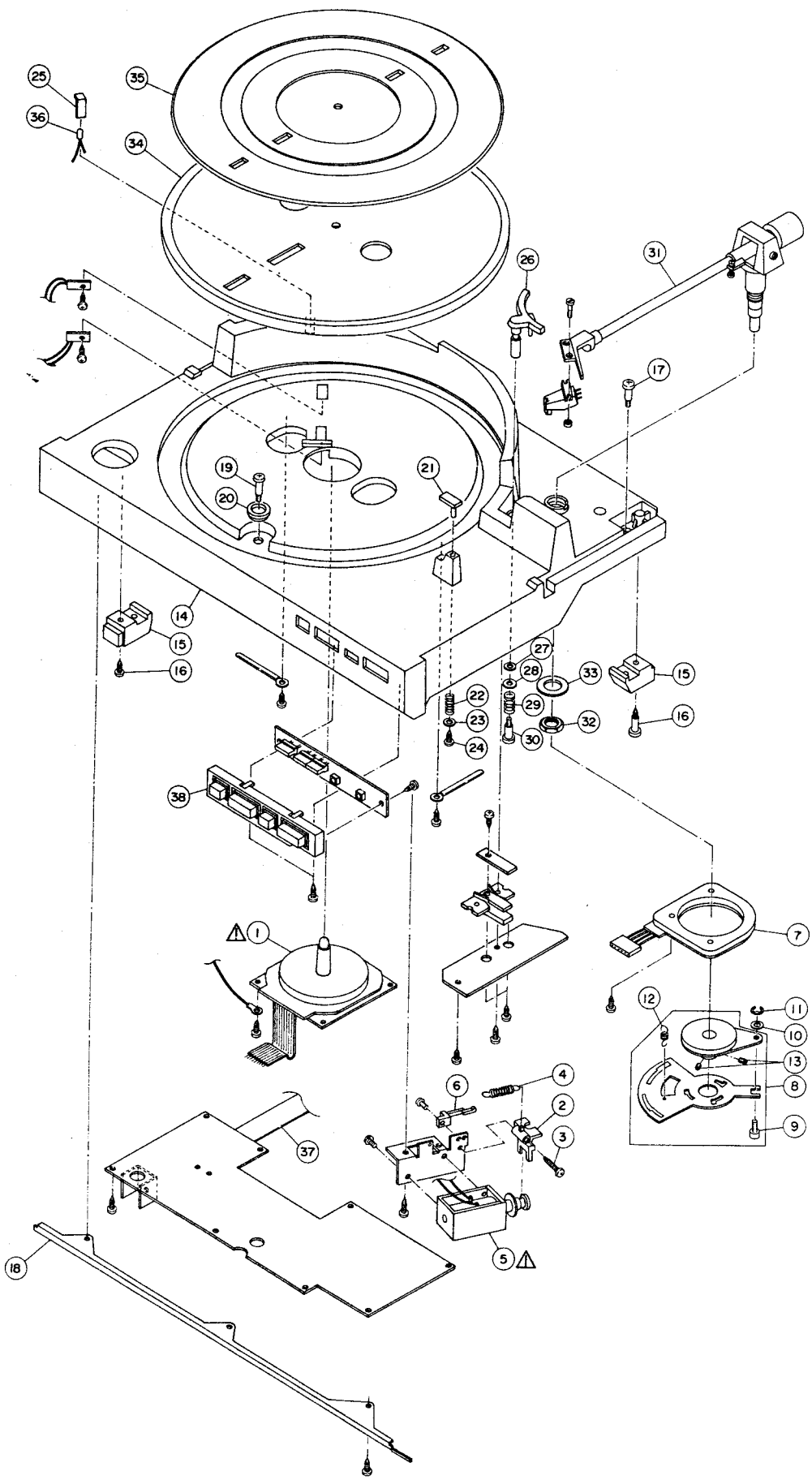


FP-7
SCHEMATIC DIAGRAM
NO.2-2 830718A

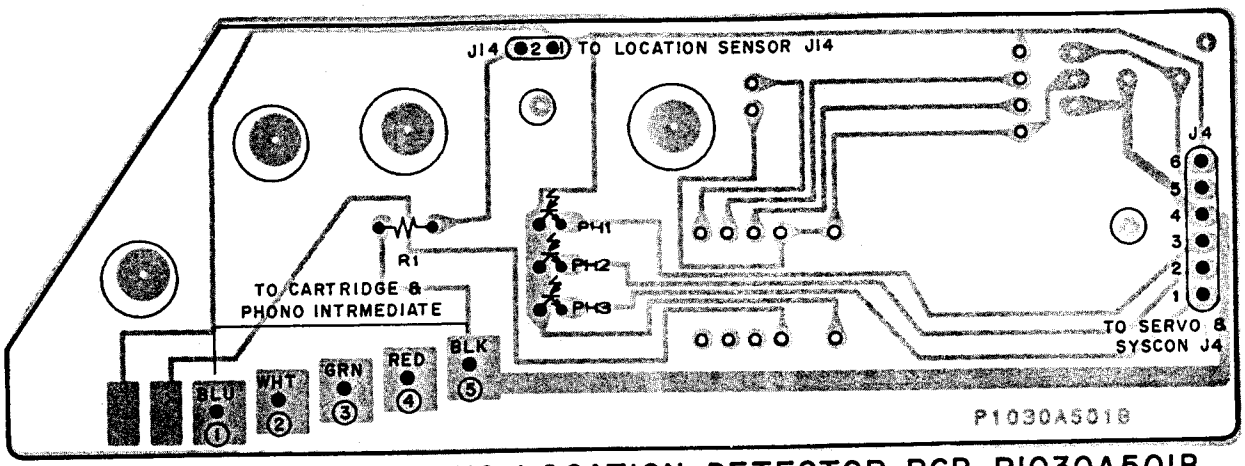
ASSEMBLY BLOCK



FINAL ASSEMBLY BLOCK

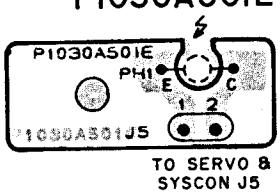


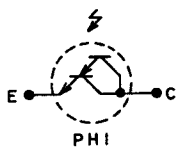
2) OTHER P.C BOARDS



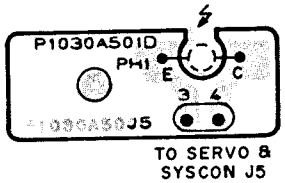
PHONO LOCATION DETECTOR PCB P1030A501B

SIZE SENSOR (B) PCB
P1030A501E

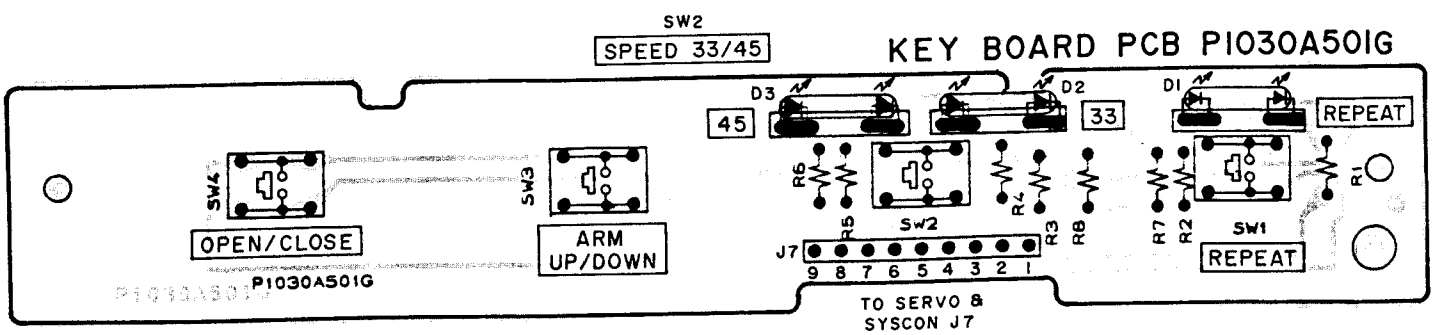




SIZE SENSOR (A) PCB
P1030A501D



KEY BOARD PCB P1030A501G



RTV servis Horvat

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Tel / fax : 031-856-139
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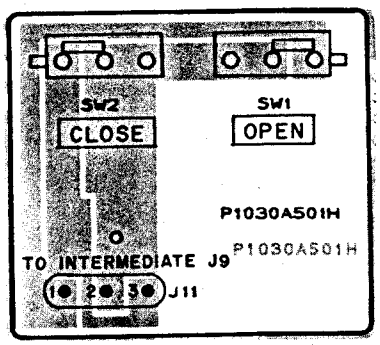
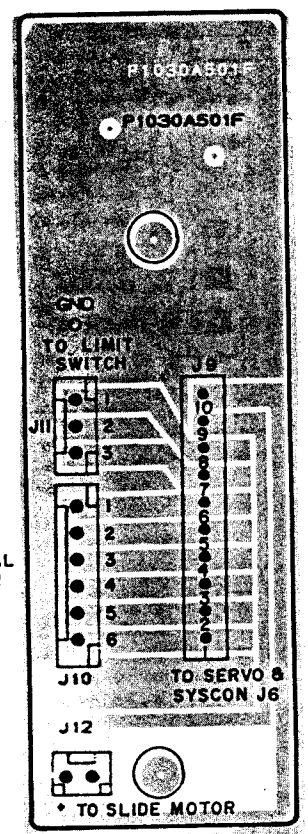
rtv-servis-horvat@os.tel.hr

01B

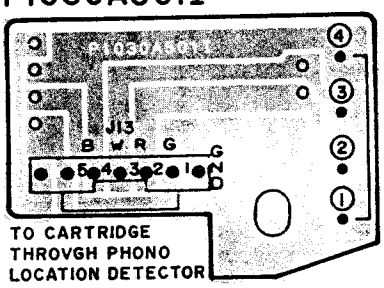


LIMIT SWITCH PCB
P1030A501H



INTERMEDIATE PCB
P1030A501F

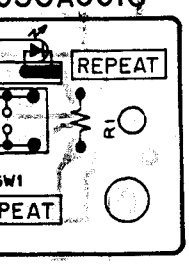
PHONO INTERMEDIATE PCB
P1030A501I

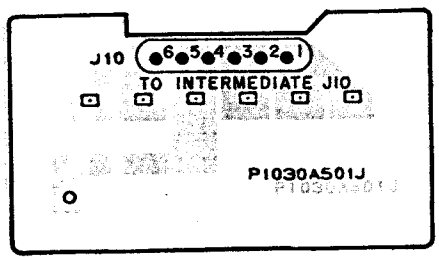


TO OUTPUT PLUG

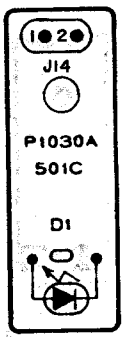
TO EXTERNAL CONNECTOR

030A501G





EXTERNAL CONNECTOR PCB
P1030A501J

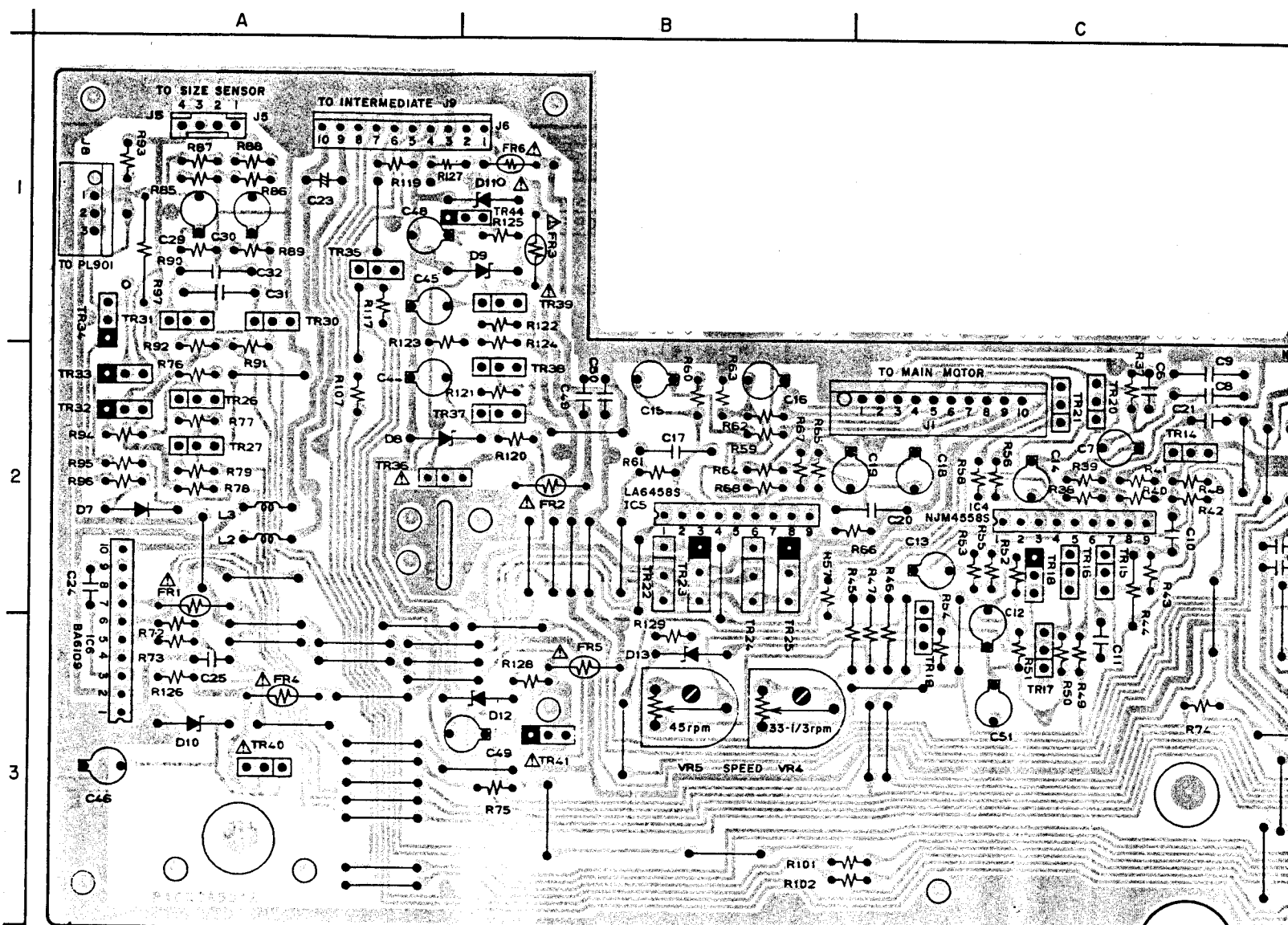


TO PHONO LOCATION DETECTOR

LOCATION SENSOR PCB
P1030A501C

8-2 COMPOSITION OF VARIOUS P.C BOARDS

1) SERVO/SYSTEM CONTROL P.C BOARD P1030A501A



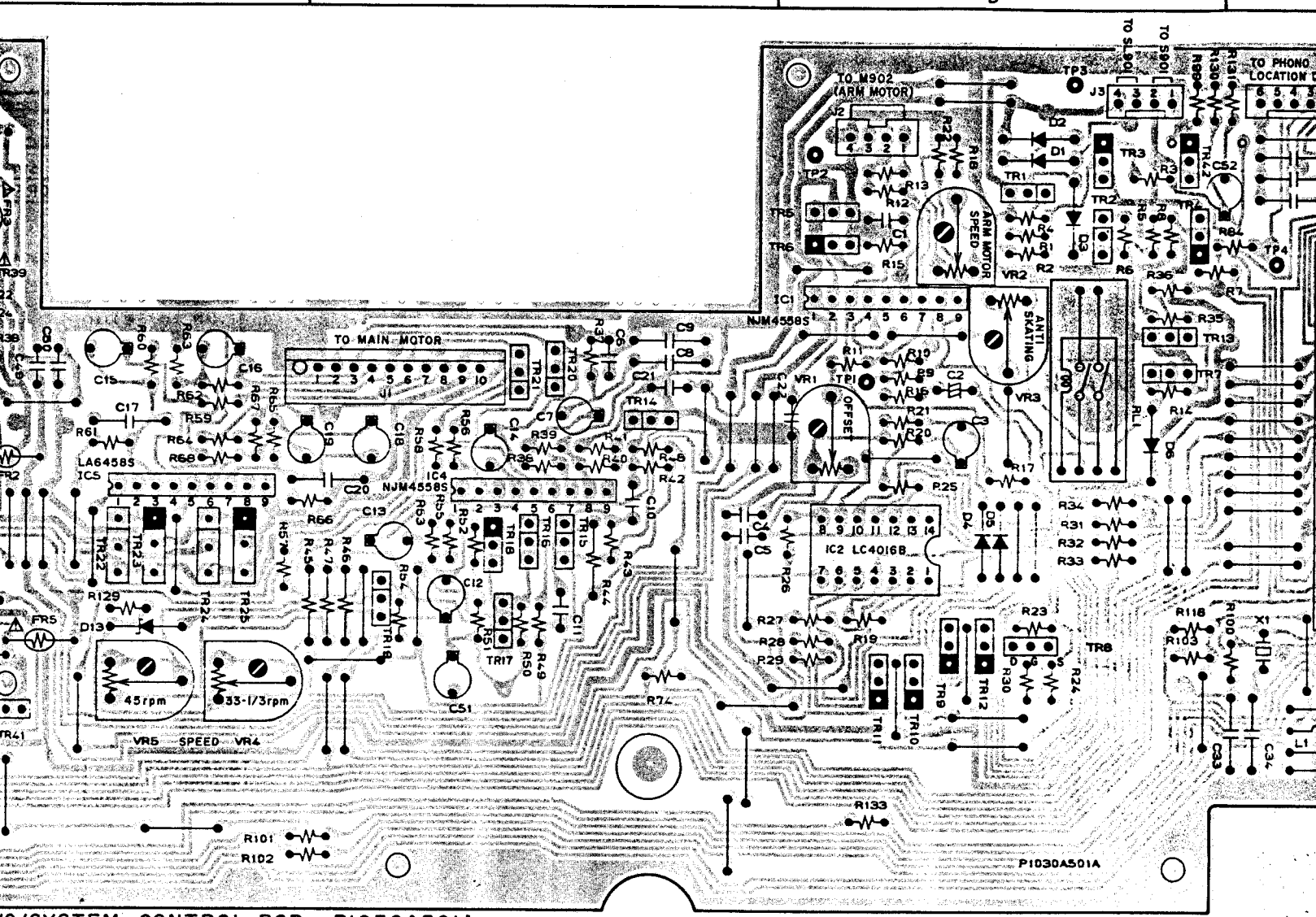
SERVO/SYSTEM CONTROL PCB P1030A501A

LOCATION OF COMPONENTS

TR	TR41.....B3	TR1,2,5,22,24.....2SC2236(O,Y)
TR1 to 6.....D1	TR42.....D1	TR3,4,9to12,
TR7.....D2	TR43.....E1	18,32to34,42,43.....2SA1015(O,Y)
TR8 to 12.....D3	TR44.....B1	TR6,23,25,44.....2SA966(O,Y)
TR13.....D2		TR7,13to17,19to21,
TR14 to 16.....C2	IC	26to31,35,37,38....2SC1815(Y,GR)
TR17.....C3	IC1.....D1	TR8.....2SK30A(R)
TR18.....C2	IC2.....D2	TR36,40.....2SD313(E,F)
TR19.....C3	IC3.....E2	TR39.....2SD612K(E,F)
TR20,21.....C2	IC4.....C2	TR41.....2SB507HP(E,F)
TR22 to 25.....B2	IC5.....B2	
TR26,27.....A2	IC6.....A3	
TR28,29.....E1		
TR30,31.....A1	TERMINALS	
TR32,33.....A2	J1.....C2	
TR34,35.....A1	J2,3.....D1	
TR36.....A2	J4.....E1	
TR37,38.....B2	J5,6.....A1	
TR39.....B1	J7.....E3	
TR40.....A3	J8.....A1	

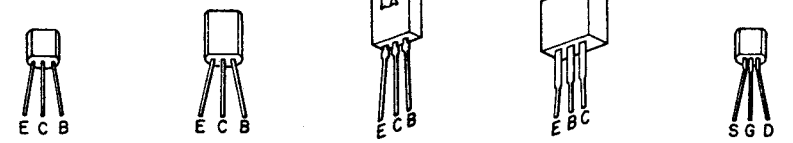
2SA1015
2SC1815

2SA9
2SC2

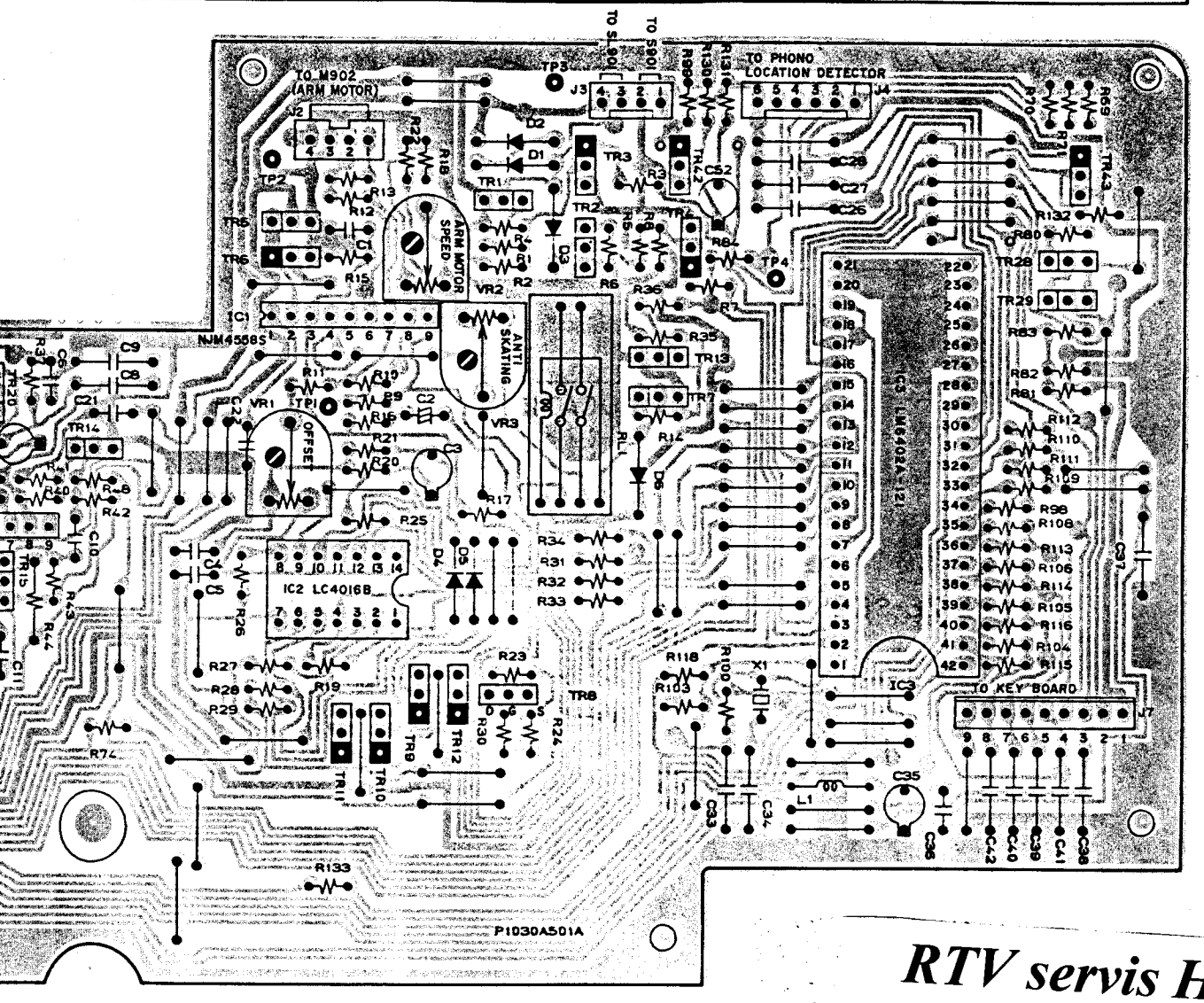


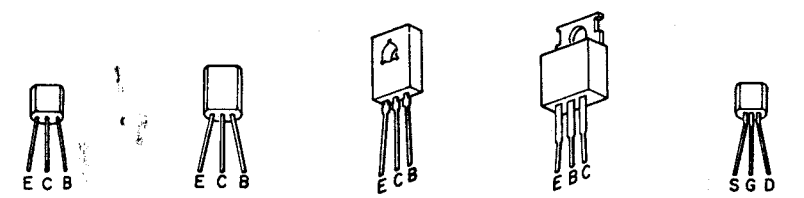
/O/SYSTEM CONTROL PCB P1030A501A

TR1,2,5,22,24.....2SC2236(O,Y)
TR3,4,9tol2,
18,32to34,42,43.....2SA1015(O,Y)
TR6,23,25,44.....2SA966(O,Y)
TR7,13tol7,19to21,
26to31,35,37,38....2SC1815(Y,GR)
TR8.....2SK30A(R)
TR36,40.....2SD313(E,F)
TR39.....2SD612K(E,F)
TR41.....2SB507HP(E,F)



WARNING: ⚠INDICATES SAFETY CR
REPLACE SAFETY CRITIC
RECOMMENDED PARTS
AVERTISSEMENT: ⚠IL INDIQUE LES
POUR MAINTENIR LE DEG
NE REMPLACER QUE DES





2SA1015 2SC1815 | 2SA966 2SC2236 | 2SD612K | 2SB507HP 2SD313 | 2SK30A

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT