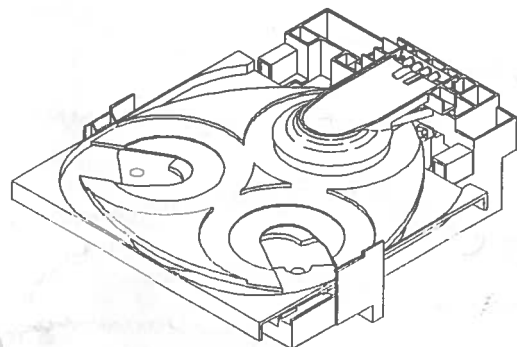


## 4ZG-1 4ZG-1A 4ZG-1B 4ZG-1Z



CD MECHANISM

• BASIC CD MECHANISM: KSM-2 131 BAM  
3ZG-2 C1 / 3ZG-2 C2 / 3ZG-2 C5

• TYPE: English

BASIC NAME		DERIVATION NAME							
4ZG-1	*1	—	—	—	—	WR	—	—	—
	*2	G	D	F	R	—	V3L	V4L	V5
4ZG-1A		G	D	—	—	—	—	—	—
4ZG-1B		G	D	—	—	—	—	—	—
4ZG-1Z		—	D	—	—	—	—	—	—

- \*1,\*2, have the same BASIC NAME but the board structures are different.  
The CD BLOCK,VCD BLOCK of the WR are shown on the SERVICE MANUAL of each DERIVATION NAME .
- This mechanism has various derivation. Derivation name is indicated by the Service Manual for each model.
- For different version of mechanism that may be introduced since the issue of this manual, only the new or modified points be discussed.

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## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylit-tävälle näkymättömälle lasersäteilylle.

### WARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

CLASS 1	LASER PRODUCT
KLASSE 1	LASER PRODUKT
LUOKAN 1	LASER LAITE
KLASS 1	LASER APPARAT

This is the SERVICE MANUAL for the BASIC CD MECHANISM of BASIC NAME: 4ZG-1. This BASIC NAME includes the following models as shown under the SUFFIX name: DERIVATION NAME. Please use this manual with the separate SERVICE MANUAL for DERIVATION NAME.

BASIC CD MECHANISM: 4ZG-1 AGD

SUFFIX  
(DERIVATION NAME)

BASIC NAME: 4ZG-1 (ORIGINAL MODEL)  
4ZG-1A (SONY IC MODEL)  
4ZG-1B (TOSHIBA IC MODEL)  
4ZG-1Z (SANYO IC MODEL)

BASIC NAME	DERIVATION NAME								
4ZG-1	*1	—	—	—	—	WR	—	—	—
	*2	G	D	F	R	—	V3L	V4L	V5
4ZG-1A		G	D	—	—	—	—	—	—
4ZG-1B		G	D	—	—	—	—	—	—
4ZG-1Z		—	D	—	—	—	—	—	—

- NOTE:**
- \*1 and \*2 have the same BASIC NAME but the board structures are different.
  - The CD BLOCK, VCD BLOCK of the WR is shown on the SERVICE MANUAL of each DERIVATION NAME.
  - Model 4ZG-1 A, B and Z has "F" as the standard installation.

BOARD NAME BASIC NAME	3CD C.B	LED C.B	T-T C.B	MOTOR C.B	MAIN VCD C.B	CD MECHA C.B	VCD C.B	DRIVE C.B
4ZG-1 *1	—	—	○	—	—	—	—	○
4ZG-1 *2	—	○	○	—	○	○	○ (EXCEPT V5)	—
4ZG-1A	○	○	○	○	—	—	—	—
4ZG-1B	○	○	○	○	—	—	—	—
4ZG-1Z	○	○	○	—	—	—	—	○

## DERIVATION NAME

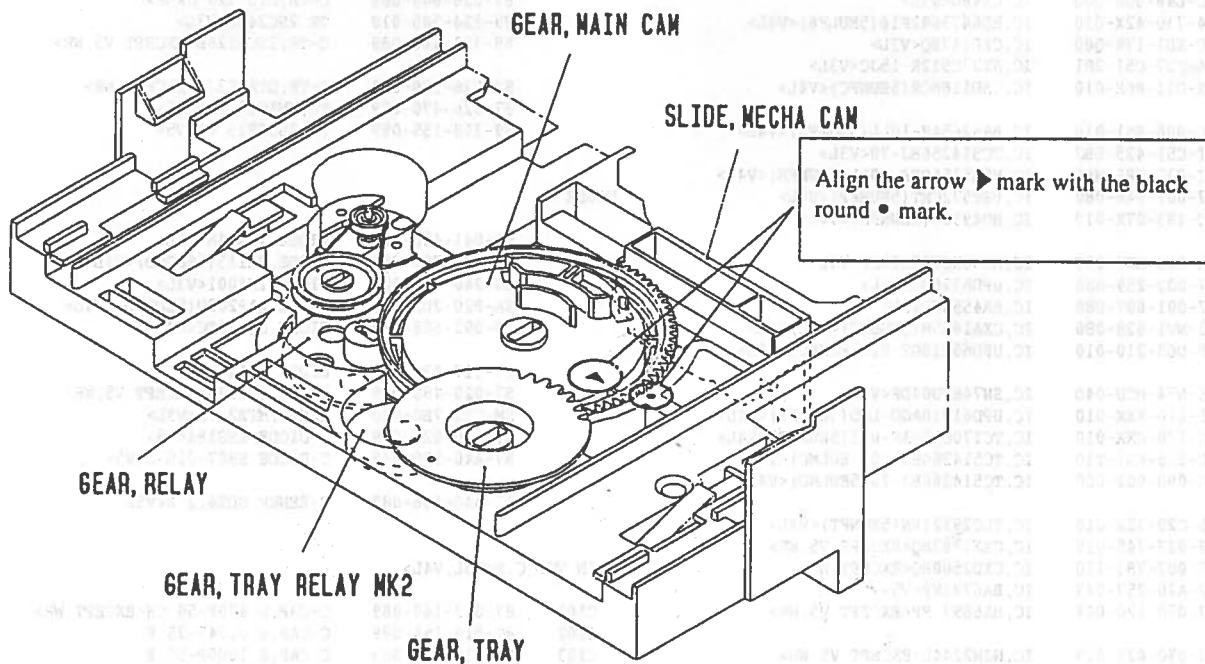
- G: Supporting the CD graphic feature  
D: Digital output function  
F: CD WINDOW Flash function (LED: AMBER/GREEN)  
R: Round Tray  
WR: With out Video CD and CD graphic board.  
V3L: Supporting the video CD function PAL  
V4L: Supporting the video CD function PAL  
V5: Supporting the video CD function



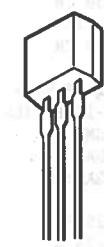
## How to Adjust the Rotating Phase of the Gear, Main Cam

- 1) Push down the hooking catch of the CHAS. MECH, and remove the TRAY.
- 2) Align the arrow mark of the Gear, Main Cam with the black round mark of the CHAS, MECHA as shown below.
- 3) Confirm that the Slide, Mech Cam is located in the right position, then insert the TRAY gently.

**Caution:** If the rotating phase of the Gear, Main Cam is incorrectly adjusted, the chucking operation and tray movement will have malfunction.



## TRANSISTOR ILLUSTRATION



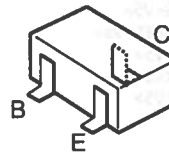
ECB

2SA933



ECB

2SA1296  
2SA1318  
2SC1815  
2SC2001  
2SD655  
2SD2172



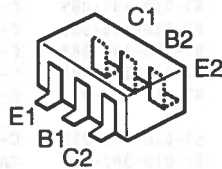
2SA1037  
2SA1162  
2SA1362  
2SA1576  
2SC2712  
2SC3326  
2SC4081  
2SD1383

DTA123JK  
DTA144TK  
DTC114TK  
DTC123JK  
DTC124XK  
DTC143TK  
RN1441



BCE

2SD2005



HN1C03

# 4ZG-1

## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC							
	SC-L48-000-000	IC	CL480<V3L>		89-327-125-089		C-TR, 2SC2712GR<EXCEPT WR>
	S4-730-42X-010	IC	HD6473042F16 (5EULF6) <V4L>		89-112-965-089		TR, 2SA1296GR<EXCEPT WR>
	SC-XD1-178-Q00	IC	CXD1178Q<V3L>		87-026-608-089		C-TR, DTC 123 JK<F>
	SA-T27-C51-2R1	IC	AT27C512R-15JC<V3L>		89-324-585-010		TR, 2SC2458<V3L>
	SX-D11-86X-010	IC	CXD1186CR (5EUNFC) <V4L>		89-333-266-089		C-TR, 2SC3326B<EXCEPT V5, WR>
	SC-008-K81-R10	IC	BR6265AF-10LL (5EUMFS) <V4L>		87-026-580-089		C-TR, DTA123JK<EXCEPT WR>
	ST-C51-425-6BJ	IC	TC514256BJ-70<V3L>		87-026-470-089		TR, HN1C03 F B<V5>
	SC-032-K81-MA0	IC	M5M5256CFP-70LL (5EUMFS) <V4L>		89-318-155-089		TR, 2SC1815 GR<V5>
	87-001-948-080	IC	PST572CMT (5EUBFP) <V4L>	DIODE			
	SD-493-07X-010	IC	HD49307 (5EUNFH) <V4L>		S0-041-480-000		DIODE, 1N4148<V3L>
	SM-C68-MC7-05C	IC	MC68HC705C8ACP<V3L>		S1-305-700-283		DIODE, DA115 (5EDQDD) <V4L>
	87-002-259-080	IC	uPD6376GS<V3L>		S0-240-010-000		DIODE, 1N4001<V3L>
	87-001-607-080	IC	BA4558F<V3L>		SA-P20-2UX-010		DIODE, DAP202U (5EDQDD) <V4L>
	82-NV1-628-080	IC	CXA1645M (5EUBFC) <V3L, V4L>		87-002-608-089		DIODE, DSF10TC<V4L>
	SP-D63-210-010	IC	UPD63210GT-E1 (5EUNFU) <V4L>				
	SS-N74-HCU-04D	IC	SN74HCU04DR<V3L>		87-017-430-090		DIODE, RK14<V3L>
	S1-010-XXX-010	IC	UPD61010AGD-LBD (5EULF6) <V4L>		87-020-465-089		DIODE, ISS133<EXCEPT V5, WR>
	SC-170-CXX-010	IC	TC170C100AF-001 (5EUKFT) <V4L>		SM-T22-7B0-000		ZENER, MT22.7B<V3L>
	SC-256-KG1-T10	IC	TC514260BJ-70 (5EULMD) <V4L>		87-020-027-089		C-DIODE 1SS184<V5>
	SC-000-002-000	IC	TC514260BJ-70 (5EULMD) <V4L>		87-A40-180-049		C-DIODE SB07-015 C<V5>
	SL-C29-32X-010	IC	TLC2932IPW (5EUNFT) <V4L>		87-A40-196-089		C-ZENER UDZ6.2 B<V5>
	87-017-745-019	IC	CXA1782BQ<EXCEPT V5, WR>	MAIN VCD C.B.<V3L, V4L>			
	87-002-783-110	IC	CXD2500BQ<EXCEPT WR>		C101	87-012-140-089	C-CAP, S 470P-50 CH<EXCEPT WR>
	87-A20-257-049	IC	BA6791FP<V5>		C102	87-010-194-089	C-CAP, S 0.047-25 F
	87-070-120-049	IC	BA6897 FP<EXCEPT V5, WR>		C103	87-010-178-089	C-CAP, S 1000P-50 B
	87-070-429-019	IC	NJM2244L<EXCEPT V5, WR>		C104	87-012-156-089	C-CAP, S 220P-50 CH
	87-002-532-019	IC	PQ05RF11<V5>		C105	87-010-384-089	CAP, E 100-25 SME
	87-017-825-019	IC	GPIF32T<D, V5>		C106	87-010-196-089	C-CAP, S 0.1-25 F
	87-001-873-019	IC	LB1644<V5>		C107	87-010-314-089	C-CAP, S 22P-50 CH
	84-ZG1-639-010	C-IC	MB8962T<V5>		C108	87-010-314-089	C-CAP, S 22P-50 CH
	ST-C74-HC2-570	IC	TC74HC257<V3L>		C110	87-010-221-089	CAP, E 470-10 11L
	83-NFT-618-010	IC	UPD78044BGF<V3L>		C111	87-010-320-089	C-CAP, S 68P-50 CH
	85-MAR-614-010	IC	UPD78044BGF-025<V4L>				
	87-070-430-019	IC	LA6530<EXCEPT V5, WR>		C112	87-010-196-089	C-CAP, S 0.1-25 F<V4L>
	87-017-543-089	IC	PST 600D<V5>		C112	87-016-463-089	C-CAP, S 0.33-16 B<V3L>
	87-A20-255-049	C-IC	SN74LV373NS<V5>		C113	87-010-260-089	CAP, E 47-25 SME
	87-A20-251-049	C-IC	BR6265BF-N10SL<V5>		C114	87-010-498-049	CAP, E 10-16 GAS
	87-A20-252-049	C-IC	SN74LV00NS<V5>		C115	87-010-498-049	CAP, E 10-16 GAS<G>
	87-A20-253-049	C-IC	SN74LV04NS<V5>				
	87-A20-254-049	C-IC	SN74LV32NS<V5>		C116	87-010-196-089	C-CAP, S 0.1-25 F
	87-A20-244-010	C-IC	CL484<V5>		C117	87-010-197-089	C-CAP, S 0.01-25 B
	87-020-881-089	IC	NJM78L05A<EXCEPT V5, WR>		C118	87-010-553-049	CAP, E 47-16 GAS<V4L>
	87-A20-200-040	C-IC	HM514260CJ7/CLJ7<V5>		C119	87-010-553-049	CAP, E 47-16 GAS
	87-017-888-089	IC	NJM4558MD<V4L>		C120	87-010-197-089	C-CAP, S 0.01-25 B
	84-ZG1-640-049	C-IC	LH5317<V5>				
	87-A20-256-049	C-IC	PQ20VZ5U<V5>		C121	87-010-384-089	CAP, E 100-25 SME<V4L>
	87-A20-247-019	C-IC	BU1417AK<V5>		C122	87-010-320-089	C-CAP, S 68P-50 CH<D>
	87-017-802-010	IC	LC7872E<G>		C123	87-010-401-089	CAP, E 1-50 SME
	87-A20-248-049	C-IC	BU2173F<V5>		C124	87-A10-011-019	CAP, E 2200-25 SMG
	87-017-803-010	IC	LC32464P-80<G>		C125	87-010-322-089	C-CAP, S 100P-50 CH
	87-A20-258-040	C-IC	SM5877AM<V5>				
TRANSISTOR							
	SC-408-1XX-010	TR	2SC4081 (5EQQ2S) <V4L>		C126	87-010-178-089	C-CAP, S 1000P-50 B
	S1-441-XXX-010	TR	RN1441-A (5EQQRN) <V4L>		C127	87-010-314-089	C-CAP, S 22P-50 CH<G>
	SA-157-6XX-010	TR	2SA1576 (5EQQ2S) <V4L>		C128	87-010-320-089	C-CAP, S 68P-50 CH
	89-111-625-089	C-TR	2SA1162GR<EXCEPT V5, WR>		C129	87-010-263-089	CAP, E 100-10 SME<D>
	87-026-237-089	C-TR	DTC124XK<EXCEPT WR>		C130	87-010-197-089	C-CAP, S 0.01-25 B<D>
	87-327-125-089	C-TR	2SC2712 GR<V5>				
	89-113-625-089	C-TR	2SA 1362 GR (TAPG) <V5>		C131	87-010-197-089	C-CAP, S 0.01-25 B
					C132	87-010-196-089	C-CAP, S 0.1-25 F
					C133	87-010-196-089	C-CAP, S 0.1-25 F
					C134	87-010-196-089	C-CAP, S 0.1-25 F
					C135	87-010-196-089	C-CAP, S 0.1-25 F
					C136	87-010-154-089	C-CAP, S 10P-50 CH<V4L>
					C201	87-010-382-089	CAP, E 22-25 SME
					C202	87-010-197-089	C-CAP, S 0.01-25 B

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C203	87-010-382-089		CAP,E 22-25 SME	C205	87-010-316-089		C-CAP,S 33P-50 CH
C204	87-010-381-089		CAP,E 330-16 SME	C206	87-010-499-049		CAP,E 22-6.3 GAS
C205	87-010-196-089		C-CAP,S 0.1-25 F	C207	87-010-197-089		C-CAP,S 0.01-25 B
C206	87-010-196-089		C-CAP,S 0.1-25 F	C208	87-010-197-089		C-CAP,S 0.01-25 B
C207	87-010-498-049		CAP,E 10-16 GAS<F>	C209	87-010-197-089		C-CAP,S 0.01-25 B
C208	87-010-405-089		CAP,E 10-50 SME	C210	87-010-197-089		C-CAP,S 0.01-25 B
C301	87-010-197-089		C-CAP,S 0.01-25 B	C211	87-010-197-089		C-CAP,S 0.01-25 B
C306	87-010-381-089		CAP,E 330-16 SME<V4L>	C212	87-010-318-089		C-CAP,S 47P-50 CH
C307	87-010-553-049		CAP,E 47-16 GAS	C301	87-010-549-049		CAP,E 47-6.3 GAS
C308	87-010-498-049		CAP,E 10-16 GAS	C302	87-010-549-049		CAP,E 47-6.3 GAS
C309	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C304	87-010-197-089		C-CAP,S 0.01-25 B
C310	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C305	87-010-197-089		C-CAP,S 0.01-25 B
C311	87-012-140-089		C-CAP,S 470P-50 CH<V4L>	C306	87-010-197-089		C-CAP,S 0.01-25 B
C312	87-012-140-089		C-CAP,S 470P-50 CH<V4L>	C307	87-010-197-089		C-CAP,S 0.01-25 B
C313	87-010-384-089		CAP,E 100-25 SME<V4L>	C308	87-010-197-089		C-CAP,S 0.01-25 B
C315	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C309	87-010-197-089		C-CAP,S 0.01-25 B
C316	87-010-404-089		CAP,E 4.7-50 SME<V4L>	C310	87-010-197-089		C-CAP,S 0.01-25 B
C317	87-010-197-089		C-CAP,S 0.01-25 B	C311	87-010-197-089		C-CAP,S 0.01-25 B
C318	87-010-197-089		C-CAP,S 0.01-25 B	C312	87-010-197-089		C-CAP,S 0.01-25 B
C401	87-010-405-089		CAP,E 10-50 SME<G>	C313	87-010-318-089		C-CAP,S 47P-50 CH
C402	87-010-314-089		C-CAP,S 22P-50 CH<G>	C314	87-010-196-089		C-CAP,S 0.1-25 F
C403	87-010-315-089		C-CAP,S 27P-50 CH<G>	C315	87-010-196-089		C-CAP,S 0.1-25 F
C406	87-010-384-089		CAP,E 100-25 SME<G>	C316	87-010-549-049		CAP,E 47-6.3 GAS
C407	87-010-384-089		CAP,E 100-25 SME<G>	C317	87-010-314-089		C-CAP,S 22P-50 CH
C408	87-010-196-089		C-CAP,S 0.1-25 F<G>	C319	87-010-314-089		C-CAP,S 22P-50 CH
C409	87-010-196-089		C-CAP,S 0.1-25 F<G>	C320	87-010-196-089		C-CAP,S 0.1-25 F
CON6	83-NFT-628-019		CONN ASSY,8P<V3L>	C321	87-010-550-049		CAP,E 100-6.3 GAS
EM101	87-008-474-089		F-BEAD,EMI BL02RN1	C322	87-010-197-089		C-CAP,S 0.01-25 B
EM102	87-008-474-089		F-BEAD,EMI BL02RN1	C323	87-010-550-049		CAP,E 100-6.3 GAS
FC1	85-NFT-612-019		FF-CABLE,30P-1.0<V4L>	C324	87-010-197-089		C-CAP,S 0.01-25 B
FC2	88-912-131-219		FF-CABLE,12P 1.25	C401	87-010-197-089		C-CAP,S 0.01-25 B
FC3	85-MAR-617-019		FF-CABLE,6P-1.25	C402	87-010-550-049		CAP,E 100-6.3 GAS
J101	87-009-502-019		JACK,PIN 1PY EARTH	C403	87-010-197-089		C-CAP,S 0.01-25 B
L101	87-003-149-089		COIL,47UH	C404	87-012-140-089		C-CAP,S 470P-50 CH
L102	87-003-149-089		COIL,47UH	C405	87-010-322-089		C-CAP,S 100P-50 CH
L103	87-003-143-089		COIL,4.7UH	C406	87-012-140-089		C-CAP,S 470P-50 CH
L401	87-003-149-089		COIL,47UH<G>	C407	87-016-350-049		CAP,E 470-4 MA GAS
L402	87-003-149-089		COIL,47UH<G>	C408	87-010-196-089		C-CAP,S 0.1-25 F
M401	87-045-305-019		MOTOR, RF-500TB	C409	87-010-197-089		C-CAP,S 0.01-25 B
PR101	87-026-689-089		PROTECTOR,1A 60V 491	C410	87-010-197-089		C-CAP,S 0.01-25 B
SW201	87-036-109-019		SW,PUSH SPPB 61	C411	87-010-550-049		CAP,E 100-6.3 GAS
SW202	87-036-109-019		SW,PUSH SPPB 61	C412	87-010-197-089		C-CAP,S 0.01-25 B
X101	87-030-270-089		VIB,XTAL 16.9344MHZ	C413	87-010-314-089		C-CAP,S 22P-50 CH
X201	89-MX1-704-089		CERA LOCK(MU)3.9MHZ	C414	87-010-316-089		C-CAP,S 33P-50 CH
X401	80-JUC-602-089		VIB,XTAL 17.73MHZ<G>	C415	87-010-499-049		CAP,E 22-6.3 GAS
MAIN VCD C.B<V5>				C416	87-010-197-089		C-CAP,S 0.01-25 B
C101	87-010-197-089		C-CAP,S 0.01-25 B	C418	87-010-197-089		C-CAP,S 0.01-25 B
C102	87-010-550-049		CAP,E 100-6.3 GAS	C420	87-010-196-089		C-CAP,S 0.1-25 F
C103	87-010-318-089		C-CAP,S 47P-50 CH	C421	87-012-140-089		C-CAP,S 470P-50 CH
C104	87-010-197-089		C-CAP,S 0.01-25 B	C422	87-010-184-089		C-CAP,S 3300P-50 B
C105	87-010-318-089		C-CAP,S 47P-50 CH	C422	87-010-184-089		C-CAP,S 3300P-50 B
C106	87-010-549-049		CAP,E 47-6.3 GAS	C423	87-010-175-089		C-CAP,S 560P-50 SL
C107	87-012-156-089		C-CAP,S 220P-50 CH	C424	87-010-317-089		C-CAP,S 39P-50 CH
C108	87-010-184-089		C-CAP,S 3300P-50 B	C425	87-012-140-089		C-CAP,S 470P-50 CH
C109	87-010-194-089		C-CAP,S 0.047-25 F	C501	87-010-549-049		CAP,E 47-6.3 GAS
C110	87-012-140-089		C-CAP,S 470P-50 CH	C502	87-010-196-089		C-CAP,S 0.1-25 F
C111	87-010-197-089		C-CAP,S 0.01-25 B	C503	87-010-318-089		C-CAP,S 47P-50 CH
C112	87-016-461-089		C-CAP,S 0.47-16 F	C505	87-010-313-089		C-CAP,S 18P-50 CH
C113	87-010-196-089		C-CAP,S 0.1-25 F	C506	87-010-313-089		C-CAP,S 18P-50 CH
C114	87-010-550-049		CAP,E 100-6.3 GAS	C507	87-010-197-089		C-CAP,S 0.01-25 B
C115	87-010-197-089		C-CAP,S 0.01-25 B	C508	87-010-178-089		C-CAP,S 1000P-50 B
C116	87-010-561-049		CAP,E 100-16 GAS	C509	87-010-178-089		C-CAP,S 1000P-50 B
C117	87-010-562-049		CAP,E 220-10 GAS	C510	87-010-178-089		C-CAP,S 1000P-50 B
C118	87-010-553-049		CAP,E 47-16 GAS	C511	87-010-178-089		C-CAP,S 1000P-50 B
C119	87-010-197-089		C-CAP,S 0.01-25 B	C512	87-010-498-049		CAP,E 10-16 GAS
C120	87-010-555-089		CAP,E 100-10 GAS	C513	87-010-498-049		CAP,E 10-16 GAS
C121	87-010-197-089		C-CAP,S 0.01-25 B	C514	87-010-318-089		C-CAP,S 47P-50 CH
C201	87-010-499-049		CAP,E 22-6.3 GAS	C515	87-010-318-089		C-CAP,S 47P-50 CH
C202	87-010-197-089		C-CAP,S 0.01-25 B	C516	87-010-196-089		C-CAP,S 0.1-25 F
C203	87-010-196-089		C-CAP,S 0.1-25 F	C599	87-010-196-089		C-CAP,S 0.1-25 F
C204	87-010-316-089		C-CAP,S 33P-50 CH	C601	87-010-561-049		CAP,E 100-16 SL
				C602	87-010-432-049		CAP,E 10-16 OS



REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C603	87-010-196-089		C-CAP,S 0.1-25 F	C136	87-010-197-089		C-CAP,S 0.01-25 B
C604	87-010-196-089		C-CAP,S 0.1-25 F	C137	87-010-805-089		C-CAP,S 1-16F
C605	87-A10-222-049		CAP,E 22-10 OS	C138	87-010-178-089		C-CAP,S 1000P-50 B
C606	87-010-196-089		C-CAP,S 0.1-25 F	C140	87-010-805-089		C-CAP,S 1-16F<EXCEPT V5>
C607	87-012-140-089		C-CAP,S 470P-50 CH	FC4	85-NFT-611-119		FF-CABLE, 16P-1.0
C608	87-010-196-089		C-CAP,S 0.1-25 F	M101	87-045-356-019		MOT,RF-310T A 30
J401	87-009-502-019		JACK,PIN 1PY EARTH	M102	87-045-358-019		MOT,RF-310T A 43
L101	87-005-781-089		C-COIL,47UH FLC32C	R140	87-022-364-089		C-RES,S82K-1/10WF
L201	87-005-781-089		C-COIL,47UH FLC32C	R141	87-022-363-089		C-RES,S 68K-1/10W F
L202	87-005-781-089		C-COIL,47UH FLC32C	R142	87-022-363-089		C-RES,S 68K-1/10W F
L301	87-005-781-089		C-COIL,47UH FLC32C	R143	87-022-363-089		C-RES,S 68K-1/10W F
L302	87-005-781-089		C-COIL,47UH FLC32C	R144	87-022-363-089		C-RES,S 68K-1/10W F
L303	87-005-781-089		C-COIL,47UH FLC32C	R145	87-022-364-089		C-RES,S82K-1/10WF
L401	87-005-196-089		COIL,10UH	SFR101	87-024-175-089		SFR,47K DIA6 V
L402	87-005-781-089		C-COIL,47UH FLC32C	SFR102	87-024-176-089		SFR,100K DIA6 V
L404	87-005-190-089		COIL,3.3UH	SFR103	87-024-175-089		SFR,47K DIA6 V
L405	87-005-189-089		COIL,2.7UH	SW101	87-036-340-019		SW,LEAF LSA-1121
L501	87-005-781-089		C-COIL,47UH FLC32C				
L601	87-005-469-089		COIL,4.7UH				
L602	87-A50-095-019		COIL,68UH				
M201	87-045-305-019		MOTOR, RF-500TB				
S101	87-036-109-019		SW,PUSH SPPB 61				
S102	87-036-109-019		SW,PUSH SPPB 61				
S201	87-A90-162-019		SW,SL 1-1-3 SSSU				
X201	87-A70-027-089		VIB,XTAL 8MHZ 100PPM				
X401	87-A70-026-089		VIB,XTAL 13.5MHZ 50PPM				
X501	87-030-270-089		VIB,XTAL 16.9344MHZ				
CD MECHA C.B<V3L,V4L,V5>				T-T C.B			
C101	87-010-154-089		C-CAP,S 10P-50 CH<EXCEPT V5>	C401	87-018-214-089		CAP TC U 0.1-50 F
C101	87-010-334-080		C-CAP,S 12P-50 CH<V5>	FC401	84-ZG1-614-119		CABLE FPC 5P-1.25
C102	87-010-193-089		C-CAP,S 0.033-25 F<V5>	M401	87-045-364-019		MOTOR, (BCH3B14)
C102	87-010-184-089		C-CAP,S 3300P-50 B<EXCEPT V5>	PS401	87-026-573-019		P-SNSR,GP1S53V
C103	87-010-197-089		C-CAP,S 0.01-25 B<EXCEPT V5>				
C103	87-010-993-089		C-CAP,S 0.056-25<V5>				
C104	87-010-193-089		C-CAP,S 0.033-25 F<EXCEPT V5>				
C104	87-010-993-089		C-CAP,S 0.056-25<V5>				
C105	87-010-197-089		C-CAP,S 0.01-25 B				
C107	87-010-197-089		C-CAP,S 0.01-25 B<V5>				
C107	87-010-182-089		C-CAP,S 2200P-50 B<EXCEPT V5>				
C108	87-010-805-089		C-CAP,S 1-16F				
C109	87-010-322-089		C-CAP,S 100P-50 CH				
C110	87-010-198-089		C-CAP,S 0.022-25 B<EXCEPT V5>				
C110	87-010-993-089		C-CAP,S 0.056-25<V5>				
C111	87-010-551-089		CAP ELECT 33-10V SRE<EXCEPT V5>				
C111	87-010-499-049		CAP,E 22-6.3 GAS<V5>				
C112	87-010-322-089		C-CAP,S 100P-50 CH				
C113	87-010-196-089		C-CAP,S 0.1-25 F				
C114	87-010-197-089		C-CAP,S 0.01-25 B				
C115	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>				
C115	87-012-141-089		C-CAP,S 0.22-16 F<V5>				
C116	87-010-182-089		C-CAP,S 2200P-50 B				
C117	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>				
C117	87-012-141-089		C-CAP,S 0.22-16 F<V5>				
C118	87-010-196-089		C-CAP,S 0.1-25 F				
C119	87-010-193-089		C-CAP,S 0.033-25 F<V5>				
C119	87-010-196-089		C-CAP,S 0.1-25 F<EXCEPT V5>				
C120	87-010-549-089		CAP ELECT 47-6.3V				
C121	87-010-549-089		CAP ELECT 47-6.3V				
C122	87-010-495-089		CAP,E 2.2-35 5L<V5>				
C122	87-010-497-089		CAP,E 4.7-35 5L<EXCEPT V5>				
C123	87-010-549-089		CAP ELECT 47-6.3V				
C125	87-010-553-089		CAP,E 47-16				
C127	87-010-553-089		CAP,E 47-16				
C127	87-010-549-089		CAP,E 47-6.3 GAS				
C128	87-010-549-089		CAP ELECT 47-6.3V				
C129	87-010-182-089		C-CAP,S 2200P-50 B				
C131	87-010-196-089		C-CAP,S 0.1-25 F				
C133	87-010-196-089		C-CAP,S 0.1-25 F				
C134	87-010-196-089		C-CAP,S 0.1-25 F				
C135	87-010-196-089		C-CAP,S 0.1-25 F				
				LED C.B<F>			
				LED101	87-070-200-089		LED,SLP636C-81-S-T1<F>
				LED102	87-017-350-080		LED,SEL1550CM<F>
				LED103	87-017-350-080		LED,SEL1550CM<F>
				LED104	87-070-200-089		LED,SLP636C-81-S-T1<F>
				VCD C.B<V3L>			
				C2	87-010-378-010		CAP,E 10-16
				C3	87-010-378-010		CAP,E 10-16
				C4	87-010-374-010		CAP,E 47-10
				C5	87-010-374-010		CAP,E 47-10
				C9	87-010-378-010		CAP,E 10-16
				C10	87-010-378-010		CAP,E 10-16
				C11	87-010-378-010		CAP,E 10-16
				C12	87-010-374-010		CAP,E 47-10
				C13	87-010-378-010		CAP,E 10-16
				C17	87-010-248-010		CAP,E 220-10
				C22	87-010-374-010		CAP,E 47-10
				C23	87-010-374-010		CAP,E 47-10
				C32	87-010-378-010		CAP,E 10-16
				C47	87-010-248-010		CAP,E 220-10
				C49	87-010-378-010		CAP,E 10-16
				C52	87-010-248-010		CAP,E 220-10
				C101	87-010-378-010		CAP,E 10-16
				L1	SL-AL0-4NA-100		COIL,10UH
				L2	SL-AL0-4NA-472		COIL,4.7UH
				X1	SS-KY4-05M-000		X'TAL,40.5MHZ
				X2	SS-KY4-M00-000		X'TAL,4MHZ
				X3	SS-KY4-433-616		X'TAL,4.433616MHZ
				VCD C.B<V4L>			
				C13	87-010-367-080		CAP,E 4.7-25V(5ECEC1)
				C38	87-010-075-040		CAP,E 10-16V(5ECEC1)
				C40	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C44	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C47	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C48	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C51	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C54	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C56	87-010-076-810		CAP,E 22-6.3V(5ECEC0)
				C58	87-010-076-810		CAP,E 22-6.3V(5ECEC0)
				C81	87-016-155-010		CAP,E 1000-6.3V5ECER0)
				C128	87-010-549-010		CAP,E 47-6.3V(5ECEC0)
				C133	87-010-053-810		CAP,E 1-50V(5ECEC1)
				C150	87-010-075-040		CAP,E 10-16V(5ECEC1)

84-ZG1-614-010

A04HD

SUB C.B<V3L>

DRIVE C.B<WR>

○チップ抵抗部品コード/CHIP RESISTOR PART CODE

$$\boxed{8} \boxed{8} - \underbrace{\boxed{\phantom{0}} \boxed{\phantom{0}} \boxed{\phantom{0}}} + \underbrace{\boxed{\phantom{0}} \boxed{\phantom{0}} \boxed{\phantom{0}}} + \underbrace{\boxed{\phantom{0}} \boxed{\phantom{0}} \boxed{\phantom{0}}}$$

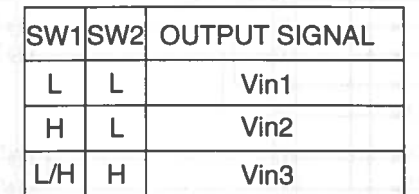
A  
抵抗部品コード  
Resistor Code

Figure

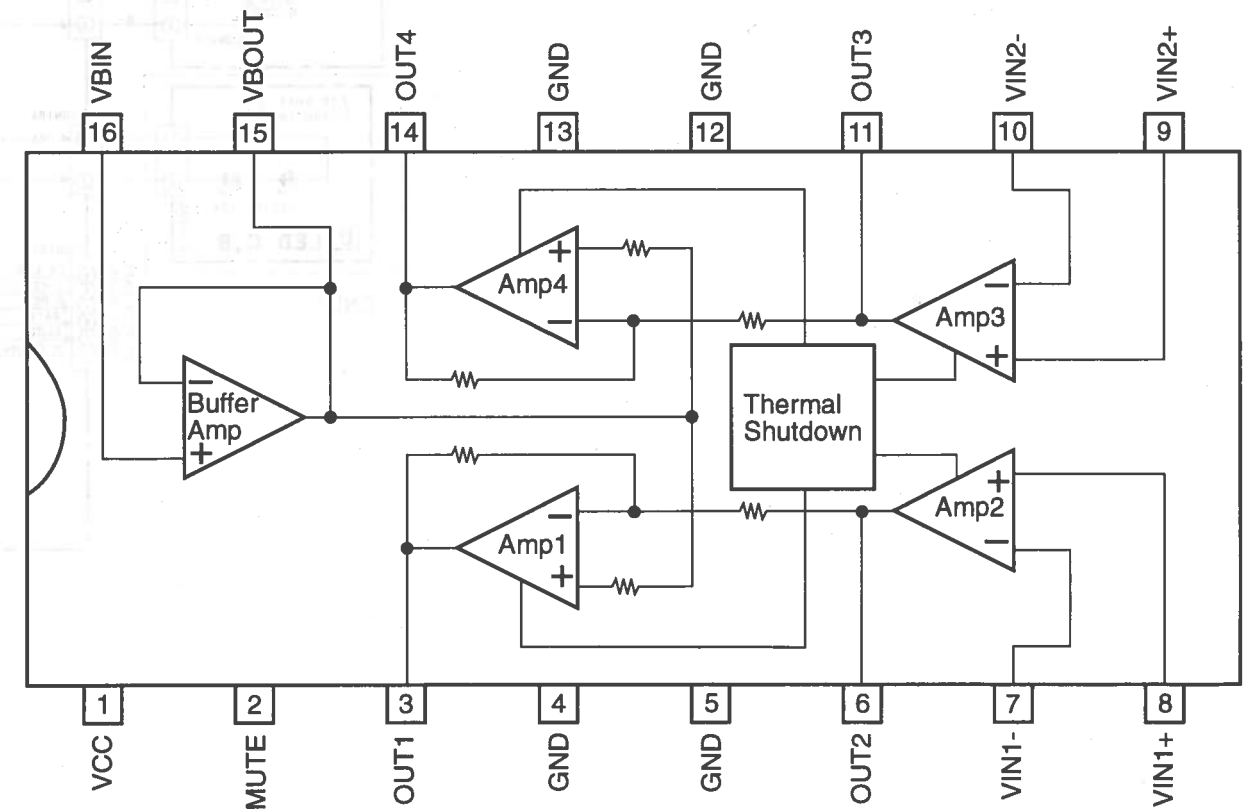
— 抵抗値  
Value of resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

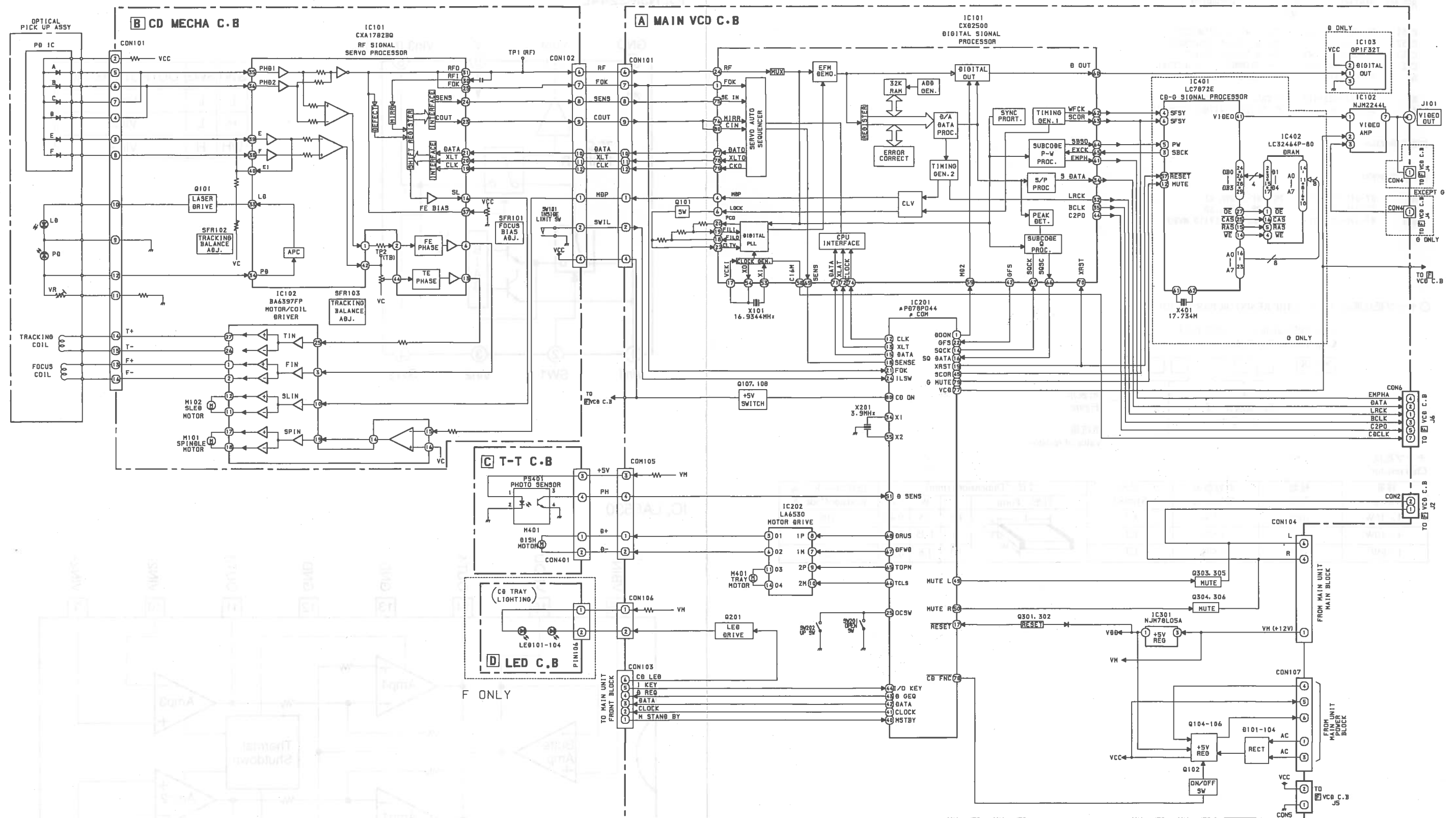
## IC, NJM2244L



## IC, LA6530



**BLOCK DIAGRAM-1 (V3L: MAIN VCD / CD MECHA)**



REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C151	87-010-549-010		CAP, E 47-6.3V (5ECEC0)
C152	87-016-155-010		CAP, E 1000-6.3V5ECER0)
C157	87-010-075-040		CAP, E 10-16V (5ECEC1)
CT1	S2-130-007-010		CAP, TRIMMER 30PF (5ECT04)
L1	S7-001-XXX-100		C-COIL, 47UH (5ELQE4)
X1	S0-120-003-010		X'TAL, 12.0000MHZ (5EXMA4)
X2	S0-177-343-010		X'TAL, 17.73447MHZ (5EXMA4)

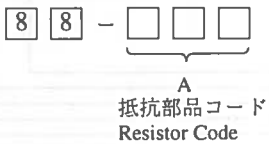
SUB C.B<V3L>

DRIVE C.B<WR>

M1	87-045-358-019	MOT, RF-310TA 43
M2	87-045-356-019	MOT, RF-310TA 30
SW1	87-A90-042-019	SW, LEAF MSW 17310 MVPO

○ チップ抵抗部品コード／CHIP RESISTOR PART CODE

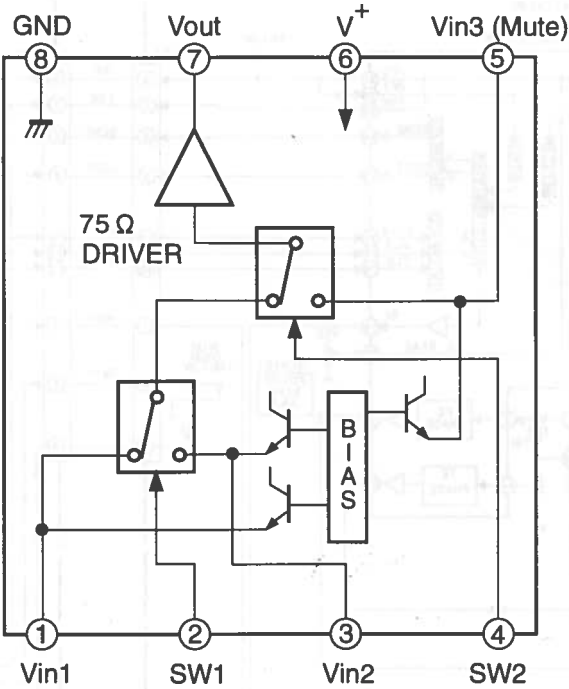
チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

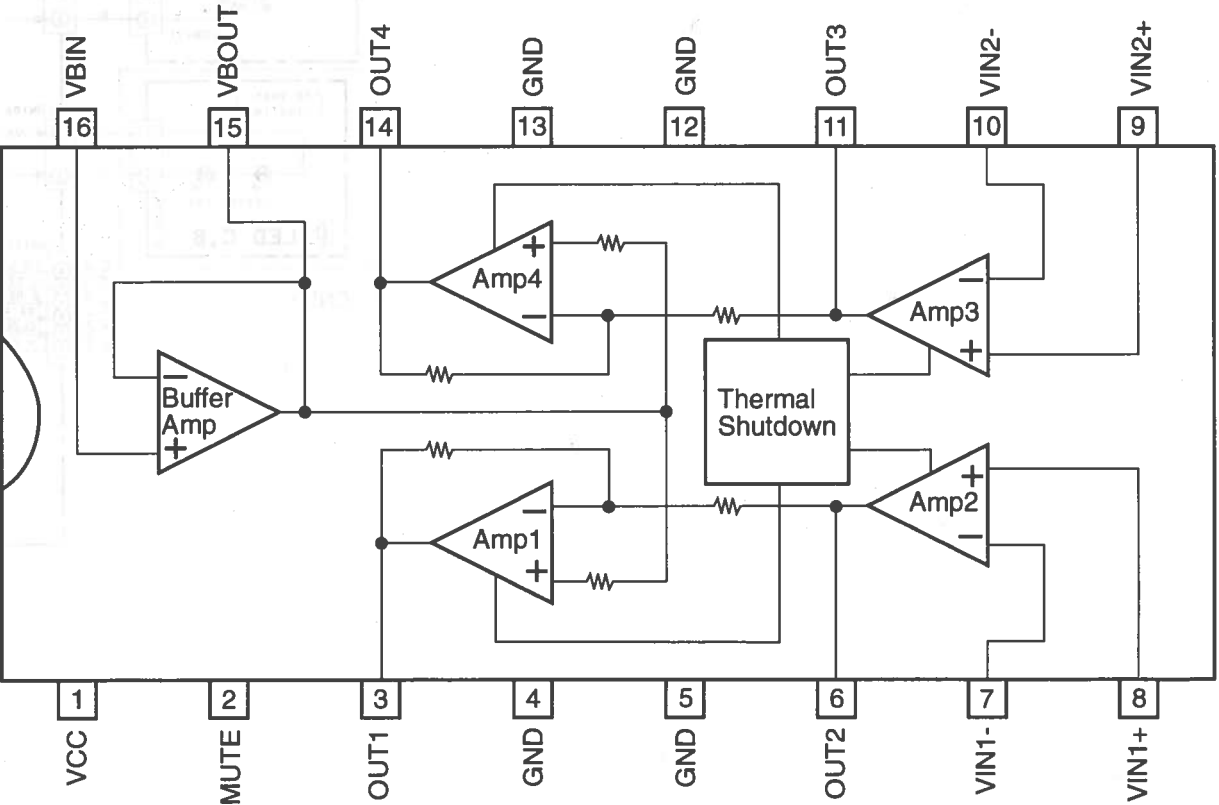
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

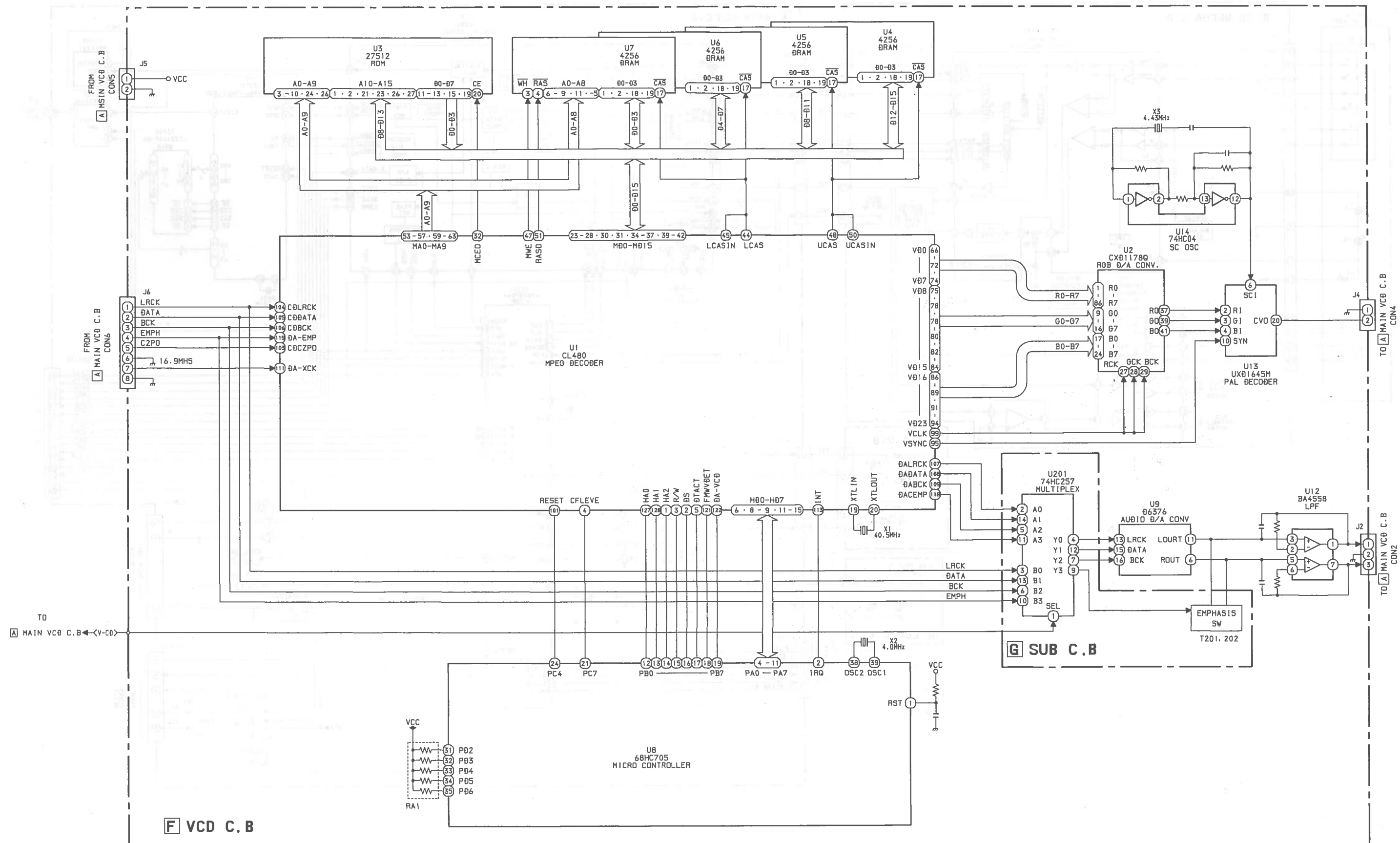
IC BLOCK DIAGRAM  
IC, NJM2244L



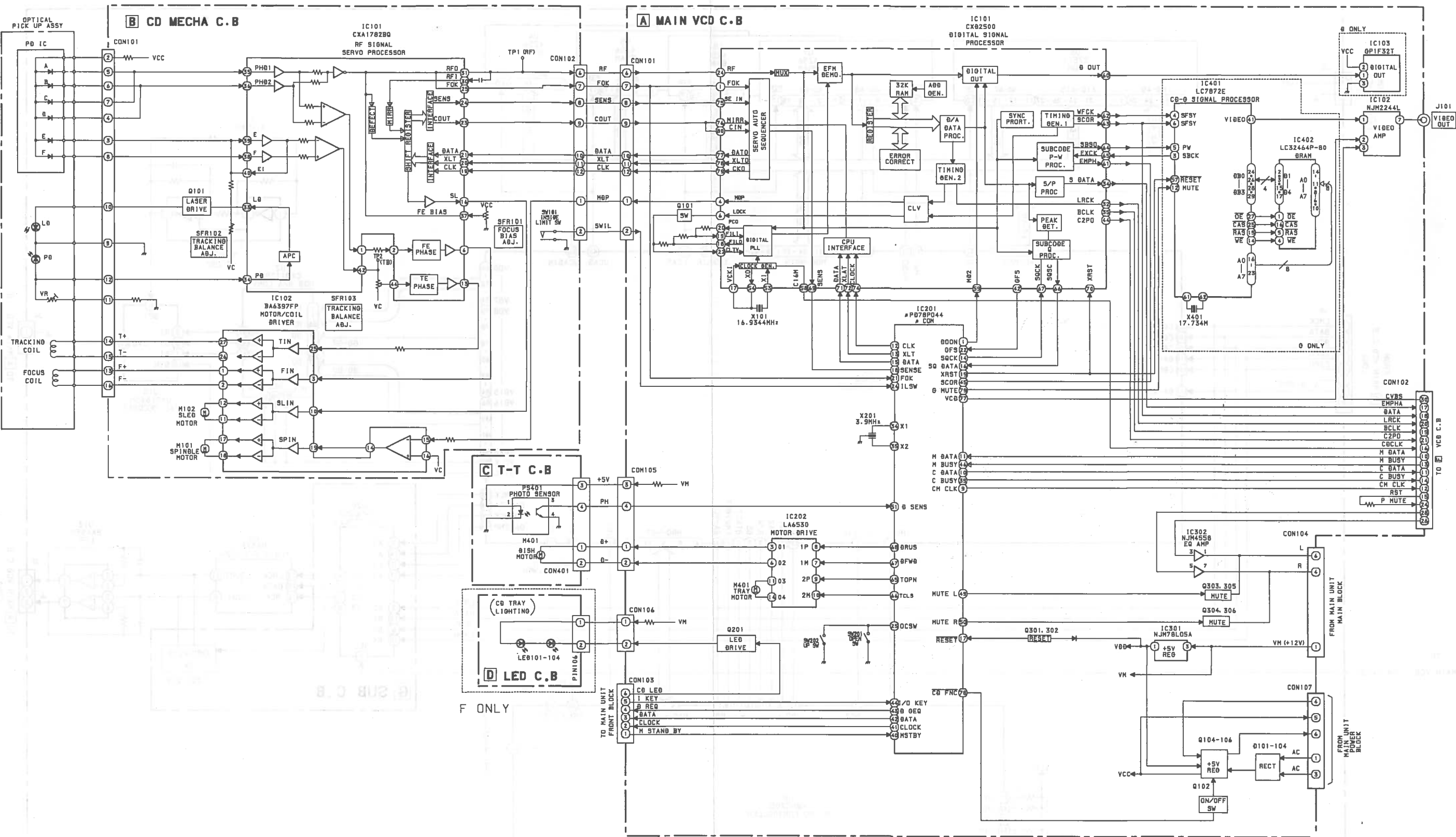
SW1	SW2	OUTPUT SIGNAL
L	L	Vin1
H	L	Vin2
L/H	H	Vin3

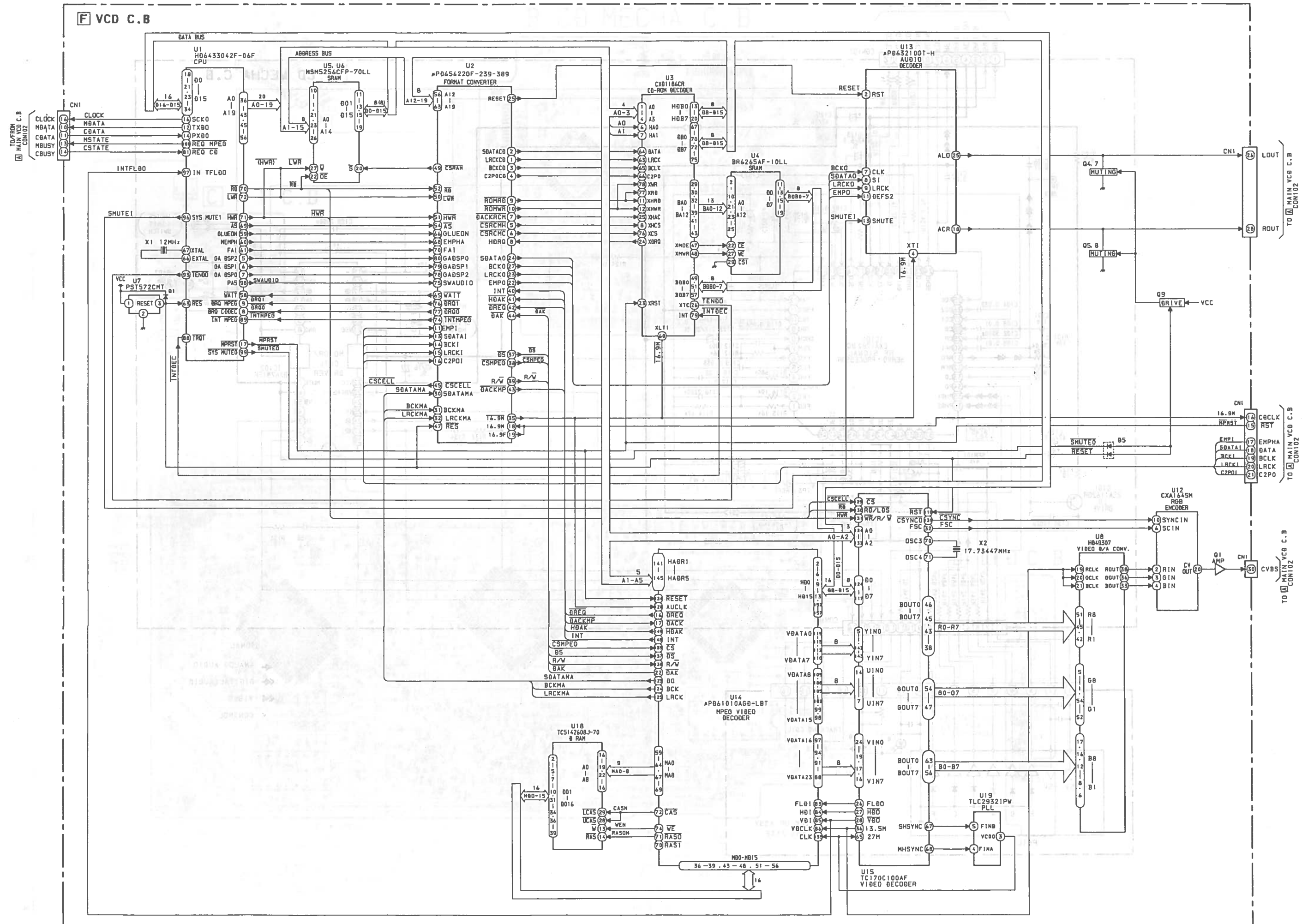
IC, LA6530

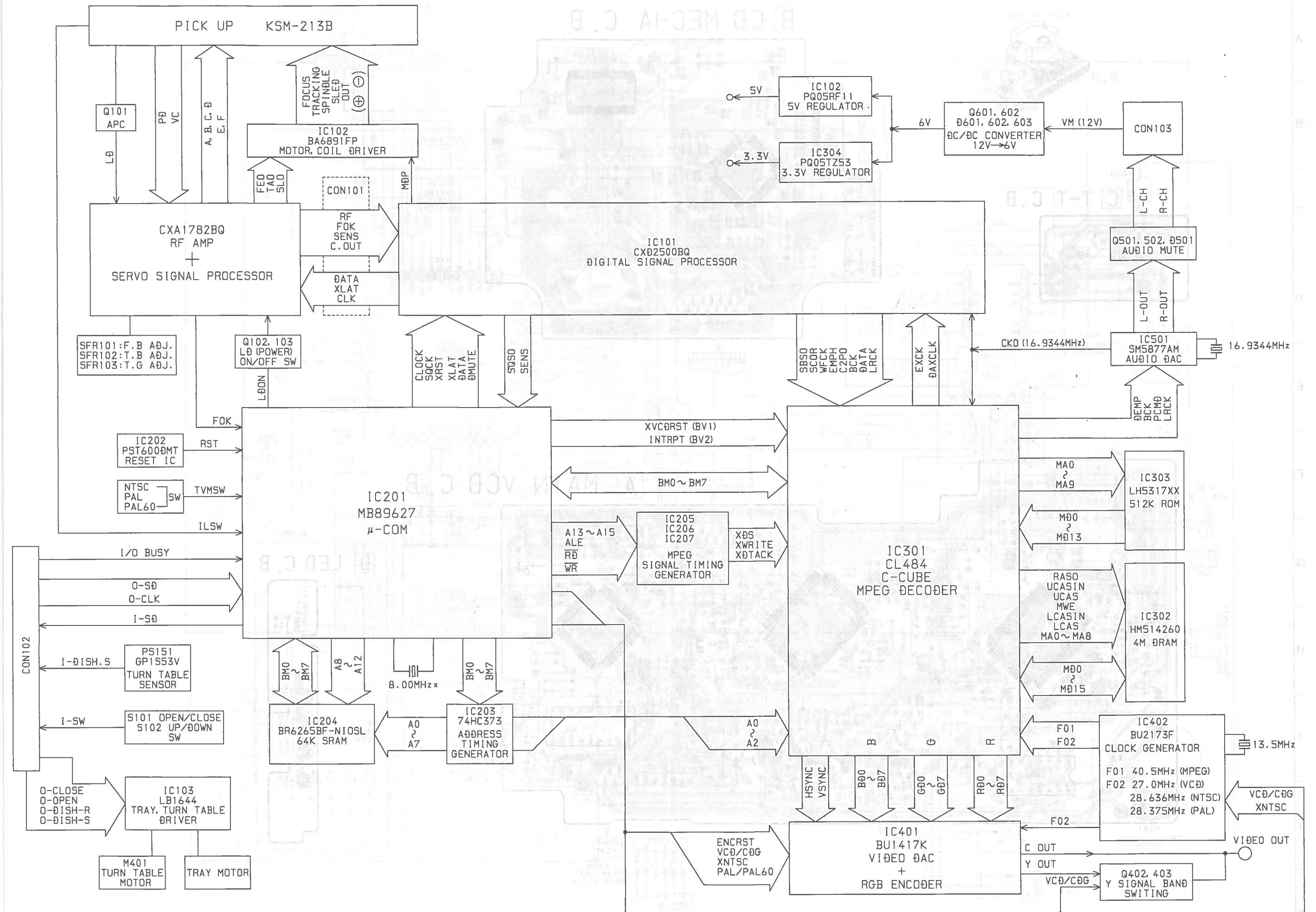


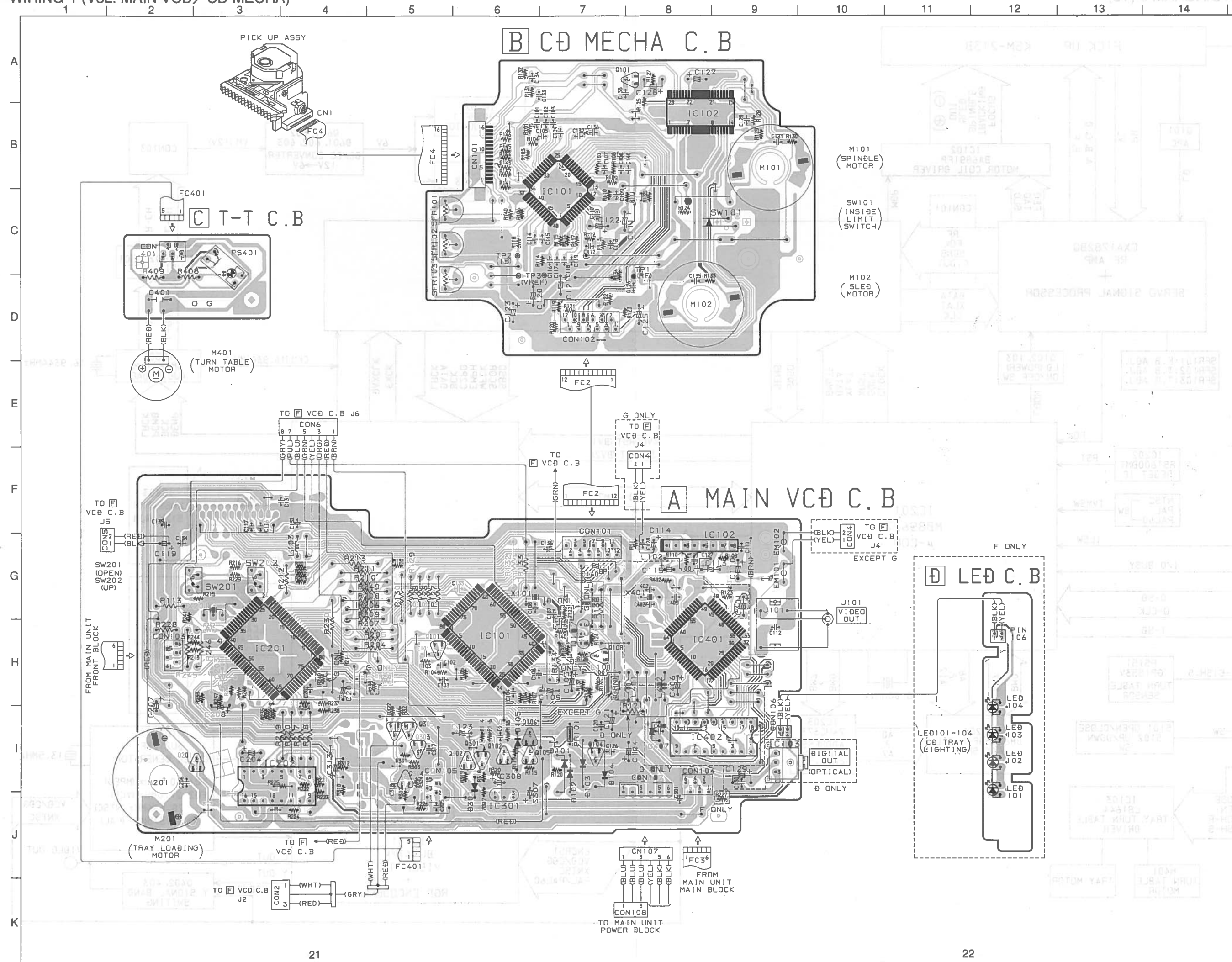








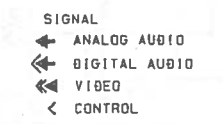


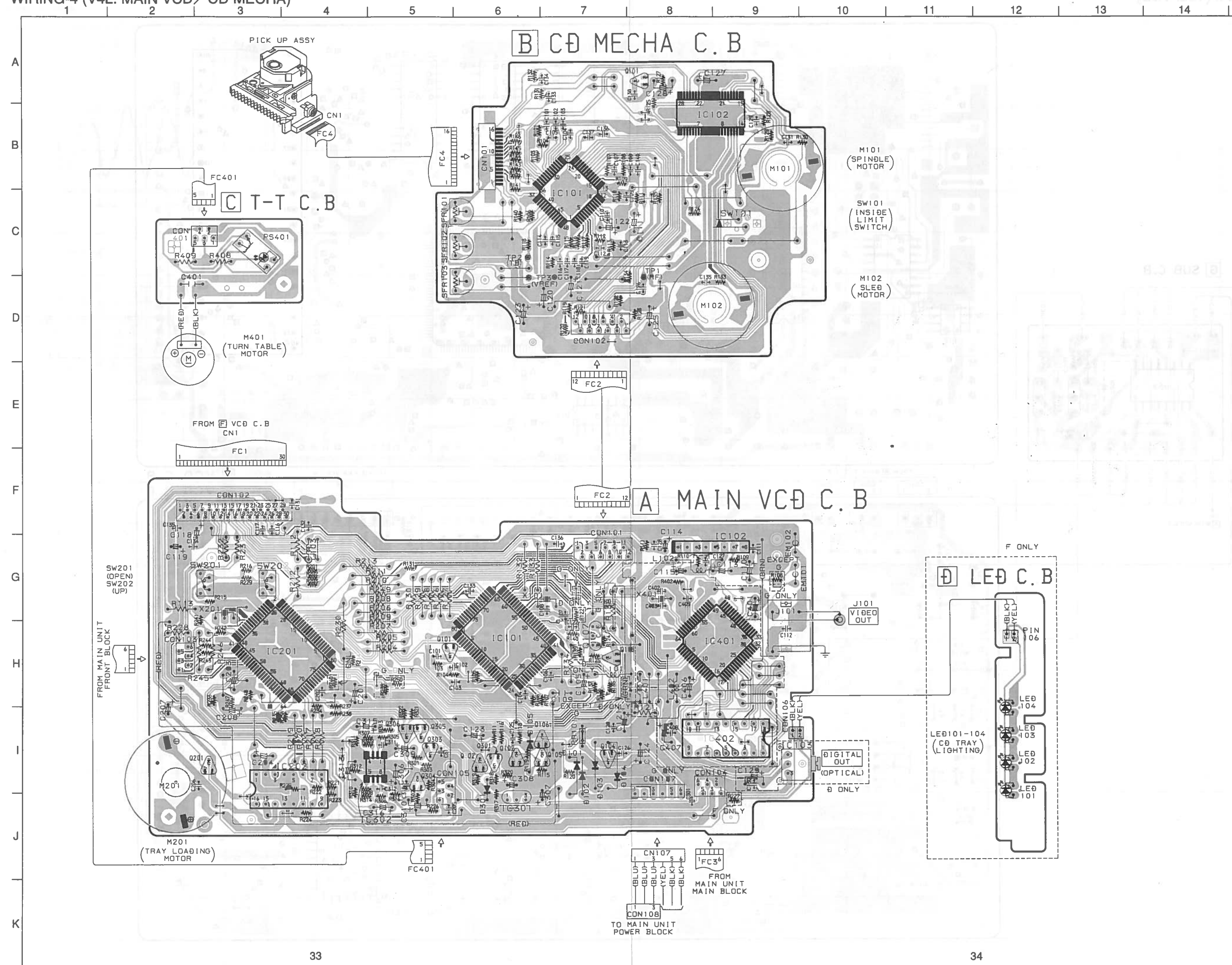




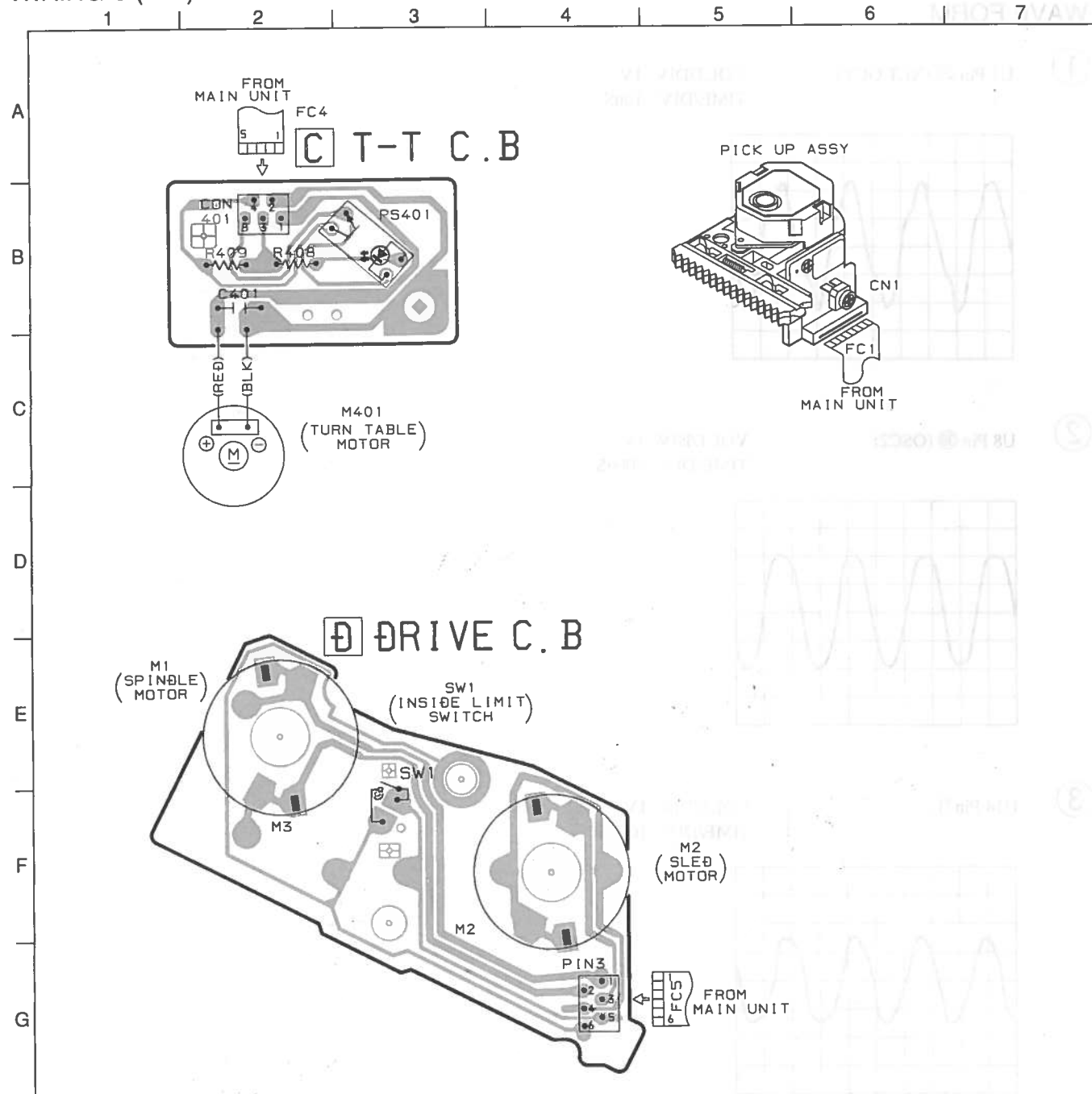




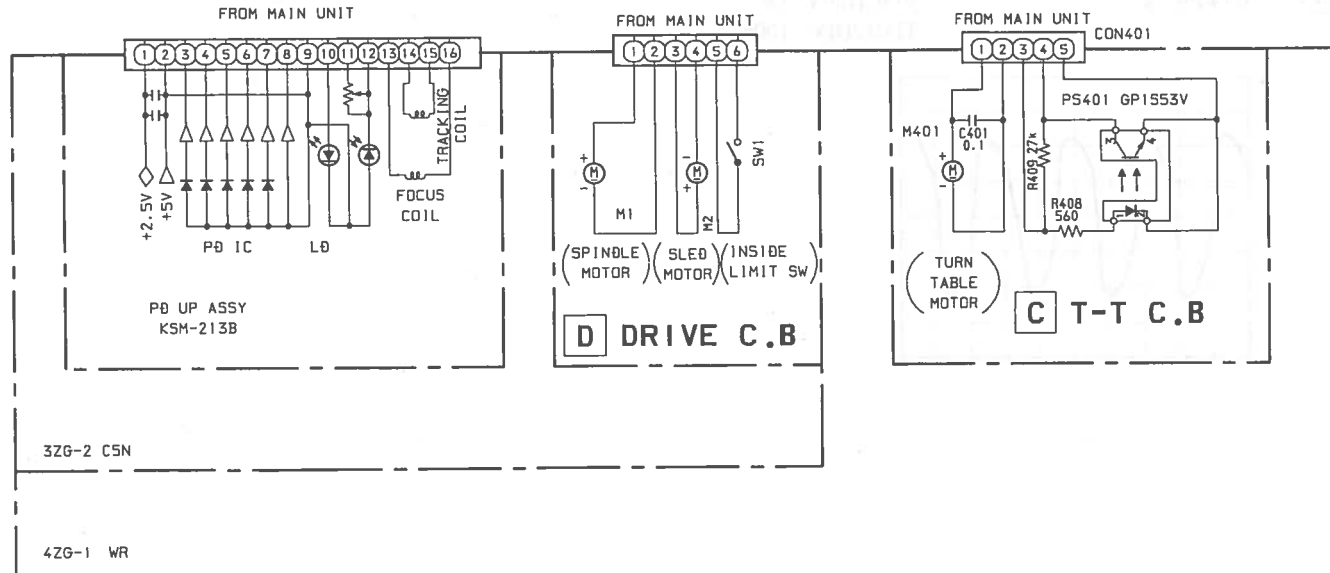








SCHEMATIC DIAGRAM-4 (WR)





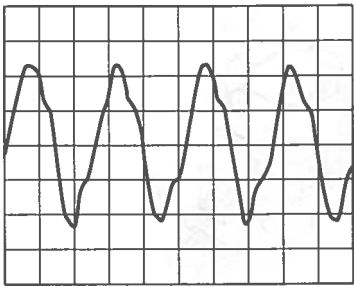




AVE FORM

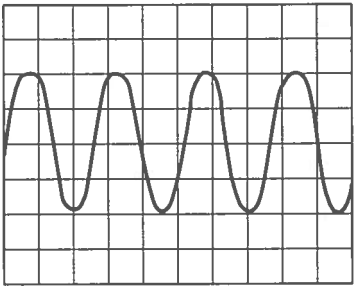
U1 Pin 20 (XLT OUT)

VOLT/DIV: 1V  
TIME/DIV: 10nS



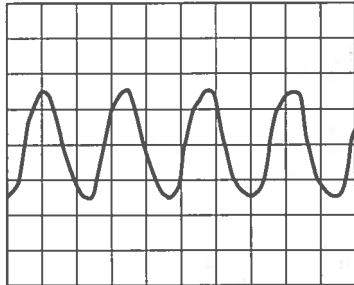
U8 Pin 38 (OSC2)

VOLT/DIV: 1V  
TIME/DIV: 100nS



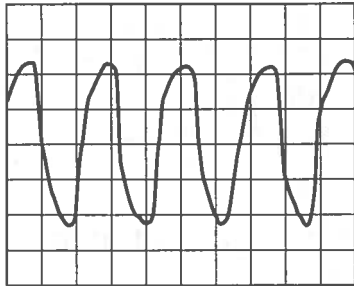
U14 Pin 1

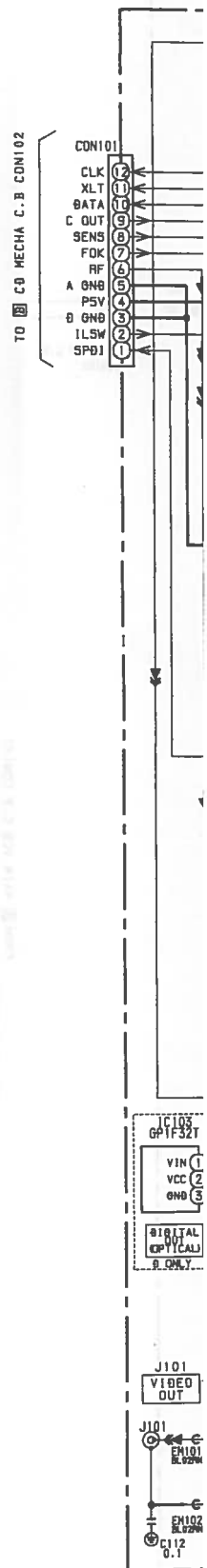
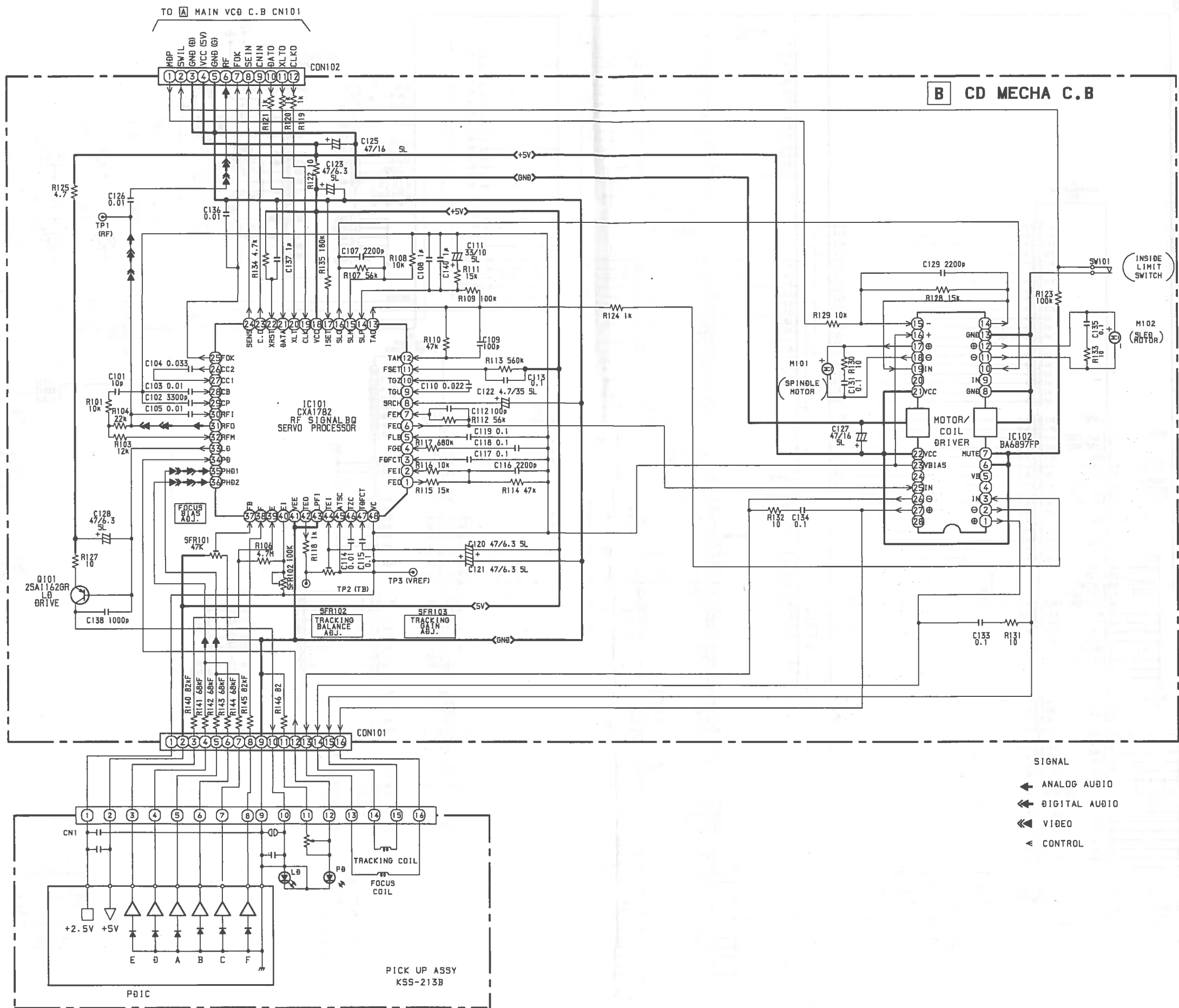
VOLT/DIV: 1V  
TIME/DIV: 100nS

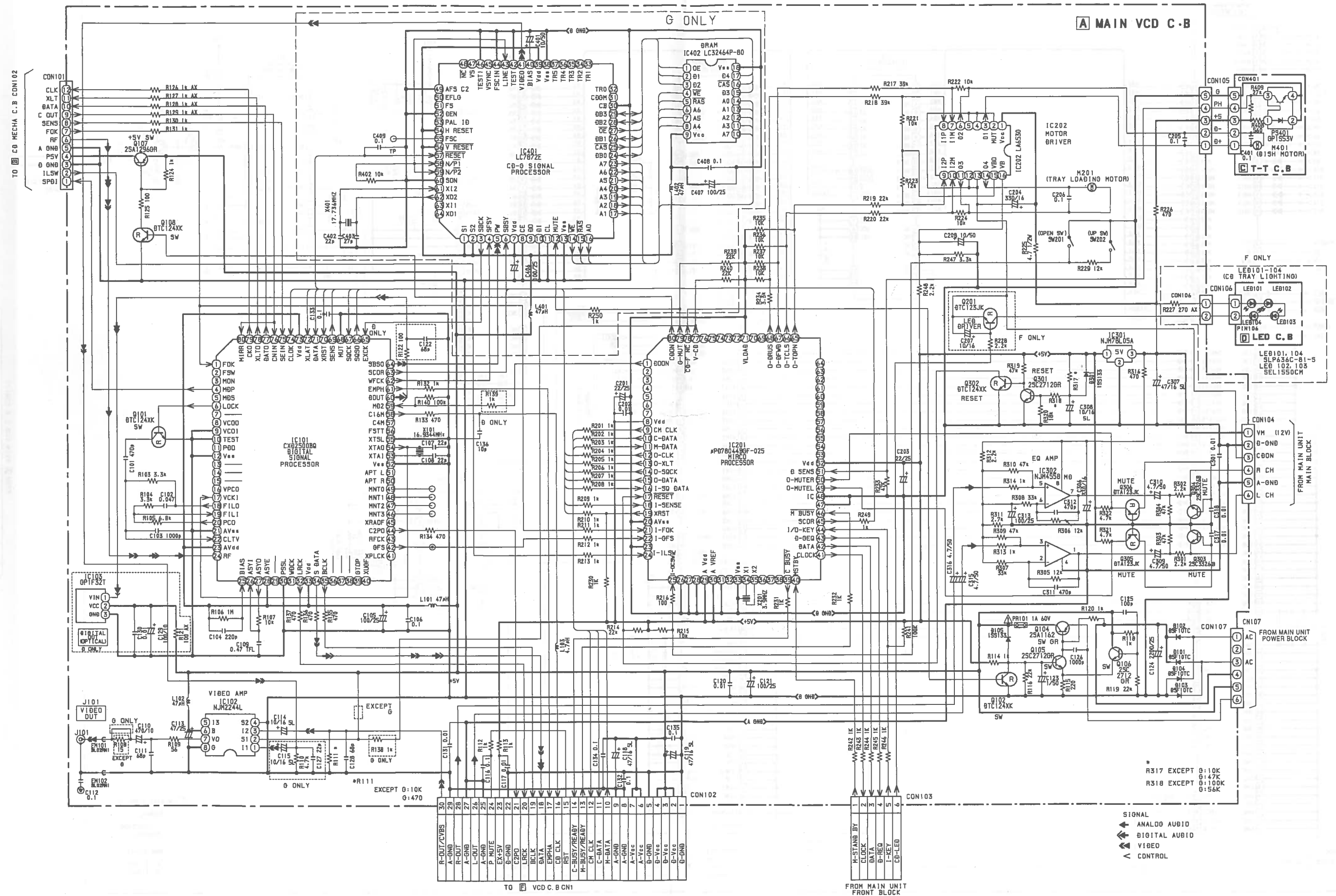


U14 Pin 12

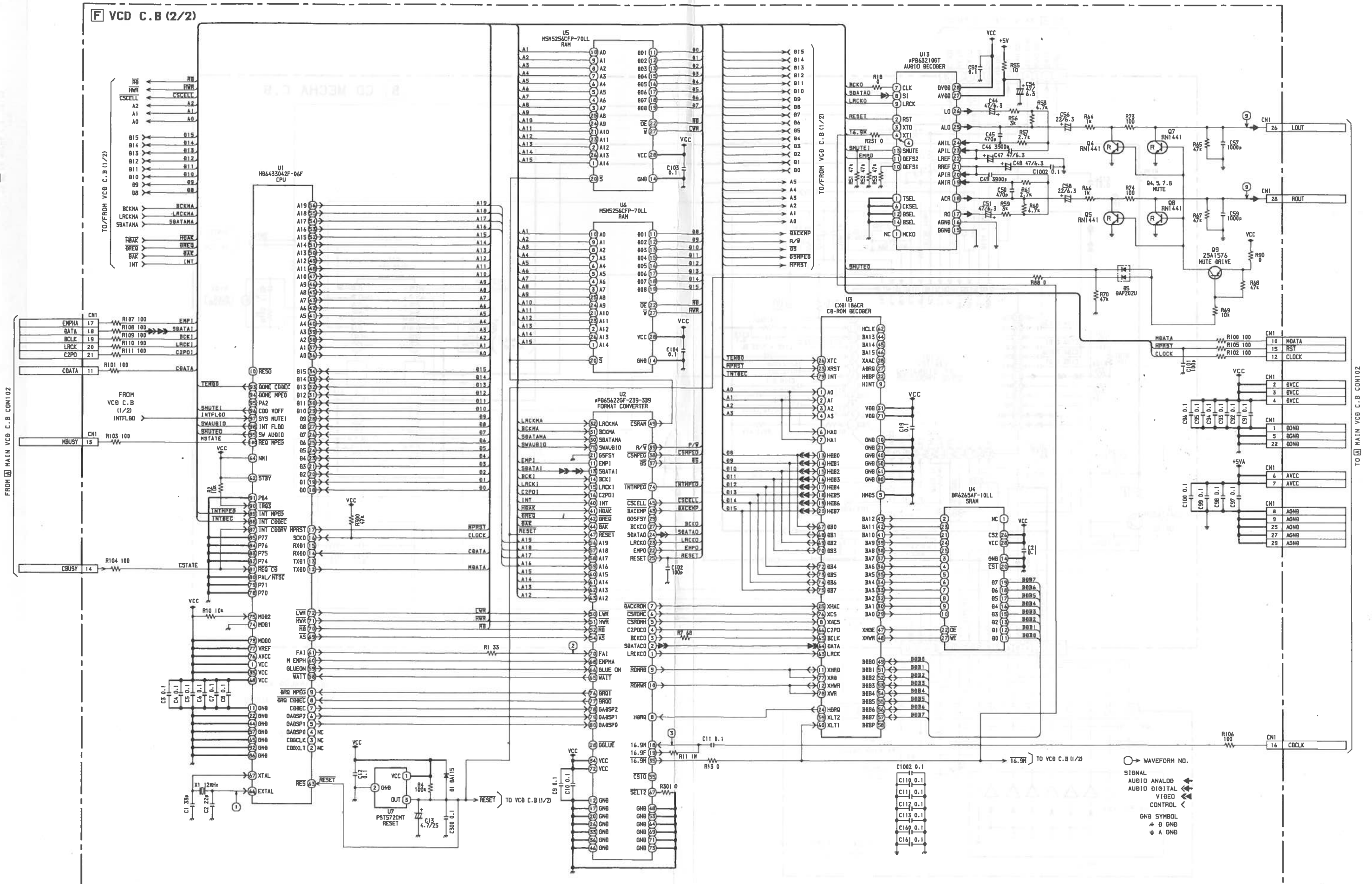
VOLT/DIV: 1V  
TIME/DIV: 100nS





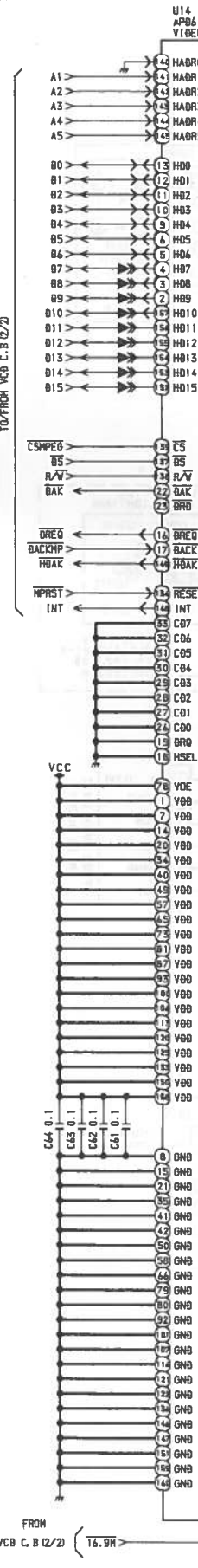


F VCD C.B (2/2)



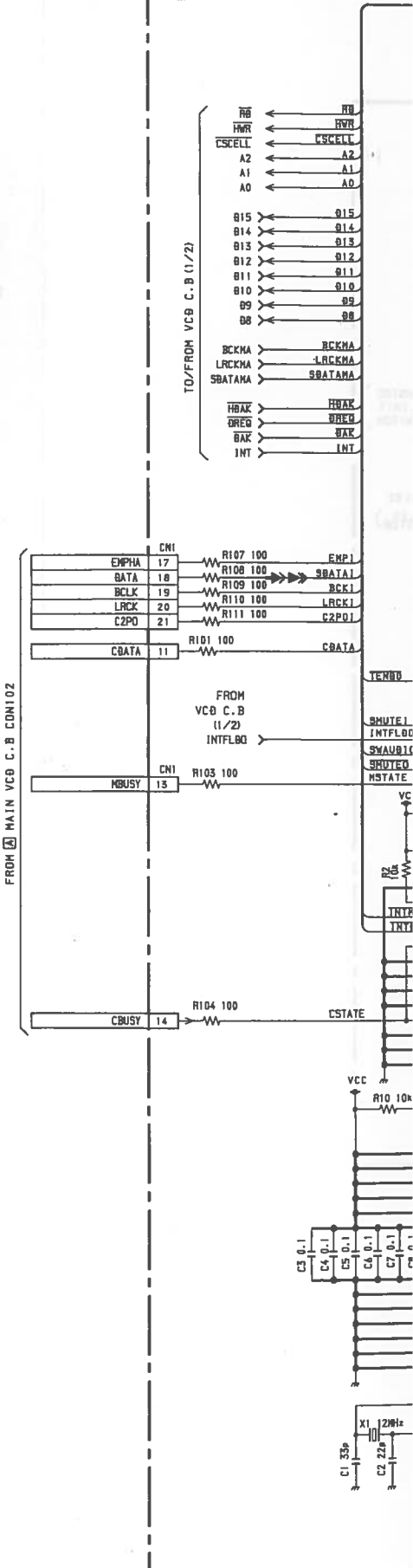
CHEMATIC DIAGRAM-7 (V4L: VCD 1/2)

F VCD C.B (1/2)



CHEMATIC DIAGRAM-8

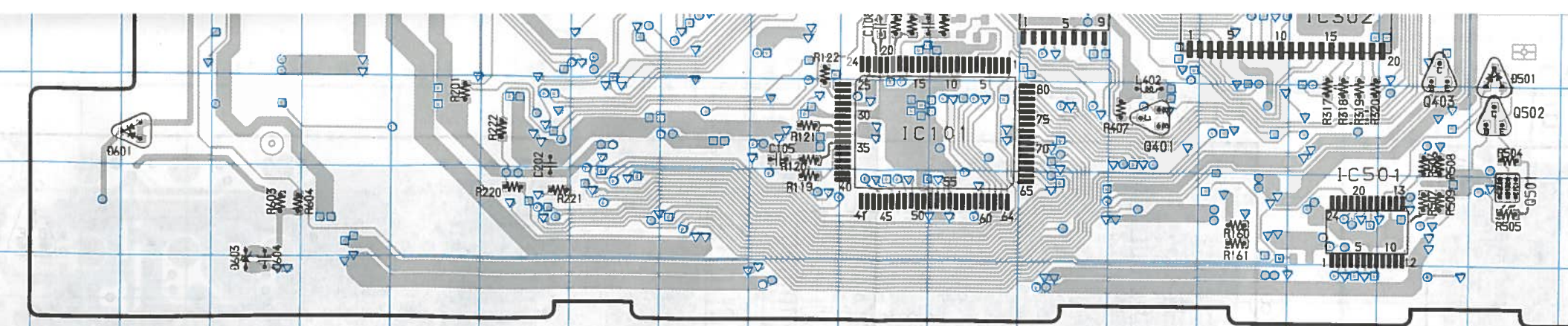
F VCD C.B (2/2)





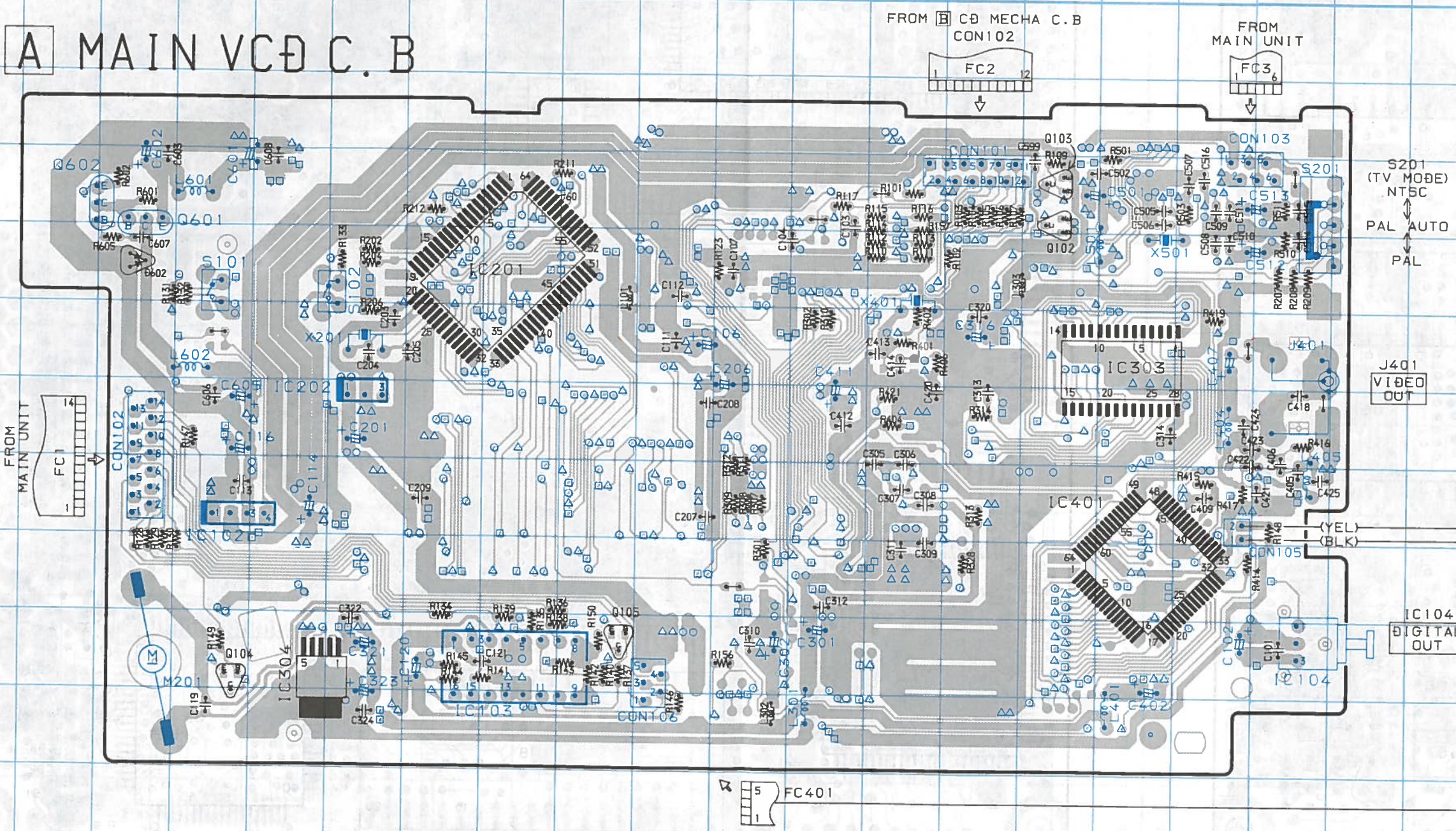




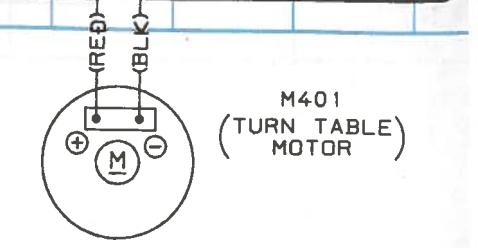
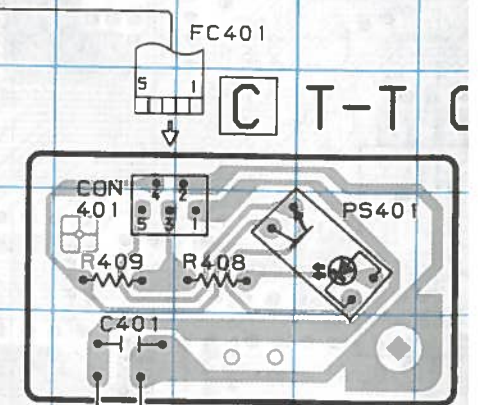
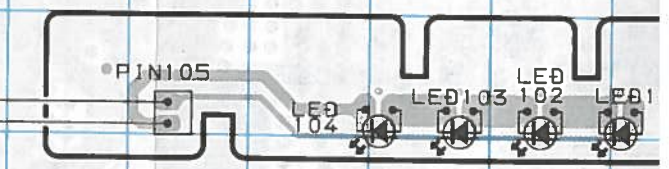


A MAIN VCD C.B

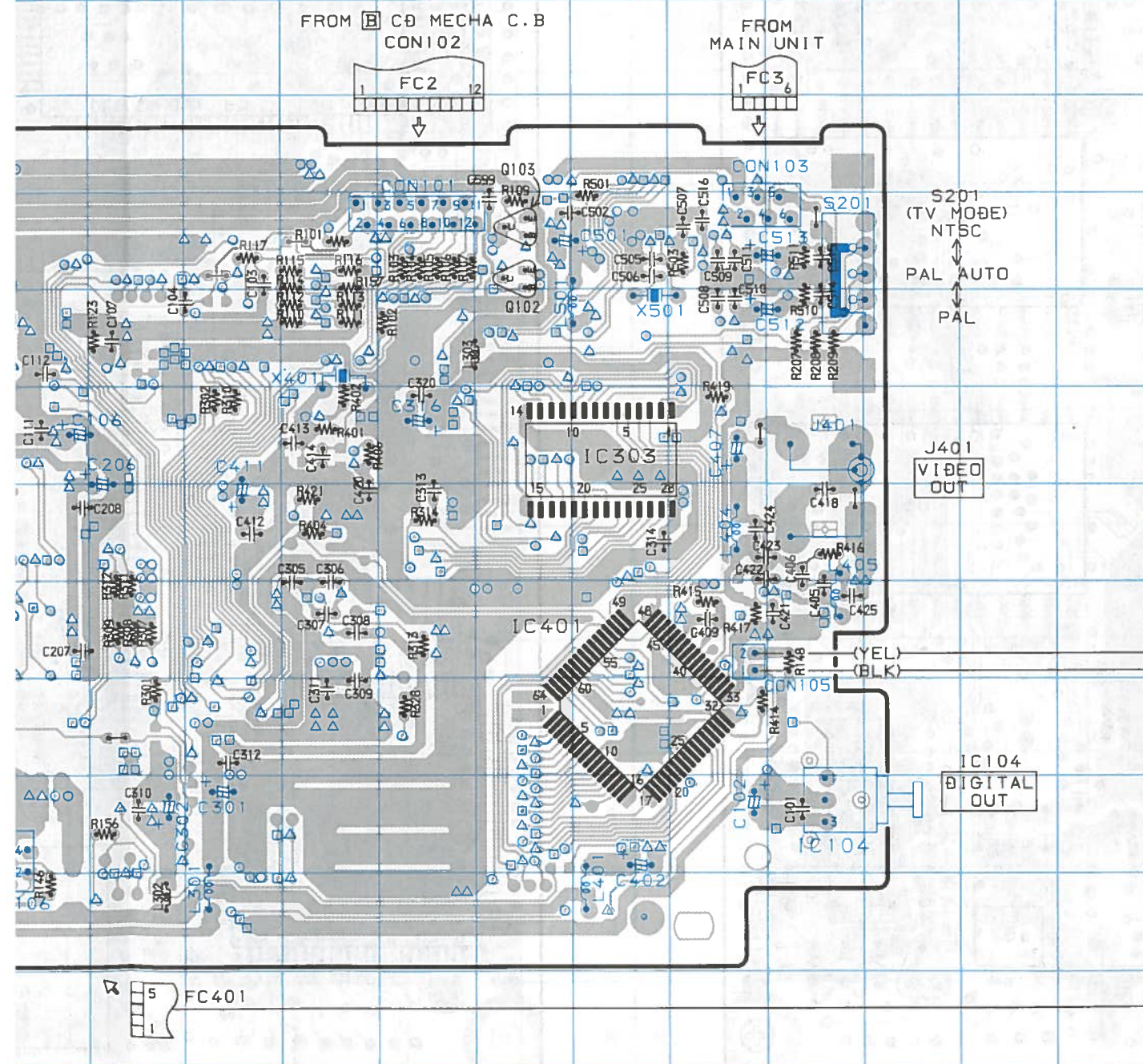
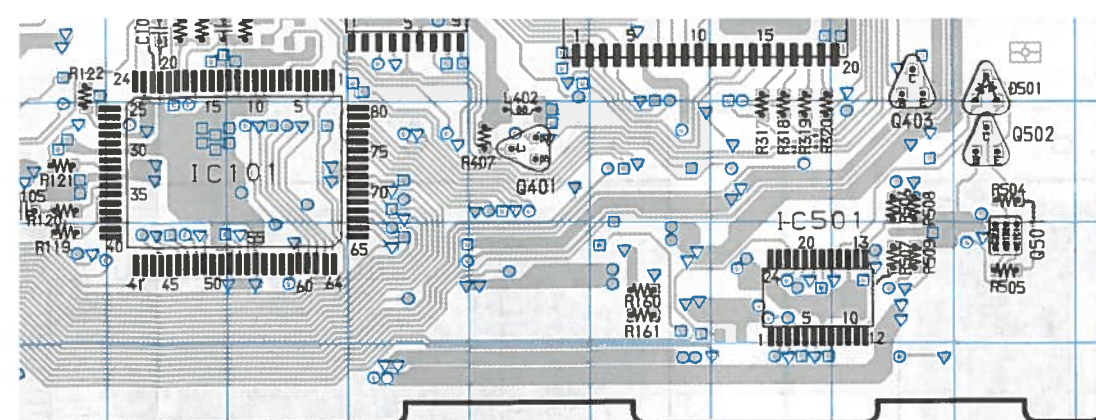
A MAIN VCD C.B



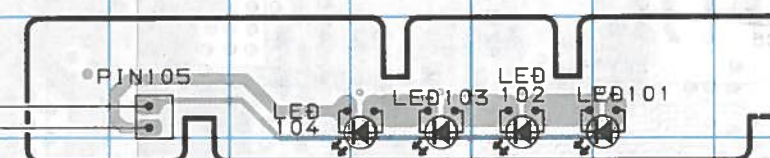
D LED C.B



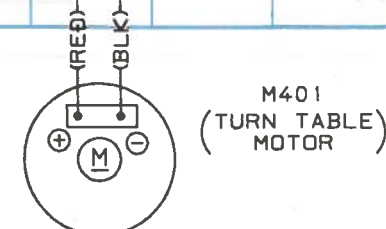
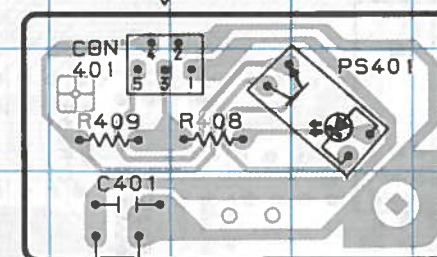




# LED C.B

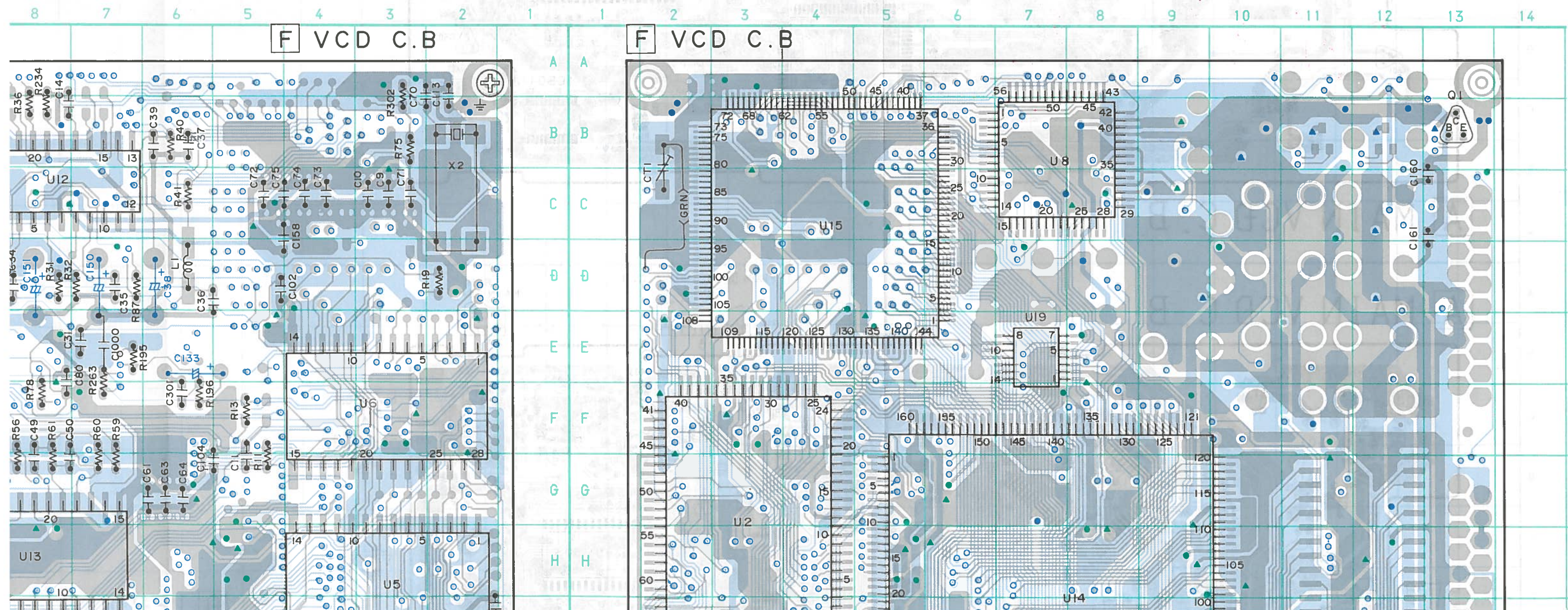


# T-T C.B



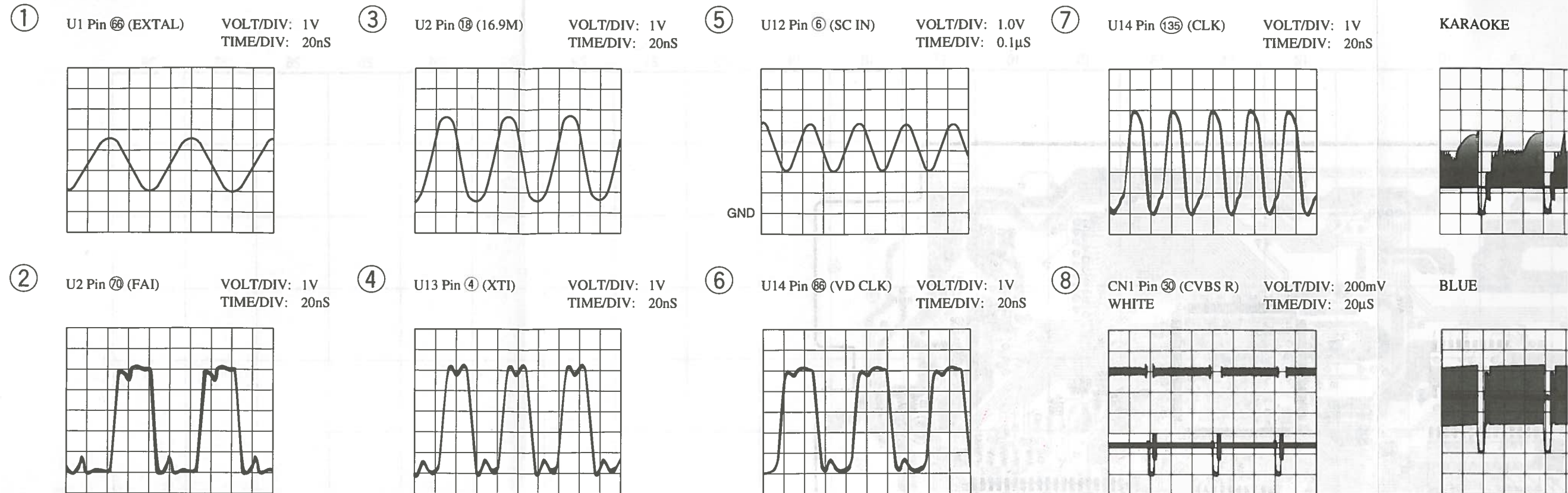


A hand-drawn graph on a grid. The x-axis is labeled from 0 to 6. The y-axis has horizontal grid lines at intervals of 2, with labels 2, 4, and 6. A periodic wave is drawn, starting at (0, 4), peaking at (1, 6), crossing the x-axis at (2, 0), reaching a trough at (3, -2), and returning to the x-axis at (4, 0). This pattern repeats, with peaks at (5, 6) and (6, 0).

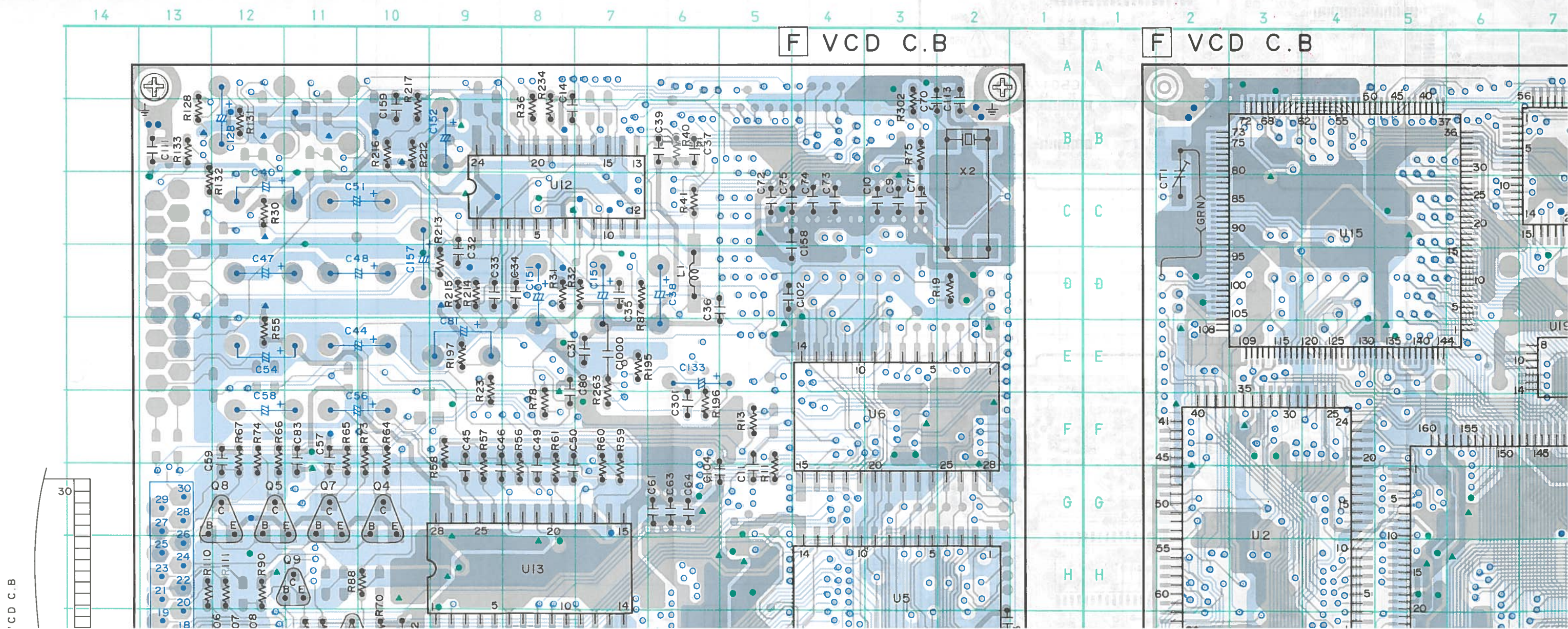




# WAVE FORM

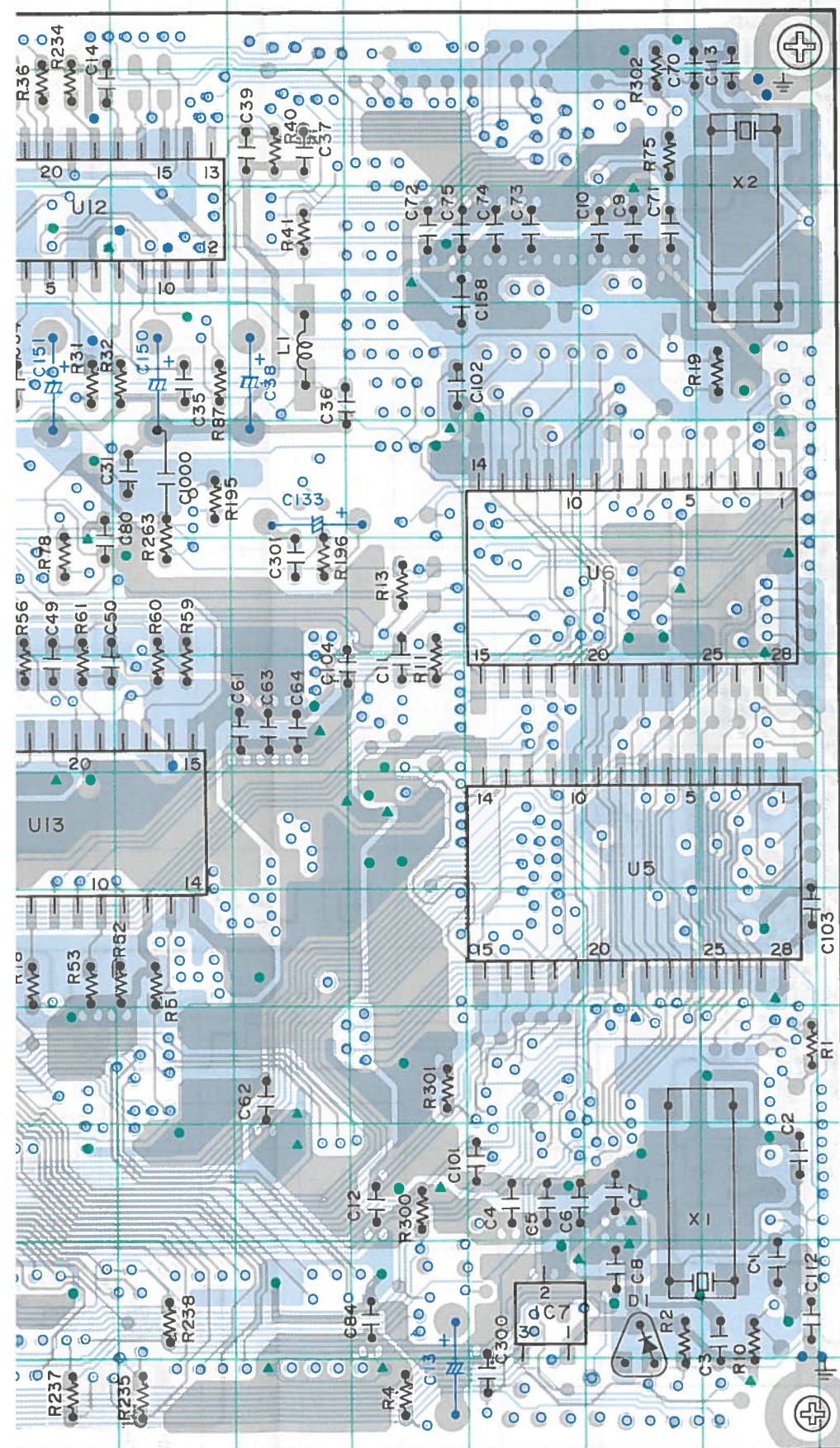


## WIRING-5 (V4L: VCD)

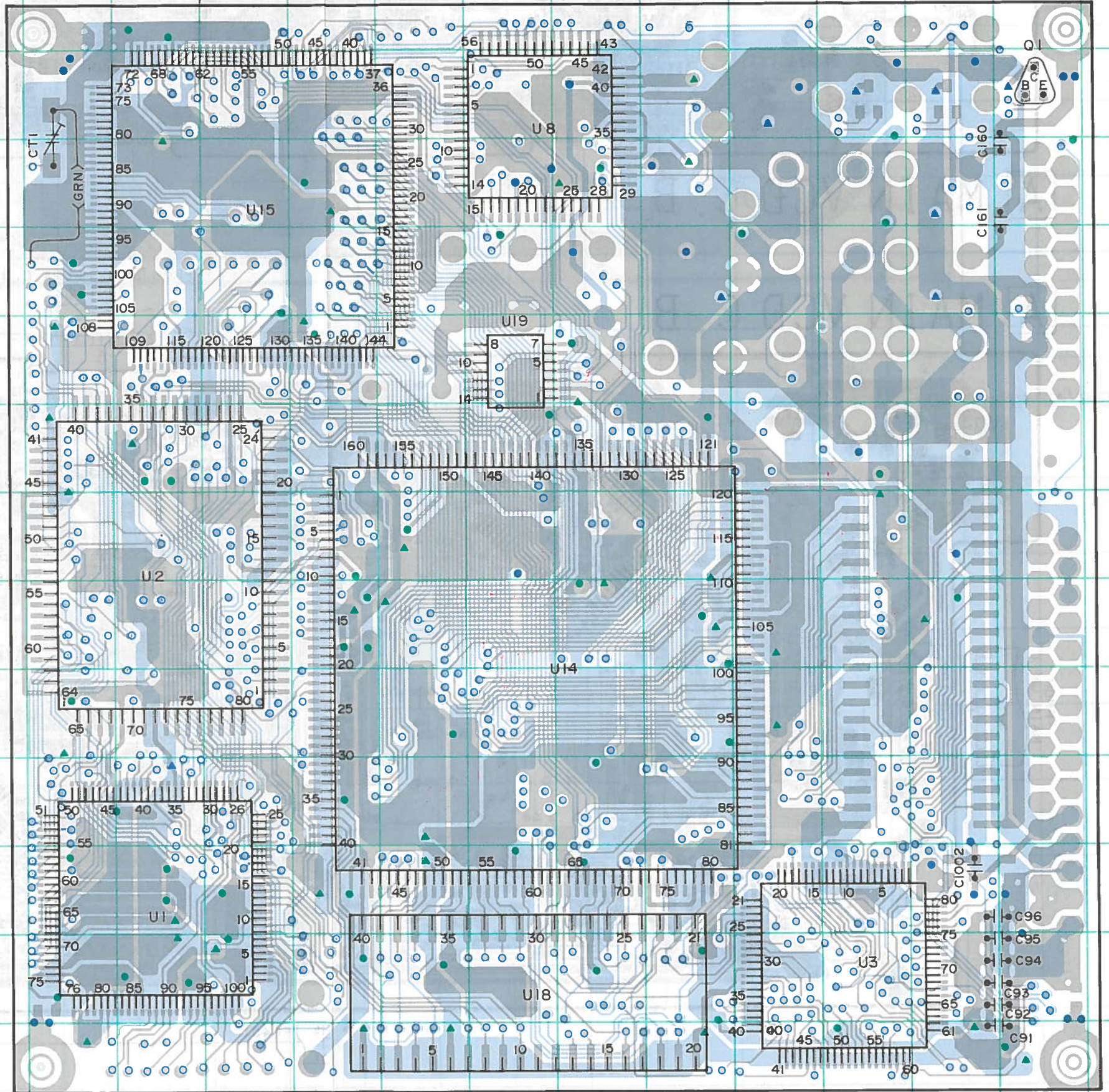




F VCD C.B

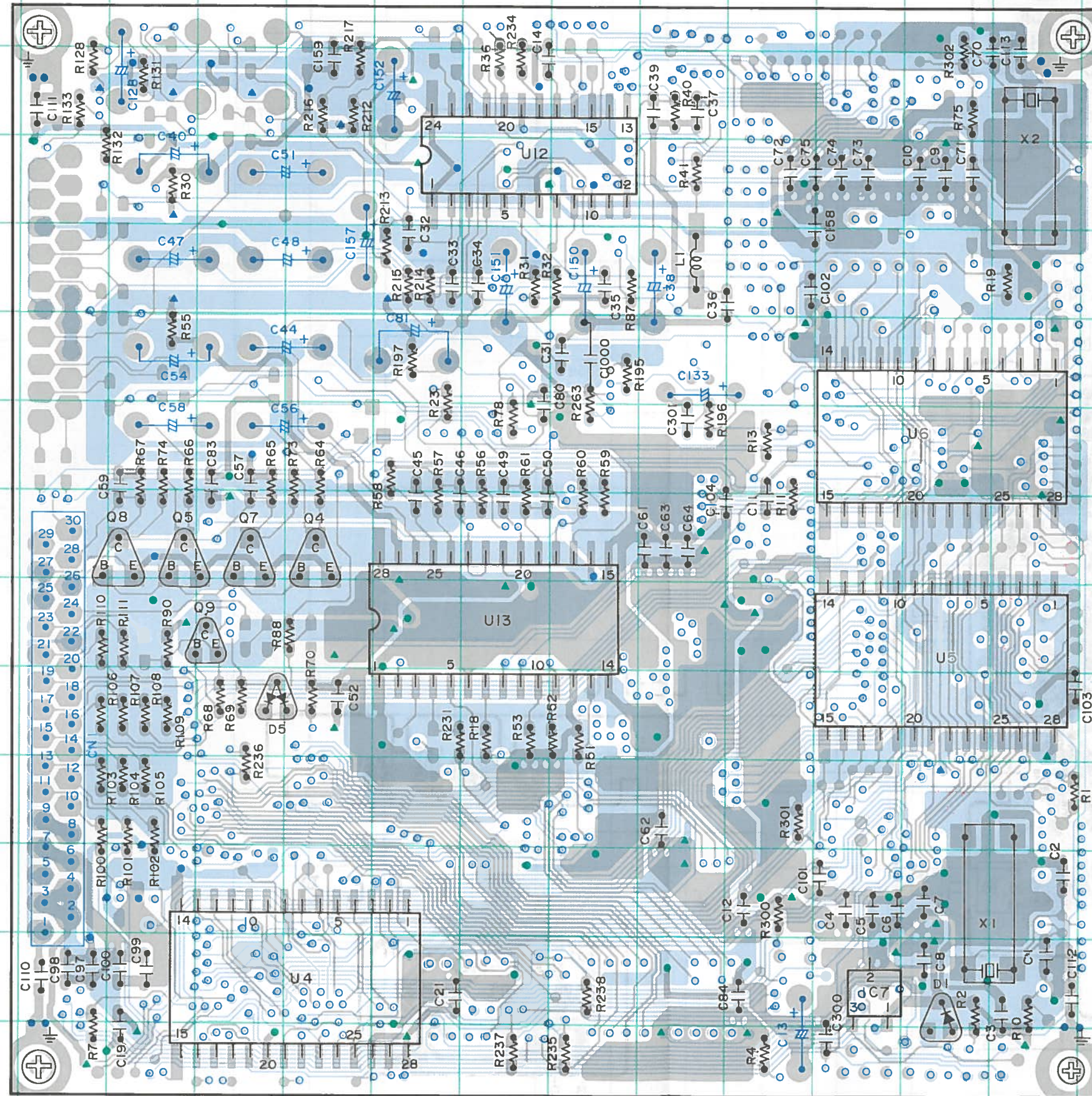


F VCD C.B





FROM [A] MAIN VCD C.B  
CONIO2

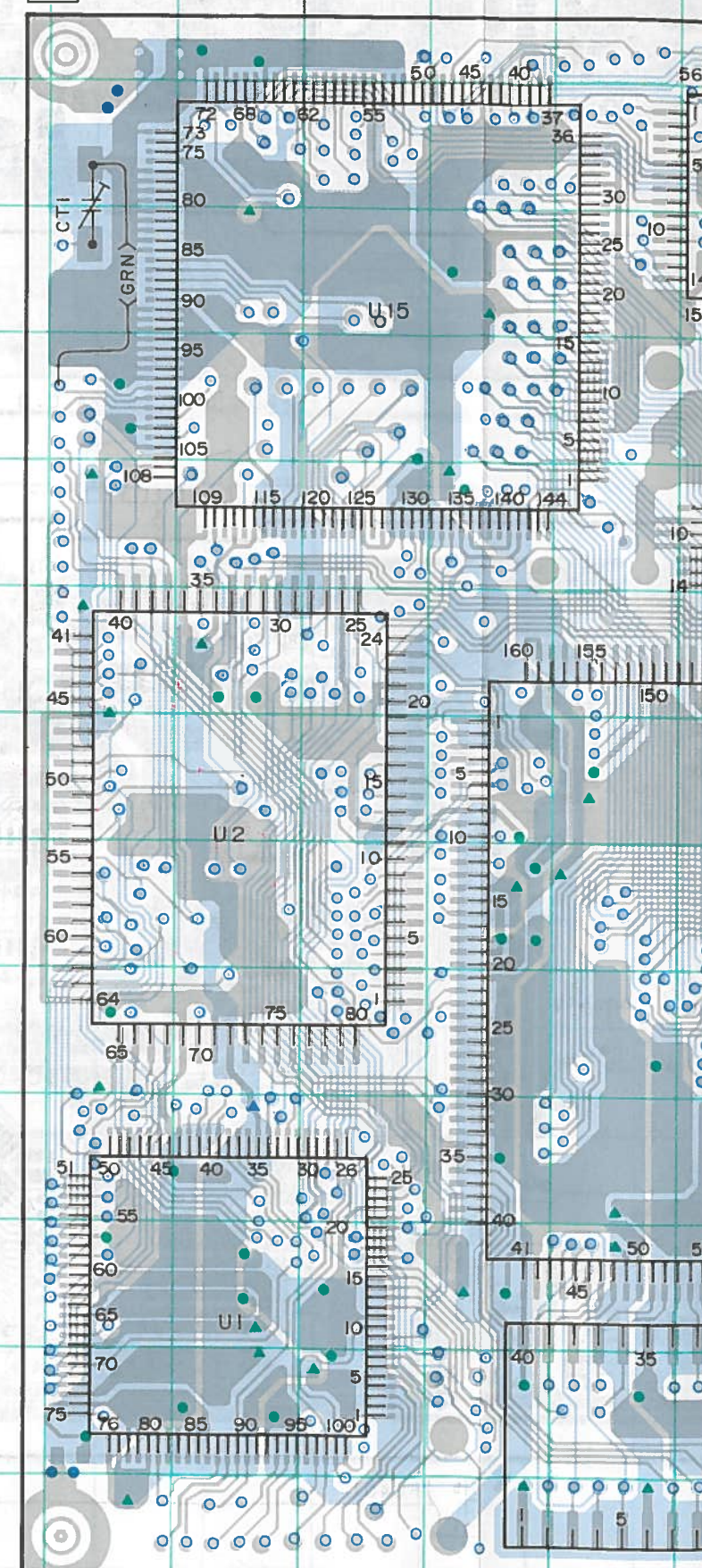


Through-Hole Note

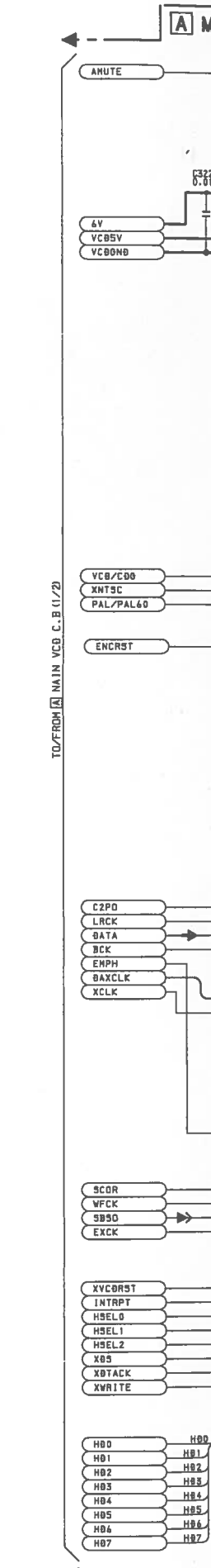
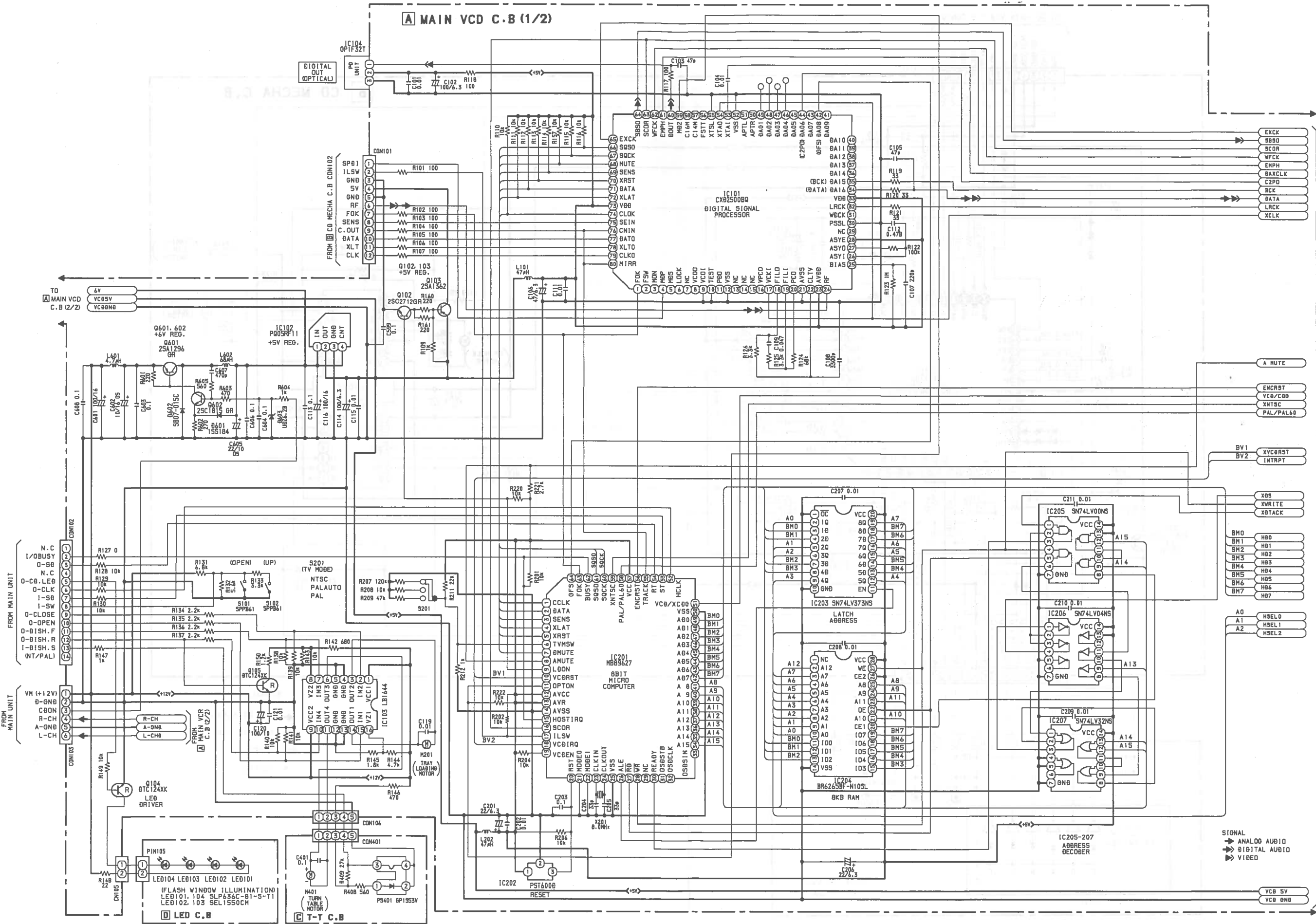
SIGNAL	VCC	+5V	A GND	D GND

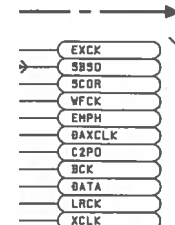
F VCD C.B

F VCD C.B





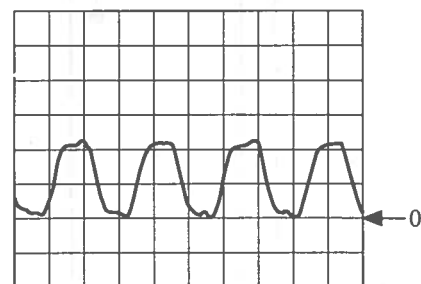




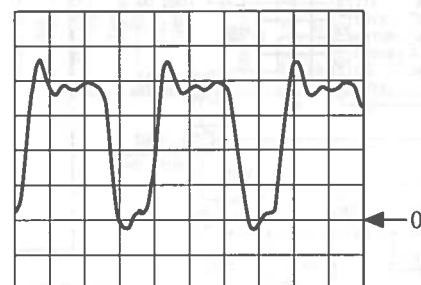


# WAVE FORM

- ① IC301 Pin ①⑨ (GCK)  
40.5MHz  
VCD PLAY  
TV MODE: • NTSC  
• PAL  
• PAL AUTO



- ② IC301 Pin ②⑨ (VCLK)  
27MHz±1350Hz  
VCD PLAY  
TV MODE: • NTSC  
• PAL  
• PAL AUTO



- 28.375MHz  
CDG PLAY  
TV MODE: • PAL  
• PAL AUTO



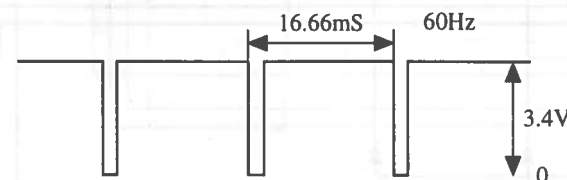
VOLT/DIV: 1V  
TIME/DIV: 10nS

- 28.6363MHz  
CDG PLAY  
TV MODE: • NTSC

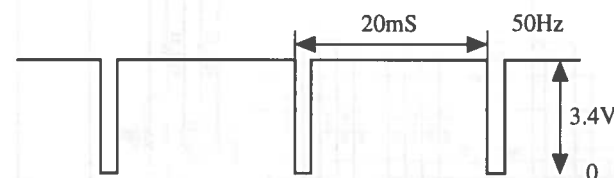


VOLT/DIV: 1V  
TIME/DIV: 10nS

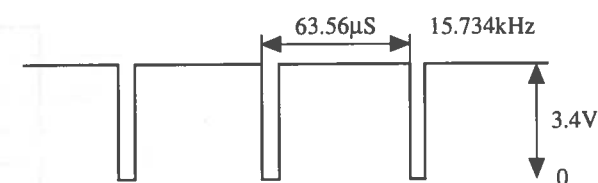
- ③ IC301 Pin ③⑤ (V SYNC)  
VCD, CDG PLAY  
TV MODE: • NTSC  
• PAL AUTO



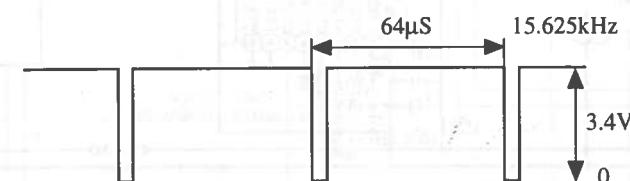
VCD, CDG PLAY  
TV MODE: PAL



- ④ IC301 Pin ④⑥ (H SYNC)  
VCD, CDG PLAY  
TV MODE: • NTSC  
• PAL AUTO

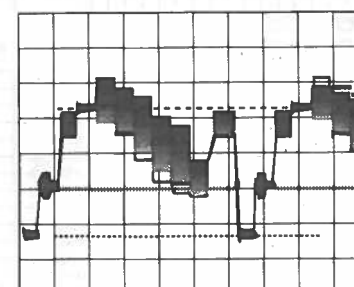


VCD, CDG PLAY  
TV MODE: PAL



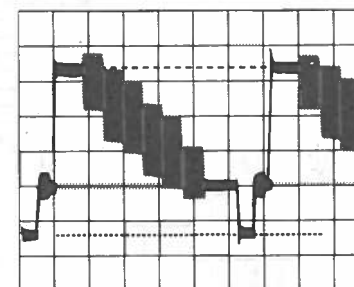
- ⑤ VIDEO OUT  
C407 ⊖ side  
CDG PLAY: CD-T03 TRACK2  
TV MODE: • NTSC

VOLT/DIV: 200mV  
TIME/DIV: 10μS

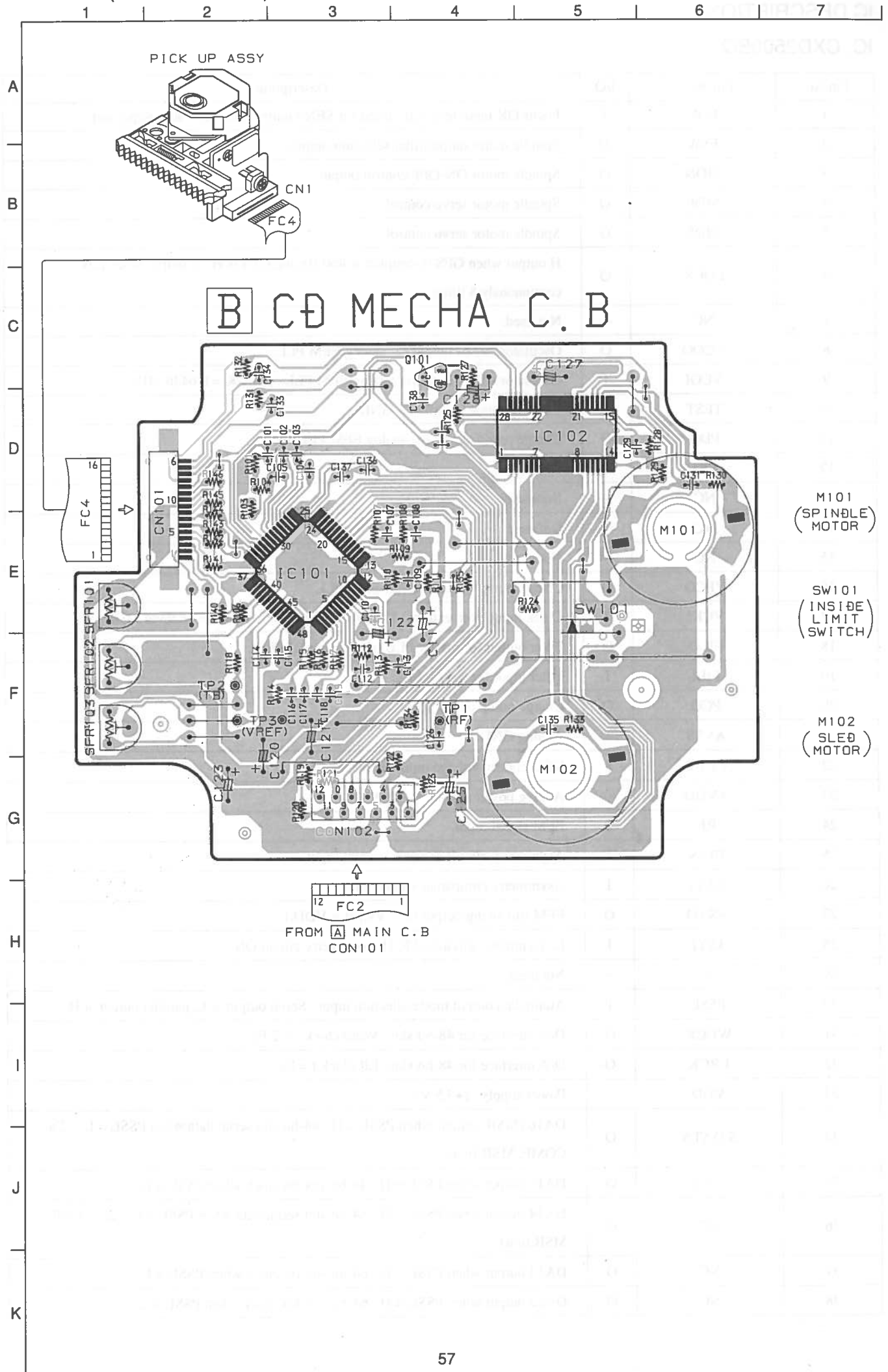


- VCD PLAY: CD-T05 TRACK4  
TV MODE: • NTSC

VOLT/DIV: 200mV  
TIME/DIV: 10μS







# IC DESCRIPTION

## IC, CXD2500BQ

Pin No.	Pin Name	I/O	Description
1	FOK	I	Focus OK input terminal. Used for SENS output and servo auto sequencer.
2	FSW	O	Spindle motor output filter selection output.
3	MON	O	Spindle motor ON-OFF control output.
4	MDP	O	Spindle motor servo control.
5	MDS	O	Spindle motor servo control.
6	LOCK	O	H output when GFS is sampled at 460 Hz and GFS is H. L output when L is continuously 8 times.
7	NC	—	Not used.
8	VCOO	O	Oscillator circuit output for analog EFM PLL.
9	VCOI	I	Oscillator circuit input for analog EFM PLL. fLOCK = 8.6436 MHz.
10	TEST	I	TEST terminal. Normally GND.
11	PDO	O	Charge pump output for analog EFM PLL.
12	VSS	—	GND.
13	NC	—	Not used.
14	NC	—	Not used.
15	NC	—	Not used.
16	VPCO	O	Charge pump output for vari-pitch PLL.
17	VCKI	I	Clock input from external VCO for vari-pitch. fc center = 16.9344 MHz.
18	FILO	O	Filter output for master PLL (slave = digital PLL).
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output for
21	AVSS	—	Analog GND.
22	CLTV	I	VCO control voltage input for master.
23	AVDD	—	Analog power supply. (+3.5 V)
24	RF	I	EFM signal input.
25	BIAS	I	Asymmetry circuit constant current input.
26	ASYI	I	Asymmetry compare voltage input.
27	ASYO	O	EFM full swing output (L = Vss, H = VDD.)
28	ASYE	I	L: asymmetry circuit OFF, H: asymmetry circuit ON.
29	NC	—	Not used.
30	PSSL	I	Audio data output mode selection input. Serial output at L, parallel output at H.
31	WDCK	O	D/A interface for 48-bit slot. Word clock f = 2 Fs.
32	LRCK	O	D/A interface for 48-bit slot. LR clock f = Fs.
33	VDD		Power supply. (+3.5 V)
34	S DATA	O	DA16 (MSB) output when PSSL = H. 48-bit slot serial data when PSSL = L. (2's COMP, MSB first).
35	BCLK	O	DA15 output when PSSL = H. 48-bit slot bit clock when PSSL = L.
36	NC	O	DA14 output when PSSL = H. 64-bit slot serial data when PSSL = L. (2's COMP, MSB first).
37	NC	O	DA13 output when PSSL = H. 64-bit slot bit clock when PSSL = L.
38	NC	O	DA12 output when PSSL = H. 64-bit slot LR clock when PSSL = L.

Pin No.	Pin Name	I/O	Description
39	GTOP	O	DA11 output when PSSL = H. GTOP output when PSSL = L.
40	XUGF	O	DA10 output when PSSL = H. XUGF output when PSSL = L.
41	XPLCK	O	DA09 output when PSSL = H. XPLCK output when PSSL = L.
42	GFS	O	DA08 output when PSSL = H. GFS output when PSSL = L.
43	RFCK	O	DA07 output when PSSL = H. RFCK output when PSSL = L.
44	C2PO	O	DA06 output when PSSL = H. C2PO output when PSSL = L.
45	XRAOF	O	DA05 output when PSSL = H. XRAOF output when PSSL = L.
46	MNT3	O	DA04 output when PSSL = H. MNT3 output when PSSL = L.
47	MNT2	O	DA03 output when PSSL = H. MNT2 output when PSSL = L.
48	MNT1	O	DA02 output when PSSL = H. MNT1 output when PSSL = L.
49	MNT0	O	DA01 output when PSSL = H. MNT0 output when PSSL = L.
50	APTR	O	Aperture correction control output. H when R channel.
51	APTL	O	Aperture correction control output. H when L channel.
52	VSS	—	GND.
53	XTAI	I	Input to 16.9344 MHz X'tal oscillator circuit. or 33.8688 MHz input.
54	XTAO	O	16.9344 MHz X'tal oscillator output.
55	XTSL	I	X'tal selection input. L when X'tal is 16.9344 MHz. H when 33.8688 MHz.
56	FSTT	O	2/3 divider output of the pins 53 and 54. Does not change with vari-pitch.
57	C4M	O	4.2336 MHz output. When vari-pitch is performed, it changes too.
58	C16M	O	16.2336 MHz output. When vari-pitch is performed, it changes too.
59	MD2	I	Digital-out ON/OFF control. ON at H, OFF at L.
60	DOUT	O	Digital-out terminal.
61	EMPH	O	H output when the playback disc has emphasis. L output without emphasis.
62	WFCK	O	WFCK (Write Frame Clock) output.
63	SCOR	O	H output when S0 or S1 of the subcode sync is detected.
64	SBSO	O	Serial output of Sub P to W.
65	EXCK	I	Clock input for SBSO read out.
66	SQSO	O	SubQ 8-bit and PCM peak level data. 16-bit output.
67	SQCK	I	Clock input for SQSO readout.
68	MUTE	I	Mute at H. Release at L.
69	SENS	O	SENS output. Output to CPU.
70	XRST	I	System reset. Reset at L.
71	DATA	I	Serial data input from CPU.
72	XLAT	I	Latch input from CPU. Latches serial data at fall-down edge.
73	VDD	—	Power supply (+3.5 V).
74	CLOCK	I	Serial data transfer clock input from CPU.
75	SEIN	I	Sensor input from SSP.
76	CNIN	I	Track jump number counted signal input.
77	DATO	O	Serial data output to SSP.
78	XLTO	O	Serial data latch output to SSP. Latches at fall-down edge.
79	CLKO	O	Serial data transfer clock output to SSP.
80	MIRR	I	Mirror signal input. Used for jump of 128 track or more at auto sequencer.

# IC, $\mu$ PD78044BGF

Pin No.	Pin Name	I/O	Description
1	DO ON	O	Digital output. ON/OFF output.
2~7	NC	—	Not used.
8	VDD	—	PWR. +5 V power supply.
9	CM CLK	I/O	Serial clock I/O.
10	C DATA	O	Serial data output.
11	M DATA	I	Serial data input.
12	O-CLK	O	DSP serial clock output.
13	O-XLT	O	DSP serial latch output.
14	O-SQCLK	O	DSP sub Q read-out clock output.
15	O-DATA	O	DSP serial data output.
16	I-SQDATA	I	DSP sub Q data input.
17	RESET	I	System reset input.
18	I-SENS	I	DSP SENS input.
19	XRST	O	CD system reset output.
20	AVSS	—	PWR. GND potential of A/D converter input.
21	I-FOK	I	ASP FOK input.
22	I-GFS	I	DSP GFS input.
23	—	—	Connected GND.
24	I-ILSW	I	Pickup limit switch input.
25	I-OC SW	I	Tray OPEN/CLOSE switch input.
26~28	—	—	Connected GND.
29	AVDD	—	PWR. Analog power supply of A/D converter input.
30	AVREF	I	PWR. Reference voltage input of A/D converter input.
31	—	—	Connected GND.
32	NC	—	Open terminal.
33	VSS	—	PWR. GND potential.
34	X1	I	CLK. Terminal for 4.19 MHz clock oscillator.
35	X2	O	CLK. Terminal for 4.19 MHz clock oscillator.
36~38	NC	—	Not used.
39	C-BUSY	O	MPEG status output.
40	MSTBY	I	Main microprocessor status input.
41	CLOCK	O	Main microprocessor serial clock output.
42	DATA	O	Main microprocessor serial data output.
43	D-REQ	O	Main microprocessor status output.
44	I-KEY	I	Main microprocessor serial data input.
45	SCOR	I	DSP SCOR input.
46	M-BUSY	I	MPEG status signal input.
47	—	—	Connected GND.
48	IC	—	PWR. Connected to Vss.
49	MUTE L	O	L channel analog mute output.
50	MUTE R	O	R channel analog mute output.



Pin No.	Pin Name	I/O	Description
51	DSSENS	I	Turntable sensor input.
52	VDD	—	PWR. +5 V power supply.
53~64	NC	—	Not used.
65	O-TOPN	O	Tray OPEN output.
66	O-CLS	O	Tray CLOSE output.
67	O-DFWD	O	Turntable forward rotation output.
68	O-DRVS	O	Turntable reverse rotation output.
69, 70	NC	—	Not used.
71	VLOAD	—	PWR. -27 V power supply for FL pull-down.
72~76	NC	—	Not used.
77	VCD	O	VIDEO CD selection output.
78	CD FUNC	O	CD function selection output.
79	G-MUT	O	CDG mute output.
80	CD ON	O	FL. Digit output for FL display.

# IC, LC7872E

Pin No.	Pin name	I/O	Description
1, 2	S1, S2	—	DSP select pin for CD. (Connected to VDD)
3	SBCK	O	Subcode read/write clock.
4	SFSY	I	Subcode frame sync signal.
5	PW	I	Subcode read/write data.
6	SBSY	I	Subcode block sync signal.
7	VDD1	—	Power supply for digital block. (Connected to +5V)
8	CE	I	Control pin when serial input or serial output. (Connected to GND)
9	DO	O	Serial data output. (Connected to GND)
10	DI	I	Serial data input. (Connected to GND)
11	CL	I	Clock when inputting/outputting serial data. (Connected to GND)
12	MUTE	I	Control signal disabling the subcode.
13	VSS1	—	GND for digital block.
14	$\overline{WE}$	O	DRAM control pin.
15	$\overline{RAS}$	O	DRAM control pin.
16~23	A0~A7	O	DRAM address pin.
24	DB0	I/O	DRAM data pin.
25	$\overline{CAS}$	O	DRAM control pin.
26	DB1	I/O	DRAM data pin.
27	$\overline{DE}$	O	DRAM control pin.
28	DB2	I/O	DRAM data pin.
29	DB3	I/O	DRAM data pin.
30	CE	I	"L": Normal mode "H": Color bar output (Not used)
31	CDGM	O	"H" output when CDG disk. (Not used)
32	TRANS0	O	Transparency digital output. (Not used)
33	TRANS1	O	Transparency digital output. (Not used)
34	TRANS2	O	Transparency digital output. (Not used)
35	TRANS3	O	Transparency digital output. (Not used)
36	TRANS4	O	Transparency digital output. (Not used)
37	TRANS5	O	Transparency digital output. (Not used)
38	VSS2	—	Composite video DAC GND pin.
39	VDD2	—	Composite video DAC power supply pin. (Connected to +5V)
40	BIAS	O	Capacitor connecting pin for eliminating ripple.
41	VIDEO	O	Composite video output pin (8-bit DAC output).
42	TEST	I	Test pin. Set to "L" normally. (Connected to GND)
43	LINE	I	When NP2 pin is "H": H: 263H L: 262H When NP2 pin is "L": H: 312H L: 314H (Not used)
44	FSCIN	I	Subcarrier clock input pin. (feedback resistor is built in) (Connected to GND)
45	VSYN	O	Vertical sync signal output pin. (Not used)
46	TEST1	I	Test pin. Set to "L" normally. (Connected to GND)
47	YS	O	Superimpose control output. (Not used)
48	$\overline{CSTNC}$	O	Composite sync signal output. (Not used)

Pin No.	Pin name	I/O	Description
49	GND	—	GND.
50	EFLG	O	Error status monitor pin. (Not used)
51	FSX	O	For error status monitor trigger. (Not used)
52	DEN	I	Disk information display enable. H: BGC L: Enable (Connected to GND)
53	PALID	I	External control pin when superimposing with PAL (pull-up resistor is built in). (Not used)
54	VDD3	—	Digital power supply (+5V)
55	FSC	O	Subcarrier clock output. NTSC mode: 3.579545 MHz PAL mode: 4.433619 MHz (Not used)
56	VDD4	—	Digital power supply (+5V)
57	RESET	I	Reset input pin.
58	N/P1	I	NTSC/PAL selection pin. (RGB encoder) "H": NTSC "L": PAL
59	N/P2	I	NTSC/PAL selection pin. (CD-G decoder) "H": NTSC "L": PAL
60	SON	I	Superimpose ON/OFF pin. (Connected to GND)
61	XIN2	I	Crystal oscillator 17.734476 MHz. (for PAL)
62	XOUT2	O	Crystal oscillator 17.734476 MHz. (for PAL)
63	XIN1	I	Crystal oscillator connection 14.31818 MHz. (for NTSC)
64	XOUT1	O	Crystal oscillator connection 14.31818 MHz. (for NTSC)



# IC, CXA1782BQ

Pin No.	Pin name	I/O	Description
1	FEO	O	Focus error amplifier output pin. This pin is connected to the FZC comparator input internally.
2	FEI	I	Focus error input pin.
3	FDFCT	I	Capacitor connection pin for time constant used when there is defect.
4	FGD	I	This pin is connected to GND via capacitor when high frequency gain of the focus servo is attenuated.
5	FLB	I	This is a pin where the time constant is externally connected to raise the low frequency gain of the focus servo.
6	FEO	O	Focus drive output.
7	FEM	I	Focus amplifier inverted input pin.
8	SRCH	I	This is a pin where the time constant is externally connected to generate the focus search waveform.
9	TGU	I	This is a pin where the selection time constant is externally connected to set the tracking servo the high frequency gain.
10	TG2	I	This is a pin where the selection time constant is externally connected to set the tracking high frequency gain.
11	FSET	I	Pin for setting peak of the phase compensator of the focus tracking.
12	TAM	I	Tracking amplifier inverted input pin.
13	TAO	O	Tracking drive output.
14	SLP	I	Sled amplifier non-inverted input pin.
15	SLM	I	Sled amplifier inverted input pin.
16	SLO	O	Sled drive output.
17	ISSET	I	The current which determines height of the focus search, track jump and sled kick is input.
18	VCC	—	+ 5 V power supply pin.
19	CLK	I	Serial data transfer clock input from CPU.
20	XLT	I	Latch input from CPU.
21	DATA	I	Serial data input from CPU .
22	XRST	I	Reset input pin. Reset at L.
23	COUT	O	Signal output to count the number of tracks.
24	SENS	O	FZC, DFCT, TZC, Gain or BAL is output depending on the command from CPU .
25	FOK	O	Output pin of the focus OK comparator.
26	CC2	O	Input pin where the DEFECT bottom hold output is capacitance coupled.
27	CC1	I	DEFECT bottom hold output pin.
28	CB	I	This is a pin where the DEFECT bottom hold capacitor is connected.
29	CP	I	This is a pin where the MIRR hold capacitor is connected and MIRR comparator non-inverted signal is input.
30	RFI	I	Input pin where the RF summing amplifier output is capacitance coupled.
31	RFO	O	RF summing amplifier output pin. (Eye pattern check point)
32	RFM	I	RF summing amplifier inverted input pin. Gain of RF amplifier is determined by the resistor connected between RFO and this pin.

Pin No.	Pin name	I/O	Description
33	LD	O	APC amplifier output pin.
34	PHD	I	APC amplifier input pin.
35~36	PHD1~2	I	RF I-V amplifier inverted input pin. These pins are connected to the A+C and B+D pins of the optical pickup.
37	FE BIAS	I	Bias adjustment pin of the focus error amplifier.
38~39	F~E	I	F and E IV amplifier non-inverted input pins. These pins are connected to the F and E of the optical pickup.
40	EI	—	Gain adjustment pin of the I-V amplifier E.
41	VEE	—	GND connection pin
42	TEO	O	Tracking error amplifier output pin. E-F signal is output.
43	LPFI	I	BAL adjustment comparator input pin.
44	TEI	I	Tracking error input pin.
45	ATSC	I	Window comparator input pin for detecting ATSC.
46	TZC	I	Tracking zero-cross comparator input pin.
47	TDFCT	I	Capacitor connection pin for the time constant used when there is defect.
48	VC	O	DC voltage output pin of VREF. (VDD/2)

# IC, CL480

Pin No.	Pin Name	I/O	Description
1	HSEL2	I	Host address bus.
2	-DS	I	Data strobe.
3	R/-W	I	Read/write.
4	CFLEVEL	O	Coded data FIFO level status. Open drain.
5	-DACK	O	Host data acknowledge. Open drain.
6	HD0	I/O	Host data bus.
7	VDD3	—	Power supply pin. Used in 3.3 V.
8, 9	HD1, HD2	I/O	Host data bus.
10	VSS	—	GND.
11~15	HD3~HD7	I/O	Host data bus.
16	VSS	—	GND.
17	-TEST	I	Test terminal. Normally fixed to High.
18	VSS	—	GND.
19	XTL IN	I	Global clock. 40.5 MHz.
20	XTL OUT	O	Global clock. 40.5 MHz.
21, 22	VDD3	—	Power supply pin. Used in 3.3 V.
23~28	MD0~MD5	I/O	Memory data bus.
29	VDD3	—	Power supply pin. Used in 3.3 V.
30, 31	MD6, MD7	I/O	Memory data bus.
32, 33	-MCE0, -MCE1	O	Chip enable.
34~37	MD8~MD11	I/O	Memory data bus.
38	VSS	—	GND.
39~42	MD12~MD15	I/O	Memory data bus.
43	VDDMAX	—	Power supply pin. Used in 5.0 V.
44	-LCAS	O	Lower digit, column address strobe.
45	-LCASIN	I	Lower digit, data latch enable.
46	VSS	—	GND.
47	-MWE	O	Write enable.
48	-UCAS	O	Higher digit, column address strobe.
49	VDD3	—	Power supply pin. Used in 3.3 V.
50	-UCASIN	I	Higher digit, data latch enable.
51, 52	RAS0, RAS1	O	Lower address strobe.
53~57	MA9~MA5	O	Memory address bus.
58	VSS	—	GND.
59~63	MA4~MA0	O	Memory address bus.
64	RESERVED	—	Reserved.
65	VDD3	—	Power supply pin. Used in 3.3 V.
66~72	VD0~VD6	O	Pixel data bus. RGB or YCbCr format.
73	VSS	—	GND.
74~76	VD7~VD9	O	Pixel data bus. RGB or YCbCr format.
77	VDD3	—	Power supply pin. Used in 3.3 V.



Pin No.	Pin Name	I/O	Description
78~80	VD10~VD12	O	Pixel data bus. RGB or YCbCr format.
81	VDD3		Power supply pin. Used in 3.3 V.
82~84	VD13~VD15	O	Pixel data bus. RGB or YCbCr format.
85	VSS	—	GND.
86~89	VD16~VD19	O	Pixel data bus. RGB or YCbCr format.
90	VSS	—	GND.
91~94	VD20~VD23	O	Pixel data bus. RGB or YCbCr format.
95	-VSYNC or CSY	I/O	Vertical sync signal.
96	-HSYNC	I/O	Horizontal sync signal.
97	-VOE	I	Video output enable.
98	VDD3	—	Power supply pin. Used in 3.3 V.
99	VCLK	I/O	Video clock.
100	VSS	—	GND.
101	-RESET	I	Hardware reset.
102	VSS	—	GND.
103	CD-C2PO	I	Data error. Used during CD-ROM data input.
104	CD-LRCK	I	LR clock.
105	CD-DATA	I	Serial data input from CD-DSP.
106	CD-BCK	I	Bit clock from CD decoder.
107	DA-LRCK	O	LR clock.
108	DA-DATA	O	Bit serial audio sample signal.
109	DA-BCK	O	Audio bit clock.
110	VDD3	—	Power supply pin. Used in 3.3 V.
111	DA-XCLK	I	External audio frequency clock.
112	VDD3	—	Power supply pin. Used in 3.3 V.
113	-INT	O	Interrupt request.
114	RESERVED	—	Reserved.
115	HOST_ENA	I	Host enable.
116	RAM_ENA	I	Boot ROM enable.
117	RESERVED	—	Reserved.
118	DAC_EMP	O	Output emphasis flag.
119	CDDA_EMP	I	Input emphasis flag.
120	RESERVED	—	Reserved.
121	-FMV_DET	O	FMV detection. L: FMV detected.
122	CDDA/VCD	O	Input data identification. H: CDDA. L: video CD.
123	VDDMAX	I	Power supply pin. Used in 5.0 V.
124	RESERVED	—	Reserved.
125	VSS	—	GND.
126	RESERVED	—	Reserved.
127, 128	HSEL0, HSEL1	I	Host address bus.

# IC, CXD1178Q

Pin No.	Pin Name	I/O	Description
1~8	R0~R7	I	Digital input.
9~16	G0~G7		
17~24	B0~B7		
25	BLK	I	Blanking pin. No signal at "H" (Output 0V). Output condition at "L".
26	$\overline{CE}$	I	Chip enable pin. No signal (Output 0V) at "H" and minimizes power consumption.
27	RCK	I	Clock pin. Moreover all input pins are TTL-CMOS compatible.
28	GCK		
29	BCK		
30, 31	DVSS	—	Digital GND.
32	VB	O	Connect a capacitor of about 0.1 $\mu$ F.
33	AVSS	—	Analog GND.
34	VREF	I	Set full scale output value.
35	IREF	I	Connect a resistance 16 times "16R" that of output resistance value "R".
36	$\overline{RO}$	O	Inverted current output pin. Normally dropped to analog GND.
37	RO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
38	$\overline{GO}$	O	Inverted current output pin. Normally dropped to analog GND.
39	GO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
40	$\overline{BO}$	O	Inverted current output pin. Normally dropped to analog GND.
41	BO	O	Current output pin. Voltage output can be obtained by connecting a resistance.
42	VG	I	Connect a capacitor of about 0.1 $\mu$ F.
43~46	AVDD	—	Analog VDD.
47, 48	DVDD	—	Digital VDD.

# IC, MC68HC705

Pin No.	Pin Name	I/O	Description
1	RST	I	Reset.
2	IRQ	I	MPEG DECODER request signal.
3	VPP	—	ROM write power.
4~11	PA7~PA0	I/O	MPEG DECODER data bus 7~0.
12~14	PB0~PB2	O	MPEG DECODER register select 0~2.
15	PB3	O	MPEG DECODER data R/W select.
16	PB4	O	MPEG DECODER data strobe.
17	PB5	I	MPEG DECODER data acknowledge.
18	PB6	I	CD-I bit stream detect.
19	PB7	I	CD DA/VCO select.
20	VSS	—	Power ground.
21	PC7	I	MPEG DECODER FIFO status.
22, 23	PC6, PC5	—	Not used.
24	PC4	O	MPEG DECODER reset signal.
25, 26	PC3, PC2	—	Not used.
27, 28	PC1, PC0	O	Key scan out 1, 0.
29	RDI	—	Not used.
30	TD $\bar{O}$		
31~34	PD2~PD5	I	Key scan input 0~3.
35	TCMP	O	Remote data out.
36	PD7	—	Not used.
37	CAP	I	Remote data in.
38, 39	OSC2, OSC1	I	X_tal in.
40	VDD	—	Power 5V.

# IC, $\mu$ PD6376

Pin No.	Pin Name	I/O	Description
1	FS-SEL	I	As this terminal is "Low" or open, L-ch data and R-ch data are inputted for serial data by the pin 15. As this terminal is "High", L-ch data is inputted by the pin 15, R-ch data is inputted by the pin 14. (Pull-downed by the 100 k $\Omega$ resistance in IC.)
2	D. GND	—	Ground terminal for the logic circuit.
3	NC	—	—
4	D. VDD	—	Power supply terminal for the logic circuit .
5	A. GND	—	Ground terminal for the analog circuit.
6	R. OUT	O	Output terminal for the right analog signal.
7, 8	A. VDD	—	Power supply terminal for the analog circuit.
9, 10	R. REF, L. REF	—	Operational Amplifier reference bias terminal. Normally connected to A.GND via a capacitor.
11	L. OUT	O	Output terminal for the left analog signal.
12	A. GND	—	Ground terminal for the analog circuit.
13	LRCK	I	As the pin 1 is "Low" or open, this is input terminal for left/right identification signal. As the pin 1 is "High", this is input terminal for word identification signal of input data.
14	LRSEL	I	As the pin 1 is "Low" or open, this is left/right selection terminal for LRCK signal. At "High" of LRCK signal, set LRSEL pin at "Low" for L-ch DATA input. At "Low" of LRCK signal, set LRSEL pin at "High" for L-ch DATA input. As the pin 1 is "High", this is input terminal for R-ch serial data.
15	DATA	I	As the pin 1 is "Low" or open, this is input terminal for L-ch and R-ch serial data. As the pin 1 is "High", this is input terminal for L-ch serial data.
16	BCK	I	Input terminal for read clock of serial input data.



# IC, CXA1645M

Pin No.	Pin Name	I/O	Description
1	GND	—	GND.
2	RIN	I	Analog RGB input terminals.
3	GIN		
4	BIN		
5	NC	—	N. C.
6	SCIN	I	Subcarrier input terminal.
7	NPIN	I	NTSC, PAL mode select terminal. NTSC: Vcc, PAL: GND.
8	BFOUT	O	Output terminal to monitor the BF pulse. Unable to drive 75 $\Omega$ load.
9	YCLPC	—	External time constant for Y signal clamp is connected to this terminal.
10	SYNCIN	I	Composite sync signal input terminal. Input at TTL level. SYNC period at L ( $\leq 0.8$ V). H ( $\geq 2.0$ V).
11	NC	—	N. C.
12	VCC	—	Power supply terminal.
13	IREF		Terminal which determines internal reference current.
14	VREF	—	Internal reference voltage terminal.
15	COUT	O	Chroma signal output terminal.
16	YOUT	O	Y signal output terminal.
17	YTRAP	I	Terminal to reduce cross-color due to subcarrier frequency component included in the Y signal.
18	FO	I	fo adjustment terminal of internal filter. The following resistor is connected between GND depending upon NTSC or PAL mode. NTSC: 20 k $\Omega$ ( $\pm 1\%$ ) PAL: 16 k $\Omega$ ( $\pm 1\%$ ).
19	VCC	—	Power supply terminal.
20	CVOUT	O	Composite video signal output terminal.
21	BOUT	O	Analog RGB signal output terminal
22	GOUT		
23	ROUT		
24	GND	—	GND.

# IC, HD6433042F06F

Pin No.	Pin Name	I/O	Description
1	VCC	I	Power supply.
2	CDG DIN	O	CD-G decoder serial data signal.
3	CDG XLT	O	CD-G decoder latch signal.
4	CDG CLK	O	CD-G decoder clock signal.
5~7	GADSP0~2	O	Gate array DSP format 0~2.
8	$\overline{\text{DRQ CDDEC}}$	I	CD-ROM decoder data request signal.
9	$\overline{\text{DRQ MPEG}}$	I	MPEG decoder data request signal.
10	RESO	O	External reset output.
11	GND	I	GND.
12	TXD0	O	Serial interface (RXD).
13	TXD1	O	CXD for test.
14	RXD0	I	Serial interface (RXD).
15	RXD1	I	RXD for test.
16	SCK0	I/O	Serial interface (SCK).
17	$\overline{\text{MPRST}}$	O	Peripheral reset. L: RESET ON.
18~21	D0~D3	I/O	Data bus 0~3.
22	GND	I	GND.
23~34	D4~D15	I/O	Data bus 4~15.
35	VCC	I	Power supply.
36~43	A0~A7	O	Address bus 0~7.
44	GND	I	GND.
45~56	A8~A19	O	Address bus 8~19.
57	GND	I	GND.
58	$\overline{\text{WAIT}}$	I	External wait signal.
59	GLUE ON	O	DMA glue circuit enable 0: OFF. 1: ON.
60	M EMPH	O	MPEG AUDIO emphasis 0: OFF. 1: ON.
61	FAI	O	System clock output.
62	$\overline{\text{STBY}}$	I	Standby. (Hardware standby mode at low level).
63	$\overline{\text{RES}}$	I	Reset input. (Reset at low).
64	NMI	I	Non-maskable interrupt. (Non-maskable interrupt is requested).
65	GND	I	GND.
66	EXTAL	I	External crystal is connected to this pin.
67	XTAL	I	External crystal is connected to this pin.
68	VCC	I	Power supply.
69	$\overline{\text{AS}}$	O	Address strobe signal.
70	$\overline{\text{RD}}$	O	External address read enable signal.
71	$\overline{\text{HWR}}$	O	External address high write enable signal.
72	$\overline{\text{LWR}}$	O	External address low write enable signal.
73~75	MOD0~MOD2	I	Mode terminal. Operating mode is set using this terminal.
76	AVCC	I	Power supply terminal of A/D converter and D/A converter.
77	VREF	I	Reference voltage input to A/D converter and D/A converter.

Pin No.	Pin Name	I/O	Description
78, 79	P70, P71	I	IN port 0, 1 for test.
80	PAL/NTSC	I	PAL/NTSC status 0: NTSC. 1: PAL.
81	REQ CD	I	Serial interface (REQ_CD).
82~85	P74~P77	I	Reserve.
86	AGND	I	GND terminal of A/D converter and D/A converter.
87	INT CDDRV	I	Serial interface interrupt.
88	INT CDDEC	I	CD-ROM decoder interrupt.
89	INT MPEG	I	MPEG decoder interrupt.
90	IRQ3	I	Reserve.
91	P84	I	Reserve.
92	GND	I	GND.
93	DONE CDDEC	O	CD-ROM decoder DONE signal.
94	DONE MPEG	O	MPEG decoder DONE signal.
95	CDG VOFF	O	CD-G decoder video OFF signal. 1: VOFF.
96	SYS MUTE1	O	Audio mute 1 signal. 1: mute ON.
97	INTFLDO	I	EVEN/OFF input signal. 0: EVEN. 1: ODD.
98	SW AUDIO	O	Audio select signal. 0: CD-G/DA. 1: MPEG.
99	SYS MUTE0	O	Audio mute 0 signal. 0: mute on.
100	REQ MPEG	O	Serial interface (REQ MPEG)

# IC, $\mu$ PD65622GF-239-3B9

Pin No.	Pin Name	I/O	Description
1	LRCKCD	O	Main data signal to CXD1186.
2	SDATACD	O	
3	BCKCD	O	
4	C2POCD	O	
5	$\overline{\text{CSROMH}}$	O	Chip select signal to CXD1186 (host side).
6	$\overline{\text{CSROMC}}$	O	Chip select signal to CXD1186 (CPU side).
7	$\overline{\text{DACKROM}}$	O	DMA acknowledge signal to CXD1186.
8	HDRQ	I	Data transfer request signal from CXD1186. This signal is active high.
9	$\overline{\text{ROMRD}}$	O	Read/write signal to CXD1186.
10	$\overline{\text{ROMWR}}$	O	Read/write signal to CXD1186.
11	EMPHI	I	This signal allows inputting the main data from the CD drive.
12	GND	—	GND.
13	SDATAI	I	This signal allows inputting the main data from the CD drive.
14	BCKI	I	
15	LRCKI	I	
16	C2POI	I	
17	GND	—	GND.
18	16.9M	I	16.9344 MHz oscillator circuit input signal.
19	16.9F	O	16.9344 MHz oscillator circuit output signal.
20	GND	—	GND.
21	GSFSY	I	Write frame clock signal used to input the sub data from CD drive.
22	EMPO	O	Main data signal to CXD1186.
23	LRCKO	O	Audio data signal to audio DAC.
24	SDATAO	O	Audio data signal to audio DAC.
25	RESET	O	Active high reset signal.
26	GND	—	GND.
27	BCKCO	O	Audio data signal to audio DAC.
28	$\overline{\text{GGLUE}}$	I	The input signal which makes the glue circuit valid from GSFSY input.
29	$\overline{\text{GGSFSY}}$	O	Not used.
30	SDATAMA	I	Audio data signal from $\mu$ PD61010.
31	BCKMA	I	
32	LRCKMA	I	
33	GND	—	GND.
34	VCC	—	Vcc.
35	$\overline{16.9M}$	O	16.9344 MHz output signal.
36	GND	—	GND.
37	$\overline{\text{DS}}$	O	Control signal to $\mu$ PD61010.
38	$\overline{\text{CSMPEG}}$	O	Chip select signal to CXD1186.
39	$\overline{\text{R/W}}$	O	Control signal to $\mu$ PD61010.
40	INT	I	Interrupt request signal from $\mu$ PD61010. This signal is active high.
41	HDAK	I	Data acknowledge signal from $\mu$ PD61010.



Pin No.	Pin Name	I/O	Description
42	$\overline{\text{DREQ}}$	I	DRAM data transfer request signal from $\mu\text{PD61010}$ .
43	$\overline{\text{DACKMP}}$	O	DMA acknowledge signal to $\mu\text{PD61010}$ .
44	$\overline{\text{DAK}}$	I	Bit stream data transfer request signal from $\mu\text{PD61010}$ .
45	$\overline{\text{CSCCELL}}$	O	Chip select signal to standard cell.
46	GND	—	GND.
47	$\overline{\text{RESET}}$	I	System reset signal.
48	GND	—	GND.
49	$\overline{\text{CSRAM}}$	O	Chip select signal to the system RAM.
50	$\overline{\text{LWR}}$	I	Lower data write signal from CPU.
51	$\overline{\text{HWR}}$	I	Upper data write signal from CPU.
52	$\overline{\text{RD}}$	I	Data read signal from CPU.
53	GND	—	GND.
54	$\overline{\text{AS}}$	I	Address strobe signal from CPU.
55	$\overline{\text{CSIO}}$	O	Optional chip select signal.
56~63	A19~A12	I	Address signal from CPU.
64	GND	—	GND.
65	$\overline{\text{WAIT}}$	O	Wait signal to CPU.
66	GLUEON	I	This signal makes the glue logic valid in order to prevent CPU DMAC from trouble. This circuit is made valid at high.
67	$\overline{\text{SEL12}}$	I	Input signal to select 12 MHz or 16 MHz CPU clock.
68	EMPMA	I	Audio data signal from $\mu\text{PD61010}$ .
69	GND	—	GND.
70	FAI	I	Basic clock signal (12 MHz) from CPU.
71	GND	—	GND.
72	VCC	—	Vcc.
73	GND	—	GND.
74	$\overline{\text{INTMPEG}}$	O	Interrupt request signal to CXD1186.
75	SWAUDIO	I	Selection signal between MPEG audio and CD-DA audio signals.
76	$\overline{\text{DRQ1}}$	O	DMA transfer request signal to $\mu\text{PD61010}$ .
77	$\overline{\text{DRQ0}}$	O	DMA transfer request signal to CXD1186.
78~80	GADSP2~0	I	Format select signal to convert format of the main data from CD drive.

# IC, CXD1186CR

Pin No.	Pin Name	I/O	Description
1~4	A0~A3	I	CPU address signal.
5	HMDS	I	Host mode select signal.
6, 7	HA0, HA1	I	Host address signal.
8	XHCS	I	Chip select negative logic signal from the host.
9	HINT	O	Interrupt request negative logic signal to the host.
10	GND	—	GND.
11	XHRD	I/O	Data read strobe signal from the host or to the SCSI control IC.
12	XHWR	I/O	Data write strobe signal from the host or to the SCSI control IC.
13~20	HDB0~HDB7	I/O	Host data bus.
21	GND	—	GND.
22	HDBP	I/O	Error flag. Host data bus.
23	XRST	I	Reset negative logic signal.
24	HDRQ	O	Data request positive logic signal to the host. Or DMA acknowledge negative logic signal to the SCSI control IC.
25	XHAC	I	DMA acknowledge negative logic signal from the host Or data request positive logic signal from the SCSI control.
26	XTC	I	Terminal count negative logic signal.
27	ADRQ	I	DMA request positive logic signal from ADP.
28	XAAC	O	DMA acknowledge negative logic signal to ADP.
29, 30	BA0, BA1	O	Buffer memory address.
31	VDD	—	Power supply (+5 V) terminal.
32~39	BA2~BA9	O	Buffer memory address.
40	GND	—	GND.
41~46	BA10~BA15	O	Buffer memory address.
47	XMOE	O	Buffer memory output enable negative logic signal.
48	XMWR	O	Buffer memory write negative logic signal.
49	BDB0	I/O	Buffer memory data bus.
50	GND	—	GND.
51~57	BDB1~BDB7	I/O	Buffer memory data bus.
58	BDBP	I/O	Buffer memory pointer data bus.
59	XTL2	O	X'TAL oscillator circuit output terminal.
60	XTL1	I	X'TAL oscillator input terminal.
61	GND	—	GND.
62	HCLK	O	X'TAL 1 divided-by-2 clock signal.
63	LRCK	I	LR clock from CD player.
64	DATA	I	Serial data from CD player.
65	BCLK	I	Bit clock from CD player.
66	C2P0	I	C2 pointer from CD player.
67~70	DB0~DB3	I/O	CPU data bus.
71	VDD	—	Power supply (+5 V) terminal.
72~75	DB4~DB7	I/O	CPU data bus.

Pin No.	Pin Name	I/O	Description
76	XCS	I	Chip select negative logic signal from CPU.
77	XRD	I	IC internal register read-out strobe negative logic signal from CPU.
78	XWR	I	IC internal register write strobe negative logic signal from CPU.
79	INT	O	Interrupt request signal to CPU.
80	GND	—	GND.

IC, TLC29321PW

Pin No.	Pin Name	I/O	Description
1	VDD	—	Power supply terminal to the internal logic circuit.
2	VCO LS	I	VCO output frequency divide-by-2 divider select terminal. The VCO output frequency can be divided by 2 and output as this terminal is controlled by external logic.
3	VCOO	O	VCO output terminal. Goes to low level during inhibit.
4, 5	FIN-A, FIN-B	I	2 input terminal for edge difference detection between the reference frequency (fREF-IN) and the frequency from external counter. The fREF-IN is input to the FIN-A terminal normally, and the divided or multiplied frequency from external counter is input to the FIN-B terminal.
6	PFDO	O	PFD output terminal.
7	GND	—	Internal logic circuit GND terminal.
8	NC	—	N.C.
9	PFDIH	I	PFD inhibit function control terminal.
10	VCOIH	I	VCO inhibit function control terminal.
11	A GND	—	VCO GND.
12	VCOI	I	VCO control voltage input. The VCO oscillator control voltage is input from an external low-pass filter to form PLL.
13	RBIAS	I	External resistor is connected to this terminal for setting the VCO oscillation frequency. A bias resistor is connected between this terminal and power supply line to supply bias for internal VCO oscillation and for setting and adjusting the oscillating frequency.
14	A VDD	—	VCO power supply voltage terminal.

IC, HD49307

Pin No.	Pin No.	I/O	Description
1~5	G4~G8	I	Digital input terminal.
6	B1	—	N. C.
7	NC	I	Digital input terminal.
8~12	B2~B6	I	Digital input terminal.
13~15	NC	—	N. C.
16, 17	B7, B8	I	Digital input terminal.
18	NC	—	N. C.
19	RCLK	I	R channel clock input.
20	GCLK	I	G channel clock input.
21	BCLK	I	B channel clock input.
22	DVSS	—	Digital GND.
23	DVDD	—	Digital power supply.
24	NC	—	N. C.
25	CBU	—	External phase compensation capacitance connection terminal.
26	CBL	—	Bypass capacitance connection terminal.
27~29	NC	—	N. C.
30	VRREF	I	Reference voltage input terminal.
31	AVSS	—	Analog GND.
32	AVDD	—	Analog power supply.
33	BOUT	O	B channel analog signal output terminal.
34	AVDD	—	Analog power supply.
35	NC	—	N. C.
36	GOUT	O	G channel analog signal output terminal.
37	AVDD	—	Analog power supply.
38	ROUT	O	R channel analog signal output terminal.
39	AVSS	—	Analog GND.
40	AVDD	—	Analog power supply.
41	DVDD	—	Digital power supply.
42	R1	I	Digital input terminal.
43~44	NC	—	N. C.
45~51	R2~R8	I	Digital input terminal.
52~54	G1~G3	I	Digital input terminal.
55, 56	NC	—	N. C.

IC, μPD61010

Pin No.	Pin Name	I/O	Description
1	VDD	—	+5 V power supply.
2~6	HD9~5	I/O	Host data bus.
7	VDD	—	+5 V power supply.
8	GND	—	GND.
9~13	HD4~0	I/O	Host data bus.
14	VDD	—	+5 V power supply.
15	GND	—	GND.
16	$\overline{\text{DREQ}}$	O	DMA request signal.
17	$\overline{\text{DACK}}$	I	DMA acknowledge signal.
18	HSEL	I	Signal to select the host CPU access method.
19	DRQ	I	Data input request for bit stream input from CD-ROM decoder.
20	VDD	—	+5 V power supply.
21	GND	—	GND.
22	DAK	O	Data input response for bit stream input from CD-ROM decoder, or DMA input request for code input.
23	$\overline{\text{DRD}}$	O	Bit stream input approval signal.
24, 25	NC	—	N. C.
26~33	CD0~7	I	Data bus for bit stream input from CD-ROM decoder.
34	VDD	—	+5 V power supply.
35	GND	—	GND.
36~39	MD7~4	I/O	DRAM data bus.
40	VDD	—	+5 V power supply.
41, 42	GND	—	GND.
43~46	MD3~0	I/O	DRAM data bus.
47, 48	MD15, 14	I/O	DRAM data bus.
49	VDD	—	+5 V power supply.
50	GND	—	GND.
51~56	MD13~8	I/O	DRAM data bus.
57	VDD	—	+5 V power supply.
58	GND	—	GND.
59~64	MA0~5	O	DRAM address bus.
65	VDD	—	+5 V power supply.
66	GND	—	GND.
67~69	MA6~8	O	DRAM address bus.
70	$\overline{\text{RAS}}\text{ } \overline{1}$	O	DRAM RAS signal.
71	$\overline{\text{RAS}}\text{ } \overline{0}$	O	DRAM RAS signal.
72	$\overline{\text{CAS}}$	O	DRAM CAS signal.
73	VDD	—	+5 V power supply.
74	$\overline{\text{WE}}$	O	Write enable to DRAM.
75~77	NC	—	N. C.
78	VOE	I	Video data output enable.

Pin No.	Pin Name	I/O	Description
79, 80	GND	—	GND.
81	VDD	—	+5 V power supply.
82	NC	—	N. C.
83	FLDI	I	Field signal (odd/even).
84	HDI	I	Horizontal sync signal.
85	VDI	I	Vertical sync signal.
86	VDCLK	I	Video data output clock (13.5 MHz).
87	VDD	—	+5 V power supply.
88~91	VDATA23~20	O	Video data output bus.
92	GND	—	GND.
93	VDD	—	+5 V power supply.
94~97	VDATA19~16	O	Video data output bus.
98, 99	VDATA15, 14	O	Video data output bus.
100	VDD	—	+5 V power supply.
101	GND	—	GND.
102~105	VDATA13~10	O	Video data output bus.
106	VDD	—	+5 V power supply.
107	GND	—	GND.
108~112	VDATA9~5	O	Video data output bus.
113	VDD	—	+5 V power supply.
114	GND	—	GND.
115~119	VDATA4~0	O	Video data output bus.
120	VDD	—	+5 V power supply.
121, 122	GND	—	GND.
123	DO	O	Video data output bus.
124	BCK	O	Video data output clock.
125	LRCK	O	L/R channel identification signal.
126	MCLK	O	Audio master clock.
127	NC	—	N. C.
128	AUCLK	I	Internal audio decoder system clock.
129	VDD	—	+5 V power supply.
130~132	NC	—	N. C.
133	VDD	—	+5 V power supply.
134	$\overline{\text{RESET}}$	I	Reset signal.
135	CLK	I	System clock (27 MHz)
136	GND	—	GND.
137	$\overline{\text{DS}}$	I	Data strobe signal.
138	$\text{R}/\overline{\text{W}}$	I	Read/write select.
139	$\overline{\text{CS}}$	I	Chip select.
140~145	HADR0~5	I	Host address bus.
146, 147	GND	—	GND.



Pin No.	Pin Name	I/O	Description
148	INT	O	Interrupt signal.
149	HDAK	O	Bus cycle response signal.
150	VDD	—	+5 V power supply.
151	GND	—	GND.
152~157	HD15~10	I/O	Host data bus.
158	VDD	—	+5 V power supply.
159, 160	GND	—	GND.

## IC, $\mu$ PD63210GT

Pin No.	Pin Name	I/O	Description
1	TSEL	I	Test selection input.
2	RST	I	Reset input.
3	XTO	O	External crystal oscillator is connected to this pin.
4	XTI	I	External crystal oscillator is connected to this pin.
5	MCKO	O	Master clock output.
6	CKSEL	I	Clock selection input.
7	CLK	I	Bit clock input.
8	SI	I	Data input.
9	LRCK	I	LR clock input.
10	DEFS1	I	Deemphasis selection input 1.
11	DEFS2	I	Deemphasis selection input 2.
12	DSEL	I	Double speed playback selection input..
13	SMUTE	I	Soft mute selection input.
14	BSEL	I	Data bit length selection input.
15	DGND	—	Digital GND.
16	AGND	—	Analog GND.
17	RO	O	D/A converter output (R channel).
18	AOR	O	Filter amplifier output (R channel).
19	ANIR	I	Filter amplifier (-) input (R channel).
20	APIR	I	Filter amplifier (+) input (R channel).
21	RREF	—	Reference (R channel).
22	LREF	—	Reference (L channel).
23	APIL	I	Filter amplifier (+) input (L channel).
24	ANIL	I	Filter amplifier (-) input (L channel).
25	AOL	O	Filter amplifier output (L channel).
26	LO	O	D/A converter output (L channel).
27	AVDD	—	Analog power supply.
28	DVDD	—	Digital power supply.

# IC, TC170C100AF

Pin No.	Pin Name	I/O	Description
1~5	YIN4~0	I	Y signal from MPEG chip.
6	GND	—	GND.
7~14	UIN7~0	I	U signal from MPEG chip.
15	GND	—	GND.
16, 17	VIN7, 6	I	V signal from MPEG chip.
18	VCC	—	Power supply terminal.
19~24	VIN5~0	I	V signal from MPEG chip.
25	GND	—	GND.
26	FLDO	O	Odd/even signal output of a field.
27	HDO	O	HSYNC signal to MPEG chip.
28	VDO	O	VSNC signal to MPEG chip.
29	PCP	O	Clamp signal output.
30	CBLK	O	Blanking signal output (used depending upon type of DAC).
31	GND	—	GND.
32	FSC	O	Sub carrier output (Divided-by-four of NTSC: 14.31818 MHz. PAL: 17.734475 MHz).
33	CDG/MPEG	O	CD-G or MPEG play selector signal to external RGB video selector.
34	TEST0	I	Operation mode setting terminal.
35	GND	—	GND.
36	13.5M	O	13.5 MHz output.
37	GND	—	GND.
38~43	R OUT7~2	O	Y/R signal output (Output format can be selectable in Y/R).
44	GND	—	GND.
45, 46	R OUT1, 0	O	Y/R signal output (Output format can be selectable in Y/R).
47~54	G OUT7~0	O	U/G signal output (Output format can be selectable in U/G).
55	VCC	—	Power supply terminal.
56~63	B OUT7~0	O	V/B signal output (Output format can be selectable in V/B).
64	GND	—	GND.
65	27M	I	27 MHz input.
66	TEST1	I	Operation mode setting terminal.
67	SHSYNC	O	Comparison clock for PLL synchronizing CLK.
68	MHSYNC	O	Reference clock for PLL synchronizing CLK.
69	VCC	—	Power supply terminal.
70	OSC1	I	14.31818 MHz input port (crystal oscillation) when supporting NTSC.
71	OSC2	O	NTSC: 14.31818 MHz crystal oscillation output terminal.
72, 73	GND	—	GND.
74	OSC3	I	17.734475 MHz input port (crystal oscillation) when supporting PAL.
75	OSC4	O	17.734475 MHz crystal oscillation output terminal.
76	VCC	—	Power supply terminal.
77, 78	TEST2, 3	I	Operation mode setting terminal.
79	FMOD	I	FLD0 output HL inversion selection signal.
80	PMOD	I	PCP output HL inversion selection signal.

Pin No.	Pin Name	I/O	Description
81	GND	—	GND.
82~85	T15~T12	I	RAM data input terminals 15 - 12 during RAM check.
86	T11OP3	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
87	T10OP2	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
88	T9OP1	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
89	T8OP0	I/O	OUT port terminals 3 - 0 (address 4). RAM data input terminals 11 - 8 during RAM check.
90	VCC	—	Power supply terminal.
91	GHSYNC	I	HSYNC signal from CD-G decoder.
92	GVSYNC	I	VSYNC signal from CD-G decoder.
93	GCSYNC	I	CSYNC signal from CD-G decoder.
94	GND	—	GND.
95~98	T7~4	I	RAM data input terminals 7 - 4 during RAM check.
99	T3IP3	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
100	T2IP2	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
101	T1IP1	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
102	T0IP0	I	IN port terminals 3 - 0 (address 5). RAM data input terminals 3 - 0 during RAM check.
103	GND	—	GND.
104	4FSC	O	104 NTSC: 14.31818 MHz. PAL: 17.734475 MHz buffer output.
105	GND	—	GND.
106	RAMCE	I	Chip enable signal for checking internal RAM and ROM check. (Fixed to low normally).
107	RAMW	I	Read/write signal for checking internal RAM and ROM check. (Fixed to low normally).
108	XT2C	I	XT2C input (used for HYNC DL delay).
109	GND	—	GND.
110	RST	I	Input port of the reset signal.
111	GND	—	GND.
112	PAL/NTSC	I	PAL/NTSC selector port.
113	HSYNCIN	O	Inverted output of HYNCS IN.
114	HSYNCIN	I	SYNC signal from VST (only when supporting FMV engine).
115	VSYNCSIN	I	VSYNCSIN from VSC. (only when supporting FMV engine).
116	GND	—	GND.
117~124	D7~0	I/O	CPU data bus signal.

Pin No.	Pin Name	I/O	Description
125	VCC	—	Power supply terminal.
126	CMOD	I	CLBK output HL inversion selection signal.
127	VOD	I	Video output disable.
128	VCD/FMV	I	VIDEO CD/DMV engine selection port.
129	CS	I	Chip select signal.
130	RD/LDS	I	READ signal from CPU RD (when supporting H8). LD (when supporting 680009).
131	WR/RW	I	WRITE signal from CPU WR (when supporting H8). R/W (when supporting 680009).
132~134	A2~0	I	Address signal from CPU.
135	H8/68	I	CPU H8-325/68000 selection port.
136	GND	—	GND.
137	HSYNCO	O	Horizontal sync output.
138	VSYNCO	O	Vertical sync output.
139	CSYNCO	O	Composite sync output. CSYNCSIN signal from video encoder.
140	SMOD	I	13.5 MHz $\uparrow$ $\downarrow$ selection of SYNC signal output. Selection is possible at the final stage of HDO, VDO, HSYNCO, VSYNCO, CSYNCO, SHYNC, PCP, CBLK, FLDO. (However, HSYNCO, VSYNCO, CSYNCO are supported during SYNC output of the CD-G decoder.)
141	VCC	—	Power supply terminal.
142~144	YIN7~5	I	Y signal from MPEG chip.

IC, MB89627

Pin No.	Pin Name	I/O	Description
1	CCLK	O	SSP, DSP Control Clock.
2	DATA	O	SSP, DSP Control Data.
3	SENS	I	SSP, DSP Status.
4	XLAT	O	SSP, DSP Command Latch.
5	XRST	O	SSP, DSP Reset.
6	TVMSW	O	OFF/NTSC/PAL/PAL60/PAL AUTO/AUTO/TEST. *NOTE
7	DMUTE	O	Digital Mute.
8	AMUTE	O	Analog Mute.
9	LDON	O	Servo PCB Power on.
10	VCDRST	O	Video CD Reset.
11	OPTON	O	Optical Digital Output ON.
12	VCC	—	A/D Converter VCC.
13	VCC	—	A/D Converter VREF.
14	VSS	—	A/D Converter VSS.
15	HOSTIRQ	I	Host CPU Interrupt Request.
16	SCOR	I	Subcode Sync 0. (Subcode IRQ)
17	ILSW	I	Inter Limit Switch.
18	VCDIRQ	I	Video CD Decoder Interrupt Request.
19	N. C.	I	Not used.
20	RST	I	CPU Reset.
21	MODE0	I	CPU MODE. (Pull-down)
22	MODE1	I	CPU MODE. (Pull-down)
23	CLKIN	O	8MHz System Clock.
24	CLKOUT	I	8MHz System Clock.
25	VSS	—	GND.
26	ALE	O	Address Latch Strobe.
27	RD	O	Data Read Strobe.
28	WR	O	Data Write Strobe.
29	CLK	O	Clock out.
30	READY	I	Video CD Decoder Ready.
31	OSDCS	O	OSDC Enable.
32	OSDCLK	O	OSDC Data Clock.
33	OSDSIN	O	OSDC Data.
34~41	A8~A15	O	Address Bus 8~15.
42~49	AD0~AD7	I/O	Address/Data Bus 0~7.
50	VSS	—	GND.
51	VCD/CDG	O	Video CD/CDG Switch.
52	HCLK	I	Host CPU Control Clock.
53	ST	O	Host CPU Control Send Data.
54	RT	I	Host CPU Control Receive Data.
55	TRACK	I	Travase Counter.

Pin No.	Pin Name	I/O	Description
56	ENCRST	O	Video Encoder Reset.
57	DVCC	—	DVCC.
58	PAL/PAL60	O	PAL/PAL60 Switch.
59	XNTSC	O	PAL/NTSC Switch.
60	SQCK	O	Subcode Q Read Clock.
61	SQSO	I	Subcode Q Serial Data.
62	BUSY	I/O	Host CPU I/F Busy Signal.
63	FOK	I	Focus Servo OK Detect.
64	GFS	I	Frame Sync Detect.

Note

- Analog input (TVMSW: 6 pin) of the microprocessor is divided into 7, then controlled.
- The output are the command setting (Set Video Format) to the two ports of PAL/PAL60 (58 pin), XNTSC (59 pin) and IC301 (CL484).

TVMSW (6 pins)		DISC encoding system	TV output mode	PAL/PAL60 (58 pins)	XNTSC (59 pins)	Set Video Format
Volt (V)	Mode					
5.00	OFF	—	Not used (NTSC output mode).			
4.58	NTSC	—	NTSC	H	L	NTSC
3.75	PAL	—	PAL	H	H	PAL
2.92	PAL60	—	PAL60	L	H	NTSC
2.08	PAL AUTO	NTSC	PAL60	L	H	NTSC
		PAL	PAL	H	H	PAL
1.25	AUTO	NTSC	NTSC	H	L	NTSC
		PAL	PAL	H	H	PAL
0.42	TEST	—	For servo circuit adjustment (NTSC output mode).			
0.00						

- \*1 As to identification of the disc encoding system, it is identified from the V\_SIZE (1A1h/word) of the MPEG data.
- \*2 “For servo circuit adjustment” is the process during adjustment (when variable resistor is operated by service engineer) that the microprocessor enters the emergency process routine if the servo system goes extremely out of the servo range.
- \*3 In addition to the above, ENCRST (56 pin) is the reset signal for TV encoder, issues the active “L” pulse when each of the input port of CDGSW, NTB, CVSY, HSY, PIXCLK, GCLK, PAL60B and VCLK of IC401 (BU1417AK) has changed as follows:
- ① When the power is supplied to the circuit boards of the CD block,
  - ② When starting to reach TOC.
  - ③ The modes have changed as follows:
    - TVMSW is switched.
    - Switching of encoding system owing to exchange of video CD disc
    - Exchange of video CD disc with the CD-DA or CD-G.

Pin No.	Pin Name	I/O	Description
1	HSEL2	I	Host address bus.
2	-DS	I	Data strobe.
3	R/-W	I	Read/write.
4	CFLEVEL	O	Coded data FIFO level status. Open drain.
5	-DACK	O	Host data acknowledge. Open drain.
6	HD0	I/O	Host data bus.
7	VDD3	—	Power supply pin. Used in 3.3 V.
8, 9	HD1, HD2	I/O	Host data bus.
10	VSS	—	GND.
11~15	HD3~HD7	I/O	Host data bus.
16	VSS	—	GND.
17	-TEST	I	Test terminal. Normally fixed to High.
18	VSS	—	GND.
19	XTL IN	I	Global clock. 40.5 MHz.
20	XTL OUT	O	Global clock. 40.5 MHz.
21, 22	VDD3	—	Power supply pin. Used in 3.3 V.
23~28	MD0~MD5	I/O	Memory data bus.
29	VDD3	—	Power supply pin. Used in 3.3 V.
30, 31	MD6, MD7	I/O	Memory data bus.
32, 33	-MCE0, -MCE1	O	Chip enable.
34~37	MD8~MD11	I/O	Memory data bus.
38	VSS	—	GND.
39~42	MD12~MD15	I/O	Memory data bus.
43	VDDMAX	—	Power supply pin. Used in 5.0 V.
44	-LCAS	O	Lower digit, column address strobe.
45	-LCASIN	I	Lower digit, data latch enable.
46	VSS	—	GND.
47	-MWE	O	Write enable.
48	-UCAS	O	Higher digit, column address strobe.
49	VDD3	—	Power supply pin. Used in 3.3 V.
50	-UCASIN	I	Higher digit, data latch enable.
51, 52	RAS0, RAS1	O	Lower address strobe.
53~57	MA9~MA5	O	Memory address bus.
58	VSS	—	GND.
59~63	MA4~MA0	O	Memory address bus.
64	RESERVED	—	Reserved.
65	VDD3	—	Power supply pin. Used in 3.3 V.
66~72	VD0~VD6	O	Pixel data bus. RGB or YCbCr format.
73	VSS	—	GND.
74~76	VD7~VD9	O	Pixel data bus. RGB or YCbCr format.
77	VDD3	—	Power supply pin. Used in 3.3 V.

Pin No.	Pin Name	I/O	Description
78~80	VD10~VD12	O	Pixel data bus. RGB or YCbCr format.
81	VDD3	—	Power supply pin. Used in 3.3 V.
82~84	VD13~VD15	O	Pixel data bus. RGB or YCbCr format.
85	VSS	—	GND.
86~89	VD16~VD19	O	Pixel data bus. RGB or YCbCr format.
90	VSS	—	GND.
91~94	VD20~VD23	O	Pixel data bus. RGB or YCbCr format.
95	-VSYNC or CSY	I/O	Vertical sync signal.
96	-HSYNC	I/O	Horizontal sync signal.
97	-VOE	I	Video output enable.
98	VDD3	—	Power supply pin. Used in 3.3 V.
99	VCLK	I/O	Video clock.
100	VSS	—	GND.
101	-RESET	I	Hardware reset.
102	VSS	—	GND.
103	CD-C2PO	I	Data error. Used during CD-ROM data input.
104	CD-LRCK	I	LR clock.
105	CD-DATA	I	Serial data input from CD-DSP.
106	CD-BCK	I	Bit clock from CD decoder.
107	DA-LRCK	O	LR clock.
108	DA-DATA	O	Bit serial audio sample signal.
109	DA-BCK	O	Audio bit clock.
110	VDD3	—	Power supply pin. Used in 3.3 V.
111	DA-XCLK	I	External audio frequency clock.
112	VDD3	—	Power supply pin. Used in 3.3 V.
113	-INT	O	Interrupt request.
114	CDG-S0S1	I	Block start sync.
115	HOST_ENA	I	Host enable.
116	RAM_ENA	I	Boot ROM enable.
117	CDG-VFSY	I	Frame start or composite sync.
118	DAC_EMP	O	Output emphasis flag.
119	CDDA_EMP	I	Input emphasis flag.
120	CDG-SDATA	I	Subcode data.
121	CDG-SCLK	I/O	Subcode data clock.
122	CDDA/VCD	O	Input data identification. H: CDDA. L: video CD.
123	VDDMAX	I	Power supply pin. Used in 5.0 V.
124	FSC1	O	Output generated by dividing-by-4 the pin-126 input CLK.
125	VSS	—	GND.
126	FSC4	I	Frequency divider input.
127, 128	HSEL0, HSEL1	I	Host address bus.



IC, BU1417AK

Pin No.	Pin Name	I/O	Description
1	BOSD	I	OSD Blue Data input.
2	GD0	I	Green Data Bit 0. (LSB)
3~8	GD1~GD6	I	Green Data Bit 1~6.
9	GND	—	Digital ground.
10	GD7	I	Green Data Bit 7. (MSB)
11	BD0	I	Blue Data Bit 0. (LSB)
12~14	BD1~BD3	I	Blue Data Bit 1~3.
15	OSDSW	I	OSD input enable.
16	CDGSWB	I	Select Video-CD/CD-G.
17~19	BD4~BD6	I	Blue Data Bit 4~6.
20	BD7	I	Blue Data Bit 7. (MSB)
21	GND	—	Digital ground.
22	NTB	I	Select NTSC/PAL mode.
23, 24	IM0, IM1	I	Input mode set Bit 0, 1.
25, 26	TEST1, TEST2	I	Normally pulldown to GND.
27	CVSY	I	C-SYNC or V-SYNC input.
28	HSY	I	H-SYNC input.
29	PIXCLK	O	1/2 Freq. of internal CL.
30	BLKB	I	Data blanking ENABLE.
31	VDD	—	Digital VDD.
32	INT	I	INTERLACE/NON-INTERLACE.
33	SLABEB	I	Set mode MASTER/SLABE.
34	ADDH	I	ADD One_line at Non-inter.
35	VREF	I	Reference voltage. (1.29V)
36	CGND	—	Chroma output ground.
37	COUT	O	Chroma output.
38	VGND	—	Composite output ground.
39	VOUT	O	Composite output.
40	AVSS	—	Analog (DAC, VREF) ground.
41	NC	—	Not used.
42	IR	I	Reference resistor. (1.2K)
43	AVDD	—	Analog (DAC, REF) VDD.
44	YGND	—	Luminance output ground.
45	YOUT	O	Luminance output.
46	G4FSC	I	Pulldown to GND.
47	GCLK	I	Video clock input for CD-G.
48	YCOFF	I	DAC (YOUT, COUT) off.
49	YFILON	I	Pulldown to GND.
50	PAL60B	I	PAL60 ON at NTB=HIGH.
51	VCLK	I	Video clock input for VCD.
52	RSTB	I	Logic part initial reset.

IC, BU2173AF

Pin No.	Pin Name	I/O	Description
53	CLKSW	I	Divide input CLK ENABLE.
54	RD0	I	Red data Bit 0. (LSB)
55, 56	RD1, RD2	I	Red data Bit 1, 2.
57	ROSD	I	OSD Red data input.
58~60	RD3~RD5	I	Red data Bit 3~5.
61	VDD	—	Digital VDD.
62	RD6, RD7	I	Red data Bit 6, 7.
63	GOSD	I	OSD green data input.

IC, BU2173AF

Pin No.	Pin Name	I/O	Description
1	VDD	—	Digital VDD.
2	TSTO	O	Open during normal mode. (Used in test mode.)
3	XTALI	I	Reference oscillator input.
4	XTALO	O	Reference oscillator output.
5	CTRLA	I	CD-G/VCD clock selector terminal.
6	CTRLB	I	Fixed to "H" during normal mode.
7	CTRLC	I	CD-G PAL/NTSC clock selector terminal.
8	TSTI	I	Connected to Vss during normal mode. (Used in test mode.)
9	VSS	—	Digital GND.
10	AVSS	—	Analog GND.
11	FOUT3	O	Not used. Open during normal mode.
12	VSSIO	—	I/O GND.
13	FOUT2	O	Clock output (2).
14	TEST	—	Test mode setting. Connected to Vss during normal mode.
15	FOUT1	O	Clock output (1).
16	VDDIO	—	I/O VDD.
17	FOUT4	O	Clock output (4).
18	AVDD	—	Analog VDD.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• Laser diode turns always ON. (CD block power is ON.)</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes. * NOTE 1</li> </ul>	<b>FOCUS SERVO</b> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read. * NOTE 1</li> </ul>	<b>FOCUS SERVO/TRACKING SERVO CLV SERVO/SLED SERVO</b> Check FOK/FZC
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON * NOTE 2</li> </ul>	<b>TRACKING SERVO ON/OFF</b> Tracking balance (traverse) adjustment
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track * NOTE 3</li> </ul> <p>(During playback, machine operates normally.)</p>	<b>SLED SERVO</b> Check SLED mechanism operation

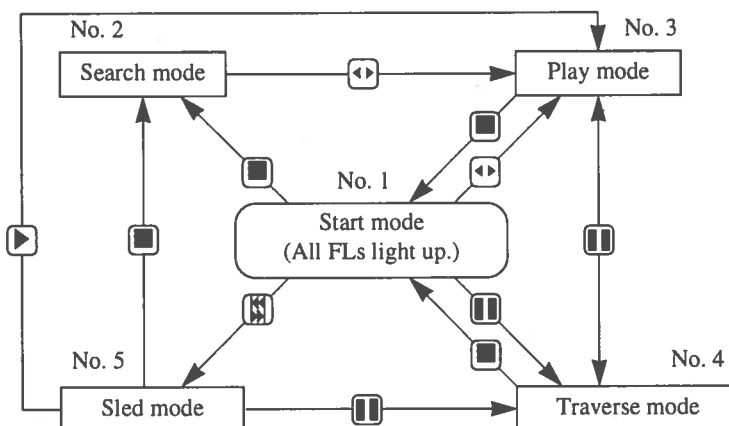
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

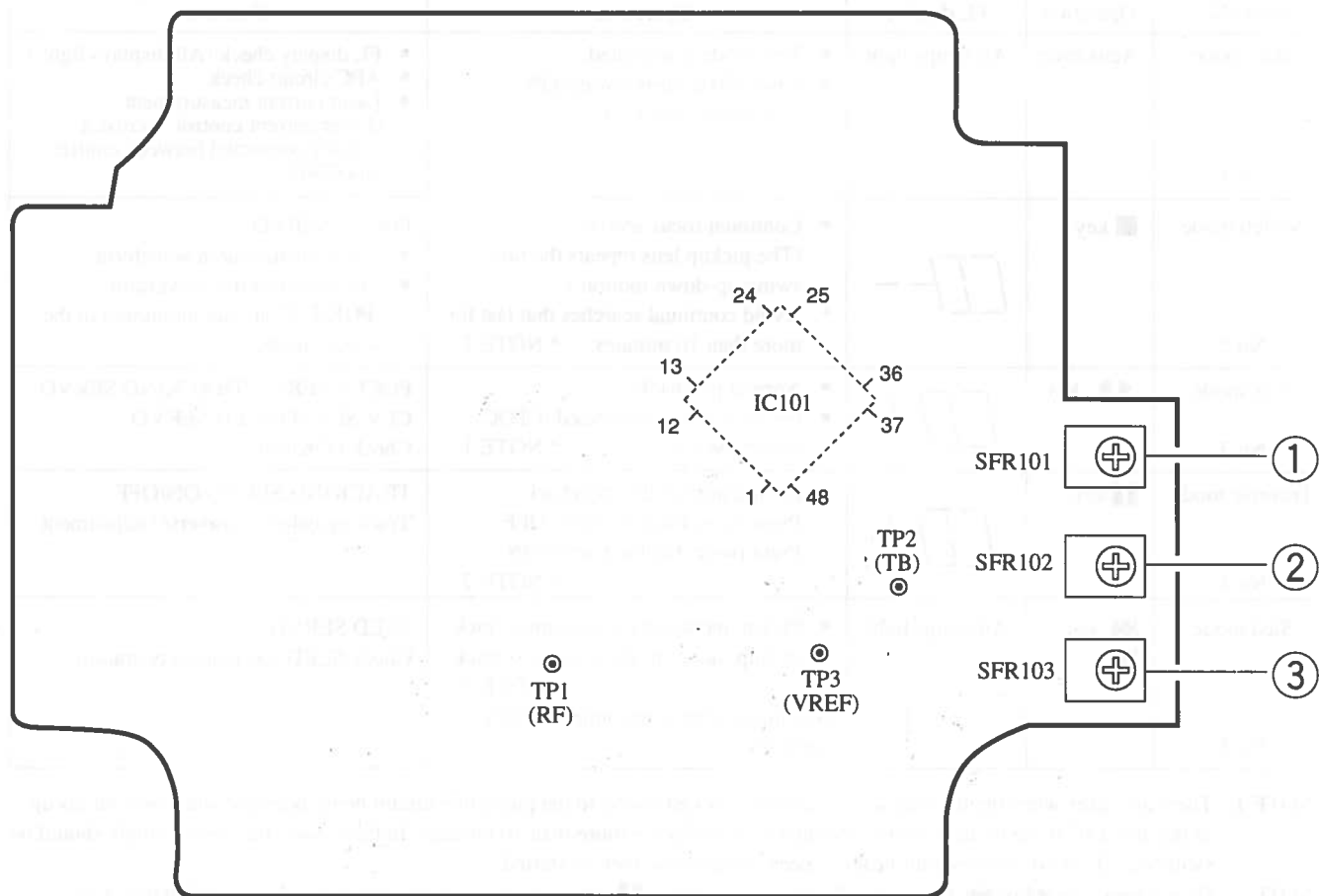
\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



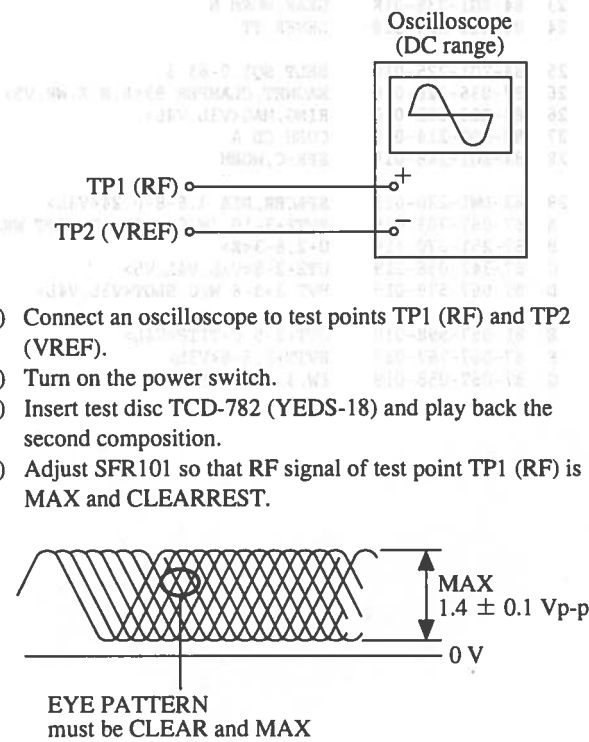
If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

**B** CD MECHA C.B

Note: Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.

### 1. Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.



- 1) Connect an oscilloscope to test points TP1 (RF) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 4) Adjust SFR101 so that RF signal of test point TP1 (RF) is MAX and CLEARREST.

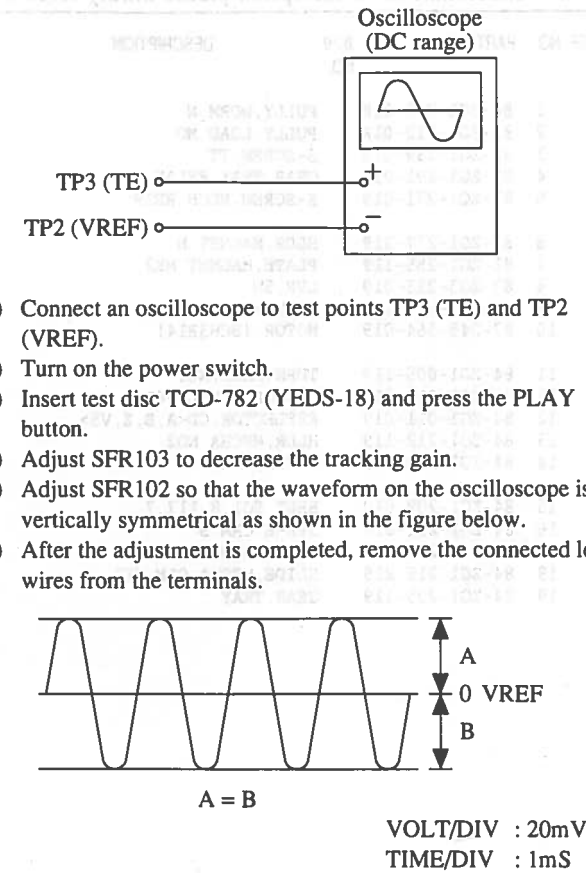
VOLT/DIV : 50mV  
TIME/DIV : 0.5μS

Note: The current of the laser signal can be checked with the voltages on both sides of R127 (10Ω). The difference for the specified value shown on the level must be within ± 6.0mA.

KSS-213B  
18553  
KA502 ← 50.2mA

$$\text{Laser current } I_{op} = \frac{\text{Voltage across R127}}{10\Omega}$$

### 2. Tracking Balance Adjustment



- 1) Connect an oscilloscope to test points TP3 (TE) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and press the PLAY button.
- 4) Adjust SFR103 to decrease the tracking gain.
- 5) Adjust SFR102 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- 6) After the adjustment is completed, remove the connected lead wires from the terminals.

### 3. Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment. Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise increases when the 2-axis device operates.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

When the gain adjustment is off, the symptoms below appear.

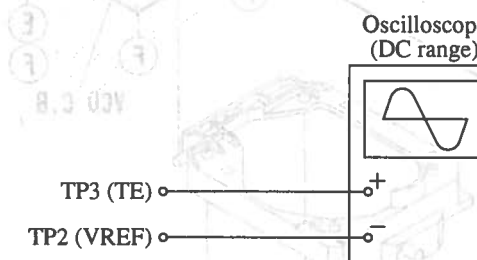
Symptoms	Gain	(Focus)	Tracking
● The time until music starts becomes longer for STOP → PLAY or automatic selection (◀▶ buttons pressed.) (Normally takes about 2 seconds.)		low	low or high
● Music does not start and disc continues to rotate for STOP → PLAY or automatic selection (◀▶ buttons pressed.)		—	low
● Disc stops to rotate shortly after STOP → PLAY.		low or high	—
● Sound is interrupted during PLAY. Or time counter display stops.		—	low
● More noises during the 2-axis device operation.		high	high

The following is simple adjustment method.

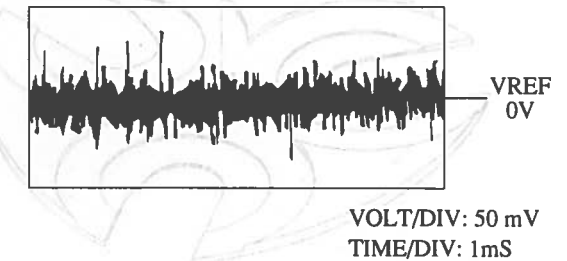
#### — Simple adjustment —

Note: Since the exact adjustment cannot be performed, remember the positions of the controls before the performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

Procedure:



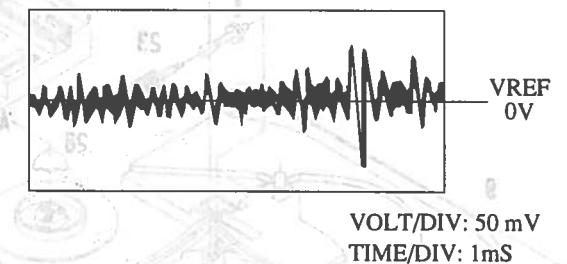
- 1) Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
- 2) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 3) Connect an oscilloscope to TP3 (TE), TP2 (VREF) of the CD MECHA C.B.
- 4) Adjust SFR103 so that the waveform appears as shown in the figure below. (tracking gain adjustment)



#### ● Incorrect example

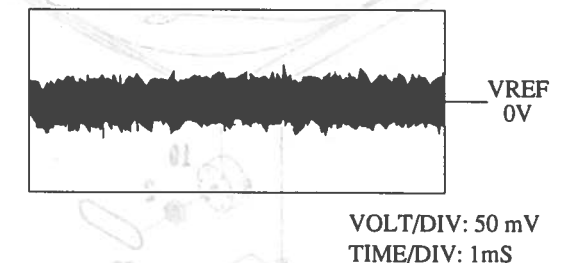
Low tracking gain

The fundamental wave appears as compared with the waveform adjusted.

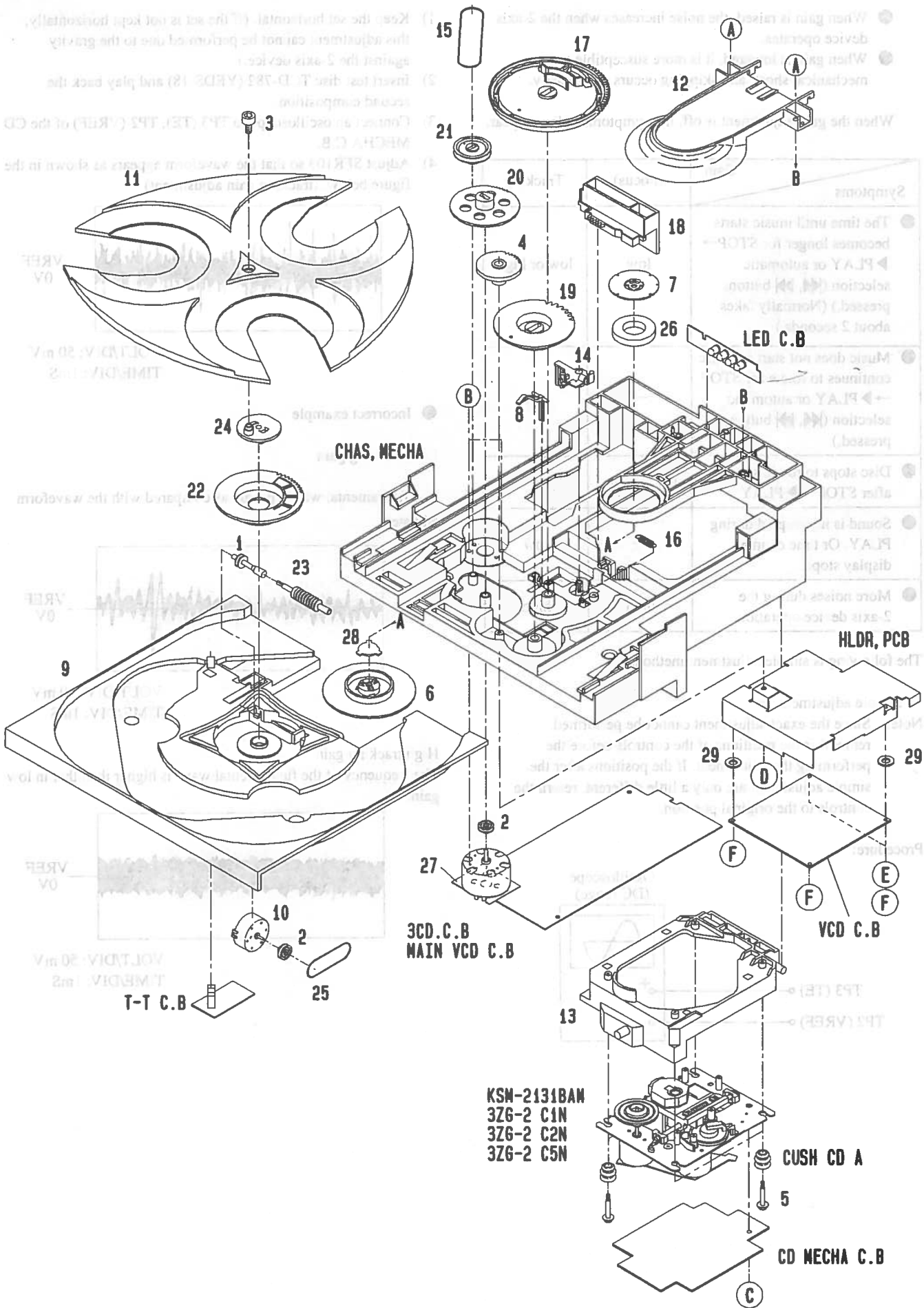


High tracking gain

The frequency of the fundamental wave is higher than that in low gain.



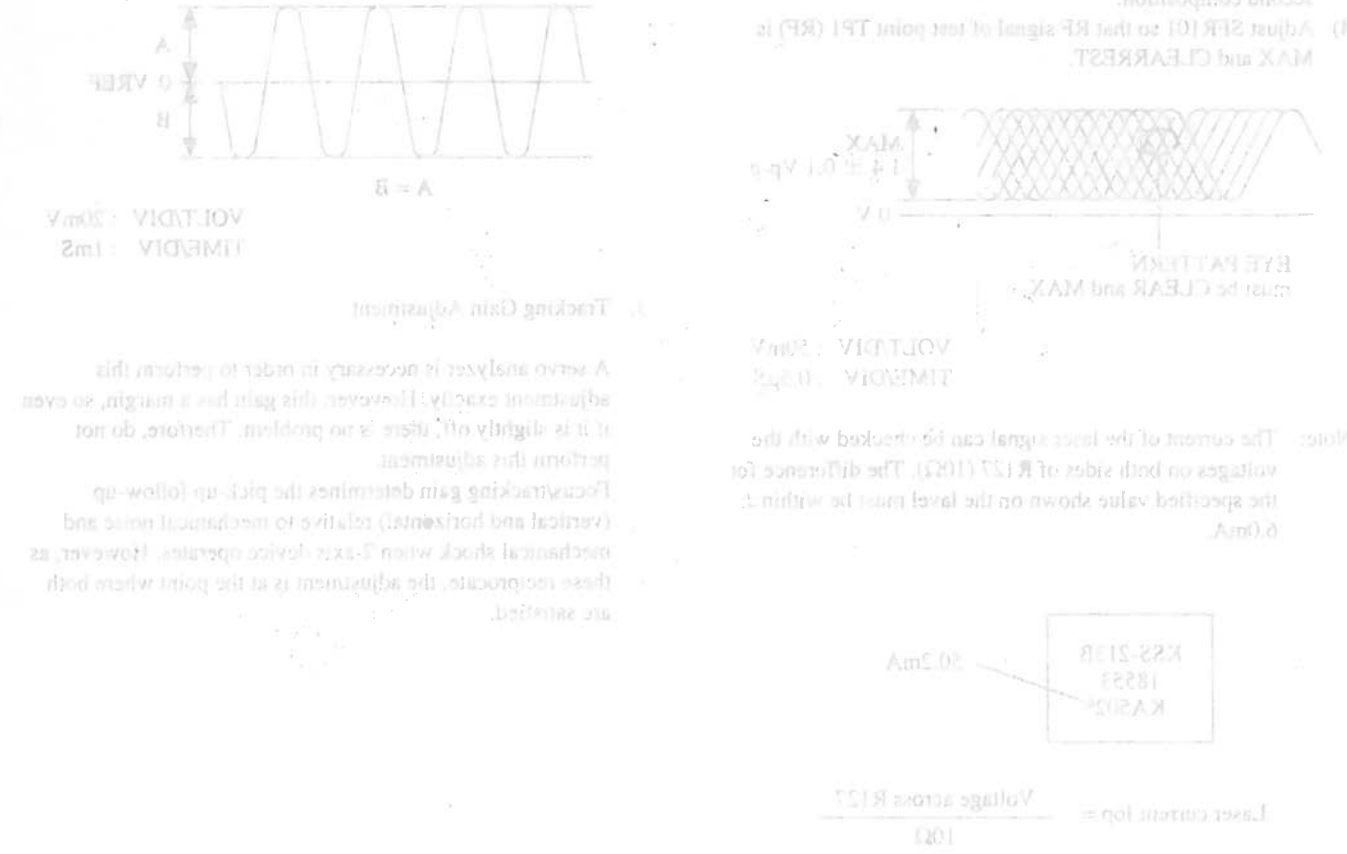
MECHANICAL EXPLODED VIEW 1 / 1



MECHANICAL PARTS LIST 1 / 1

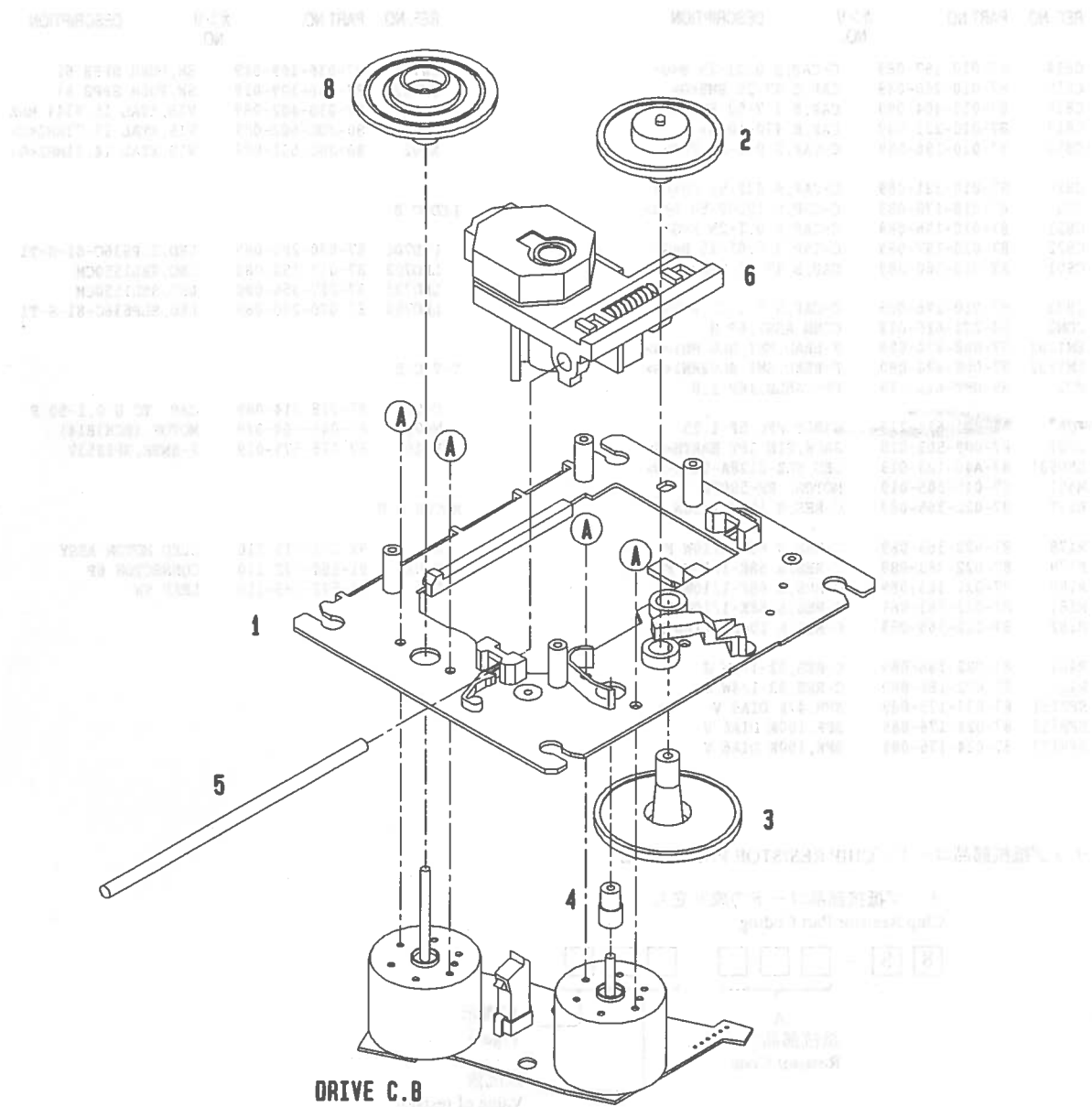
DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	84-ZG1-239-11K		PULLY, WORM N	20	84-ZG1-206-119		GEAR, RELAY
2	81-ZG1-212-01K		PULLY, LOAD MO	21	84-ZG1-219-019		PULLY, RELAY BGE
3	81-ZG1-239-019		S-SCREW, TT	22	84-ZG1-221-019		GEAR, MAIN TT
4	81-ZG1-291-019		GEAR, TRAY RELAY NO3	23	84-ZG1-238-01K		GEAR, WORM N
5	81-ZG1-271-019		S-SCREW, MECH REAR	24	84-ZG1-224-019		LEVER, TT
6	81-ZG1-277-219		HLDR, MAGNET N	25	84-ZG1-225-010		BELT, SQ1.0-63.3
7	81-ZG1-255-119		PLATE, MAGNET MK2	26	87-036-326-010		MAGNET, CLAMPER 93<A, B, Z, WR, V5>
8	83-ZG3-213-019		LVR, SW	26	83-ZG3-602-010		RING, MAG<V3L, V4L>
9	84-ZG1-003-219		TRAY, NO2-B	27	80-CD3-214-019		CUSH CD A
10	87-045-364-019		MOTOR, (BCH3B14)	28	84-ZG1-248-019		SPR-C, WORM
11	84-ZG1-005-119		TURNTABLE, NO1	29	82-DW1-220-019		SPACER, DIA 3.6-8-0.24<V3L>
12	84-ZG1-010-019		IND, CD N<V3L, V4L>	A	87-067-703-019		BVT2+3-10 (W/O SLOT)<EXCEPT WR>
13	84-ZG1-011-019		REFLECTOR, CD<A, B, Z, V5>	B	87-251-070-419		U+2, 6-3<Z>
14	84-ZG1-212-119		HLDR, MECHA NO2	C	87-342-036-219		UT2+2-8<V3L, V4L, V5>
15	84-ZG1-208-019		LEVER, CAM	D	87-067-579-019		BVT 2+3-8 W/O SLOT<V3L, V4L>
16	84-ZG1-209-010		BELT, SQ1.8-117.7	E	81-557-598-010		UTT+2-5 C-TITE<V4L>
17	84-ZG1-211-019		SPR-E CAM S	F	87-067-767-019		BVTT+2, 6-6<V3L>
18	84-ZG1-215-219		GEAR, MAIN CAM BLU	G	87-067-058-019		FW, 3.2-8-0.5<V4L>
19	84-ZG1-216-219		SLIDE, MECHA CAM YEL				
	84-ZG1-205-119		GEAR, TRAY				





CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C5N <WR>)

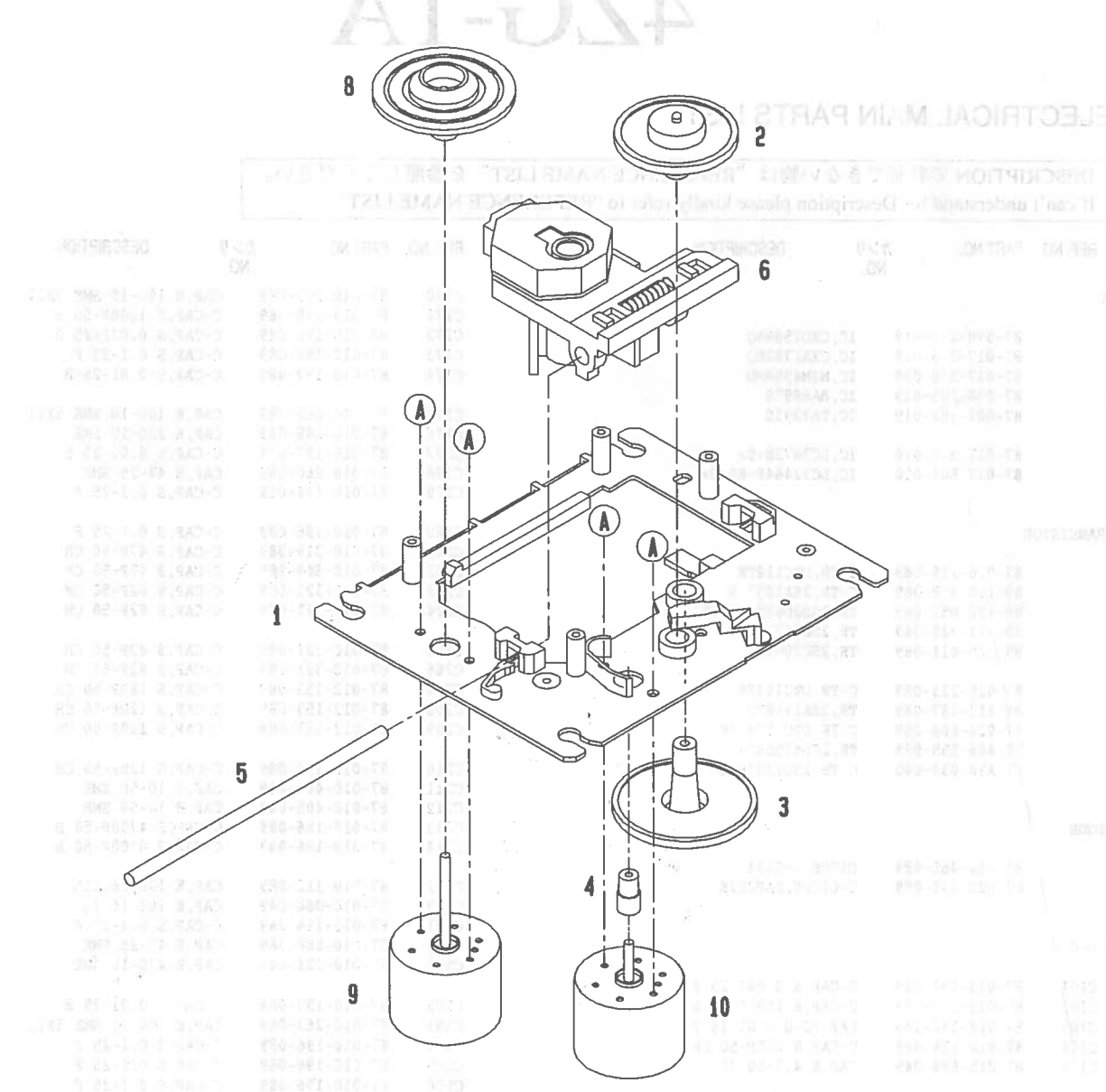


CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C5N <WR>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY,S	6	87-070-445-010		PICK-UP,KSS-213B
2	83-ZG2-204-419		GEAR,A	8	83-ZG2-227-01K		TURN TABLE,C1
3	83-ZG2-205-219		GEAR,B	A	87-261-032-219		SCREW V+2-3
4	83-ZG2-220-01K		GEAR MOTOR 2				
5	83-ZG2-207-119		SHAFT,SLIDE				

CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C1N <V3L/V4L/V5>)



CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C1N <V3L/V4L/V5>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY,S	6	87-070-445-010		PICK-UP,KSS-213B
2	83-ZG2-204-419		GEAR,A	8	83-ZG2-233-019		TURN TABLE,A5
3	83-ZG2-205-219		GEAR,B	9	87-045-358-019		MOT,RF-310T A 43
4	83-ZG2-220-01K		GEAR MOTOR 2	10	87-045-356-019		MOT,RF-310T A 30
5	83-ZG2-207-119		SHAFT,SLIDE	A	87-261-032-219		SCREW V+2-3

# 4ZG-1A

## ELECTRICAL MAIN PARTS LIST

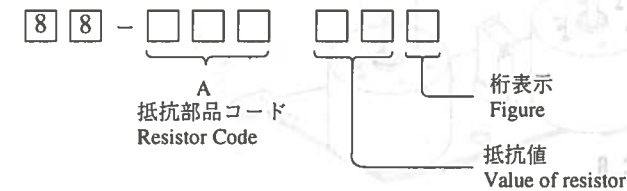
DESCRIPTION で判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC							
	87-070-294-019		IC, CXD2508AQ	C170	87-010-263-089		CAP, E 100-10 SME 5X11
	87-017-745-019		IC, CXA1782BQ	C171	87-010-178-089		C-CAP, S 1000P-50 B
	87-017-888-089		IC, NJM4558MD	C172	87-010-198-089		C-CAP, S 0.022-25 B
	87-070-305-019		IC, BA6897S	C173	87-010-196-089		C-CAP, S 0.1-25 F
	87-001-982-019		IC, TA7291S	C174	87-010-197-089		C-CAP, S 0.01-25 B
	87-017-802-010		IC, LC7872E<G>	C175	87-010-263-089		CAP, E 100-10 SME 5X11
	87-017-803-010		IC, LC32464P-80<G>	C176	87-010-248-089		CAP, E 220-10 SME
				C177	87-010-197-089		C-CAP, S 0.01-25 B
				C178	87-010-260-089		CAP, E 47-25 SME
				C179	87-010-196-089		C-CAP, S 0.1-25 F
TRANSISTOR							
	87-026-239-089		C-TR, DTC114TK	C180	87-010-196-089		C-CAP, S 0.1-25 F
	89-110-373-089		C-TR, 2SA1037 S	C201	87-010-318-089		C-CAP, S 47P-50 CH
	89-420-052-089		TR 2SD2005Q (T105)	C202	87-010-318-089		C-CAP, S 47P-50 CH
	89-421-722-389		TR, 2SD2172 V/W	C203	87-010-321-089		C-CAP, S 82P-50 CH
	89-320-011-089		TR, 2SC2001K	C204	87-010-321-089		G-CAP, S 82P-50 CH
	87-026-223-089		C-TR, DTC143TK	C205	87-010-321-089		C-CAP, S 82P-50 CH
	89-113-187-089		TR, 2SA1318TU	C206	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-608-089		C-TR, DTC 123 JK	C207	87-012-153-089		C-CAP, S 120P-50 CH
	89-406-555-089		TR, 2SD655E<G>	C208	87-012-153-089		C-CAP, S 120P-50 CH
	87-A30-039-040		C-TR, 2SD1383K<D>	C209	87-012-153-089		C-CAP, S 120P-50 CH
DIODE							
	87-020-465-089		DIODE, 1SS133	C210	87-012-153-089		C-CAP, S 120P-50 CH
	87-020-330-089		C-DIODE, DAP202K	C211	87-010-405-049		CAP, E 10-50 SME
				C212	87-010-405-049		CAP, E 10-50 SME
				C213	87-010-186-089		C-CAP, S 4700P-50 B
				C214	87-010-186-089		C-CAP, S 4700P-50 B
3CD C.B							
C101	87-010-194-089		C-CAP, S 0.047-25 F	C231	87-010-112-089		CAP, E 100-16 11L
C102	87-010-180-089		C-CAP, S 1500P-50 B	C232	87-010-060-049		CAP, E 100-16 7L
C103	87-018-134-089		CAP, TC-U 0.01-16 Y	C301	87-010-196-089		C-CAP, S 0.1-25 F
C104	87-012-156-089		C-CAP, S 220P-50 CH	C302	87-010-260-089		CAP, E 47-25 SME
C105	87-015-698-049		CAP, E 4.7-50 7L	C501	87-010-221-049		CAP, E 470-10 SME
C106	87-010-060-049		CAP, E 100-16 7L	C502	87-010-197-089		C-CAP, S 0.01-25 B
C107	87-010-197-089		C-CAP, S 0.01-25 B	C503	87-010-263-089		CAP, E 100-10 SME 5X11
C108	87-016-461-089		C-CAP, S 0.47-16 F	C504	87-010-196-089		C-CAP, S 0.1-25 F
C109	87-010-197-089		C-CAP, S 0.01-25 B	C505	87-010-196-089		C-CAP, S 0.1-25 F
C115	87-010-318-089		C-CAP, S 47P-50 CH	C506	87-010-196-089		C-CAP, S 0.1-25 F
C116	87-010-318-089		C-CAP, S 47P-50 CH	C507	87-010-196-089		C-CAP, S 0.1-25 F
C117	87-010-197-089		C-CAP, S 0.01-25 B	C508	87-010-221-049		CAP, E 470-10 SME
C118	87-010-260-089		CAP, E 47-25 SME	C509	87-010-196-089		C-CAP, S 0.1-25 F
C119	87-018-134-089		CAP, TC-U 0.01-16 Y<EXCEPT G>	C510	87-010-196-089		C-CAP, S 0.1-25 F
C120	87-018-209-080		CAP, TC-U 0.1-50 F	C511	87-010-185-089		C-CAP, S 3900P-50 B
C121	87-018-134-089		CAP, TC-U 0.01-16 Y	C601	87-010-197-089		C-CAP, S 0.01-25 B
C151	87-010-182-089		C-CAP, S 2200P-50 B	C602	87-010-381-089		CAP, E 330-16 SME
C152	87-010-196-089		C-CAP, S 0.1-25 F	C603	87-010-196-089		C-CAP, S 0.1-25 F
C153	87-010-196-089		C-CAP, S 0.1-25 F	C604	87-010-137-080		CAP, E, 22-16 BP
C154	87-010-196-089		C-CAP, S 0.1-25 F	C701	87-010-322-089		C-CAP, S 100P-50 CH
C155	87-010-404-089		CAP, E 4.7-50 SME	C702	87-010-322-089		C-CAP, S 100P-50 CH
C156	87-010-193-089		C-CAP, S 0.033-25 F	C703	87-010-318-089		C-CAP, S 47P-50 CH
C157	87-010-197-089		C-CAP, S 0.01-25 B	C704	87-010-178-089		C-CAP, S 1000P-50 B
C158	87-010-401-089		CAP, E 1-50 SME	C705	87-010-178-089		C-CAP, S 1000P-50 B
C159	87-010-382-089		CAP, E 22-25 SME	C712	87-010-982-049		CAP, E 33-25 GAS
C160	87-010-213-089		C-CAP, S 0.015-25 B	C801	87-010-197-089		C-CAP, S 0.01-25 B<G>
C161	87-018-134-089		CAP, TC-U 0.01-16 Y	C802	87-010-260-089		CAP, E 47-25 SME<G>
C162	87-010-263-089		CAP, E 100-10 SME 5X11	C803	87-010-194-089		C-CAP, S 0.047-25 F<G>
C163	87-010-197-089		C-CAP, S 0.01-25 B	C804	87-010-260-089		CAP, E 47-25 SME<G>
C164	87-010-193-089		C-CAP, S 0.033-25 F	C805	87-018-134-089		CAP, TC-U 0.01-16 Y<G>
C165	87-010-197-089		C-CAP, S 0.01-25 B	C806	87-010-260-089		CAP, E 47-25 SME<G>
C166	87-010-193-089		C-CAP, S 0.033-25 F	C807	87-010-405-089		CAP, E 10-50 SME<G>
C167	87-010-197-089		C-CAP, S 0.01-25 B	C808	87-010-197-089		C-CAP, S 0.01-25 B<G>
C169	87-010-150-089		C-CAP, S 6P-50 CH	C809	87-010-405-049		CAP, E 10-50 SME<G>
				C810	87-010-313-089		C-CAP, S 18P-50 CH<G>
				C811	87-010-314-089		C-CAP, S 22P-50 CH<G>
				C812	87-010-313-089		C-CAP, S 18P-50 CH<G>
				C813	87-010-315-089		C-CAP, S 27P-50 CH<G>

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C814	87-010-197-089		C-CAP, S 0.01-25 B<G>	SW701	87-036-109-019		SW, PUSH SPPB 61
C815	87-010-260-049		CAP, E 47-25 SME<G>	SW702	87-036-109-019		SW, PUSH SPPB 61
C816	87-010-404-089		CAP, E 4.7-50 SME<G>	X101	87-030-402-089		VIB, XTAL 16.9344 MHZ
C817	87-010-221-089		CAP, E 470-10<G>	X801	80-JUC-602-089		VIB, XTAL 17.73MHZ<G>
C818	87-010-196-089		C-CAP, S 0.1-25 F<G>	X802	80-JUC-601-089		VIB, XTAL 14.31MHZ<G>
C819	87-010-321-089		C-CAP, S 82P-50 CH<G>				
C820	87-010-178-089		C-CAP, S 1000P-50 B<G>	LED C.B			
C821	87-010-196-089		C-CAP, S 0.1-25 F<G>	LED701	87-070-200-089		LED, SLP636C-81-S-T1
C822	87-010-197-089		C-CAP, S 0.01-25 B<G>	LED702	87-017-350-080		LED, SEL1550CM
C901	87-010-260-089		CAP, E 47-25 SME<D>	LED703	87-017-350-080		LED, SEL1550CM
C902	87-010-196-089		C-CAP, S 0.1-25 F<D>	LED704	87-070-200-089		LED, SLP636C-81-S-T1
CON2	84-ZG1-616-019		CONN ASSY, 6P H				
EMI801	87-008-474-089		F-BEAD, EMI BL02RN1<G>	T-T C.B			
EMI802	87-008-474-089		F-BEAD, EMI BL02RN1<G>	C401	87-018-214-089		CAP TC U 0.1-50 F
FC1	85-NFT-611-119		FF-CABLE, 16P-1.0	M401	87-045-364-019		MOTOR, (BCH3B14)
FC4	84-ZG1-614-219		GABLE, FFC 5P-1.25	PS401	87-026-573-019		P-SNSR, GP1S53V
J801	87-009-502-010		JACK, PIN 1PY EARTH<G>				
LED901	87-A40-123-019		LED, SLZ-8128A-01-B<D>				
M601	87-045-305-019		MOTOR, RF-500TB	MOTOR C.B			
R177	87-022-365-089		C-RES, S 100K-1/10W F				
R178	87-022-363-089		C-RES, S 68K-1/10W F	M2	9X-262-513-210		SLED MOTOR ASSY
R179	87-022-363-089		C-RES, S 68K-1/10W F	PIN3	91-564-722-110		CONNECTOR 6P
R180	87-022-363-089		C-RES, S 68K-1/10W F	SW1	91-572-085-110		LEAF SW
R181	87-022-363-089		C-RES, S 68K-1/10W F				
R182	87-022-365-089		C-RES, S 100K-1/10W F				
R401	87-022-186-089		C-RES, 82-1/4W J				
R403	87-022-186-089		C-RES, 82-1/4W J				
SFR151	87-024-175-089		SFR, 47K DIA6 V				
SFR152	87-024-176-089		SFR, 100K DIA6 V				
SFR153	87-024-176-089		SFR, 100K DIA6 V				

### ○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)			抵抗コード : A Resistor Code: A
				外形／Form	L	W	t
1/16W	1608	±5%	CJ		1.6	0.8	0.45
1/10W	2125	±5%	CJ		2	1.25	0.45
1/8W	3216	±5%	CJ		3.2	1.6	0.55

Refer to the following pages for the 4ZG-1 and the common sections.

### ■ IC DESCRIPTION

CXA1782BQ ..... See page 64

LC7872E ..... See page 62

### ■ MECHANICAL EXPLODED VIEW 1 / 1

See page 95

### ■ MECHANICAL PARTS LIST 1 / 1

See page 96



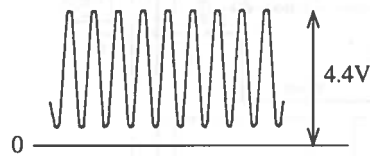




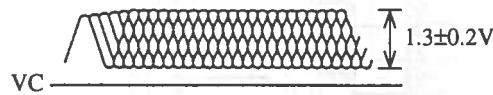


WAVE FORM

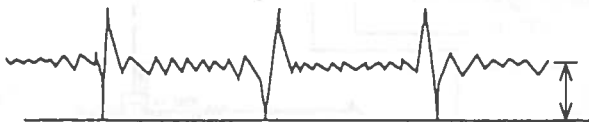
① SYSTEM CLOCK  
IC101 Pin ⑦ (XTAO)  
f=16.9344MHz  
VOLT/DIV: 2V  
TIME/DIV: 0.1μs



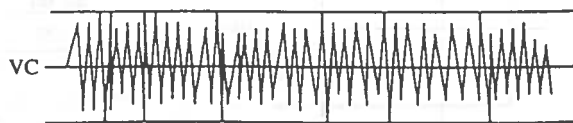
② RF  
TP1 (RF)  
VOLT/DIV: 500mV  
TIME/DIV: 0.5μs



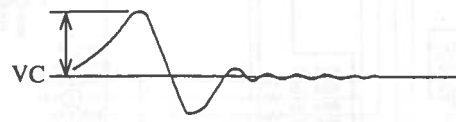
③ Focus  
IC151 Pin ⑥ (FE-O)  
VOLT/DIV: 200mV  
TIME/DIV: 2mS



④ Tracking  
TP2 (TE)  
TIME/DIV: 1mS

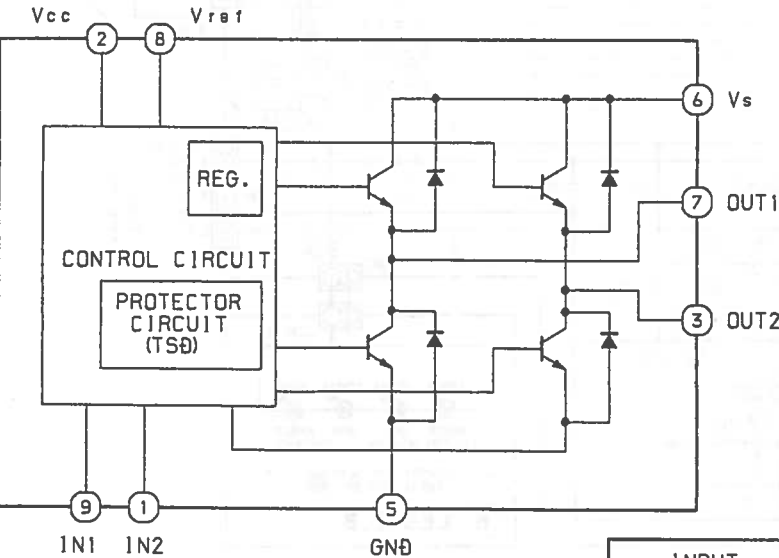


⑤ Focus Search  
IC151 Pin ⑥ (FE-O)



IC BLOCK DIAGRAM

IC, TA7291



INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW
0	1	L	H	CCW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE  
NOTE : INPUT "H" ACTIVE

IC DESCRIPTION

IC, CXD2508AQ

Pin No.	Pin name	I/O	Description
1	SCOR	O	1H when the subcode sync S0 or S1 is detected.
2	SBSO	O	SUBP~W serial output.
3	EXCK	I	Clock input for SBSO read out.
4	SQSO	O	SUBQ 80-bit serial output.
5	SQCK	I	Clock input for SQSO read out.
6	MUTE	I	H to mute. L to cancel.
7	SENS	O	SENS signal output to CPU.
8	XRST	I	System reset. L to reset.
9	DATA	I	Serial data input from CPU .
10	XLAT	I	Latch input from CPU. Latching serial data at fall down.
11	CLOK	I	Clock input from CPU to transfer serial data.
12	VSS	—	GND.
13	SEIN	I	SENS input from SSP.
14	CNIN	I	Numbers of track jump are counted and input.
15	DATO	O	Serial data output to SSP.
16	XLTO	O	Serial data latched output to SSP. Latched at fall down edge.
17	CLKO	O	Clock input from SSP to transfer serial data.
18, 20	SPOA, C	I	Microprocessor expansion interface.
19	XTSL	I	X'tal selection input terminal. "L" at 16.9344MHz X'tal. "H" at 33.86888MHz.
22	XLON	O	Microprocessor expansion interface.
23	FOK	I	Focus OK input pin. Used for SENS output and servo auto sequencer.
24	MON	O	Spindle motor ON/OFF control output.
25	MDP	O	Spindle motor servo control output.
26	MDS	O	Spindle motor servo control output.
27	LOCK	O	GFS is sampled by 460Hz. H output when GFS is H. L output when GFS is L for 8 consecutive times.
28	TEST1	I	TEST. (Connected to GND)
29	FILO	O	Filter output to master PLL. (slave=digital PLL)
30	FILI	I	Filter input to master PLL.
31	PCO	O	Charge-pump output to master PLL.
32	VDD	—	Power supply input. (+5V)
33	AVSS1	—	GND.
34	CLTV	I	VCO control voltage input to master PLL.
35	AVDD1	—	Power supply input. (+5V)
36	RF	I	EFM signal input.
37	BIAS	I	Constant current input to asymmetry correction circuit.
38	ASYI	I	Compare voltage input to asymmetry correction circuit.
39	ASYO	O	EFM full swing output. (L=VSS, H=VDD)
40	ASYE	I	L: asymmetry correction OFF. H: asymmetry correction ON
41	WDCK	O	D/A interface, word clock (2Fs) for 48-bit slot.
42	LRCK	O	D/A interface, LR clock (Fs) for 48-bit slot.



Pin No.	Pin name	I/O	Description
43	LRCKI	I	LR clock input to DAC. (48-bit slot)
44	PCMD	O	D/A interface, serial data. (2's complement, MSB first)
45	PCMDI	I	Audio data input to DAC. (48-bit slot)
46	BCK	O	D/A interface, bit clock.
47	BCKI	I	Bit clock input to DAC. (48-bit slot)
48	GTOP	O	GTOP output.
49	XUGF	O	XUFG output.
50	XPCK	O	XPLCK output.
51	GFS	O	GFS output.
52	RFCK	O	RFCK output.
53	VSS	—	GND.
54	C2PO	O	C2PO output.
55	XROF	O	XRAOF output.
56	MNT3	O	MNT3 output.
57	MNT1	O	MNT1 output.
58	MNT0	O	MNT0 output.
59	FSTT	O	Pins-73 and -74 divided-by 2/3 output.
60	C4M	O	4.2336MHz output.
61	DOUT	O	Digital Out connector output signal.
62	EMPH	O	H when the playback disc has emphasis. L when it does not.
63	EMPHI	I	DAC emphasis ON/OFF. H when ON. L when OFF
64	WFCK	O	WFCK (WRITE FRAME CLOCK) output.
65	ZEROL	O	No sound data detection output. H (L-ch) when no sound data is detected.
66	ZEROR	O	No sound data detection output. H (R-ch) when no sound data is detected.
67	DTSI	I	TEST for DAC. (Normally "L")
68	VDD	—	Power supply input. (+5V)
69	NLPWM	O	L-ch PWM output. (reversed polarity)
70	LPWM	O	L-ch PWM output. (normal polarity)
71	AVDD2	—	Power supply input to L-ch PWM driver. (Connected to +5V)
72	AVDD3	—	Power supply input to X'tal. (Connected to +5V)
73	XTAI	I	X'tal input to 33.8688MHz oscillator circuit.
74	XTAO	O	33.8688MHz X'tal oscillator circuit output.
75	AVSS1	—	GND input to X'tal. (Connected GND)
76	AVSS2	—	GND input to PWM driver. (Connected to GND)
77	NRPWM	O	R-ch PWM output. (reversed phase)
78	RPWM	O	R-ch PWM output. (normal phase)
79	DTS2	I	TEST-2 for DAC. (Normally "L")
80	DTS3	I	TEST-3 for DAC. (Normally "L")

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button. (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• Laser diode turns always ON. (CD block power is ON.)</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes. * NOTE 1</li> </ul>	<b>FOCUS SERVO</b> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read. * NOTE 1</li> </ul>	<b>FOCUS SERVO/TRACKING SERVO</b> <b>CLV SERVO/SLED SERVO</b> Check FOK/FZC
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON * NOTE 2</li> </ul>	<b>TRACKING SERVO ON/OFF</b> Tracking balance (traverse) adjustment
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track * NOTE 3</li> </ul> (During playback, machine operates normally.)	<b>SLED SERVO</b> Check SLED mechanism operation

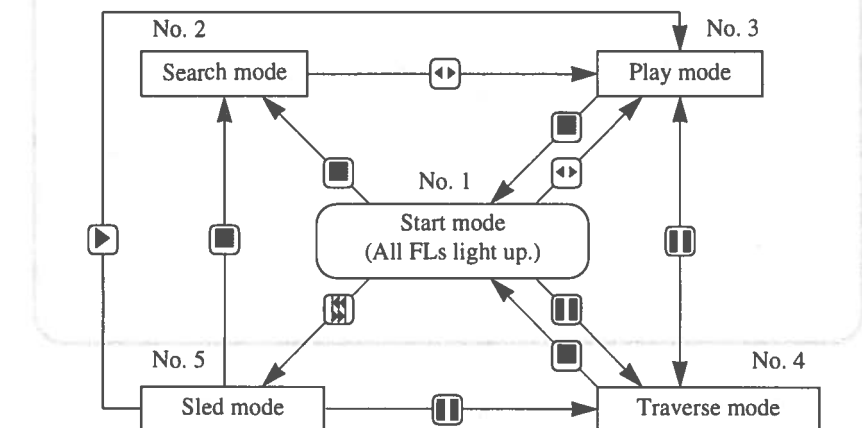
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

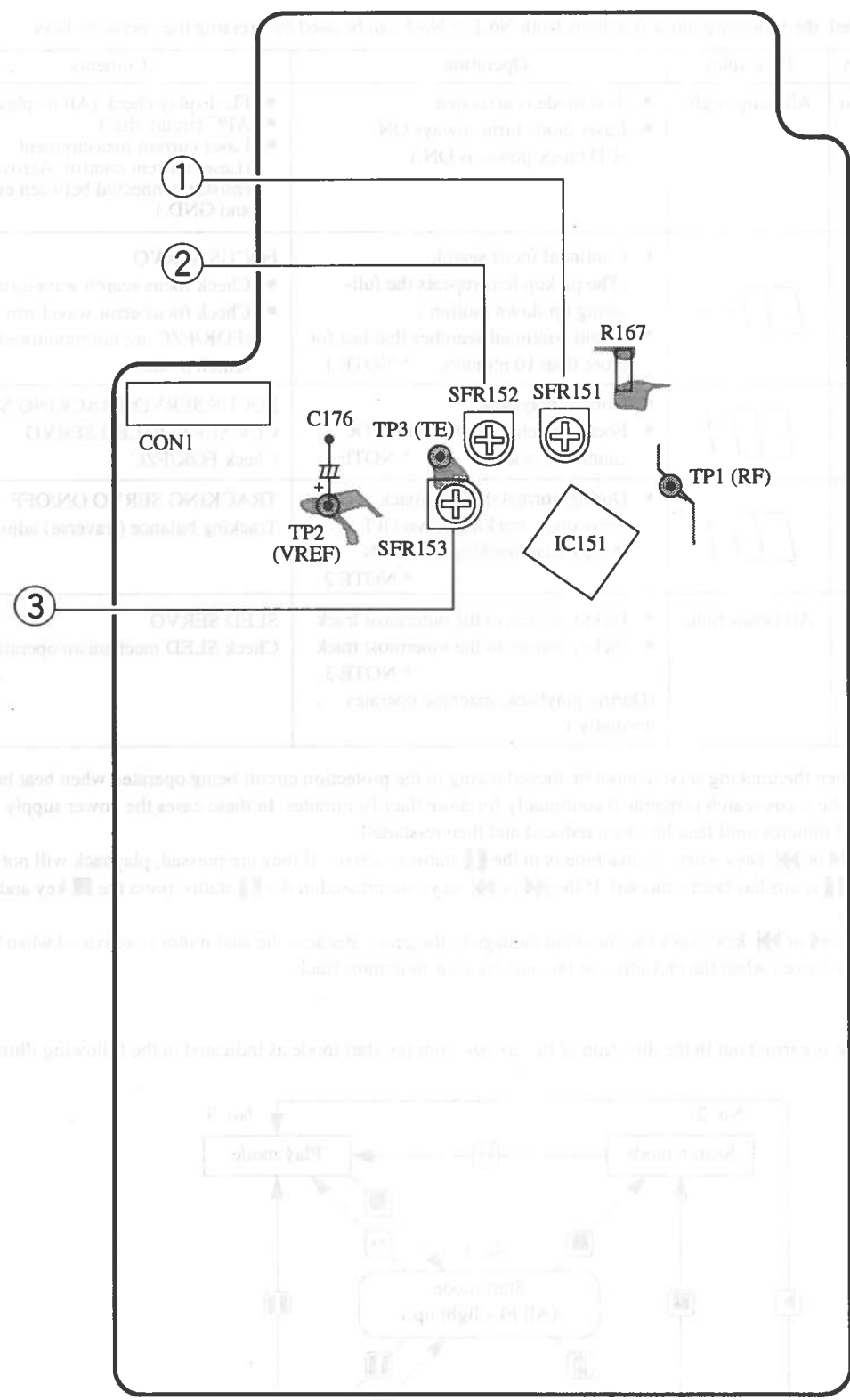
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



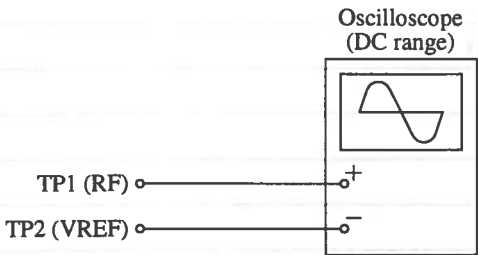
If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

A 3CD C.B (PATTERN SIDE)

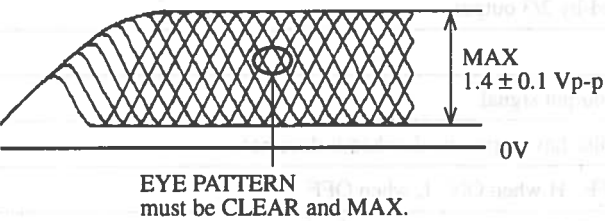


Note: • Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.  
• During adjustment, connect (⊖) pin of an oscilloscope to TP2 (VREF).

1. Focus Bias Adjustment  
Make the focus bias adjustment when replacing and repairing the optical block.

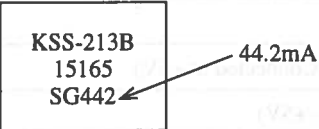


- 1) Connect an oscilloscope to test points TP1 (RF) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 4) Adjust SFR151 so that RF signal of test point TP1 (RF) is MAX and CLEARREST.



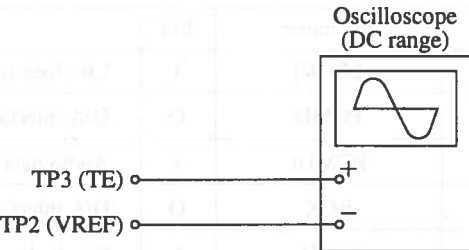
VOLT/DIV: 0.5 V  
TIME/DIV: 0.5μS

Note: The current of the laser signal can be checked with the voltages on both sides of R167 (10Ω). The difference for the specified value shown on the label must be within±6.0mA.

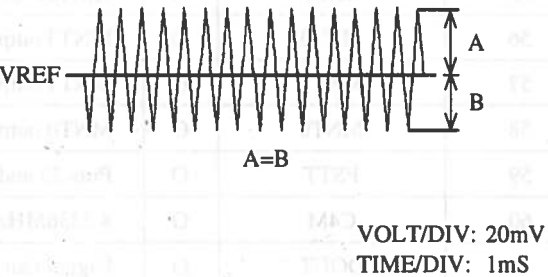


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R167}}{10\Omega}$$

2. Tracking Balance Adjustment



- 1) Connect an oscilloscope to test points TP3 (TE) and TP2 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and press the PLAY button.
- 4) Adjust SFR153 to reduce the tracking gain.
- 5) Adjust SFR152 so that the traverse waveform on an oscilloscope is vertically symmetrical as shown in the figure below.



3. Tracking Gain Adjustment

A servo analyzer is necessary in order to perform this adjustment exactly. However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.  
Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when 2-axis device operates. However, as these reciprocate, the adjustment is at the point where both are satisfied.  
• When gain is raised, the noise increases when the 2-axis device operates.  
• When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.  
When the gain adjustment is off, the symptoms below appear.

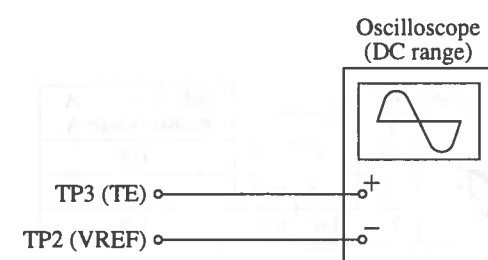
Symptoms	Gain	(Focus)	Tracking
● The time until music starts becomes longer for STOP→▶PLAY or automatic selection (◀▶, ▶▶ buttons pressed.) (Normally takes about 2 seconds.)		low	low or high
● Music does not start and disc continues to rotate for STOP→▶PLAY or automatic selection (◀▶, ▶▶ buttons pressed.)		—	low
● Disc stops to rotate shortly after STOP→▶PLAY.	low or high	—	—
● Sound is interrupted during PLAY. Or time counter display stops.	—	—	low
● More noises during the 2-axis device operation.	high	—	high

The following is simple adjustment method.

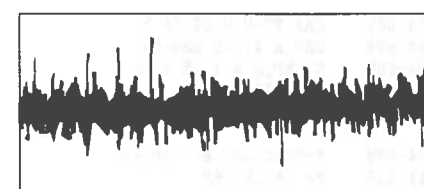
— Simple adjustment —

**Note:** Since the exact adjustment cannot be performed, remember the positions of the controls before the performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

**Procedure:**



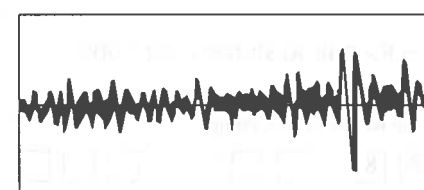
- 1) Keep the set horizontal. (If the set is not kept horizontally, this adjustment cannot be performed due to the gravity against the 2-axis device.)
- 2) Insert test disc TCD-782 (YEDS-18) and play back the second composition.
- 3) Connect an oscilloscope to TP3 (TE), TP2 (VREF) of the CD C.B.
- 4) Adjust SFR153 so that the waveform appears as shown in the figure below. (tracking gain adjustment)



VOLT/DIV: 50mV  
TIME/DIV: 1mS

● Incorrect example

**Low tracking gain**  
(The fundamental wave appears as compared with the waveform adjusted.)



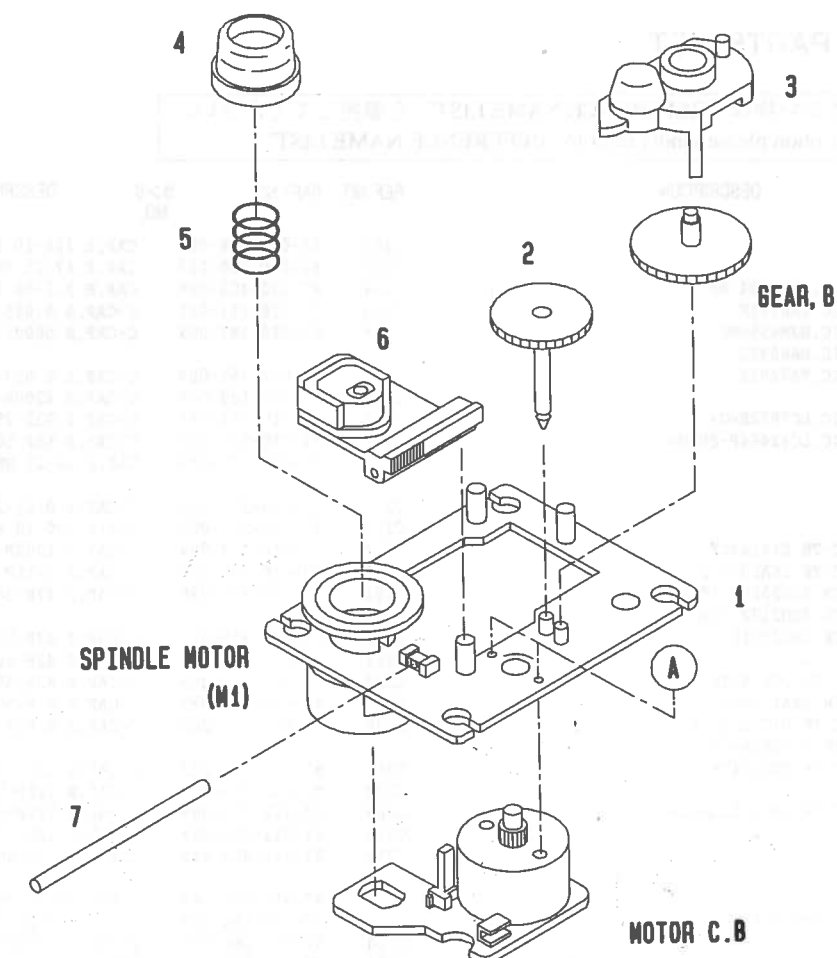
VOLT/DIV: 50mV  
TIME/DIV: 1mS

**High tracking gain**  
(The frequency of the fundamental wave is higher than that in low gain.)



VOLT/DIV: 50mV  
TIME/DIV: 1mS

## CD MECHANISM EXPLODED VIEW 1 / 1 (KSM-2131BAM <A, B>)



## CD MECHANISM PARTS LIST 1 / 1 (KSM-2131BAM <A, B>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	-	-	MOTOR CHASSIS ASSY	6	87-070-445-010		OPTICAL PICK UP KSS-213B
2	92-625-188-020		GEAR (A)	7	94-917-565-010		SHAFT SLED
3	92-625-544-010		COVER	A	87-261-032-210		V+2-3
4	92-625-186-020		RING CENTER C				
5	92-625-191-010		SPRING COMPRESSION				



# 4ZG-1B

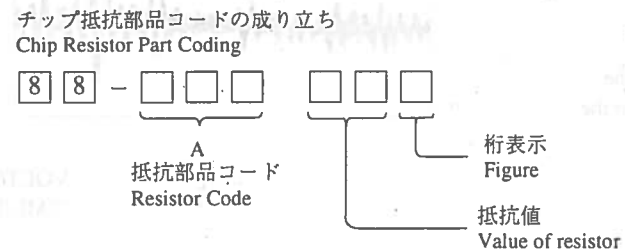
## ELECTRICAL MAIN PARTS LIST

DESCRIPTION で判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.


REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC							
	87-070-336-019	IC, TC 9284 BF		C162	87-010-248-089	CAP, E 220-10 SME	
	87-002-407-019	IC TA8191F		C163	87-010-260-089	CAP, E 47-25 SME	
	87-017-888-089	IC, NJM4558MD		C164	87-010-403-089	CAP, E 3.3-50 SME	
	87-070-305-019	IC, BA6897S		C165	87-010-213-089	C-CAP, S 0.015-25 B	
	87-001-982-019	IC, TA7291S		C166	87-010-187-089	C-CAP, S 5600P-50 B	
	87-017-802-010	IC, LC7872E<G>		C167	87-012-365-089	C-CAP, S 0.027-25V BK	
	87-017-803-010	IC, LC32464P-80<G>		C168	87-010-189-089	C-CAP, S 8200P-50 B	
				C169	87-015-883-089	C-CAP 0.022-25BK	
				C170	87-010-320-089	C-CAP, S 68P-50 CH	
				C171	87-010-382-089	CAP, E 22-25 SME	
TRANSISTOR							
	87-026-297-089	C-TR, DTA144TK		C172	87-010-197-089	C-CAP, S 0.01-25 B	
	89-110-373-089	C-TR, 2SA1037 S		C173	87-010-263-089	CAP, E 100-10 SME 5X11	
	89-420-052-089	TR 2SD2005Q (T105)		C174	87-010-178-089	C-CAP, S 1000P-50 B	
	89-421-722-389	TR, 2SD2172 V/W		C175	87-010-805-089	C-CAP, S 1-16F	
	89-320-011-089	TR, 2SC2001K		C201	87-010-318-089	C-CAP, S 47P-50 CH	
	87-026-223-089	C-TR, DTC143TK		C202	87-010-318-089	C-CAP, S 47P-50 CH	
	89-113-187-089	TR, 2SA1318TU		C203	87-010-321-089	C-CAP, S 82P-50 CH	
	87-026-608-089	C-TR, DTC 123 JK		C204	87-010-321-089	C-CAP, S 82P-50 CH	
	89-406-555-089	TR, 2SD655E<G>		C205	87-010-321-089	C-CAP, S 82P-50 CH	
	87-026-239-089	C-TR, DTC114TK<G>		C206	87-010-321-089	C-CAP, S 82P-50 CH	
	89-327-125-089	C-TR, 2SC2712GR<D>		C207	87-012-153-089	C-CAP, S 120P-50 CH	
				C208	87-012-153-089	C-CAP, S 120P-50 CH	
				C209	87-012-153-089	C-CAP, S 120P-50 CH	
				C210	87-012-153-089	C-CAP, S 120P-50 CH	
				C211	87-010-405-049	CAP, E 10-50 SME	
DIODE							
	87-020-465-089	DIODE, 1SS133		C212	87-010-405-049	CAP, E 10-50 SME	
				C213	87-010-186-089	C-CAP, S 4700P-50 B	
				C214	87-010-186-089	C-CAP, S 4700P-50 B	
				C231	87-010-112-089	CAP, E 100-16	
				C232	87-010-060-049	CAP, E 100-16 7L	
3CD C.B							
C101	87-015-819-089	CHIP CAP 0.01		C301	87-010-196-089	C-CAP, S 0.1-25 F	
C102	87-015-819-089	CHIP CAP 0.01		C302	87-010-260-089	CAP, E 47-25 SME	
C103	87-015-676-089	CAP, E 47-6.3 7L		C501	87-010-221-049	CAP, E 470-10 SME	
C104	87-015-676-089	CAP, E 47-6.3 7L		C502	87-010-197-089	C-CAP, S 0.01-25 B	
C106	87-010-197-089	C-CAP, S 0.01-25 B		C503	87-010-263-089	CAP, E 100-10 SME 5X11	
C107	87-010-404-089	CAP, E 4.7-50 SME		C504	87-010-196-089	C-CAP, S 0.1-25 F	
C108	87-010-197-089	C-CAP, S 0.01-25 B		C505	87-010-196-089	C-CAP, S 0.1-25 F	
C109	87-010-248-049	CAP, E 220-10 SME		C506	87-010-196-089	C-CAP, S 0.1-25 F	
C110	87-010-263-049	CAP, E 100-10		C507	87-010-196-089	C-CAP, S 0.1-25 F	
C111	87-010-309-089	C-CAP, 1000P-50 CH		C508	87-010-221-049	CAP, E 470-10 SME	
C112	87-010-197-089	C-CAP, S 0.01-25 B		C509	87-010-196-089	C-CAP, S 0.1-25 F	
C113	87-010-184-089	C-CAP, S 3300P-50 B		C510	87-010-196-089	C-CAP, S 0.1-25 F	
C114	87-010-060-049	CAP, E 100-16 7L		C601	87-010-197-089	C-CAP, S 0.01-25 B	
C115	87-010-197-089	C-CAP, S 0.01-25 B		C602	87-010-381-089	CAP, E 330-16 SME	
C116	87-010-197-089	C-CAP, S 0.01-25 B		C603	87-010-196-089	C-CAP, S 0.1-25 F	
C117	87-010-322-089	C-CAP, S 100P-50 CH		C701	87-010-322-089	C-CAP, S 100P-50 CH	
C120	87-010-314-089	C-CAP, S 22P-50 CH		C702	87-010-322-089	C-CAP, S 100P-50 CH	
C121	87-010-314-089	C-CAP, S 22P-50 CH		C703	87-010-318-089	C-CAP, S 47P-50 CH	
C123	87-010-197-089	C-CAP, S 0.01-25 B		C704	87-010-178-089	C-CAP, S 1000P-50 B	
C124	87-010-184-089	C-CAP, S 3300P-50 B		C705	87-010-178-089	C-CAP, S 1000P-50 B	
C125	87-010-805-089	C-CAP, S 1-16F		C712	87-010-982-049	CAP, E 33-25 GAS	
C126	87-018-134-089	CAP, TC-U 0.01-16 Y<EXCEPT G>		C801	87-010-197-089	C-CAP, S 0.01-25 B<G>	
C127	87-010-196-089	C-CAP, S 0.1-25 F		C802	87-010-260-089	CAP, E 47-25 SME<G>	
C152	87-010-196-089	C-CAP, S 0.1-25 F		C803	87-010-194-089	C-CAP, S 0.047-25 F<G>	
C153	87-010-154-089	C-CAP, S 10P-50 CH		C804	87-010-260-089	CAP, E 47-25 SME<G>	
C154	87-010-322-089	C-CAP, S 100P-50 CH		C805	87-018-134-089	CAP, TC-U 0.01-16 Y<G>	
C155	87-010-263-089	CAP, E 100-10 SME 5X11		C806	87-010-260-089	CAP, E 47-25 SME<G>	
C156	87-010-197-089	C-CAP, S 0.01-25 B		C807	87-010-405-089	CAP, E 10-50 SME<G>	
C157	87-012-141-089	C-CAP, S 0.22-16 F		C808	87-010-197-089	C-CAP, S 0.01-25 B<G>	
C158	87-010-545-049	CAP E 0.22-50 SME		C809	87-010-405-049	CAP, E 10-50 SME<G>	
C159	87-015-683-080	CAP, E 33-16 7L		C810	87-010-313-089	C-CAP, S 18P-50 CH<G>	
C160	87-010-193-089	C-CAP, S 0.033-25 F		C811	87-010-314-089	C-CAP, S 22P-50 CH<G>	
C161	87-010-197-089	C-CAP, S 0.01-25 B		C812	87-010-313-089	C-CAP, S 18P-50 CH<G>	

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
C813	87-010-315-089	C-CAP, S 27P-50 CH<G>		SFR152	87-024-171-089	SFR 4.7K DIA6 V	
C814	87-010-197-089	C-CAP, S 0.01-25 B<G>		SW701	87-036-109-019	SW, PUSH SPPB 61	
C815	87-010-260-049	CAP, E 47-25 SME<G>		SW702	87-036-109-019	SW, PUSH SPPB 61	
C816	87-010-404-089	CAP, E 4.7-50 SME<G>		X101	87-030-402-089	VIB, XTAL 16.9344 MHZ	
C817	87-010-221-089	CAP, E 470-10<G>		X801	80-JUC-602-089	VIB, XTAL 17.73MHZ<G>	
C818	87-010-196-089	C-CAP, S 0.1-25 F<G>		X802	80-JUC-601-089	VIB, XTAL 14.31MHZ<G>	
C819	87-010-321-089	C-CAP, S 82P-50 CH<G>		LED C.B			
C820	87-010-178-089	C-CAP, S 1000P-50 B<G>		LED701	87-070-200-089	LED, SLP636C-81-S-T1	
C821	87-010-196-089	C-CAP, S 0.1-25 F<G>		LED702	87-017-350-080	LED, SEL1550CM	
C822	87-010-403-089	CAP, E 3.3-50 SME<G>		LED703	87-017-350-080	LED, SEL1550CM	
C824	87-018-134-089	CAP, TC-U 0.01-16 Y		LED704	87-070-200-089	LED, SLP636C-81-S-T1	
C901	87-010-260-089	CAP, E 47-25 SME<D>		T-T C.B			
C902	87-010-196-089	C-CAP, S 0.1-25 F<D>		C401	87-018-214-089	CAP TC U 0.1-50 F	
CON2	84-ZG1-616-019	CONN ASSY, 6P H		M401	87-045-364-019	MOTOR, (BCH3B14)	
EMI801	87-008-474-089	F-BEAD, EMI BL02RN1<G>		PS401	87-026-573-019	P-SNSR, GP1S53V	
EMI802	87-008-474-089	F-BEAD, EMI BL02RN1<G>		MOTOR C.B			
FC1	85-NFT-611-119	FF-CABLE, 16P-1.0		M2	9X-262-513-210	SLED MOTOR ASSY	
FC4	84-ZG1-614-219	CABLE, FFC 5P-1.25		PIN3	91-564-722-110	CONNECTOR 6P	
J801	87-009-502-010	JACK, PIN 1PY EARTH<G>		SW1	91-572-085-110	LEAF SW	
LED901	87-A40-123-019	LED, SLZ-8128A-01-B<D>					
M601	87-045-305-019	MOTOR, RF-500TB					
R184	87-022-361-089	C-RES, S 47K-1/10W F					
R185	87-022-361-089	C-RES, S 47K-1/10W F					
R186	87-022-361-089	C-RES, S 47K-1/10W F					
R187	87-022-361-089	C-RES, S 47K-1/10W F					
R188	87-022-361-089	C-RES, S 47K-1/10W F					
R189	87-022-361-089	C-RES, S 47K-1/10W F					
R401	87-022-186-089	C-RES, 82-1/4W J					
R403	87-022-186-089	C-RES, 82-1/4W J					
SFR151	87-024-176-089	SFR, 100K DIA6 V					

### ○ チップ抵抗部品コード／CHIP RESISTOR PART CODE



### チップ抵抗 Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1／10W	2125	± 5%	CJ		2	1.25	0.45	118
1／8W	3216	± 5%	CJ		3.2	1.6	0.55	128

Refer to the following pages for the 4ZG-1 and the common sections.

### ■ IC DESCRIPTION

LC7872E ..... See page 62

### ■ MECHANICAL EXPLODED VIEW 1 / 1

See page 95

### ■ MECHANICAL PARTS LIST 1 / 1

See page 96

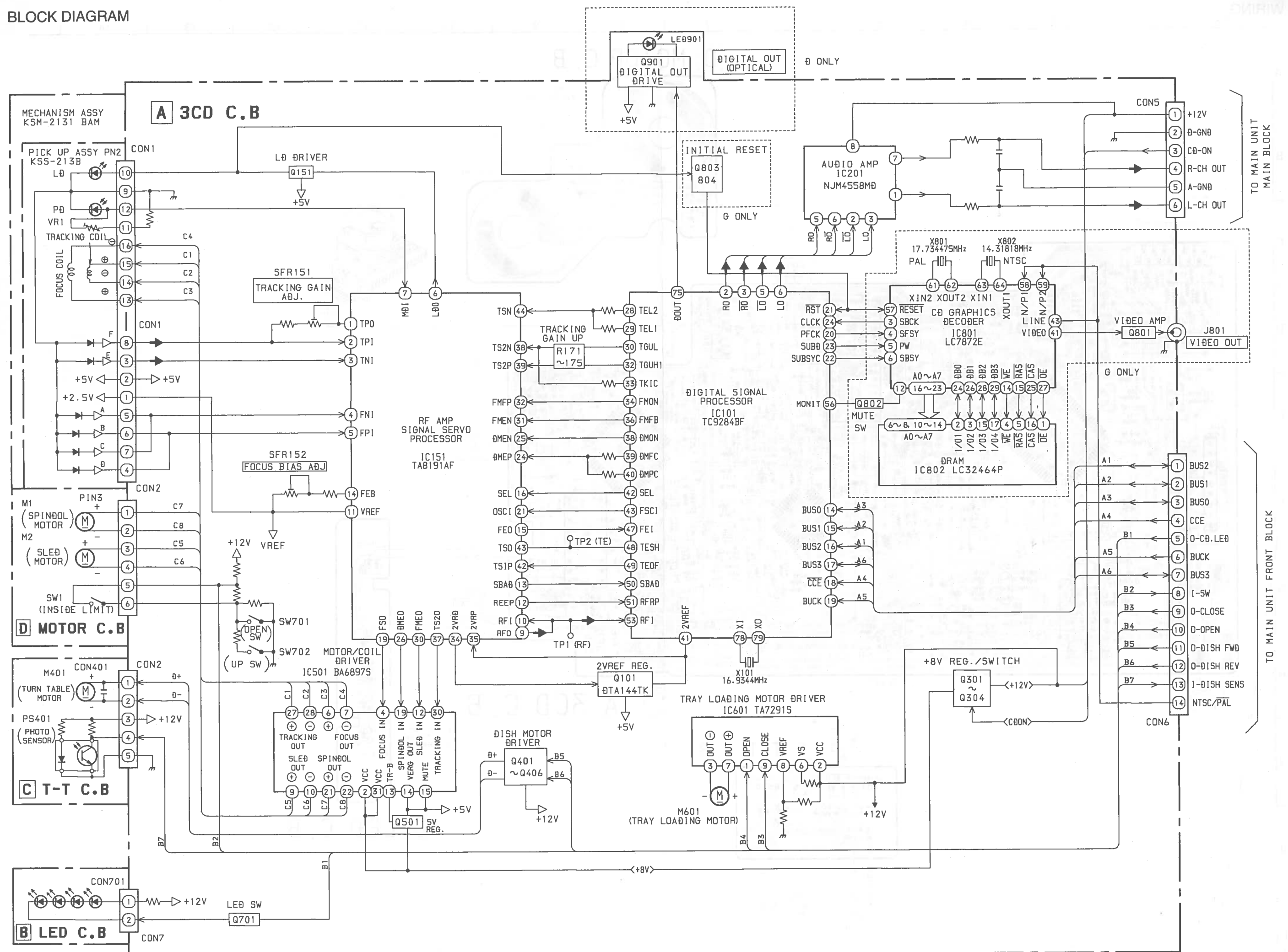
### ■ CD MECHANISM EXPLODED VIEW 1 / 1

See page 114

### ■ CD MECHANISM PARTS LIST 1 / 1

See page 114

# BLOCK DIAGRAM

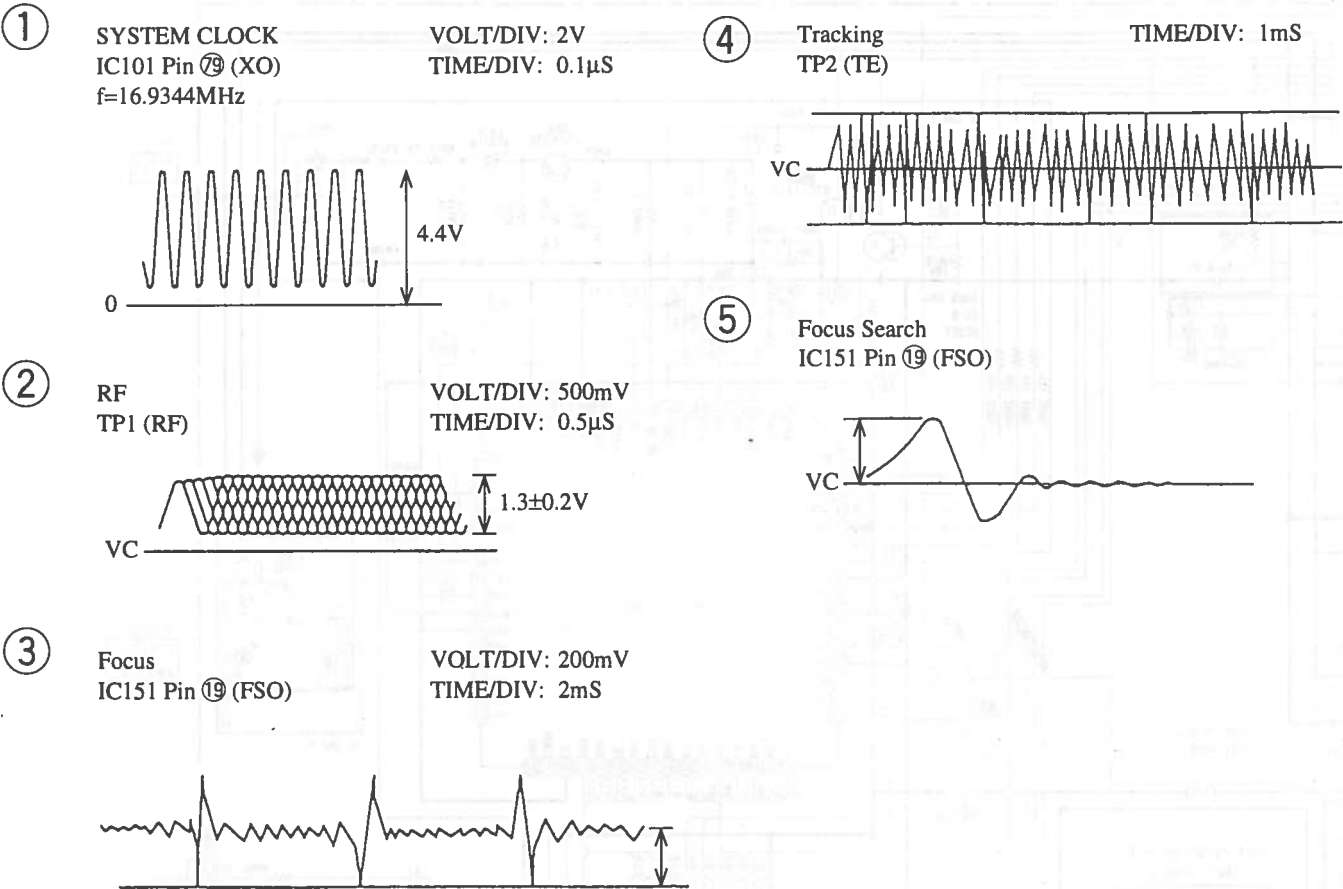






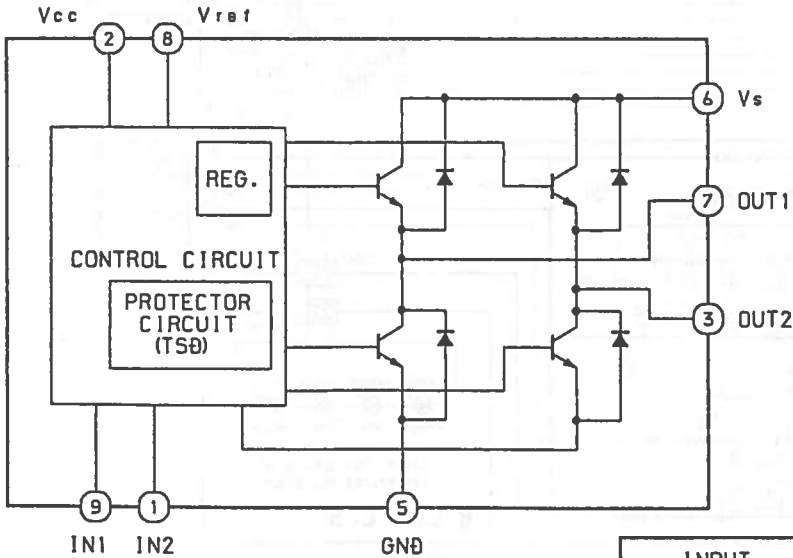


WAVE FORM



IC BLOCK DIAGRAM

IC, TA7291



INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	∞	∞	STOP
1	0	H	L	CW
0	1	L	H	CCW
1	1	L	L	BRAKE

∞ : HI IMPEDANCE  
NOTE : INPUT "H" ACTIVE

IC DESCRIPTION

IC, TC9284BF

Pin No.	Pin name	I/O	Description
1	GNDA	—	D/A converter R-channel analog GND.
2	RO	O	R-channel data positive output.
3	RO	O	R-channel data inverted output.
4	VDA	—	D/A converter power supply.
5	LO	O	L-channel data inverted output.
6	LO	O	L-channel data positive output.
7	GNDA	—	D/A converter L-channel analog GND.
8~10	TEST3~TEST5	I	TEST pin. Normally "H" or open.
11	SBOK	O	Sub code Q data CRCC judgment result output. Judgment result OK: H
12	VDDD	—	Digital power supply. (+5 V)
13	GNDD	—	Digital GND.
14~17	BUS0~BUS3	I/O	μprocessor interface, data input/output.
18	CCE	I	μprocessor interface, chip enable signal input. When "L" : BUS 3~0 are active
19	BUCK	I	μprocessor interface, clock input.
20	PFCK	O	PB frame sync output.
21	RST	I	Reset signal input. "L" at reset.
22	SUBSYC	O	Sub code block sync output. When sub code is detected, "H" at S1 position.
23	SUBD	O	Sub code P~W output.
24	CLCK	I	Sub code P~W data read clock input.
25	VDDD	—	Digital power supply. (+5 V)
26	GNDD	—	Digital GND.
27	DFCT	O	Defect detection signal output. When defect is detected: "VREF", normally "HiZ".
28	TEL2	O	Tracking gain adjustment analog switch output. "VREF", or "HiZ".
29	TEL1	O	Tracking gain adjustment analog switch output. "VREF", or "HiZ".
30	TGUL	O	Analog switch output for tracking servo gain up. Polarity in gain-up mode and normal mode can be selected by command.
31	TGUH2	O	Analog switch output for tracking servo gain up. "HiZ" for gain-up, normally "VREF".
32	TUGH1	O	TGUH1 during normal playback. TGUH2: not used
33	TKIC	O	Tracking actuator kick signal output. NKICx and CKICx are used for kick during tracking gain adjustment. "VREF" for outermost track. "O" for moving toward inner track. Normally "HiZ".
34	FMON	O	Analog switch output to turn ON/OFF the feed servo. "HiZ" to turn ON servo. "VREF" to turn OFF servo.
35	TEST1	I	TEST pin. Normally "H" or open.
36	FMFB	O	Feed motor FWD/BWD direction control signal output. "2VREF" for outmost track. "O" for moving toward inner track. Normally "HiZ".
37	TEST	I	TEST pin. Normally "H" or open.
38	DMON	O	Analog switch output to select gain of the disc motor drive circuit. "HiZ" for CLV servo OFF, "HiZ" or "VREF" can be selected by command.

Pin No.	Pin name	I/O	Description																
39	DMPC	O	Disc motor CLV servo AFC signal output.																
			<table><tr><th>Operation</th><th>Command</th><th>DMFC output</th></tr><tr><td>Motor acceleration</td><td>DMFK</td><td>“2VREF”</td></tr><tr><td>CLV servo ON</td><td>DMSV</td><td>AFC signal (PWM)</td></tr><tr><td>Motor brake</td><td>DMBK</td><td>“L”</td></tr><tr><td>CLV servo OFF</td><td>DMOFF</td><td>“VREF”</td></tr></table>	Operation	Command	DMFC output	Motor acceleration	DMFK	“2VREF”	CLV servo ON	DMSV	AFC signal (PWM)	Motor brake	DMBK	“L”	CLV servo OFF	DMOFF	“VREF”	
			Operation	Command	DMFC output														
			Motor acceleration	DMFK	“2VREF”														
			CLV servo ON	DMSV	AFC signal (PWM)														
Motor brake	DMBK	“L”																	
CLV servo OFF	DMOFF	“VREF”																	
40	DMPC	O	Disc motor CLV servo APC signal output.																
41	2VREF	—	Analog power supply. (twice the “VREF” voltage)																
42	SEL	O	Servo mode select output. It turns ON/OFF the laser diode (LD) and focus servo.																
			<table><tr><th>SEL output</th><th>LD</th><th>Focus servo</th><th>Operating mode</th></tr><tr><td>“L”</td><td>OFF</td><td>OFF</td><td>LD OFF</td></tr><tr><td>“HiZ”</td><td>ON</td><td>OFF</td><td>Focus search</td></tr><tr><td>“H”</td><td>ON</td><td>ON</td><td>Focus ON (normal play)</td></tr></table>	SEL output	LD	Focus servo	Operating mode	“L”	OFF	OFF	LD OFF	“HiZ”	ON	OFF	Focus search	“H”	ON	ON	Focus ON (normal play)
			SEL output	LD	Focus servo	Operating mode													
			“L”	OFF	OFF	LD OFF													
“HiZ”	ON	OFF	Focus search																
“H”	ON	ON	Focus ON (normal play)																
43	FCSI	O	Focus actuator drive signal output during focus search mode. “VDDA” to move the lens far from disc. “L” to move the lens closer to disc. Normally “HiZ”.																
44	FKIC	O	Focus actuator drive signal output during focus adjustment mode. “VDDA” to move the lens far from disc. “L” to move the lens closer to disc. Normally “HiZ”.																
45, 46	FEL1, FEL2	O	Focus gain adjustment analog switch output. “VREF” or “HiZ”.																
47	FEI	I	Focus error signal input.																
48	TESH	I	Analog switch input to track error signal sample-and-hold.																
49	TEOF	O	Focus gain adjustment analog switch output. “VREF” when tracking servo off.																
50	SBAD	I	Sub beam added signal input.																
51	RFRP	I	RF ripple signal input.																
52	VREF	—	Analog power supply.																
53	RFI	I	RF signal input.																
54	GND A	—	Analog GND.																
55	DTSC2	O	Data slice control EFM signal inverted output.																
56	MONI T	O	Internal signal monitored output. EFMO, PLCK or LOCK signals can be selected by command. Can be muted. (Not used)																
57	DTSC 1	O	Data slice control EFM signal positive polarity output.																
58	VDDA	—	Analog power supply.																
59	PDCNT	I	PDO output control signal input. “L” to fix to “HiZ” forcibly. “H” : normal output.																
60	PDO	O	Phase error signal between EFM and PLCK signals is output.																
61	TMAX	O	TMAX detected result output.																
			<table><tr><th>TMAX detected result</th><th>TMAX output</th></tr><tr><td>Longer than specified cycle</td><td>“L”</td></tr><tr><td>Shorter than specified cycle</td><td>“VREF”</td></tr><tr><td>Within specified cycle</td><td>“HiZ”</td></tr></table>	TMAX detected result	TMAX output	Longer than specified cycle	“L”	Shorter than specified cycle	“VREF”	Within specified cycle	“HiZ”								
			TMAX detected result	TMAX output															
			Longer than specified cycle	“L”															
Shorter than specified cycle	“VREF”																		
Within specified cycle	“HiZ”																		
62	LPFN	I	Low-pass filter amplifier inverted input.																

Pin No.	Pin name	I/O	Description
63	LPFO	O	Low-pass filter amplifier output.
64	VCOF	O	VCO filter output.
65	TESTX	I	TEST pin. Normally “H” or “L” .(Connected to +5 V)
66	HS	O	Double speed mode output. “H” : normal speed. “L” : double speed
67	GNDD	—	Digital GND.
68	SPDA	O	Processor status signal output.
69	COFS	O	Correction circuit frame clock (7.35 kHz) output.
70	WDCK	O	Word clock (88.2 kHz) output. SUBQ, BUF0V or 1PF can be selected by the μprocessor command. (Not used)
71	CHCK	O	Channel clock (44.1 kHz) output. “L” for L-channel. “H” for R-channel.
72	BCK	O	Bit clock (1.4112 MHz) output.
73	AOUT	O	Audio data output. (Not used)
74	EMPH	O	Emphasis ON/OFF select signal. “H” : emphasis ON. “L” for emphasis OFF
75	DOUT	O	DIGITAL SIGNAL output.
76	TEST2	I	TEST pin. Normally “H”.
77	VDDX	—	Crystal oscillator circuit power supply.
78	XI	I	External crystal oscillator is connected. (Crystal oscillator frequency 16.9344 MHz)
79	XO	O	External crystal oscillator is connected. (Crystal oscillator frequency 16.9344 MHz)
80	GNDX	—	Crystal oscillator GND.



IC, TA8191F

Pin No.	Pin Name	I/O	Description
1	TPO	O	Sub beam I-V amplifier (TA Amp) output terminal.
2	TPI	I	Sub beam I-V amplifier (TA Amp) input terminal.
3	TNI	I	Sub beam I-V amplifier (TA Amp) input terminal.
4	FNI	I	Main beam I-V amplifier (FN Amp) input terminal.
5	FPI	I	Main beam I-V amplifier (FP Amp) input terminal.
6	LDO	O	Laser diode amplifier (LD Amp) output terminal.
7	MDI	I	Monitor photo diode amplifier (MD Amp) input terminal.
8	RFN	I	RF amplifier reversed phase input terminal.
9	RFO	O	RF amplifier output terminal.
10	RFI	I	RF ripple signal generator circuit input terminal.
11	VREF	O	Reference voltage output terminal (+2.1 V).
12	RFRP	O	RF ripple signal output terminal.
13	SBAD	O	Scar detection signal output terminal.
14	FEB	I	Focus error balance adjustment input terminal.
15	FEO	O	Focus error amplifier (FE Amp) output terminal.
16	SEL	I	Analog switch control signal input terminal.
17	VEE	—	Power supply terminal. (TA8190F; -5 V, TA8191F; GND)
18	FSN	I	Focus output amplifier (FS Amp) reversed phase input terminal.
19	FSO	O	Focus output amplifier (FS Amp) output terminal.
20	COSC	O	External capacitor to generate focus search signal is connected to this terminal.
21	OSCI	I	External input to control the built-in power supply to generate focus search signal is connected to this terminal.
22	GND	—	GND.
23	VCC	I	Power supply terminal (+5 V).
24	DMEP	I	Disc motor amplifier (DM Amp) positive phase input terminal.
25	DMEN	I	Disc motor amplifier (DM Amp) reversed phase input terminal.
26	DMEO	O	Disc motor amplifier (DM Amp) output terminal.
27	DMPO	O	Disc motor drive amplifier (DMP Amp) output terminal. (Not used).
28	PVR	I	Drive amplifier reference voltage input terminal.
29	FMPO	O	Feed motor drive amplifier (FMP Amp) output terminal. (Not used).
30	FMEO	O	Feed motor amplifier (FM Amp) output terminal.
31	FMEN	I	Feed motor amplifier (FM Amp) reversed phase input terminal.
32	FMEP	O	Feed motor amplifier (FM Amp) positive phase input terminal.
33	FAPO	O	Focus actuator drive amplifier (FAP Amp) output terminal. (Not used).
34	2VRO	I	2 V REF amplifier (2 V REF Amp) output terminal.
35	2VRP	I	2 V REF amplifier (2 V REF Amp) positive phase input terminal.
36	2VRN	I	2 V REF amplifier (2 V REF Amp) reversed phase input terminal.
37	TS2O	O	Tracking servo amplifier 2 (TS2 Amp) output terminal.
38	TS2N	I	Tracking servo amplifier 2 (TS2 Amp) reversed phase input terminal.
39	TS2P	I	Tracking servo amplifier 2 (TS2 Amp) positive phase input terminal.
40	TS1O	O	Tracking servo amplifier 1 (TS1 Amp) output terminal.

Pin No.	Pin Name	I/O	Description
41	TS1N	I	Tracking servo amplifier 1 (TS1 Amp) reversed phase input terminal.
42	TS1P	I	Tracking servo amplifier 1 (TS1 Amp) positive phase input terminal.
43	TSO	O	Tracking output amplifier (TS Amp) output terminal.
44	TSN	I	Tracking output amplifier (TS Amp) reversed phase input terminal.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	• Test mode is activated.	• FL display check (All displays light.)
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Laser diode turns always ON. (CD block power is ON.)</li> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul> <p><b>FOCUS SERVO</b></p> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<p><b>FOCUS SERVO/TRACKING SERVO</b></p> <p><b>CLV SERVO/SLED SERVO</b></p> <p>Check FOK/FZC</p>
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback</li> <li>Press once; tracking servo OFF</li> <li>Press twice; tracking servo ON</li> </ul> <p style="text-align: right;">* NOTE 2</p>	<p><b>TRACKING SERVO ON/OFF</b></p> <p>Tracking balance (traverse) adjustment</p>
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> </ul> <p style="text-align: right;">* NOTE 3</p> <p>(During playback, machine operates normally.)</p>	<p><b>SLED SERVO</b></p> <p>Check SLED mechanism operation</p>

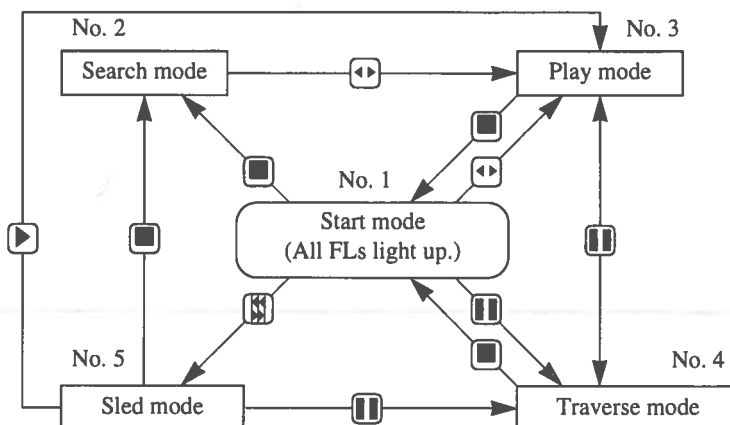
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

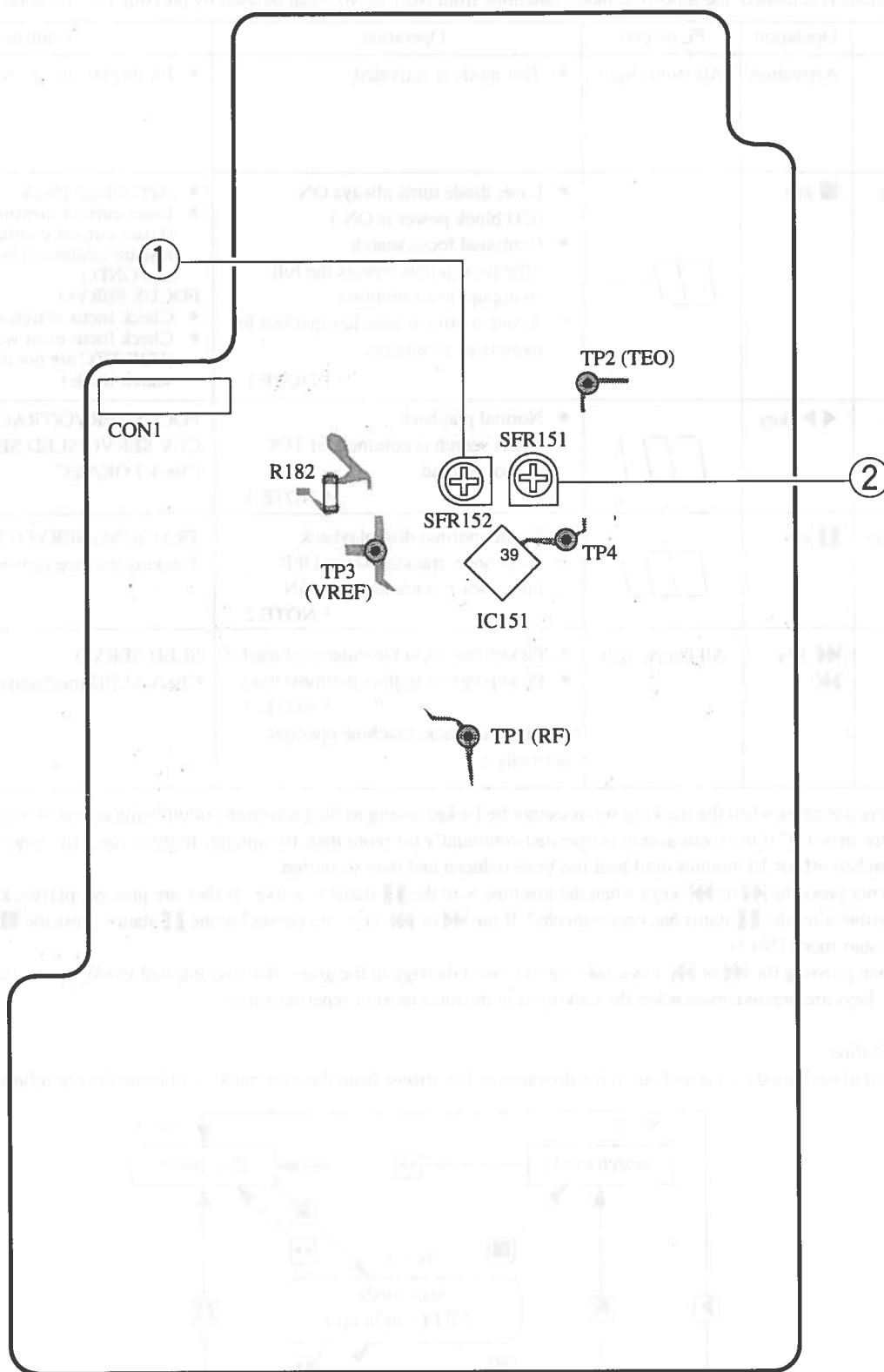
\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

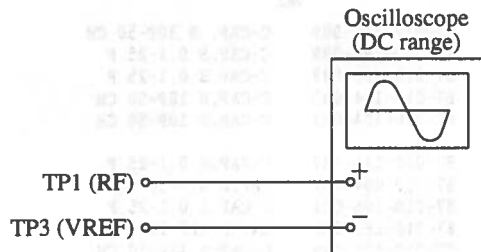
**A 3CD C.B (PATTERN SIDE)**



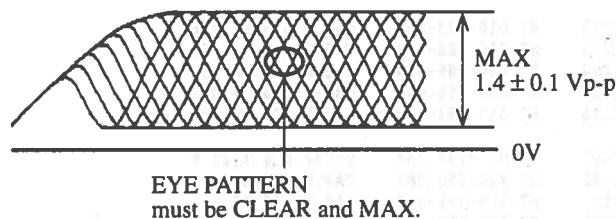
- Note:**
- Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.
  - During adjustment, connect ( $\ominus$ ) pin of an oscilloscope to TP3 (VREF).

### 1. Focus Bias Adjustment

Make the focus bias adjustment when replacing and repairing the optical block.

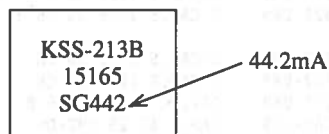


- 1) Connect an oscilloscope to test points TP1 (RF) and TP3 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second program.
- 4) Adjust SFR152 so that RF signal of the test point TP2 (RF) is MAX and CLEARREST.



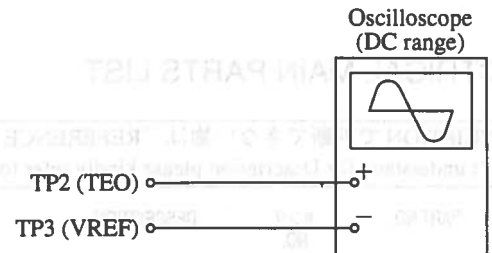
VOLT/DIV: 0.5V  
TIME/DIV: 0.5μS

**Note :** The current of the laser signal can be checked with the voltages on both sides of R182 (voltage across 10Ω). The difference for the specified value shown on the label must be within ± 6.0mA.

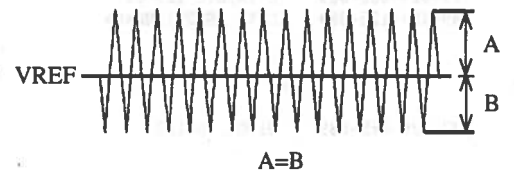


$$\text{Laser current } I_{op} = \frac{\text{Voltage across R182}}{10\Omega}$$

### 2. Tracking Balance Adjustment



- 1) Short circuit between TP3 (VREF) and TP4.
- 2) Connect an oscilloscope to test points TP2 (TEO) and TP3 (VREF).
- 3) Turn on the power switch.
- 4) Insert test disc TCD-782 (YEDS-18) and press the PLAY (▶) button.
- 5) Adjust SFR151 so that the waveform on the oscilloscope is vertically symmetrical as shown in the figure below.
- 6) After the adjustment is completed, remove the connected lead wires from the test point TP3 (VREF) and TP4.



VOLT/DIV: 20mV  
TIME/DIV: 2mS

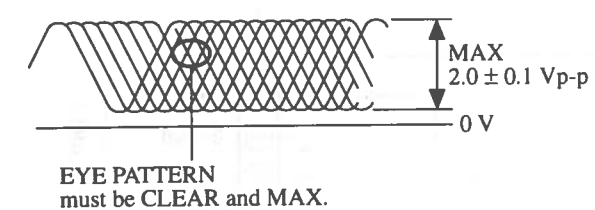
# 4ZG-1Z

## ELECTRICAL MAIN PARTS LIST

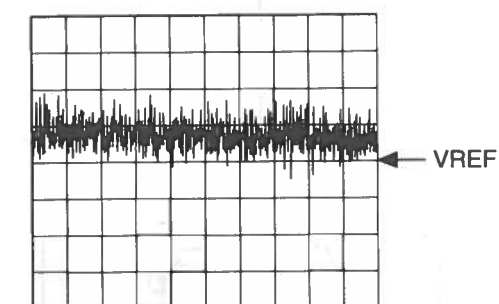
DESCRIPTION で判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO.	PART NO.	カンリ NO.	DESCRIPTION	REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
IC				C103	87-012-149-089		C-CAP, S 30P-50 CH
	87-A20-165-010		C-IC, LA9230M	C105	87-010-196-089		C-CAP, S 0.1-25 F
	87-A20-164-010		C-IC, LC78630E-T	C106	87-010-196-089		C-CAP, S 0.1-25 F
	87-017-888-089		IC, NJM4558MD	C108	87-010-154-089		C-CAP, S 10P-50 CH
	87-070-305-019		IC, BA6897S	C109	87-010-154-089		C-CAP, S 10P-50 CH
	87-001-982-019		IC, TA7291S	C111	87-010-196-089		C-CAP, S 0.1-25 F
TRANSISTOR				C112	87-010-404-089		CAP, E 4.7-50 SME
	87-026-463-089		TR, 2SA933S (RS)	C113	87-010-196-089		C-CAP, S 0.1-25 F
	89-406-555-089		TR, 2SD655E	C114	87-010-263-089		CAP, E 100-10 SME
	89-320-011-089		TR, 2SC2001K	C201	87-010-318-089		C-CAP, S 47P-50 CH
	87-026-223-089		C-TR, DTC143TK	C202	87-010-318-089		C-CAP, S 47P-50 CH
	89-113-187-089		TR, 2SA1318TU	C203	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-470-089		TR, HN1C03 F B	C204	87-010-321-089		C-CAP, S 82P-50 CH
	87-026-608-089		C-TR, DTC 123 JK	C205	87-010-321-089		C-CAP, S 82P-50 CH
	89-327-125-089		C-TR, 2SC2712GR<D>	C206	87-010-321-089		C-CAP, S 82P-50 CH
DIODE				C207	87-010-318-089		C-CAP, S 47P-50 CH
	87-020-465-089		DIODE, 1SS133	C208	87-010-318-089		C-CAP, S 47P-50 CH
3CD C.B				C209	87-010-318-089		C-CAP, S 47P-50 CH
C11	87-016-081-089		C-CAP, S 0.1-16 RK	C210	87-010-318-089		C-CAP, S 47P-50 CH
C12	87-012-157-089		C-CAP, S 330P-50 CH	C211	87-010-403-089		CAP, E 3.3-50 SME
C13	87-016-369-089		C-CAP, S 0.033-25 B K	C212	87-010-403-089		CAP, E 3.3-50 SME
C14	87-016-081-089		C-CAP, S 0.1-16 RK	C213	87-010-186-089		C-CAP, S 4700P-50 B
C15	87-010-596-089		C-CAP, S 0.047-16 RK	C214	87-010-186-089		C-CAP, S 4700P-50 B
C16	87-010-956-089		C-CAP, S 0.068-25 B	C215	87-010-555-049		CAP, E 100-10 GAS
C17	87-010-182-089		C-CAP, S 2200P-50 B	C216	87-010-384-089		CAP, E 100-25 SME
C18	87-016-369-089		C-CAP, S 0.033-25 B K	C301	87-010-196-089		C-CAP, S 0.1-25 F
C19	87-010-213-089		C-CAP, S 0.015-25 B	C302	87-010-260-089		CAP, E 47-25 SME
C20	87-010-178-089		C-CAP, S 1000P-50 B	C501	87-010-221-089		CAP, E 470-10 11L
C21	87-012-393-089		C-CAP, S 0.22-16, R, K	C502	87-010-197-089		C-CAP, S 0.01-25 B
C22	87-016-083-089		C-CAP, S 0.15-16 RK	C504	87-010-196-089		C-CAP, S 0.1-25 F
C23	87-010-197-089		C-CAP, S 0.01-25 B	C505	87-010-196-089		C-CAP, S 0.1-25 F
C24	87-010-186-089		C-CAP, S 4700P-50 B	C506	87-010-196-089		C-CAP, S 0.1-25 F
C25	87-015-694-089		CAP E 0.47-50-7L	C507	87-010-196-089		C-CAP, S 0.1-25 F
C26	87-010-322-089		C-CAP, S 100P-50 CH	C509	87-010-196-089		C-CAP, S 0.1-25 F
C27	87-015-686-089		CAP, E 22-25 7L	C510	87-010-196-089		C-CAP, S 0.1-25 F
C28	87-015-697-089		CAP, E 3.3-50 7L	C601	87-010-197-089		C-CAP, S 0.01-25 B
C29	87-010-184-089		C-CAP, S 3300P-50 B	C602	87-010-381-089		CAP, E 330-16 SME
C30	87-010-146-089		C-CAP, S 2P-50 CH	C603	87-010-196-089		C-CAP, S 0.1-25 F
C31	87-010-186-089		C-CAP, S 4700P-50 B	C701	87-010-322-089		C-CAP, S 100P-50 CH
C32	87-010-148-089		C-CAP, S 4P-50 CH	C702	87-010-322-089		C-CAP, S 100P-50 CH
C33	87-016-081-089		C-CAP, S 0.1-16 RK	C703	87-010-322-089		C-CAP, S 100P-50 CH
C35	87-010-196-089		C-CAP, S 0.1-25 F	C704	87-010-322-089		C-CAP, S 100P-50 CH
C37	87-010-405-089		CAP, E 10-50 SME	C705	87-018-131-089		CAP, TC-U 1000P-50 B
C38	87-010-263-089		CAP, E 100-10 SME	C901	87-010-260-089		CAP, E 47-25 SME<D>
C39	87-010-197-089		C-CAP, S 0.01-25 B	C902	87-010-196-089		C-CAP, S 0.1-25 F<D>
C40	87-010-401-089		CAP, E 1-50 SME	FC1	85-NFT-611-119		FF-CABLE, 16P-1.0
C41	87-016-463-089		C-CAP, S 0.33-16 B	FC4	84-ZG1-614-219		CABLE, FFC 5P-1.25
C42	87-010-263-089		CAP, E 100-10 SME	FC5	84-ZG1-630-019		CABLE FFC 6P-1.25
C43	87-018-134-089		CAP, TC-U 0.01-16 Y	L11	87-003-102-089		COIL, 10UH
C44	87-010-263-089		CAP, E 100-10 SME	LED901	87-A40-123-019		LED, SLZ-8128A-01-B<D>
C46	87-010-196-089		C-CAP, S 0.1-25 F	M601	87-045-383-019		MOT, M9I T2
C47	87-015-684-010		CAP, E 47-16 7L	R102	87-022-345-089		C-RES, S 1.2K-1/10W F
C48	87-010-196-089		C-CAP, S 0.1-25 F	SW701	87-036-109-019		SW, PUSH SPPB 61
C50	87-010-197-089		C-CAP, S 0.01-25 B	SW702	87-036-109-019		SW, PUSH SPPB 61
C51	87-010-263-089		CAP, E 100-10 SME	X101	87-030-402-089		VIB, XTAL 16.9344 MHZ
C101	87-016-081-089		C-CAP, S 0.1-16 RK	LED C.B			
C102	87-016-081-089		C-CAP, S 0.1-16 RK	LED701	87-070-200-089		LED, SLP636C-81-S-T1
				LED702	87-017-350-080		LED, SEL1550CM
				LED703	87-017-350-080		LED, SEL1550CM
				LED704	87-070-200-089		LED, SLP636C-81-S-T1

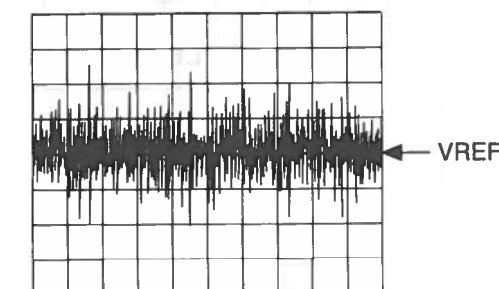
IC11 Pin ④ (RFSM)

VOLT/DIV: 0.5V  
TIME/DIV: 1μS

IC11 Pin ⑩ (FD)

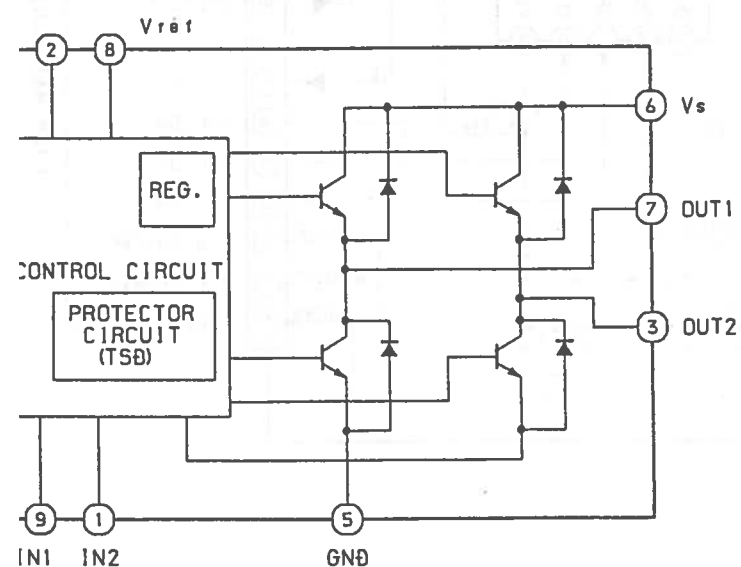
VOLT/DIV: 100mV  
TIME/DIV: 1mS

IC11 Pin ⑮ (TO)

VOLT/DIV: 100mV  
TIME/DIV: 1mS

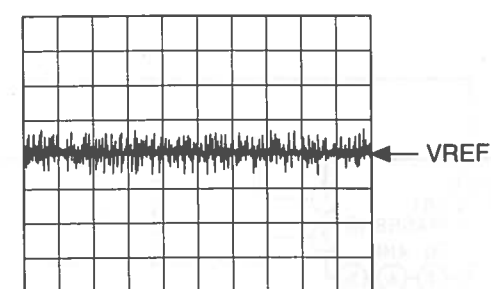
## BLOCK DIAGRAM

A7291



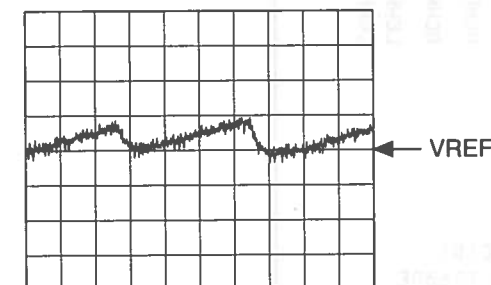
④

IC11 Pin ⑳ (SPD)

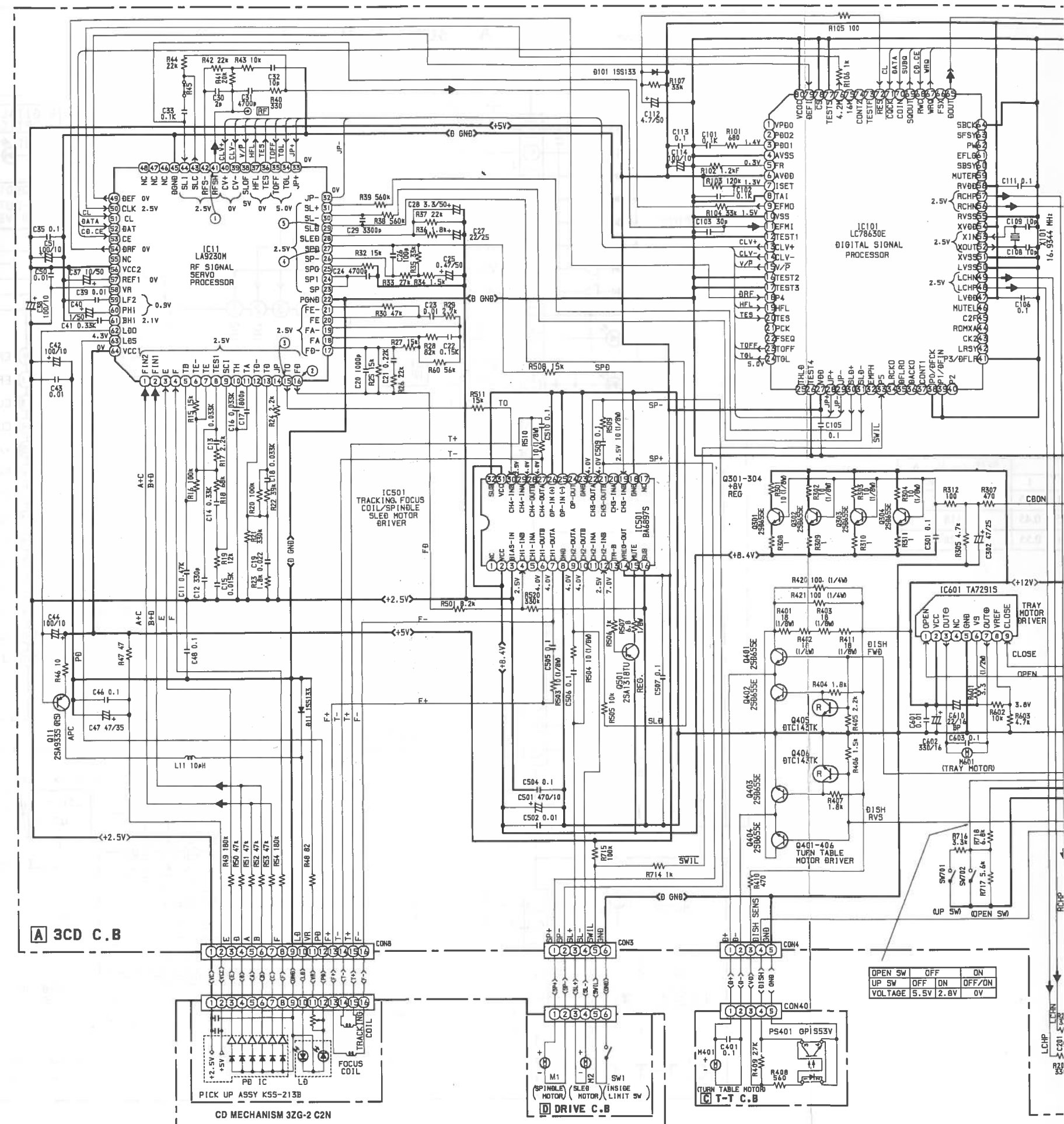
VOLT/DIV: 100mV  
TIME/DIV: 1mS

⑤

IC11 Pin ㉑ (SLD)

VOLT/DIV: 200mV  
TIME/DIV: 2S

## SCHEMATIC DIAGRAM





SCHEMATIC DIAGRAM

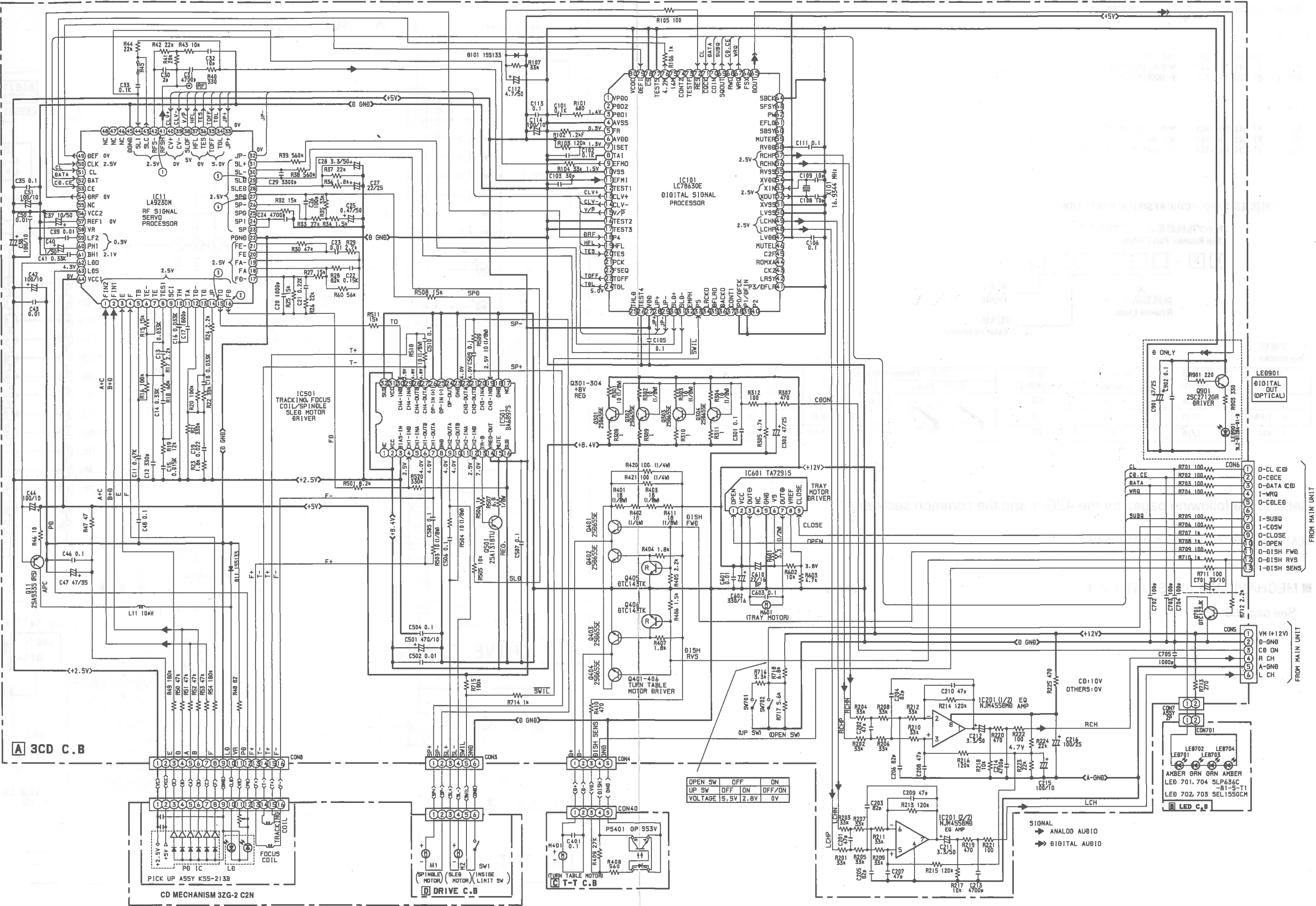
V: 100mV  
V: 1mS

REF

IV: 200mV  
V: 2S

REF

MODE
STOP
CW
CCW
BRAKE



REF. NO.	PART NO.	カンリ NO.	DESCRIPTION
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T-T C.B

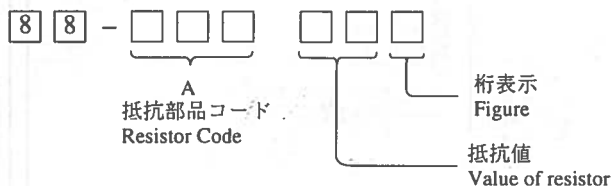
C401	87-018-214-089		CAP TC U 0.1-50 F
M401	87-045-364-019		MOTOR, (BCH3B14)
PS401	87-026-573-019		P-SNSR, GP1S53V

DRIVE C.B


M1	87-045-358-019		MOT, RF-310TA 43
M2	87-045-356-019		MOT, RF-310TA 30
SW1	87-A90-042-019		SW, LEAF MSW 17310 MVPO

# ○ チップ抵抗部品コード / CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code: A
				外形／Form	L	W	t	
1／16W	1608	±5%	CJ		1.6	0.8	0.45	108
1／10W	2125	±5%	CJ		2	1.25	0.45	118
1／8W	3216	±5%	CJ		3.2	1.6	0.55	128

Refer to the following pages for the 4ZG-1 and the common sections.

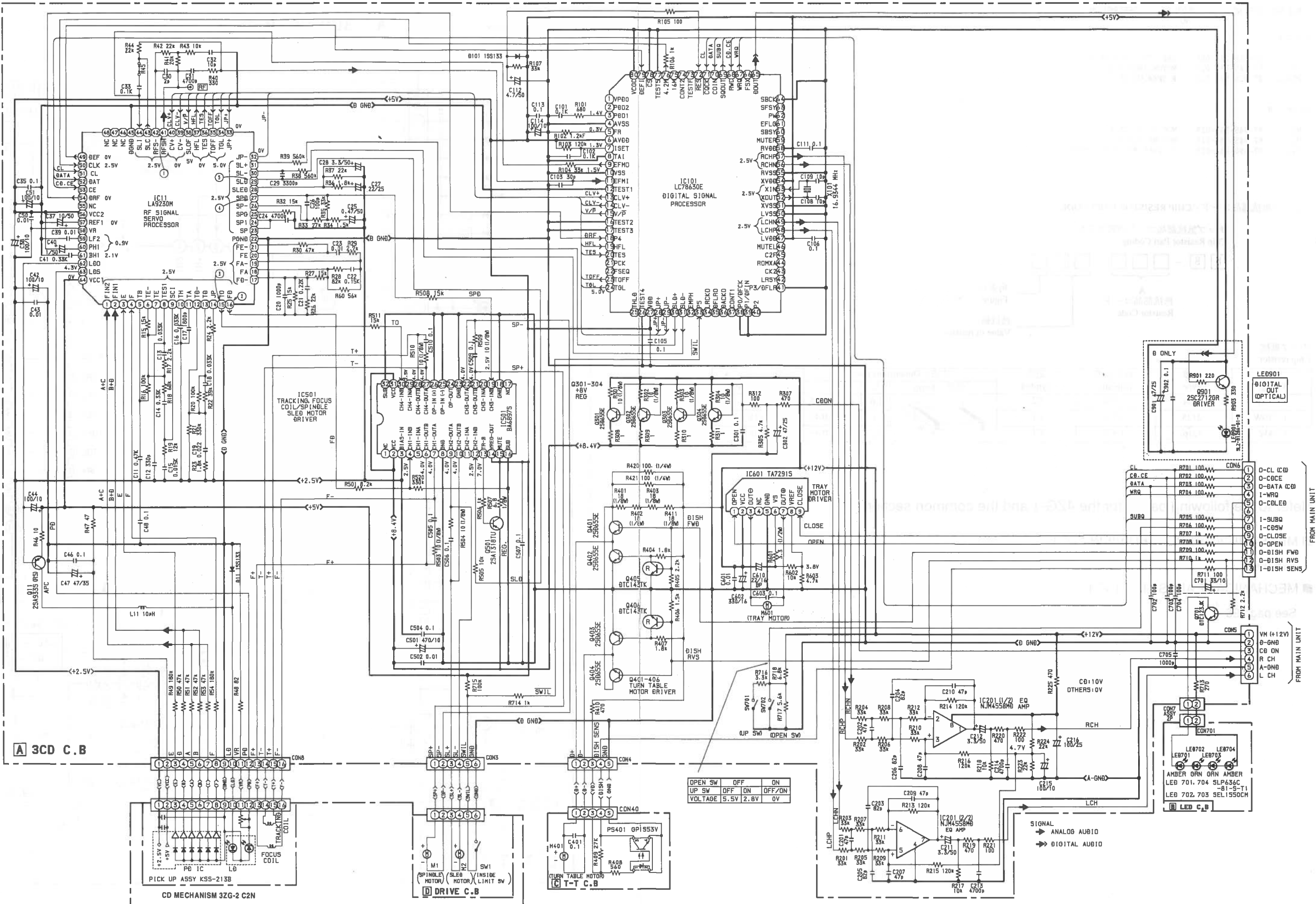
## ■ MECHANICAL EXPLODED VIEW 1 / 1

See page 95

## ■ MECHANICAL PARTS LIST 1 / 1

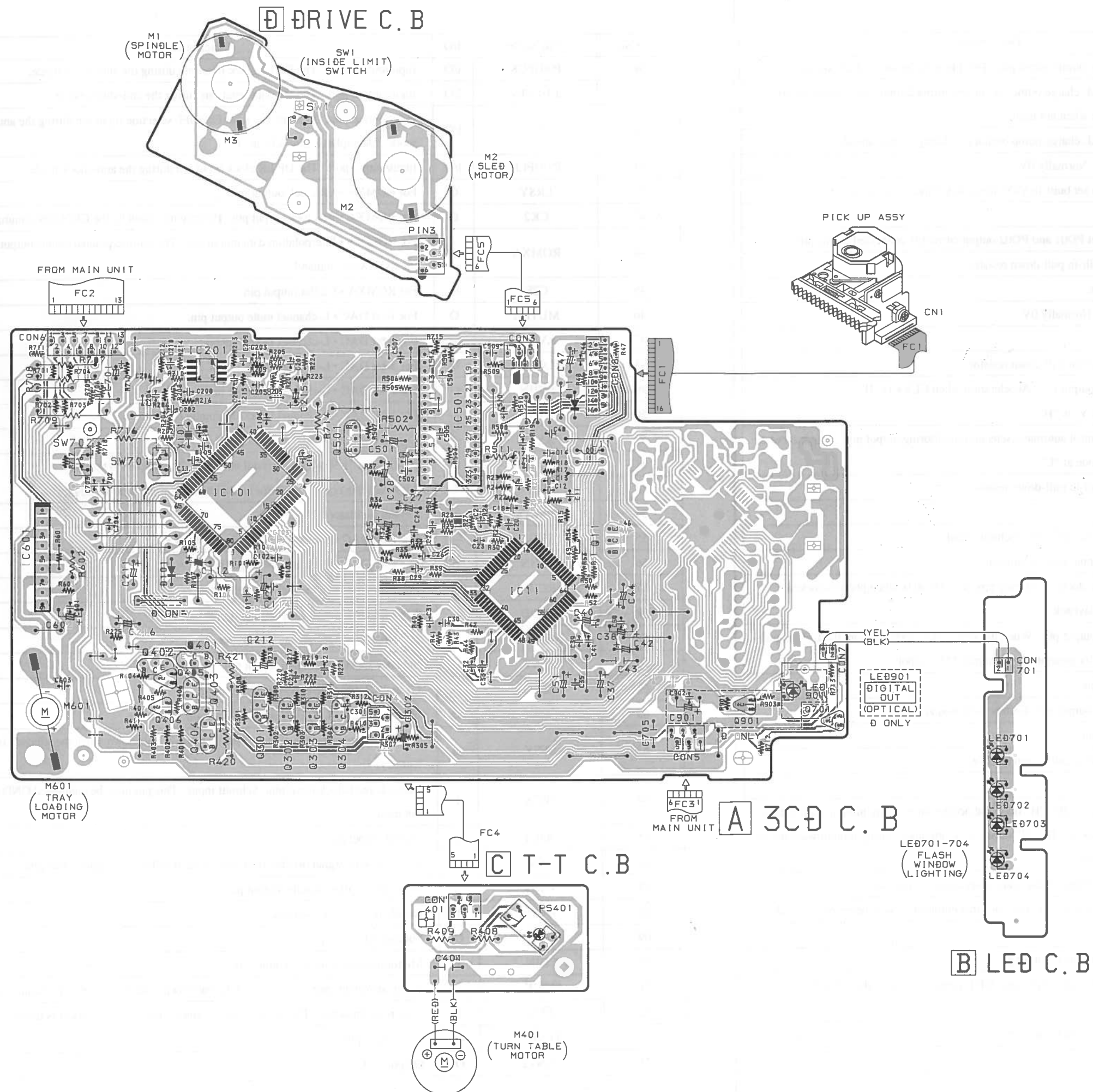
See page 96

SCHEMATIC DIAGRAM





A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K



IC DESCRIPTION  
IC, LC78630E

Pin No.	Pin Name	I/O	Description
1	VPDO	O	Vari-pitch PLL charge pump output pin. This pin must be open when not used.
2	PDO2	O	Bit clock playback PLL charge pump output pin during 2 times and 4 times speed. This pin must be open when not used.
3	PDO1	O	Bit clock playback PLL charge pump output pin during normal speed.
4	AVSS	—	Analog system GND. Normally 0V.
5	FR	I	An external resistor to set built-in VCO frequency range is connected to this pin.
6	AVDD	—	Analog system GND.
7	ISSET	I	An external resistor set PD01 and PD02 output current is connected to this pin.
8	TAI	I	Test input pin with built-in pull-down resistor.
9	EFMO	O	EFM signal output pin.
10	VSS	—	Digital system GND. Normally 0V.
11	EFMI	I	EFM signal input pin.
12	TEST1	I	Test input pin with built-in pull-down resistor.
13	CLV+	O	Spindle servo control output pin. Acceleration when CLV+ is "H".
14	CLV-	O	Deceleration when CLV- is "H".
15	V/F	O	Rough servo/phase control automatic selection monitoring output pin. Rough servo at "H". Phase control mode at "L".
16, 17	TEST2, TEST3	I	Test input pin with built-in pull-down resistor.
18	P4	I/O	Input/output port.
19	HFL	I	Tracking detection signal input pin. Schmitt input.
20	TES	I	Tracking error signal input pin. Schmitt input.
21	PCK	O	EFM data playback bit clock monitoring pin. 4.3218 MHz when phase is locked during normal speed playback.
22	FSEQ	O	Sync signal detection output pin. When the sync signal detected from the EFM signal agrees with the internally generated sync signal, "H" output.
23	TOFF	O	Tracking OFF output pin.
24	TGL	O	Tracking gain selector output pin. Gain is increased at "L".
25	THLD	O	Tracking hold output pin.
26	TEST4	I	Test input pin with built-in pull-down resistor.
27	VDD	—	Digital system GND.
28, 29	JP+, JP-	O	Tracking jump output pin. JP+ "H" occurs at acceleration during jump toward outside or decelerator toward inside. JP- "H" occurs at acceleration during jump toward inside or deceleration toward outside.
30, 31	SLD+, SLD-	O	Sled output pin. Four different level can be set using commands.
32	EMPH	O	Emphasis monitoring output. "H" indicates that emphasis disc is being played back.
33	P5	I/O	Input/output.
34	LRCKO	O	Digital filter output. LR clock output pin.
35	DFLRO	O	Digital filter output. LR data output pin. DF is turned OFF with the DFOFF command.
36	DACKO	O	Digital filter output. Bit clock output pin.
37	CONT1	O	Output port.

Pin No.	Pin Name	I/O	Description
38	P0/DFCK	I/O	Input/output port. The DF bit clock input pin during the anti-shock mode.
39	P1/DFIN	I/O	Input/output port. The DF data input pin during the anti-shock mode.
40	P2	I/O	Input/output port. Deemphasis filter ON/OFF selection input pin during the anti-shock mode. Deemphasis filter ON at "H".
41	P3/DFLR	I/O	Input/output port. The DF LR clock input pin during the anti-shock mode.
42	LRSY	O	For ROMXA • LR clock output pin.
43	CK2	O	For ROMXA • Bit clock output pin. Polarity inversion by the CK2CON command.
44	ROMXA	O	For ROMXA • Interpolation data output pin. The un-interpolated data is output with the ROMXA command.
45	C2F	O	For ROMXA • C2 flat output pin.
46	MUTEL	O	For 1-bit DAC • L-channel mute output pin.
47	LVDD	—	For 1-bit DAC • L-channel power supply.
48	LCHP	O	For 1-bit DAC • L-channel P output pin.
49	LCHN	O	For 1-bit DAC • L-channel N output pin.
50	LVSS	—	For 1-bit DAC • L-channel GND. Normally 0 V.
51	XVSS	—	Crystal oscillator GND. Normally 0 V.
52	XOUT	O	An external 16.9344 MHz crystal oscillator is connected to this pin.
53	XIN	I	33.8688 MHz crystal oscillator is connected during 4 time speed playback.
54	XVDD	—	Crystal oscillator GND.
55	RVSS	—	For 1-bit DAC • R-channel GND. Normally 0 V.
56	RCHN	O	For 1-bit DAC • R-channel N output pin.
57	RCHP	O	For 1-bit DAC • R-channel P output pin.
58	RVDD	—	For 1-bit DAC • R-channel power supply.
59	MUTER	O	For 1-bit DAC • R-channel mute output pin.
60	SBSY	O	Subcode block sync signal output pin.
61	EFLG	O	C1 and C2 error correction monitoring pin.
62	PW	O	ubcode P, Q, R, S, T, U, V and W output pin.
63	SFSY	O	Subcode frame sync signal output pin. The level falls down when the subcode is in standby.
64	SBCK	I	Subcode read clock input pin. Schmitt input. This pin must be connected GND when not used.
65	DOUT	O	Digital output pin.
66	FSX	O	7.35 kHz sync signal divided from the crystal oscillator is output to this pin.
67	WRQ	O	Subcode Q output standby output pin.
68	RWC	I	Read/write control input pin.
69	SQOUT	O	Subcode Q output pin.
70	COIN	I	Microprocessor command input pin.
71	CQCK	I	Command input read clock or subcode read clock input from SQOUT. Schmitt input.
72	RES	I	Chip reset input pin. This pin goes to "L" once when the main power is turned on.
73	TESTF	O	Test output pin.
74	CONT2	O	Output port.

Pin No.	Pin Name	I/O	Description
75	16M	O	16.9344 MHz crystal output pin. 33.8688 MHz is output during 4 times speed playback.
76	4.2M	O	4.2336 MHz output pin.
77	TEST5	I	Test input pin with built-in pull-down resistor.
78	$\overline{\text{CS}}$	I	Chip select input pin with built-in pull-down resistor.
79	DEFI	I	Defect detection signal input pin. This pin must be connected GND when not used.
80	VCOC	I	Vari-pitch VCO control input pin. This pin must be connected GND when not used.



# IC, LA9230M

Pin No.	Pin Name	I/O	Description
1	FIN2	I	Photo diode of pickup is connected to this pin. This signal is added to the FIN1 pin signal to produce the RF signal and subtracted to produce the FE signal.
2	FIN1	I	Photo diode of pickup is connected to this pin.
3	E	I	Photo diode of pickup is connected to this pin. This signal is subtracted from the F pin signal to produce the FE signal.
4	F	I	Photo diode of pickup is connected to this pin.
5	TB	I	DC component of the TE signal is input to this pin.
6	TE-	I	The TE signal gain adjustment resistor is connected between this pin and the TE pin.
7	TE	O	The TE signal output pin.
8	TESI	I	TES (Track Error Sense) comparator input pin. The TE signal is input after passing through band-pass filter.
9	SCI	I	Shock sense input signal is connected to this pin.
10	TH	I	Tracking gain time constant setting pin.
11	TA	O	TA amplifier output pin.
12	TD-	I	An external tracking phase compensation constant is connected between the TD and VR pins.
13	TD	I	An external tracking phase compensation setting pin.
14	JP	I	Tracking jump signal (kick pulse) amplitude setting pin.
15	TO	O	Tracking control signal output pin.
16	FD	O	Focusing control signal output pin.
17	FD-	I	A focusing phase compensation constant is connected between the FD and FA pins.
18	FA	I	A focusing phase compensation constant is connected between the FD- and FA- pins.
19	FA-	I	A focusing phase compensation constant is connected between the FA and FE pins.
20	FE	O	FE signal output pin.
21	FE-	I	An external FE signal gain setting resistor is connected between the TE and this pins.
22	AGND	—	Analog signal GND.
23	SP	O	Single-ended output of the CV+ and CV- pin input signal.
24	SPI	I	Spindle amplifier input.
25	SPG	I	An external spindle gain in 12 cm mode setting resistor is connected to this pin.
26	SP-	I	An external spindle phase compensation constant together with the SPD pin, is connected to this pin.
27	SPD	O	Spindle control signal output pin.
28	SLEQ	I	Sled phase compensation constant is connected to this pin.
29	SLD	O	Sled control signal output pin.
30, 31	SL-, SL+	I	Sled advance signal input pin from microprocessor.
32, 33	JP-, JP+	I	Tracking jump signal input pin from DSP.
34	TGL	I	Tracking gain control signal input pin from DSP. Gain low when TGL = "H".
35	TOFF	I	Tracking off control signal input pin from DSP. Tracking off when TGL = "H".
36	TES	O	The TES signal is output from this pin to DSP.
37	HFL	I	The (HIGH FREQUENCY LEVEL) is used to judge whether the main beam is positioned above the bits or mirror.

Pin No.	Pin Name	I/O	Description
38	SLOF	I	Sled servo off control input pin.
39, 40	CV-, CV+	I	CLV error signal input pin from DSP.
41	RFSM	O	RF output pin.
42	RFS-	I	RF gain setting and 3T compensation constant setting pin together with RFSM pin.
43	SLC	O	The (SLICE LEVEL CONTROL) is the signal which control the data slice level of the RF waveform with DSP. The (SLICE LEVEL CONTROL) is from this pin.
44	SLI	I	The input signal which controls the data slice level with DSP, is connected to this pin.
45	DGND	—	Digital system GND.
46	NC [FSC]	—	No connection. (Output pin for focus search smoothing capacity.)
47, 48	NC	—	No connection.
49	DEF	O	Disc defect detection output pin.
50	CLK	I	Reference clock input pin. The DSP 4.23 MHz is input to this pin.
51	CL	I	Microprocessor command clock input pin.
52	DAT	I	Microprocessor command data input pin.
53	CE	I	Microprocessor command chip enable input pin.
54	DRF	O	(DETECT RF) RF level detection output.
55	NC	—	No connection.
56	VCC2	—	Servo system and digital system Vcc pin.
57	REFI	I	A bypass capacitor for reference voltage is connected to this pin.
58	VR	O	Reference voltage output pin.
59	LF2	I	An external disc defect detection constant is connected to this pin.
60	PH1	I	An external RF signal peak holding capacitor is connected to this pin.
61	BH1	I	An external RF signal bottom holding capacitor is connected to this pin.
62	LDD	O	APC circuit output pin.
63	LDS	I	APC circuit input pin.
64	VCC1	—	RF system Vcc pin.

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.




### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• CD block power is ON.</li> </ul>	<ul style="list-style-type: none"> <li>• FL display check (All displays light.)</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Laser diode turns always ON.</li> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul> <p><b>FOCUS SERVO</b></p> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<p><b>FOCUS SERVO/TRACKING SERVO</b></p> <p><b>CLV SERVO/SLED SERVO</b></p> <p>Check DRF</p>
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback</li> <li>Press once; tracking servo OFF</li> <li>Press twice; tracking servo ON</li> </ul> <p style="text-align: right;">* NOTE 2</p>	<p><b>TRACKING SERVO ON/OFF</b></p> <p>Tracking balance (traverse) check</p>
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> </ul> <p style="text-align: right;">* NOTE 3</p> <p>(During playback, machine operates normally.)</p>	<p><b>SLED SERVO</b></p> <p>Check SLED mechanism operation</p>

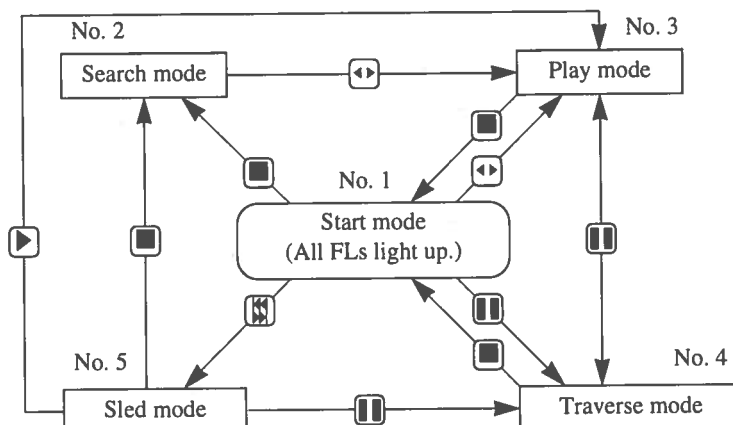
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

### 4. Operation Outline

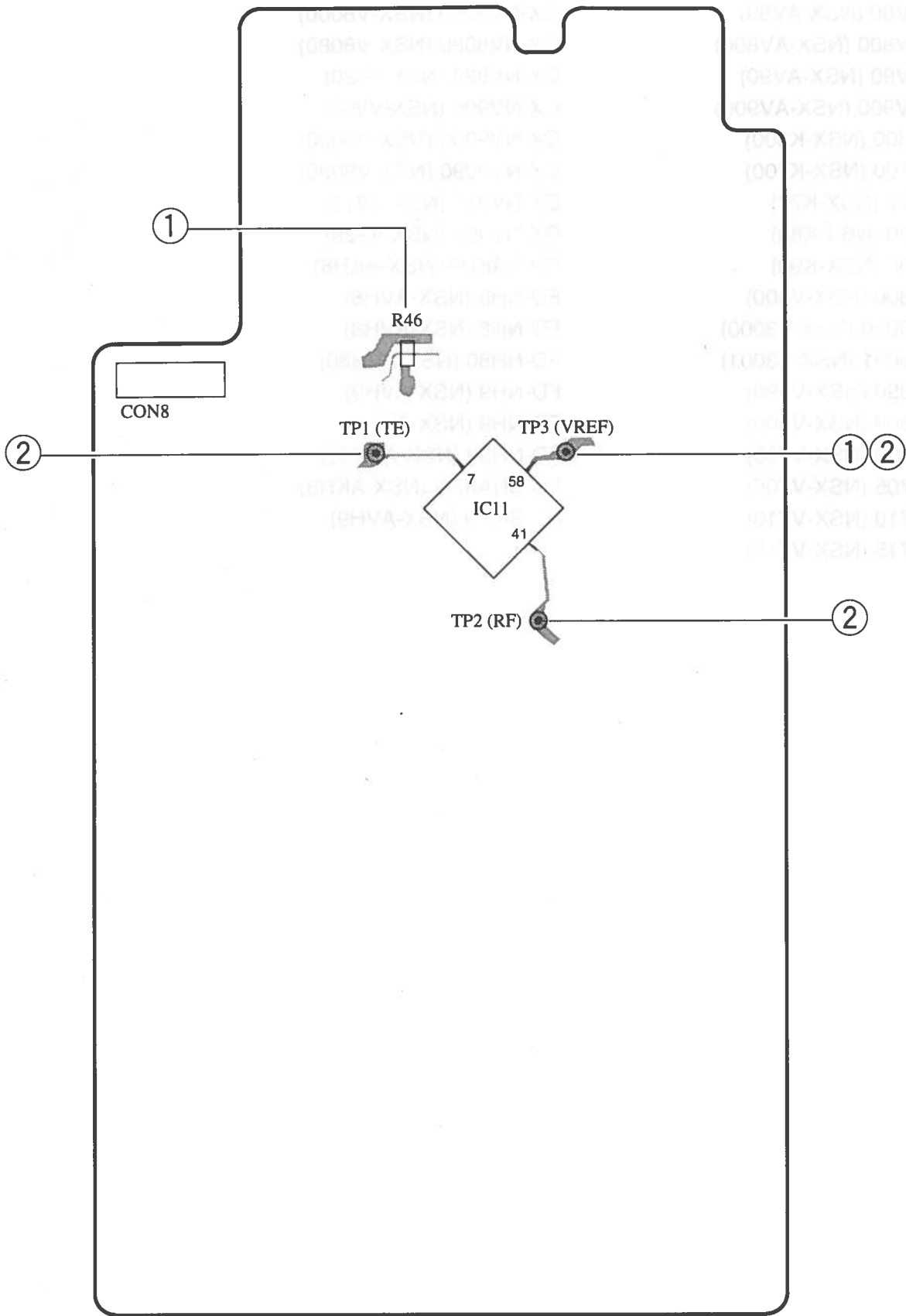
The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

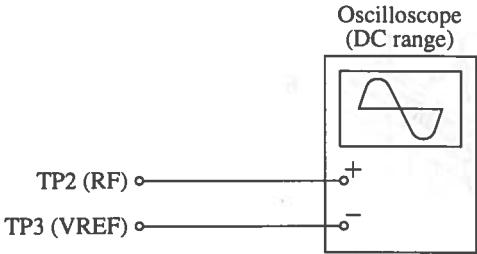


**A** 3CD C.B (PATTERN SIDE)

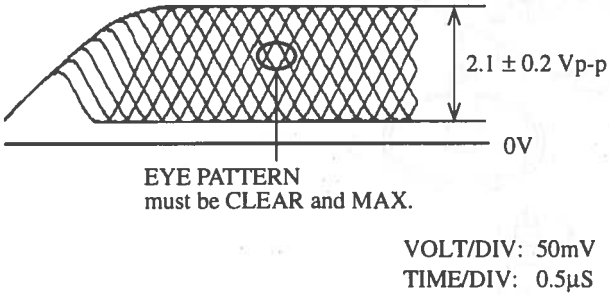


Note: • Connect a probe (10: 1) of the oscilloscope or the frequency counter to a test point.  
• During adjustment, connect (⊖) pin of an oscilloscope to TP3 (VREF).

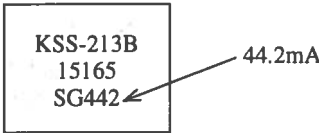
1. RF waveform Check



- 1) Connect an oscilloscope to test points TP2 (RF) and TP3 (VREF).
- 2) Turn on the power switch.
- 3) Insert test disc TCD-782 (YEDS-18) and play back the second program.
- 4) Confirm that the waveform at oscilloscope has amplitude of 2.1 Vp-p, and clear wedge area in its center.

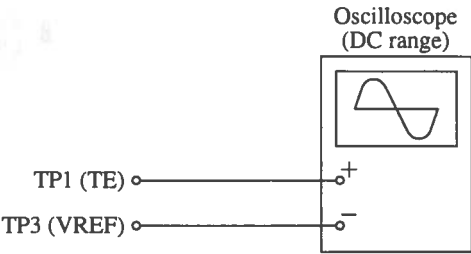


Note: The current of the laser signal can be checked with the voltages on both sides of R46 (voltage across 10Ω). The difference for the specified value shown on the label must be within ± 6.0mA.

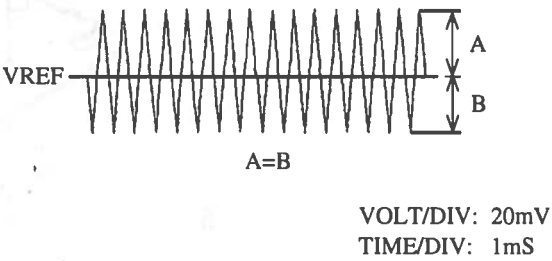


Laser current Iop =  $\frac{\text{Voltage across R46}}{10\Omega}$

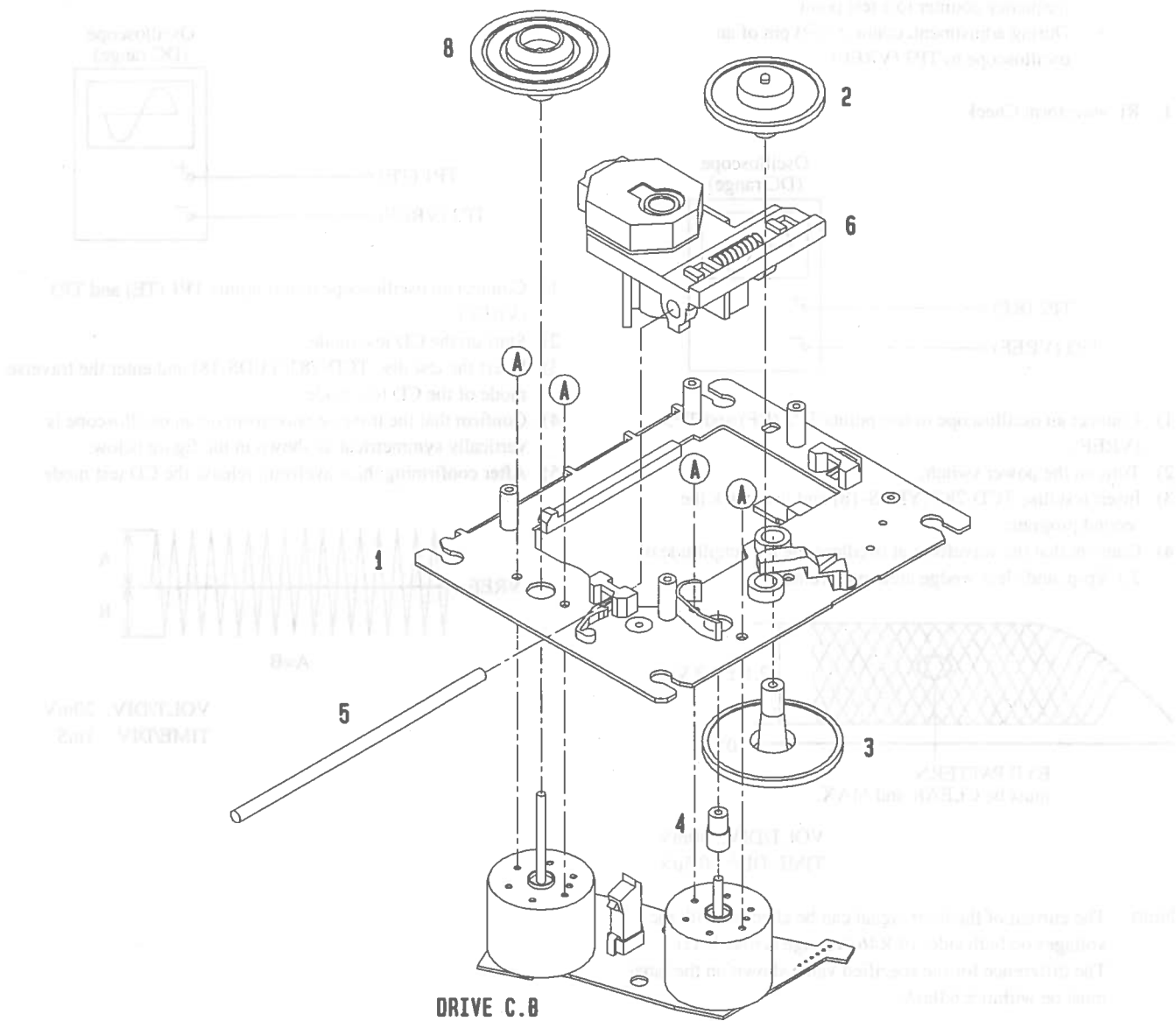
2. Tracking Balance Check



- 1) Connect an oscilloscope to test points TP1 (TE) and TP3 (VREF).
- 2) Start up the CD test mode.
- 3) Insert the test disc TCD-782(YEDS-18) and enter the traverse mode of the CD test mode.
- 4) Confirm that the traverse waveform on an oscilloscope is vertically symmetrical as shown in the figure below.
- 5) After confirming the waveform, release the CD test mode.



CD MECHANISM EXPLODED VIEW 1 / 1 (3ZG-2 C2N <Z>)



CD MECHANISM PARTS LIST 1 / 1 (3ZG-2 C2N <Z>)

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	83-ZG2-202-71K		O-SERT S ASSY, S	6	87-070-445-010		PICK-UP, KSS-213B
2	83-ZG2-204-419		GEAR, A	8	83-ZG2-233-019		TURN TABLE, A5
3	83-ZG2-205-219		GEAR, B	A	87-261-032-219		SCREW V+2-3
4	83-ZG2-220-01K		GEAR MOTOR 2				
5	83-ZG2-207-119		SHAFT, SLIDE				

USE MODEL LIST

CX-NAV70 (NSX-AV70)	CX-NV720 (NSX-V720)
CX-NAV700 (NSX-AV700)	CX-NV770 (NSX-V770)
CX-NAV71 (NSX-AV71)	CX-NV800 (NSX-V800)
CX-NAV80 (NSX-AV80)	CX-NV8000 (NSX-V8000)
CX-NAV800 (NSX-AV800)	CX-NV8080 (NSX-V8080)
CX-NAV90 (NSX-AV90)	CX-NV820 (NSX-V820)
CX-NAV900 (NSX-AV900)	CX-NV900 (NSX-V900)
CX-NK300 (NSX-K300)	CX-NV9000 (NSX-V9000)
CX-NK700 (NSX-K700)	CX-NV9090 (NSX-V9090)
CX-NK77 (NSX-K77)	CX-NV915 (NSX-V915)
CX-NK80 (NSX-K80)	CX-NV929 (NSX-V929)
CX-NK90 (NSX-K90)	FD-NAKH8 (NSX-AKH8)
CX-NV300 (NSX-V300)	FD-NH8 (NSX-AVH8)
CX-NV3000 (NSX-V3000)	FD-NH8 (NSX-AVH8)
CX-NV3001 (NSX-V3001)	FD-NH80 (NSX-AVH80)
CX-NV390 (NSX-V390)	FD-NH9 (NSX-AVH9)
CX-NV500 (NSX-V500)	FD-NH9 (NSX-AVH9)
CX-NV700 (NSX-V700)	FD-NH90 (NSX-AVH90)
CX-NV705 (NSX-V705)	FD-SNAKH8 (NSX-AKH8)
CX-NV710 (NSX-V710)	FD-SNH9 (NSX-AVH9)
CX-NV715 (NSX-V715)	

# REFERENCE NAME LIST

## ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER
サージサプレッサ	SERGESUPPRESSOR
セラコン	CAP, CERA

## MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL
ジグアーム	ARM, SHAFT
ジグガイド	GUIDE, SHAFT
ストラップ	STRAP
トクナベ	S-SCREW
ヒンジ	HINGE
ヒンジビス	S-SCREW
ビスセレート	SCREW, SERRART



サービス技術ニュース	
番 号	連絡内容
G - -	
G - -	
G - -	

**アイワ株式会社**  
**AIWA CO.,LTD.**

912162, 750038

Tokyo Japan

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylit-tävälle näkymättömälle lasersäteilylle.

### VARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

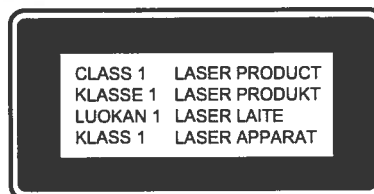
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.

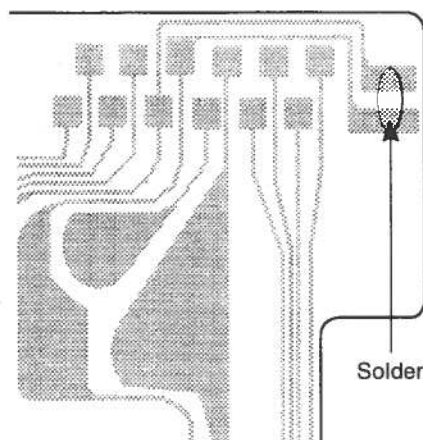


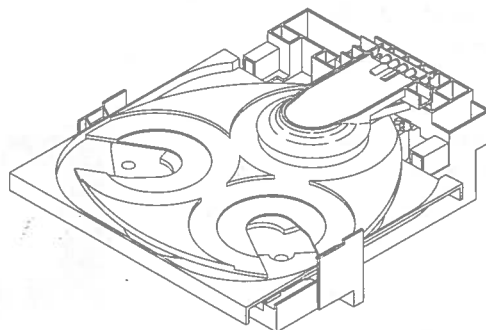
### Precaution to replace Optical block (KSS-213F)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.

PICK-UP Assy P.C.B





# SERVICE MANUAL

CD MECHANISM

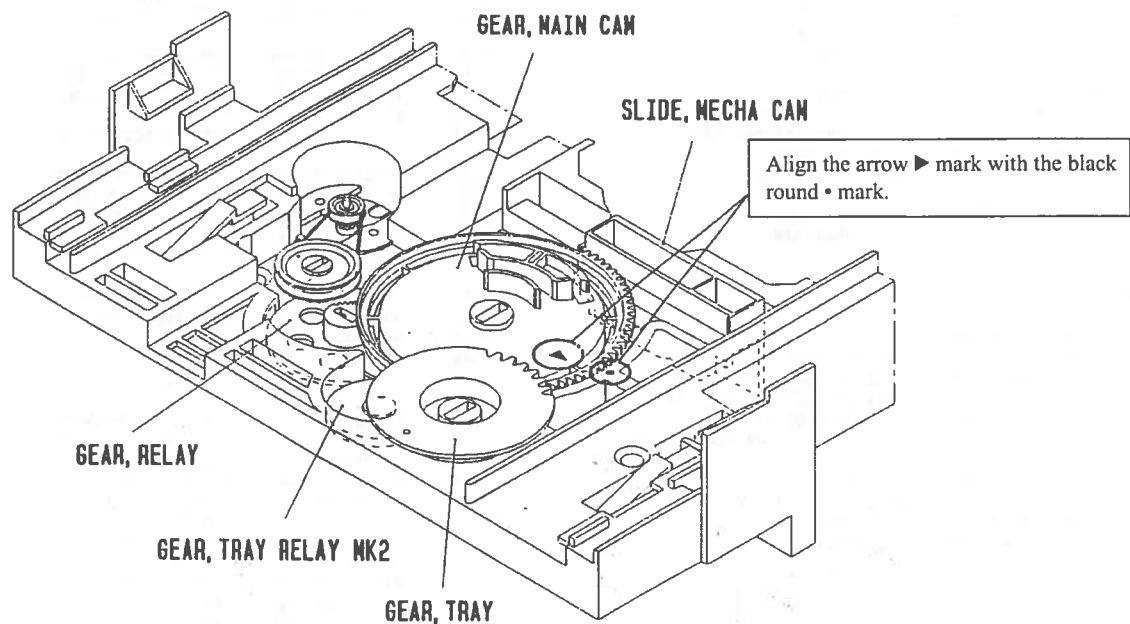
BASIC CD MECHANISM : 3ZG-2 E3  
KSM-2131 FAM

TYPE	BASIC CD MECHANISM
VOS1NDSHM	3ZG-2 E3
VOS1RNDISM	3ZG-2 E3
VOS1RMDSM	3ZG-2 E3
VOS1RMDS	KSM-2131 FAM
VOS1RNDSC	KSM-2131 FAM

## How to Adjust the Rotating Phase of the Gear, Main Cam

- 1) Push down the hooking catch of the CHAS. MECH, and remove the TRAY.
- 2) Align the arrow mark of the Gear, Main Cam with the black round mark of the CHAS, MECHA as shown below.
- 3) Confirm that the Slide, Mech Cam is located in the right position, then insert the TRAY gently.

**Caution:** If the rotating phase of the Gear, Main Cam is incorrectly adjusted, the chucking operation and tray movement will have malfunction.





# ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

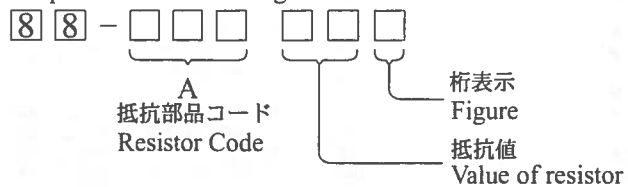
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C134	87-010-196-080		CHIP CAPACITOR,0.1-25
				C135	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A20-547-010		C-IC,CXA1992AR	C136	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A20-919-040		C-IC,BA5915FP	C137	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A20-917-010		C-IC,CXD2540Q-1/2	C138	87-010-184-080		CHIP CAPACITOR 3300P(K)
	84-ZG1-698-010		C-IC,UPD78016FGC-553				
	87-017-825-010		IC,GP1F32T	C139	87-010-197-080		CAP, CHIP 0.01 DM
				C140	87-010-112-040		CAP,E 100-16
	87-017-760-080		IC,M51943BML	C141	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A20-602-040		C-IC,M5291FP	C142	87-010-196-080		CHIP CAPACITOR,0.1-25
	87-A20-925-040		C-IC,BA05FP	C143	87-010-213-080		C-CAP,S 0.015-50 B
	87-A20-905-040		C-IC,BA033FP				
	87-001-873-010		IC,LB1644	C151	87-010-263-040		CAP,E 100-10
				C152	87-010-197-080		CAP, CHIP 0.01 DM
	87-A20-920-010		C-IC,CL680-D1	C153	87-A10-893-040		CAP,E 220-10 M PW
	87-A20-921-040		C-IC,SN74LVU04APW	C154	87-010-190-080		S CHIP F 0.01
	87-A20-962-040		C-IC,MSM54V16258B/BSL	C155	87-010-184-080		CHIP CAPACITOR 3300P(K)
	84-ZG1-695-040		C-IC,LH5V2RN1				
	87-A20-975-040		C-IC,SN74LV74APW	C156	87-010-992-080		C-CAP,S 0.047-25 B
				C157	87-010-992-080		C-CAP,S 0.047-25 B
	87-A20-974-040		C-IC,LC74781M-9017	C158	87-012-156-080		C-CAP,S 220P-50 CH
	87-A20-918-040		C-IC,SM5878AM	C159	87-016-526-080		C-CAP,S 0.47-16 BK
				C160	87-010-314-080		C-CAP,S 22P-50V
TRANSISTOR				C161	87-010-182-080		C-CAP,S 2200P-50 B
				C162	87-010-178-080		CHIP CAP 1000P
	87-026-463-080		TR,2SA933S (0.3W)	C201	87-016-669-080		C-CAP,S 0.1-25 K B
	87-026-237-080		CHIP-TR,DTC124XK	C204	87-010-190-080		S CHIP F 0.01
	89-327-125-080		CHIP TR,2SC2712GR	C205	87-010-379-040		CAP,E 22-16 M SME
	87-026-231-080		CHIP-TRANSISTER,DTA124XK				
	87-A30-288-040		CHIP-TR,DTC114YKA	C206	87-010-322-080		C-CAP,S 100P-50 CH
			<VOS1RMDSM,VOS1RMDS>	C207	87-010-322-080		C-CAP,S 100P-50 CH
				C208	87-010-322-080		C-CAP,S 100P-50 CH
				C209	87-010-322-080		C-CAP,S 100P-50 CH
	87-A30-117-010		TR,2SA1357	C210	87-016-669-080		C-CAP,S 0.1-25 K B
	89-111-625-080		TR,2SA1162 (0.15W)				
	87-026-580-080		C-TR,DTA123JK	C211	87-010-263-040		CAP,E 100-10
	87-026-470-080		TR,HN1C03F (0.3W)	C213	87-010-190-080		S CHIP F 0.01
DIODE				C214	87-010-196-080		CHIP CAPACITOR,0.1-25
				C301	87-016-251-040		CAP,E 220-16 SMG
				C302	87-012-140-080		CAP 470P
	87-020-027-080		CHIP-DIODE 1SS184				
	87-017-024-040		C-DIODE,DA204K	C303	87-010-178-080		CHIP CAP 1000P
	87-A40-180-040		C-DIODE,SB07-015C	C304	87-010-384-040		CAP,E 100-25 SME
	87-A40-384-080		C-ZENER,UDZ3.3B	C305	87-010-982-040		CAP,E 33-25 GAS
				C306	87-010-112-040		CAP,E 100-16
				C307	87-010-196-080		CHIP CAPACITOR,0.1-25
VCD C.B							
C101	87-010-182-080		C-CAP,S 2200P-50 B	C308	87-010-263-040		CAP,E 100-10
C102	87-016-669-080		C-CAP,S 0.1-25 K B	C309	87-010-196-080		CHIP CAPACITOR,0.1-25
C103	87-016-669-080		C-CAP,S 0.1-25 K B	C310	87-010-263-040		CAP,E 100-10
C104	87-016-669-080		C-CAP,S 0.1-25 K B	C311	87-010-196-080		CHIP CAPACITOR,0.1-25
C105	87-010-404-040		CAP,E 4.7-50 SME	C312	87-010-178-080		CHIP CAP 1000P
C106	87-016-369-080		C-CAP,S 0.033-25 B K	C320	87-010-196-080		CHIP CAPACITOR,0.1-25
C107	87-010-197-080		CAP, CHIP 0.01 DM	C401	87-016-044-040		CAP,E 100-16 GAS
C108	87-010-401-040		CAP,E 1-50 SME	C402	87-010-190-080		S CHIP F 0.01
C109	87-010-382-040		CAP,E 22-25 SME	C403	87-010-190-080		S CHIP F 0.01
C110	87-010-213-080		C-CAP,S 0.015-50 B	C404	87-010-552-040		CAP,E 22-16 GAS
C111	87-010-263-040		CAP,E 100-10	C501	87-010-197-080		CAP, CHIP 0.01 DM
C112	87-010-197-080		CAP, CHIP 0.01 DM	C502	87-010-197-080		CAP, CHIP 0.01 DM
C113	87-016-369-080		C-CAP,S 0.033-25 B K	C503	87-010-197-080		CAP, CHIP 0.01 DM
C114	87-016-369-080		C-CAP,S 0.033-25 B K	C504	87-010-154-080		CAP CHIP 10P
C115	87-016-369-080		C-CAP,S 0.033-25 B K	C505	87-010-154-080		CAP CHIP 10P
C116	87-012-158-080		C-CAP,S 390P-50 CH	C506	87-010-197-080		CAP, CHIP 0.01 DM
C117	87-012-154-080		C-CAP,S 150P-50 CH	C508	87-010-263-040		CAP,E 100-10
C118	87-010-494-040		CAP,E 1-50 GAS	C509	87-016-669-080		C-CAP,S 0.1-25 K B
C119	87-010-313-080		CAP, CHIP 18P	C510	87-010-263-040		CAP,E 100-10
C120	87-010-992-080		C-CAP,S 0.047-25 B	C511	87-010-196-080		CHIP CAPACITOR,0.1-25
C121	87-010-992-080		C-CAP,S 0.047-25 B	C512	87-010-197-080		CAP, CHIP 0.01 DM
C123	87-016-669-080		C-CAP,S 0.1-25 K B	C513	87-010-197-080		CAP, CHIP 0.01 DM
C125	87-010-198-080		CAP, CHIP 0.022	C514	87-010-197-080		CAP, CHIP 0.01 DM
C126	87-016-669-080		C-CAP,S 0.1-25 K B	C518	87-010-322-080		C-CAP,S 100P-50 CH
C127	87-010-555-040		CAP,E 100-10 GAS	C519	87-012-145-080		CAP, CHIP S 270P CH
C130	87-010-555-040		CAP,E 100-10 GAS	C520	87-012-157-080		C-CAP,S 330P-50 CH
C131	87-010-555-040		CAP,E 100-10 GAS	C521	87-012-154-080		C-CAP,S 150P-50 CH
C132	87-010-178-080		CHIP CAP 1000P	C522	87-010-371-080		CAP, ELECT 470-6.3V
C133	87-010-555-040		CAP,E 100-10 GAS	C523	87-010-197-080		CAP, CHIP 0.01 DM
				C524	87-010-197-080		CAP, CHIP 0.01 DM

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C525	87-010-197-080		CAP, CHIP 0.01 DM	CN403	87-099-030-010		CONN,13P 6216H
C526	87-010-197-080		CAP, CHIP 0.01 DM	FB201	83-XM1-617-080		C-COIL,BK2125HM601
C527	87-010-197-080		CAP, CHIP 0.01 DM				<VOS1RMDSM,VOS1RMDS>
C528	87-010-197-080		CAP, CHIP 0.01 DM	J501	87-009-502-010		JACK,PIN 1P Y EARTH
C529	87-010-197-080		CAP, CHIP 0.01 DM	L101	87-005-196-080		COIL,10UH
				L301	87-A50-095-010		COIL,68UH RCR875D
C530	87-010-197-080		CAP, CHIP 0.01 DM				
C531	87-010-197-080		CAP, CHIP 0.01 DM	L302	87-005-426-080		COIL,3.3UH K FLR50
C532	87-010-374-040		CAP,E 47-10	L502	87-005-204-080		COIL,47UH
C533	87-010-197-080		CAP, CHIP 0.01 DM	L503	87-005-189-080		COIL 2.7UH
C534	87-010-555-040		CAP,E 100-10 GAS	L504	87-005-187-080		COIL,1.8UH
				L505	87-005-204-080		COIL,47UH
C535	87-010-197-080		CAP, CHIP 0.01 DM				
C536	87-010-078-040		CAP,E 47-6.3 5L	L506	87-005-204-080		COIL,47UH
C537	87-010-190-080		S CHIP F 0.01	L507	87-005-204-080		COIL,47UH
C538	87-010-196-080		CHIP CAPACITOR,0.1-25	L508	87-005-817-080		C-COIL, 33UH J FLC32
C539	87-010-196-080		CHIP CAPACITOR,0.1-25	M601	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)
							<EXCEPT VOS1RNDSC>
C540	87-010-078-040		CAP,E 47-6.3 5L	M601	87-045-383-010		MOT,M9I50T28-2<VOS1RNDSC>
C541	87-010-197-080		CAP, CHIP 0.01 DM				
C542	87-010-318-080		C-CAP,S 47P-50 CH	R130	87-022-364-080		C-RES,S 82K-1/10W F
C544	87-010-197-080		CAP, CHIP 0.01 DM	R131	87-022-364-080		C-RES,S 82K-1/10W F
C546	87-010-197-080		CAP, CHIP 0.01 DM	R132	87-022-364-080		C-RES,S 82K-1/10W F
				R133	87-022-364-080		C-RES,S 82K-1/10W F
C549	87-010-494-040		CAP,E 1-50 GAS	R134	87-022-364-080		C-RES,S 82K-1/10W F
C550	87-010-196-080		CHIP CAPACITOR,0.1-25				
C551	87-012-153-080		C-CAP,S 120P-50 CH	R135	87-022-364-080		C-RES,S 82K-1/10W F
C552	87-016-526-080		C-CAP,S 0.47-16 BK	S201	87-A90-162-010		SW,SL 1-1-3 SSSU
C554	87-010-197-080		CAP, CHIP 0.01 DM	S401	87-036-109-010		PUSH SWITCH
				S402	87-036-109-010		PUSH SWITCH
C556	87-010-197-080		CAP, CHIP 0.01 DM	FC1	85-NFT-611-110		FF-CABLE 16P-1.0
C557	87-A11-167-080		C-CAP,S 27P-50 F CH				
C558	87-A11-167-080		C-CAP,S 27P-50 F CH	FC2	84-ZG1-630-010		CABLE FFC 6P-1.25
C560	87-010-197-080		CAP, CHIP 0.01 DM	X201	87-A70-124-080		VIB,CER 8.0MHZ
C601	87-010-197-080		CAP, CHIP 0.01 DM	X501	87-A70-125-080		VIB,XTAL 27MHZ 50PPM
				X601	87-030-270-080		VIB,XTAL 16.9344MHZ
C602	87-010-197-080		CAP, CHIP 0.01 DM				
C603	87-010-112-040		CAP,E 100-16				LED C.B<VOS1RMDSM,VOS1RMDS>
C604	87-010-196-080		CHIP CAPACITOR,0.1-25				
C605	87-010-197-080		CAP, CHIP 0.01 DM	LED401	87-A40-447-040		LED,SLP-6130C-81H-S-T1 ORN
C606	87-010-197-080		CAP, CHIP 0.01 DM				<VOS1RMDSM,VOS1RMDS>
C607	87-010-313-080		CAP, CHIP 18P	LED402	87-017-350-080		LED,SEL1550CM<VOS1RMDSM,VOS1RMDS>
C608	87-010-313-080		CAP, CHIP 18P	LED403	87-017-350-080		LED,SEL1550CM<VOS1RMDSM,VOS1RMDS>
C609	87-010-178-080		CHIP CAP 1000P	LED404	87-A40-447-040		LED,SLP-6130C-81H-S-T1 ORN
C610	87-010-178-080		CHIP CAP 1000P				<VOS1RMDSM,VOS1RMDS>
C611	87-010-178-080		CHIP CAP 1000P				
C612	87-010-178-080		CHIP CAP 1000P				
C613	87-010-403-040		CAP,E 3.3-50 SME	T-T C.B			
C614	87-010-403-040		CAP,E 3.3-50 SME	FC3	84-ZG1-673-010		F-CABLE,5P 1.25 210MM BLACK N
C615	87-010-318-080		C-CAP,S 47P-50 CH	FC3	84-ZG1-672-010		F-CABLE,5P 1.25 210MM WHITE N
C616	87-010-318-080		C-CAP,S 47P-50 CH	C401	87-A11-148-080		CAP,TC U 0.1-50 Z F
CN101	87-A60-424-010		CONN,16P V TOC-B	CN401	86-NFZ-675-010		CONN,5P H 6216-11H
CN102	87-099-199-010		CONN,6P 6216 H	M401	87-045-364-010		MOTOR(BCH3B14)
CN201	87-009-345-010		CONN,2P PH H<VOS1RMDSM,VOS1RMDS>				
CN301	87-099-199-010		CONN,6P 6216 H	PS401	87-026-573-010		IC,GP1S53V
CN401	87-099-212-010		CONN,5P 6216 V				


- Regarding connectors, they are not stocked as they are not the initial order items.  
The connectors are available after they are supplied from connector manufacturers upon the order is received.

# ○チップ抵抗部品コード／CHIP RESISTOR PART CODE

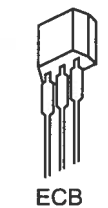
チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



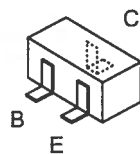
チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

## TRANSISTOR ILLUSTRATION



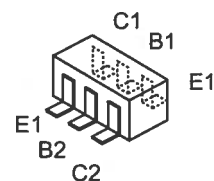
2SA933S



2SA1162  
2SC2712  
DTA123JK  
DTA124XK  
DTC114YKA  
DTC124XK

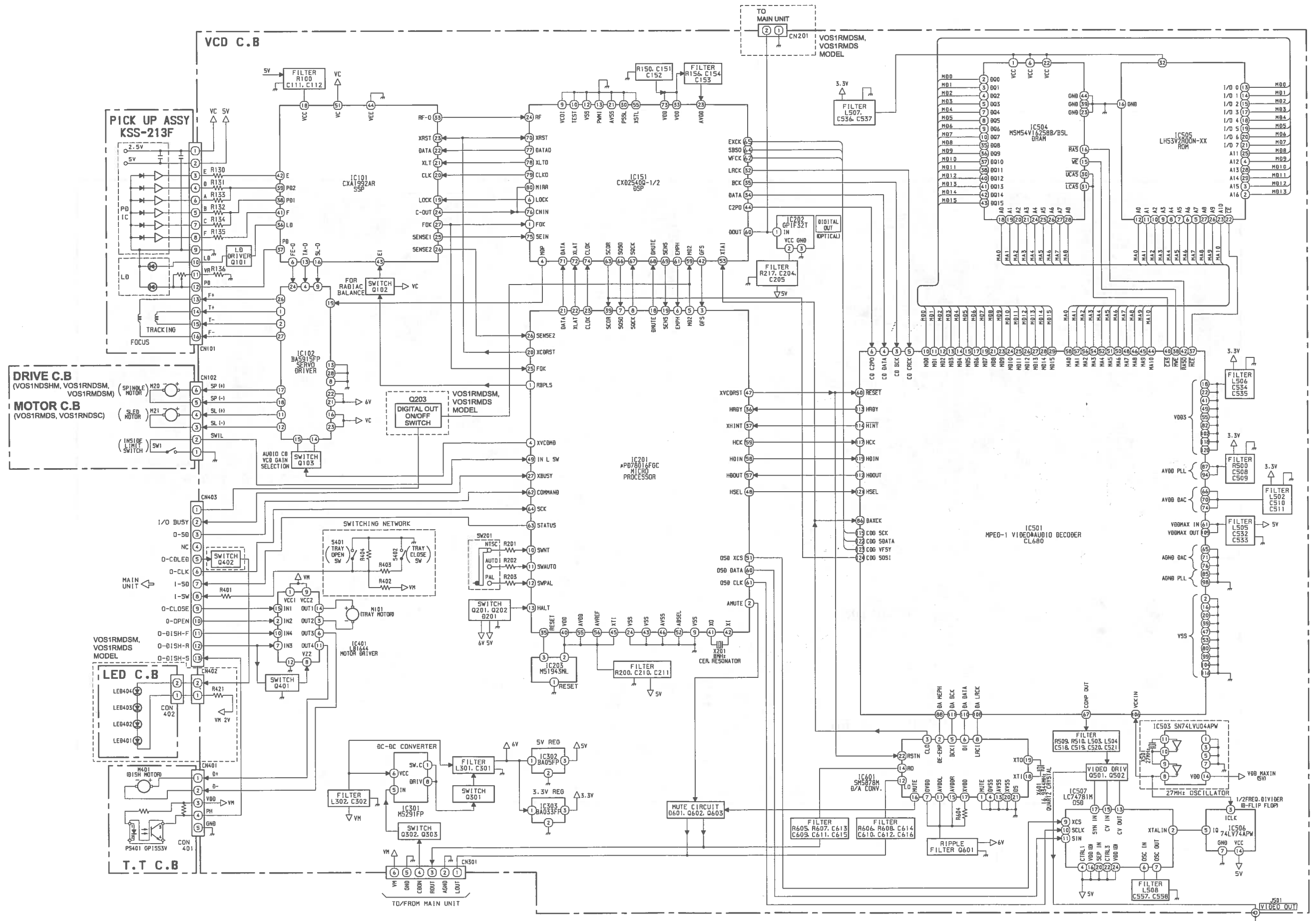


2SA1357



HN1C03F

### BLOCK DIAGRAM



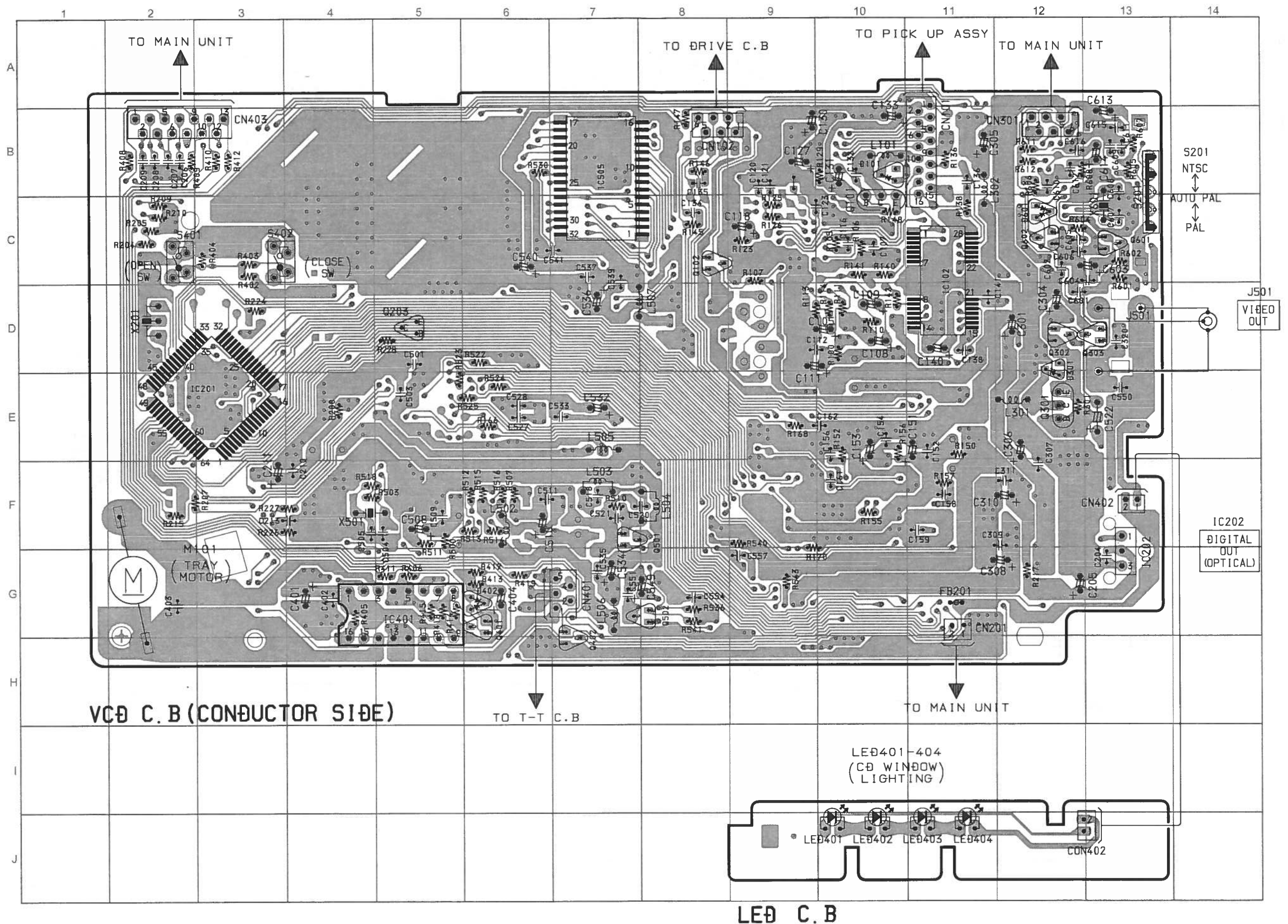




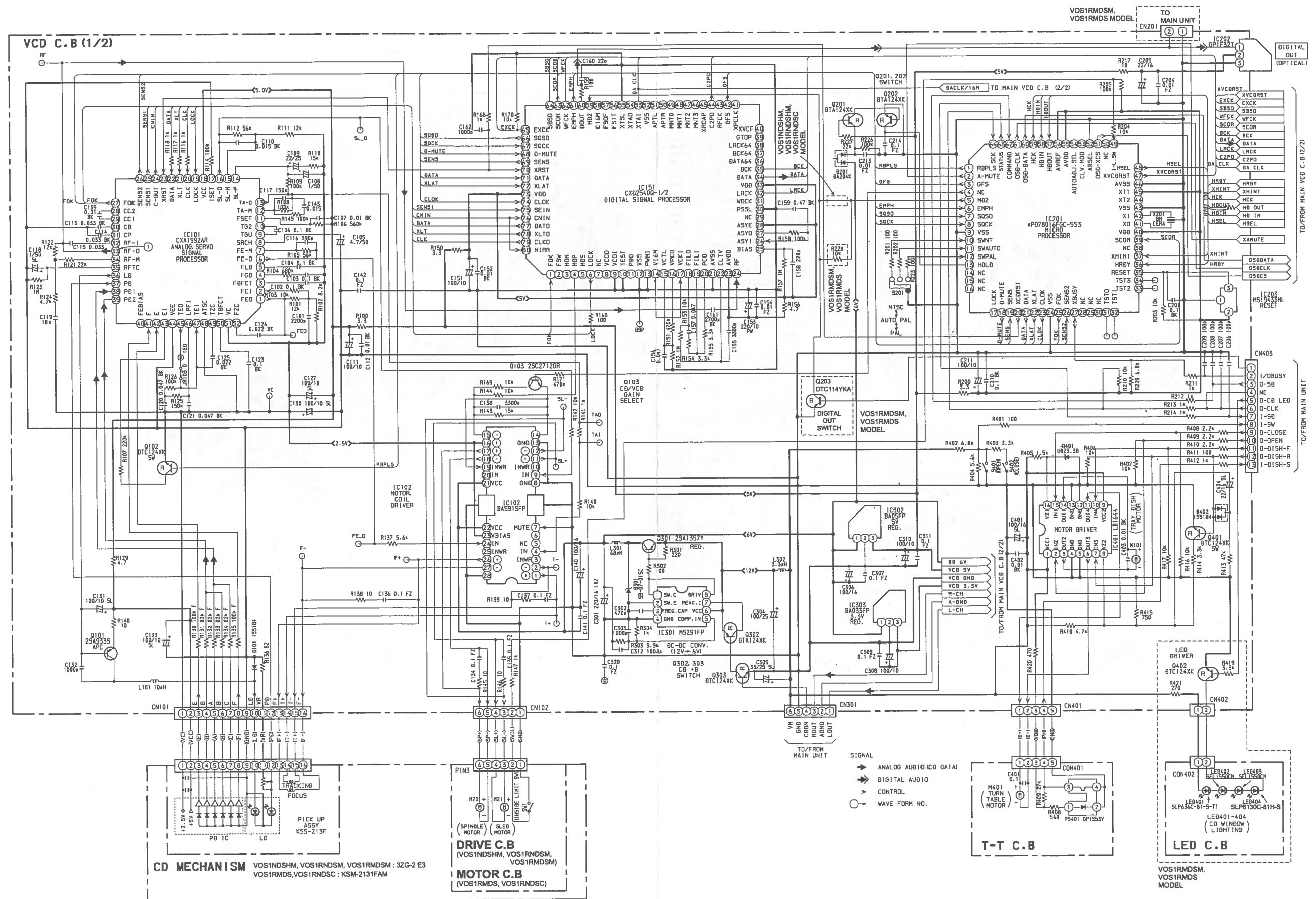




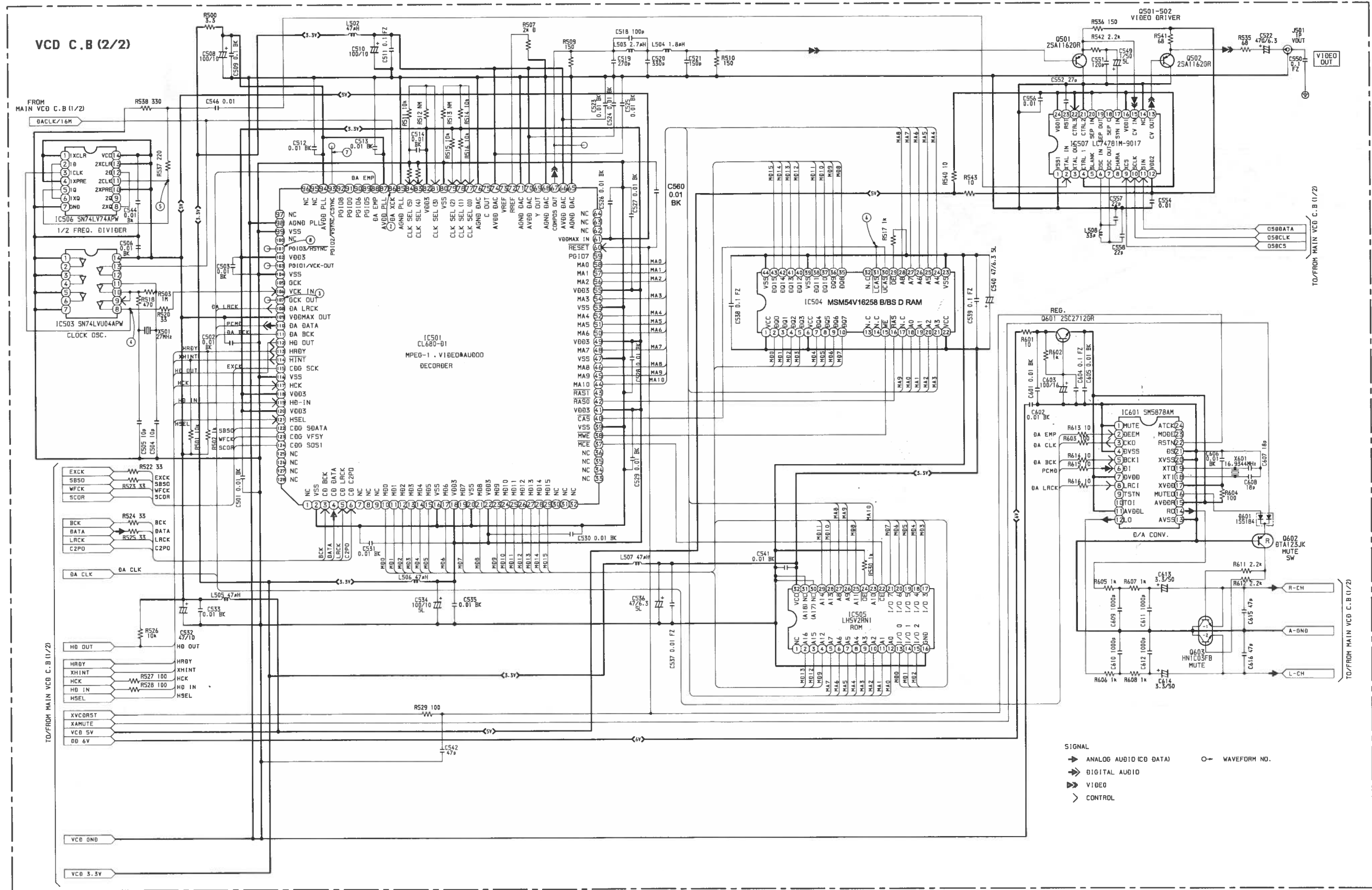




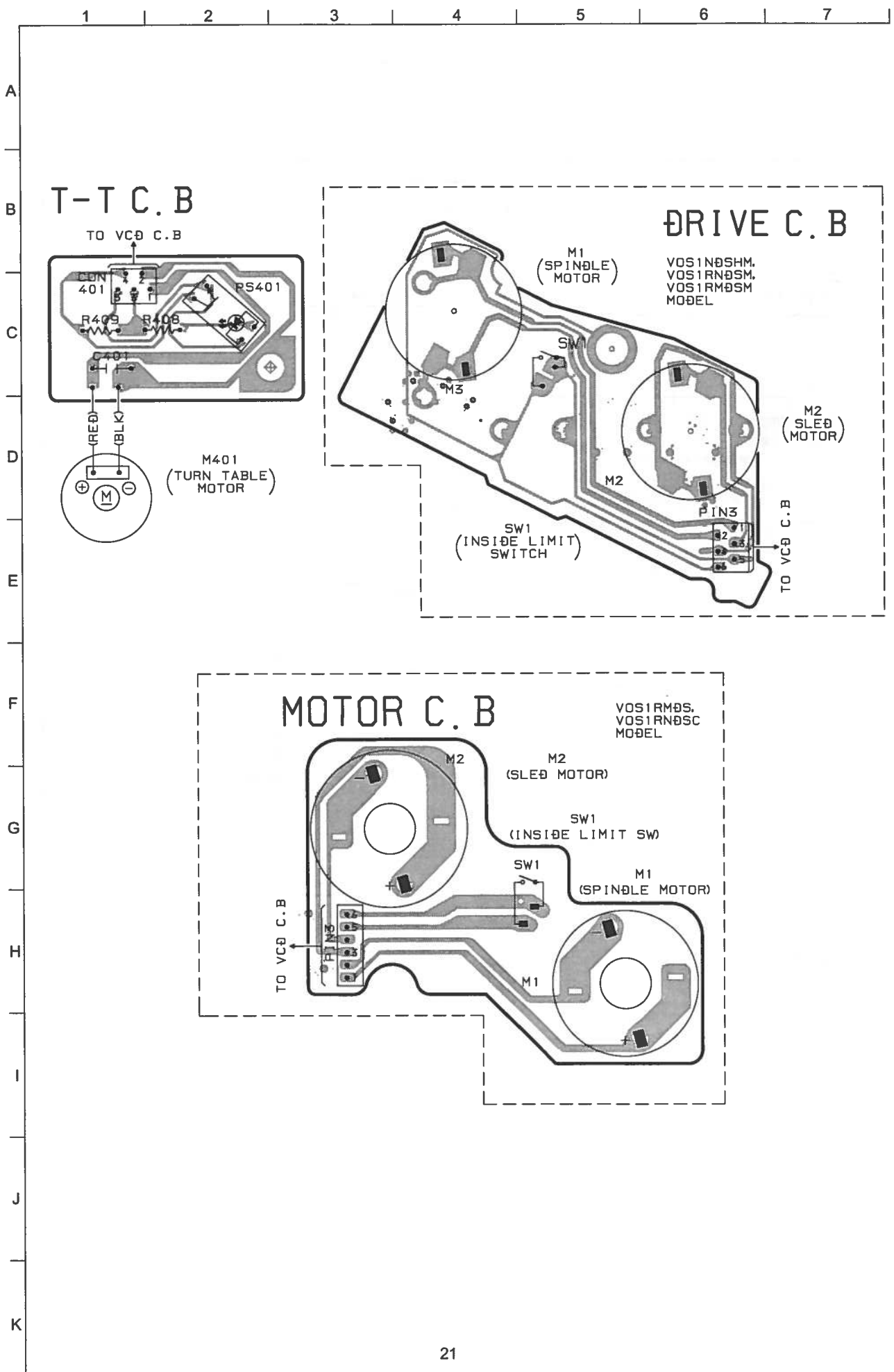




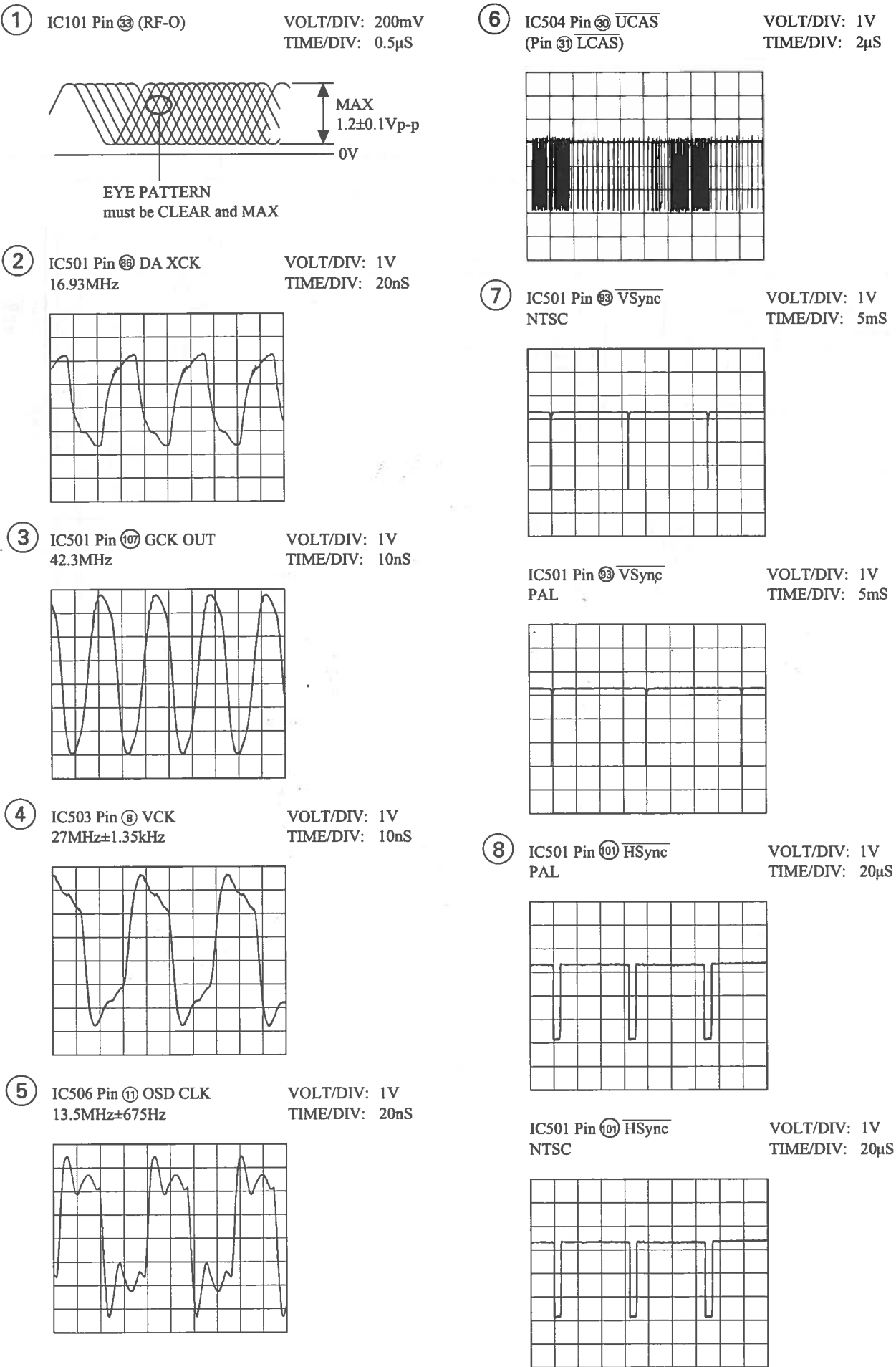
SCHEMATIC DIAGRAM-2



WIRING-3 (MECHA)



WAVE FORM



# IC DESCRIPTION

## IC, CXA1992AR

Pin No.	Pin Name	I/O	Description
1	FEO	O	Output terminal for focus error amplifier. Internally connected to window comparator input for bias condition.
2	FEI	I	Input terminal for focus error.
3	FDFCT	I	Capacitor connection terminal for time constant used when there is defect.
4	FGD	I	This pin is connected to GND via capacitor when high frequency gain of the focus servo is attenuated.
5	FLB	I	This is a pin where the time constant is externally connected to raise the low frequency gain of the focus servo.
6	FE_O	O	Focus drive output.
7	FEM	I	Focus amplifier inverted input pin.
8	SRCH	I	This is a pin where the time constant is externally connected to generate the focus search waveform.
9	TGU	I	This is a pin where the selection time constant is externally connected to set the tracking servo the high frequency gain.
10	TG2	I	This is a pin where the selection time constant is externally connected to set the tracking high frequency gain.
11	FSET	I	Pin for setting peak of the phase compensator of the focus tracking.
12	TA_M	I	Tracking amplifier inverted input pin.
13	TA_O	O	Tracking drive output.
14	SL_P	I	Sled amplifier non-inverted input pin.
15	SL_M	I	Sled amplifier inverted input pin.
16	SL_O	O	Sled drive output.
17	ISSET	I	The current which determines height of the focus search, track jump and sled kick is input with external resistance connected.
18	Vcc	I	Power supply.
19	LOCK	I	"L" setting starts sled disorder-prevention circuit. (Not pull-up resistance)
20	CLK	I	Clock input for serial data transfer from CPU. (No pull-up resistance)
21	XLT	I	Latch input from CPU. (No pull-up resistance)
22	DATA	I	Serial data input from CPU. (No pull-up resistance)
23	XRST	I	Reset system at "L" setting. (No pull-up resistance)
24	C_OUT	O	Signal output for track number counting.
25	SENS1	O	FZC, DFCT1, TZC, BALH, TGH, FOH, or ATSC is output depending on the command from CPU.
26	SENS2	O	DFCT2, MIRR, BALL, TGL or FOL is output depending on the command from CPU.
27	FOK	O	Output terminal for focus OK comparator.
28	CC2	I	Input pin where the DEFECT bottom hold output is capacitance coupled.
29	CC1	O	DEFECT bottom-hold output terminal. Internally connected to interruption comparator input.
30	CB	I	Connection terminal for DEFECT bottom-hold capacitor.
31	CP	I	Connection terminal for MIRR hold-capacitor. Anti-reverse input terminal for MIRR comparator.



Pin No.	Pin Name	I/O	Description
32	RF_I	I	Input terminal by capacity combination of RF summing amplifier.
33	RF_O	O	Output terminal of RF summing amplifier. Checkpoint of Eye pattern.
34	RF_M	I	Anti-reverse input terminal for RF summing amplifier. The gain of RF amplifier is decided by the connection resistance between RF_M and RFO terminals.
35	RFTC	I	This is a pin where the selection time constant is externally connected to control the RF level.
36	LD	O	APC amplifier output terminal.
37	PD	I	APC amplifier input terminal.
38, 39	PD1, PD2	I	RFI-V amplifier inverted input pin. These pins are connected to the A+C and B+C pins of the optical pickup, receiving by currents input.
40	FEBIAS	I/O	Bias adjustment pin of the focus error amplifier.
41, 42	F, E	I	F and EIV amplifier inverted input pins. These pins are connected to the F and E of the optical pickup, receiving by current input.
43	EI	—	Gain adjustment pin of the I-V amplifier E. (When not in use of BAL automatic adjustment)
44	VEE	—	GND connection pin.
45	TEO	O	Output terminal for tacking-error amplifier. Output E-F signal.
46	LPFI	I	BAL adjustment comparator input pin. (Input through LPF from TEO)
47	TEI	I	Input terminal for tracking error.
48	ATSC	I	Window-comparator input terminal for detecting ATSC.
49	TZC	I	Input terminal for tracking-zero cross comparator.
50	TDFCT	I	Capacitor connection pin for the time constant used when there is defect.
51	VC	O	Output terminal for DC voltage reduced to half of VCC+VEE.
52	FZC	I	Input terminal for focus-zero cross comparator.

# IC, CXD2540Q

Pin No.	Pin Name	I/O	Description
1	FOK	I	Focus OK input. Used for SENS output and the servo auto sequencer.
2	FSW	O	Spindle motor output filter switching output.
3	MON	O	Spindle motor on/off control output.
4	MDP	O	Spindle motor servo control.
5	MDS	O	
6	LOCK	O	High, when sampled value of GFS at 460Hz is high. Low, when sampled value of GFS at 460Hz is low by 8 times successively.
7	NC	—	Not used.
8	VCOO	O	Analog EFM PLL oscillation circuit output.
9	VCOI	I	Analog EFM PLL oscillation circuit input. fLOCK=8.6436MHz.
10	TEST	I	TEST pin.
11	PDO	O	Analog EFM PLL charge pump output.
12	VSS	—	GND.
13	PWMI	I	Spindle motor external control input.
14	V16M	O	VCO2 oscillation output for the wide-band EFM PLL.
15	VCTL	I	VCO2 control voltage input for the wide-band EFM PLL.
16	VPCO	O	Wide-band EFM PLL charge pump output.
17	VCKI	I	VCO2 oscillation input for the wide-band EFM PLL.
18	FILO	O	Multiplier PLL (slave=digital PLL) filter output.
19	FILI	I	Multiplier PLL filter input.
20	PCO	O	Multiplier PLL charge pump output.
21	AVSS	—	Analog GND.
22	CLTV	I	Multiplier VCO1 control voltage input.
23	AVDD	—	Analog power supply (5V).
24	RF	I	EFM signal input.
25	BIAS	I	Constant current input of the asymmetry circuit.
26	ASYI	I	Asymmetry comparator voltage input.
27	ASYO	O	EFM full-swing output.
28	ASYE	I	Low: asymmetry circuit off; high: asymmetry circuit on.
29	NC	—	Not used.
30	PSSL	I	Audio data output mode switching input. Low: serial output; high: parallel output.
31	WDCK	O	D/A interface for 48-bit slot. Word clock f=2Fs.
32	LRCK	O	D/A interface for 48-bit slot. LR clock f=Fs.
33	VDD	—	Power supply (5V).
34	DA16	O	DA16 (MSB) output when PSSL=1. 48-bit slot serial data (two's complement, MSB first) when PSSL=0.
35	DA15	O	DA15 output when PSSL=1. 48-bit slot bit clock when PSSL=0.
36	DA14	O	DA14 output when PSSL=1. 64-bit slot serial data (two's complement, LSB first) when PSSL=0.
37	DA13	O	DA13 output when PSSL=1. 64-bit slot bit clock when PSSL=0.
38	DA12	O	DA12 output when PSSL=1. 64-bit slot LR clock when PSSL=0.

Pin No.	Pin Name	I/O	Description
39	DA11	O	DA11 output when PSSL=1. GTOF output when PSSL=0.
40	DA10	O	DA10 output when PSSL=1. XUGF output when PSSL=0.
41	DA09	O	DA09 output when PSSL=1. XPLCK output when PSSL=0.
42	DA08	O	DA08 output when PSSL=1. GFS output when PSSL=0.
43	DA07	O	DA07 output when PSSL=1. RFCK output when PSSL=0.
44	DA06	O	DA06 output when PSSL=1. C2PO output when PSSL=0.
45	DA05	O	DA05 output when PSSL=1. XRAOF output when PSSL=0.
46	DA04	O	DA04 output when PSSL=1. MNT3 output when PSSL=0.
47	DA03	O	DA03 output when PSSL=1. MNT2 output when PSSL=0.
48	DA02	O	DA02 output when PSSL=1. MNT1 output when PSSL=0.
49	DA01	O	DA01 output when PSSL=1. MNT0 output when PSSL=0.
50	APTR	O	Aperture compensation control output. This pin outputs a high signal when the right channel is used.
51	APTL	O	Aperture compensation control output. This pin outputs a high signal when the left channel is used.
52	VSS	—	GND.
53	XTAI	I	Crystal oscillation circuit input.
54	XTAO	O	Crystal oscillation circuit output.
55	XTSL	I	Crystal selector input.
56	FSTT	O	2/3 frequency divider output for Pins 53 and 54.
57	FSOF	O	1/4 frequency divider output for Pins 53 and 54.
58	C16M	O	16.9344MHz output. (V16M output in CLV-W and CAV-W modes)
59	MD2	I	Digital-out on/off control. High: on; low: off
60	DOUT	O	Digital-out output.
61	EMPH	O	Outputs a high signal when the playback disc has emphasis, and a low signal when there is no emphasis.
62	WFCK	I	WFCK (write frame clock) output.
63	SCOR	O	Outputs a high signal when either subcode sync S0 or S1 is detected.
64	SBSO	O	Sub P to W serial output.
65	EXCK	I	SBSO readout clock input.
66	SQSO	O	Sub Q 80-bit and PCM peak, level meter and internal status outputs.
67	SQCK	I	SQSO readout clock input.
68	MUTE	I	High: mute; low: release
69	SENS	—	SENS output to CPU.
70	XRST	I	System reset. Reset when low.
71	DATA	O	Serial data input from CPU.
72	XLAT	O	Latch input from CPU. Serial data is latched at the falling edge.
73	VDD		Power supply (5V).
74	CLOCK	O	Serial data transfer clock input from CPU.
75	SEIN	I	SENS input from SSP.
76	CNIN	I	Track jump count signal input.

Pin No.	Pin Name	I/O	Description
77	DATO	O	Serial data output to SSP.
78	XLTO	O	Serial data latch output to SSP. Latched at the falling edge.
79	CLKO	O	Serial data transfer clock output to SSP.
80	MIRR	I	Mirror signal input. Used when the number of tracks is 128 or more for the 2N-track jump and M track move of the auto sequencer.

**Notes)**

- The 64-bit slot is an LSB first, two's complement output, and the 48-bit slot is an MSB first, two's complement output.
- GTOP is used to monitor the frame sync protection status. (High: sync protection window open.)
- XUGF is the negative pulse for the frame sync obtained from the EFM signal. It is the signal before sync protection.
- XPLCK is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge and the EFM signal transition point coincide.
- GFS goes high when the frame sync and the insertion protection timing match.
- RFCK is derived from the crystal accuracy, and has a cycle of 136 $\mu$ .
- C2PO represents the data error status.
- XRAOF is generated when the 32K RAM exceeds the  $\pm 28F$  jitter margin.



# IC, CL680

Pin No.	Pin Name	I/O	Description
1	NC	—	No connection.
2	VSS	—	GND.
3	CD BCK	I	Bit clock input from CD DSP.
4	CD DATA	I	Data input from CD DSP.
5	CD LRCK	I	LRCK input from CD DSP.
6	CD C2PO	I	C2 pointer input from CD DSP.
7-9	NC	—	No connection.
10-15	MD0-MD5	I/O	DRAM/ROM interface. (DATA)
16	VSS	—	Ground.
17	MD6	I/O	DRAM/ROM interface. (DATA)
18	VDD3	—	Power supply 3.3V.
19	MD7	I/O	DRAM/ROM interface. (DATA)
20	VSS	—	Ground.
21	MD8	I/O	DRAM/ROM interface. (DATA)
22	VDD3	—	Power supply 3.3V.
23-29	MD9-MD15	I/O	DRAM/ROM interface. (DATA)
30-36	NC	—	No connection.
37	$\overline{\text{MCE}}$	—	ROM chip enable.
38	$\overline{\text{MWE}}$	O	DRAM write enable.
39	VSS	—	Ground.
40	$\overline{\text{CAS}}$	O	DRAM/ROM interface.
41	VDD3	—	Power supply 3.3V.
42	$\overline{\text{RASO}}$	O	DRAM/ROM interface.
43	$\overline{\text{RASI}}$	O	
44-46	MA10-MA8	O	DRAM/ROM interface. (Address)
47	VSS	—	Ground.
48	MA7	O	DRAM/ROM interface. (Address)
49	VDD3	—	Power supply 3.3V.
50-52	MA6-MA4	O	DRAM/ROM interface. (Address)
53	VSS	—	Ground.
54	MA3	O	DRAM/ROM interface. (Address)
55	VDD3	—	Power supply 3.3V.
56-58	MA2-MA0	O	DRAM/ROM interface. (Address)
59	PGIO7	I/O	Programmable I/O.
60	$\overline{\text{RESET}}$	I	Reset input.
61	VDD MAX IN	—	Power supply - VDDMAX. (5.0V)
62-64	NC	—	No connection.
65	AGND DAC	—	Analog ground.
66	A DAC	—	Analog power supply (DAC) : 3.3V.
67	COMP OUT	O	Composite out.
68	AGND DAC	—	Analog ground.

Pin No.	Pin Name	I/O	Description
69	Y OUT	O	Video signal "Y" OUT.
70	AVDD DAC	—	Analog power supply (DAC) 3.3V.
71	AGND DAC	—	Analog ground.
72	R REF	I	Reference resistor input.
73	V REF	I	Voltage reference input.
74	AVDD DAC	—	Analog power supply (DAC) : 3.3V.
75	C OUT	O	Video signal "C" out.
76	AGND DAC	—	Analog ground.
77-79	CLK SEL0-2	I	Clock selection input.
80	VSS	—	Ground.
81	CLK SEL3	I	Clock selection input.
82	VDD3	—	Power supply 3.3V.
83, 84	CLK SEL4, 5	I	Clock selection input.
85	AGND PLL	—	Analog ground.
86	DA XCK	I	DA XCK (16.933MHz) input.
87	AVDD PLL	—	Analog power supply 3.3V.
88	DA EMP	O	DAC-emphasis output.
89, 90	PGIO5, O6	I/O	Programmable I/O.
91	PGIO0	I/O	
92	PGIO8	I/O	
93	$\overline{\text{VSYNC/CSYNC}}$	O	$\overline{\text{VSYNC/CSYNC}}$ output.
94	AVDD PLL	—	Analog power supply (PLL) 3.3V.
95	VID_DAC_CK	O	Video DAC clock.
96	PROC_CK	O	Processor clock.
97	AUD_XCK	O	Audio XCK.
98	AGND PLL	—	Analog ground.
99	VSS	—	Ground.
100	NC	—	No connection.
101	$\overline{\text{HSYNC}}$	O	$\overline{\text{HSYNC}}$ output.
102	VDD3	—	Power supply 3.3V.
103	VCK OUT	O	VCK out.
104	VSS	—	Ground.
105	GCK	I	Global clock signal input. (42.3MHz)
106	VCK	I	Video clock signal input. (27.0MHz)
107	GCK OUT	O	Global clock signal output. (27.0MHz)
108	DA LRCK	O	DAC-LRCK output.
109	VDD MAX OUT	—	Power supply (VDD MAX) : 5.0V.
110	DA DATA	O	DAC-PCM data output.
111	DA BCK	O	DAC-BIT clock output.
112	HD OUT	O	Micon interface. (Data out)
113	HRDY	O	Micon interface. (Host ready)

Pin No.	Pin Name	I/O	Description
114	HINT	O	Micon interface. (Host interrupt)
115	CDG SCK	I	CD-G serial clock input.
116	VSS	—	Ground.
117	HCK	I	Micon interface. (Host clock)
118	VDD3	—	Power supply 3.3V.
119	HD IN	I	Micon interface. (Host data in)
120	VDD3	—	Power supply 3.3V.
121	HSEL	I	Micon interface. (Host select in)
122	CDG DATA	I	CD-G data input.
123	CDG VFSY	I	CD-G VFSY input.
124	CDG SOSI	I	CD-G SOSI input.
125	DSP-XCK	O	DSP-XCK output.
126-128	NC	—	No connection.

# IC, LC74781M

Pin No.	Pin Name	I/O	Description
1	VSS1	—	GND connection terminal. (Digital ground terminal).
2	Xtal IN	I	External X'tal and capacitor for internal sync generator, or the external clock are connected to this terminal. (2fsc or 4fsc).
3	Xtal OUT	O	
4	CTRL1	I	Either the external clock input mode or the X'tal generator mode is selected by this selector terminal. L: X'tal generator mode, H: External clock input.
5	BLANK	O	Blank signal (character and the green ORed signal) is output from this terminal. (MODE 0: composite sync signal is output at H.) When reset ( $\overline{\text{RST}}$ terminal = L), the X'tal clock signal is output. (It is not output when reset by the reset command).
6	OSC IN	I	External coil and capacitor for the character output dot clock generator are connected to this terminal.
7	OSC OUT	O	
8	CHARA	O	The character signal is output from this terminal. (MOD 0: when H, the external sync signal identification signal is output from this terminal. This output signal tells whether the external sync signal is present or not. When external sync signal is present, H is output.) When reset ( $\overline{\text{RST}}$ terminal = L), the dot clock signal (LC oscillator) is output. (It is not output when reset by the reset command).
9	$\overline{\text{CS}}$	I	Enable signal for the serial data input is input to this terminal. The serial data input is enabled at L. Pull-up resistor is built-in. (Hysteresis input).
10	SCLK	I	Clock of the serial data input is input to this terminal. Pull-up resistor is built-in. (Hysteresis input).
11	SIN	I	Serial data input terminal. Pull-up resistor is built-in. (Hysteresis input).
12	VDD2	—	Power supply for the composite video signal level adjustment. (Analog power supply).
13	CV OUT	O	Composite video signal output terminal.
14	NC	—	Connected to GND or not connected.
15	CV IN	I	Composite video signal input terminal.
16	VDD1	—	Power supply (+5V digital power supply).
17	SYN IN	I	Video signal for the internal sync separator circuit is input to this terminal. (When the internal sync separator circuit is not used, the horizontal sync signal or composite sync signal is input to this terminal).
18	SEP C	—	Internal sync separator circuit bias voltage monitoring terminal.
19	SEP OUT	O	The composite sync output signal of the internal sync separator circuit is output from this terminal. (H: MOD 1. H: during internal sync mode. L: during external sync mode.) (When internal sync separator circuit is not used, the SYN IN input signal is output from this terminal).
20	SEP IN	I	The output signal of the SEP OUT terminal is integrated so that the vertical sync signal is input to this terminal. An integrator circuit must be connected between the SEP OUT terminal and this terminal. When this terminal is not used, it must be connected to VDD1.
21	CTRL2	I	When selecting any of the NTSC or PAL or PAL-M or PAL-N system, the pin setting has priority. When L, the NTSC system is selected after resetting. Selection of either NTSC or PAL or PAL-M or PAL-N system by the command becomes effective. H: PAL-M system.



Pin No.	Pin Name	I/O	Description
22	CTRL3	I	Controls whether or not to input the $\overline{\text{VSYNC}}$ signal to the SEPIN input. L: to input the $\overline{\text{VSYNC}}$ signal. H: not to input the $\overline{\text{VSYNC}}$ signal.
23	$\overline{\text{RST}}$	I	System reset input terminal. Pull-up resistor is built-in. (Hysteresis input).
24	VDD1	—	Power supply. (+5V digital power supply).

IC,  $\mu$ PD78016FGC

Pin No.	Pin Name	I/O	Description
1	RBPLS	O	RADIAL BALANCE PLUS.
2	AMUTE	O	AUDIO ANALOG MUTE (H=MUTE ON).
3	GFS	I	GFS.
4	XVCDMD	I	AUDIO/VIDEO CD MODE (L=VCD=SPINDLE GAIN UP).
5	MD2	O	DOUT MUTE CONT.
6	EMPH	I	EMPHASIS.
7	SQSO	I	SQDATA FROM CD.
8	SQCK	O	SQCLK TO CD.
9	VSS	—	GND.
10	SWNT	I	SW TV OUT MODE (L=NTSC).
11	SWAUTO	I	SW TV OUT MODE (L=NTSC/PAL AUTO).
12	SWPAL	I	SW TV OUT MODE (L=PAL).
13	EMERG	I	POWER EMERGENCY STOP (L*3sec=STOP).
14	NC	—	Nou used.
15	LPCSEL	I	“LPC ON/OFF (H=ON, NORMAL)”.
16	NC	—	Nou used.
17	LOCK	O	GFS (FRAME SYNC) LOCK (NO USE=H).
18	DMUTE	O	DIGITAL DATA OUT MUTE.
19	SENS	I	DSP SENS1 FROM CD.
20	XCDRST	O	CD RESET.
21	DATA	O	DATA TO CD.
22	XLAT	O	XLT TO CD.
23	CLOK	O	CLK TO CD.
24	VSS	—	GND.
25	FOK	I	FOCUS OK.
26	SENS2	I	SSP SENS2 FROM CD.
27	XBUSY	I/O	READY/BUSY I/O TO HOST OD.
28	NC	—	Nou used.
29	NC	—	
30	NC	—	
31	TST0	I/O	CHECK LAND.
32	TST1	I/O	
33	TST2	I/O	
34	TST3	I/O	
35	RESET	I	RESET.
36	HRDY	I	HRDY FROM CL680.
37	XHINT	I	HINT FROM CL680.
38	NC	—	Nou used.
39	SCOR	I	SCOR FROM CD.
40	VDD	—	5.0VDD.
41	XO	O	8.0MHz CERALOCK.

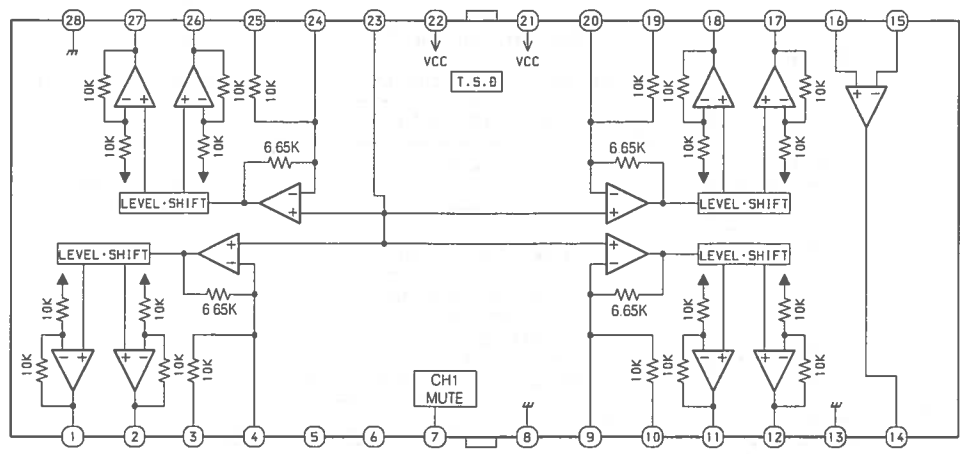
Pin No.	Pin Name	I/O	Description
42	XI	I	8.0MHz CERALOCK.
43	VSS	—	GND.
44	XT2	—	Nou used.
45	XT1	I	5.0VDD.
46	AVSS	—	GND.
47	XMPGRST	O	MPEG BLOCK IC RESET.
48	HSEL	O	ADDRESS/DATA SEL TO CL680.
49	INLSW	I	INSIDE LIMIT SW.
50	NC	—	Nou used.
51	OSDXCS	O	OSD CHIP SELECT.
52	ABSEL	I	CXA1992A/B SELECT (L=CXA1992A).
53	CLVSEL	I	CLV MODE SELECT (H=CLV-N).
54	AADSEL	I	AUTO ADJUST SELECT (H=AUTO ON).
55	AVDD	—	5.0VDD.
56	AVREF	—	
57	HDOUT	I	HD-OUT FROM CL680.
58	HDIN	O	HD-IN TO CL680.
59	HCK	O	HCK TO CL680.
60	OSDDATA	O	OSD DATA.
61	OSDCLK	O	OSD CLOCK.
62	COMMAND	I	COMMAND FROM HOST.
63	STATUS	O	STATUS TO HOST.
64	SCK	I	SCK FROM HOST.

# IC, SM5878M

Pin No.	Pin Name	I/O	Description
1	MUTE	I	MODE = H: Soft mute ON/OFF terminal. (Mute at H). MODE = L: Attenuator level DOWN/UP terminal. (DOWN at H).
2	DEEM	I	De-emphasis ON/OFF terminal. (De-emphasis ON at H).
3	CKO	O	Oscillator clock output. (16.9344 MHz).
4	DVSS	—	Digital VSS terminal.
5	BCKI	I	Bit clock input terminal.
6	DI	I	Serial data input terminal.
7	DVDD	—	Digital VDD terminal.
8	LRCI	I	Sample rate clock (fs) input terminal. (H = L ch/L = R ch).
9	TSTN	I	Test input. ("H" or open during normal operation)
10	TOI	O	Test output 1. (Normally low level output).
11	AVDDL	—	Analog VDD terminal. (For L ch).
12	LO	O	Left channel analog output terminal.
13	AVSS	—	Analog VSS terminal.
14	RO	O	Right channel analog output terminal.
15	AVDDR	—	Analog VDD terminal. (For R ch).
16	MUTEO	O	Infinity zero detection output.
17	XVDD	—	X'tal system VDD terminal.
18	XTI	I	X'tal oscillator terminal. (Or external clock input terminal of 16.9344 MHz).
19	XTO	O	X'tal oscillator terminal.
20	XVSS	—	X'tal system VSS terminal.
21	DS	I	Double-speed/normal playback selection. (Double-speed at H).
22	RSTN	I	Reset terminal. (Reset at L).
23	MODE	I	Soft mute/Attenuator mode selection. (Soft mute at H).
24	ATCK	I	Attenuator level setup clock (Ignored when MODE = H).

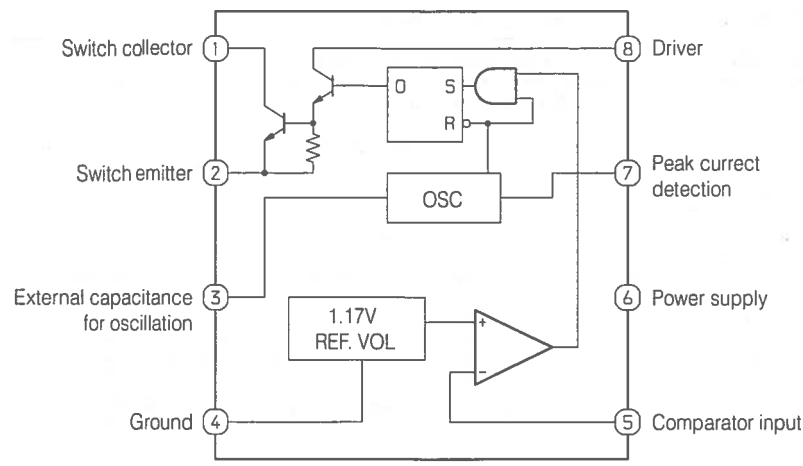


IC BLOCK DIAGRAM  
IC, BA5915FP

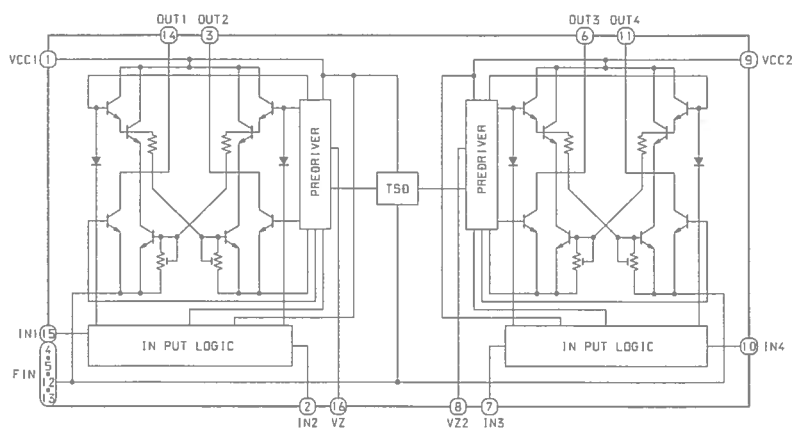


T.S.D: Thermal shut-down  
Resistors are in units of  $\Omega$ .

IC, M5291FP



IC, LB1644



TRUTH TABLE

IN1	IN2	OUT1	OUT2	IN3	IN4	OUT3	OUT4
0	0	L	L	0	0	L	L
1	0	H	L	1	0	H	L
0	1	L	H	0	1	L	H
1	1	L	L	1	1	L	L

INPUT				OUTPUT				MODE	
IN1	IN2	IN3	IN4	OUT1	OUT2	OUT3	OUT4	M1	M2
0	0	0	0	L	L	L	L	BRAKE	BRAKE
1	0	0	0	H	L	L	L	FF/REW	BRAKE
0	1	1	1	L	H	L	L	REW/FF	BRAKE
1	1	0	0	L	L	H	L	BRAKE	FF/REW
0	0	1	1	L	L	L	H	BRAKE	REW/FF
1	1	1	1	L	L	L	L	BRAKE	BRAKE

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.

### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button) • Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	TEST 00 00 00 Flashes repeatedly	<ul style="list-style-type: none"> <li>• Test mode is activated.</li> <li>• CD block power is ON.</li> </ul>	<ul style="list-style-type: none"> <li>• Test mode</li> </ul>
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes. * NOTE 1</li> </ul>	<b>FOCUS SERVO</b> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read. * NOTE 1</li> </ul>	<b>FOCUS SERVO/TRACKING SERVO CLV SERVO/SLED SERVO</b> Check FOK/FZC
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback</li> <li>Press once; tracking servo OFF</li> <li>Press twice; tracking servo ON</li> <li>* NOTE 2</li> </ul>	<b>TRACKING SERVO ON/OFF</b> Tracking balance (traverse) check
Sled mode No.5	⏏ key ⏏ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> <li>* NOTE 3</li> <li>(During playback, machine operates normally.)</li> </ul>	<b>SLED SERVO</b> Check SLED mechanism operation

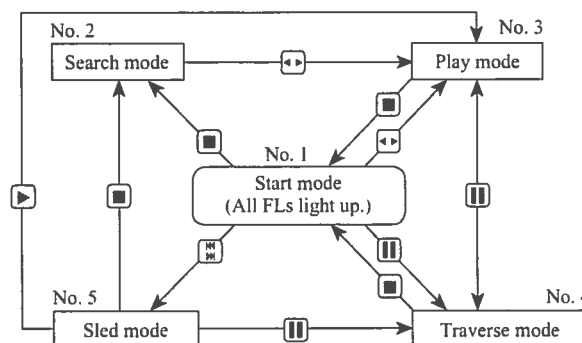
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ⏏ or ⏏ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ⏏ or ⏏ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ⏏ or ⏏ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ⏏ or ⏏ keys are pressed, even when the pick-up is at the outermost or innermost track.

### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

### 5. How to check the Automatic Adjustment Values

The automatic adjustment values can be checked by pressing the square (■) button.

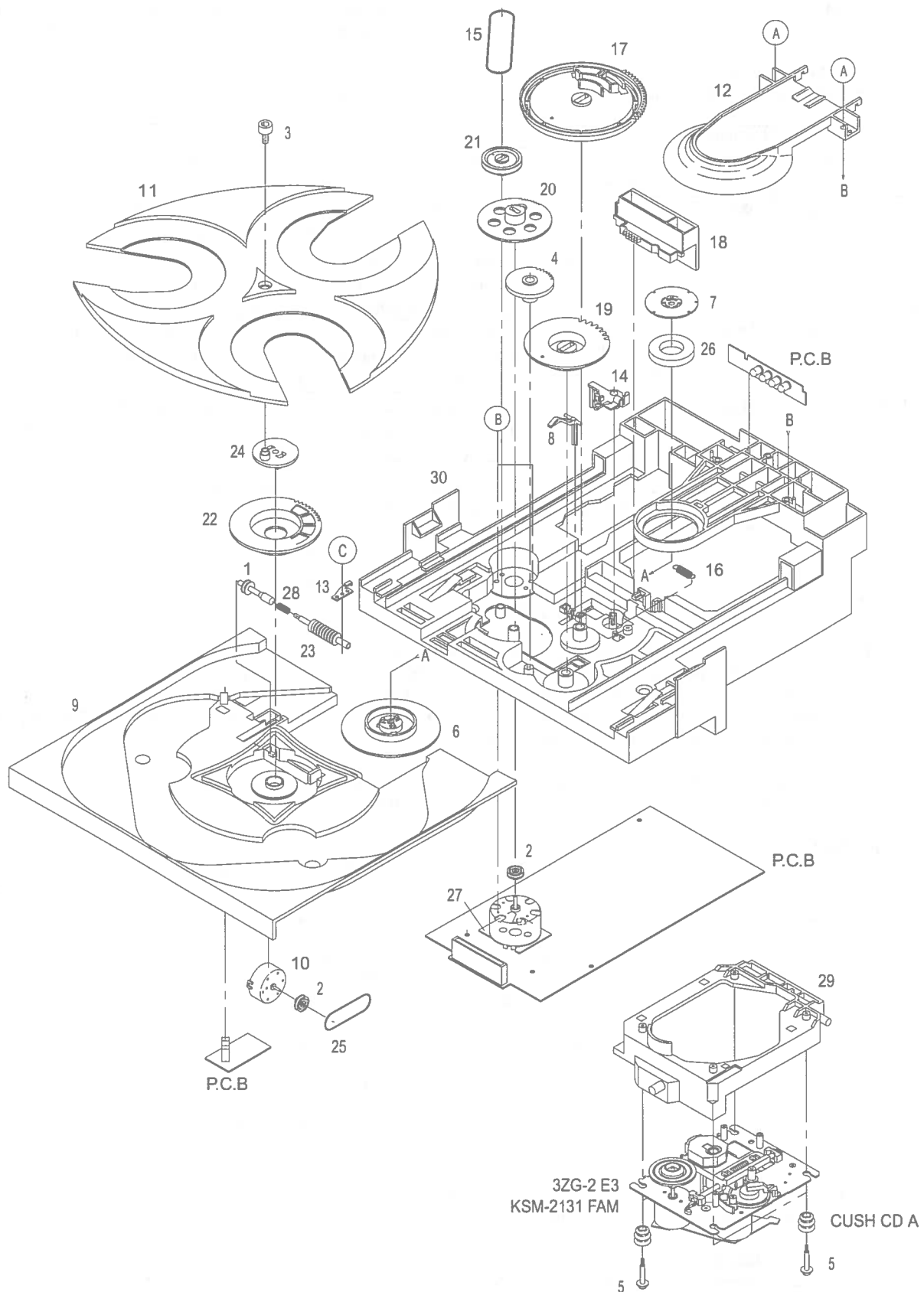
FL display (displayed in hexadecimal values)

\*\* \*\* \*

- Tracking balance (00-0F)
- Tracking gain (00-0C)
- Focus bias (10-2F)

Note) The reference value is "20 08 08".

# MECHANICAL EXPLODED VIEW 1/1



## MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

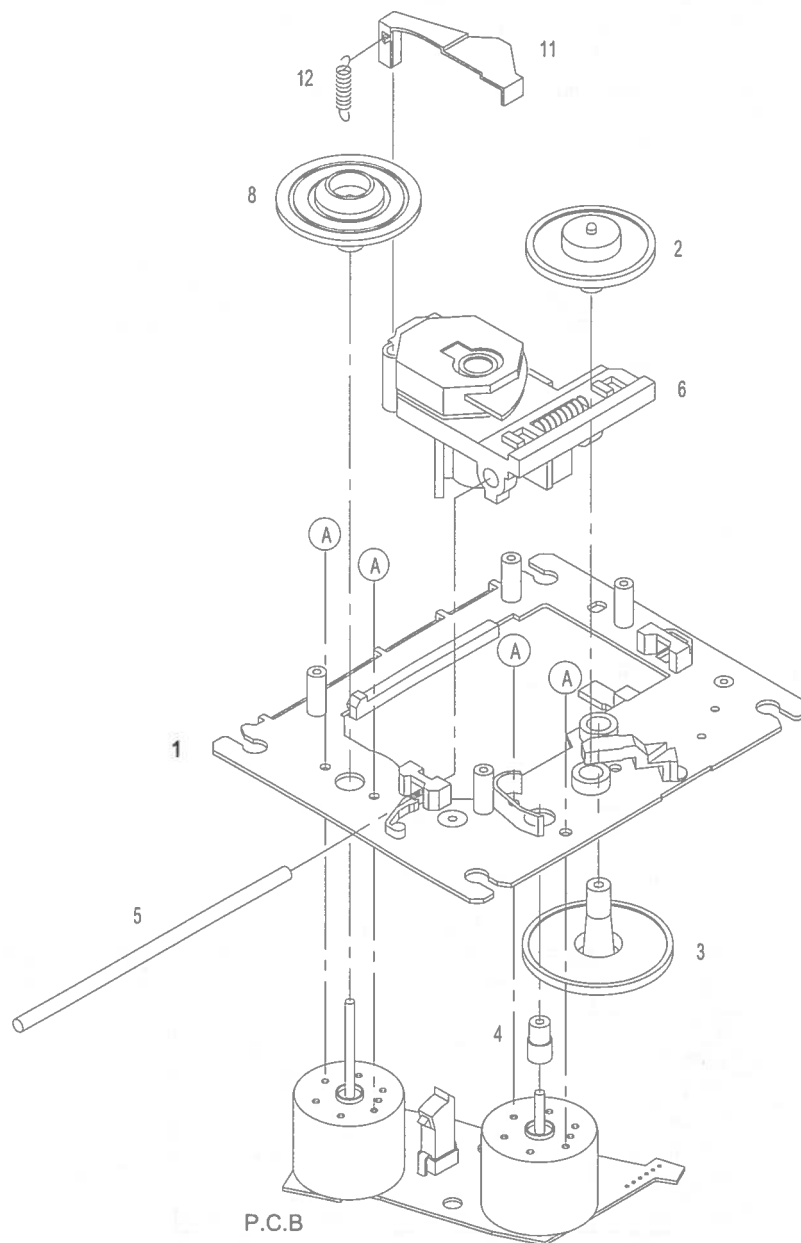
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	84-ZG1-239-210		PULLY, WORM N<EXCEPT VOS1RNDSC>	19	84-ZG1-205-210		GEAR, TRAY (*)
1	84-ZG1-273-010		PULLEY, WORM 4<VOS1RNDSC>	20	84-ZG1-274-010		GEAR, RELAY 8<EXCEPT VOS1RNDSC>
2	84-ZG1-267-010		PULLEY, LOAD MO 8	20	84-ZG1-206-110		GEAR, RELAY<VOS1RNDSC>
3	81-ZG1-239-010		S-SCREW, TT	21	84-ZG1-207-010		PULLEY, RELAY<EXCEPT VOS1RNDSC>
4	81-ZG1-291-110		GEAR, TRAY RELAY NO3	21	84-ZG1-271-010		PULLEY, RELAY 8<VOS1RNDSC>
5	81-ZG1-271-010		S-SCREW MECH REAR	22	84-ZG1-269-010		GEAR, MAIN TT 4
6	84-ZG1-289-010		HLDR, MAGNET NAT <VOS1RNDSC, VOS1RNDSC>	23	84-ZG1-238-010		GEAR, WORM N
6	81-ZG1-277-310		HLDR, MAGNET N<VOS1RMDSM, VOS1RMDSC>	24	84-ZG1-224-010		LEVER, TT<VOS1RMDSM, VOS1RMDSC>
6	84-ZG1-291-010		HLDR, MAGNET 4 NAT<VOS1RNDSC>	24	84-ZG1-288-010		LEVER, TT NAT <EXCEPT VOS1RMDSM, VOS1RMDSC>
7	81-ZG1-255-110		PLATE, MAGNET MK2	25	84-ZG1-225-010		BELT, SQ1.0-63.3
8	83-ZG3-213-010		LVR, SW	26	83-ZG3-604-010		RING, MAG 2
9	84-ZG1-003-310		TRAY, NO2-B<VOS1RNDSC>	27	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA) <EXCEPT VOS1RNDSC>
9	84-ZG1-008-210		TRAY, NO3<EXCEPT VOS1RNDSC>	27	87-045-383-010		MOT, M9150T28-2<VOS1RNDSC>
10	87-045-364-010		MOTOR (BCH3B14)	28	84-ZG1-248-010		SPR-C, WORM
11	84-ZG1-005-210		TURNTABLE, NO1 (*)	29	84-ZG1-287-010		HLDR, MECHA NAT <EXCEPT VOS1RMDSM, VOS1RMDSC>
12	84-ZG1-011-010		REFLECTOR, CD	29	84-ZG1-212-210		HLDR, MECHA NO2 <VOS1RMDSM, VOS1RMDSC>
13	84-ZG1-259-010		SPR-P, WORM	30	84-ZG1-286-010		CHAS, MECHA NAT <VOS1RNDSC, VOS1RNDSC>
14	84-ZG1-266-010		LEVER, CAM 8<EXCEPT VOS1RNDSC>	30	84-ZG1-201-410		CHAS, MECHA<VOS1RMDSM, VOS1RMDSC>
14	84-ZG1-208-210		LEVER, CAM<VOS1RNDSC>	30	84-ZG1-292-010		CHAS, MECHA N NAT<VOS1RNDSC>
15	84-ZG1-209-010		BELT, SQ1.8-117.7	A	87-067-703-010		TAPPING SCREW, BVT2+3-10
16	84-ZG1-211-010		SPR-E CAM S	B	87-251-070-410		U+2.6-3
17	84-ZG1-215-410		GEAR, MAIN CAM BLU <VOS1RMDSM, VOS1RMDSC>	C	87-067-981-010		BVT2+3-6 BLK
17	84-ZG1-203-410		GEAR, MAIN CAM <EXCEPT VOS1RMDSM, VOS1RMDSC>				
18	84-ZG1-216-310		SLIDE, MECHA CAM YEL <VOS1RMDSM, VOS1RMDSC>				
18	84-ZG1-204-310		SLIDER, MECHA CAM <EXCEPT VOS1RMDSM, VOS1RMDSC>				

## COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		



## CD MECHANISM EXPLODED VIEW 1/1 (3ZG-2E3)

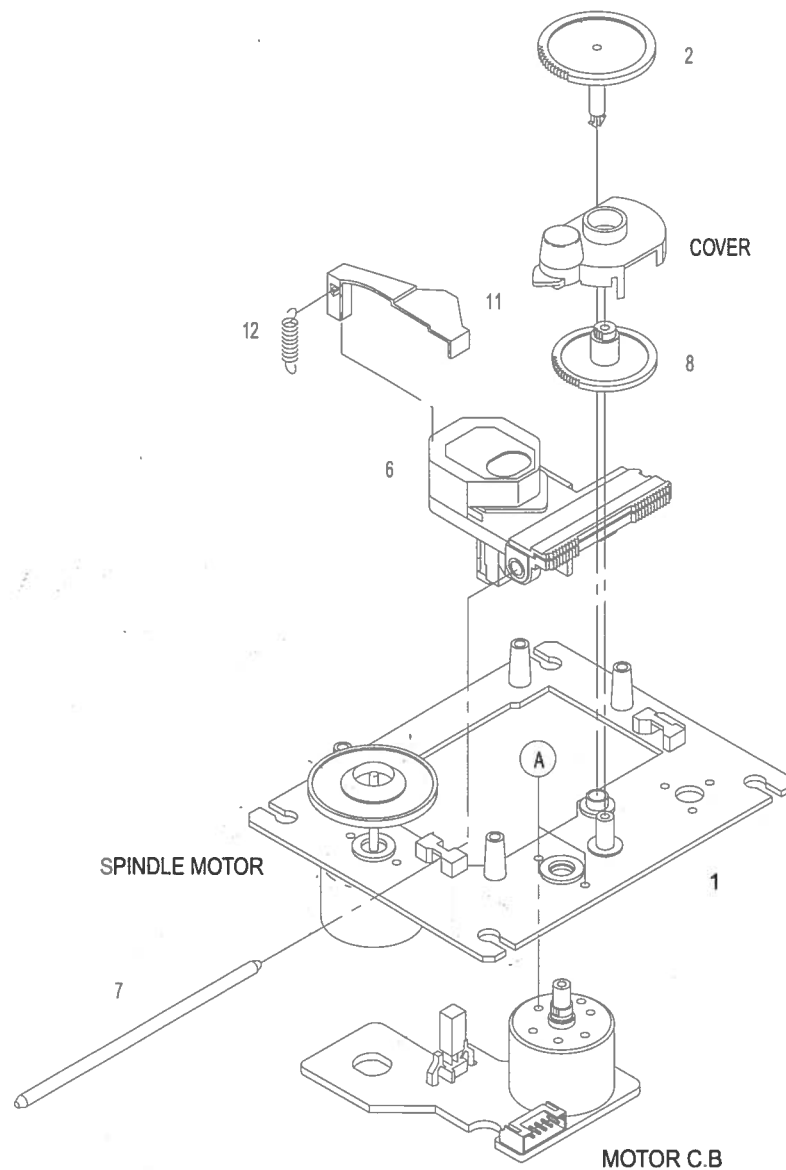


## CD MECHANISM PARTS LIST 1/1 (3ZG-2E3)

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	83-ZG2-243-210		CHAS ASSY,SHT
2	83-ZG2-235-010		GEAR,A3
3	83-ZG2-205-210		GEAR,B
4	83-ZG2-236-010		GEAR MOTOR 3
5	83-ZG2-253-010		SHAFT,SLIDE 5
6	87-A90-836-010		PICKUP,KSS-213F
8	83-ZG2-227-210		TURN TABLE,C1
11	83-ZG2-245-410		LEVER,SHUTTER
12	83-ZG2-250-110		SPR-E,SHT 2
A	87-261-032-210		SCREW V+2-3

# CD MECHANISM EXPLODED VIEW 1/1 (KSM-2131 FAM)



## CD MECHANISM PARTS LIST 1/1 (KSM-2131 FAM)

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	9X-262-629-220		MOTOR CHASSIS ASSY (MB) (FR)
2	92-626-907-010		GEAR (A) (S)
6	87-A90-836-010		OPTICAL PICK UP KSS-213F
7	92-626-908-020		SHAFT SLED
8	92-627-003-010		GEAR (B)
11	92-646-697-020		LENS SHUTTER (F)
12	92-646-702-010		SPRIG EXTENSION
A	97-621-255-150		SCREW+P2-3

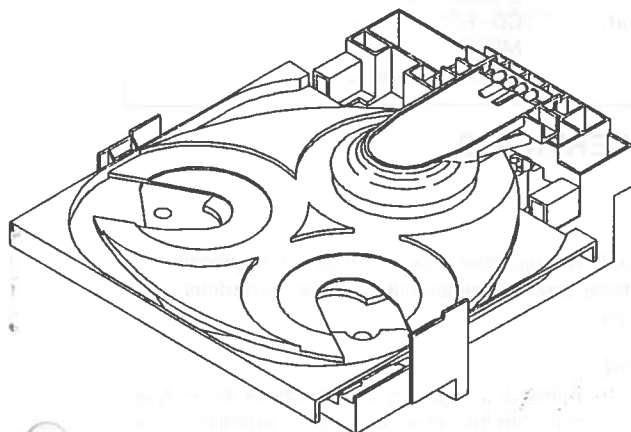
**アイワ株式会社** 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)  
**AIWA CO.,LTD.** 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110-8710, JAPAN TEL:03 (3827) 3111

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# aiwa



## 4ZG-1



CD MECHANISM

• BASIC CD MECHANISM: KSM-2101 ABM

• TYPE: English.Japanese

BASIC NAME	DERIVATION NAME							
4ZG-1	G	D	F	R	FJ	V		

- This mechanism has various derivation. Derivation name is indicated by the Service Manual for each model.

本体マニュアルはBASIC CD MECHANISMのサフィックスがDERIVATION NAMEです。組み合わせて使用してください。

- This Service Manual has information about difference between 4ZG-1. If requiring the other information, see Service Manual of S/M Code No. 09-946-056-10T.

このサービスマニュアルは4ZG-1との変更部分のみを載せます。共通部分についてはS/M Code No. 09-946-056-10Tを参照してください。

MANUAL  
SERVICE



## SPECIFICATIONS

ディスク	コンパクトディスク
読み取り方式	非接触光学式読み取り (半導体レーザー使用)
複合化	16 bit 直線
ワウ フラッター	測定限界以下

映像信号	NTSC/PAL 方式
映像出力端子	ピンジャック 1Vp-p、75 Ω、不平衡
物理フォーマット	CD-ROM フォーマット
ビデオデータ	MPEG 1
オーディオデータ	MPEG 1 レイヤー 2

Disc	Compact disc
Scanning method	Non contact optical scanner (semiconductor laser application)
Laser	Semiconductor laser ( $\lambda = 780 \text{ nm}$ )
No. of channels	2 channels

Video signal	NTSC/PAL
Video output	RCA pin jack 1 Vp-p, 75 Ω unbalanced
Physical format	CD-ROM format
Video data	MPEG 1
Audio data	MPEG 1 layer 2

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

### WARNING!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

### VAROITUS!

Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylit-tävälle näkymättömälle lasersäteilylle.

### VARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvisning, kan användaren utsättas för osynlig laserstråling, som överskrider gränsen för laserklass 1.

### CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

### ATTENTION

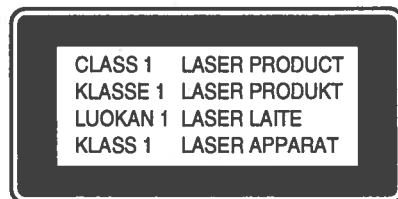
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

### ADVARSEL!

Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.

The CLASS 1 LASER PRODUCT label is located on the rear exterior.



## 光学ブロック (KSS - 210A) 交換時の注意

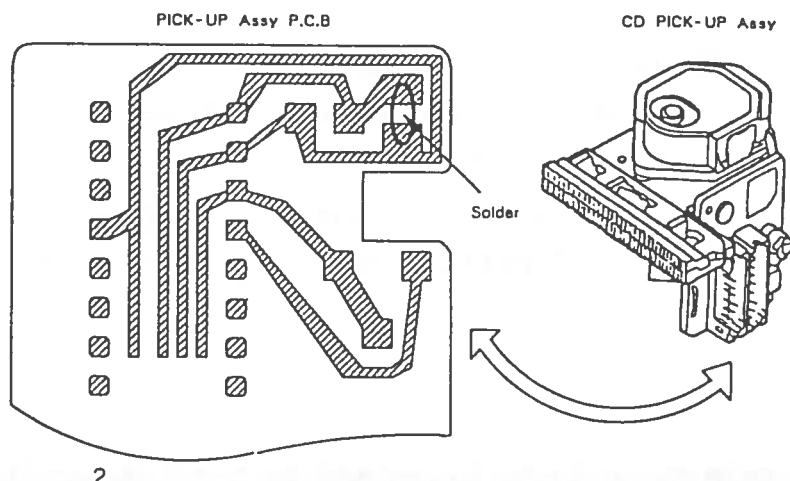
光学系ブロック内のレーザーダイオードは、衣服や人体に帯電した静電荷等で電位差を生じることにより、静電破壊することがあります。人体アース、作業台のアースをとり、衣服が触れぬよう注意して下さい。

- 1) コネクターを接続後、右図に示すハンダ付けを取り除いて下さい。

## Precaution to replace Optical block (KSS - 210A)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

- 1) After the connection, remove solder shown in the right figure.



## ギヤ、メインカムの位相の合わせ方

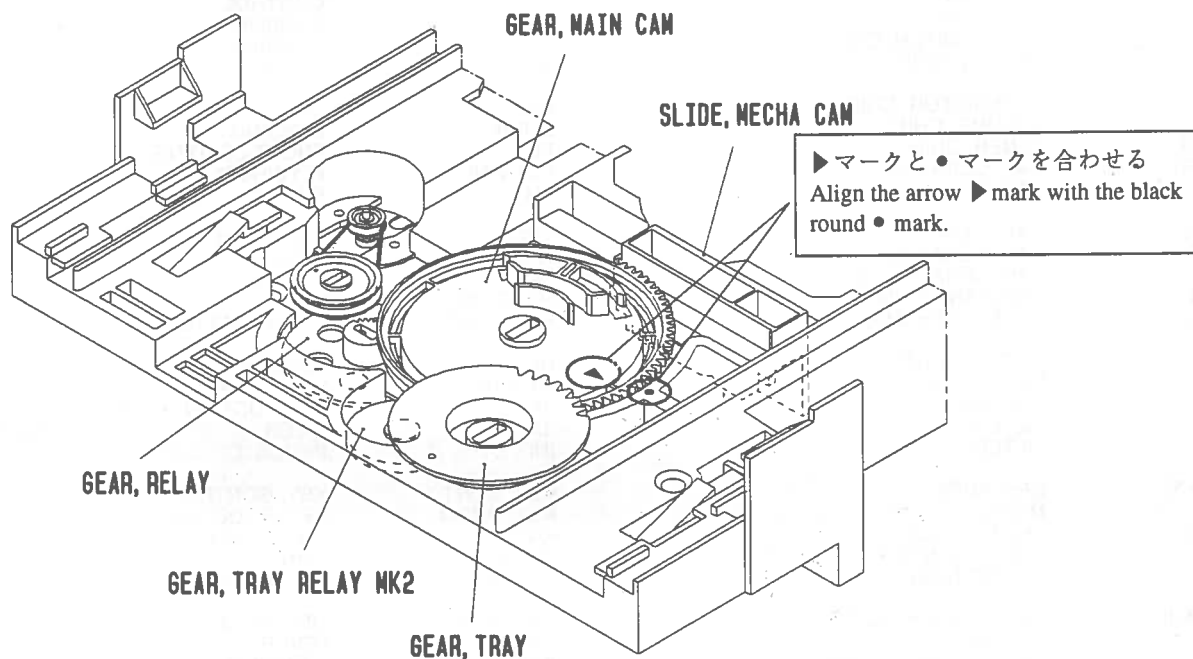
- 1) CHAS, MECHのツメを下側に押し、TRAYを外す。
- 2) 下図の様にGEAR, MAIN CAMの矢印とCHAS, MECHの点印を合わせる。
- 3) SLIDE, MECH CAMが右側の位置にある事を確認し、TRAYをゆっくり挿し込んで下さい。

注意: GEAR, MAIN CAMの位相がズレている場合、チャッキング及びトレイが誤動作を起こします。

## How to Adjust the Rotating Phase of the Gear, Main Cam

- 1) Push down the hooking catch of the CHAS. MECH, and remove the TRAY.
- 2) Align the arrow mark of the Gear, Main Cam with the black round mark of the CHAS, MECH as shown below.
- 3) Confirm that the Slide, Mech Cam is located in the right position, then insert the TRAY gently.

Caution: If the rotating phase of the Gear, Main Cam is incorrectly adjusted, the chucking operation and tray movement will have malfunction.



# REFERENCE NAME LIST

## ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, SERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER
サージサプレッサ	SERGESUPPRESSOR
セラコン	CAP,CERA

## MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL
ジグアーム	ARM,SHAFT
ジグガイド	GUIDE,SHAFT
ストラップ	STRAP
トクナベ	S-SCREW
ヒンジ	HINGE
ヒンジビス	S-SCREW
ビスセレート	SCREW,SERRART

サービス技術ニュース	
番 号	連絡内容
G - -	
G - -	
G - -	

**アイワ株式会社**  
**AIWA CO.,LTD.**

912162

Tokyo Japan

## ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
IC				C111	87-010-154-080	0E	C-CAP, S 10P-50 CH
	87-017-745-010	2A	IC, CXA1782BQ	C112	87-010-318-080	0E	C-CAP, S 47P-50 CH(D)
	87-017-586-010	2Y	IC, CXD 2518Q	C113	87-010-263-080	0E	CAP, E 100-10
	87-017-825-010	1E	IC, GP1F32T(D)	C114	87-010-197-080	0E	C-CAP, S 0.01-25 B
	87-017-888-080	1A	IC, NJM4558MD	C115	87-010-318-080	0E	C-CAP, S 47P-50 CH
	87-020-501-080	1B	IC, TA78L005AP	C116	87-010-318-080	0E	C-CAP, S 47P-50 CH
	87-017-801-080	1F	IC, TA2058F	C117	87-010-197-080	0E	C-CAP, S 0.01-25 B
	87-001-982-010	1B	IC, TA7291S	C118	87-010-263-080	0E	CAP, E 100-10(D)
	87-017-802-010	1C	IC, LC7872E(G)	C119	87-010-197-080	0E	C-CAP, S 0.01-25 B(D)
	87-017-803-010	2A	IC, LC32464P-80(G)	C201	87-012-153-080	0E	C-CAP, S 120P-50 CH
	87-002-892-080	1C	IC, MM1031XMR(G)	C202	87-012-153-080	0E	C-CAP, S 120P-50 CH
TRANSISTOR				C203	87-010-321-080	0E	C-CAP, S 82P-50 CH
	87-026-463-080	0E	TR, 2SA933S(RS)	C204	87-010-321-080	0E	C-CAP, S 82P-50 CH
	87-026-211-080	0E	C-TR, DTA144EK	C205	87-010-321-080	0E	C-CAP, S 82P-50 CH
	89-320-011-080	0E	TR, 2SC2001K	C206	87-010-321-080	0E	C-CAP, S 82P-50 CH
	87-026-223-080	0E	C-TR, DTC143TK	C207	87-012-153-080	0E	C-CAP, S 120P-50 CH(EXCEPT V)
	87-026-233-080	0E	C-TR, DTA114TK	C207	87-010-321-080	0E	C-CAP, S 82P-50 CH(V)
	89-109-340-480	0E	TR, 2SA934Q	C208	87-012-153-080	0E	C-CAP, S 120P-50 CH(EXCEPT V)
	89-318-155-080	0E	TR, 2SC1815GR	C208	87-010-321-080	0E	C-CAP, S 82P-50 CH(V)
	87-026-608-080	0E	C-TR, DTC 123JK(F, FJ)	C209	87-012-153-080	0E	C-CAP, S 120P-50 CH(EXCEPT V)
DIODE				C209	87-010-321-080	0E	C-CAP, S 82P-50 CH(V)
	87-002-564-080	0E	DIODE, 1SS133 RA	C210	87-012-153-080	0E	C-CAP, S 120P-50 CH(EXCEPT V)
	87-020-465-080	0E	DIODE, 1SS133	C210	87-010-321-080	0E	C-CAP, S 82P-50 CH(V)
3CD C. B				C211	87-010-401-080	0E	CAP, E 1-50 SME
C11	87-010-182-080	0E	C-CAP, S 2200P-50 B	C212	87-010-401-080	0E	CAP, E 1-50 SME
C12	87-010-196-080	0E	C-CAP, S 0.1-25 F	C213	87-010-186-080	0E	C-CAP, S 4700P-50 B
C13	87-010-196-080	0E	C-CAP, S 0.1-25 F	C214	87-010-186-080	0E	C-CAP, S 4700P-50 B
C14	87-010-196-080	0E	C-CAP, S 0.1-25 F	C231	87-010-221-080	0E	CAP, E 470-10
C15	87-010-404-080	0E	CAP, E 4.7-50 SME	C232	87-010-263-080	0E	CAP, E 100-10
C16	87-010-193-080	0E	C-CAP, S 0.033-25 F	C301	87-010-196-080	0E	C-CAP, S 0.1-25 F
C17	87-010-197-080	0E	C-CAP, S 0.01-25 B	C302	87-015-688-010	0E	CAP, E 4.7-35 7L
C18	87-010-402-040	0E	CAP, E 2.2-50 SME	C303	87-010-248-080	0E	CAP, E 220-10 SME
C19	87-010-382-040	0E	CAP, E 22-25 SME	C304	87-010-196-080	0E	C-CAP, S 0.1-25 F
C20	87-010-213-080	0E	C-CAP, S 0.015-50 B	C305	87-010-196-080	0E	C-CAP, S 0.1-25 F
C21	87-010-197-080	0E	C-CAP, S 0.01-25 B	C306	87-010-221-080	0E	CAP, E 470-10
C22	87-010-263-040	0E	CAP, E 100-10	C501	87-016-459-040	0E	CAP, E 470-10 SMG
C23	87-015-819-080	0E	C-CAP, S 0.01-50 B K	C502	87-010-197-080	0E	C-CAP, S 0.01-25 B
C24	87-010-193-080	0E	C-CAP, S 0.033-25 F	C503	87-010-260-040	0E	CAP, E 47-25 SME
C25	87-010-197-080	0E	C-CAP, S 0.01-25 B	C504	87-010-197-080	0E	C-CAP, S 0.01-25 B
C26	87-010-193-080	0E	C-CAP, S 0.033-25 F	C505	87-010-196-080	0E	C-CAP, S 0.1-25 F
C27	87-010-197-080	0E	C-CAP, S 0.01-25 B	C506	87-010-196-080	0E	C-CAP, S 0.1-25 F
C28	87-010-146-080	0E	C-CAP, S 2P-50 CH	C507	87-010-196-080	0E	C-CAP, S 0.1-25 F
C29	87-010-154-080	0E	C-CAP, S 10P-50 CH	C508	87-010-196-080	0E	C-CAP, S 0.1-25 F
C30	87-010-263-080	0E	CAP, E 100-10	C509	87-010-197-080	0E	C-CAP, S 0.01-25 B
C31	87-010-178-080	0E	C-CAP, S 1000P-50 B	C510	87-010-178-080	0E	C-CAP, S 1000P-50 B
C32	87-010-198-080	0E	C-CAP, S 0.022-25 B	C601	87-010-197-080	0E	C-CAP, S 0.01-25 B
C33	87-010-196-080	0E	C-CAP, S 0.1-25 F	C602	87-010-381-080	0E	CAP, E 330-16 SME
C34	87-010-197-080	0E	C-CAP, S 0.01-25 B	C603	87-010-196-080	0E	C-CAP, S 0.1-25 F
C35	87-010-263-080	0E	CAP, E 100-10	C701	87-010-322-080	0E	C-CAP, S 100P-50 CH
C36	87-010-248-080	0E	CAP, E 220-10 SME	C702	87-010-297-080	0E	C-CAP, 100P-50 CH
C37	87-010-197-080	0E	C-CAP, S 0.01-25 B	C703	87-010-318-080	0E	C-CAP, S 47P-50 CH
C38	87-010-260-080	0E	CAP, E 47-25 SME	C704	87-010-178-080	0E	C-CAP, S 1000P-50 B
C39	87-010-196-080	0E	C-CAP, S 0.1-25 F	C705	87-010-197-080	0E	C-CAP, S 0.01-25 B(V)
C42	87-010-178-080	0E	C-CAP, S 1000P-50 B	C801	87-010-197-080	0E	C-CAP, S 0.01-25 B(G)
C101	87-010-194-080	0E	C-CAP, S 0.047-25 F	C802	87-010-260-080	0E	CAP, E 47-25 SME(G)
C102	87-010-188-080	0E	C-CAP, S 6800P-50 B	C803	87-010-194-080	0E	C-CAP, S 0.047-25 F(G)
C103	87-010-182-080	0E	C-CAP, S 2200P-50 B	C804	87-010-260-080	0E	CAP, E 47-25 SME(G)
C104	87-012-156-080	0E	C-CAP, S 220P-50 CH	C805	87-015-819-080	0E	C-CAP, S 0.01-50 B K(G)
C105	87-010-404-080	0E	CAP, E 4.7-50 SME	C806	87-010-260-080	0E	CAP, E 47-25 SME(G)
C106	87-010-263-040	0E	CAP, E 100-10	C807	87-010-405-080	0E	CAP, E 10-50 SME(G)
C107	87-010-197-080	0E	C-CAP, S 0.01-25 B	C808	87-010-197-080	0E	C-CAP, S 0.01-25 B(G)
C108	87-010-400-040	0E	CAP, E 0.47-50 SME	C809	87-010-405-080	0E	CAP, E 10-50 SME(G)
C109	87-010-197-080	0E	C-CAP, S 0.01-25 B	C810	87-010-313-080	0E	C-CAP, S 18P-50 CH(G)
C110	87-010-180-080	0E	C-CAP, S 1500P-50 B	C811	87-010-314-080	0E	C-CAP, S 22P-50 CH(G)
				C812	87-010-313-080	0E	C-CAP, S 18P-50 CH(G)
				C813	87-010-315-080	0E	C-CAP, S 27P-50 CH(G)
				C814	87-010-197-080	0E	C-CAP, S 0.01-25 B(G)
				C815	87-010-260-080	0E	CAP, E 47-25 SME(G)
				C816	87-010-260-080	0E	CAP, E 47-25 SME(G)

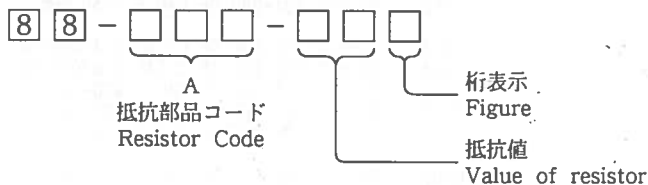


REF. NO	PART NO.	カリ NO.	DESCRIPTION
C817	87-010-221-080	0E	CAP, E 470-10(G)
C818	87-010-196-080	0E	C-CAP, S 0.1-25 F(G)
C819	87-010-321-080	0E	C-CAP, S 82P-50 CH(G)
C820	87-010-178-080	0E	C-CAP, S 1000P-50 B(G)
EMI801	87-008-474-080	0E	F-BEAD, EMI BL02RN1(G)
EMI802	87-008-474-080	0E	F-BEAD, EMI BL02RN1(G)
J801	87-009-502-010	1A	JACK, PIN 1P Y EARTH(G)
L11	87-003-295-080	0E	COIL, 10UH
M601	87-045-305-019	1E	MOTOR, RF-500TB
SFR11	87-024-175-080	0E	SFR, 47K DIA6 V
SFR12	87-024-176-080	0E	SFR, 100K DIA6 V
SFR13	87-024-176-080	0R	SFR, 100K DIA6 V
SW701	87-036-109-010	0E	SW, PUSH SPPB 61
SW702	87-036-109-010	0E	SW, PUSH SPPB 61
X101	87-030-270-080	1B	VIB, XTAL 16.9344MHZ
X801	80-JUC-602-080	1E	VIB, XTAL 17.73MHZ(G)
X802	80-JUC-601-080	1E	V/IB, XTAL 14.31MHZ(G)

REF. NO	PART NO.	カリ NO.	DESCRIPTION
LED C. B(F, FJ)			
LED701	87-017-350-080	0E	LED, SEL1550CM(FJ)
LED701	87-017-806-010	0E	LED, SEL1810DM(F)
LED702	87-017-733-080	0E	LED, SEL1250SM(FJ)
LED702	87-017-350-080	0E	LED, SEL1550CM(F)
LED703	87-017-733-080	0E	LED, SEL1250SM(FJ)
LED703	87-017-350-080	0E	LED, SEL1550CM(F)
LED704	87-017-350-080	0E	LED, SEL1550CM(FJ)
LED704	87-017-806-010	0E	LED, SEL1810DM(F)
T-T C. B			
C401	87-018-214-089	0E	CAP TC U 0.1-50 F
PS401	87-026-573-019	1B	P-SNSR, GP1S53V
MOTOR C. B			
PIN3	91-564-722-110	1C	CONNECTOR 6P
M3	9X-262-513-210	2H	SLED MOTOR ASSY
SW1	91-572-085-110	1B	LEAF SW

# ○ チップ抵抗部品コード / CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち  
Chip Resistor Part Coding



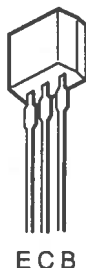
チップ抵抗  
Chip resistor

Wattage 容量	Type 種類	Tolerance 許容誤差	Symbol 記号	Dimensions/寸法 (mm)				Resistor Code : A 抵抗コード : A
				Form/外形	L	W	t	
1/32W	1608	±5%	CJ		1.6	0.8	0.35	108
1/10W	2125	±5%	CJ		2	1.25	1.45	118
1/8W	3126	±5%	CJ		3.2	1.6	0.5 ~0.7	128

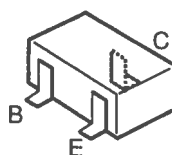
## TRANSISTOR ILLUSTRATION



2SA934  
2SC2001

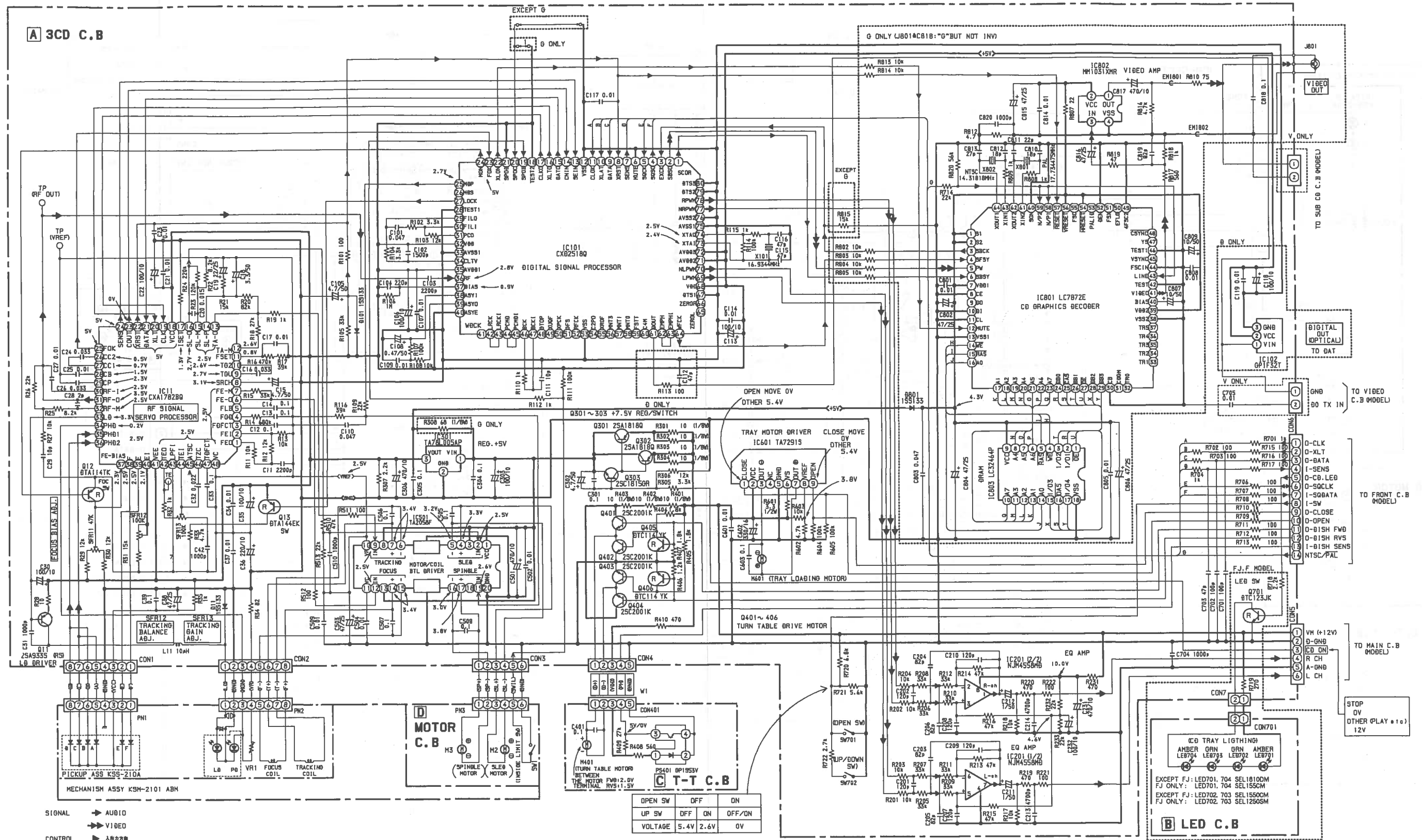


2SA933

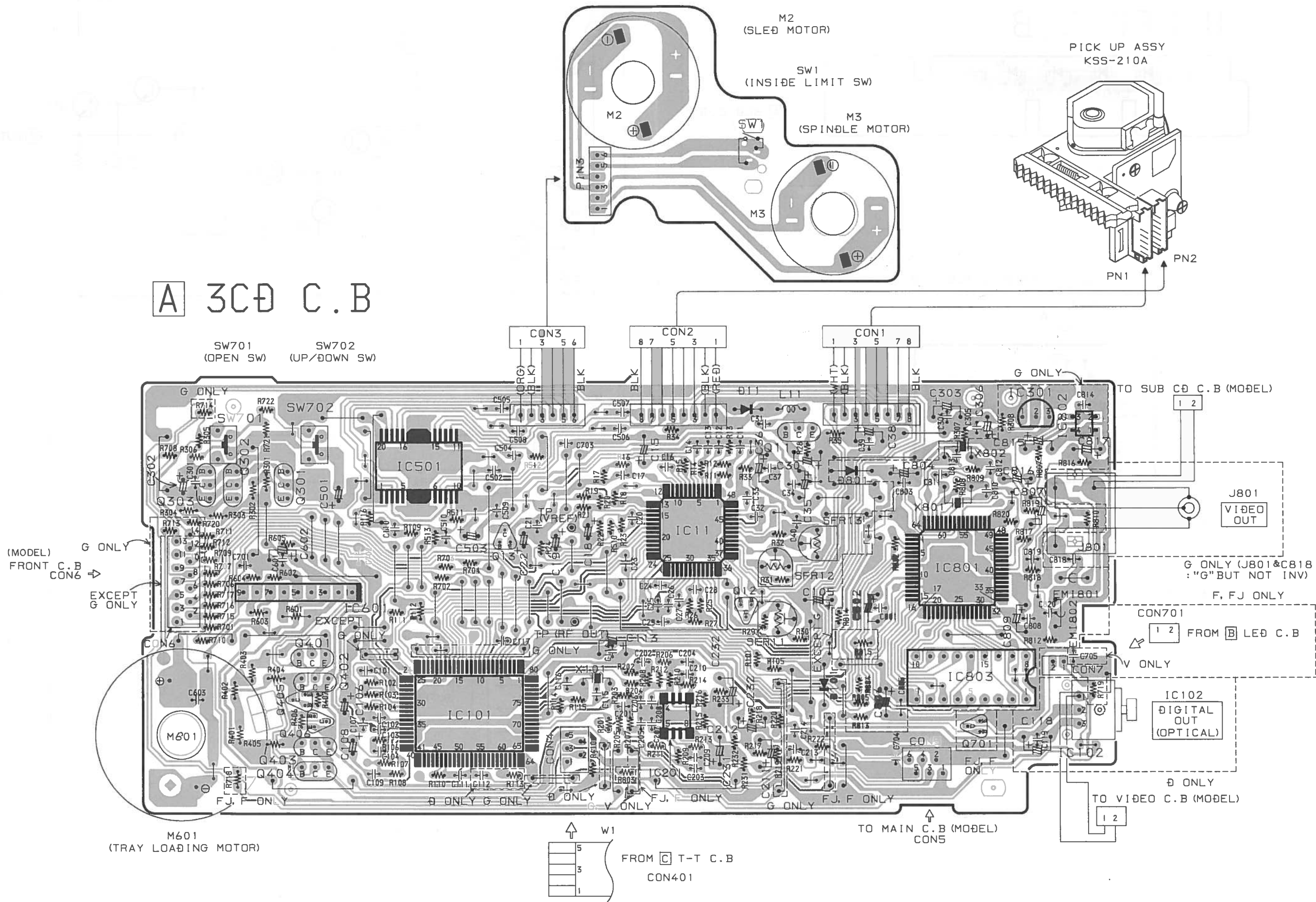


DTA114TK  
DTA144EK  
DTC123JK  
DTC143TK

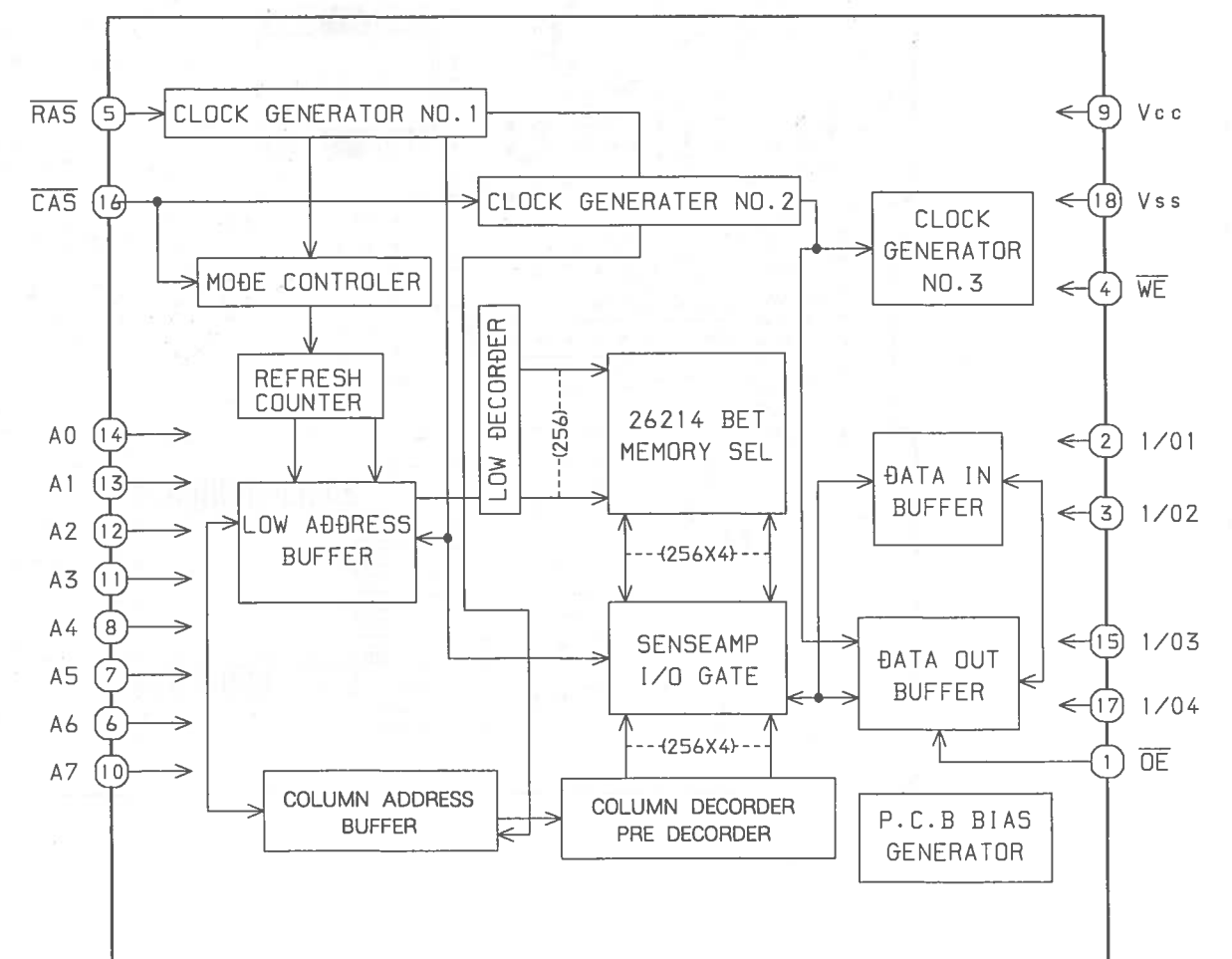
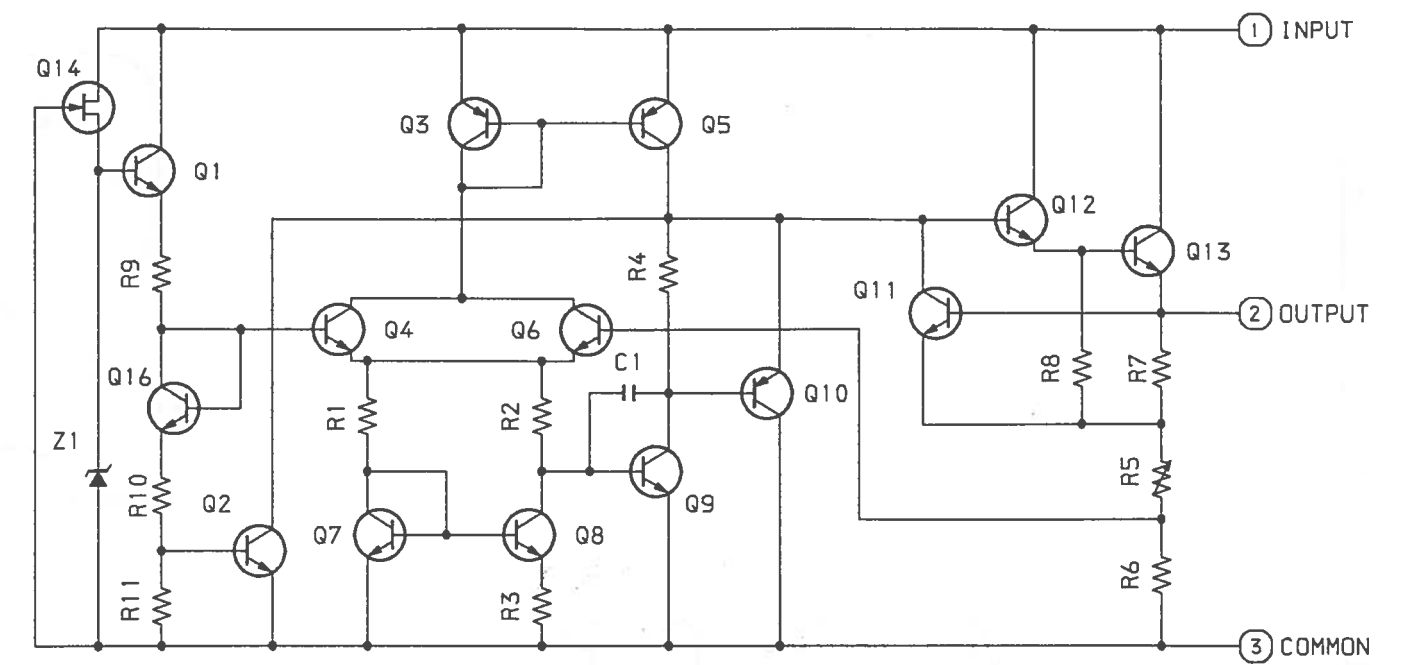
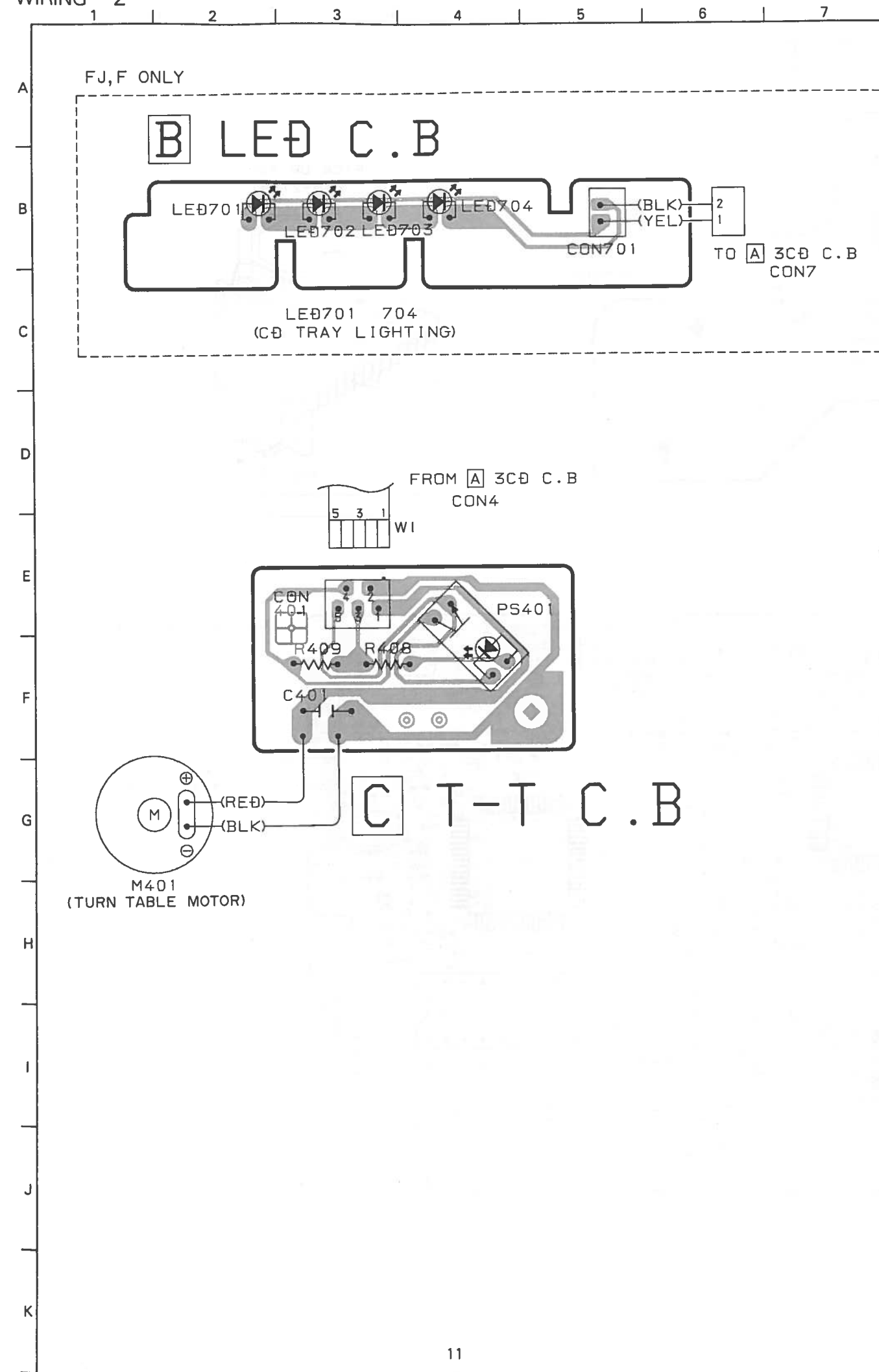




Ⓣ MOTOR C.B

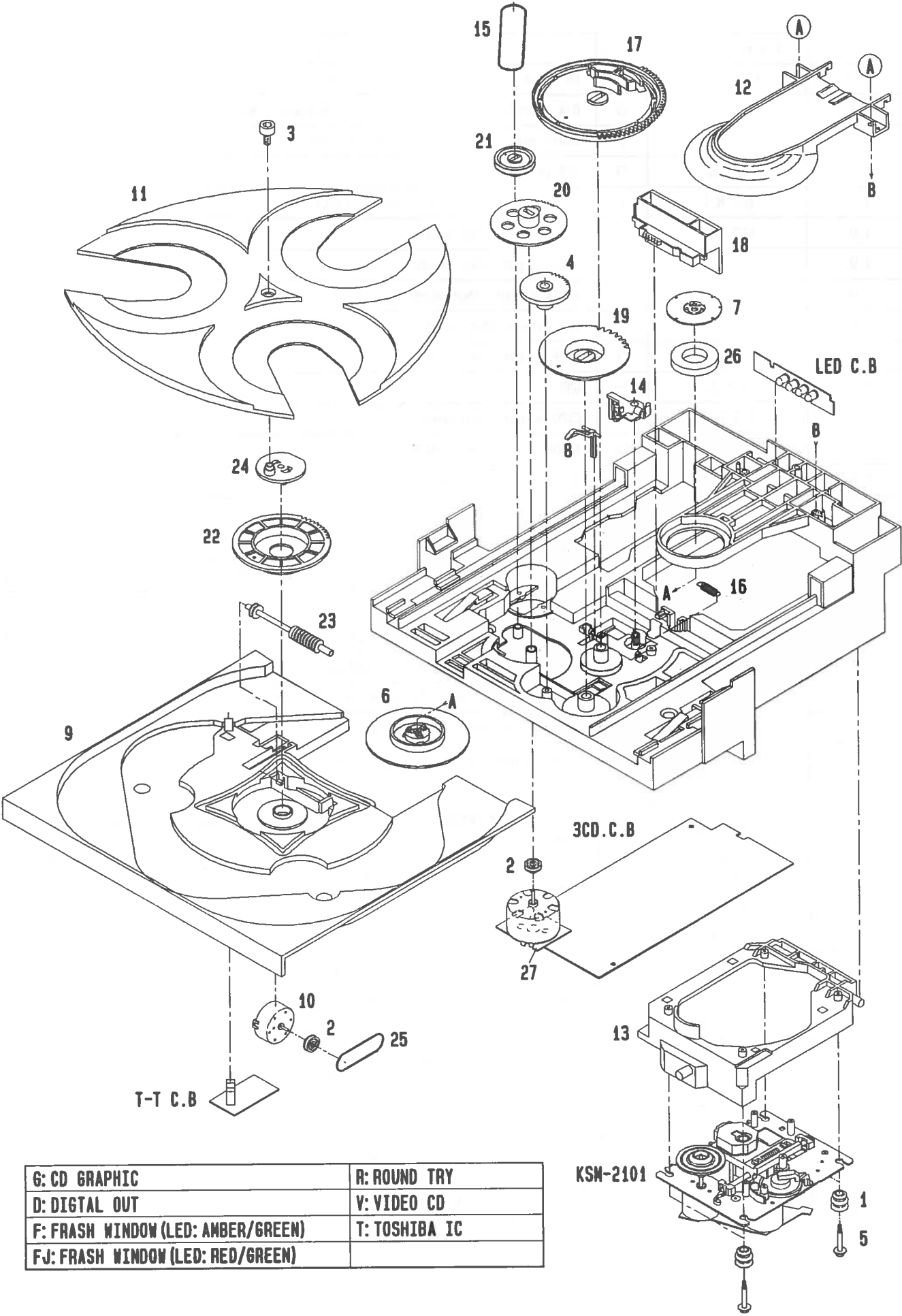






Pin No.	Pin Name	I/O	Description
43	LRCKI	I	LR clock input to DAC. (48-bit slot)
44	PCMD	O	D/A interface, serial data. (2's complement, MSB first)
45	PCMDI	I	Audio data input to DAC. (48-bit slot)
46	BCK	O	D/A interface, bit clock.
47	BCKI	I	Bit clock input to DAC. (48-bit slot)
48	GTOP	O	GTOP output. (Not used)
49	XUGF	O	XUGF output. (Not used)
50	XPCK	O	XPLCK output. (Not used)
51	GFS	O	GFS output. (Not used)
52	RFCK	O	RFCK output. (Not used)
53	VSS	—	GND.
54	C2PO	O	C2PO output. (Not used)
55	XROF	O	XRAOF output. (Not used)
56	MNT3	O	MNT3 output. (Not used)
57	MNT1	O	MNT1 output. (Not used)
58	MNT0	O	MNT0 output. (Not used)
59	FSTT	O	Pins-73 and -74 divided-by 2/3 output. (Not used)
60	C4M	O	4.2336MHz output. (Not used)
61	DOUT	O	Digital Out connector output signal.
62	EMPH	O	H when the playback disc has emphasis. "L" when it does not.
63	EMPHI	I	DAC emphasis ON/OFF. "H" when ON. "L" when OFF
64	WFCK	O	WFCK (WRITE FRAME CLOCK) output. (Not used)
65	ZEROL	O	No sound data detection output. H (L-ch) when no sound data is detected. (Not used)
66	ZEROR	O	No sound data detection output. H (R-ch) when no sound data is detected. (Not used)
67	DTSI	I	TEST for DAC. (Connected to GND)
68	VDD	—	Power supply input. (+5V)
69	LPWM	O	L-ch PWM output. (normal polarity)
70	NLPWM	O	L-ch PWM output. (reversed polarity)
71	AVDD2	—	Power supply input to L-ch PWM driver. (Connected to +5V)
72	AVDD3	—	Power supply input to X'tal. (Connected to +5V)
73	XTAI	I	X'tal input to 33.8688MHz oscillator circuit.
74	XTAO	O	33.8688MHz X'tal oscillator circuit output.
75	AVSS1	—	Power supply input to X'tal. (Connected GND)
76	AVSS2	—	Power supply input to PWM driver. (Connected to GND)
77	NRPWM	O	R-ch PWM output. (reversed phase)
78	RPWM	O	R-ch PWM output. (normal phase)
79	DTS2	I	TEST-2 for DAC. (Connected to GND)
80	DTS3	I	TEST-3 for DAC. (Connected to GND)

MECHANICAL EXPLODED VIEW 1/1



G: CD GRAPHIC	R: ROUND TRY
D: DIGITAL OUT	V: VIDEO CD
F: FRASH WINDOW (LED: AMBER/GREEN)	T: TOSHIBA IC
FJ: FRASH WINDOW (LED: RED/GREEN)	

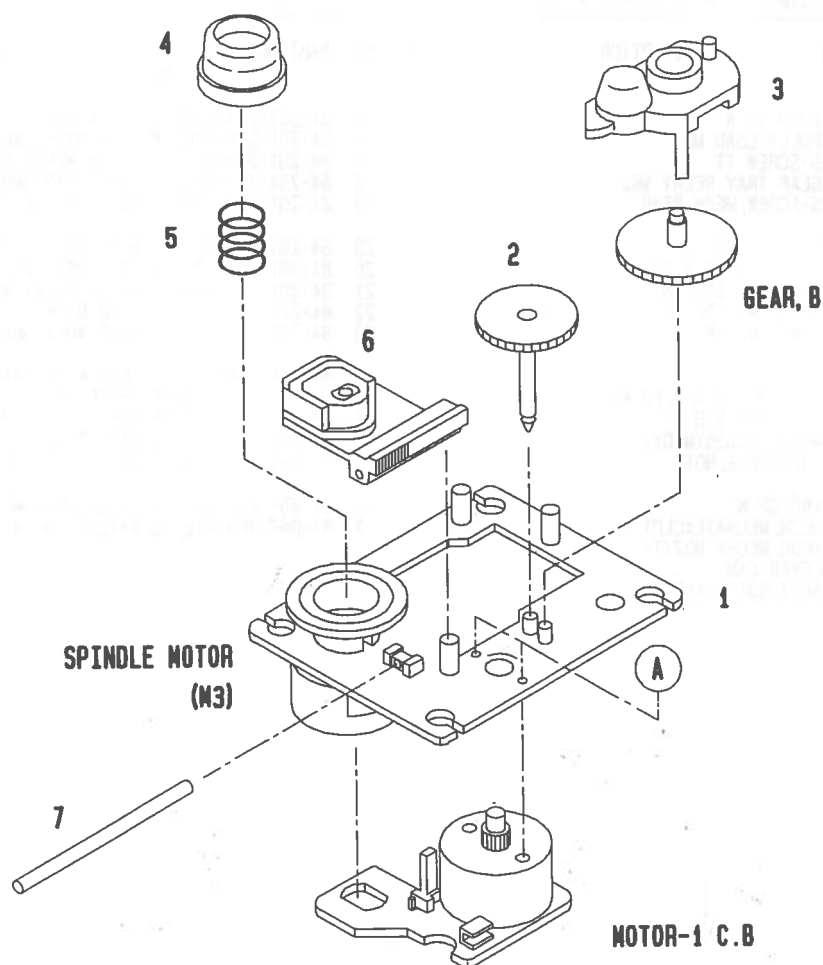
# MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は“REFERENCE NAME LIST”を参照してください。  
If can't understand for Description please kindly refer to “REFERENCE NAME LIST”.

REF. NO	PART NO.	カンリ NO.	DESCRIPTION	REF. NO	PART NO.	カンリ NO.	DESCRIPTION
1	80-CD3-214-019	0E	CUSH CD A	16	84-ZG1-211-019	--	SPR-E CAM S
2	81-ZG1-212-01K	0E	PULLY, LOAD MO	17	84-ZG1-215-010	1B	GEAR, MAIN CAM BLU
3	81-ZG1-239-019	0E	S-SCREW, TT	18	84-ZG1-216-010	1A	SLIDE, MECHA CAM YEL
4	81-ZG1-250-019	0E	GEAR TRAY RELAY MK2	19	84-ZG1-217-010	1A	GEAR, TRAY RED<EXCEPT T>
5	81-ZG1-271-019	0E	S-SCREW, MECH REAR	19	84-ZG1-205-11S	1A	GEAR, TRAY<T>
6	81-ZG1-288-019	1A	HLDR, MAGNET<R>	20	84-ZG1-218-010	0E	GEAR, RELAY YEL<EXCEPT T>
6	81-ZG1-277-019	1A	HLDR, MAGNET N<EXCEPT R>	20	84-ZG1-206-110	0E	GEAR, RELAY<T>
7	81-ZG1-285-019	1A	PLATE, MAGNET N<R>	21	84-ZG1-219-010	0E	PULLY, RELAY BGE
7	81-ZG1-255-019	1A	PLATE, MAGNET MK2<G, D, F, F.J, V>	22	84-ZG1-221-010	1B	GEAR, MAIN TT
7	81-ZG1-229-110	1A	PLATE, MAGNET<T>	23	84-ZG1-222-010	1A	GEAR, WORM SHAFT<EXCEPT T>
8	83-ZG3-213-019	0E	LVR, SW	23	84-ZG1-235-010	1A	GEAR, WORM SHAFT NO2<T>
9	84-ZG1-001-010	1H	TRAY, NO1<G, D, F, F.J, V>	24	84-ZG1-224-010	0E	LEVER, TT
9	84-ZG1-002-010	1H	TRAY, NO1-B<R, T>	25	84-ZG1-225-010	0E	BELT, SQ1. 0-63. 3
10	87-045-364-010	1F	MOTOR BCH3B<M401>	26	87-036-326-010	1A	MAGNET, CLAMPER 93
11	84-ZG1-005-010	1H	TURNTABLE, NO1	27	84-ZG1-230-019	1A	SHILD CORE, MOT<EXCEPT T>
12	84-ZG1-010-010	1C	IND, CD N	27	84-ZG1-231-019	1A	SHILD CORE, MOT S<T>
13	84-ZG1-202-010	1C	HLDR, MECHA<EXCEPT T>	A	87-067-703-019	0E	BVT2+3-10<W/O SLOT>
13	84-ZG1-212-01S	1C	HLDR, MECHA NO2<T>				
14	84-ZG1-208-010	0E	LEVER, CAM				
15	84-ZG1-209-010	0E	BELT, SQ1. 8-117. 7				



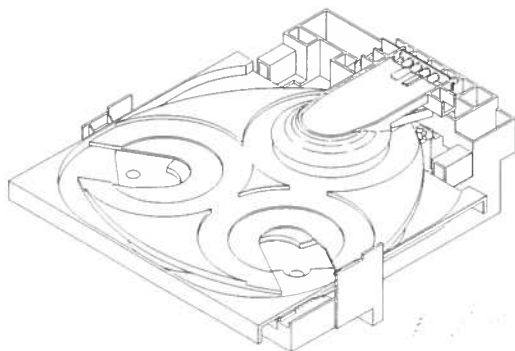
# CD MECHANISM EXPLODED VIEW 1/1



## CD MECHANISM PARTS LIST 1/1

REF. NO	PART NO.	カリ NO.	DESCRIPTION	REF. NO	PART NO.	カリ NO.	DESCRIPTION
1	9X-262-513-310	2C	T. T CHASS ASSY W/MOTOR	6	98-848-127-110	2G	OPTICAL PICK UP KSS-210A
2	92-625-188-020	1D	GEAR (A)	7	94-917-565-010	2M	SHAFT SLED
3	92-625-544-010	1H	COVER	A	87-261-032-210	0E	V+2-3
4	92-625-187-010	1B	RING CENTER				
5	92-625-191-010	1B	SPRING COMPRESSION				

## 4ZG-1



CD MECHANISM

• BASIC CD MECHANISM:3ZG-2 E1

• TYPE: English

## SUPPLEMENT

BASIC NAME	DERIVATION NAME					
	V	O	S1	D	SH	R
4ZG-1						

This Service Manual has various derivation. Derivation name is indicated by the Service Manual for each model.

This Service Manual contains information about the difference between 4ZG-1.  
If requiring the other information, see Service Manual of 4ZG-1 (S/M Code No. 09-985-249-80T)

本体のマニュアルのBASIC CD MECHANISMのサフィックスが  
DERIVATION NAMEです。本サービスマニュアルは、DERIVATION  
NAMEを組み合わせて使用して下さい。

BASIC CD MECHANISM: 4ZG-1 VOS1DSH  
SUFFIX  
(DERIVATION NAME)

BASIC NAME: 4ZG-1

BASIC NAME	DERIVATION NAME							
4ZG-1	V	O	S1	D	SH	R	—	—

#### DERIVATION NAME

V: VIDEO OUT  
O: On screen display  
S1: THE 1st SONY IC MODEL  
D: Digital output function  
SH: Pick up equipped with shutter  
R: Difference of tray

# MECHANICAL PARTS LIST 1/1

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

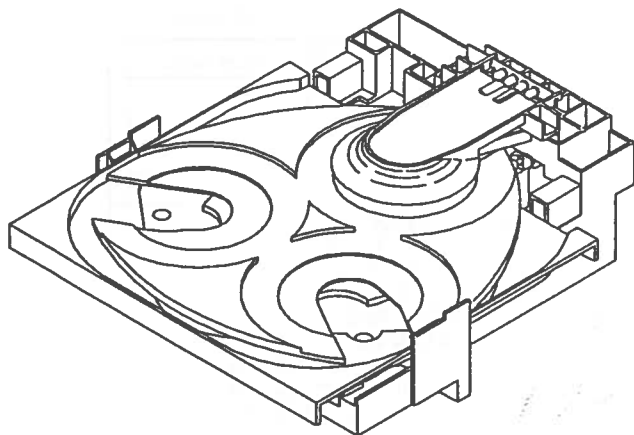
REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	84-ZG1-239-210	1A	PULLY, WORM N	21	84-ZG1-207-010	0E	PULLEY, RELAY
2	84-ZG1-267-010	0E	PULLEY, LOAD MO 8	22	84-ZG1-221-010	1A	GEAR, MAIN TT
3	81-ZG1-239-010	0E	S-SCREW, TT	23	84-ZG1-238-010	1A	GEAR, WORM N
4	81-ZG1-291-110	0E	GEAR, TRAY RELAY NO3	24	84-ZG1-224-010	0E	LEVER, TT
5	81-ZG1-271-010	0E	S-SCREW MECH REAR	25	84-ZG1-225-010	0E	BELT, SQ1.0-63.3
6	81-ZG1-277-310	1A	HLDR, MAGNET N	26	83-ZG3-602-010	1A	RING, MAG
7	81-ZG1-255-110	0E	PLATE, MAGNET MK2	27	87-045-305-010	1F	MOTOR, RF-500TB DC-5V (2MA)
8	83-ZG3-213-010	0E	LVR, SW	28	84-ZG1-248-010	0E	SPR-C, WORM
9	84-ZG1-008-110	1H	TRAY, NO3	A	87-067-703-010	0E	TAPPING SCREW, BVT2+3-10
10	87-045-364-010	1F	MOTOR (BCH3B14)	B	87-251-070-410	0E	U+2.6-3
11	84-ZG1-005-210	1H	TURNTABLE, NO1 (*)	C	87-342-036-210	0E	UT2+2-8
12	84-ZG1-011-010	1A	REFLECTOR, CD	D	87-067-981-010	0E	BVT2+3-6 BLK
13	84-ZG1-259-010	0E	SPR-P, WORM				
14	84-ZG1-208-210	0E	LEVER, CAM				
15	84-ZG1-209-010	0E	BELT, SQ1.8-117.7				
16	84-ZG1-211-010	0E	SPR-E CAM S				
17	84-ZG1-215-410	1B	GEAR, MAIN CAM BLU				
18	84-ZG1-216-310	1A	SLIDE, MECHA CAM YEL				
19	84-ZG1-205-110	1A	GEAR, TRAY				
20	84-ZG1-206-110	0E	GEAR, RELAY				



# aiwa



## 4ZG-1T



CD MECHANISM

• BASIC CD MECHANISM: KSM-2101 ABM

• TYPE: English.Japanese

## SUPPLEMENT

- This Service Manual has information about Service Mode between 4ZG1T. if requiring the other information, see Service Manual of S/M Code No. 09-94C-086-20T

このサービスマニュアルは4ZG1Tのサービスモードのみを載せています。  
共通部分についてはS/M Code No. 09-94C-086-20Tを参照してください。

MANUAL  
SERVICE

## TEST MODE

### 1. CDテストモードの起動方法

ファンクションCDの釦を押しながら、ACプラグを挿入する。  
上記によりFL表示管が全て点灯し、テストモードが起動します。

### 2. CDテストモードの解除方法

下記のいずれか1つの操作で解除します。  
・ファンクション釦を押す  
・パワーSW釦を押す。  
(CDファンクション釦以外) ・ACプラグを抜く。

### 3. CDテストモードの機能説明

テストモード起動後、各操作釦を押す事により次のNo1～No5の各モード機能が使用できます。

Mode/No.	操作	FL表示	動作	内容
スタートモード No.1	起動	全灯表示	<ul style="list-style-type: none"> <li>TEST MODE起動</li> </ul>	<ul style="list-style-type: none"> <li>FL表示確認 (全灯)</li> </ul>
サーチモード No.2	■ 釦		<ul style="list-style-type: none"> <li>LASER DIODE常時発光 (CDブロック電源ON)</li> <li>連続フォーカスサーチ (PUレンズがフルスイングを繰り返す)</li> <li>* 10分以上の連続フォーカスは避けて下さい。 *注1</li> </ul>	<ul style="list-style-type: none"> <li>APC回路確認</li> <li>レーザー電流測定 (レーザー電流コントロール、トランジスタのエミッター-GND間の抵抗の両端。)</li> <li>FOCUS SERVO</li> <li>フォーカスラッチ波形確認</li> <li>フォーカスエラー波形確認 (サーチモードではFOK/FZCは監視せず。)</li> </ul>
プレイモード No.3	◀▶ 釦		<ul style="list-style-type: none"> <li>通常再生</li> <li>TOC READ出来ない場合フォーカスサーチを続行</li> <li>*注1</li> </ul>	FOCUS SERVO/TRACKING SERVO CLV SERVO/SLED SERVO FOK/FZC確認
トラバースモード No.4	▨ 釦		<ul style="list-style-type: none"> <li>DISC通常再生中</li> <li>1回押すトラッキングサーボ OFF</li> <li>2回押すトラッキングサーボ ON</li> <li>*注2</li> </ul>	TRACKING SERVO ON/OFF トラッキングバランス (トラバース) 調整
スレッドモード No.5	◀◀ 釦 ▶▶ 釦	全灯表示	<ul style="list-style-type: none"> <li>ピックアップ外周へ移動</li> <li>ピックアップ内周へ移動</li> <li>*注3</li> <li>(再生中は通常動作致します)</li> </ul>	SLED SERVO SLED メカ動作確認

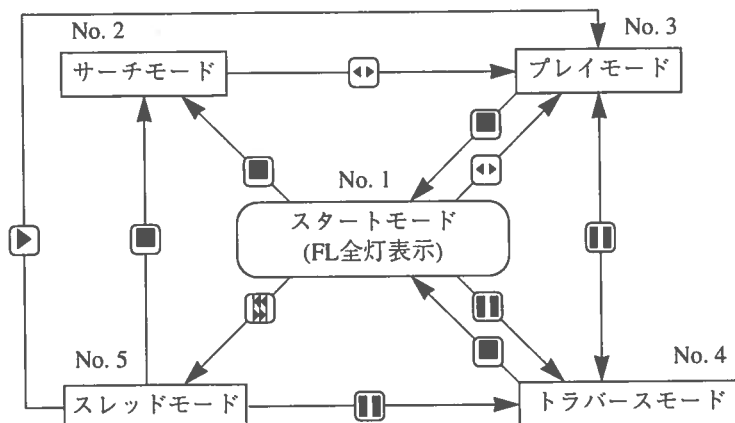
\*注1 フォーカスサーチを連続して10分以上動作し続けるとドライバーICが発熱し保護回路が働く為、トラッキングサーボがかからない状態となる場合があります。このような場合には、電源を切り約10分間放熱後、再スタートして下さい。

\*注2 「▨」状態で、「◀◀」または「▶▶」釦を押さない事。「▨」状態解除後、再生出来なくなります。「▨」状態で、「◀◀」または「▶▶」釦を押した場合には「■」釦を押してスタートモード (No.1) に戻して下さい。

\*注3 ピックアップが最内周、最外周の位置でも「◀◀」または「▶▶」釦を押している間はスレッドモータが回転する為、ギヤ破損に注意して下さい。

### 4. 操作概要

下図の様にスタートモードから、矢印方向の流れで各モードの操作が行えます。モード変更は、下図の流れに従って下さい。



尚、DISC DIRECT PLAY釦を押した場合には、上図のPLAY釦を押した時と同様の動作となります。またプレイモード/トラバースモード時にopen/close釦により、トレイを開閉させた場合には、スタートモードに戻ります。

## TEST MODE

### 1. How to Activate CD Test Mode

Insert the AC plug while pressing the function CD button.  
All FL display tubes will light up, and the test mode will be activated.




### 2. How to Cancel CD Test Mode

Either one of the following operations will cancel the CD test mode.

- Press the function button.
- Press the power switch button.
- (except CD function button)
- Disconnect the AC plug

### 3. CD Test Mode Functions

When test mode is activated, the following mode functions from No.1 to No.5 can be used by pressing the operation keys.

Mode/No.	Operation	FL display	Operation	Contents
Start mode No.1	Activation	All lamps light	• Test mode is activated.	• FL display check (All displays light.)
Search mode No.2	■ key		<ul style="list-style-type: none"> <li>• Laser diode turns always ON. (CD block power is ON.)</li> <li>• Continual focus search (The pickup lens repeats the full-swing up-down motion.)</li> <li>* Avoid continual searches that last for more than 10 minutes.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<ul style="list-style-type: none"> <li>• APC circuit check</li> <li>• Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.)</li> </ul> <p><b>FOCUS SERVO</b></p> <ul style="list-style-type: none"> <li>• Check focus search waveform</li> <li>• Check focus error waveform (FOK/FZC are not monitored in the search mode)</li> </ul>
Play mode No.3	◀▶ key		<ul style="list-style-type: none"> <li>• Normal playback</li> <li>• Focus search is continued if TOC cannot be read.</li> </ul> <p style="text-align: right;">* NOTE 1</p>	<p><b>FOCUS SERVO/TRACKING SERVO</b></p> <p><b>CLV SERVO/SLED SERVO</b></p> <p>Check FOK/FZC</p>
Traverse mode No.4	key		<ul style="list-style-type: none"> <li>• During normal disc playback</li> <li>Press once; tracking servo OFF</li> <li>Press twice; tracking servo ON</li> </ul> <p style="text-align: right;">* NOTE 2</p>	<p><b>TRACKING SERVO ON/OFF</b></p> <p>Tracking balance (traverse) adjustment</p>
Sled mode No.5	◀◀ key ▶▶ key	All lamps light	<ul style="list-style-type: none"> <li>• Pickup moves to the outermost track</li> <li>• Pickup moves to the innermost track</li> </ul> <p style="text-align: right;">* NOTE 3</p> <p>(During playback, machine operates normally.)</p>	<p><b>SLED SERVO</b></p> <p>Check SLED mechanism operation</p>

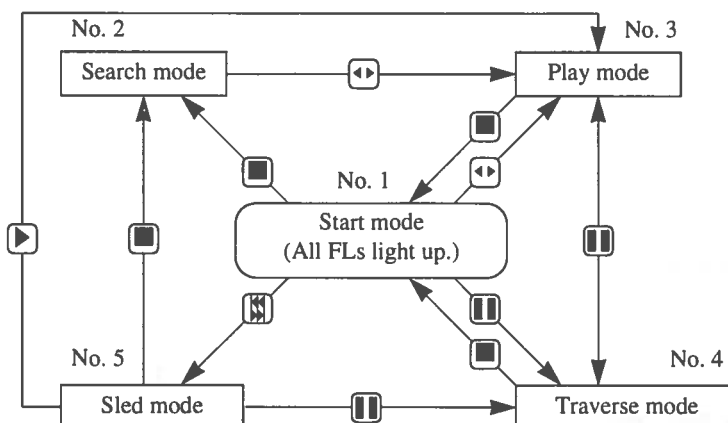
\* NOTE 1: There are cases when the tracking servo cannot be locked owing to the protection circuit being operated when heat builds up in the driver IC if the focus search is operated continually for more than 10 minutes. In these cases the power supply should be switched off for 10 minutes until heat has been reduced and then re-started.

\* NOTE 2: Do not press the ◀◀ or ▶▶ keys when the machine is in the || status is active. If they are pressed, playback will not be possible after the || status has been canceled. If the ◀◀ or ▶▶ keys are pressed in the || status, press the ■ key and return to the start mode (No.1).

\* NOTE 3: When pressing the ◀◀ or ▶▶ keys, take care to avoid damage to the gears. Because the sled motor is activated when the ◀◀ or ▶▶ keys are pressed, even when the pick-up is at the outermost or innermost track.

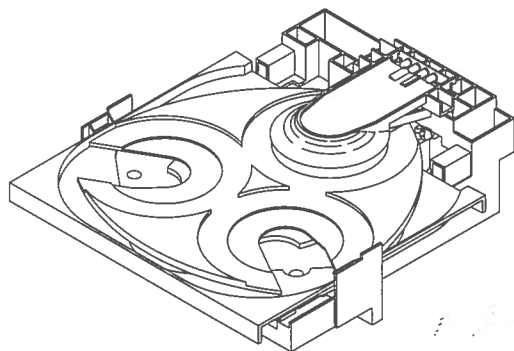
### 4. Operation Outline

The operation of each mode is carried out in the direction of the arrows from the start mode as indicated in the following illustration.



If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.

## 4ZG-1Z



CD MECHANISM

• BASIC CD MECHANISM: KSM-2131 BAM / 3ZG-2 C7

• TYPE: English, Japanese

## CORRECTION

BASIC NAME	DERIVATION NAME					
4ZG-1Z	1D	2D	1MD	—	—	—

■ This Service Manual is replaces "CORRECT Manual"(S/M Code No.09-973-187-50T ).

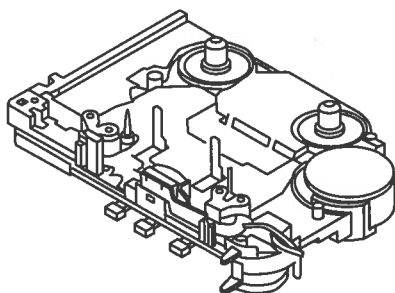
■ 本体マニュアルは(S/M Code No.09-973-187-50T )の訂正版です。

WRONG
S/M Code No.09-973-187-50T

CORRECT
S/M Code No.09-974-187-50T

サービス技術ニュース	
番号	連絡内容
G- -	
G- -	
G- -	





TAPE MECHANISM

• TYPE: English, Japanese

### 訂正版 CORRECTION

- This Service Manual contains information about correction on Service Manual of used 3ZM-1 Tape Mechanism all models.
- This Service Manual has various derivation. Derivation name is indicated by the Service Manual for each model.

・このサービスマニュアルは、3ZM-1テープメカニズムを使用した全てのサービスマニュアルについての訂正版です。  
 ・本体マニュアルはBASIC CD MECHANISMのサフィックスがDERIVATION NAMEです。組み合わせて使用してください。

BASIC NAME	DERIVATION NAME
3ZM-1	P1
	P2
	P3
	P4
	P5
	R1
	R2

# ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は "REFERENCE NAME LIST" を参照してください。  
If can't understand for Description please kindly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
---------	----------	-----------	-------------

## 3ZM-1 P1

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
PH1	87-046-418-019	1H HEAD ASSY,PH

## 3ZM-1 P2

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
PH1	87-046-418-019	1H HEAD ASSY,PH

## 3ZM-1 P3

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
PH1	87-046-418-019	1H HEAD ASSY,PH

## 3ZM-1 P4

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
PH1	87-A90-805-010	-- HEAD ASSY,PH MR52P-CF001

## 3ZM-1 P5

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
PH1	87-A90-805-010	-- HEAD ASSY,PH MR52P-CF001

## 3ZM-1 R1

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
RPH1	87-046-408-019	2A HEAD ASSY,R PH

## 3ZM-1 R2

HEAD FLEX. C.B

SW1	87-036-357-019	1A SW,SL 2-2-2(NC)
RPH1	87-046-408-019	2A HEAD ASSY,R PH

サービス技術ニュース	
番号	連絡内容
G- -	
G- -	
G- -	