ond. mag.

Radio en Televisieservice
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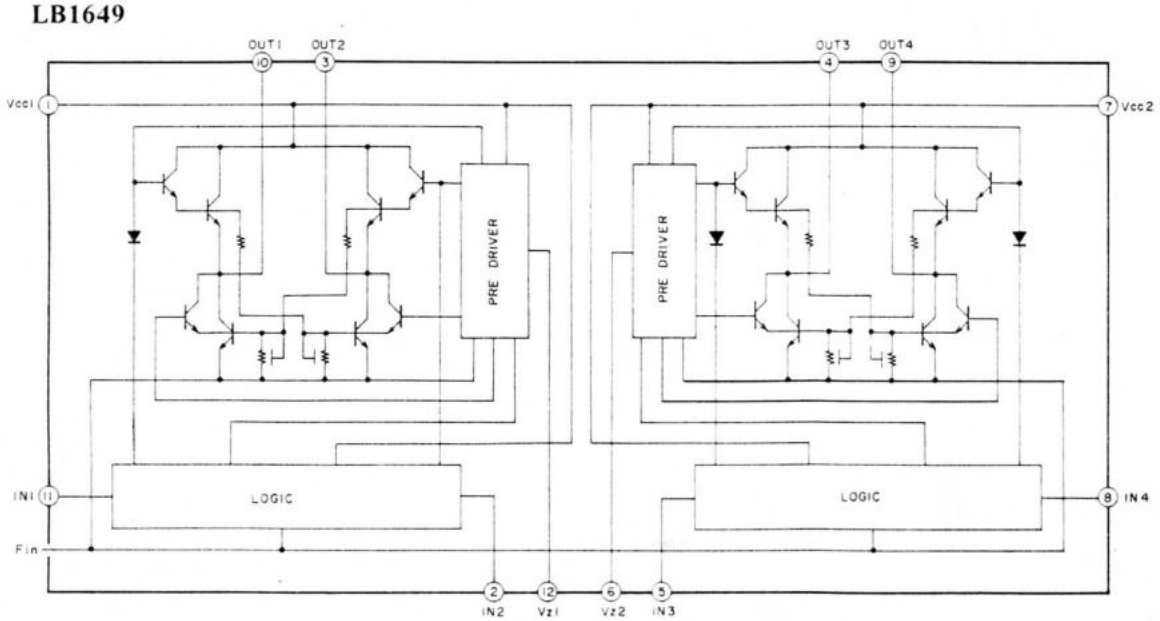
AKAI

MODEL HX-R40

SCHEMATIC DIAGRAM AND PC BOARDS

TABLE OF CONTENTS

LB1649



T2077 (LM6405H)

PIN NO.	I/O	ACTIVE	INITIA-LIZE	PORT NAME	COMMENT
1				X TAL	Crystal oscillator terminal Clock frequency: 800 kHz
42				EX TAL	
2	INPUT	L	H	$\overline{\text{ANTI REC FWD}}$	Forward anti recording input Anti Recording: H
3	INPUT	L	H	$\overline{\text{ANTI REC REV}}$	Reverse anti recording input Anti Recording: H
4					
5					
6				$\overline{\text{INT}}$	Interrupting terminal: To GND
7				$\overline{\text{RESET}}$	Reset at L, when Power ON
8	INPUT	L	H	$\overline{\text{ENCODER}}$ #0	Cam position detection Input (From Encoder) * Refer to Rotary Encoder Output Table for Syscon Block Diagram
9	INPUT	L	H	$\overline{\text{ENCODER}}$ #2	
10	INPUT	L	H	$\overline{\text{ENCODER}}$ #3	
11	INPUT	L	H	$\overline{\text{ENCODER}}$ #1	
12	OUTPUT	L	H	FWD IND	FWD IND drive output L: FWD IND ON
13	OUTPUT	L	H	REV IND	REV IND drive output L: REV IND ON
14	OUTPUT	L	H	REC IND	REC IND drive output L: REC IND ON
15	OUTPUT		H	REEL MOTOR PLAY/FAST	Reel Motor drive voltage control output H: Voltage for PLAY mode L: Voltage for FAST mode
16	OUTPUT	L	H	$\overline{\text{REEL MOTOR}}$	Reel Motor control output
17	OUTPUT	L	H	$\overline{\text{REEL MOTOR}}$	

PIN NO. / MODE	IC301 ⑯	IC301 ⑰
FORWARD DIRECTION	H	L
REVERSE DIRECTION	L	H
STOP	H	H

PIN NO.	I/O	ACTIVE	INITIA-LIZE	PORT NAME	COMMENT
18	OUTPUT	L	H	$\overline{\text{CAM MOTOR}}$	Cam Motor control output PIN NO. / MODE: FORWARD DIRECTION — IC301 ⑱ H, ⑲ L; REVERSE DIRECTION — ⑱ L, ⑲ H; STOP — ⑱ H, ⑲ H
19	OUTPUT	L	H	$\overline{\text{CAM MOTOR}}$	
20				TEST	To GND
21				V_{SS}	
22	INPUT	L	H	TIMER REC SW	Absentee recording input L (When stand-by IED light off): TIMER RECORDING
23	INPUT	L	H	TIMER PB SW	Timer Play input L (When Stand-by IED light off): TIMER PLAY
24	INPUT	L	H	NONE REVERSE SELECT	3 way reverse select input PIN NO. / REV MODE: → — IC301 ㉔ L, ㉕ H; ⊃ — ㉔ H, ㉕ H; ⊂ — ㉔ H, ㉕ L
25	INPUT	L	H	INFINITE REVERSE SELECT	
26	OUTPUT	L	H	$\overline{\text{OSC}}$	Oscillator drive control output L: Oscillator driven
27	OUTPUT		H	$\overline{\text{REC}}$ / PB	REC/PB control output H: PB L: REC
28	OUTPUT	H	H	REC MUTE	REC MUTE control output H: REC MUTE
29	OUTPUT	H	H	PB MUTE	PB MUTE control output H: PB MUTE
30	INPUT	L	H	$\overline{\text{AUTO MUTE}}$	AUTO MUTE Key input AUTO MUTE Key ON: L
31	INPUT	L	H	$\overline{\text{REC}}$	REC Key input REC Key ON: L
32	INPUT	L	H	$\overline{\text{STOP}}$	STOP Key input STOP Key ON: L

PIN NO.	I/O	ACTIVE	INITIA-LIZE	PORT NAME	COMMENT
33	INPUT	L	H	$\overline{\text{QUICK REVERSE}}$	Tape magnetic surface-leader tape transition detector input. Tape magnetic surface: H Leader tape: L
34	INPUT	L	H	$\overline{\text{REEL PULSE}}$	Reel Pulse detection input Reel rotation is detective on the basis of H → L → H transitions.
35	INPUT	L	H	$\overline{\text{IPLS}}$	Recorded sections (L) and blank sections (H) detecting inputs. IPLS Blanks are detective on the basis of L → H transitions. INTRO SCAN Recorded sections are detected on the basis of H → L transitions.
36	OUTPUT	H	L	SERCH	IPLS malfunction preventing output. H: SERCH
37	INPUT	L	H	$\overline{\text{REW}}$	REW Key input REW Key ON: L
38	INPUT	L	H	$\overline{\text{FF}}$	FF Key input FF Key ON: L
39	INPUT	L	H	$\overline{\text{FWD}}$	FWD Key input FWD Key ON: L
40	INPUT	L	H	$\overline{\text{REV}}$	REV Key input REV Key ON: L
41				V_{DD}	+5V

HX-R40

ROTARY ENCODER OUTPUT TABLE

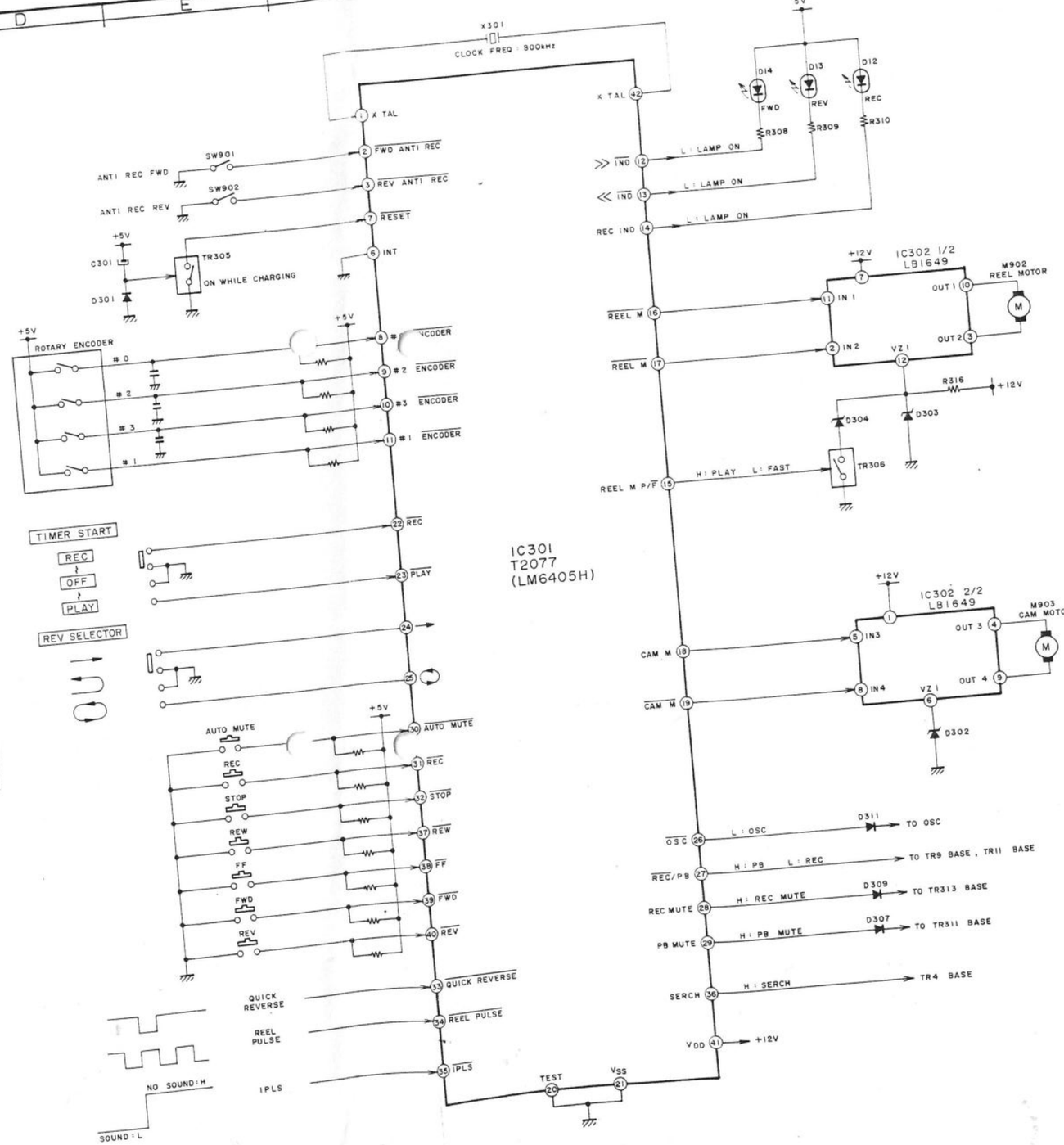
CONTROL (B) A PCB J103 PIN NO. 4	3	2	1	OPERATION MODE	STAND BY	CAM MOTOR'S DIRECTION	REEL MOTOR DRIVE VOLTAGE	DIRECTION
L	L	L	H	FWD.PLAY, FWD REC	FORWARD	FORWARD	LOW	÷2
L	H	H	H	SEARCH, REC PAUSE			SEARCH MIDDLE REC PAUSE NONE	FF·S: ÷2 REW·S: ÷1 REC·P: STOP
H	L	H	H	STOP			NONE	STOP
H	H	L	H	FAST (FF, REW)			MIDDLE	FF: ÷1 REW: ÷2
H	H	L	L	FAST (FF, REW)			MIDDLE	FF: ÷2 REW: ÷1
H	L	H	L	STOP	REVERSE		NONE	STOP
L	H	H	L	SEARCH, REC PAUSE		REVERSE	SEARCH MIDDLE REC PAUSE NONE	FF·S: ÷2 REW·S: ÷1 REC·P: STOP
L	L	L	L	REV PLAY			LOW	÷2

NOTE
1. ÷1 RIGHT REEL TABLE TO DRIVE
2. ÷2 LEFT REEL TABLE TO DRIVE

PIN NO. / REV MODE	IC301 (24)	IC301 (25)
→	L	H
↩	H	H
↪	H	L

PIN NO. / REEL MOTOR MODE	IC302 (11)	IC302 (2)
FORWARD DIRECTION	H	L
REVERSE DIRECTION	L	H
STOP	H	H

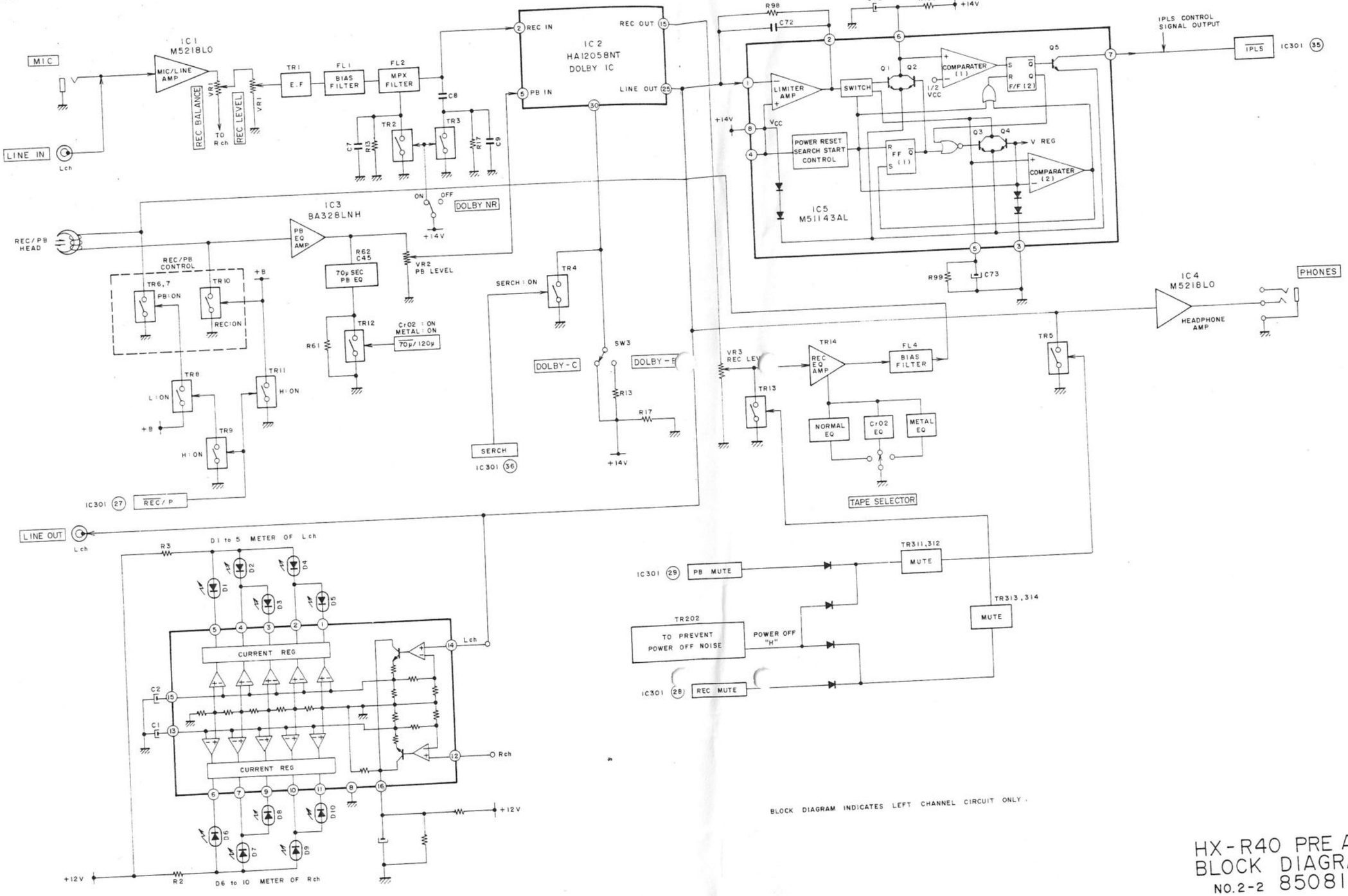
PIN NO. / CAM MOTOR MODE	IC302 (5)	IC302 (6)
FORWARD DIRECTION	H	L
REVERSE DIRECTION	L	H
STOP	H	H



HX-R40 SYSCON BLOCK DIAGRAM

NO.2-1 850809A(A2)

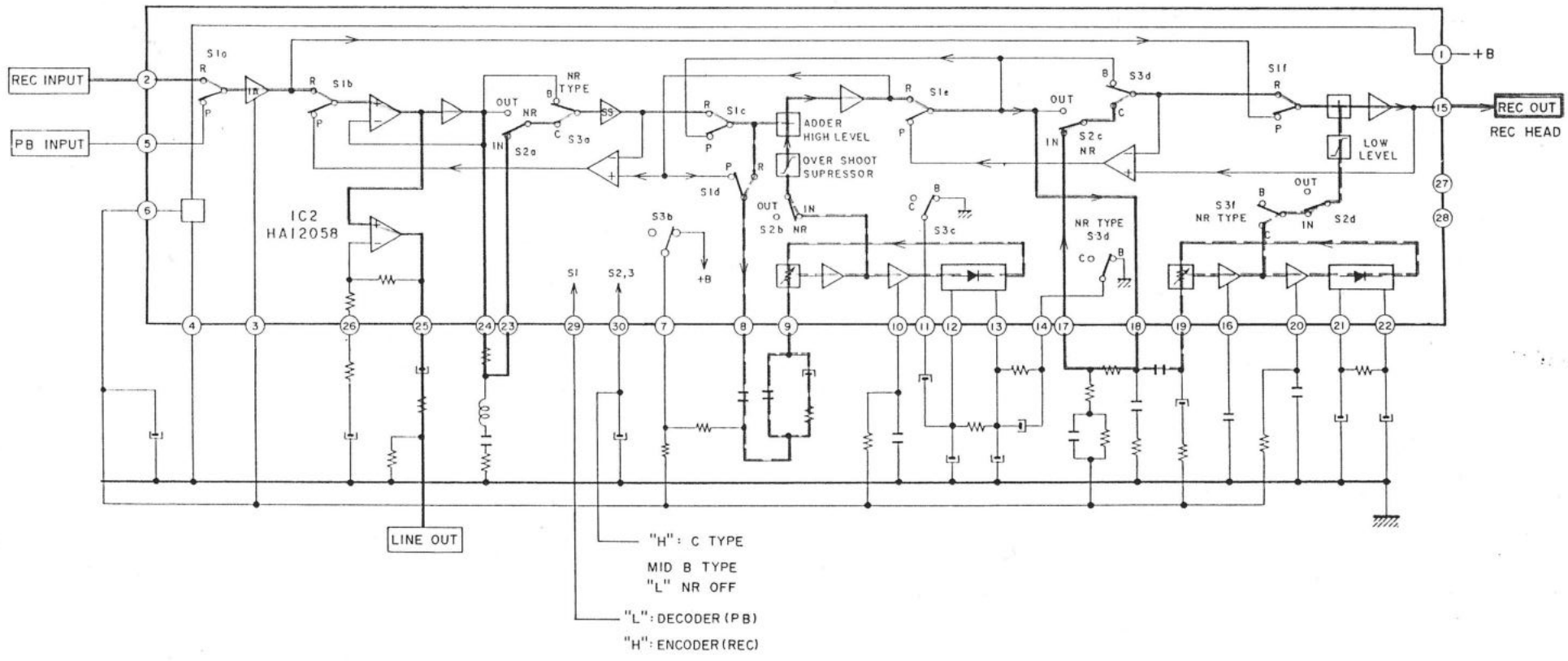
HX-R40



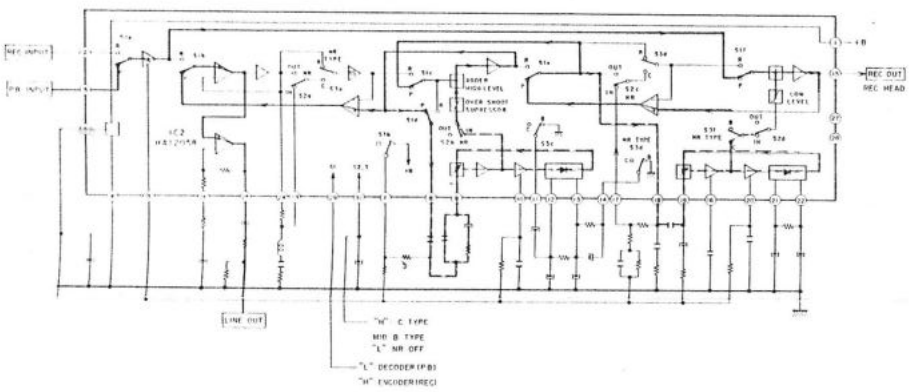
BLOCK DIAGRAM INDICATES LEFT CHANNEL CIRCUIT ONLY.

HX-R40 PRE AMP
BLOCK DIAGRAM
NO.2-2 850810A(A2)

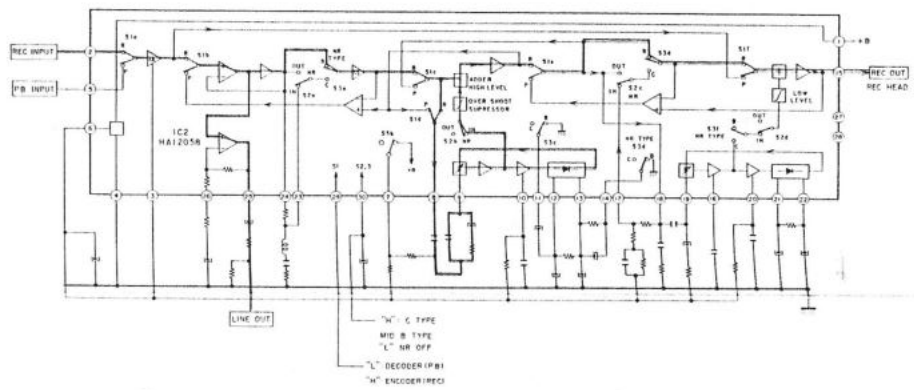
DOLBY C "ON" REC MODE（ドルビーC録音）



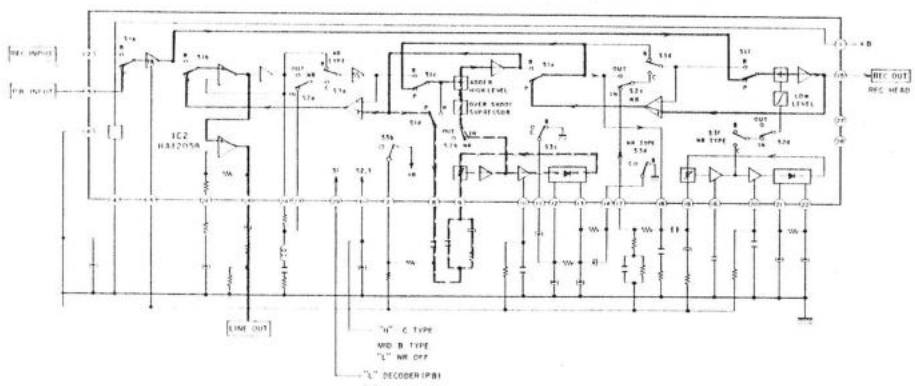
DOLBY C P.B MODE（ドルビーC再生）



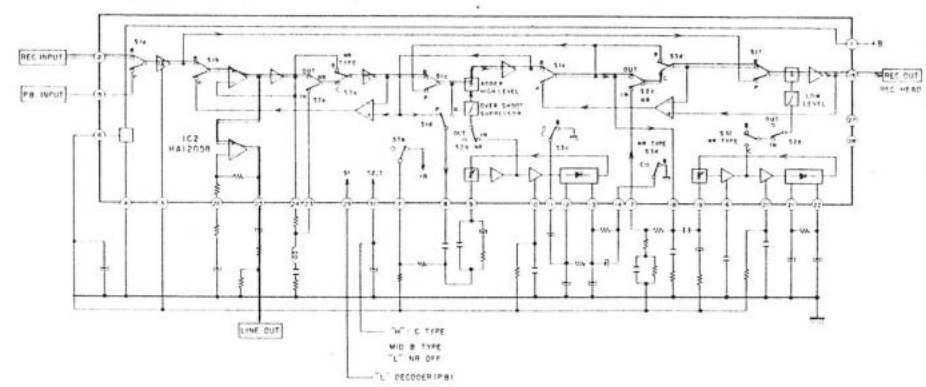
DOLBY B REC MODE（ドルビーB録音）



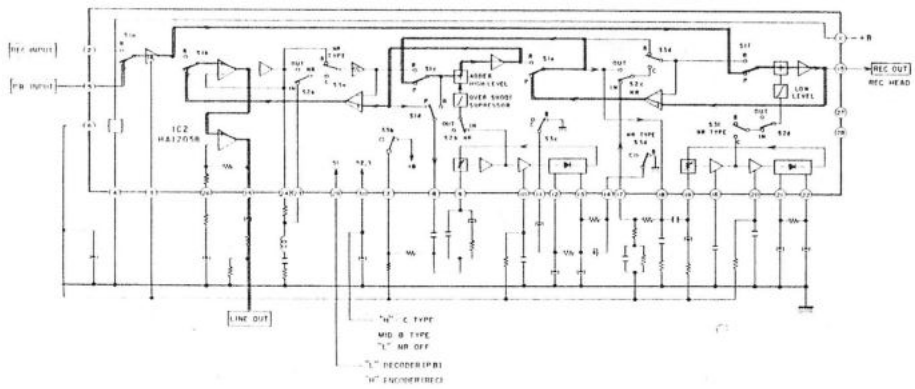
DOLBY B P.B MODE（ドルビーB再生）



DOLBY "OFF" REC MODE（ドルビーOFF録音）

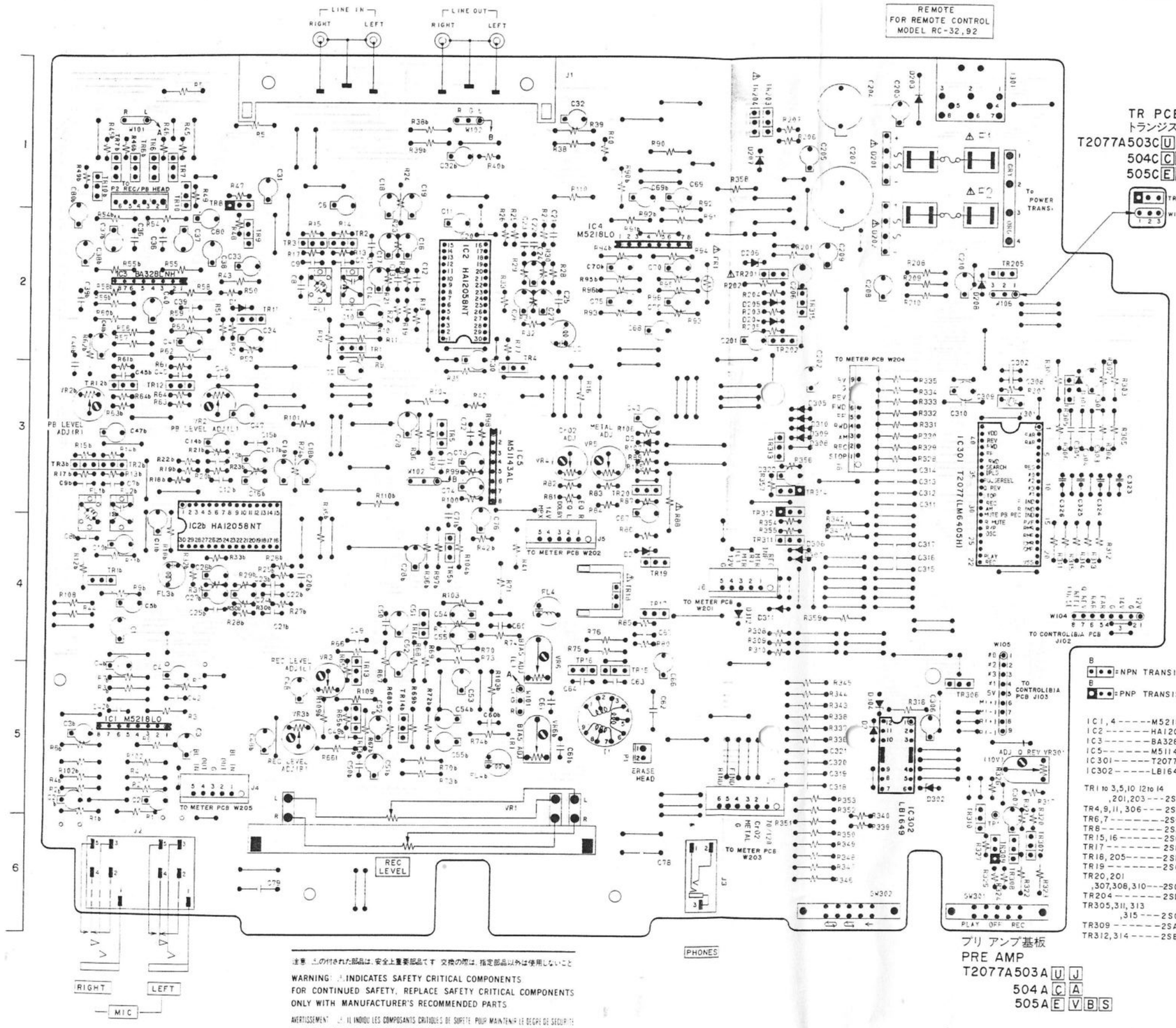


DOLBY "OFF" P.B MODE（ドルビーOFF再生）



DOLBY IC (HA12038 / HA12058)

SIGNAL LINE



TR PCB
トランジスタ基板
T2077A503C[U][T]
504C[C][A]
505C[E][V][B][S]

LOCATION OF COMPONENTS

IC's

IC1-----G5
IC2-----E2
IC2b----G4
IC3-----G2
IC4-----D2
IC5-----E3

IC301---A3,4,B3,4
IC302---B5

TR's

TR1----F2
TR1b---G4
TR2----F2
TR2b---G3
TR3----F2
TR3b---G3
TR4----E3
TR5----E3
TR5b---E4
TR6----G1
TR6b---G1
TR7----G1
TR7b---G1
TR8----G1
TR9----G2
TR10---G1
TR10b--G1
TR11---G2
TR12---G3
TR12b--G3
TR13---F5
TR13b--F5
TR14---E4
TR14b--E5
TR15---D5
TR16---D5
TR17---D4
TR18---D4
TR19---D4
TR20---D3

TR201--C2
TR202--C2
TR203--C1
TR204--C1
TR205--B1

TR305--A3
TR307--A6
TR309--B6
TR310--B6
TR311--C4
TR312--C4
TR313--C3
TR314--C3
TR315--C2

B [E][B][C] = NPN TRANSISTOR
B [E][B][C] = PNP TRANSISTOR

IC1,4-----M52181L0
IC2------HAI2058NT
IC3------BA328LNH
IC5------M51143AL
IC301----T2077(LM6405H)
IC302----LB1649

TR1 to 3,5,10 12to 14
,201,203---2SC3383(S,T)
TR4,9,11,306---2SC3402
TR6,7-------2SC1845(E,F)
TR8-------2SA992(E,F)
TR15,16-----2SC2274K
TR17-------2SD1012-V(G,H)
TR18,205----2SD794(P,Q)
TR19-------2SC2320(E,F)
TR20,201
,307,308,310---2SC2603(E,F)
TR204------2SD313(E,F)
TR305,311,313
,315---2SC3399
TR309------2SA1115(E,F)
TR312,314----2SB774(R,Q)

FL1 ·····バイアス リーク
FL2 ·····MPX フィルター

VR1 ·····録音入力レベル
VR2 ·····再生レベル
VR3 ·····録音レベル
VR4 ·····クローム バイアス
VR5 ·····メタル バイアス
VR6 ·····ノーマル バイアス
VR301 ····クイック リバース感度

注意 △印の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと

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 SURETE. POUR MAINTENIR LE DEGRE DE SECURITE
DE L'APPAREIL, NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE
QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT

プリ アンプ基板
PRE AMP
T2077A503A[U][J]
504A[C][A]
505A[E][V][B][S]

HX-R40

04

LEFT

MIC

REC/PB

RIGHT

MIC

REC/PB

ロータリー エンコーダー基板
ROTARY ENCODER PCB
CMR30B5010

06

CAPSTAN MOTOR

REEL MOTOR

07

コントロール B/B 基板
CONTROL(B)B PCB
CMR30C510B

リーフ スイッチ基板
LEAF SW PCB
CMR30SC5030

CONTROL(B)A PCB CMR30C510A
コントロール B/A基板

05

PEAK LEVEL

CURRENT REG

METER PCB T2077B5020
メーター基板

プリ アンプ基板
PRE AMP PCB
T2077A503A U, J
A504A C, A
A505A E, V, B, S

09

POWER

電源 スイッチ基板
POWER SW PCB
T2077A503B J

VOLTAGE SELECTOR

電源 スイッチ基板
POWER SW PCB
T2077A503B U

電源 スイッチ基板
POWER SW PCB
T2077A504B C, A
A505B E, V, B, S

08

トランジスタ基板
TR PCB
T2077A503C U, J
A504C C, A
A505C E, V, B, S

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

注記
△印部品(特に指定された部品以外)
抵抗 Ω(1/4W(J)) (FS)記号は不燃性部品
コンデンサ μF 50WV(J)
各電圧は GND(DC電圧をデジタルボルトメーターにて計測した値です

HX-R40
CONNECTION DIAGRAM
NO.2-1 850811A

コントロール(B)B基板
CONTROL(B) B PCB
CMR30C510B

PH100

SPI-313

M903 CAM MOTOR

M902 REEL MOTOR

M903 CAPSTAN MOTOR

CMR30
B5010
AKAI

ROTARY ENCODER PCB
ロータリー エンコーダー基板
CMR30B5010

R1.01

J103

J102

To PRE AMP PCB
W105

To PRE AMP PCB
W104

CONTROL(B) A PCB
コントロール(B)A基板
CMR30C510A

リーフ スイッチ基板
LEAF SW PCB CMR30C5030

ANTI REC
(FWD) SW
SW901

ANTI REC
(REV) SW
SW902

IC1 IR2E27A

REC BALANCE
VR1

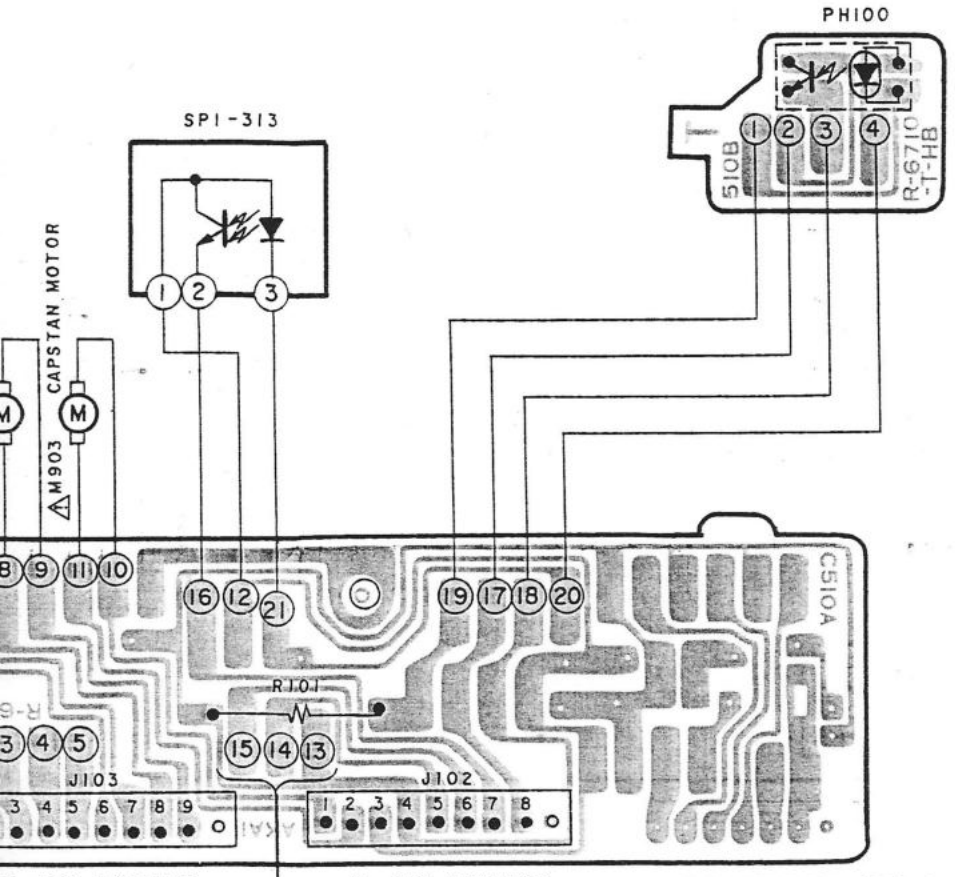
SW1

TO
PRE AMP PCB
J6

TO
PRE AMP PCB
J7

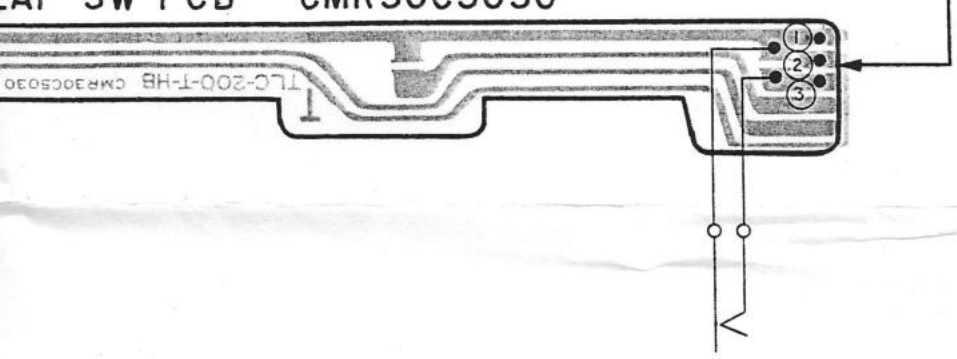
TO
PRE AMP PCB
J5

コントロール(B)B基板
CONTROL(B) B PCB
CMR30C510B



CONTROL(B) A PCB
コントロール(B)A基板
CMR30C510A

ーフ スイッチ基板
EAF SW PCB CMR30C5030



ANTI REC
(REV) SW
SW902

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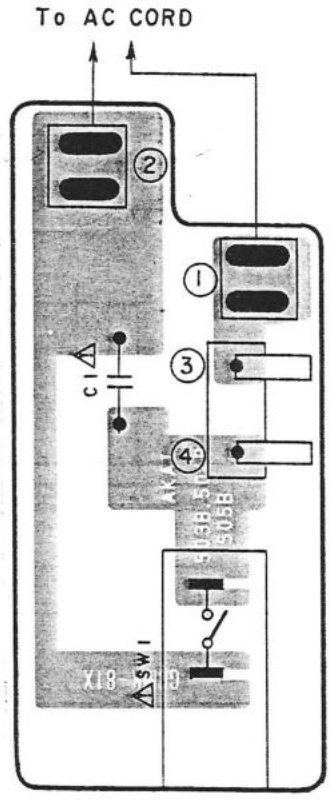
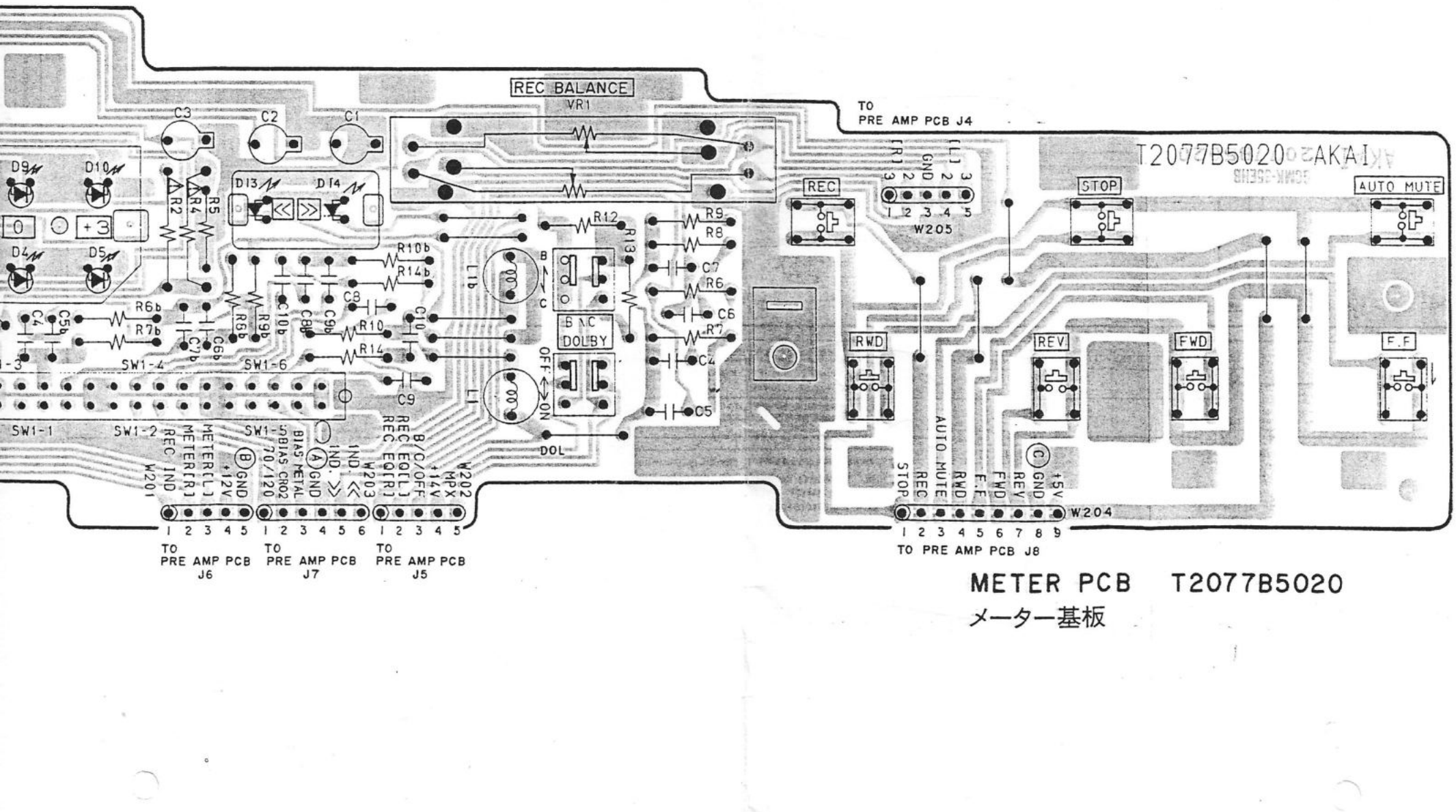


電源 スイッチ基板
POWER SW PCB
T2077A503B U J
504B C A
505B E V B S



METER PCB T2077B5020
メーター基板

HX-R40

プリ アンプ基板
PRE AMP PCB T2077A503A [U, J] T2077A504A [C, A] T2077A505A [E, V, B, S]

D | E | F | G | H | I

604A C, A T2077A505A E, V, B, S

IC2 HA12058NT

*REFER TO DOLBY IC SIGNAL LINE

IC5 M51143AL

IC3 BA328LNH

IC4 M5218LO

IC1 T2077(LM6405H)

SAME AS Lch

REMOTE

TR4 2SC3402

TR319 2SC3399

TR311 2SC3399

TR313 2SC3399

TR312 2SB774 (R, S)

TR314 2SB774 (R, S)

TR201 2SC3383 (S, T)

TR202 2SA1115 (E, F)

TR203 2SC3383 (S, T)

TR204 2SD313 (E, F)

TR205 2SD794 (P, Q)

TR1 2SB744 (P, Q)

SW301 TIMER START SW302 REV SELECTOR

VOLTAGE INDICATE AT PB MODE. (DOLBY NR OFF)

Ⓟ MARK IS PULSE SIGNAL.

●各電圧は再生時(ドルビー オフ)の電圧値を示します。
●( )内の電圧は記録時の電圧値を示します。
●Pはパルス信号を示します。

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TO METER PCB (W201)
TO METER PCB (W203)
TO METER PCB (W204)
TO METER PCB (W205)
TO METER PCB (W202)

トランジスタ基板
TR PCB
T2077A503C J, U
A504C C, A
A505C E, V, B, S

2SA992
2SB774
2SC1845
2SC2274K
2SC2320
2SC3383

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

備考
C, Rの単位(特に指定された部品以外)
抵抗……Ω 1/4W(J).
コンデンサ……μF 50WV(J)

D | E | F | G | H | I | J

REC MODE

		NORMAL	CrO2	METAL
TR15	B	0V	0V	0V
	C	6.5V	9.3V	13.4V
	E	0.1V	0.1V	0.2V
TR16	B	0V	0V	0V
	C	6.5V	9.3V	13.4V
	E	0.1V	0.1V	0.1V
TR17	B	6.7V	9.5V	13.8V
	C	7.3V	10.1V	14.4V
	E	6.6V	9.3V	13.5V
TR18	B	7.3V	10.1V	14.4V
	C	21.7V	21.5V	21.3V
	E	6.7V	9.5V	13.8V
TR19	B	4.4V	4.4V	4.2V
	C	7.3V	10.1V	14.4V
	E	3.8V	3.7V	3.6V
TR20	B	0V	0V	0.1V
	C	7.3V	10.1V	14.4V
	E	0V	0V	0V

*	J, U	C, A	E, V, B, S
F1	1.6A 250V	1.6A 125V	T1A 250V
F2	500mA 250V	500mA 125V	T400mA 250V

トランジスタ基板
TR PCB
T2077A503C [J, U]
A504C [C, A]
A505C [E, V, B, S]

2SA992
2SB774
2SC1845
2SC2274K
2SC2320
2SC3383

2SC3399
2SC3402
2SD1012-V

2SD313

2SB744
2SD794

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

備考
C, Rの単位(特に指定された部品以外)
抵抗……Ω 1/4W(J).
コンデンサ……μF 50WV(J)

HX-R40 PREAMP SCHEMATIC DIAGRAM

NO.2-2 850812A