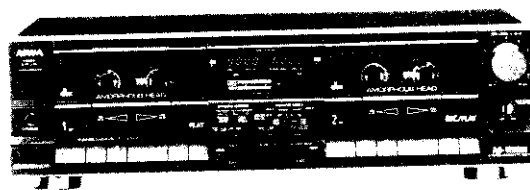


SERVICE MANUAL

MODEL No. **AD-WX808**

- STEREO CASSETTE DECK
- TYPE. HB,UB,EB,KB,ZB
- BASIC MECHANISM : X-3



SPECIFICATIONS

Type	Stereo cassette tape deck	Wow and flutter	Deck 1 0.1% (According to DIN 45500) 0.055% (WRMS)
Track format	4 tracks, 2 channels	Deck 2 0.1% (According to DIN 45500) 0.055% (WRMS)	
Power supply	AD-WX808E, Z AC 220 V, 50/60 Hz AD-WX808K AC 240 V, 50/60 Hz AD-WX808U AC 120 V, 60 Hz AD-WX808H AC 120 V/220 V/240 V switchable, 50/60 Hz	Tape speed	4.8 cm/sec (1-7/8 ips), 9.5 cm/sec (Double speed)
Power consumption	AD-WX808E, K, Z 36 W AD-WX808H, U 30 W	Recording system	AC bias (frequency 100 kHz)
Frequency response	METAL tape: 20 - 18,000 Hz CrO ₂ tape: 20 - 17,000 Hz NORMAL tape: 20 - 16,000 Hz	Erase system	AC erase
Signal-to-noise ratio	92 dB (CrO ₂ tape dbx NR ON) 73 dB (METAL tape DOLBY C NR ON)	Motor	DC Servomotor × 2
		Heads	Record/playback head × 1 (AMORPHOUS HEAD) Playback head × 1 (AMORPHOUS HEAD) Erase head × 1
		Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 kHz)
		Outputs	LINE OUT standard output level 400 mV (0 VU), suitable load impedance: over 47 kΩ
		Dimensions	430(W) × 126.5(H) × 318.5(D)mm
		Weight	5.5 kg

• HX professional originated by BANG&OLUFSEN.

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation
- Dolby and the  symbol are trademarks of Dolby Laboratories Licensing Corporation.

REF.NO.	PART NO.	ORDER	DESCRIPTION	REF.NO.	PART NO.	ORDER	DESCRIPTION	REF.NO.	PART NO.	ORDER	DESCRIPTION	REF.NO.	PART NO.	ORDER	DESCRIPTION	REF.NO.		
C646	*87-010-620-010		CAP,TANTALUM 22-16 J	D813	87-020-752-010		DIODE 1SS270	SFR451	*87-027-746-010		SFR 100K	C753	*87-010-101-010		CAP,ELECT 220-16 SME	SOL110		
C700	*87-018-134-010		CAP,CERA-SOL SS 0.01	D814	87-020-752-010		DIODE 1SS270	SFR452	*87-027-746-010		SFR 100K	C754	*87-010-101-010		CAP,ELECT 220-16 SME	---		
C701	*87-015-241-010		CAP,ELECT LL 1-50	D851	87-020-123-010		DIODE DS446	SFR601	*87-021-741-010		SFR 4.7K	C755	*87-010-385-010		CAP,ELECT 220-25	---		
C702	*87-015-241-010		CAP,ELECT LL 1-50	D852	87-020-123-010		DIODE DS446	SFR1451	*87-021-747-010		SFR 220K	J751	87-049-827-010		JACK HLJ-C521-010(PHONES)	PCB-K		
C801	*87-018-118-010		CAP,CERA-SOL SS 82P	D853	87-020-123-010		DIODE DS446	SFR1452	*87-021-747-010		SFR 220K	LS1	82-224-617-010		PUSH SW(POWER)	CP110		
C802	*87-018-205-010		CAP,CERA-SOL SS 0.022	D854	87-020-123-010		DIODE DS446	=== KEY CIRCUIT BOARD SECTION ===			=== SW-1 CIRCUIT BOARD SECTION ===			=== MECHANISM-1 CIRCUIT BOARD SECTION ===				
C851	*87-010-565-010		CAP,ELECT 470-12 SME	D901	87-020-752-010		DIODE 1SS270	PCB-B	*	KEY CIRCUIT BOARD	PCB-E	*	SW-1 CIRCUIT BOARD	---				
C852	*87-010-565-010		CAP,ELECT 470-12 SME	D902	87-020-752-010		DIODE 1SS270	D1001	87-020-752-010		DIODE 1SS270	D1501	87-020-752-010		DIODE 1SS270	---		
C853	*87-010-565-010		CAP,ELECT 470-12 SME	D903	87-020-752-010		DIODE 1SS270	D1002	87-020-752-010		DIODE 1SS270	D1502	87-020-752-010		DIODE 1SS270	---		
C854	*87-010-565-010		CAP,ELECT 470-12 SME	D904	87-020-752-010		DIODE 1SS270	D1003	87-027-556-010		DIODE,ZENER HZ11B3	D1551	*87-001-159-010		LED,SLV31MC 3F GR(D1 PLAY)	---		
C881	*87-010-379-010		CAP,ELECT 22-16 SME	D951	87-020-752-010		DIODE 1SS270	D1505	87-020-752-010		DIODE 1SS270	D1562	*87-001-159-010		LED,SLV31MC 3F GR(D1 PLAY)	---		
C882	*87-010-402-010		CAP,ELECT 2.2-50 SME	D952	87-020-752-010		DIODE 1SS270	D1506	87-020-752-010		DIODE 1SS270	D1563	*87-001-159-010		LED,SLV31MC 3F GR(D1 PLAY)	---		
C883	*87-010-379-010		CAP,ELECT 22-16 SME	D953	87-020-752-010		DIODE 1SS270	D1507	87-020-752-010		DIODE 1SS270	D1564	*87-001-159-010		LED,SLV31MC 3F GR(D1 PLAY)	---		
C884	*87-010-402-010		CAP,ELECT 2.2-50 SME	D1401	87-020-752-010		DIODE 1SS270	D1508	87-020-752-010		DIODE 1SS270	SW1501	87-031-893-010		TACT SW(FWD PLAY D1)	D1201		
C900	*87-018-134-010		CAP,CERA-SOL SS 0.01	D1402	87-020-752-010		DIODE 1SS270	D1509	87-020-752-010		DIODE 1SS270	SW1502	87-031-893-010		TACT SW(REV PLAY D1)	D1202		
C901	*87-010-401-010		CAP,ELECT 1-50 SME	FR1	87-029-090-010		RES,FUSIBLE 22-1/4W	D1510	87-020-752-010		DIODE 1SS270	=== SW-2 CIRCUIT BOARD SECTION ===			D1200			
C902	*87-010-401-010		CAP,ELECT 1-50 SME	ICP1	*83-203-688-010		PROTECTOR ICP-N25	D1511	87-020-752-010		DIODE 1SS270	PCB-F	*	SW-2 CIRCUIT BOARD	M1001			
C951	*87-010-404-010		CAP,ELECT 4.7-50 SME	ICP2	*87-001-211-010		PROTECTOR ICP-N50	D1512	87-020-752-010		DIODE 1SS270	D1503	87-020-752-010		DIODE 1SS270	M1002		
C952	*87-010-404-010		CAP,ELECT 4.7-50 SME	J701	87-049-420-010		PIN JACK 4P-14(LINE IN)	D1513	87-020-752-010		DIODE 1SS270	D1504	87-020-752-010		DIODE 1SS270	PH		
C953	*87-010-378-010		CAP,ELECT 10-16	J901	87-049-420-010		PIN JACK 4P-14(LINE OUT)	D1514	87-020-752-010		DIODE 1SS270	D1565	*87-001-160-010		LED,SLV31VC 3F RED(D2 PLAY)	IC B		
C954	*87-010-378-010		CAP,ELECT 10-16	L251	*81-760-621-010		COIL 130UH	D1515	87-020-752-010		DIODE 1SS270	D1566	*87-001-160-010		LED,SLV31VC 3F RED(D2 PLAY)			
C955	*87-010-380-010		CAP,ELECT 47-15 SME	L301	*87-003-128-010		INDUCTOR 5.6MMH	D1516	87-020-752-010		DIODE 1SS270	D1567	*87-001-160-010		LED,SLV31VC 3F RED(D2 PLAY)			
C956	*87-010-380-010		CAP,ELECT 47-15 SME	L302	*87-003-128-010		INDUCTOR 5.6MMH	D1517	87-020-752-010		DIODE 1SS270	D1568	*87-001-160-010		LED,SLV31VC 3F RED(D2 PLAY)			
C957	*87-010-385-010		CAP,ELECT 220-25	L303	*87-003-131-010		COIL CHOKE 10MMH	D1518	87-020-752-010		DIODE 1SS270	D1569	*87-001-159-010		LED,SLV31MC 3F GR(D2 REC)			
C959	*87-015-244-010		CAP,ELECT LL 4.7-50	L304	*87-003-131-010		COIL CHOKE 10MMH	D1519	87-020-752-010		DIODE 1SS270	D1570	*87-001-159-010		LED,SLV31MC 3F GR(D2 REC)			
C960	*87-011-011-010		CAP,ELECT LL 4.7-50	L305	*82-196-603-010		COIL TRAP 100K	D1573	*87-001-137-010		LED,SLP981C50 R(REC MUTE)	D1571	*87-001-159-010		LED,SLV31MC 3F GR(D2 REC)			
C961	*87-018-134-010		CAP,CERA-SOL SS 0.01	L306	*82-196-603-010		COIL TRAP 100K	D1576	*87-001-137-010		LED,SLP981C50 R(SYNC.DUB.HI)	D1572	*87-001-159-010		LED,SLV31MC 3F GR(D2 REC)			
C1403	*87-010-404-010		CAP,ELECT 4.7-50 SME	L401	*82-203-623-010		COIL OSC BIAS 100K	D1577	*87-001-137-010		LED,SLP981C50 R(SYNC.DUB.NOR)	SW1503	87-031-893-010		TACT SW(FWD PLAY D2)			
C1451	*87-010-402-010		CAP,ELECT 2.2-50 SME	L451	*82-203-624-010		COIL HX 100K AM W/C	D1574	*87-001-138-010		LED,SLP481C50 Y(D1 PAUSE)	SW1504	87-031-893-010		TACT SW(REV PLAY D2)			
C1452	*87-010-402-010		CAP,ELECT 2.2-50 SME	L452	*82-203-624-010		COIL HX 100K AM W/C	D1575	*87-001-138-010		LED,SLP481C50 Y(D2 PAUSE)	=== VL CIRCUIT BOARD SECTION ===						
D1	82-001-187-010		DIODE S5277B,LC6	LS01	*82-721-697-010		FILTER SQ,CX	D1576	*87-001-137-010		LED,SLP981C50 R(SYNC.DUB.HI)	PCB-G	*	VL CIRCUIT BOARD				
D2	82-001-187-010		DIODE S5277B,LC6	LS02	*82-721-697-010		FILTER SQ,CX	D1577	*87-001-137-010		LED,SLP981C50 R(SYNC.DUB.NOR)	C721	*87-015-241-010		CAP,ELECT LL 1-50			
D3	82-001-187-010		DIODE S5277B,LC6	LS03	*82-224-612-010		FILTER DOLBY 100K	SW1001	82-221-614-010		SLIDE SW(DOLBY B-C/DBX)	C722	*87-015-241-010		CAP,ELECT LL 1-50			
D4	82-001-187-010		DIODE S5277B,LC6	LS04	*82-224-612-010		FILTER DOLBY 100K	SW1505	87-031-893-010		TACT SW(REC D2)	VR401	82-224-618-010		VOLUME 250KB,PH16			
D5	82-001-187-010		DIODE S5277B,LC6	LS01	*82-202-624-010		COIL OSC LC6520H	SW1506	87-031-893-010		TACT SW(REC MUTE)	VR721	82-224-613-010		VOLUME 10KA(RK16)(REC LEVEL)			
D6	87-020-123-010		DIODE DS446	R603	*87-025-442-010		RES,MF 6.2K 1/8W F	SW1507	87-031-893-010		TACT SW(SYN.DUB.HI)	=== TR CIRCUIT BOARD SECTION ===						
D7	87-027-393-010		DIODE,ZENER HZ-402	R604	*87-025-442-010		RES,MF 6.2K 1/8W F	SW1508	87-031-893-010		TACT SW(SYN.DUB.NOR)	PCB-H			TR CIRCUIT BOARD			
D8	87-020-752-010		DIODE 1SS270	R605	*87-025-443-010		RES,MF 24K 1/8W F	SW1509	87-031-893-010		TACT SW(STOP D1)	=== MECHANISM-1 CIRCUIT BOARD SECTION ==						
D9	87-027-386-010		DIODE,ZENER HZ-501	R606	*87-025-443-010		RES,MF 24K 1/8W F	SW1510	87-031-893-010		TACT SW(PAUSE D1)	PCB-I	*	MECHANISM-1 CIRCUIT BOARD				
D10	87-027-386-010		DIODE,ZENER H30-2L	R615	*87-025-428-010		RES,MF 33K 1/8W	SW1511	87-031-893-010		TACT SW(MS/▶▶D1)	S1108	87-036-040-010		PUSH SW(CO,D1)			
D11	87-027-747-010		DIODE,ZENER HZ-18-2L T2	R616	*87-025-428-010		RES,MF 33K 1/8W	SW1512	87-031-893-010		TACT SW(◀◀/MS D1)	S1109	87-036-039-010		PUSH SW(CST,D1)			
D251	87-027-746-010		DIODE,ZENER HZ-501	R617	*87-025-444-010		RES,MF 91K 1/8W F	SW1513	87-031-893-010		TACT SW(STOP D2)	S1110	87-036-039-010		PUSH SW(DIR,D1)			
D252	87-020-752-010		DIODE 1SS270	R618	*87-025-444-010		RES,MF 91K 1/8W F	SW1514	87-031-893-010		TACT SW(PAUSE D2)	SFR110	87-021-966-010		SFR 4.7K (D1)			
D401	87-020-752-010		DIODE 1SS270	R619	*87-025-423-010		RES,MF 4.7K 1/8W	SW1515	87-031-893-010		TACT SW(MS/▶▶D2)	SFR110	87-021-966-010		SFR 4.7K (D1)			
D402	87-020-752-010		DIODE 1SS270	R620	*87-025-423-010		RES,MF 4.7K 1/8W	SW1516	87-031-893-010		TACT SW(◀◀/MS D2)	SOL110	86-535-611-010		SOLENOID X-3 PL(D			

OPTION
220-16 SME
220-16 SME
220-25
521-010(PHONES)
POWER)

IT BOARD
70
70
C 3F GR(D1 PLAY)
C 3F GR(D1 PLAY)
C 3F GR(D1 PLAY)
C 3F GR(D1 PLAY)
D PLAY D1)

V PLAY D1)

IT BOARD
70
70
C 3F RED(D2 PLAY)
C 3F RED(D2 PLAY)
C 3F RED(D2 PLAY)
C 3F GR(D2 REC)

C 3F GR(D2 REC)
C 3F GR(D2 REC)
C 3F GR(D2 REC)
D PLAY D2)

V PLAY D2)

BOARD
L 1-50
L 1-50
B,PH16
NOR/CR02)
(RK16)(REC LEVEL)

BOARD

CIRCUIT BOARD
D1)
,D1)
,D1)

1)
1)
3 PL(D1)
3 FR(D1)

CIRCUIT BOARD
D2)
D2)
,D2)

,D2)
B,D2)
A,D2)
)

3 PB(D2)

REF.NO. PART NO. ORDER DESCRIPTION

SOL110 86-535-612-010 SOLENOID X-3 FR(D2)

=== SENSOR CIRCUIT BOARD SECTION ===

PCB-K *
CP1101 87-020-755-010 SENSOR CIRCUIT BOARD
PHOTO SENSOR SPI-900

=== MISCELLANEOUS ===

△ *87-034-732-010 AC CORD H ASSY(H)
△ *87-034-731-010 AC CORD (UL) ASSY(U)
△ *87-034-736-010 AC CORD E ASSY(E)
△ *87-034-734-010 AC CORD K ASSY(K)

△ *87-085-184-010 AC CORD BUSHING(H)
△ *87-085-189-010 AC CORD BUSHING U(U)
△ *87-085-185-010 AC CORD BUSHING E(E)
D1201 *87-020-109-010 LED SLF-201C(D1)

D1202 *87-020-109-010 LED SLF-201C(D2)
M1001 87-045-235-010 MOTOR MMA6B2LW(D1)
M1002 87-045-235-010 MOTOR MMA6B2LW(D2)
PH 87-046-296-010 HEAD PH(D1)

REF.NO. PART NO. ORDER DESCRIPTION

△ PT1 82-221-621-010 POWER TRANSFORMER H(H)
△ PT1 82-221-622-010 POWER TRANSFORMER UC(U,C)
△ PT1 82-221-623-010 POWER TRANSFORMER EZ(E,Z)
△ PT1 82-221-625-010 POWER TRANSFORMER KG(K,G)

RPEH 87-046-289-010 HEAD RPEH HADKH 5503A(D2)
△ SW2 87-031-586-010 ROTARY SW(H)(AC VOLTAGE)

Combination circuit board A 82-221-601-010

PCB-A 82-221-602-010

PCB-B 82-221-603-010

PCB-C 82-221-604-010

PCB-D 82-221-605-010

PCB-E 82-221-606-010

PCB-F 82-221-607-010

PCB-G 82-221-610-010

PCB-H 82-221-609-010

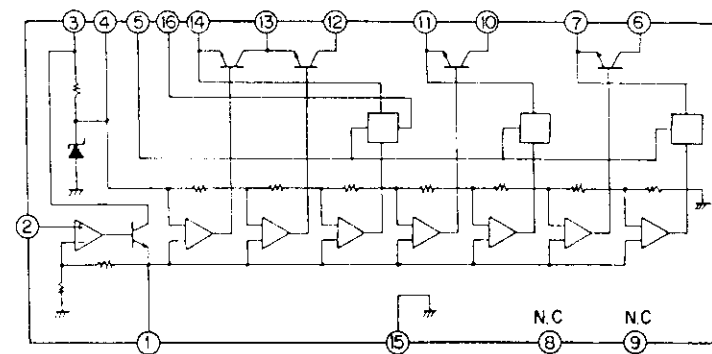
Combination circuit board B 86-535-601-210

PCB-I,J 86-535-602-210

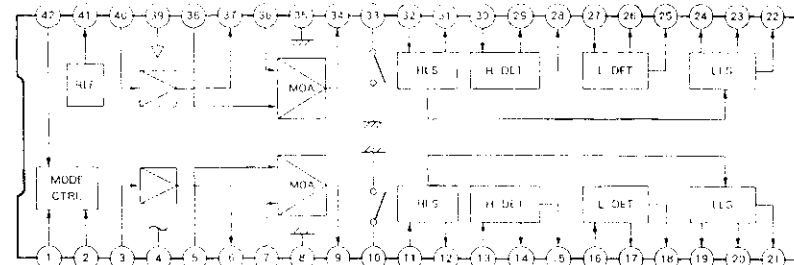
PCB-K,L 86-535-603-210

IC BLOCK DIAGRAM

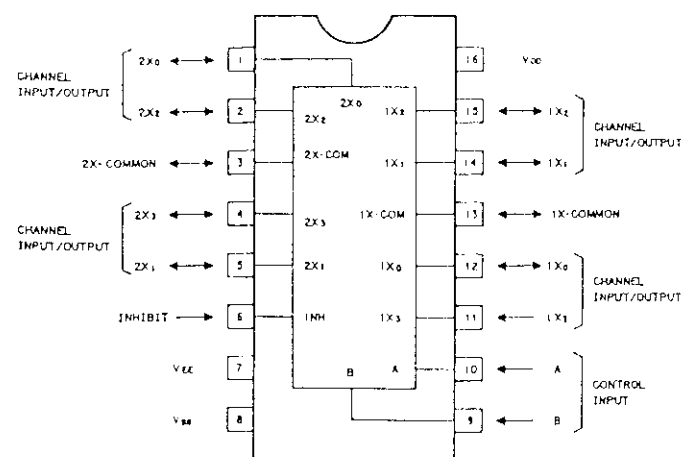
LB1408



CX 20187



NJU4052BP

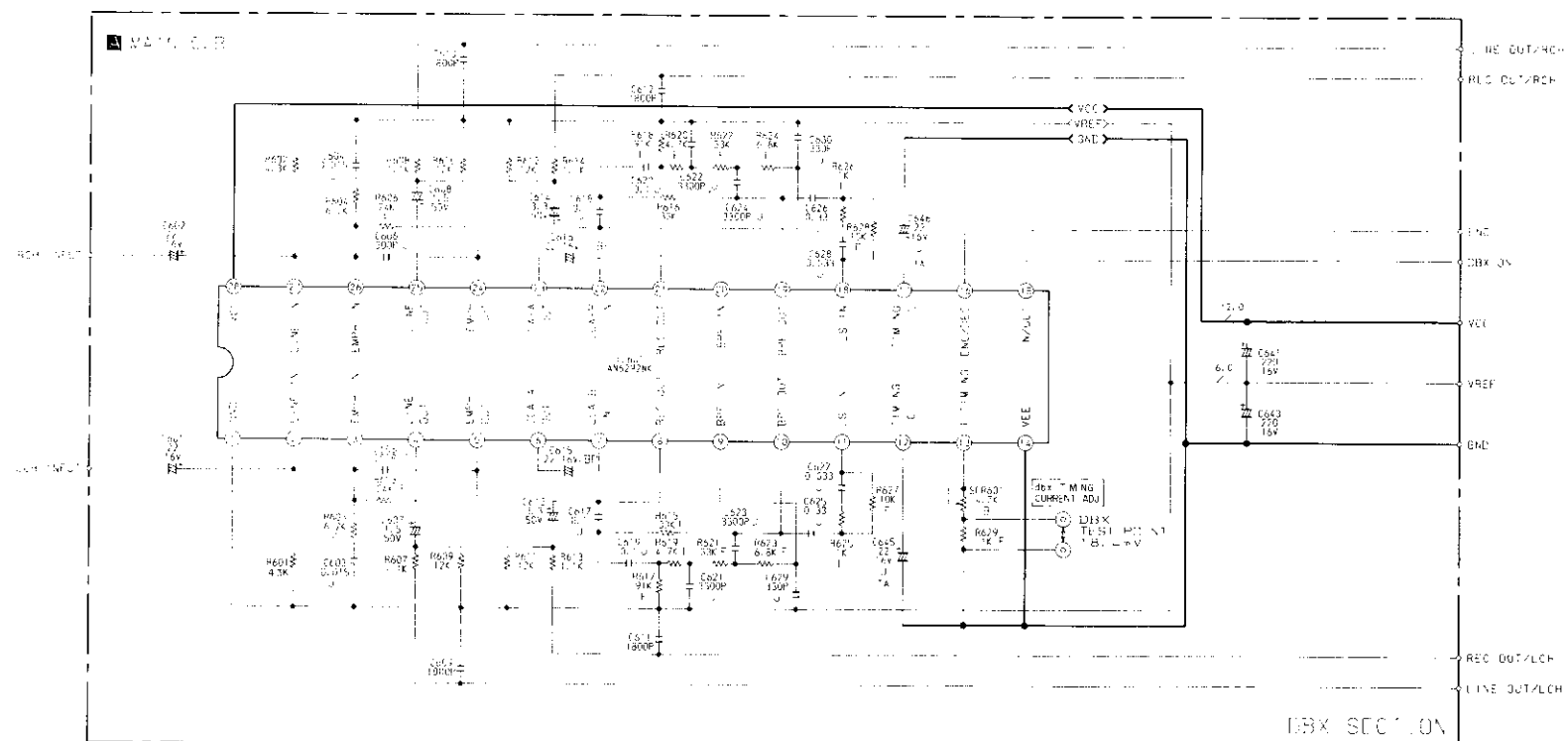
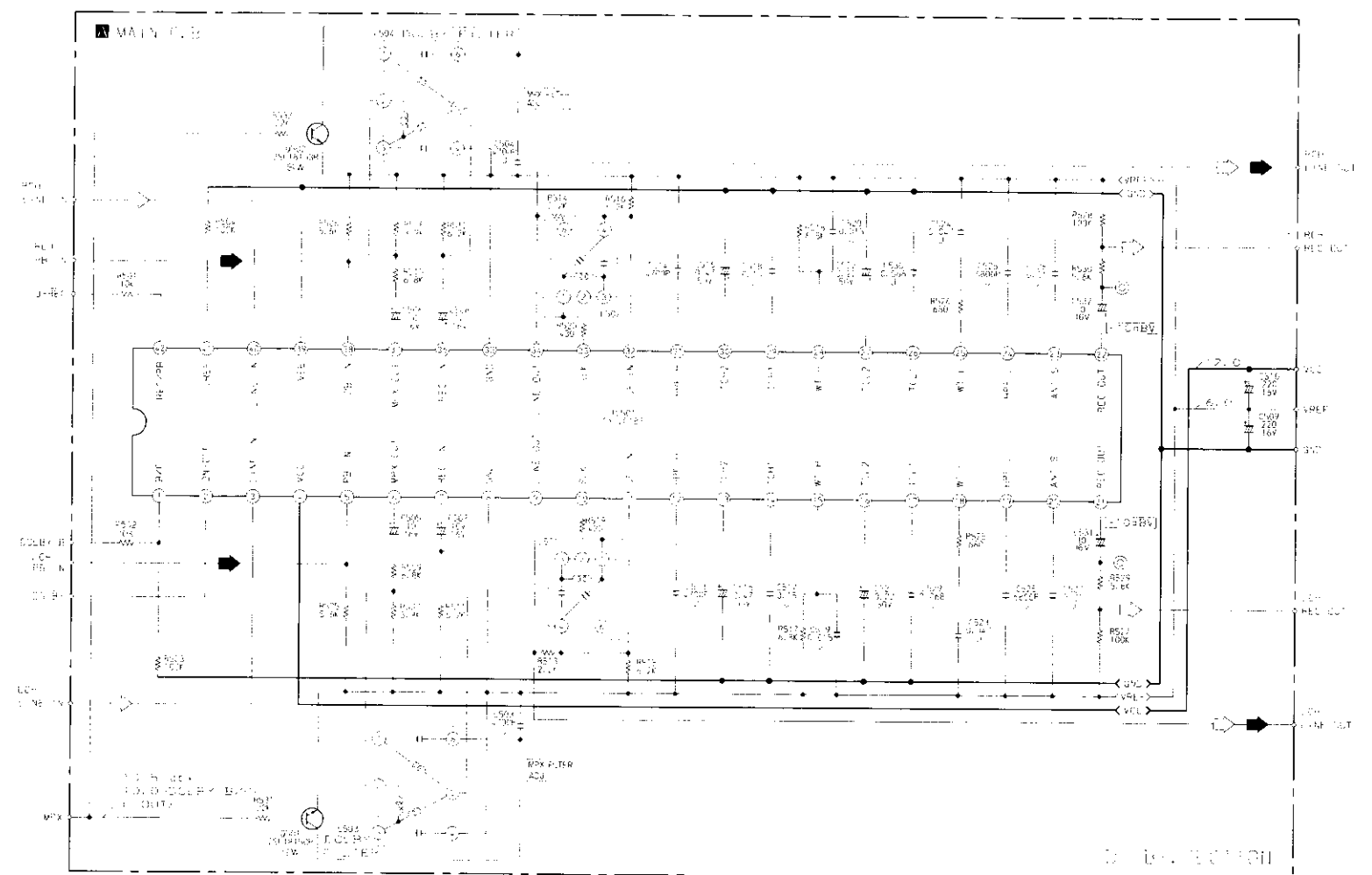


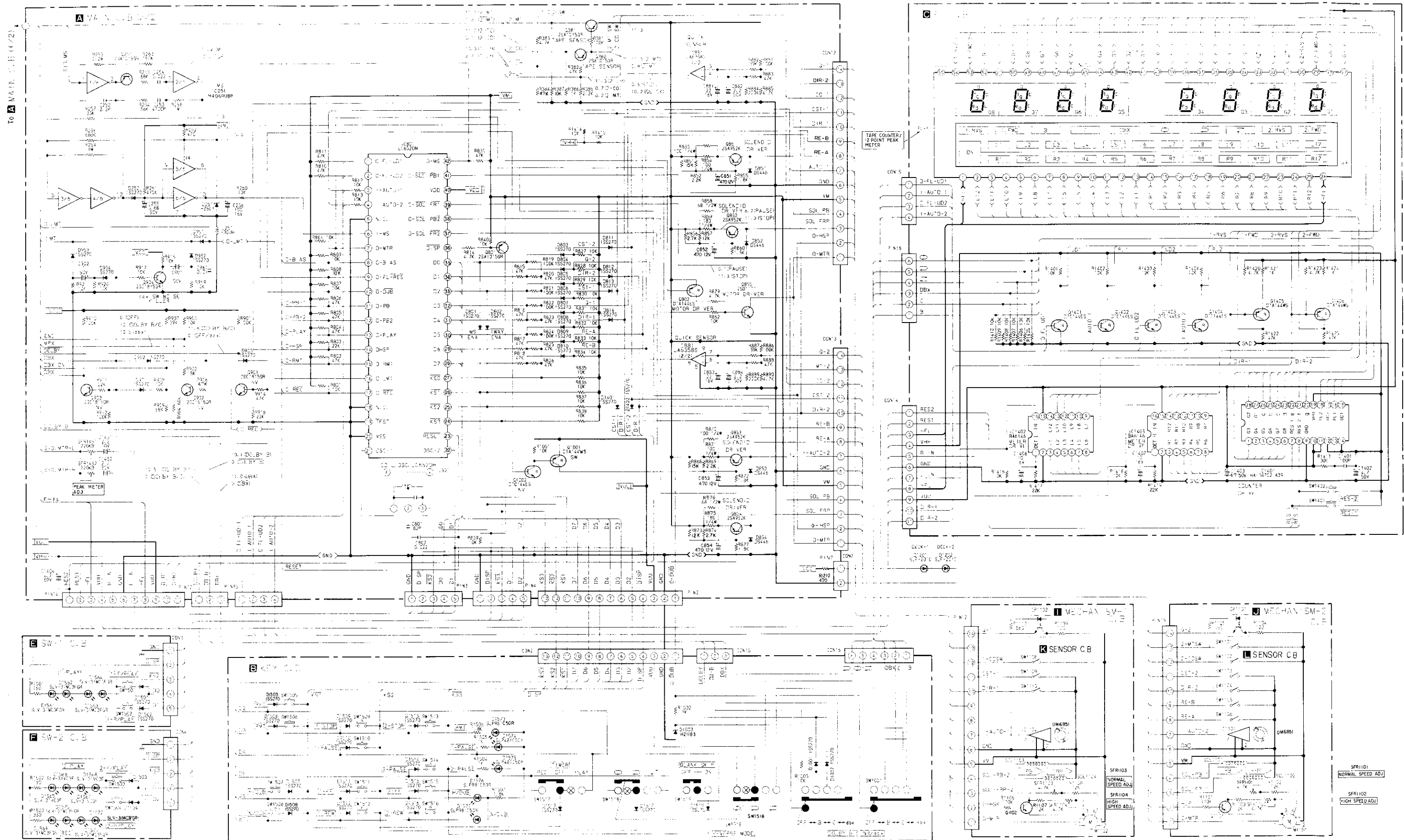
TRUTH TABLE

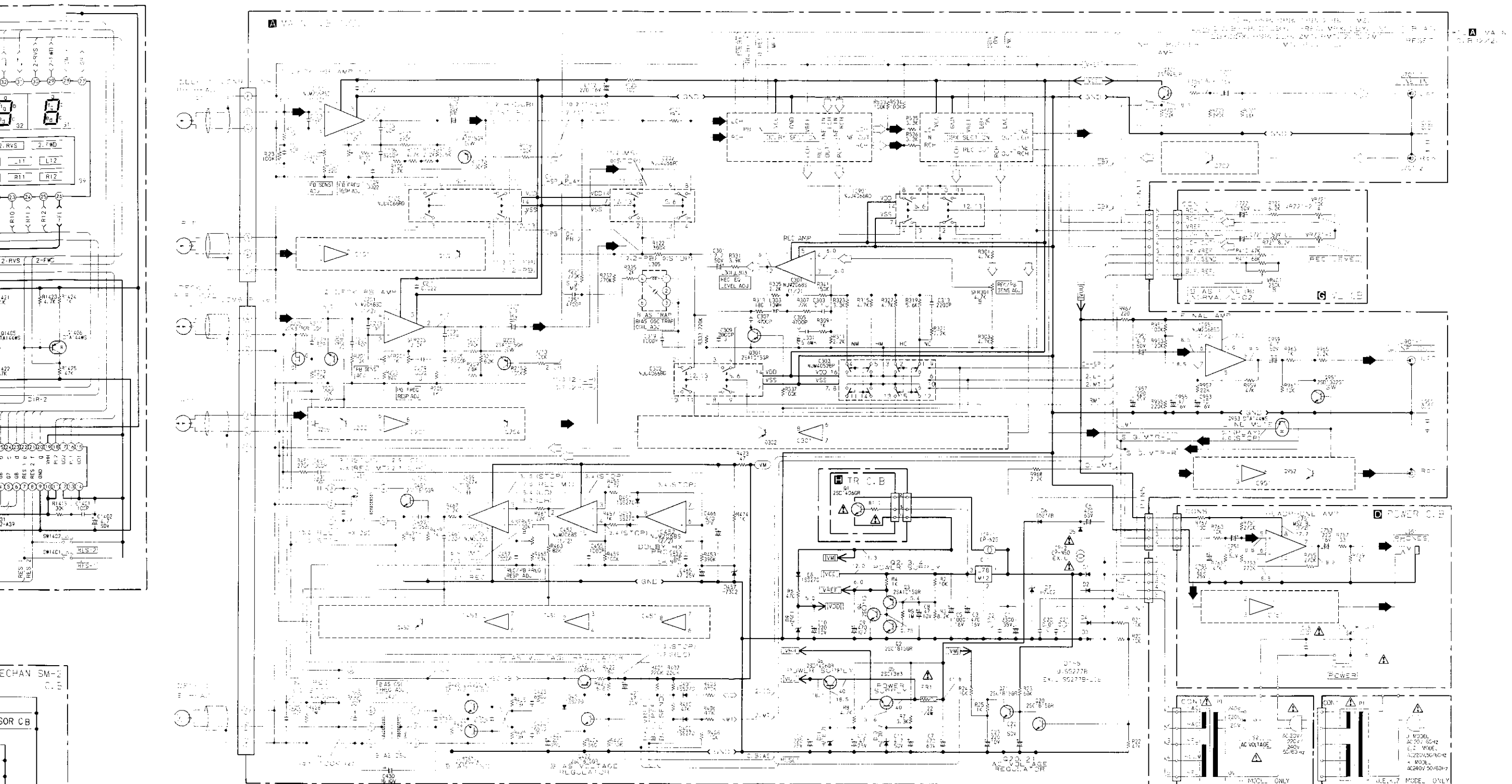
INHIBIT	CONTROL	CHANNEL INPUT/OUTPUT SWITCH OF COMMON TERMINAL			
INPUT	INPUT	X ₀	X ₁	X ₂	X ₃
L	L	L	ON	OFF	OFF
L	L	H	OFF	ON	OFF
L	H	L	OFF	OFF	ON
L	H	H	OFF	OFF	OFF
H	X	X	OFF	OFF	OFF

Note 1 X: "H" or "L"

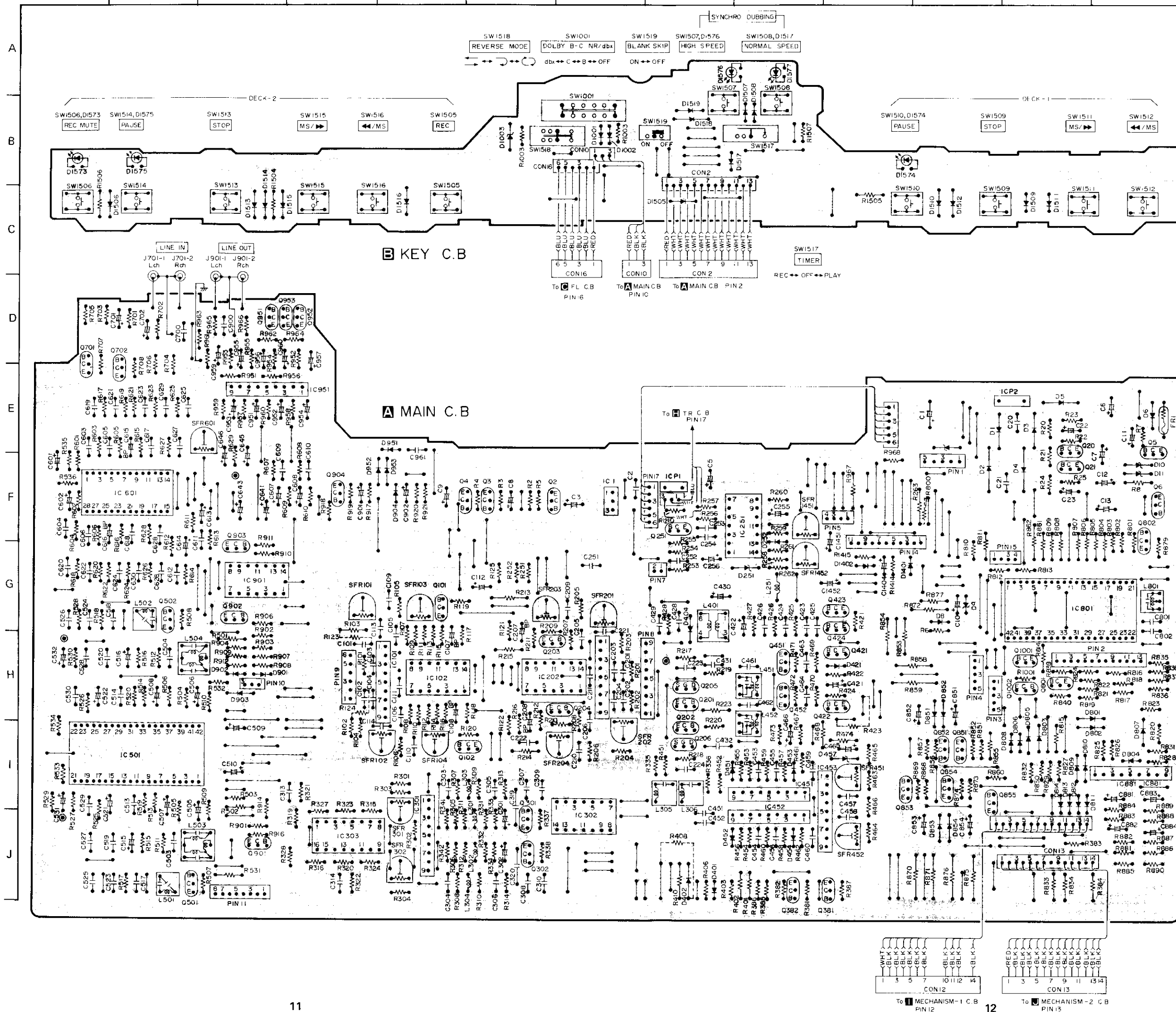
SCHEMATIC DIAGRAM-1







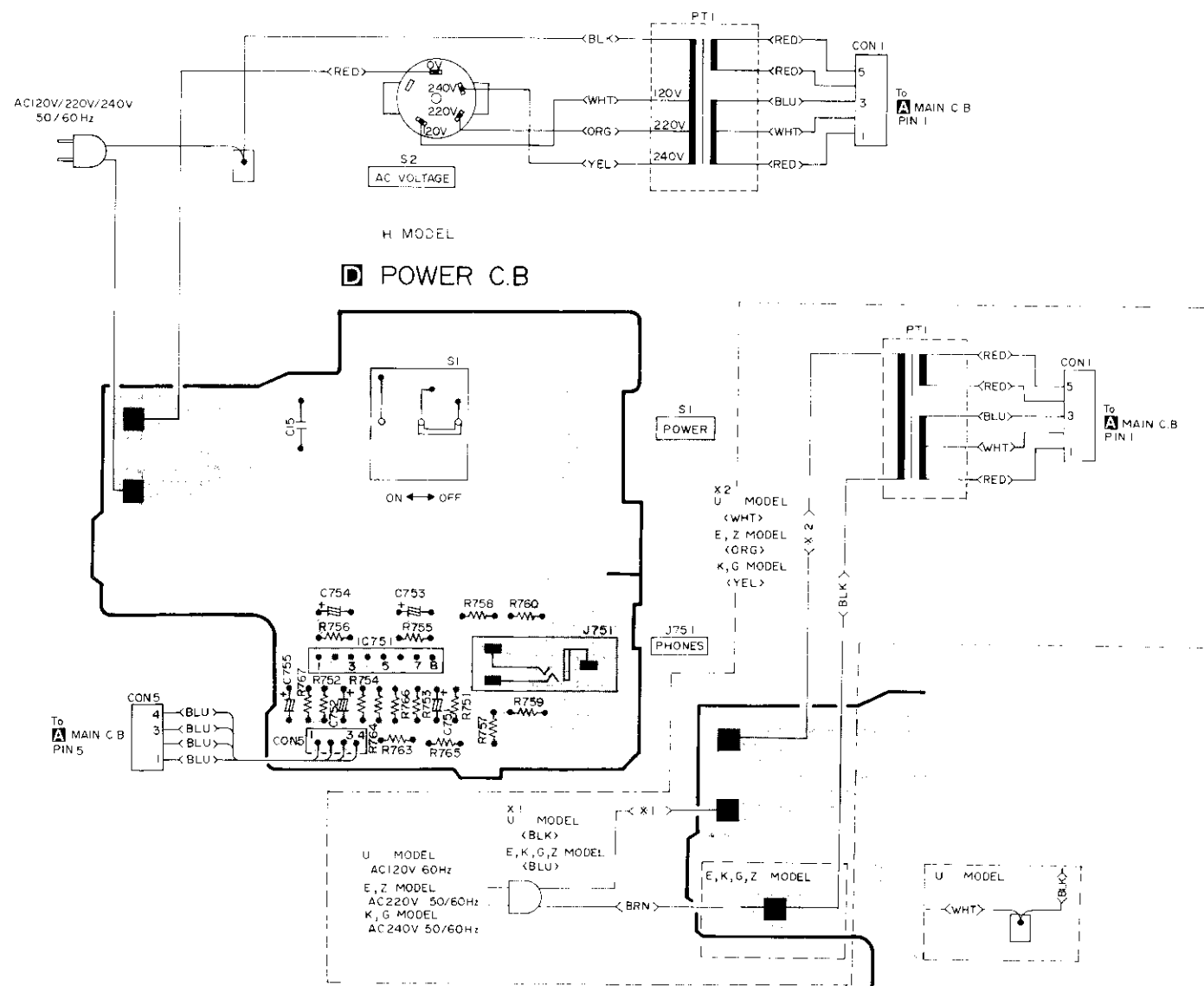
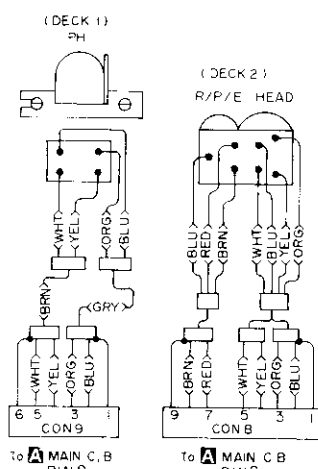
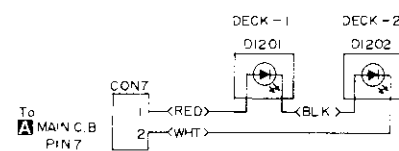
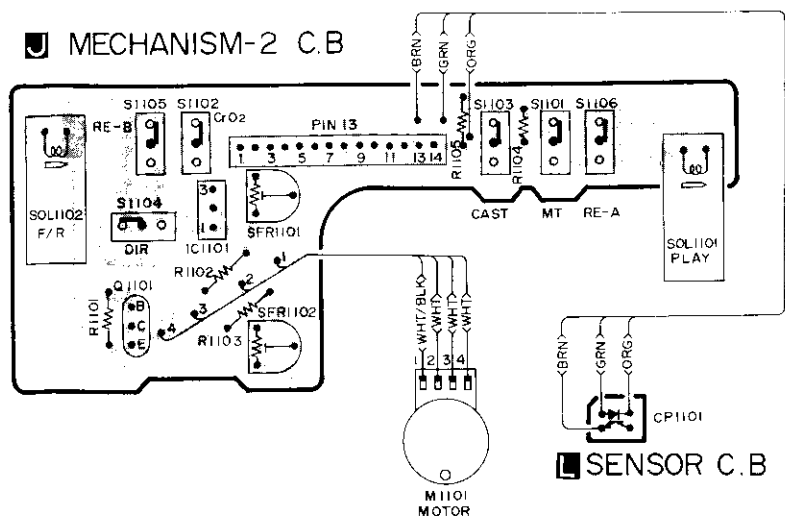
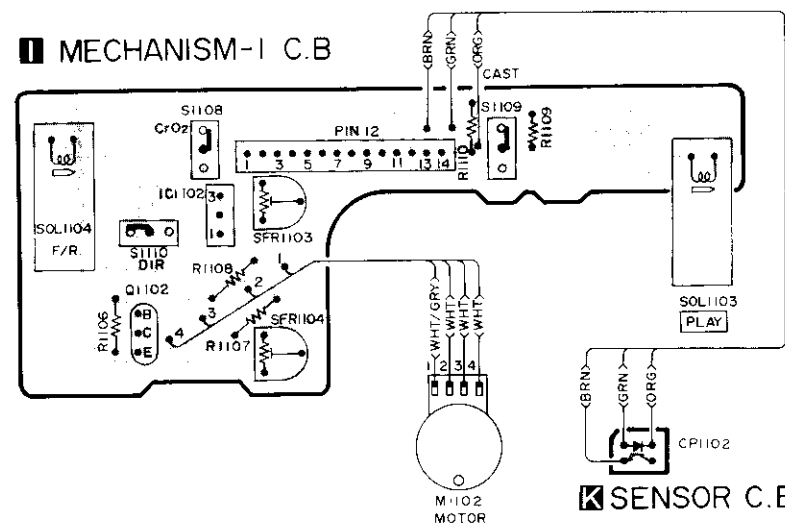
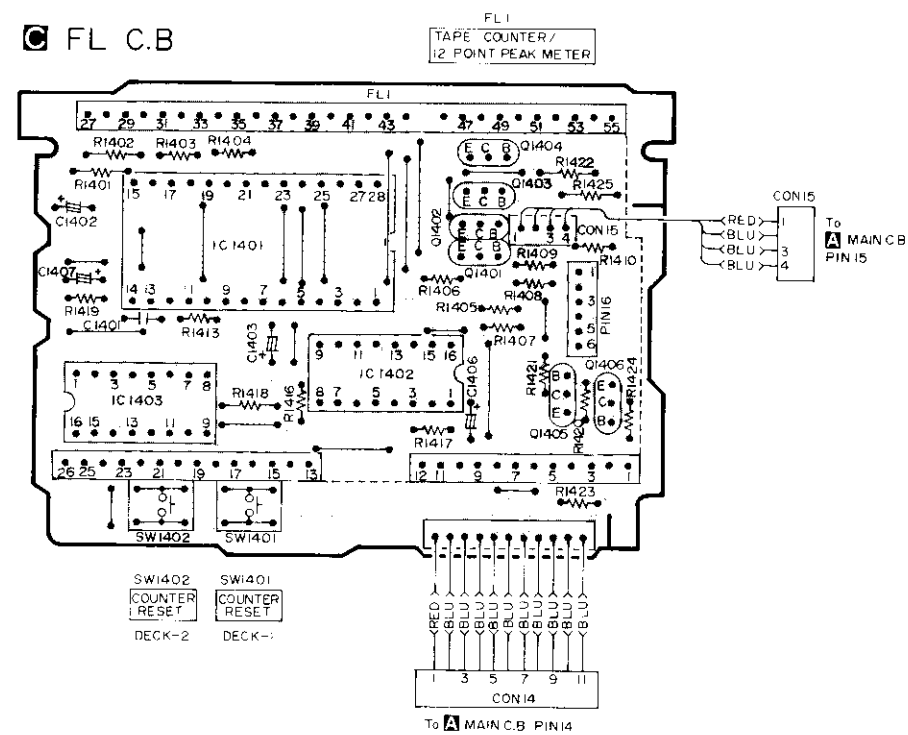
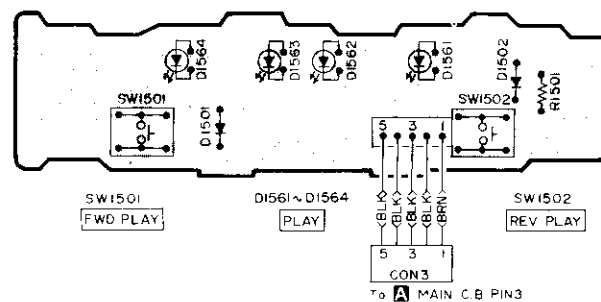
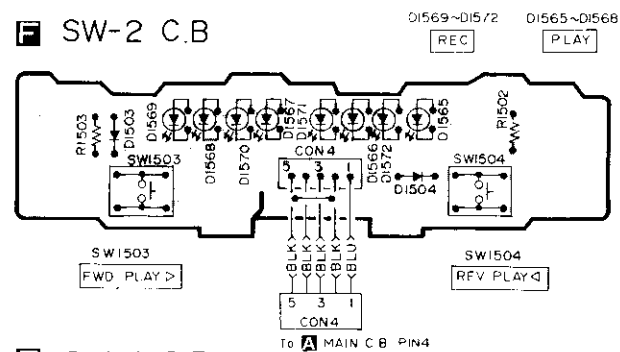
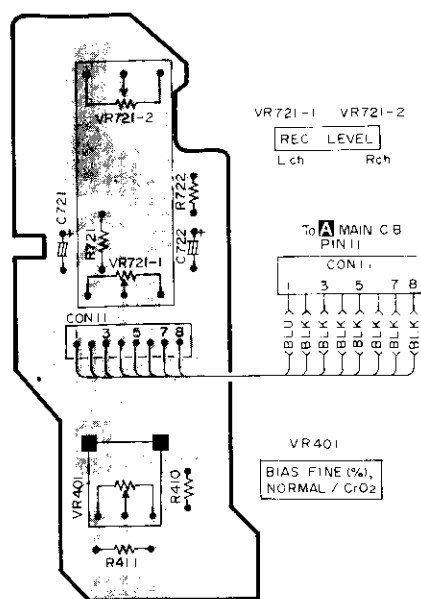
- | | | | |
|---|---|--|---|
|  |  |  |  |
| 2SK373 | 2SA952 | 2SD1406 | DT A144 |
| | 2SA1015 | | 2SC 3113 |
| | 2SC 945 | | |
| | 2SC 1815 | | |
| | 2SC 2001 | | |
| | 2SD1111 | | |
| | 2SD1302 | | |
| | 2SC1383 | | |



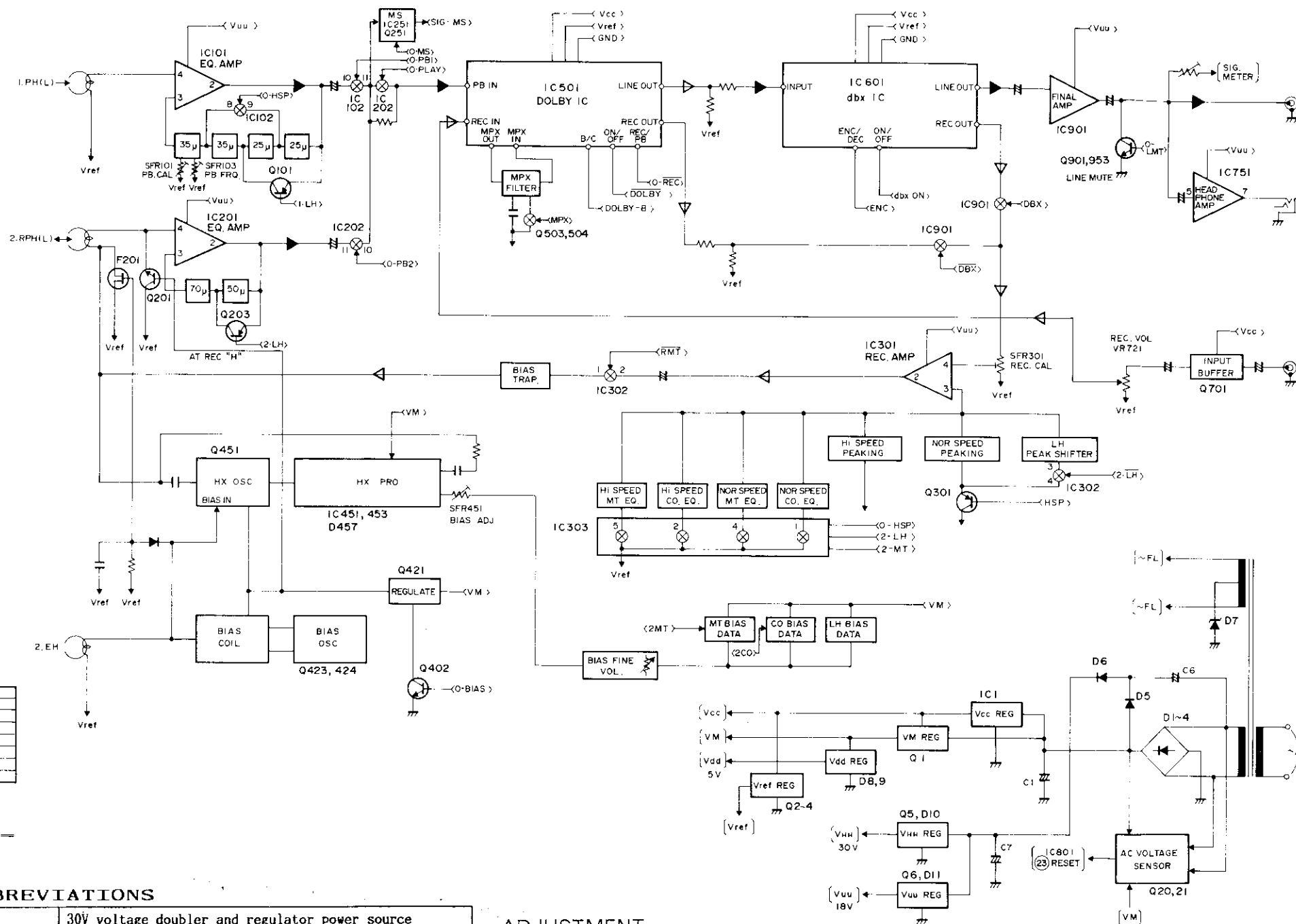
VL C.B.

MECHANIS

MECHANIS



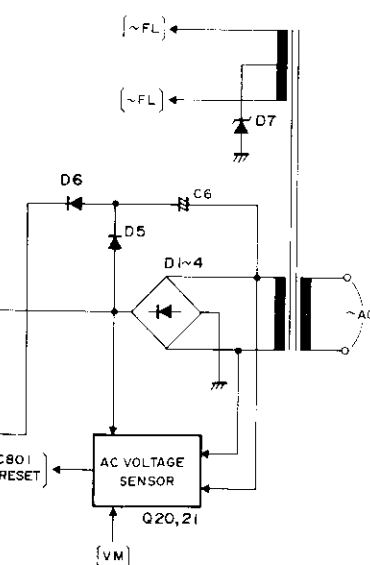
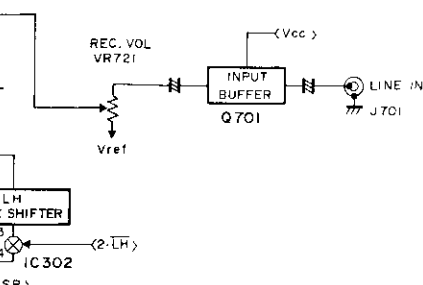
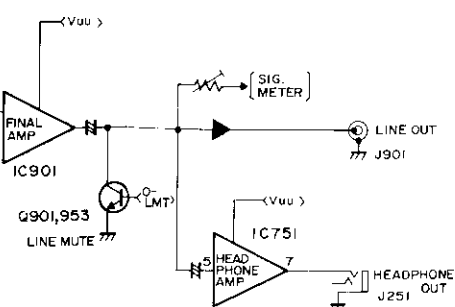
BLOCK DIAGRAM-2



ADJUSTMENT

1. Normal Speed Adjustment (DECK-1, DECK-2)
 1. Load the unit with a test tape (TTA-111S) and play its intermediate area.
 2. Then adjust the variable resistor inserting a screwdriver through the adjustment SFR1103(1101) so that the frequency counter reads 3000Hz.
 3. Check the reverse running of tape for DECK 2.
2. High Speed Adjustment (DECK-1, DECK-2)
 1. Short-Circuit the pattern of the MOTOR in the DECK to be adjusted as shown in
 2. Load the unit with a test tape (TTA-111) and play its intermediate area.
 3. Adjust the variable resistor SFR1104(1101) so that the frequency counter reads 3000Hz
 4. After adjustment is completed, release short-circuit of the pattern.

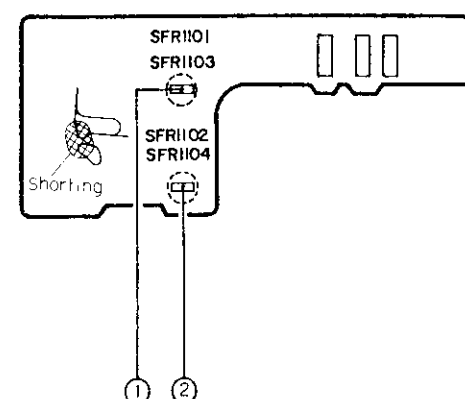
Note: Always perform the normal speed adjustment and then the high-speed adjustment. Adjusting the high-speed only will cause an error in the normal tape speed.



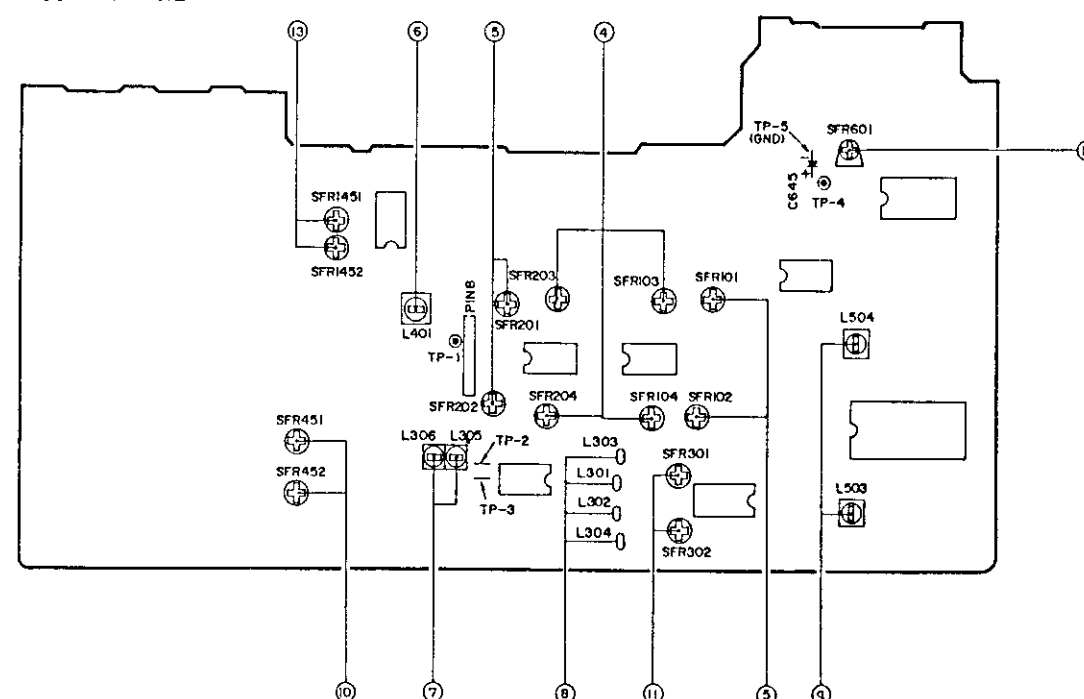
Adjustment (DECK-1, DECK-2)
 Circuit the pattern of the MOTOR P.C.B
 DECK to be adjusted as shown in Fig.
 the unit with a test tape (TTA-111H)
 by its intermediate area.
 the variable resistor SFR1104(1102) so that
 frequency counter reads 3000Hz
 adjustment is completed, release the
 circuit of the pattern.
 always perform the normal speed adjustment
 then the high-speed adjustment.
 justing the high-speed only will cause
 error in the normal tape speed.

3. Head Azimuth Adjustment (DECK-1, DECK-2)
 Settings: • Test tape: SCC-1429 (TTA-317E)
 • Test point: LINE OUT
 • Adjustment location: Head azimuth adjustment screw
 Method: Play back the test tape, and adjust so that the output becomes maximum.
 Note: Perform on each PLAY and REV PLAY mode.
4. PB Frequency Response Adjustment (DECK-1, DECK-2)
 Settings: • Test tape: SCC-1429 (TTA-317E)
 • Test point: LINE OUT
 • Adjustment location: SFR103 (DECK-1, Lch)
 SFR104 (DECK-1, Rch)
 SFR203 (DECK-2, Lch)
 SFR204 (DECK-2, Rch)
 Method: Play back the test tape, and adjust so that the output becomes $+0.3 \pm 0.2$ dB.

MECHANISM-1 C.B MECHANISM-2 C.B

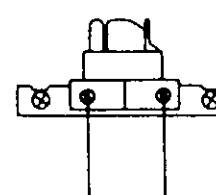


MAIN C.B

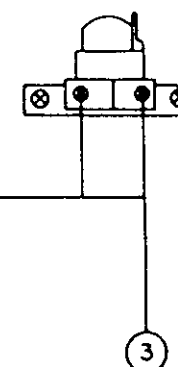


5. PB Sensitivity Adjustment (DECK-1, DECK-2)
 Settings: • Test tape: TCC-130 (TTA-161)
 • Test point: LINE OUT
 • Adjustment location: SFR101 (DECK-1, Lch)
 SFR102 (DECK-1, Rch)
 SFR201 (DECK-2, Lch)
 SFR202 (DECK-2, Rch)
 Method: Play back the test tape, and adjust so that the output becomes 560 ± 10 mV.
6. Bias OSC Frequency Adjustment (DECK-2)
 Settings: • Test tape: TTA-119K
 • Test point: TP-1
 • Adjustment location: L401
 Method: Adjust so that the output frequency becomes $100 \text{ kHz} \pm 0.5 \text{ kHz}$.

DECK 2 R/P/E HEAD



DECK 1 P HEAD



7. Bias OSC Trap Coil Adjustment (DECK-2)
 Settings: • Test tape: TTA-119K
 • Test point: TP-2 (Lch)
 TP-6 (Rch)
 • Adjustment location: L305 (Lch)
 L306 (Rch)
 Method: Record the test tape, and adjust for minimum output.
8. REC Equalizer Level Adjustment
 Settings: • Test tape: Metal tape
 • Input level: -20VU (40mV at LINE OUT)
 • Test point: TP-2 (Lch)
 TP-3 (Rch)
 • Adjustment location: L301, L303 (Lch)
 L302, L304 (Rch)
 Method: Record the test tape, adjust so that the output becomes minimum at the peak level (about 20kHz).
9. MPX Filter Adjustment
 Settings: • Test tape: Blank tape
 • Input signal: 19kHz signal at LINE IN
 • Test point: LINE OUT
 • Adjustment location: L503 (Lch)
 L504 (Rch)
 Method: Record the test tape, and adjust so that the output at DOLBY B/C SW ON becomes up to 27dB for the output at DOLBY B/C SW OFF.
10. REC/PB Frequency Response Adjustment (DECK-2)
 Settings: • Test tape: TTA-119K
 • Output level: 40mV at LINE OUT
 • Test point: LINE OUT
 • Adjustment location: SFR451 (Lch)
 SFR452 (Rch)
 Method: Record the 1kHz and 10kHz signals, then play back the recorded tape and adjust so that the output difference between 1kHz and 10kHz becomes $+0.5 \text{ dB} \pm 0.5 \text{ dB}$.
11. REC/PB Sensitivity Adjustment (DECK-2)
 Settings: • Test tape: TTA-119K
 • Input signal: 400Hz (or 1kHz)
 • Test point: LINE OUT
 • Adjustment location: SFR301 (Lch)
 SFR302 (Rch)
 Method: Record the input signal and play back the test tape.
 Adjust so that the output difference between REC level and PB level becomes $40 \text{ mV} \pm 0.3 \text{ dB}$.
12. dbx Timing Current Adjustment
 Settings: • Test point: TP4
 TP5 (C645)
 • Adjustment location: SFR601
 Method: Adjust so that the output between testpoints becomes DC 18.4mV.
13. Peak Meter Adjustment
 Settings: • Test tape: Blank tape
 • Output level: 400mV at LINE OUT
 • Adjustment location: SFR1451 (Lch)
 SFR1452 (Rch)
 Method: Adjust so that the peak meter (FL1) displays 0dB.
 Confirm that the peak meter displays correctly for -7, -2, +3, +6dB.

IC DESCRIPTION

LC6520H (IC801)

Pin No	Pin Name	Description
1	—	Pulled up to 10.8 V by a resistor.
2	—	Pulled up to 10.8 V by a resistor.
3	I-AUTO-1	DECK 1 auto-stop input. DECK 1 stops automatically without level change of "L" and "H".
4	I-AUTO-2	DECK 2 auto-stop input. DECK 2 stops automatically without level change of "L" and "H".
5	—	GND
6	—	Pulled down by a resistor and grounded.
7	O-MOTOR	Motor drive output (active "H"). Outputs "L" only when both DECKs 1 & 2 are in the stop mode. This pin outputs a signal 320 msec before SOL-PB and SOL-FRP, waiting for the O-MOTR rotating steadily.
8	O-BIAS	Bias oscillation output. Goes "L" during REC PAUSE and "H" during REC and DUBBING.
9	O-FL-RES	Outputs "H" when MPU is reset (initialized).
10	O-DUBB	Noise reduction control output during dubbing. Goes "L" during dubbing.
11	O-PB1	DECK 1 PB request output. Goes "L" when DECK 2 is in the play, play pause, cue and review modes.
12	O-PB2	DECK 2 PB request output. Goes "H" when DECK 1 is in the play; play pause, cue and review modes.
13	O-PLAY	CUE/REVIEW MUTE output. Goes "H" when the DECK which is selected by O-PB1 and O-PB2 is in the play mode.
14	O-HSP	Motor high-speed request output. Goes "H" at high-speed.
15	O-RMT	REC MUTE output. Goes "H" during REC and PLAY. Goes "L" during PAUSE, RMT and REC→REVERSE.
16	O-LMT	LINE MUTE output. Goes "L" during PLAY, CUE REVIEW, REC, REC PLAY, REC MUTE and REC→PAUSE.
17	O-REC	REC/PLAY switching output. Goes "H" during REC and REC REVERSE. Goes "L" during dubbing.
18	—	GND
19	TEST	MPU test pin connected to Vss
20	Vss	Common terminal (GND) of each input/output power of MPU.
21	OSC-1	4MHz clock oscillation pin.
22	OSC-2	4MHz clock oscillation pin.
23	RESET	MPU reset input. "H" resets the MPU.
24		} Refer to the next page.
36		
37	O-SOL-FRP2	
38	O-SOL-PB2	DECK 2 / solenoid absorption output (active "L"). DECK 2 performs F.FWD/REW and CUE/REVIEW according to the absorption timing.
39	O-SOL-FRP1	DECK 2 / solenoid absorption output (active "L"). DECK 2 performs PLAY, PAUSE and REVERSE according to the absorption timing.
40	VDD	DECK 1 / solenoid absorption output (active "L"). DECK 1 performs F.FWD/REW and CUE/REVIEW according to the absorption timing.
41	O-SOL-PB1	MPU power pin connected to +5 V.
42	—	DECK 1 PB solenoid absorption output (active "L"). DECK 1 performs PLAY, PAUSE and REVERSE according to the absorption timing.
		Pulled down by a resistor and grounded.

Pin No	Pin Name	Description				
		Input : Key DATA				Output : LED
		Key SW IN = ON at "L", PULSE = ON at "H"				Lights when
		When KS3 is "L"	When KS2 is "L"	When KS1 is "L"	When KS0 is "L"	DISP is "L"
35	DT ϕ	*	F.PLAY-1 KEY IN	MS-ENABLE	CST-2 SW IN	PLAY-1 LED OUT
34	DT1	R.PLAY-2 KEY IN	REV-1 KEY IN	$\overline{1}$ -WAY-ENABLE	QUICK-2 PULSE IN	PLAY-2 LED OUT
33	DT2	F.PLAY-2 KEY IN	REV.MODE  SW IN	REC KEY IN	DIR-2 SW IN	REC LED OUT
32	DT3	STOP-2 KEY IN	STOP-1 KEY IN	RMT KEY IN	CST-1 SW IN	RMT LED OUT
31	DT4	BLANK SKIP SW IN	PAUSE-1 KEY IN	TIMER PLAY SW IN	QUICK-1 PULSE IN	PAUSE-1 LED OUT
30	DT5	PAUSE-2 KEY IN	REV.MODE  SW IN	TIMER REC SW IN	DIR-1 SW IN	PAUSE-2 LED OUT
29	DT6	FF-2 KEY IN	FF-1 KEY IN	H/DUB KEY IN	RE-A SW IN	H/DUB LED OUT
28	DT7	REW-2 KEY IN	REW-1 KEY IN	N/DUB KEY IN	RE-B SW IN	N/DUB LED OUT
27 26 25 24	$\overline{KS0}$ $\overline{KS1}$ $\overline{KS2}$ $\overline{KS3}$	DT ϕ ~ DT7 KEY SCAN OUT				
36	DISP	DT ϕ ~ DT7 LED SCAN OUT				

PRACTICAL SERVICE FIGURE

Playback output : (TTA-161)	560 $\pm$ 60mV (LINE OUT, 400Hz)	(WTD-A)	(DOLBY C NR OFF/ON with MT, CrO ₂ tapes) More than 46/61dB
PB/REC output : (TTA-119K)	400 $\pm$ 50mV (LINE OUT, 1kHz)		(DOLBY C OFF/ON with NORM, tape) More than 72dB
PB/REC distortion :	Less than 1.5% (NORM) Less than 2.0% (MT, CrO ₂)	Recording bias frequency : 100kHz	(dBx ON with MT, CrO ₂ and NORM tapes)
Playback noise :	Less than 1.2mV (DOLBY C NR ON, with CrO ₂ , NORM. tapes) Less than 3.5mV (DOLBY B NR OFF, with NORM. tapes)	Tape speed : (TTA-111S)	3kHz $\pm$ 1.5%
Erase ratio (125Hz) :	More than 60dB	Wow & flutter : (W. R. M. S)	Less than 0.065% (FWD)(DECK1,2)
PB/REC S/N ratio :	More than 47/62dB (CrO ₂), 63dB (MT)	Take-up torque :	30~60g-cm (DECK1,2)
		Fast forward torque :	130 $\pm$ 30g-cm (DECK1,2)
		Rewind torque :	130 $\pm$ 30g-cm (DECK1,2)
		Back-tension :	2.5~5.5g-cm (DECK1,2)
		Pinch roller pressure :	290 $\pm$ 70g (DECK1,2)
		Test tape :	METAL TTA-119MP CrO ₂ TTA-119H NORMAL TTA-119K

CIRCUIT DESCRIPTION

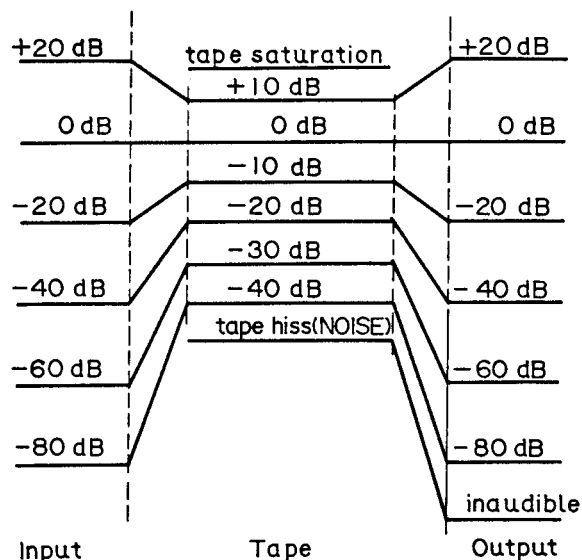
The dbx Noise Reduction System

1. Overview

The dbx noise reduction system compresses signals that are recorded on tape and expands them when they are played back to extend dynamic range and substantively reduce noise level.

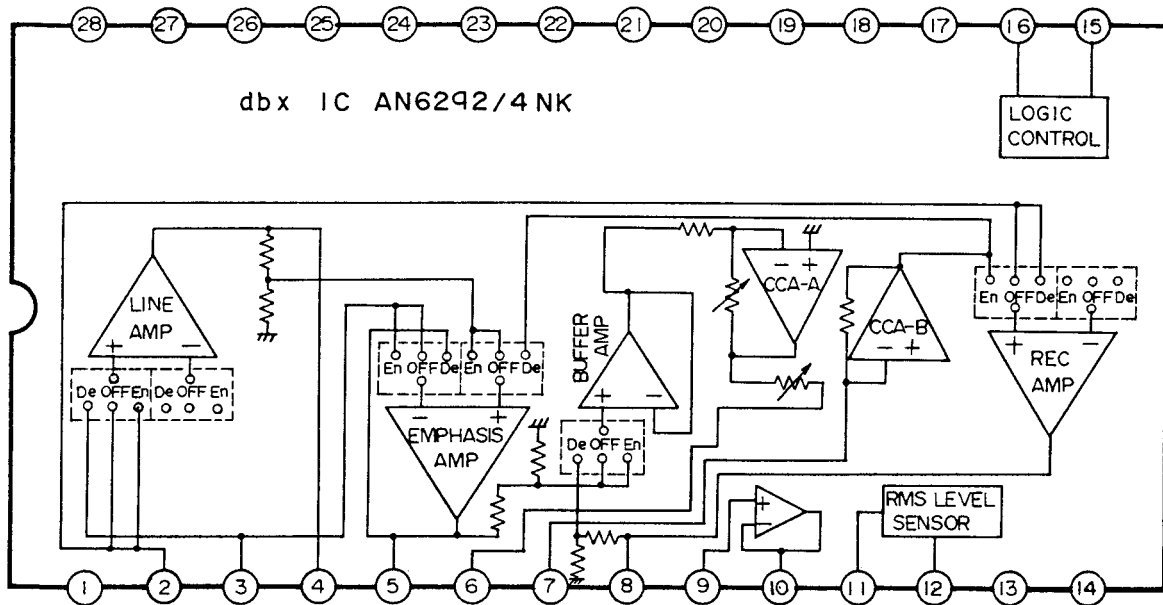
The tape used in cassette tape decks has saturation and noise levels (tape hiss) that permit only a very narrow, 55dB dynamic range. This is why the inputting of a program with a dynamic range wider than 55dB will saturate and clip large signals and bury small signals in noise level.

Before recording, the dbx noise reduction system accurately compresses, by one-half algebraic value, recording signals, even those from wide dynamic range program sources. Compressing a program source's 80dB dynamic range to 40dB width, for example, records all program sources in the cassette deck's dynamic range without distortion and burying in noise. The signal is expanded during playback to double what it was, i.e., expanded to an 80dB program source, which is the original dynamic range. This is an effective means of overall noise reduction because, at this time, noise level will also decrease over the entire range by about 30dB. This also improves saturation level, equivalently, by about 10dB.



2. Operations in each mode

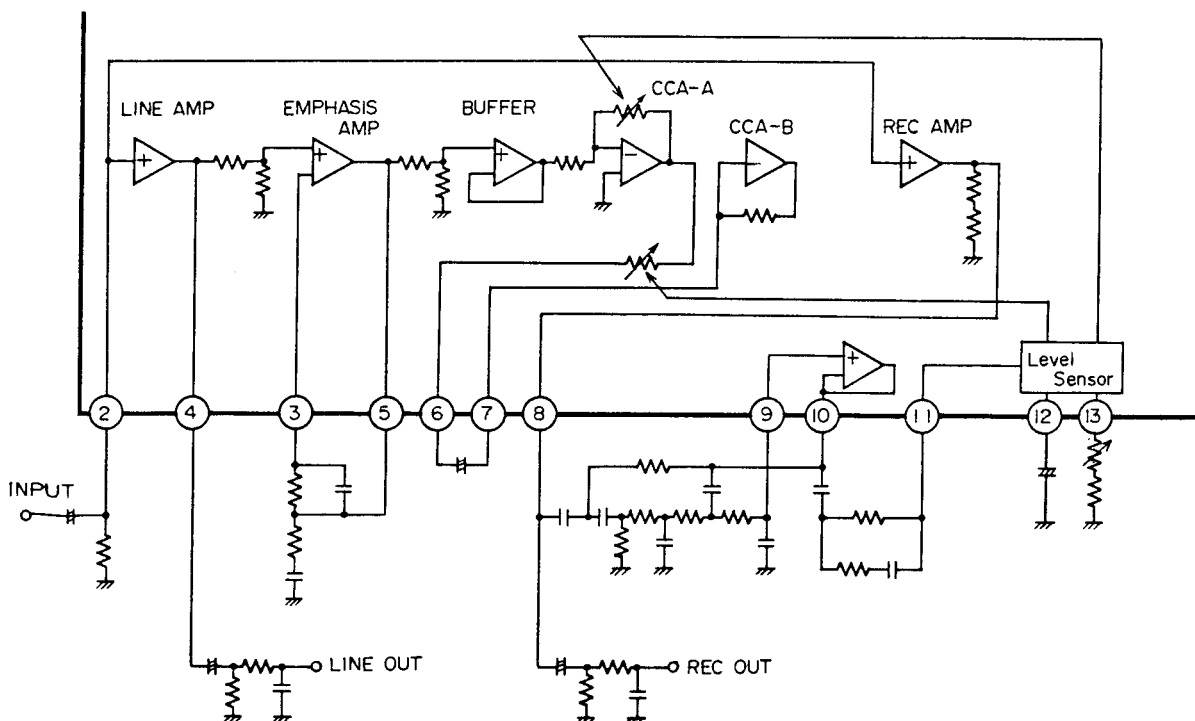
The switches in the IC are changed over depending on the levels at pins 15 and 16, and dbx turning off, encoding and decoding are performed. The following describes the flow of signals and operation of circuits in each mode.



1) dbx-OFF (BYPASS MODE)

The signal that enters pin 2 passes through LINE AMP to be output through pin 4. The signal becomes playback output during playback and monitor output during recording. The signal input to pin 2 also passes through the REC AMP to be output through pin 8. But if dbx is OFF, the analog switch in IC901 prevents output from pin 8 going to the recording circuits.

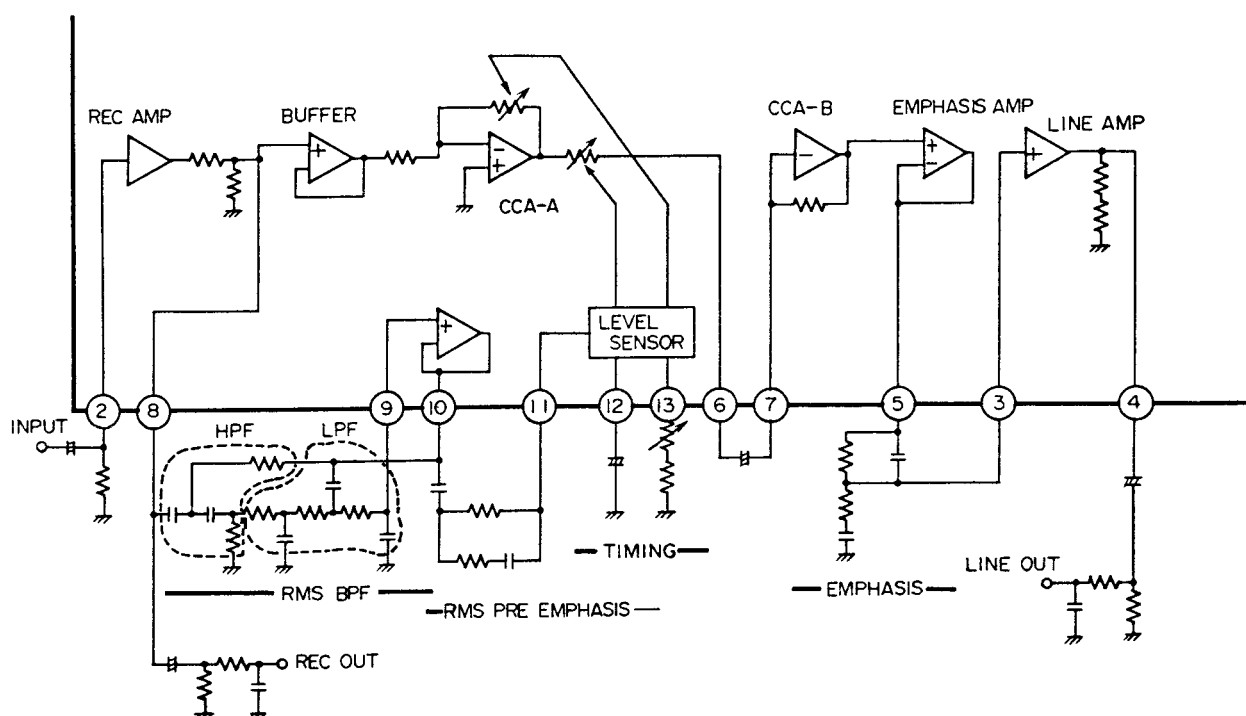
The remaining sections (EMPHASIS AMP, BUFFER, CCA-A and CCA-B) have no connection with this operation.



2) dbx playback (DECODE MODE)

Signal input to pin 2 passes through the REC AMP, then through the RMS BPF and the RMS PRE-EMPHASIS to be input to pin 11 and then to the LEVEL SENSOR.

The output which has left the REC AMP passes through the BUFFER to enter the CCA-A whose gain is controlled by the control signals from the LEVEL SENSOR. The signal passes out of pin 6, reenters pin 7, passes through CCA-B, the EMPHASIS AMP and LINE AMP to be output from pin 4 as playback output.



6292/94NK Decode Mode (During dbx playback)

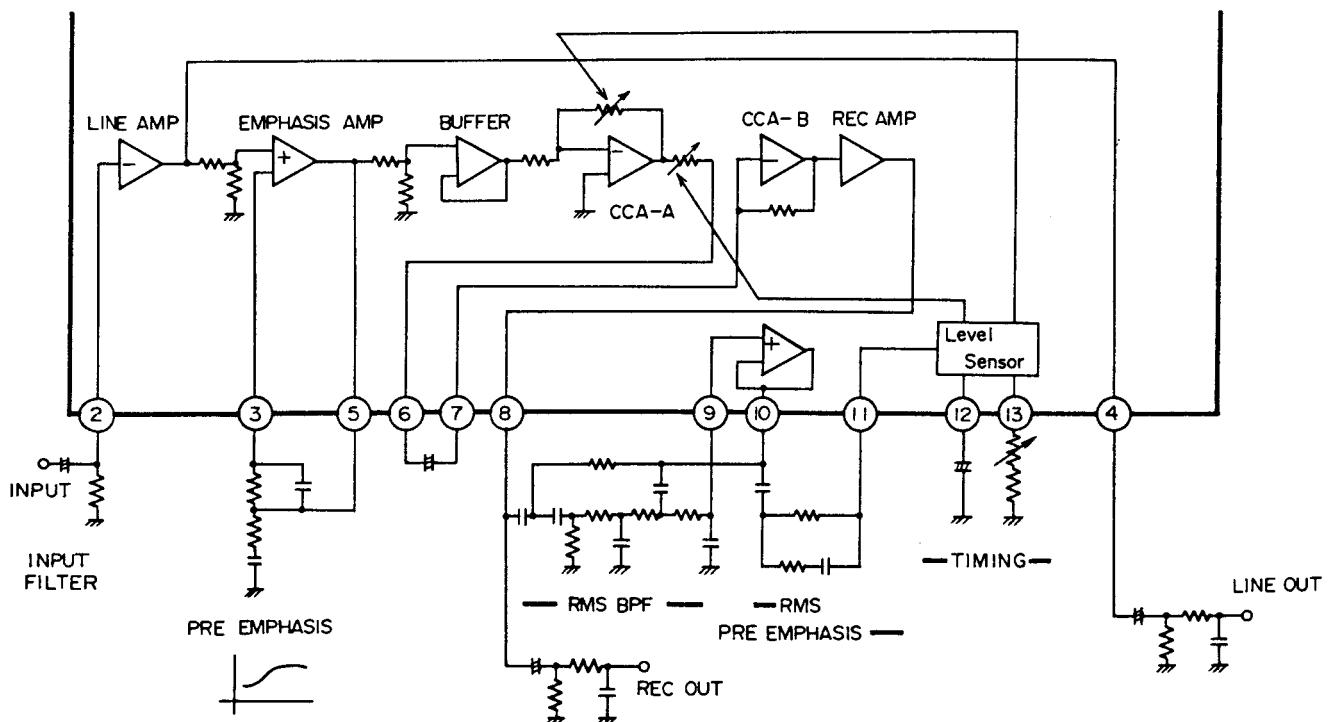
Signal levels during Dolby level tape playback (TTA-161) (dbx ON)

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SIG. LEVEL (VP-P)	0	5.0	1.2	5.0	1.9	0	0	5.0	4.4	4.6	0	0	0	0	0	0

3) dbx Record (ENCODE MODE)

Signal input to pin 2 passes through the LINE AMP, EMPHASIS AMP and BUFFER to enter the CCA-A which outputs it through pin 6. The signal then passes through a capacitor and reenters through pin 7 to go through CCA-B and the REC AMP to be output through pin 8 and sent to the recording circuits.

Output from pin 8 passes through the RMS BPF and RMS PRE-EMPHASIS then goes through pin 11 and into the LEVEL SENSOR. The LEVEL SENSOR sends control signals to CCA-A that control CCA-A's gain. LINE AMP output goes through pin 4 for use as a recording monitor signal.



3. Functions of each section

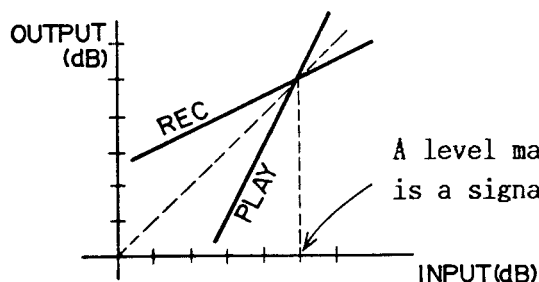
1) RMS LEVEL SENSOR

This sensor creates the signal that controls the gain of CCA (CURRENT CONTROL AMP). Signal input to pin 11 (18) is rectified, algebraically converted and square-rooted. The square-rooted signal is filtered by the capacitor connected to pin 12 (17) to create a voltage that is proportional to the input signal's RMS value, which is then current-converted to become a CCA gain control signal.

2) CCA (CURRENT CONTROL AMP)

CCA is the amplifier which converts the degree of amplification, algebraically and linearly, as determined by the RMS LEVEL SENSOR's control signal. During the compression operation, for example, compression is linear with no relation to frequency band, thus a -60dB signal will be compressed to -30dB, a +10dB signal will be compressed to +5dB. (The process would be the exact opposite in the expansion operation).

CCA-A is the amplifier component and CCA-B is the buffer component.



3) RMS BPF and RMS PRE-EMPHASIS

The dbx's large rate of compression and expansion means that blooming will easily occur when input signals change rapidly. Inserting an RMS BPF and RMS PRE-EMPHASIS in the stage in front of the LEVEL SENSOR improves the blooming effect.

The RMS BPF eliminates the effects of tape hiss and head contact. The RMS PRE-EMPHASIS raises sensitivity in the high-frequency band to decrease the compression and expansion rate.

4) CR externally attached to pins 12, 17 and 19

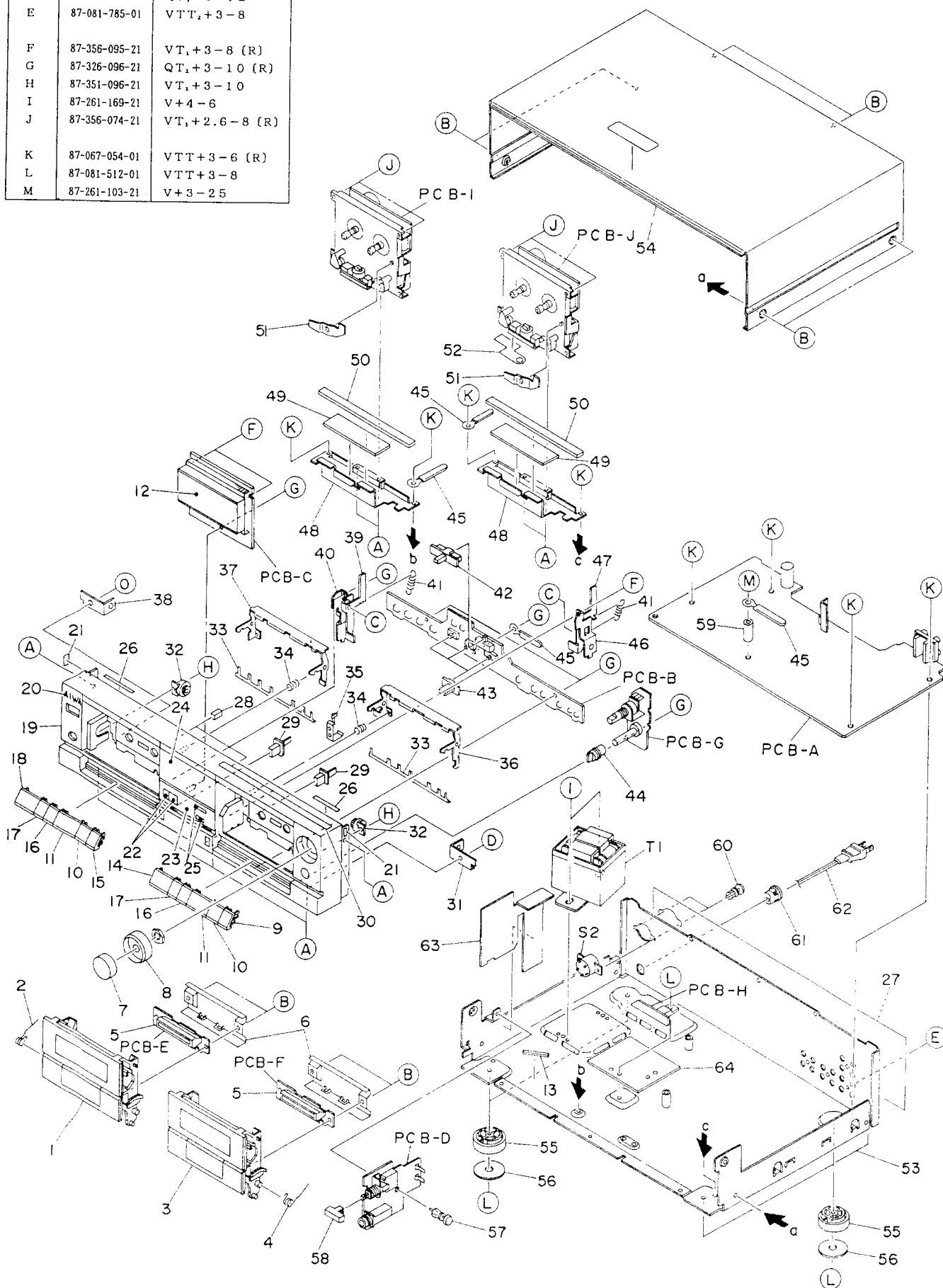
The CR sets the rate of CCA gain reduction (rate of change in gain after the input signal rapidly disappears). The standard value is 125dB/s. Adjust the SFR so that the voltage across R11 (1K Ω) in the STOP mode.

5) LOGIC CONTROL

LOGIC CONTROL selects the switch in the IC as determined by the logic state at pins 15 and 16. If pin 15 is "Hi", dbx is on, if pin 15 is "Lo", dbx is off. When pin 16 is "Hi", the unit is in encode (record) state, when pin 16 is "Lo", the unit is in decode (playback) state.

EXPLODED VIEW-1

REF.NO.	PART NO.	DESCRIPTION
A	87-081-531-01	QTT+3-6
B	87-347-095-21	UT ₂ +3-8 (B)
C	87-441-008-01	STE-2.5
D	87-321-097-21	QT ₁ +3-12
E	87-081-785-01	VTT ₂ +3-8
F	87-356-095-21	VT ₁ +3-8 (R)
G	87-326-096-21	QT ₁ +3-10 (R)
H	87-351-096-21	VT ₁ +3-10
I	87-261-169-21	V+4-6
J	87-356-074-21	VT ₁ +2.6-8 (R)
K	87-067-054-01	VTT+3-6 (R)
L	87-081-512-01	VTT+3-8
M	87-261-103-21	V+3-25



MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
1-1		09-047-284-010		CASSETTE BOX 1 ASSY(EXCEPT U)	*	1
1-1		09-047-286-010		CASSETTE BOX 1 ASSY(U ONLY)	*	1
1-2		*82-221-223-110		T-SPRING,EJECT 1	*	1
1-3		09-047-285-010		CASSETTE BOX 2 ASSY(EXCEPT U)	*	1
1-3		09-047-287-010		CASSETTE BOX 2 ASSY(U ONLY)	*	1
1-4		*82-221-224-110		T-SPRING,EJECT 2	*	1
1-5		*82-221-204-010		GUIDE,LED	*	2
1-6		*82-221-033-010		PLATE,BOX REAR	*	2
1-7		82-221-012-010		KNOB,VOLUME R	*	1
1-8		82-221-011-010		KNOB,VOLUME L	*	1
1-9		*82-221-039-010		PUSH-KEY ASSY,MUTE	*	1
1-10		*82-221-038-010		PUSH-KEY ASSY,PAUSE	*	2
1-11		*82-221-019-010		PUSH-KEY,STOP	*	2
1-12		*82-221-035-010		SHHET,FL FILTER	*	1
1-13		*82-785-273-010		CUSHION 35-5		1
1-14		*82-221-017-010		PUSH-KEY,REC	*	1
1-15		*82-221-024-010		PUSH-KEY,DUMMY B	*	1
1-16		*82-221-020-010		PUSH-KEY,FF	*	2
1-17		*82-221-018-010		PUSH-KEY,REW	*	2
1-18		*82-221-023-010		PUSH-KEY,DUMMY A	*	1
1-19		*82-221-002-110		CABINET,FRONT	*	1
1-20		84-721-024-010		BADGE,AIWA	XC-001	1
1-21		*81-544-235-010		SHEET 14-6-0.3	CS-W550	2
1-22		*82-221-032-010		PUSH-KEY ASSY,DUBB	*	1
1-23		*82-221-005-010		PANEL,CENTER	*	1
1-24		*82-221-008-010		WINDOW,INDICATOR	*	1
1-25		*82-221-028-010		PUSH-KEY,COUNTER RESET	*	1
1-26		*82-221-232-010		FELT 4-30	*	2
1-27		---		NAME PLATE,JACK		1
1-28		*81-525-222-010		G CUSHION 6X3X2	HS-J300	2
1-29		*82-221-029-010		PUSH-BUTTON,EJECT	*	2
1-30		*82-174-045-110		BIAS EXPLANATION SHEET EX		1
1-31		*82-221-209-010		HOLDER,C-BOX 2	*	1
1-32		*87-063-143-010		OIL-DAMP 75	*	2
1-33		*82-221-207-010		P-SPRING,PUSH-KEY	*	2
1-34		*82-217-211-110		C-SPRING,LEVER EJECT	AD-WX909	2
1-35		*82-221-206-010		EARTH PLATE,CENTER	*	1
1-36		*82-221-222-010		PLATE,EJECT(3)-2	*	1
1-37		*82-221-221-110		PLATE,EJECT(3)-1	*	1
1-38		*82-221-208-010		HOLDER,C-BOX 1	*	1
1-39		*82-221-210-010		LEVER,EJECT 1	*	1
1-40		*82-221-216-010		HOLDER ASSY,EJECT 1	*	1
1-41		*84-123-293-010		E-SPRING,M		2
1-42		*82-221-014-010		KNOB,DOLBY	*	1
1-43		*82-221-013-010		KNOB,REV MODE	*	3
1-44		*84-424-008-010		KNOB,VOLUME		1
1-45		---		WIRE BINDER		4
1-46		*82-221-215-110		HOLDER ASSY,EJECT 2	*	1
1-47		*82-221-211-010		LEVER,EJECT 2	*	1
1-48		*82-221-214-010		HOLDER,MECHANISM	*	2
1-49		*82-221-050-010		DAMPER,MECHANISM	*	2
1-50		*82-217-248-010		DAMPER,MECHANISM 2	AD-WX909	2
1-51		*82-217-213-110		LEVER,EJECT BLOCKING L	AD-WX909	2
1-52		*82-221-229-010		PLATE,WIRE	*	1
1-53		---		CHASSIS ASSY,AMP.		1
1-54		*82-217-041-010		CABINET,STEEL	AD-WX909	1
1-55		*81-715-051-010		FOOT 4D		4
1-56		*82-217-069-010		FELT ϕ 33.5	AD-WX909	4
1-57		*87-084-086-010		NYLON RIVET 3.5-4.5		1
1-58		84-721-023-010		PUSH-BUTTON,POWER	XC-001	1
1-59		*82-221-230-010		COLLAR 18,LED	*	1
1-60		*87-085-090-010		NYLON RIVET 3-6.5(H ONLY)		2
1-61		*87-085-184-010		AC CORD BUSHING(H ONLY)		1
1-61		*87-085-189-010		AC CORD BUSHING(U ONLY)		1
1-61		*87-085-185-010		AC CORD BUSHING(E,K,Z ONLY)		1
1-62		*87-034-732-010		AC CORD ASSY(H ONLY)		1
1-62		*87-034-731-010		AC CORD ASSY(U,ONLY)		1
1-62		*87-034-736-010		AC CORD ASSY(E,Z ONLY)		1
1-62		*87-034-734-010		AC CORD ASSY(K,ONLY)		1
1-63		*82-221-225-010		COVER,TERMINAL	*	1
1-64		---		HEAT SINK		1

See the X-3 Mechanism (Supplement of Service Manual) for the exploded views.
The following parts have been changed for this model.

■ DECK 1 (X-3 P3)

ALTERATION PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1-20	*86-535-351-110		ACTUATING CHASSIS PH ASSY		1
	1-23	*86-535-356-010		HEAD HOUSING PH ASSY		1
	1-44	*86-535-353-010		FELT 5-4-2		1
	2-17	86-535-354-010		BELT		1

The following REF. NOS. are not used in this model.

1-4-1-6, 1-9, 2-9

ADDITIONAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1-45	*86-535-358-010		T-SPRING, BRAKE R		1

■ DECK 2 (X-3 R3)

ALTERATION PARTS LIST

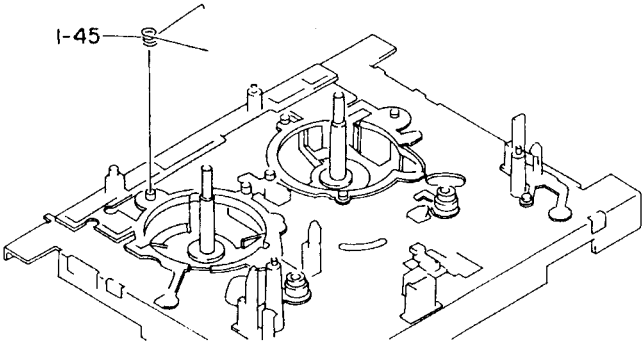
PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1-20	*86-535-351-110		ACTUATING CHASSIS PH ASSY		1
	1-23	*86-535-356-010		HEAD HOUSING PH ASSY		1
	1-44	*86-535-353-010		FELT 5-4-2		1
	2-17	86-535-354-010		BELT		1

The following REF. NOS. are not used in this model.

1-4, 2-9

ADDITIONAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1-45	*86-535-358-010		T-SPRING, BRAKE R		1



■ ACCESSORIES/PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1	*82-221-901-010		INSTRUCTION BOOKLET	*	1
	2	*87-032-845-010		SIEMENS PLUG (H ONLY)		1