

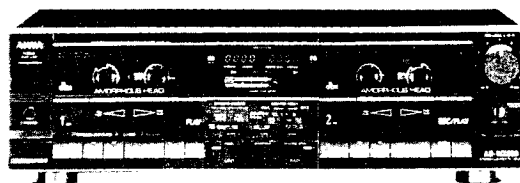
SERVICE MANUAL

MODEL No. **AD-WX808**

■ STEREO CASSETTE DECK

■ TYPE. HB,UB,EB,KB,ZB

■ BASIC MECHANISM : X-3



For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor,
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauriton.co.uk

SPECIFICATIONS

Type	Stereo cassette tape deck	Wow and flutter	Deck ①
Track format	4 tracks, 2 channels		0.1% (According to DIN 45500)
Power supply	AD-WX808E, Z AC 220 V, 50/60 Hz		0.055% (WRMS)
	AD-WX808K AC 240 V, 50/60 Hz		Deck ②
	AD-WX808U AC 120 V, 60 Hz	Tape speed	0.1% (According to DIN 45500)
	AD-WX808H AC 120 V/220 V/240 V switchable, 50/60 Hz		0.055% (WRMS)
Power consumption	AD-WX808E, K, Z 36 W	Recording system	4.8 cm/sec. (1-7/8 ips), 9.5 cm/sec (Double speed)
	AD-WX808H, U 30 W	Erase 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	Motor	AC erase
Signal-to-noise ratio	92 dB (CrO ₂ tape dbx NR ON) 73 dB (METAL tape DOLBY C NR ON)	Heads	DC Servomotor × 2
			Record/playback head × 1 (AMORPHOUS HEAD)
			Playback head × 1 (AMORPHOUS HEAD)
			Erase head × 1
		Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 kΩ)
		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

--- IC ---

87-001-144-010	IC,AN6292NK
87-020-180-010	IC,BA6146
87-001-143-010	IC,CX20187
87-020-454-010	IC,DM6851
82-202-621-010	IC,HD38702A39
87-020-140-010	IC,L78M12
87-020-261-010	IC,LA6358S
82-224-614-010	IC,LC6520H-3386
87-020-533-010	IC,M4069UBP
87-027-895-010	IC,M5218L
87-020-680-010	IC,NJM2068S
87-020-758-010	IC,NJM2068SD
87-001-133-010	IC,NJU4052BP
87-020-908-010	IC,NJU4066BD

--- TRANSISTOR ---

89-503-735-010	FET,2SK373GR
87-026-219-010	TRANSISTOR,DTA144ES
87-026-292-010	TRANSISTOR,DTA144WS
87-026-218-010	TRANSISTOR,DTC144ES
89-109-521-010	TRANSISTOR,2SA952K
89-110-155-010	TRANSISTOR,2SA1015GR
89-313-834-010	TRANSISTOR,2SC1383(S)
89-318-155-010	TRANSISTOR,2SC1815GR
89-320-011-010	TRANSISTOR,2SC2001K
89-331-138-010	TRANSISTOR,2SC3113B
89-309-456-010	TRANSISTOR,2SC945LP
89-411-110-010	TRANSISTOR,2SD1111
89-413-023-010	TRANSISTOR,2SD1302S
89-414-065-010	TRANSISTOR,2SD1406GR

--- MAIN CIRCUIT BOARD SECTION ---

PCB-A	*	MAIN CIRCUIT BOARD
C1	*82-186-685-010	CAP,ELECT 3300-35
C3	*87-010-235-010	CAP,ELECT 470-16
C5	*87-010-237-010	CAP,ELECT 1000-16 SME
C6	*87-010-623-010	CAP,ELECT 470-63
C7	*87-010-623-010	CAP,ELECT 470-63
C8	*87-010-374-010	CAP,ELECT 47-10
C9	*87-010-565-010	CAP,ELECT 470-12
C10	*87-010-248-010	CAP,ELECT 220-10 SME
C11	*87-010-404-010	CAP,ELECT 4.7-50 SME
C12	*87-010-260-010	CAP,ELECT 47-25 SME
C22	*87-010-401-010	CAP,ELECT 1-50 SME
C23	*87-010-248-010	CAP,ELECT 220-10 SME
C101	*87-018-121-010	CAP,CERA-SOL SS 150P
C102	*87-018-121-010	CAP,CERA-SOL SS 150P
C103	*87-018-106-010	CAP,CERA-SOL SS 15P
C104	*87-018-106-010	CAP,CERA-SOL SS 15P
C107	*87-010-134-010	CAP,ELECT BP 4.7-35
C108	*87-010-134-010	CAP,ELECT BP 4.7-35
C111	*87-018-205-010	CAP,CERA-SOL SS 0.022
C112	*87-010-101-010	CAP,ELECT 220-16 SME
C113	*87-018-119-010	CAP,CERA-SOL SS 100P
C114	*87-018-119-010	CAP,CERA-SOL SS 100P
C201	*87-018-121-010	CAP,CERA-SOL SS 150P
C202	*87-018-121-010	CAP,CERA-SOL SS 150P
C203	*87-018-106-010	CAP,CERA-SOL SS 15P
C204	*87-018-106-010	CAP,CERA-SOL SS 15P
C207	*87-010-134-010	CAP,ELECT BP 4.7-35
C208	*87-010-134-010	CAP,ELECT BP 4.7-35
C211	*87-018-205-010	CAP,CERA-SOL SS 0.022

REF.NO. PART NO. ORDER DESCRIPTION

C221	*87-018-119-010	CAP,CERA-SOL SS 100P
C222	*87-018-119-010	CAP,CERA-SOL SS 100P
C223	*87-018-121-010	CAP,CERA-SOL SS 150P
C224	*87-018-121-010	CAP,CERA-SOL SS 150P
C251	*87-018-133-010	CAP,CERA-SOL SS 4700P
C252	*87-018-097-010	CAP,CERA-SOL SS 2.2P
C253	*87-018-133-010	CAP,CERA-SOL SS 4700P
C254	*87-018-205-010	CAP,CERA-SOL SS 0.022
C255	*88-337-790-010	CAP,ELECT 0.68-50
C256	*87-010-112-010	CAP,ELECT 100-16
C301	*87-010-402-010	CAP,ELECT 2.2-50 SME
C302	*87-010-402-010	CAP,ELECT 2.2-50 SME
C319	*87-018-131-010	CAP,CERA-SOL SS 1000P
C320	*87-018-131-010	CAP,CERA-SOL SS 1000P
C413	*87-010-385-010	CAP,ELECT 220-25
C421	*87-010-260-010	CAP,ELECT 47-25 SME
C422	*87-010-382-010	CAP,ELECT 22-25 SME
C425	*87-018-133-010	CAP,CERA-SOL SS 4700P
C428	*87-014-079-010	CAP,PP 8200P
C429	*87-018-131-010	CAP,CERA-SOL SS 1000P
C430	*87-010-378-010	CAP,ELECT 10-16
C431	*87-018-121-010	CAP,CERA-SOL SS 150P
C432	*87-018-121-010	CAP,CERA-SOL SS 150P
C451	*87-018-131-010	CAP,CERA-SOL SS 1000P
C452	*87-018-131-010	CAP,CERA-SOL SS 1000P
C455	*87-018-131-010	CAP,CERA-SOL SS 1000P
C456	*87-018-131-010	CAP,CERA-SOL SS 1000P
C457	*87-018-131-010	CAP,CERA-SOL SS 1000P
C458	*87-018-131-010	CAP,CERA-SOL SS 1000P
C461	*87-018-123-010	CAP,CERA-SOL SS 220P
C462	*87-018-123-010	CAP,CERA-SOL SS 220P
C465	*87-010-260-010	CAP,ELECT 47-25 SME
C466	*87-010-565-010	CAP,ELECT 470-12
C505	*87-010-378-010	CAP,ELECT 10-16
C506	*87-010-378-010	CAP,ELECT 10-16
C507	*87-010-378-010	CAP,ELECT 10-16
C508	*87-010-378-010	CAP,ELECT 10-16
C509	*87-010-624-010	CAP,ELECT 220-16 SXJ
C510	*87-010-624-010	CAP,ELECT 220-16 SXJ
C515	*87-010-400-010	CAP,ELECT 0.47-50 SME
C516	*87-010-400-010	CAP,ELECT 0.47-50 SME
C521	*87-010-545-010	CAP,ELECT 0.22-50 SME
C522	*87-010-545-010	CAP,ELECT 0.22-50 SME
C531	*87-010-378-010	CAP,ELECT 10-16
C532	*87-010-378-010	CAP,ELECT 10-16
C601	*87-010-379-010	CAP,ELECT 22-16 SME
C602	*87-010-379-010	CAP,ELECT 22-16 SME
C605	*87-014-044-010	CAP,PP 300P
C606	*87-014-044-010	CAP,PP 300P
C607	*87-010-621-010	CAP,ELECT 1.5-50 MA
C608	*87-010-621-010	CAP,ELECT 1.5-50 MA
C609	*87-018-197-010	CAP,CERA-SOL SS 1800P
C610	*87-018-197-010	CAP,CERA-SOL SS 1800P
C611	*87-018-197-010	CAP,CERA-SOL SS 1800P
C612	*87-018-197-010	CAP,CERA-SOL SS 1800P
C613	*87-010-403-010	CAP,ELECT 3.3-50 SME
C614	*87-010-403-010	CAP,ELECT 3.3-50 SME
C615	*87-010-137-010	CAP,ELECT BP 22-16
C616	*87-010-137-010	CAP,ELECT BP 22-16

REF.NO.	PART NO.	ORDER	DESCRIPTION
C646	*87-010-620-010	CAP,TANTALUM 22-16 J	
C700	*87-018-134-010	CAP,CERA-SOL SS 0.01	
C701	*87-015-241-010	CAP,ELECT LL 1-50	
C702	*87-015-241-010	CAP,ELECT LL 1-50	
C801	*87-018-118-010	CAP,CERA-SOL SS 82P	
C802	*87-018-205-010	CAP,CERA-SOL SS 0.022	
C851	*87-010-565-010	CAP,ELECT 470-12 SME	
C852	*87-010-565-010	CAP,ELECT 470-12 SME	
C853	*87-010-565-010	CAP,ELECT 470-12 SME	
C854	*87-010-565-010	CAP,ELECT 470-12 SME	
C881	*87-010-379-010	CAP,ELECT 22-16 SME	
C882	*87-010-402-010	CAP,ELECT 2.2-50 SME	
C883	*87-010-379-010	CAP,ELECT 22-16 SME	
C884	*87-010-402-010	CAP,ELECT 2.2-50 SME	
C900	*87-018-134-010	CAP,CERA-SOL SS 0.01	
C901	*87-010-401-010	CAP,ELECT 1-50 SME	
C902	*87-010-401-010	CAP,ELECT 1-50 SME	
C951	*87-010-404-010	CAP,ELECT 4.7-50 SME	
C952	*87-010-404-010	CAP,ELECT 4.7-50 SME	
C953	*87-010-378-010	CAP,ELECT 10-16	
C954	*87-010-378-010	CAP,ELECT 10-16	
C955	*87-010-380-010	CAP,ELECT 47-16 SME	
C956	*87-010-380-010	CAP,ELECT 47-16 SME	
C957	*87-010-385-010	CAP,ELECT 220-25	
C959	*87-015-244-010	CAP,ELECT LL 4.7-50	
C960	*87-015-244-010	CAP,ELECT LL 4.7-50	
C961	*87-018-134-010	CAP,CERA-SOL SS 0.01	
C1404	*87-010-404-010	CAP,ELECT 4.7-50 SME	
C1451	*87-010-402-010	CAP,ELECT 2.2-50 SME	
C1452	*87-010-402-010	CAP,ELECT 2.2-50 SME	
D1	82-001-187-010	DIODE S5277B,LC6	
D2	82-001-187-010	DIODE S5277B,LC6	
D3	82-001-187-010	DIODE S5277B,LC6	
D4	82-001-187-010	DIODE S5277B,LC6	
D5	82-001-187-010	DIODE S5277B,LC6	
D6	87-020-123-010	DIODE DS446	
D7	87-027-393-010	DIODE,ZENER HZ-4C2	
D8	87-020-752-010	DIODE 1SS270	
D9	87-027-286-010	DIODE,ZENER HZ-5C1	
D10	87-027-661-010	DIODE,ZENER H30-ZL	
D11	87-027-347-010	DIODE,ZENER HZ-18-ZL T2	
D251	87-027-286-010	DIODE,ZENER HZ-5C1	
D252	87-020-752-010	DIODE 1SS270	
D401	87-020-752-010	DIODE 1SS270	
D402	87-020-752-010	DIODE 1SS270	
D404	87-020-123-010	DIODE DS446	
D421	87-020-752-010	DIODE 1SS270	
D451	87-020-752-010	DIODE 1SS270	
D452	87-020-752-010	DIODE 1SS270	
D453	87-020-752-010	DIODE 1SS270	
D454	87-020-752-010	DIODE 1SS270	
D457	87-027-416-010	DIODE,ZENER HZ3C2	
D801	87-020-752-010	DIODE 1SS270	
D802	87-020-752-010	DIODE 1SS270	
D803	87-020-752-010	DIODE 1SS270	
D804	87-020-752-010	DIODE 1SS270	
D805	87-020-752-010	DIODE 1SS270	
D806	87-020-752-010	DIODE 1SS270	
D807	87-020-752-010	DIODE 1SS270	
D808	87-020-752-010	DIODE 1SS270	
D809	87-020-752-010	DIODE 1SS270	
D810	87-020-752-010	DIODE 1SS270	
D811	87-020-752-010	DIODE 1SS270	
D812	87-020-752-010	DIODE 1SS270	

REF.NO.	PART NO.	ORDER	DESCRIPTION
D813	87-020-752-010	DIODE 1SS270	
D814	87-020-752-010	DIODE 1SS270	
D851	87-020-123-010	DIODE DS446	
D852	87-020-123-010	DIODE DS446	
D853	87-020-123-010	DIODE DS446	
D854	87-020-123-010	DIODE DS446	
D901	87-020-752-010	DIODE 1SS270	
D902	87-020-752-010	DIODE 1SS270	
D903	87-020-752-010	DIODE 1SS270	
D904	87-020-752-010	DIODE 1SS270	
D951	87-020-752-010	DIODE 1SS270	
D952	87-020-752-010	DIODE 1SS270	
D953	87-020-752-010	DIODE 1SS270	
D1401	87-020-752-010	DIODE 1SS270	
D1402	87-020-752-010	DIODE 1SS270	
FR1	87-029-090-010	RES,FUSIBLE 22-1/4W	
ICP1	*83-203-688-010	PROTECTOR ICP-N25	
ICP2	*87-001-211-010	PROTECTOR ICP-N50	
J701	87-049-420-010	PIN JACK 4P-14(LINE IN)	
J901	87-049-420-010	PIN JACK 4P-14(LINE OUT)	
L251	*81-760-621-010	COIL 130UH	
L301	*87-003-128-010	INDUCTOR 5.6MMH	
L302	*87-003-128-010	INDUCTOR 5.6MMH	
L303	*87-003-131-010	COIL CHOKE 10MMH	
L304	*87-003-131-010	COIL CHOKE 10MMH	
L305	*82-196-603-010	COIL TRAP 100K	
L306	*82-196-603-010	COIL TRAP 100K	
L401	*82-203-623-010	COIL OSC BIAS 100K	
L451	*82-203-624-010	COIL HX 100K AM W/C	
L452	*82-203-624-010	COIL HX 100K AM W/C	
L501	*82-221-697-010	FILTER SQ,CX	
L502	*82-221-697-010	FILTER SQ,CX	
L503	*82-224-612-010	FILTER DOLBY 100K	
L504	*82-224-612-010	FILTER DOLBY 100K	
L801	*82-202-624-010	COIL OSC LC6520H	
R603	*87-025-442-010	RES,MF 6.2K 1/8W F	
R604	*87-025-442-010	RES,MF 6.2K 1/8W F	
R605	*87-025-443-010	RES,MF 24K 1/8W F	
R606	*87-025-443-010	RES,MF 24K 1/8W F	
R615	*87-025-428-010	RES,MF 33K 1/8W	
R616	*87-025-428-010	RES,MF 33K 1/8W	
R617	*87-025-444-010	RES,MF 91K 1/8W F	
R618	*87-025-444-010	RES,MF 91K 1/8W F	
R619	*87-025-423-010	RES,MF 4	

SCHEMATIC DIAGRAM-1

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 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

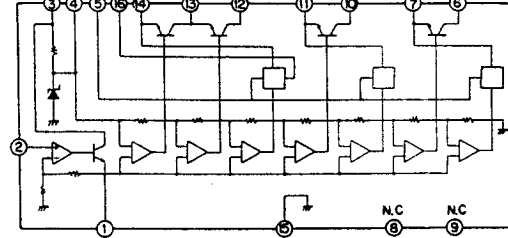
Combination circuit board B 86-535-601-210

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

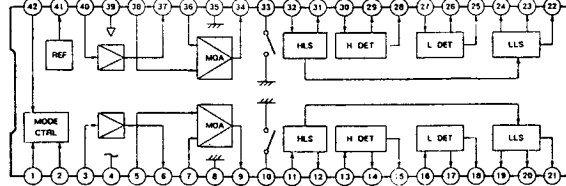
PCB-K,L 86-535-603-210

IC BLOCK DIAGRAM

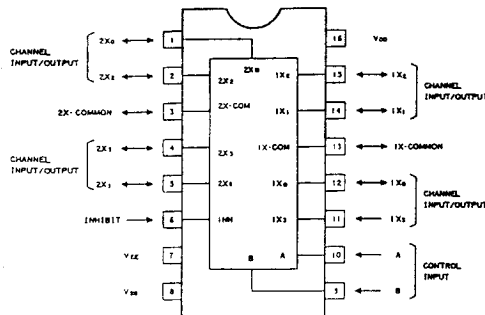
LB1408



CX 20187



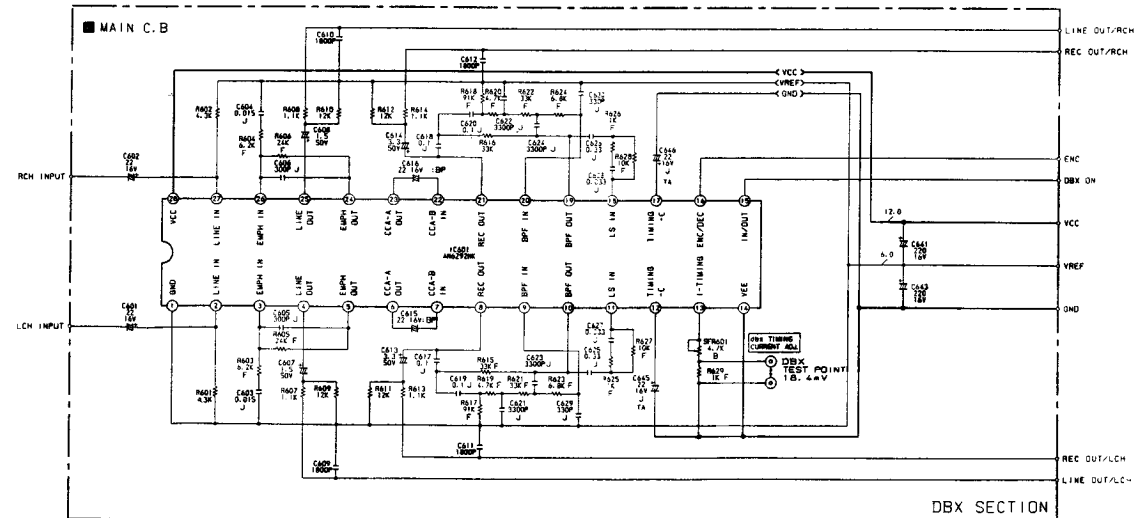
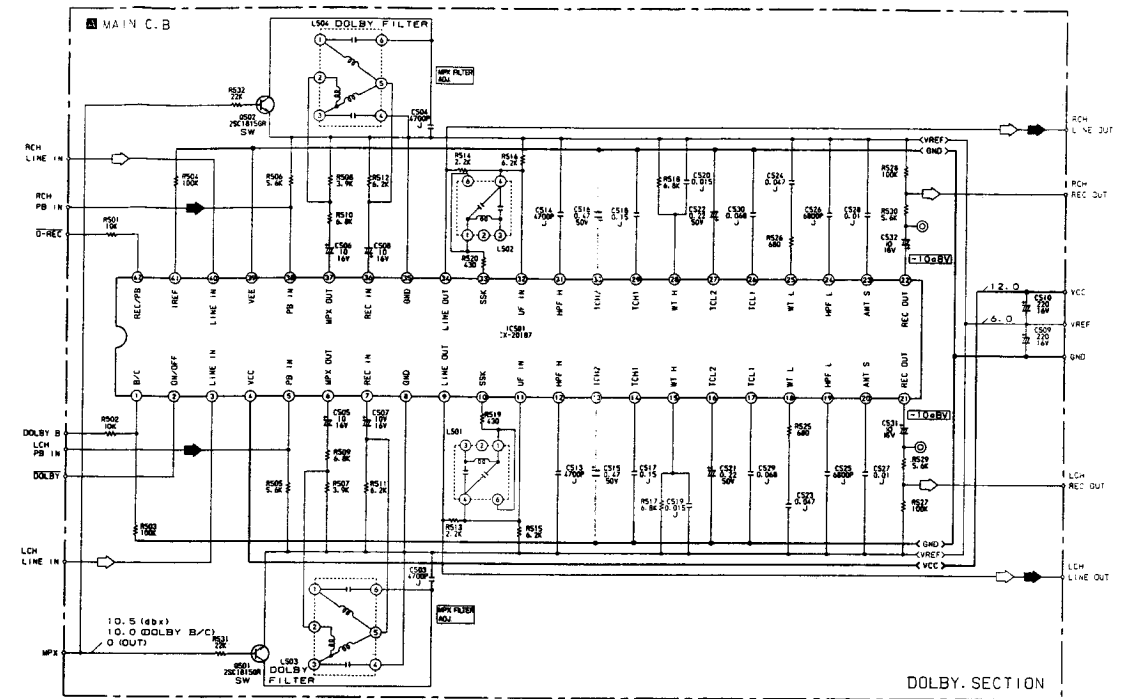
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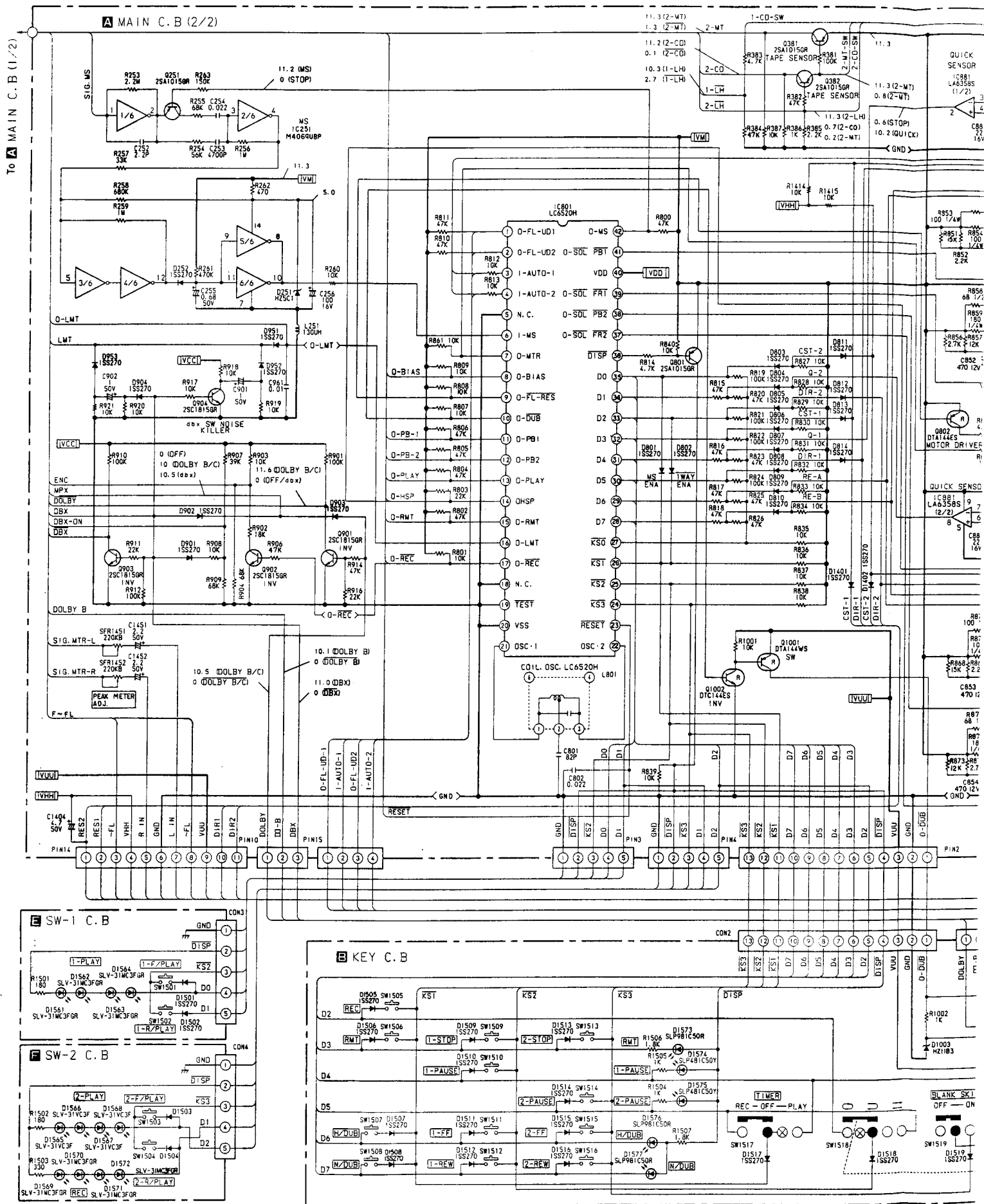


TRUTH TABLE

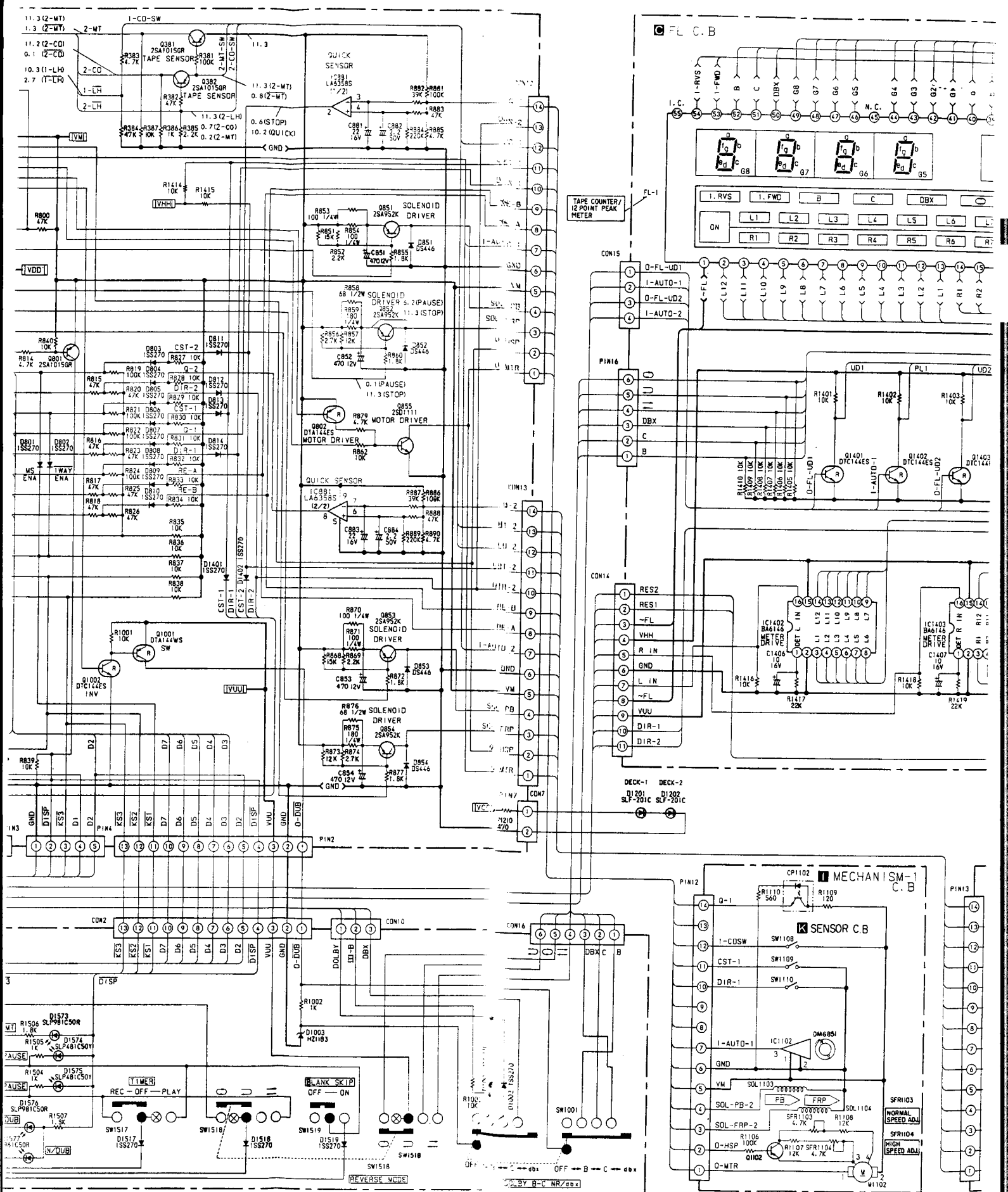
INHIBIT INPUT	CONTROL INPUT	CHANNEL INPUT/OUTPUT SWITCH OF COMMON TERMINAL				
INHIBIT	B	A	X ₀	X ₁	X ₂	X ₃
L	L	L	ON	OFF	OFF	OFF
L	L	H	OFF	ON	OFF	OFF
L	H	L	OFF	OFF	ON	OFF
L	H	H	OFF	OFF	OFF	ON
H	X	X	OFF	OFF	OFF	OFF

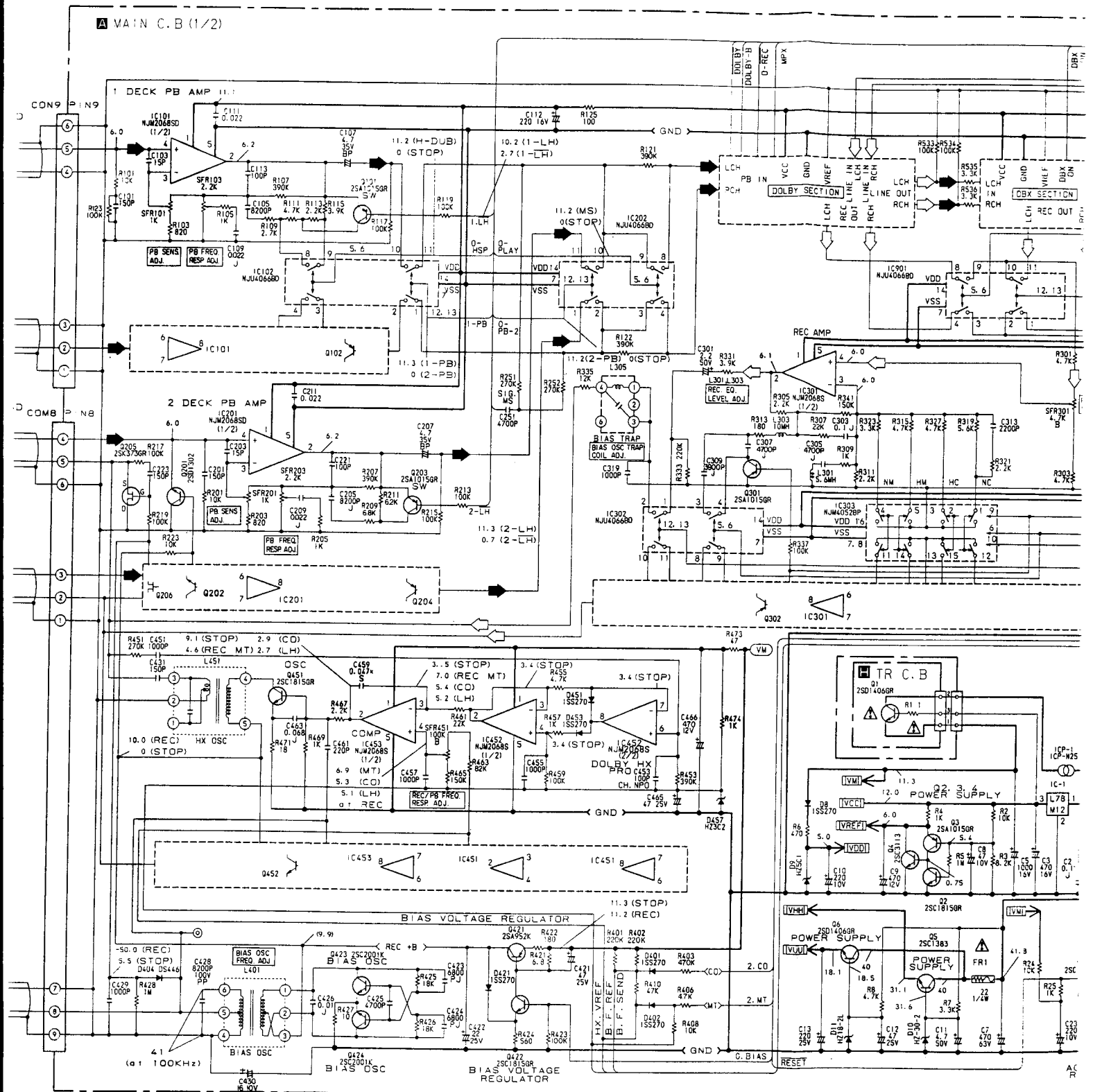
Note 1 X: "H" or "L"





For Service Manuals Contact
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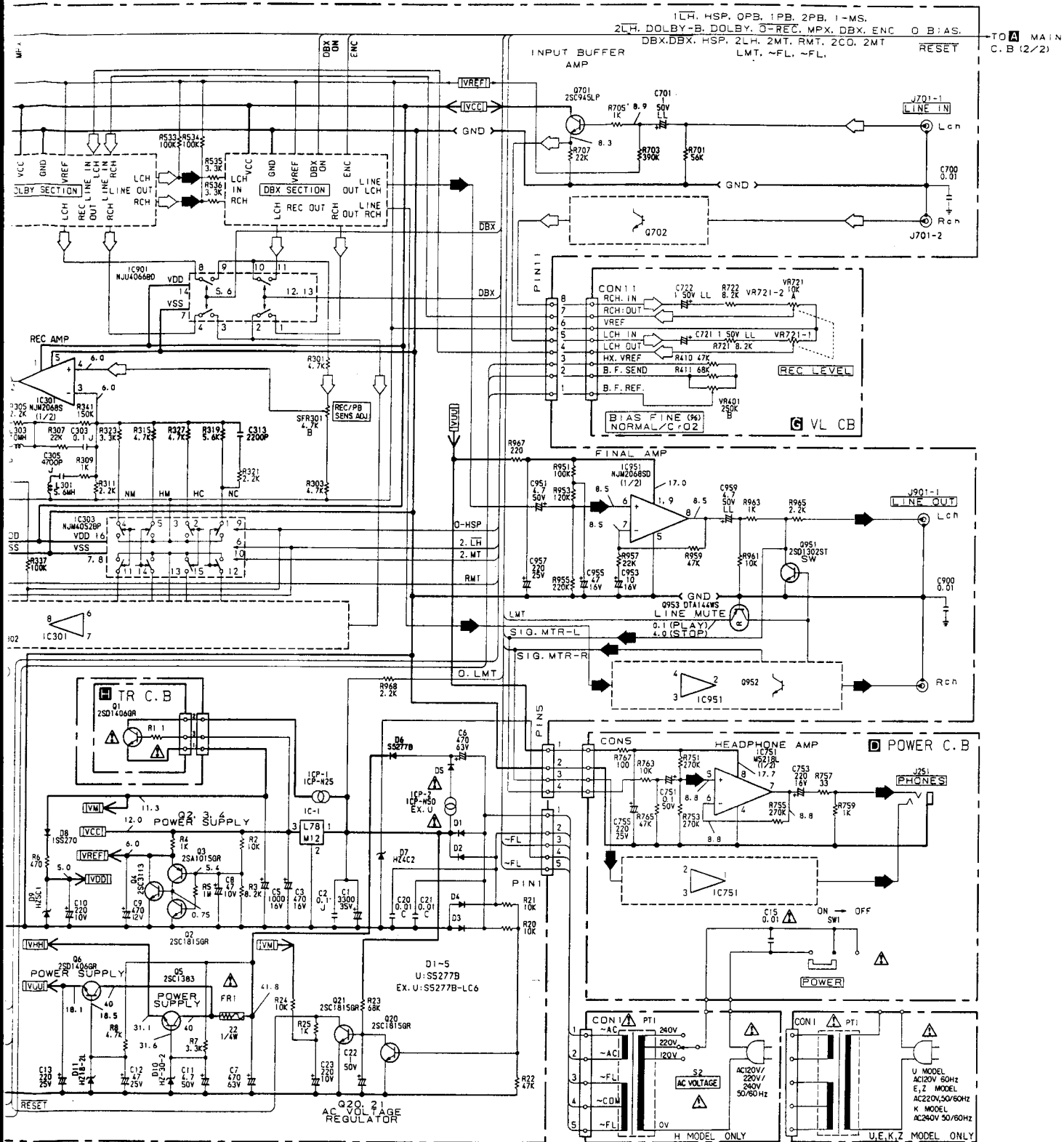


2SK373

2SA952
2SA1015
2SC945
2SC1815
2SC2001
2SD1111
2SD1302
2SC1383

2SD1406

DT A144
2SC3113



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A

B

C

D

E

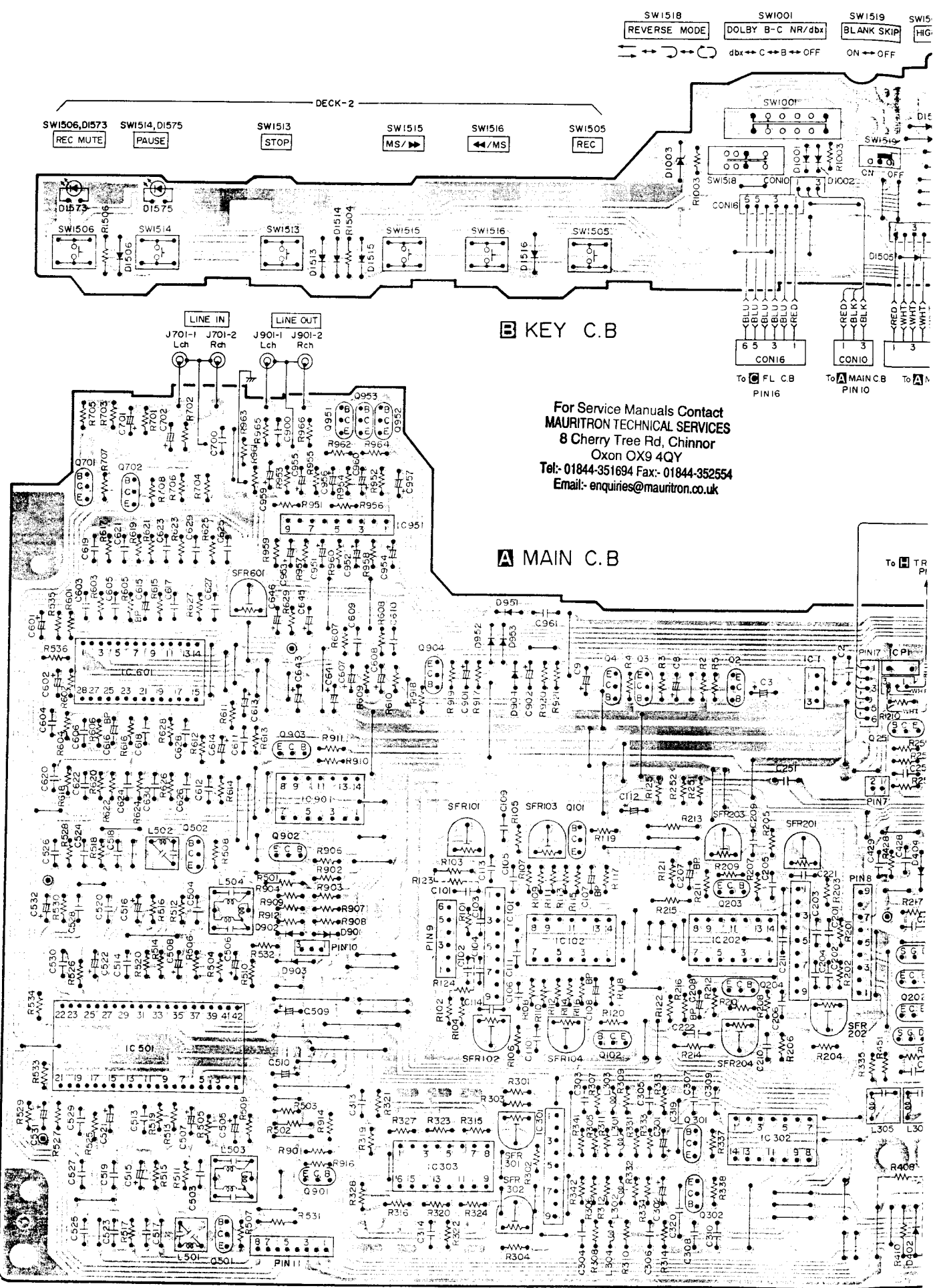
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G

H

I

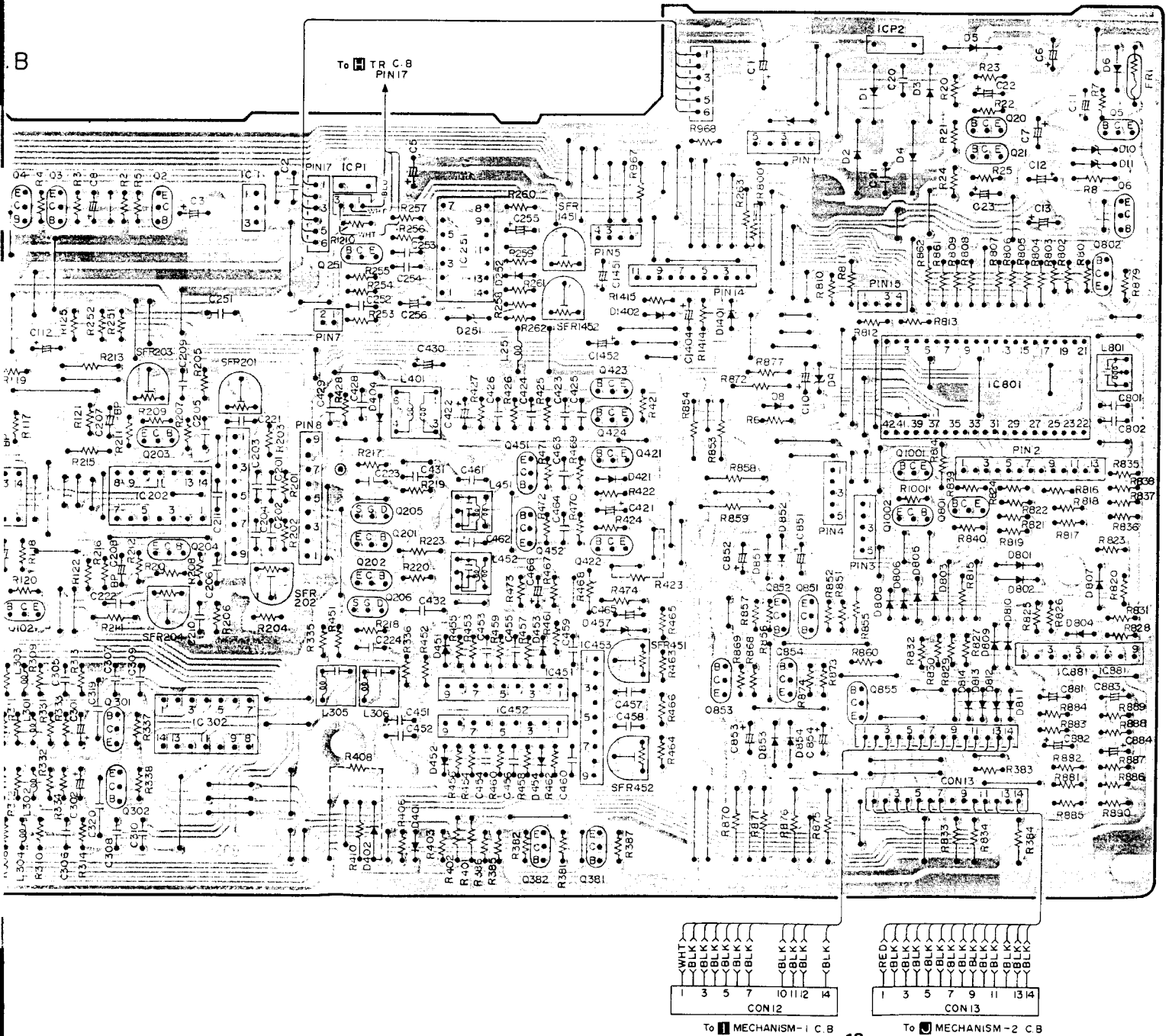
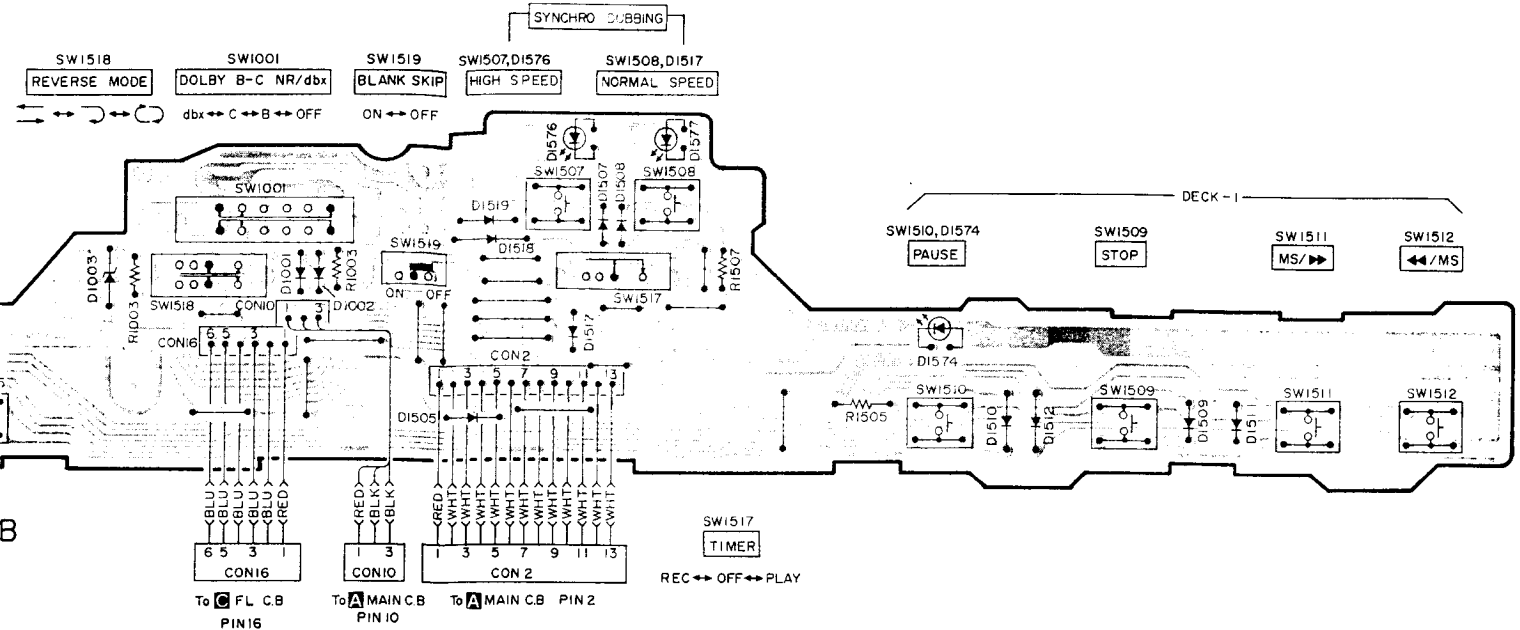
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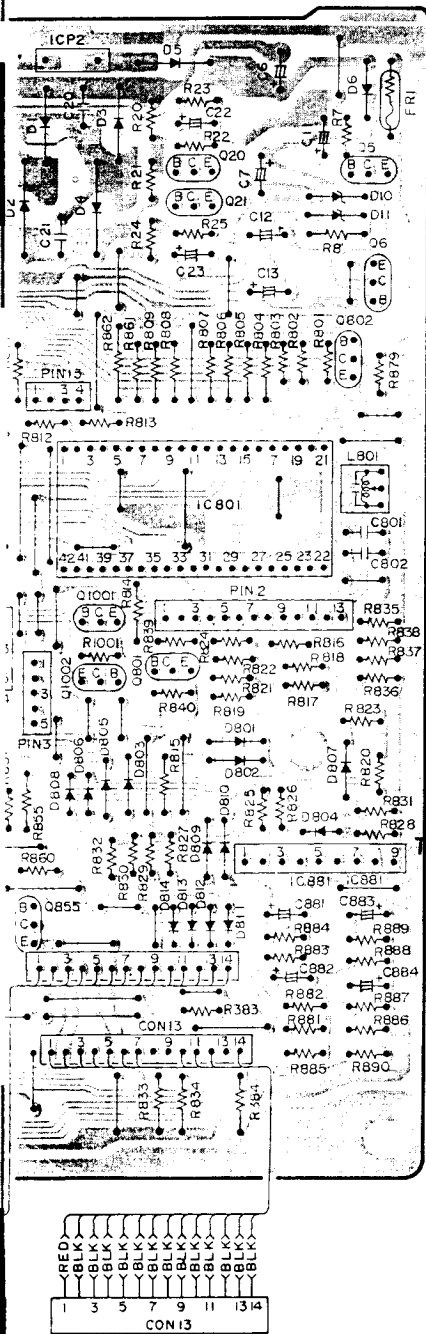
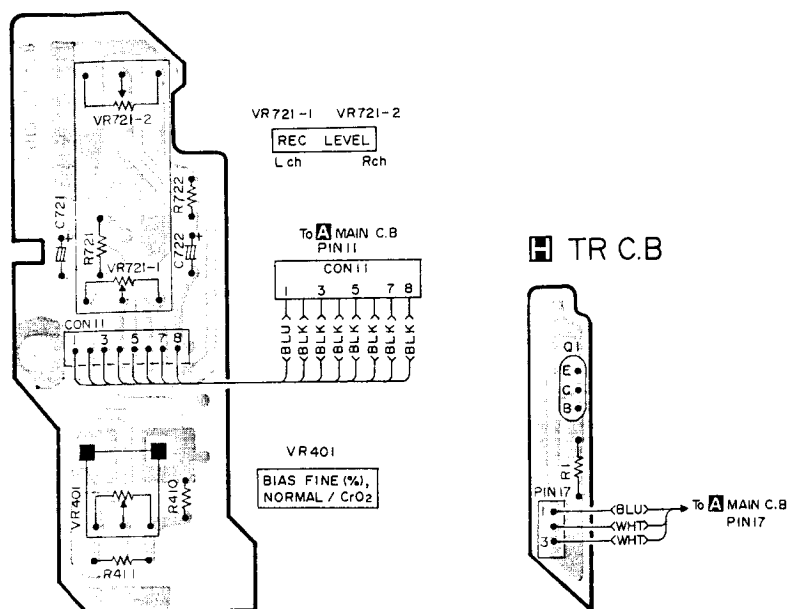
KEY C.B

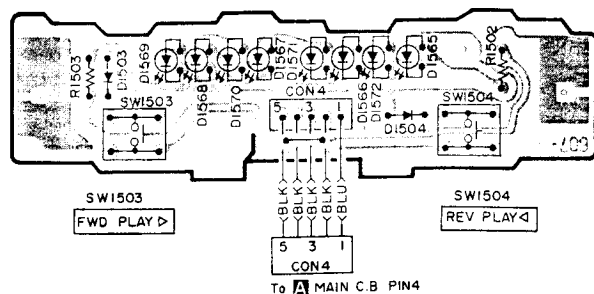
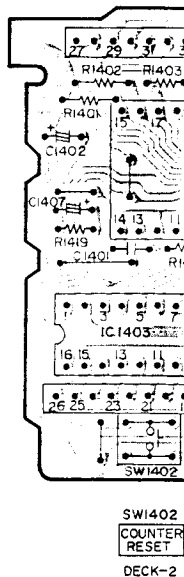
MAIN C.B

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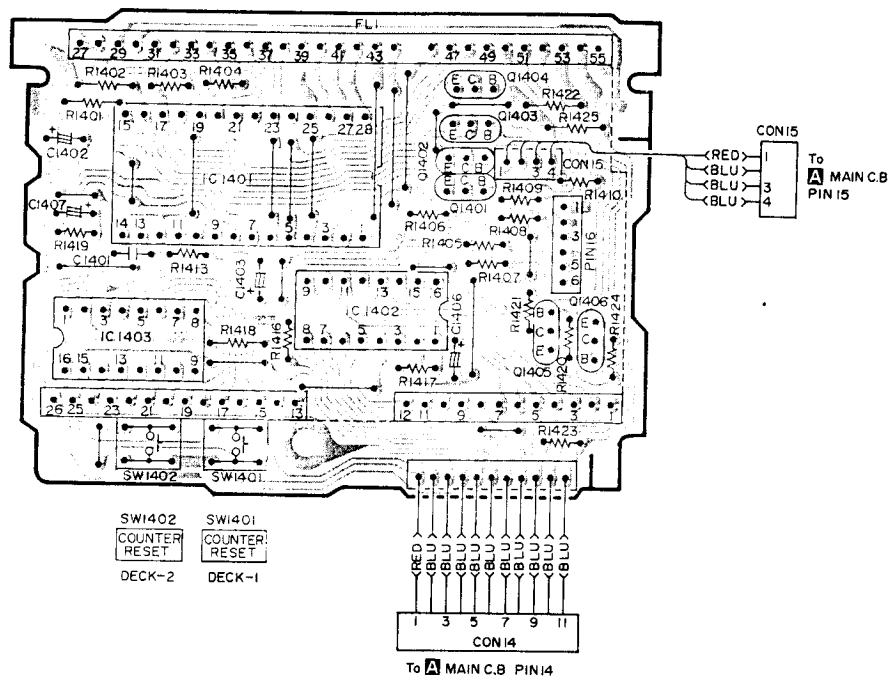
VL C.B



F SW-2 C.BD1569~D1572 REC
D1565~D1568 P.LAY**C** FL C.B

DI565~DI568

C FL C.B

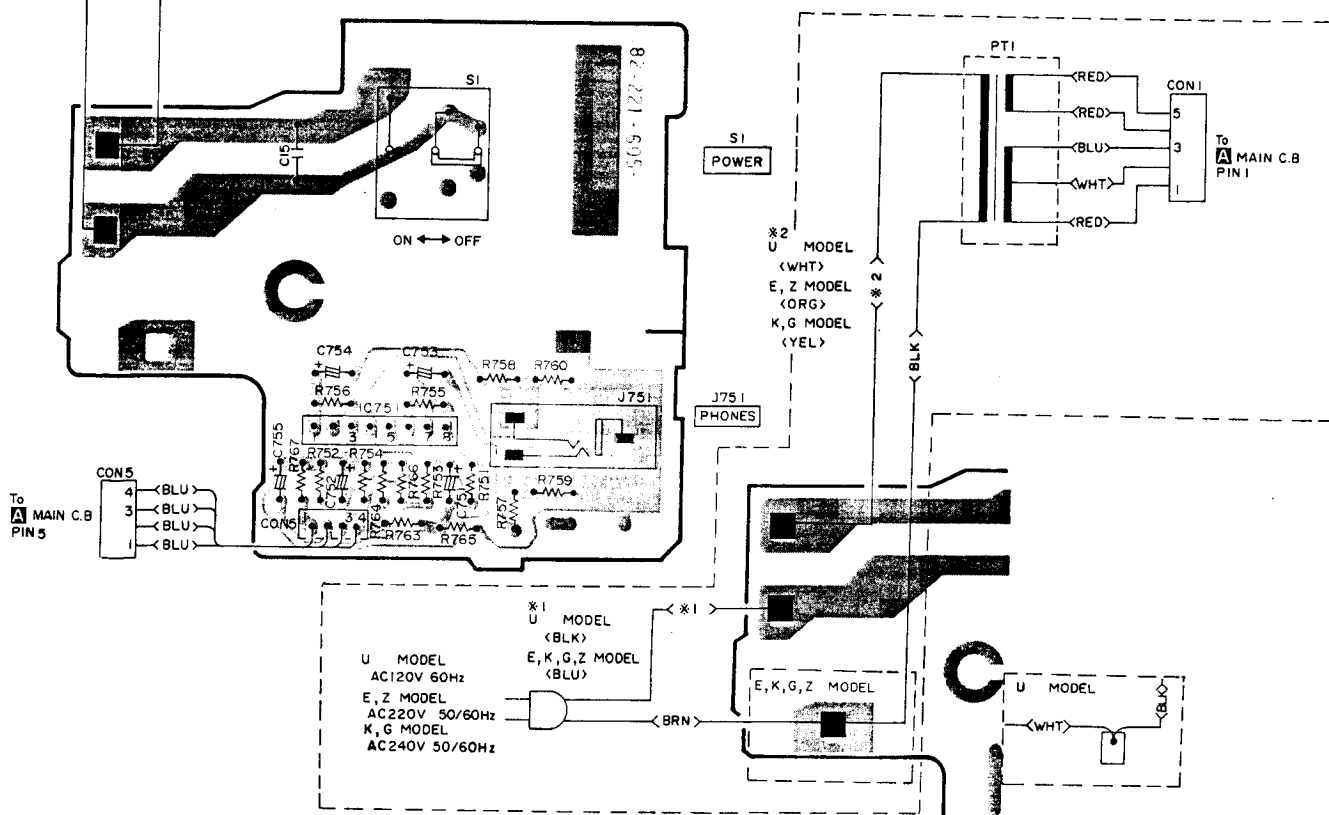
FLI
TAPE COUNTER/
12 POINT PEAK METERSW1402
COUNTER
RESET
DECK-2SW1401
COUNTER
RESET
DECK-1

To A MAIN C.B. PIN14

W1502
V PLAY120V/220V/240V
50/60 Hz

H MODEL

D POWER C.B

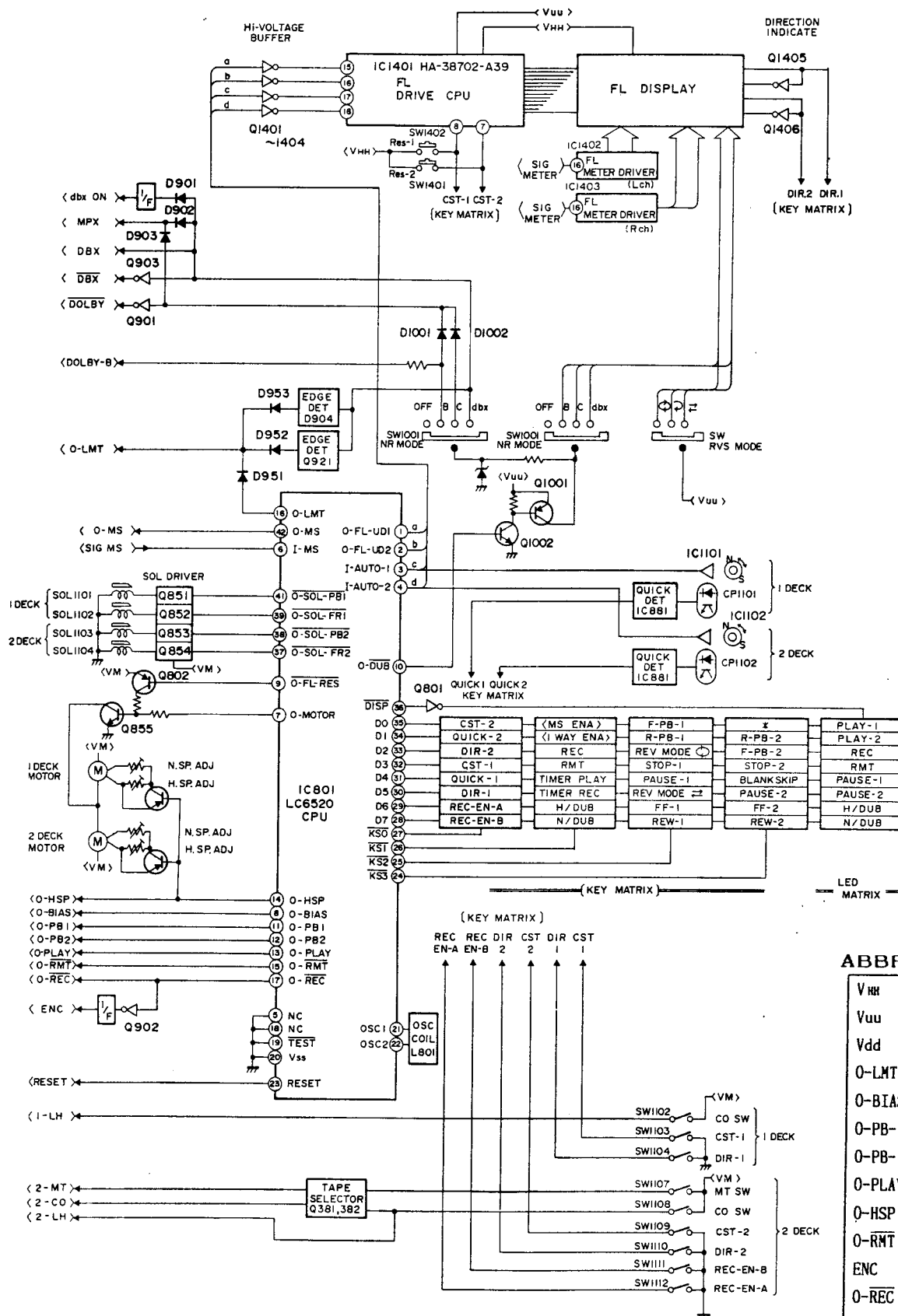


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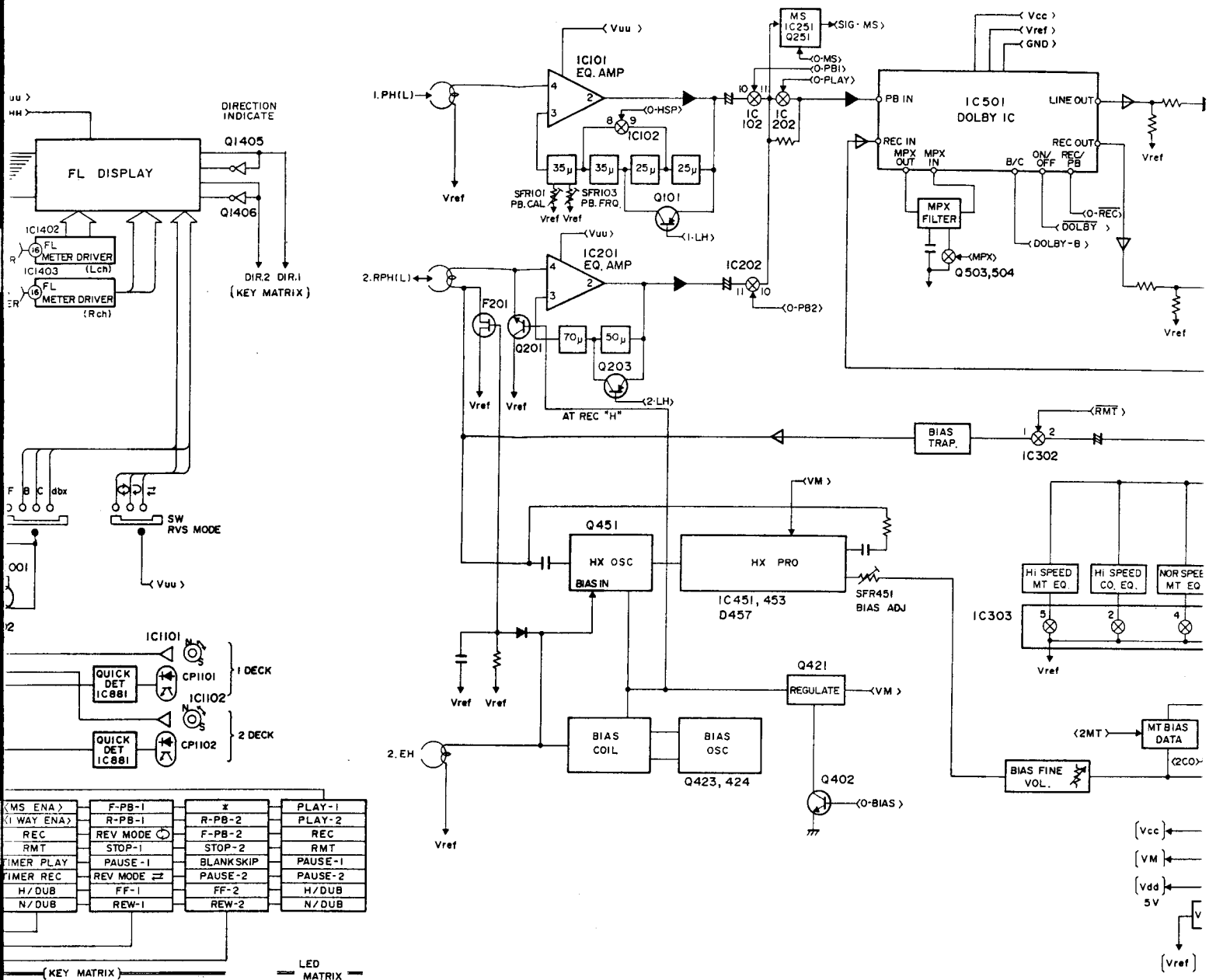
BLOCK DIAGRAM-1

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BLOCK DIAGRAM-2



BLOCK DIAGRAM-2

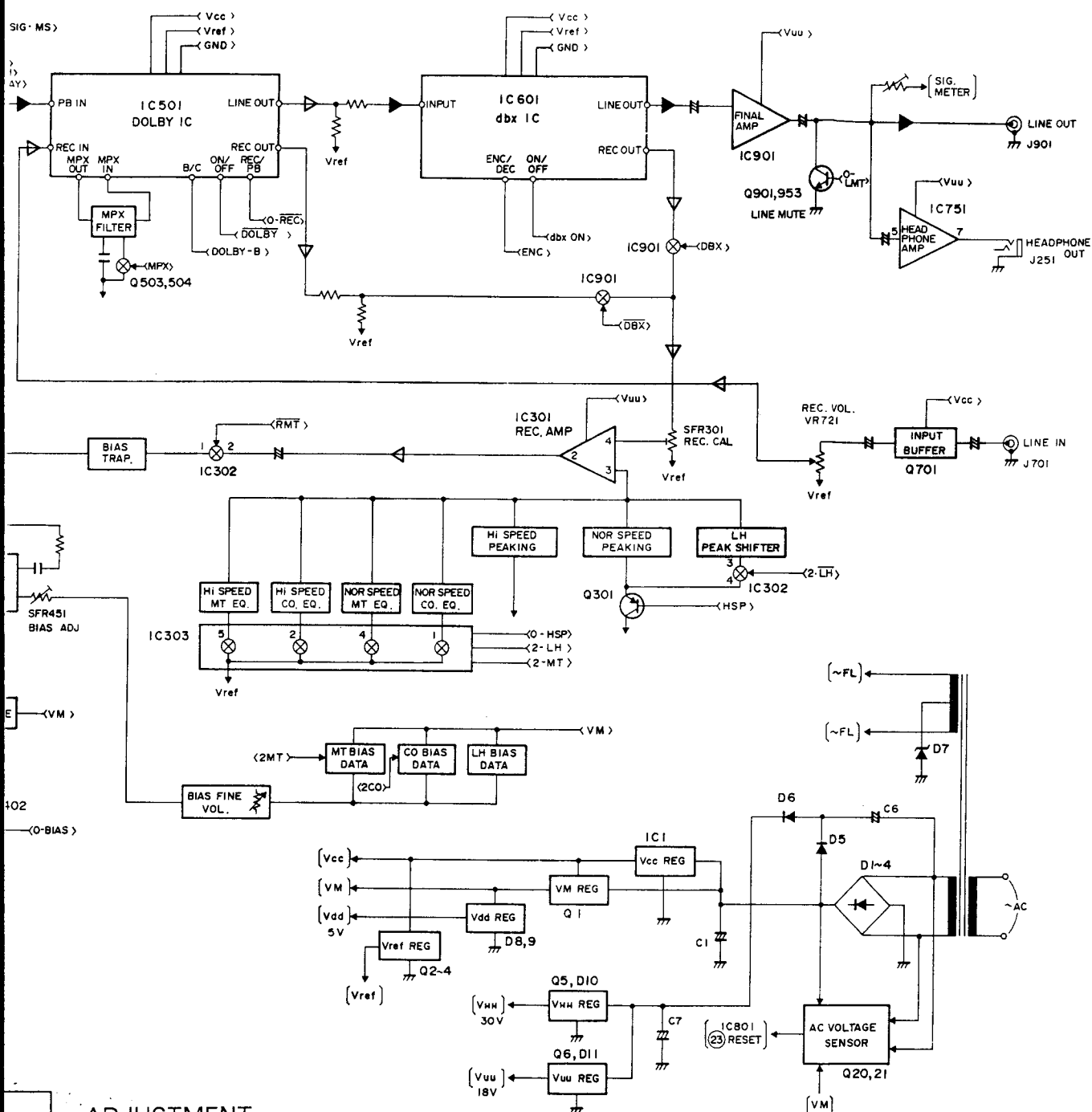


ABBREVIATIONS

V _{HH}	30V voltage doubler and regulator power source
V _{uu}	18V voltage doubler and regulator power source
V _{dd}	5V micro computer IC power source.
O-LMT	Line mute, dbx sw mute.
O-BIAS	Bias osc control.
O-PB-1	1 tape deck mute control.
O-PB-2	2 tape deck mute control.
O-PLAY	CUE/REV mute control.
O-HSP	Hi-speed mode control.
O-RMT	REC MUTE control.
ENC	dbx IC ENC/DEC switching signal.
O-REC	Dolby IC REC/PLAY switching signal.
DBX	REC OUT SELECT: dbx-IC
DBX	REC OUT SELECT: Dolby IC
MPX	MPX filter ON/OFF switching signal
Dolby B	Dolby IC B/C switching signal.
SIG-MS	MS circuit input signal.
SIG-METER	meter driver input signal.
dbx-ON	dbx IN on/off switching signal.
Dolby	Dolby on/off switching signal.

ADJUSTMENT

- Normal Speed Adjustment (DECK-1)
 - Load the unit with a test ta and play its intermediate ar
 - Then adjust the variable res screwdriver through the adju so that the frequency counte
 - Check the reverse running of



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 P.C.B in the DECK to be adjusted as shown in Fig.
2. Load the unit with a test tape (TTA-111H) and play its intermediate area.
3. Adjust the variable resistor SFR1104(1102) so that the frequency counter reads 3000Hz
4. After adjustment is completed, release the short-circuit of the pattern.

3. Head A:

Settin:

Method

Note :

4. PB Fre:

Settin:

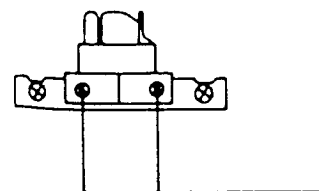
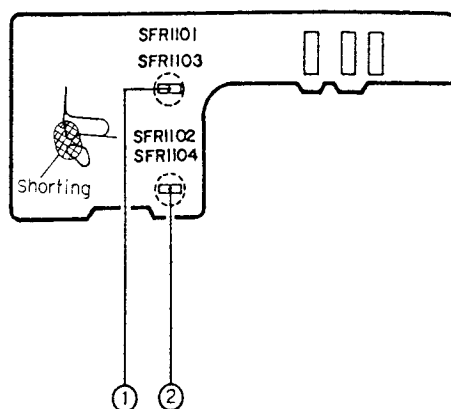
Note : Always perform the normal speed adjustment and then the high-speed adjustment. Adjusting the high-speed only will cause an error in the normal tape speed.

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Method

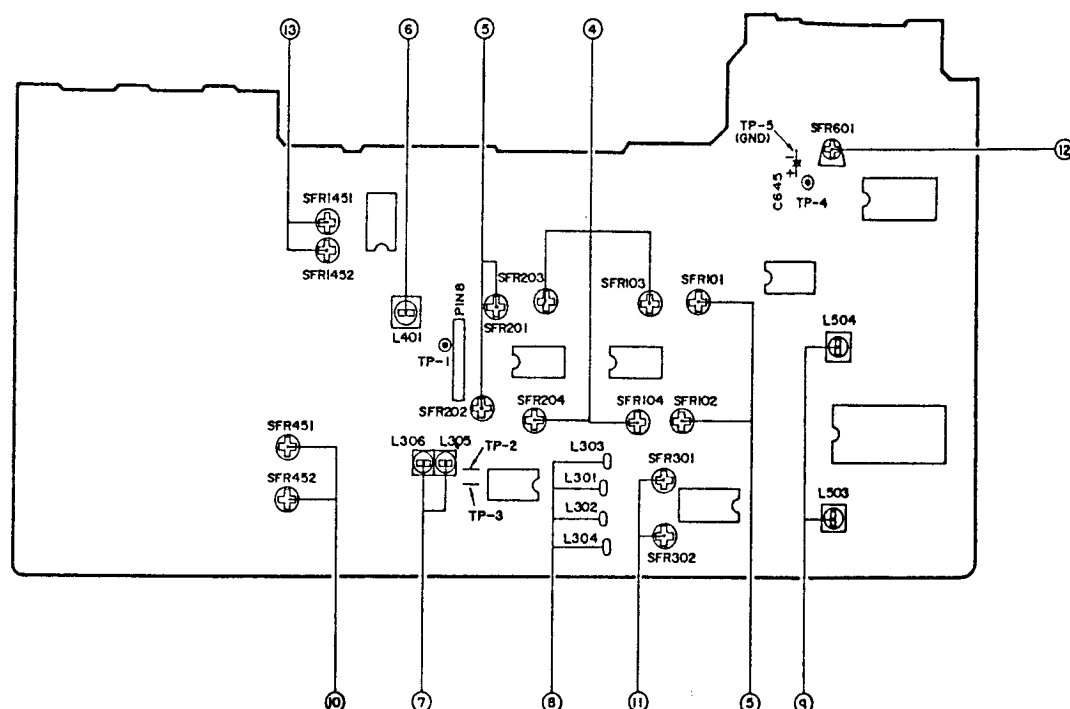
■ MECHANISM-1 C.B
 ■ MECHANISM-2 C.B

DECK 2
 R/P/E HEAD



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■ MAIN C.B



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.

5. PB Sensitivity Adjustment (DECK-1, DECK-2)

Settings: • Test tape: TCC-130 (TTA-161)

• Test point: LINE OUT

• Adjustment location: SFR101 (DEC)
 SFR102 (DEC)
 SFR201 (DEC)
 SFR202 (DEC)

Method: Play back the test tape, and adjust 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

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 $+0.5\text{dB} \begin{smallmatrix} +0.5 \\ -0.5 \end{smallmatrix} \text{dB}$.

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 $40\text{mV} \begin{smallmatrix} +0.3 \\ -0.1 \end{smallmatrix} \text{dB}$.

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)

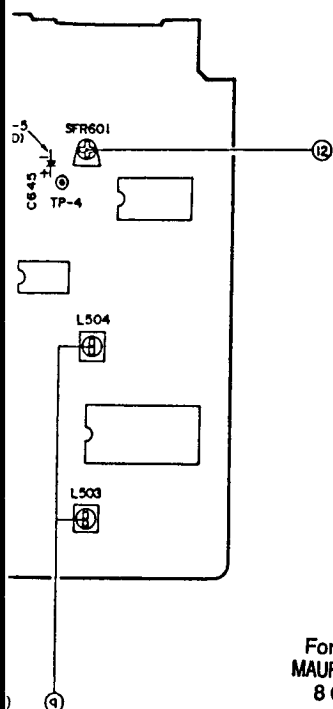
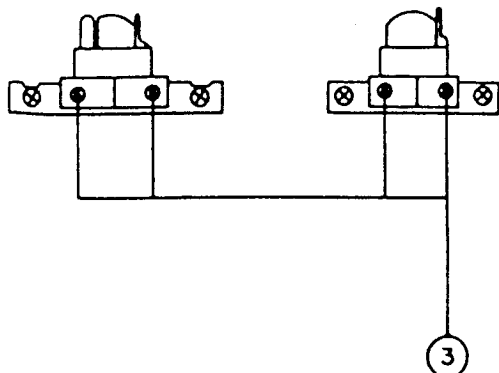
SFR1452 (Rch)

Method: Adjust so that the peak meter (FL1) displays 0dB.

Confirm that the peak meter displays correctly for -7, -2, +3, +6dB.

DECK 2
R/P/E HEAD

DECK 1
P HEAD



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ty Adjustment (DECK-1, DECK-2)

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)

y back the test tape, and adjust so that the output
comes $560 \pm 10\text{mV}$.

quency Adjustment (DECK-2)

Test tape: TTA-119K

Test point: TP-1

Adjustment location: L401

ust so that the output frequency becomes $100\text{kHz} \begin{smallmatrix} +0 \\ -0.5 \end{smallmatrix} \text{kHz}$.

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.

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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	$\overline{\text{I-WAY-ENABLE}}$	QUICK-2 PULSE IN	PLAY-2 LED OUT
33	DT2	F.PLAY-2 KEY IN	REV.MODE $\rightarrow$ 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 $\leftarrow$ 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	REV-2 KEY IN	REV-1 KEY IN	N/DUB KEY IN	RE-B SW IN	N/DUB LED OUT
27 26 25 24	$\overline{\text{KS0}}$ $\overline{\text{KS1}}$ $\overline{\text{KS2}}$ $\overline{\text{KS3}}$	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 (DOLBY C OFF/ON with NORM, tape) More than 72dB (dBx ON with MT, CrO ₂ and NORM tapes)
PB/REC output : (TTA-119K)	400 $\pm$ 50mV (LINE OUT, 1kHz)		
PB/REC distortion :	Less than 1.5% (NORM) Less than 2.0% (MT, CrO ₂)	Recording bias frequency : 100kHz	
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%
		Wow & flutter : (W. R. M. S)	Less than 0.065% (FWD)(DECK1,2)
Erase ratio (125Hz) :	More than 60dB	Take-up torque :	30~60g-cm (DECK1,2)
PB/REC S/N ratio :	More than 47/62dB (CrO ₂), 63dB (MT)	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

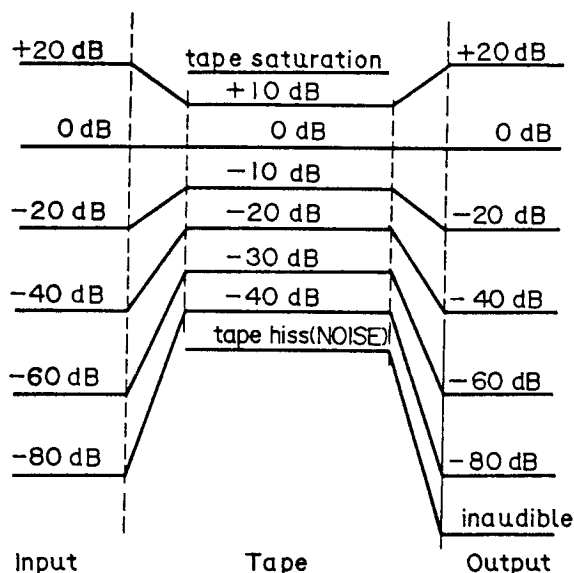
The dbx Noise Reduction System

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.

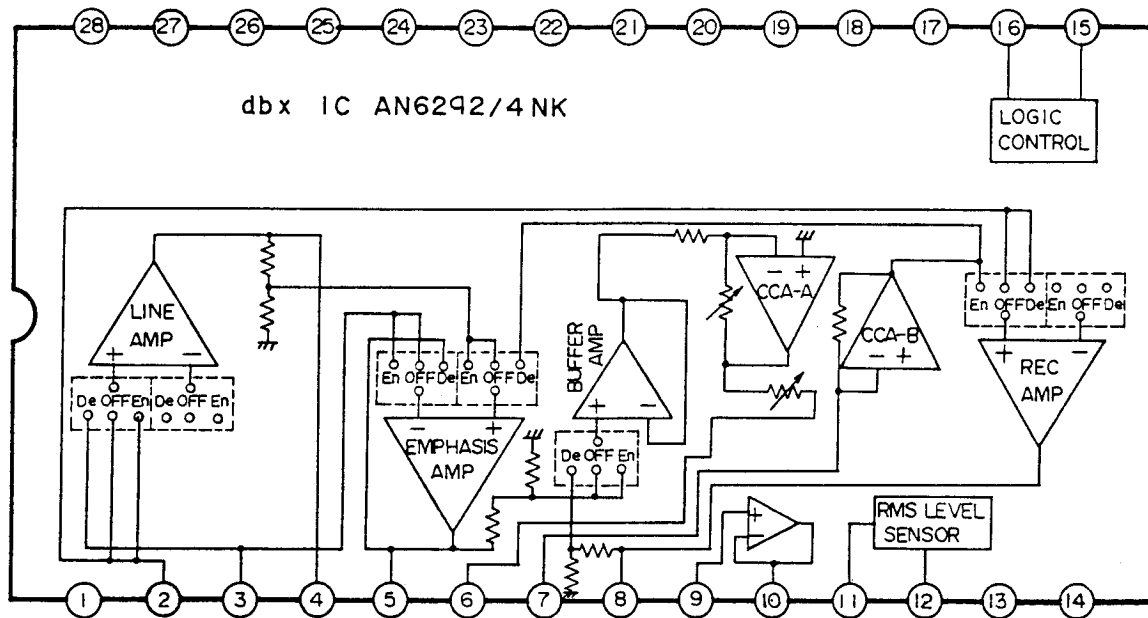
Before recording, the dbx noise reduction system accurately compresses, by one-half algebraic value, recording signals, even those from wide dynamic range program sources. Compressing a program source's 80dB dynamic range to 40dB width, for example, records all program sources in the cassette deck's 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.



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2. Operations in each mode

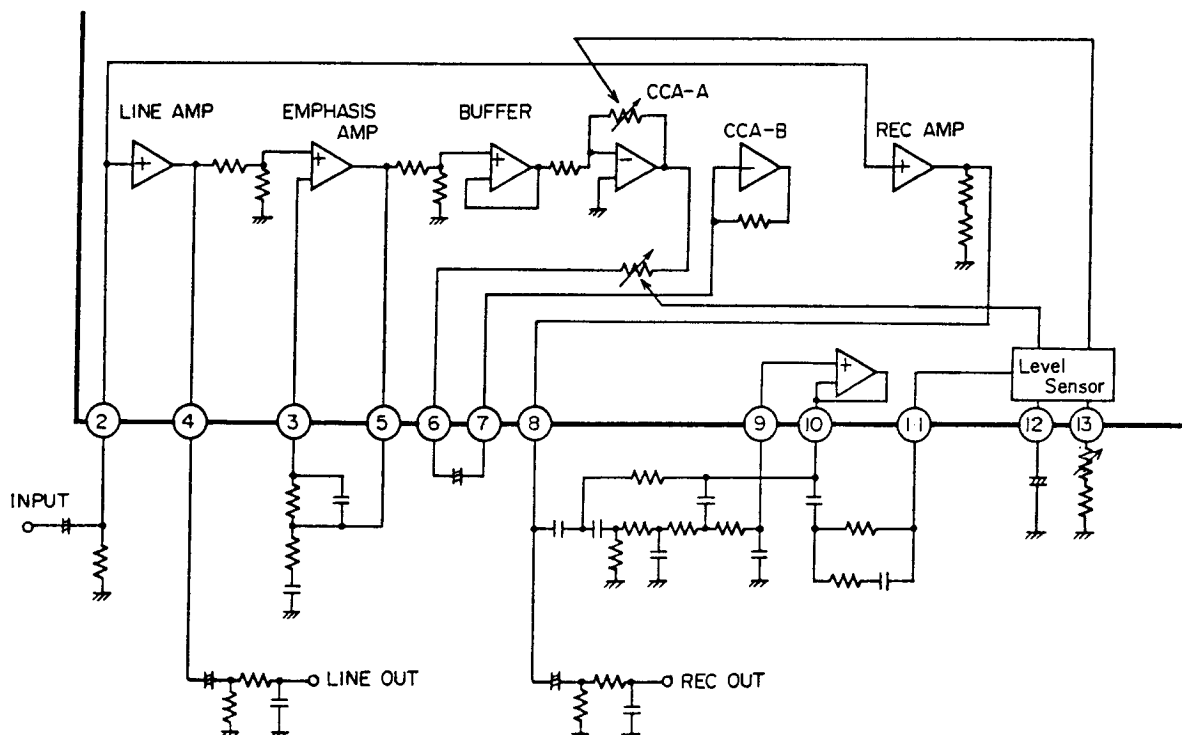
The switches in the IC are changed over depending on the levels at pins 15 and 16, and dbx turning off, encoding and decoding are performed. The following describes the flow of signals and operation of circuits in each mode.



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.

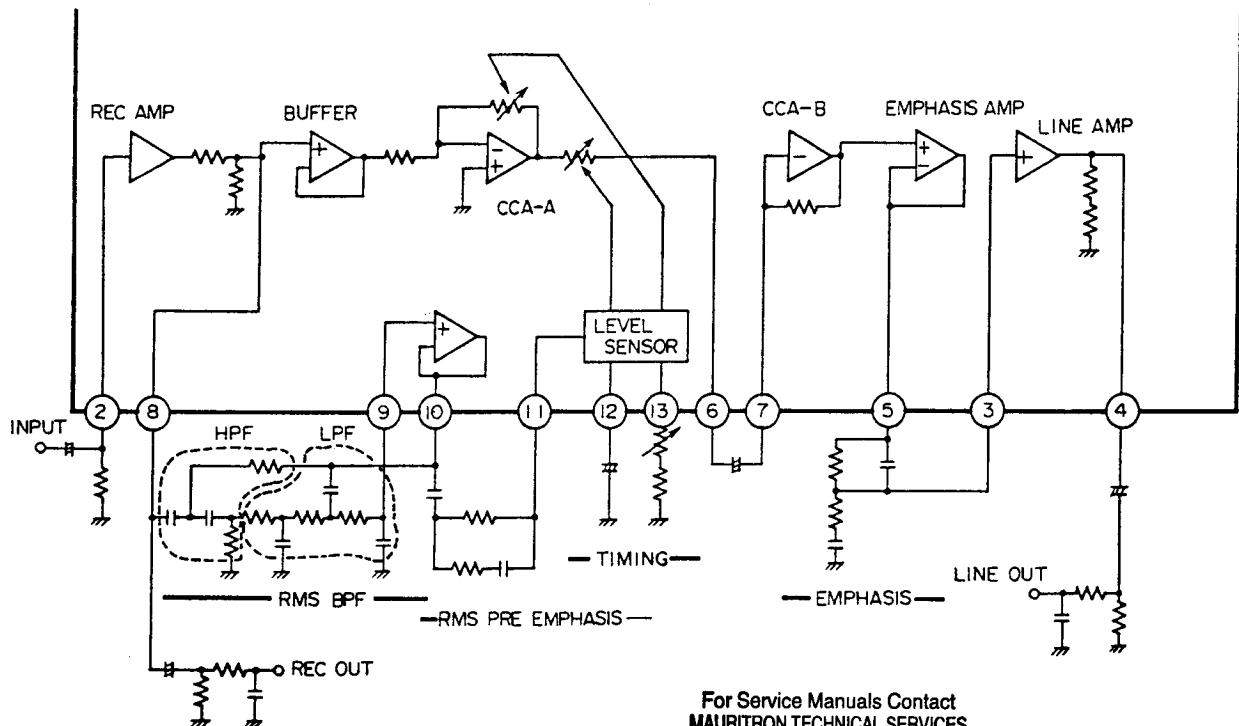
The remaining sections (EMPHASIS AMP, BUFFER, CCA-A and CCA-B) have no connection with this operation.



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.



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6292/94NK Decode Mode (During dbx playback)

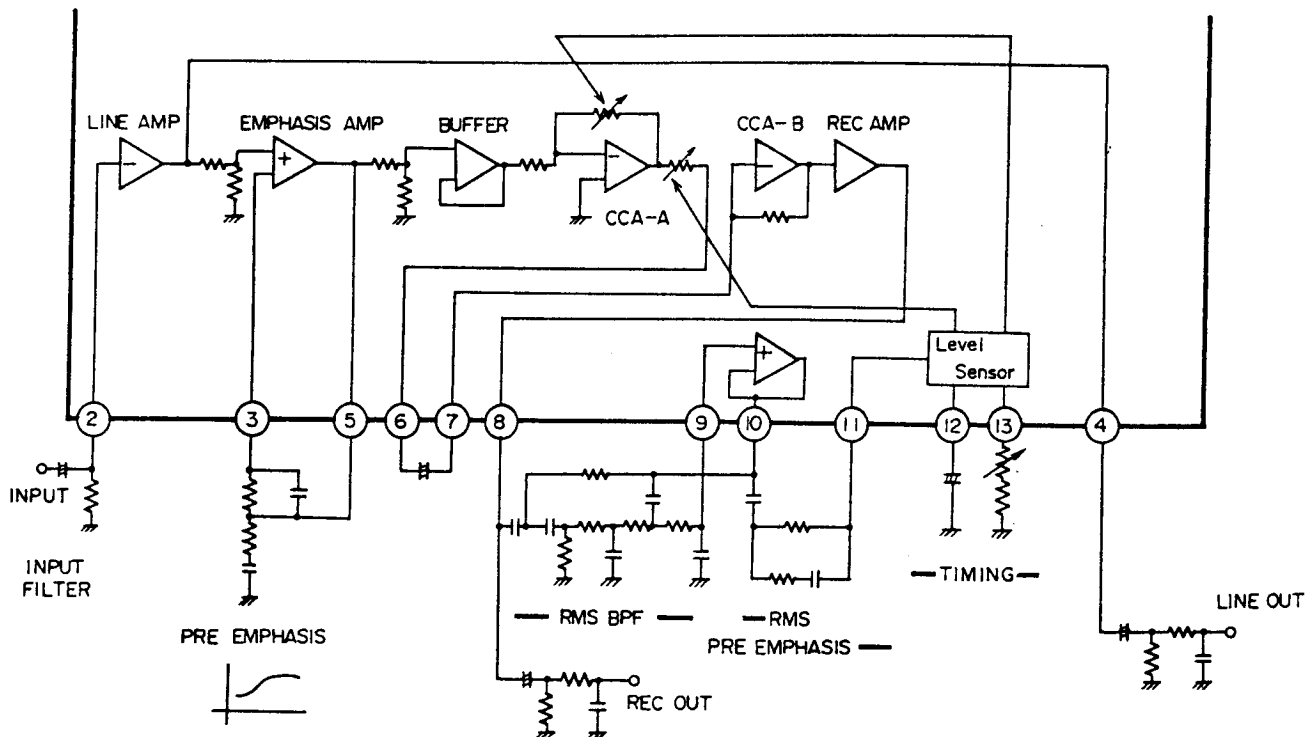
Signal levels during Dolby level tape playback (TTA-161) (dbx ON)

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

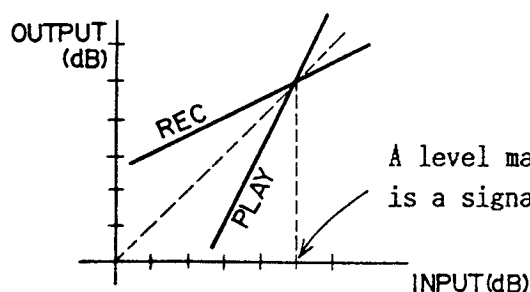
1) RMS LEVEL SENSOR

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.



A level match (90mV at pins 2 and 27) which in this unit is a signal -6.5dB from the Dolby level.

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

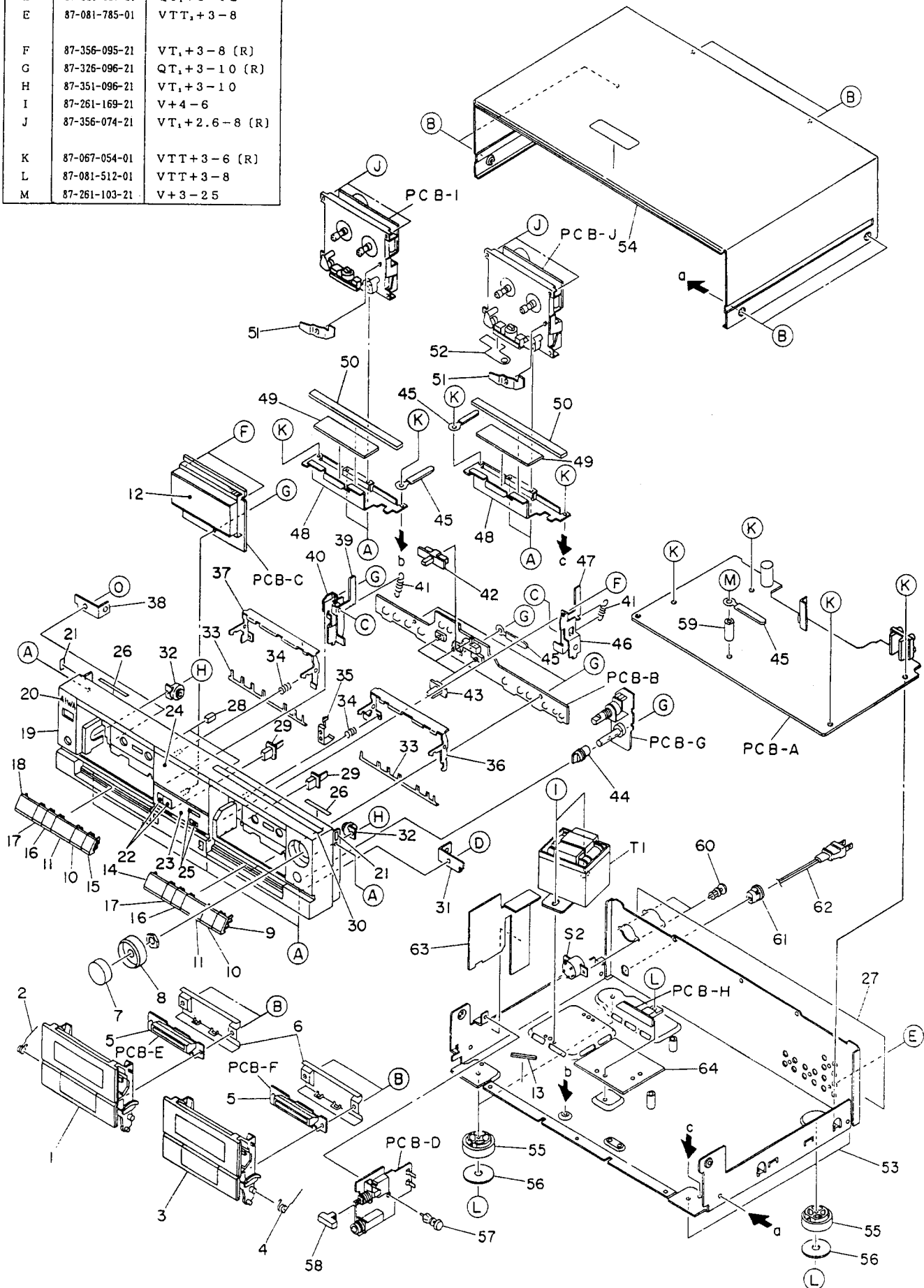
LOGIC CONTROL selects the switch in the IC as determined by the logic state at pins 15 and 16. If pin 15 is "Hi", dbx is on, if pin 15 is "Lo", dbx is off. When pin 16 is "Hi", the unit is in encode (record) state, when pin 16 is "Lo", the unit is in decode (playback) state.

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EXPLODED VIEW-1

REF.NO.	PART NO.	DESCRIPTION
A	87-081-531-01	QTT+3-6
B	87-347-095-21	UT ₁ +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 ₁ +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+3-2.5



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 40		4
1-56		*82-217-069-010		FELT 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		1

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk

■ DECK 2 (X-3 R3)

ALTERATION PARTS LIST

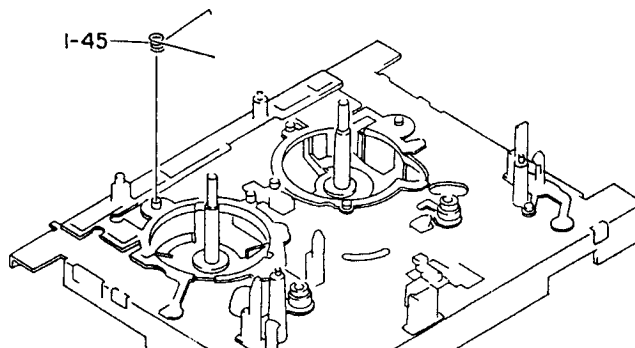
PART NO. CHANGED TO	REF. NO.	PART NO.	ORDER	DESCRIPTION	COMMON MODEL	Q, TY
	1-20	*86-535-351-110		ACTUATING CHASSIS PH ASSY		1
	1-23	*86-535-356-010		HEAD HOUSING PH ASSY		1
	1-44	*86-535-353-010		FELT 5-4-2		1
	2-17	86-535-354-010		BELT		1

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