aiwa
SERVICE

SERVICE MANUAL

		KSM-2131FAM
CD MECHANISM	BASIC CD MECHANISM :	3ZG-2 E1
		3ZG-2 E3
		3ZG-2 E4

TYPE	BASIC CD MECHANISM
Z3NDSH	3ZG-2 E1
Z3RDLSHJ	3ZG-2 E3
Z3RNDSHJ	3ZG-2 E1
Z3RNDSH	3ZG-2 E1
Z3RNSMDJ	3ZG-2 E1
Z3RSHMDJ	3ZG-2 E3
PZ3MD	3ZG-2 E4
Z4RNDSH	KSM-2131 FAM
Z4RNSHMDJ	KSM-2131 FAM

aiwa

DATA

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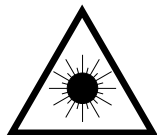
■ Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
■ Advarsel: Usynling laserståling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!

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

VARNING!

Om apparaten används på annat sätt än vad som specificeras i denna bruksanvising, kan användaren utsättas för osynling 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 laserståling ved åbning, når sikkerhedsafbrydereer 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
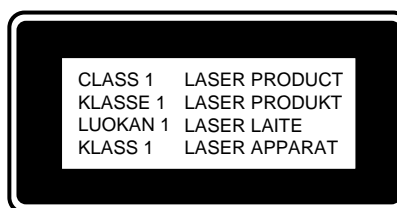
Precaution to replace Optical block
(KSS-213F)

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

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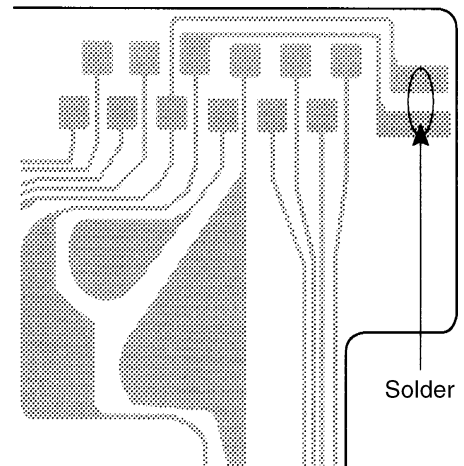
How to Adjust the Rotating Phase of the Gear, Main Cam

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.

GEAR, MAIN CAM

SLIDE, MECHA CAM

Align the arrow ▶ mark with the black round • mark.

GEAR, RELAY

GEAR, TRAY RELAY MK2

GEAR, TRAY

4
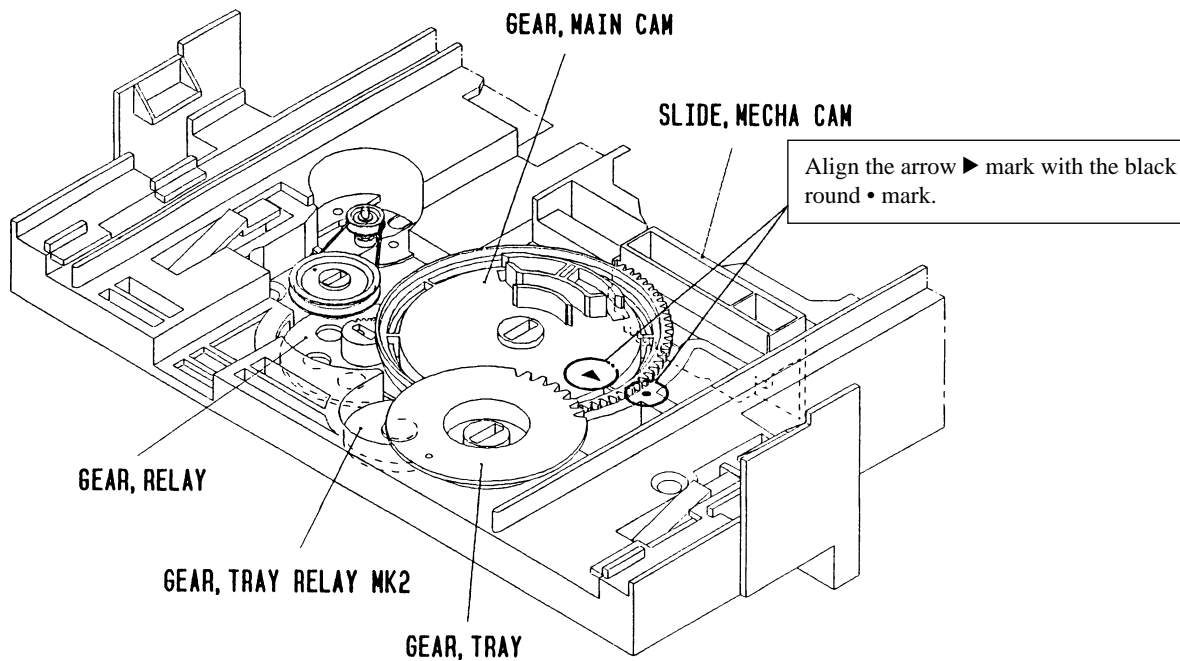
ELECTRICAL MAIN PARTS LIST

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
IC			
	87-A20-446-010		C-IC,LA9241ML
	87-A20-459-010		C-IC,LC78622ED
	87-A20-445-010		IC,BA5936
			<Z4RNDSH,Z4RNSHMDJ,Z3RNSMDJ,PZ3MD>
	88-NF9-621-010		IC,BA5936S
			<Z3NDSH,Z3RDLSHJ,Z3RNDSHJ,Z3RNDSHM>
TRANSISTOR			
	89-113-187-080		TR,2SA1318TU<Z3RNSMDJ,PZ3MD>
	87-026-609-080		TR,KTA1266GR
			<EXCEPT Z3RNSMDJ,PZ3MD>
	87-026-295-080		TR,DTC144TK
	87-A30-076-080		C-TR,2SC3052F
	89-406-554-580		TR,2SD655DE<EXCEPT Z4RNSHMDJ>
	87-A30-047-080		TR,CSD655E<Z4RNSHMDJ>
	87-A30-073-080		C-TR,RT1N 141C<Z3RDLSHJ,PZ3MD>
	87-A30-075-080		C-TR,2SA1235F
DIODE			
	87-A40-527-080		DIODE,1SS133 T-91S
	87-020-465-080		DIODE,1SS133 (110MA)
			<EXCEPT PZ3MD>
	87-A40-470-080		DIODE,1SS254<PZ3MD>
3CD C.B			
C11	87-012-393-080		C-CAP,S 0.22-16 R K
C12	87-012-157-020		C-CAP,S 330P-50 CH
C13	87-016-369-080		C-CAP,S 0.033-25 B K
C14	87-A10-201-080		C-CAP,S0.33-16 KB
C15	87-010-213-020		C-CAP,S 0.015-25 B
C16	87-016-083-080		C-CAP,S 0.15-16 RK
C17	87-010-184-020		C-CAP,S 3300P-50 B
C18	87-016-083-080		C-CAP,S 0.15-16 RK
C19	87-010-198-020		C-CAP,S 0.022-25 B<EXCEPT PZ3MD>
C19	87-016-369-080		C-CAP,S 0.033-25 B K<PZ3MD>
C20	87-010-178-020		C-CAP,S 1000P-50 B
C21	87-012-393-080		C-CAP,S 0.22-16 R K
C22	87-016-083-080		C-CAP,S 0.15-16 RK
C23	87-010-197-020		C-CAP,S 0.01-25 B
C24	87-010-186-020		C-CAP,S 4700P-50 B
C25	87-010-400-040		CAP,E 0.47-50
C26	87-010-322-020		C-CAP,S 100P-50 CH
C27	87-010-382-040		CAP,E 22-25 SME
C28	87-010-545-040		CAP,E 0.22-50 SME
C29	87-010-184-020		C-CAP,S 3300P-50 B
C31	87-010-186-020		C-CAP,S 4700P-50 B
C32	87-010-315-020		C-CAP,S 27P-50 CH<EXCEPT PZ3MD>
C32	87-010-312-020		C-CAP,S 15P-50 CH<PZ3MD>
C33	87-016-081-080		C-CAP,S 0.1-16 RK
C35	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C37	87-010-405-080		CAP, ELECT 10-50V
C38	87-010-263-080		CAP, ELECT 100-10V
C39	87-010-596-020		C-CAP,S 0.047-16 RK
C40	87-010-401-080		CAP, ELECT 1-50V
C41	87-010-805-080		CAP, S 1-16
C42	87-010-263-080		CAP, ELECT 100-10V
C43	87-010-197-020		C-CAP,S 0.01-25 B
C44	87-010-263-080		CAP, ELECT 100-10V
C46	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C47	87-010-260-080		CAP, ELECT 47-25V
C48	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C49	87-010-404-080		CAP, ELECT 4.7-50V
C50	87-010-197-020		C-CAP,S 0.01-25 B
C51	87-010-263-040		CAP,E 100-10
C52	87-012-156-080		C-CAP,S 220P-50 CH
C101	87-016-369-020		C-CAP,S 0.033-25 B K
C102	87-016-081-080		C-CAP,S 0.1-16 RK
C103	87-010-321-020		C-CAP,S 82P-50 CH
C104	87-012-154-020		C-CAP,S 150P-50 J CH GRM
C105	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C109	87-010-197-020		C-CAP,S 0.01-25 B
C111	87-010-312-020		C-CAP,S 15P-50 J CH
C112	87-010-154-020		C-CAP,S 10P-50 CH
C113	87-010-322-020		C-CAP,S 100P-50 CH
C115	87-010-404-080		CAP, ELECT 4.7-50V
C116	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C117	87-010-263-040		CAP,E 100-10
C118	87-010-178-020		C-CAP,S 1000P-50 B
C119	87-010-154-020		C-CAP,S 10P-50 CH
C121	87-010-403-080		CAP, ELECT 3.3-50V
C122	87-010-403-080		CAP, ELECT 3.3-50V
C123	87-012-157-020		C-CAP,S 330P-50 CH
C124	87-012-157-020		C-CAP,S 330P-50 CH
C131	87-010-382-080		CAP, ELECT 22-25V
C191	87-010-263-040		CAP,E 100-10
C301	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C302	87-010-382-080		CAP, ELECT 22-25V
C303	87-010-260-040		CAP,E 47-25 SME
C501	87-A10-730-080		CAP,E 1000-16 SMG
C502	87-010-197-020		C-CAP,S 0.01-25 B
C504	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C505	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C506	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C507	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C509	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C510	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C603	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C610	87-010-405-080		CAP, ELECT 10-50V
C611	87-010-405-080		CAP, ELECT 10-50V
C701	87-010-405-040		CAP,E 10-50
C705	87-010-197-020		C-CAP,S 0.01-25 B
C706	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C707	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
C711	87-010-322-020		C-CAP,S 100P-50 CH
C712	87-010-322-020		C-CAP,S 100P-50 CH
C713	87-010-322-020		C-CAP,S 100P-50 CH
C901	87-010-260-080		CAP, ELECT 47-25V
C902	87-010-196-020		C-CAP,S 0.1-25 Z F GRM
CON3	84-ZG1-648-010		CONN ASSY,6P<Z4RNDSH,Z4RNSHMDJ>
CON3	87-099-199-010		CONN,6P 6216 H
			<EXCEPT Z4RNSHMDJ>
CON4	87-099-212-010		CONN,5P 6216 V
CON5	87-099-199-010		CONN,6P 6216 H
CON6	87-099-030-010		CONN,13P 6216H
CON8	87-A60-248-010		CONN,16P H CFF1416
			<Z4RNDSH,Z4RNSHMDJ>
CON8	87-A60-429-010		CONN,16P H TOC-A
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>
CON9	87-009-345-010		CONN,2P PH H
			<Z4RNSHMDJ,Z3RNSMDJ,PZ3MD>
FC1	85-NFT-611-110		FF-CABLE 16P-1.0
FC4	84-ZG1-672-010		F-CABLE,5P 1.25 210MM WHITE N
FC5	84-ZG1-630-010		CABLE FFC 6P-1.25
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>
L11	87-005-602-080		COIL,10UH LAV35 J
L101	87-005-614-080		COIL 100UH LAV35 J
L102	87-005-602-080		COIL,10UH LAV35 J
L902	87-A50-189-080		C-COIL,S BLM21B272S
			<Z4RNSHMDJ,Z3RNSMDJ,PZ3MD>
LED901	87-A40-558-010		LED,SLZ-8128A-01-A<EXCEPT PZ3MD>
LED901	87-A40-123-010		LED,SLZ-8128A-01-B<PZ3MD>
M601	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)
R50	88-118-124-020		C-RES,S 120K-1/10W J
			<EXCEPT PZ3MD>
R51	88-118-124-020		C-RES,S 120K-1/10W J
			<EXCEPT PZ3MD>

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
R52	88-118-124-020		C-RES,S 120K-1/10W J
			<EXCEPT PZ3MD>
R53	88-118-124-020		C-RES,S 120K-1/10W J
			<EXCEPT PZ3MD>
SFR101	87-A90-787-080		SFR,100K H HOKU
SW701	87-036-109-010		PUSH SWITCH
SW702	87-036-109-010		PUSH SWITCH
X101	87-A70-046-010		VIB,XTAL 16.934MHZ

LED C.B<Z3RDLSHJ,PZ3MD>

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
LED701	87-A40-316-080		LED,SLR-56PCT31 GRN<PZ3MD>
LED702	87-A40-316-080		LED,SLR-56PCT31 GRN<Z3RDLSHJ>
LED702	87-A40-268-080		LED,SLH-56DCT31 ORN<PZ3MD>
LED703	87-A40-268-080		LED,SLH-56DCT31 ORN
			<Z3RDLSHJ,PZ3MD>
LED704	87-A40-316-080		LED,SLR-56PCT31 GRN<PZ3MD>

T-T C.B

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
C401	87-A11-148-080		CAP,TC U 0.1-50 Z F
CON401	86-NFZ-675-010		CONN,5P H 6216-11H
M401	87-045-364-010		MOTOR(BCH3B14)
PS401	87-026-573-010		IC,GP1S53V
			<Z4RNDSH,Z4RNSHMDJ,Z3RNSMDJ,PZ3MD>
PS401	88-NF9-627-010		SNSR,SG-240
			<Z3NDSH,Z3RDLSHJ,Z3RNDSHJ,Z3RNDSHM>

DRIVE C.B<EXCEPT Z4RNDSH,Z4RNSHMDJ>

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
M1	87-045-358-010		MOT,RF-310TA 43
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>
M2	87-045-356-010		MOT,RF-310TA 30
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>
SW1	87-A90-042-010		SW,MSW-17310MVPO
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>

MOTOR C.B<Z4RNDSH,Z4RNSHMDJ>

REF. NO	PART NO.	KANRI NO.	DESCRIPTION
M2	9X-262-513-210		SLED MOTOR<Z4RNDSH,Z4RNSHMDJ>
PIN3	91-564-722-110		CONNECTOR 6P<Z4RNDSH,Z4RNSHMDJ>
SW1	91-572-085-110		LEAF SW<Z4RNDSH,Z4RNSHMDJ>

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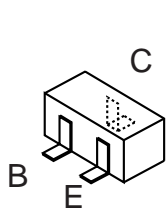
○チップ抵抗部品コード／CHIP RESISTOR PART CODE

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

8 8 − □□□ □□□

A
抵抗部品コード
Resistor Code

桁表示
Figure

抵抗値
Value of resistor
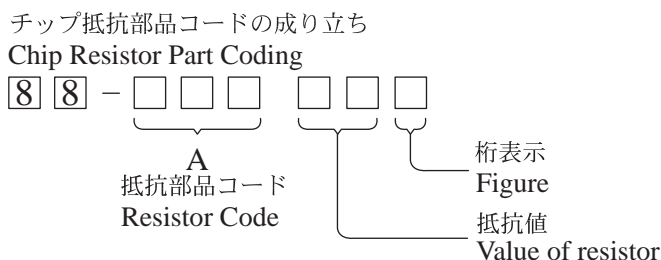
チップ抵抗
Chip resistor

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
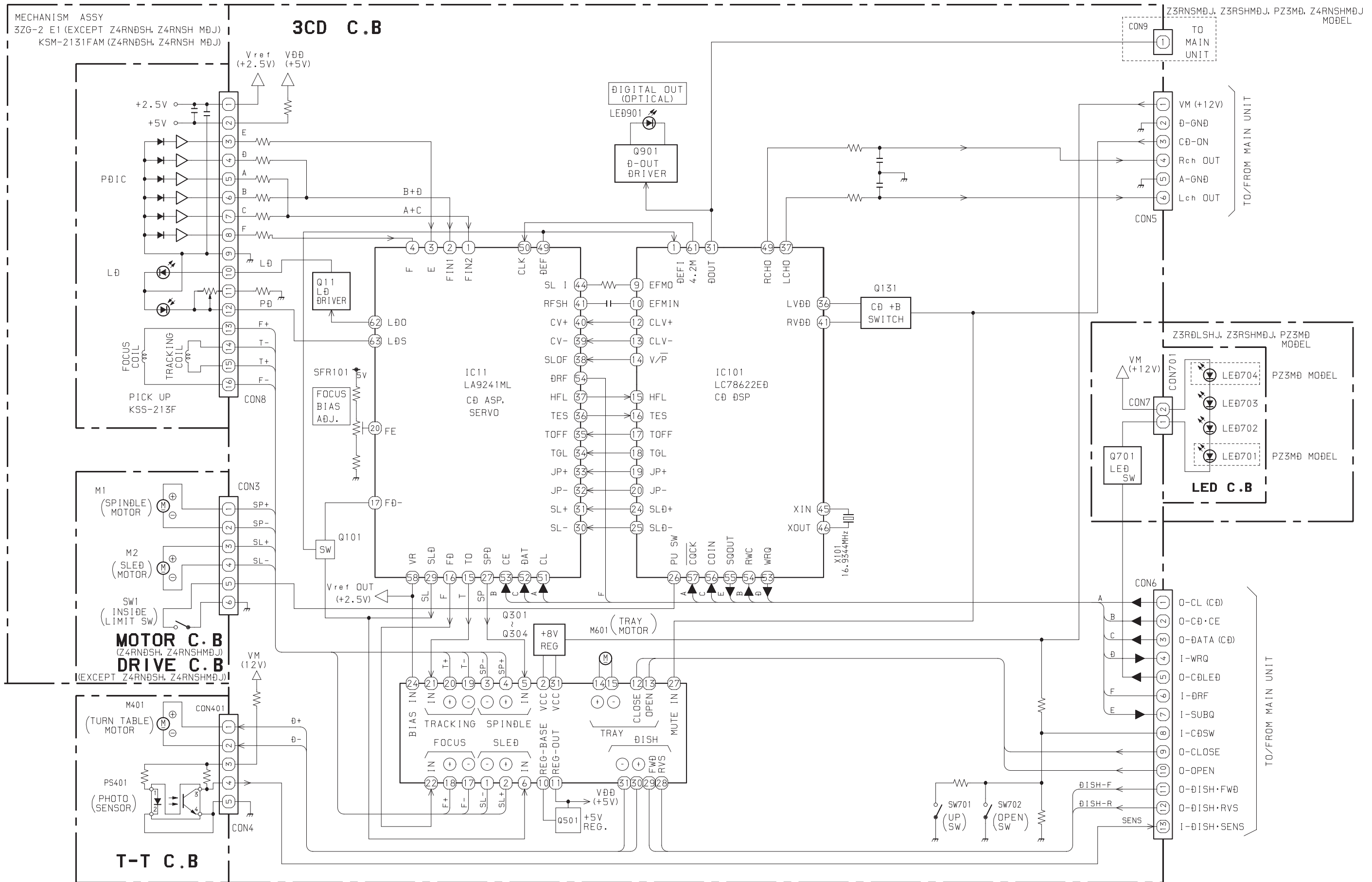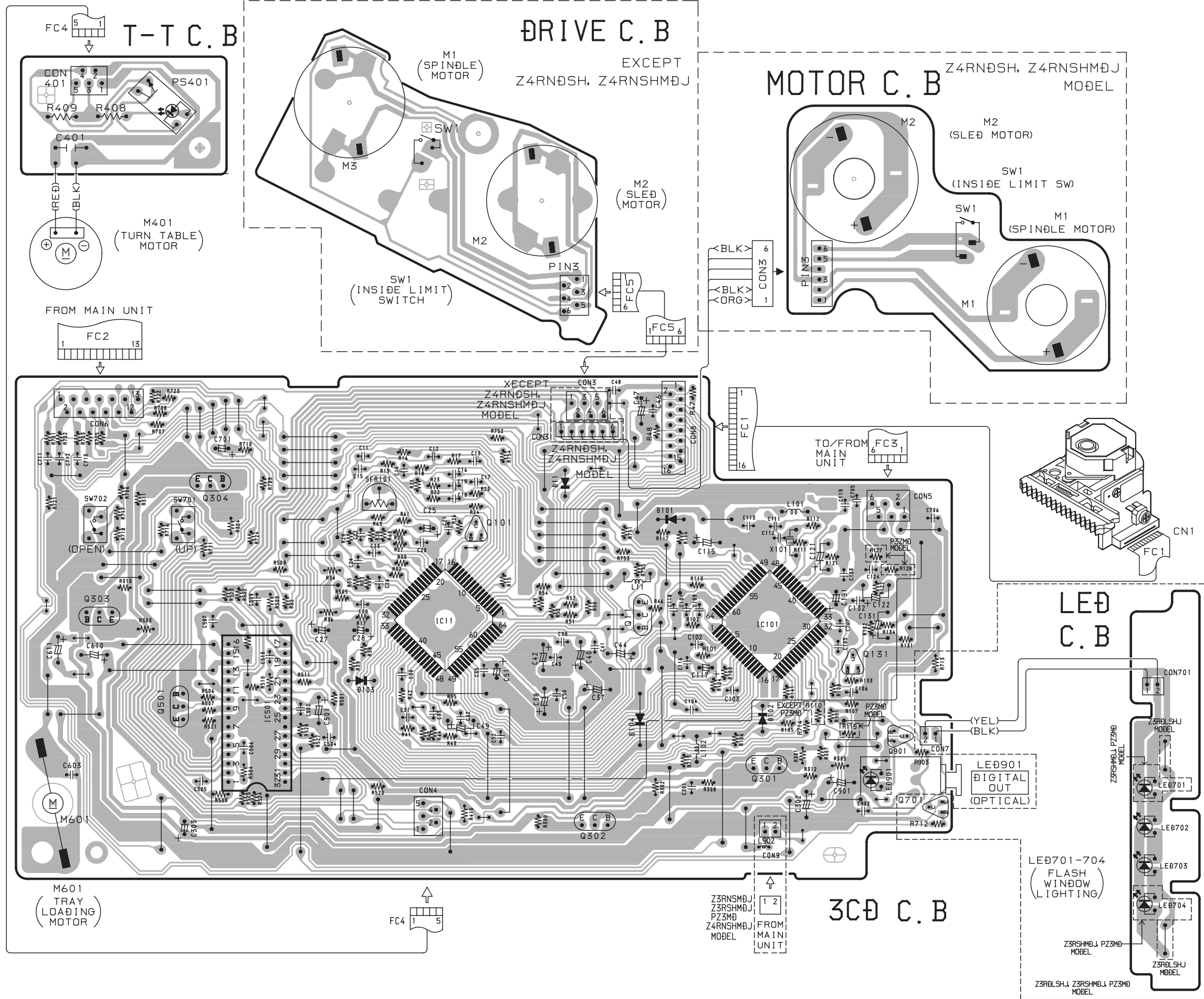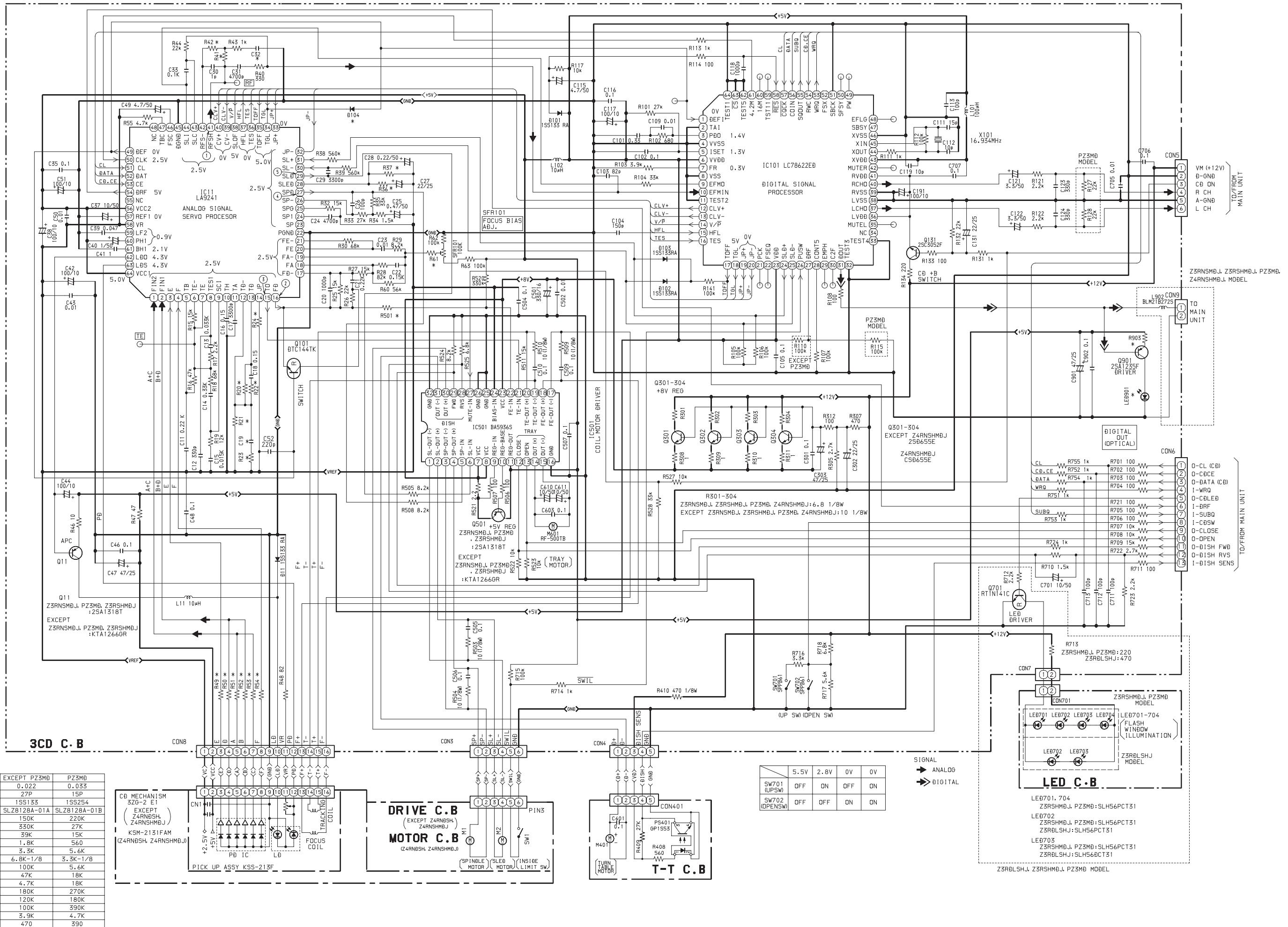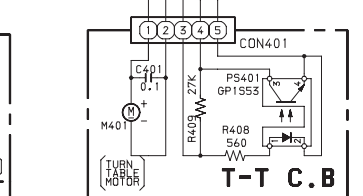

2SA1235
2SC3052
DTC144TK

2SD655
KTA1266

BLOCK DIAGRAM
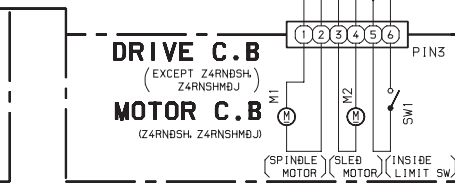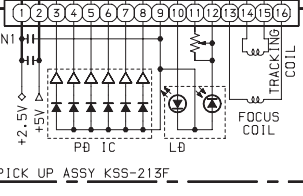
T-T C.B

DRIVE C.B
EXCEPT
Z4RNĐSH, Z4RNSHMĐJ

MOTOR C.B
Z4RNĐSH, Z4RNSHMĐJ
MOĐEL

LEĐ C.B

3CĐ C.B

SCHEMATIC DIAGRAM

WAVE FORM

① IC11 Pin ㊵ (RFSM)   VOLT/DIV: 0.5V
                             TIME/DIV: 1μS

MAX
2.0±0.1 Vp-p

0 V

EYE PATTERN
must be CLEAR and MAX

② IC11 Pin ⑯ (FD)   VOLT/DIV: 100mV
                           TIME/DIV: 1mS

VREF

③ IC11 Pin ⑮ (TO)   VOLT/DIV: 100mV
                           TIME/DIV: 1mS

VREF

④ IC11 Pin ㉗ (SPD)   VOLT/DIV: 100mV
                             TIME/DIV: 1mS

VREF

⑤ IC11 Pin ㉙ (SLD)   VOLT/DIV: 200mV
                             TIME/DIV: 2S

VREF

IC BLOCK DIAGRAM

IC, BA5936
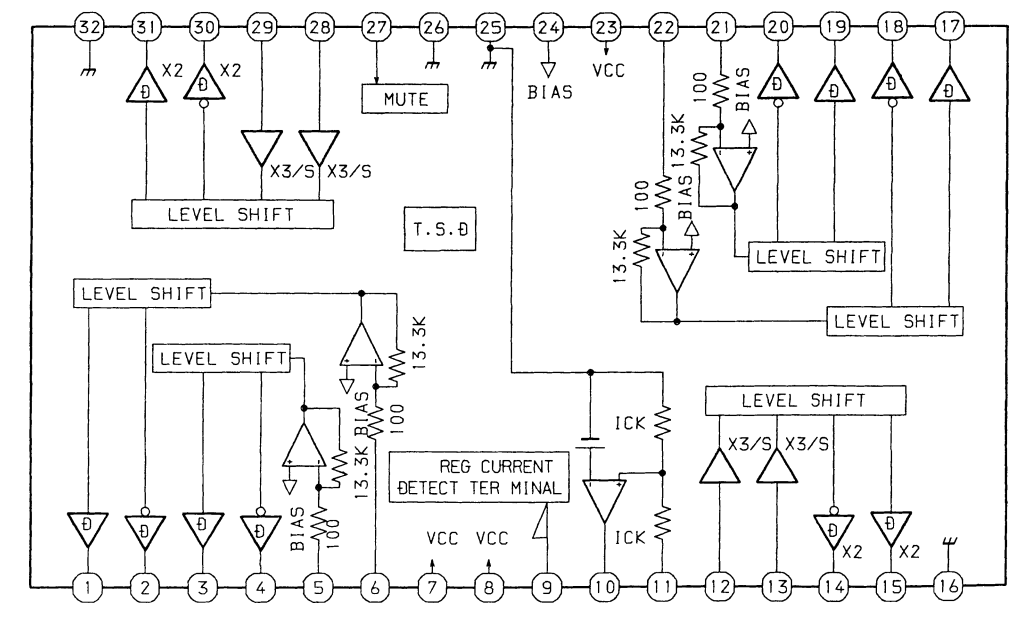
IC DESCRIPTION
IC, LA9241M

Pin No.	Pin Name	I/O	Description
1	FIN2	I	Pin to which external pickup photo diode is connected. RF signal is created by adding with the FIN1 pin signal. FE signal is created by subtracting from the FIN1 pin signal.
2	FIN1	I	Pin to which external pickup photo diode is connected.
3	E	I	Pin to which external pickup photo diode is connected. TE signal is created by subtracting from the F pin signal.
4	F	I	Pin to which external pickup photo diode is connected.
5	TB	I	DC component of the TE signal is input.
6	TE–	I	Pin to which external resistor setting the TE signal gain is connected between the TE pin.
7	TE	O	TE signal output pin.
8	TESI	I	TES "Track Error Sense" comparator input pin. TE signal is passed through a band-pass filter then input.
9	SCI	I	Shock detection signal input pin.
10	TH	I	Tracking gain time constant setting pin.
11	TA	O	TA amplifier output pin.
12	TD–	I	Pin to which external tracking phase compensation constants are connected between the TD and VR pins.
13	TD	I	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	Pin to which external focusing phase compensation constants are connected between the FD and FA pins.
18	FA	I	Pin to which external focusing phase compensation constants are connected between the FD– and FA– pins.
19	FA–	I	Pin to which external focusing phase compensation constants are connected between the FA and FE pins.
20	FE	O	FE signal output pin.
21	FE–	I	Pin to which external FE signal gain setting resistor is connected between the FE pin.
22	AGND	—	Analog signal GND.
23	NC	—	No connection.
24	SP	O	Single ended output of the CV+ and CV– pin input signal.
25	SPG	I	Pin to which external spindle gain setting resistor in 12 cm mode is connected.
26	SP–	I	Pin to which external spindle phase compensation constants are connected together with SPD pin.
27	SPD	O	Spindle control signal output pin.
28	SLEQ	I	Pin to which external sled phase compensation constants are connected.
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 from DSP. Low gain when TGL = H.
35	TOFF	I	Tracking off control signal input pin from DSP. Off when TOFF = H.

Pin No.	Pin Name	I/O	Description
36	TES	O	Pin from which TES signal is output to DSP.
37	HFL	O	"High Frequency Level" is used to judge whether the main beam position is on top of bit or on top of mirror.
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 EFM signal 3T compensation constant setting pin together with RFSM pin.
43	SLC	O	"Slice Level Control" is the output pin which controls the RF signal data slice level by DSP.
44	SLI	I	Input pin which control the data slice level by the DSP.
45	DGND	—	Digital system GND.
46	FSC	O	Output pin to which external focus search smoothing capacitor is connected.
47	TBC	I	"Tracking Balance Control" EF balance variable range setting pin.
48	NC	—	No connection.
49	DEF	O	Disc defect detector output pin.
50	CLK	I	Reference clock input pin. 4.23 MHz of the DSP is input.
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 detector output.
55	FSS	I	"Focus Search Select" focus search mode (± search/+ search) select pin.
56	VCC2	—	Servo system and digital system Vcc pin.
57	REFI	—	Pin to which external bypass capacitor for reference voltage is connected.
58	VR	O	Reference voltage output pin.
59	LF2	I	Disc defect detector time constant setting pin.
60	PH1	I	Pin to which external capacitor for RF signal peak holding is connected.
61	BH1	I	Pin to which external capacitor for RF signal bottom holding is connected.
62	LDD	O	APC circuit output pin.
63	LDS	I	APC circuit input pin.
64	VCC1	—	RF system Vcc pin.

IC, LC78622ED

Pin No.	Pin Name	I/O	Description	
1	DEFI	I	Defect sense signal (DEF) input pin. (Connect to 0V when not used).	
2	TAI	I	For PLL.	Test signal input pin with built-in pull-down resistor. Be sure to connect to 0V.
3	PDO	O		Phase comparator output pin to control external VCO.
4	VVSS	—		GND pin for built-in VCO. Be sure to connect to 0V.
5	ISET	I		Pin to which external resistor adjusting the PD0 output current.
6	VVDD	—		Power supply pin for built-in VCO.
7	FR	I		Pin for VCO frequency range adjustment.
8	VSS	—	Digital system GND. Be sure to connect to 0V.	
9	EFMO	O	For slice level control.	EFM signal output pin.
10	EFMIN	I		EFM signal input pin.
11	TEST2	I	Test signal input pin with built-in pull-down resistor. Be sure to connect to 0V.	
12, 13	CLV+, CLV–	O	Disc motor control output. Three level output is possible using command.	
14	$V/\overline{P}$	O	Rough servo or phase control automatic selection monitoring output pin. Rough servo at H. Phase servo at L.	
15	HFL	I	Track detect signal input pin. Schmidt input.	
16	TES	I	Tracking error signal input pin. Schmidt input.	
17	TOFF	O	Tracking OFF output pin.	
18	TGL	O	Tracking gain selection output pin. Gain boost at L.	
19, 20	JP+, JP–	O	Track jump control signal output pin. Three level output is possible using command.	
21	PCK	O	EFM data playback clock monitoring pin 4.3218 MHz when phase is locked in.	
22	FSEQ	O	Sync signal detection output pin. H when the sync signal which is detected from EFM signal and thesync signal which is internally generated agree.	
23	VDD	—	Digital system power supply pin.	
24-28	SL+ - PUIN	I/O	General purpose input/output pin 1 to 5.	The pin is controlled by the serial data command from microprocessor. When the pin is not used, set the pin to the input terminal and connect to 0V, or alternately set the pin to output terminal and leave the pin open.
29	EMPH	O	De-emphasis monitor output pin. De-emphasis disc is being played back at H.	
30	C2F	O	C2 flag output pin.	
31	DOUT	O	DIGITAL OUT output pin. (EIAJ format).	
32, 33	TEST3, TEST4	I	Test signal input pin with built-in pull-down resistor. Be sure to connect to 0V.	
34	N.C.	—	Not used. Set the pin to open.	
35	MUTEL	O	L-channel 1-bit DAC.	L-channel mute output pin.
36	LVDD	—		L-channel power supply pin.
37	LCHO	O		L-channel output pin.
38	LVSS	—		L-channel GND. Be sure to connect to 0V.
39	RVSS	—	R-channel 1-bit DAC.	R-channel GND. Be sure to connect to 0V.
40	RCHO	O		R-channel output pin.
41	RVDD	—		R-channel power supply pin.
42	MUTER	O		R-channel mute output pin.

Pin No.	Pin Name	I/O	Description
43	XVDD	—	Crystal oscillator power supply pin.
44	XOUT	O	Pin to which external 16.9344 MHz crystal oscillator is connected.
45	XIN	I	
46	XVSS	—	Crystal oscillator GND pin. Be sure to connect to 0V.
47	SBSY	O	Subcode block sync signal output pin.
48	EFLG	O	C1, C2, single and dual correction monitoring pin.
49	PW	O	Subcode P, Q, R, S, T, U and W output pin.
50	SFSY	O	Subcode frame sync signal output pin. Falls down when subcode enters standby.
51	SBCK	I	Subcode read clock input pin. Schmidt input. (Be sure to connected to 0V when not in use.)
52	FSX	O	Pin outputting the 7.35 kHz sync signal which is generated by dividing frequency of crystal oscillator.
53	WRQ	O	Subcode Q output standby output pin.
54	RWC	I	Read/write control input pin. Schmidt input.
55	SQOUT	O	Subcode Q output pin.
56	COIN	I	Command input pin from microprocessor.
57	$\overline{\text{CQCK}}$	I	Command input read clock or subcode read input clock from SQOUT pin
58	$\overline{\text{RES}}$	I	LC78622 reset input pin. Set this pin to L once when the main power is turned on.
59	TST11	O	Test signal output pin. Use this pin as open (normally L output).
60	16M	O	16.9344 MHz output pin.
61	4.2M	O	4.2336 MHz output pin.
62	TEST5	I	Test signal input pin with built-in pull-down resistor. Be sure to connect to 0V.
63	$\overline{\text{CS}}$	I	Chip select signal input pin with built-in pull-down resistor. Be sure to connect to 0V while it is not controlling.
64	TEST1	I	Test signal input pin without built-in pull-down resistor. Be sure to connect to 0V.

Note: The same potential must be applied to the respective power supply terminals. (VDD, VVDD, LVDD, RVDD, XVDD)

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. • CD block power is ON.	• FL display check (All displays light.)
Search mode No.2	■ key		• Laser diode turns always ON. • Continual focus search (The pickup lens repeats the full-swing up-down motion.) * Avoid continual searches that last for more than 10 minutes. * NOTE 1	• APC circuit check • Laser current measurement (Laser current control. Across a resistor connected between emitter and GND.) FOCUS SERVO • Check focus search waveform • Check focus error waveform (FOK/FZC are not monitored in the search mode)
Play mode No.3	◄ ► key		• Normal playback • Focus search is continued if TOC cannot be read. * NOTE 1	FOCUS SERVO/TRACKING SERVO CLV SERVO/SLED SERVO Check DRF
Traverse mode No.4	‖ key		• During normal disc playback Press once; tracking servo OFF Press twice; tracking servo ON * NOTE 2	TRACKING SERVO ON/OFF Tracking balance (traverse) check
Sled mode No.5	⧏ key ⧐	All lamps light	• Pickup moves to the outermost track • Pickup moves to the innermost track * NOTE 3 (During playback, machine operates normally.)	SLED SERVO 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.
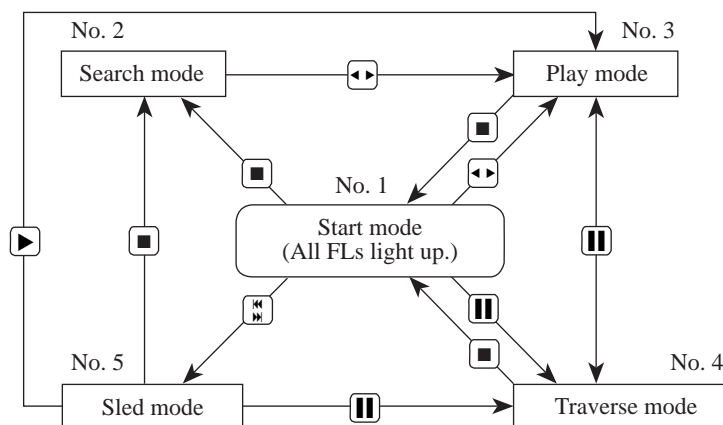
If the DISC DIRECT PLAY button is pressed, the machine performs the same operation as the PLAY button is pressed as shown. If the tray is opened by pressing OPEN/CLOSE button during Play mode or Traverse mode, the machine returns to the Start mode.
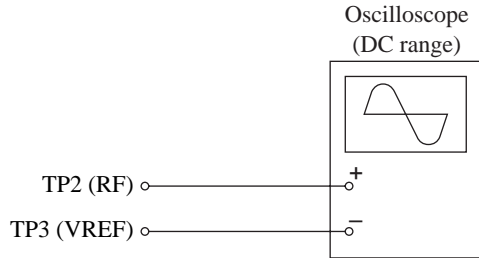
3CD C.B (PATTERN SIDE)

R46

TP3 (VREF)

58

IC11   41

TP1 (TE)

R16

① SFR101

TP2 (RF)
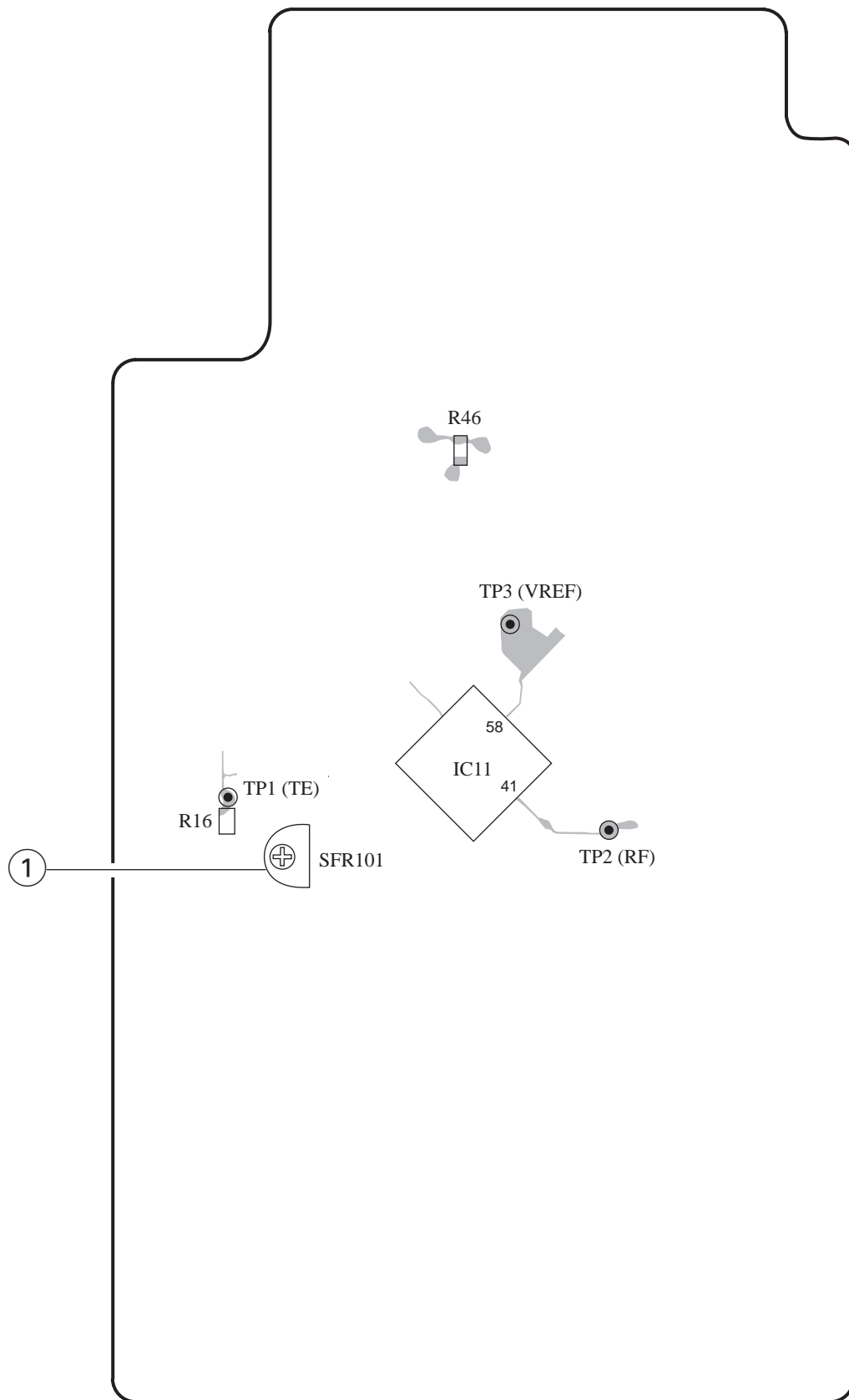
Note: • Connect a probe (10: 1) of the oscilloscope test point for adjustment.
• Connect ground (⊖) terminal of oscilloscope probe to TP3 (VREF) for all adjustment.

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

Oscilloscope
(DC range)

TP2 (RF) o————————— +
TP3 (VREF) o————————— −

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) Adjust SFR101 so that RF signal of the test point TP2 (RF) is MAX and CLEARREST.

MAX
1.4±0.1 Vp-p

0V

EYE PATTERN
must be CLEAR and MAX.
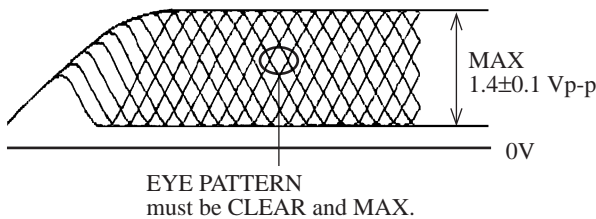
VOLT/DIV: 0.5V
TIME/DIV: 0.5μS

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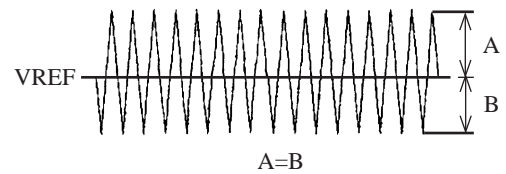The difference for the specified value shown on the label must be within ± 6.0mA.

KSS-213B
15165
SG442 ←———— 44.2mA
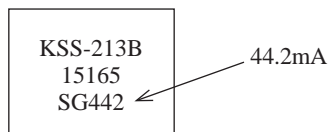
$$\text{Laser current Iop} = \frac{\text{Voltage across R46}}{10\Omega}$$

2. Tracking Balance Check

Oscilloscope
(DC range)
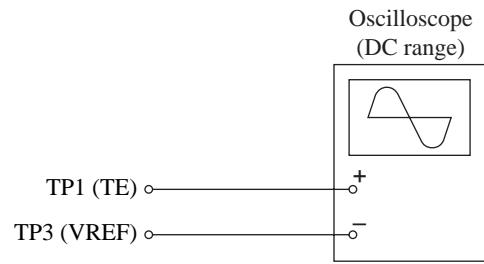
TP1 (TE) o————————— +
TP3 (VREF) o————————— −

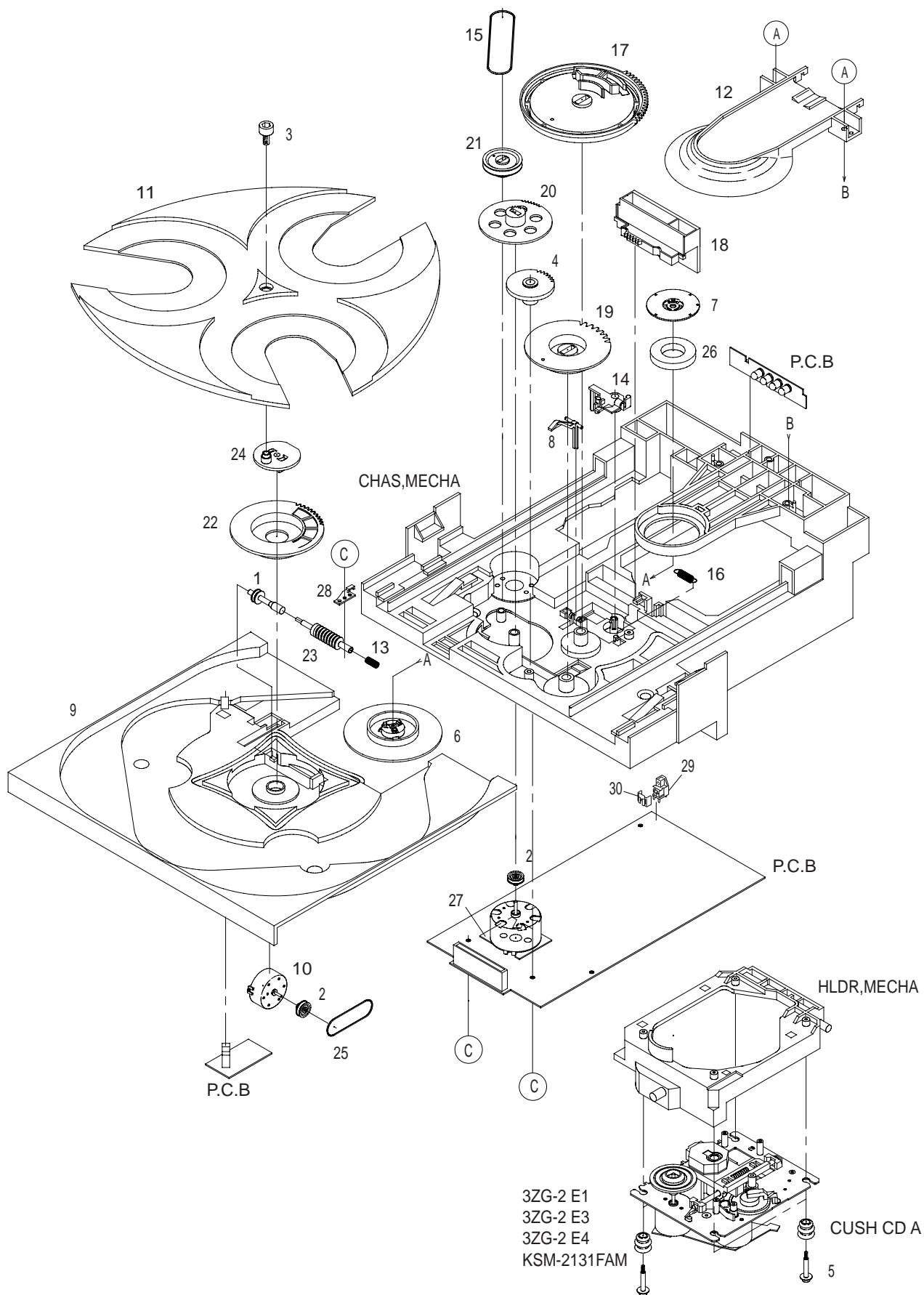1) Connect an oscilloscope to test points TP1 (TE) and TP3 (VREF).
2) Start up the CD test mode.
3) Insert the test disc TCD-782 (YEDS-18) and enter the traverse mode of the CD test mode.
4) Confirm that the traverse waveform on an oscilloscope is vertically symmetrical as shown in the figure below.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

VREF

A
B

A=B

VOLT/DIV: 20mV
TIME/DIV: 1mS

15

3

17

A

21

12

A

11

20

B

18

4

19

7

26

P.C.B

24

8

14

B

CHAS,MECHA

22

16

C

A

28

1

13

23

A

9

6

29

30

2

10

27

C

2

25

C

P.C.B

P.C.B

C

HLDR,MECHA

3ZG-2 E1
3ZG-2 E3
3ZG-2 E4
KSM-2131FAM

CUSH CD A
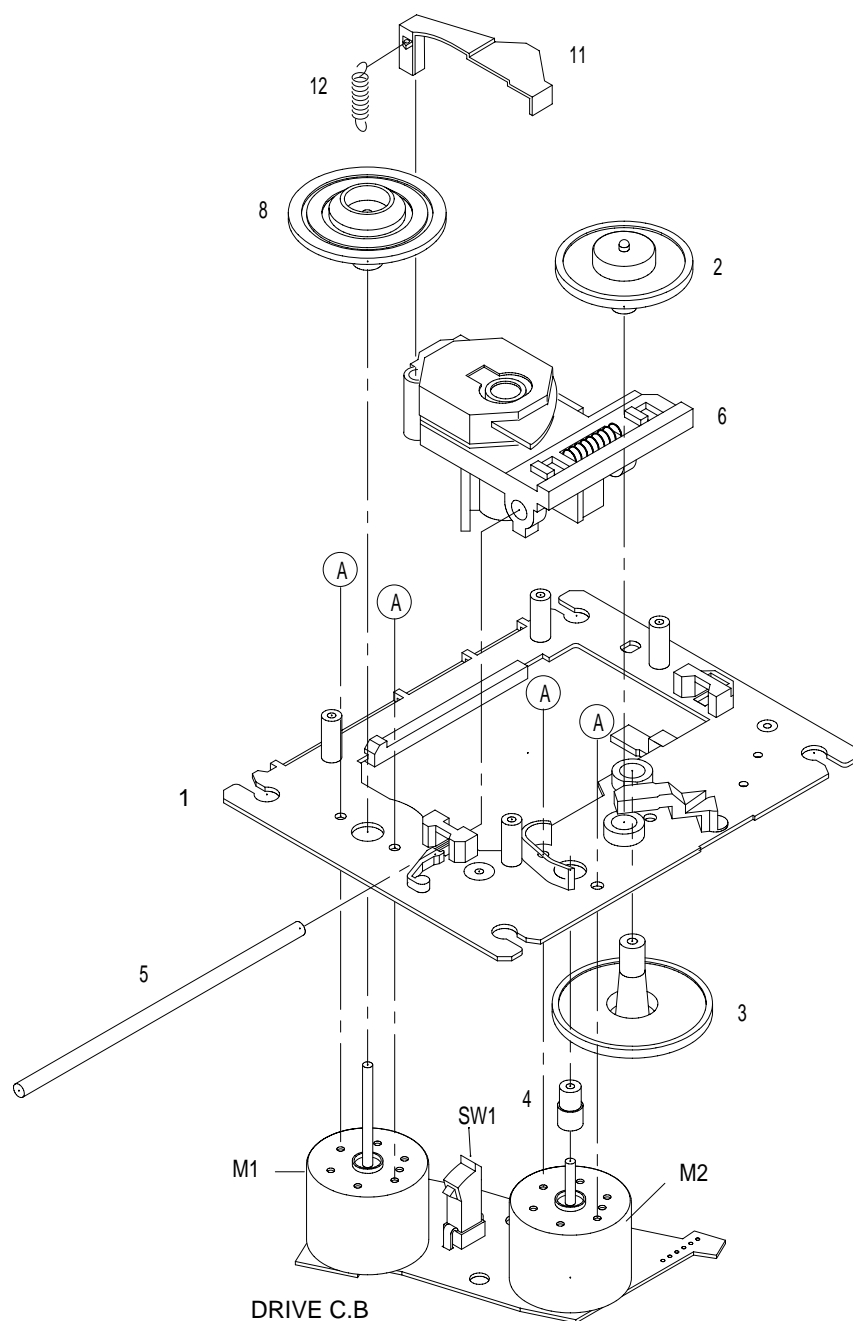
5

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
1	84-ZG1-239-210		PULLY,WORM N
2	84-ZG1-267-010		PULLEY,LOAD MO 8
			<EXCEPT Z4RNDSH,Z4RNSHMDJ,PZ3MD>
2	81-ZG1-212-010		PULLY,LOAD MO
			<Z4RNDSH,Z4RNSHMDJ,PZ3MD>
3	81-ZG1-239-010		S-SCREW,TT
4	81-ZG1-291-110		GEAR,TRAY RELAY NO3
5	81-ZG1-271-010		S-SCREW MECH REAR
6	84-ZG1-290-010		HLDR,MAGNET J NAT
			<Z4RNSHMDJ,Z3RNDSHJ,Z3RNSMDJ>
6	84-ZG1-295-010		HLDR,MAGNET JV<Z3RDLSHJ>
6	84-ZG1-289-010		HLDR,MAGNET NAT
			<Z4RNDSH,Z3NDSH,Z3RNDSHM>
7	81-ZG1-229-110		PLATE,MAGNET
			<Z4RNDSH,Z4RNSHMDJ,PZ3MD>
7	81-ZG1-255-110		PLATE,MAGNET MK2
			<EXCEPT Z4RNDSH,Z4RNSHMDJ,PZ3MD>
8	83-ZG3-213-010		LVR,SW
9	84-ZG1-003-310		TRAY,NO2-B<Z3NDSH,PZ3MD>
9	84-ZG1-008-210		TRAY,NO3<EXCEPT Z3NDSH,PZ3MD>
10	87-045-364-010		MOTOR(BCH3B14)
11	84-ZG1-005-210		TURNTABLE,NO1(*)
12	84-ZG1-011-010		REFLECTOR,CD<Z3RDLSHJ,PZ3MD>
13	84-ZG1-248-010		SPR-C,WORM
14	84-ZG1-208-210		LEVER,CAM<PZ3MD>
14	84-ZG1-266-010		LEVER,CAN 8<EXCEPT PZ3MD>
15	84-ZG1-209-010		BELT,SQ1.8-117.7
16	84-ZG1-211-010		SPR-E CAM S
17	84-ZG1-203-410		GEAR,MAIN CAM
			<EXCEPT Z3RDLSHJ,PZ3MD>
17	84-ZG1-215-410		GEAR,MAIN CAM BLU<Z3RDLSHJ,PZ3MD>
18	84-ZG1-216-310		SLIDE,MECHA CAM YEL
			<Z3RDLSHJ,PZ3MD>
18	84-ZG1-204-310		SLIDER,MECHA CAM
			<EXCEPT Z3RDLSHJ,PZ3MD>
19	84-ZG1-205-210		GEAR,TRAY (*)
20	84-ZG1-206-110		GEAR,RELAY<PZ3MD>
20	84-ZG1-274-010		GEAR,RELAY 8<EXCEPT PZ3MD>
21	84-ZG1-207-010		PULLEY,RELAY
22	84-ZG1-221-010		GEAR,MAIN TT<PZ3MD>
22	84-ZG1-269-010		GEAR,MAIN TT 4<EXCEPT PZ3MD>
23	84-ZG1-238-010		GEAR,WORM N
24	84-ZG1-224-010		LEVER,TT<Z3RDLSHJ,PZ3MD>
24	84-ZG1-288-010		LEVER,TT NAT
			<EXCEPT Z3RDLSHJ,PZ3MD>
25	84-ZG1-225-010		BELT,SQ1.0-63.3
26	84-ZG1-300-010		MAGNET,CLAMPER 4P
			<EXCEPT Z4RNDSH,Z3RDLSHJ,Z4RNSHMDJ>
26	84-ZG1-296-010		MAGNET,CLAMPER 93ZZ<Z3RDLSHJ>
26	84-ZG1-268-010		MAGNET,CLAMPER 97
			<Z4RNDSH,Z4RNSHMDJ>
27	87-045-305-010		MOTOR, RF-500TB DC-5V (2MA)
28	84-ZG1-259-010		SPR-P,WORM
29	84-ZG1-244-310		CABI,OPTICAL
			<EXCEPT Z4RNDSH,Z4RNSHMDJ>
29	84-ZG1-276-010		CABI,OPTICAL C<Z4RNDSH,Z4RNSHMDJ>
30	84-ZG1-261-010		LID,OPTICAL
31	84-ZG1-287-010		HLDR,MECHA NAT
			<EXCEPT Z3RDLSHJ,PZ3MD>
32	84-ZG1-286-010		CHAS,MECHA NAT
			<EXCEPT Z3RDLSHJ,PZ3MD>
A	87-067-703-010		TAPPING SCREW, BVT2+3-10
			<Z3RDLSHJ,PZ3MD>
C	87-067-981-010		BVT2+3-6 BLK

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		

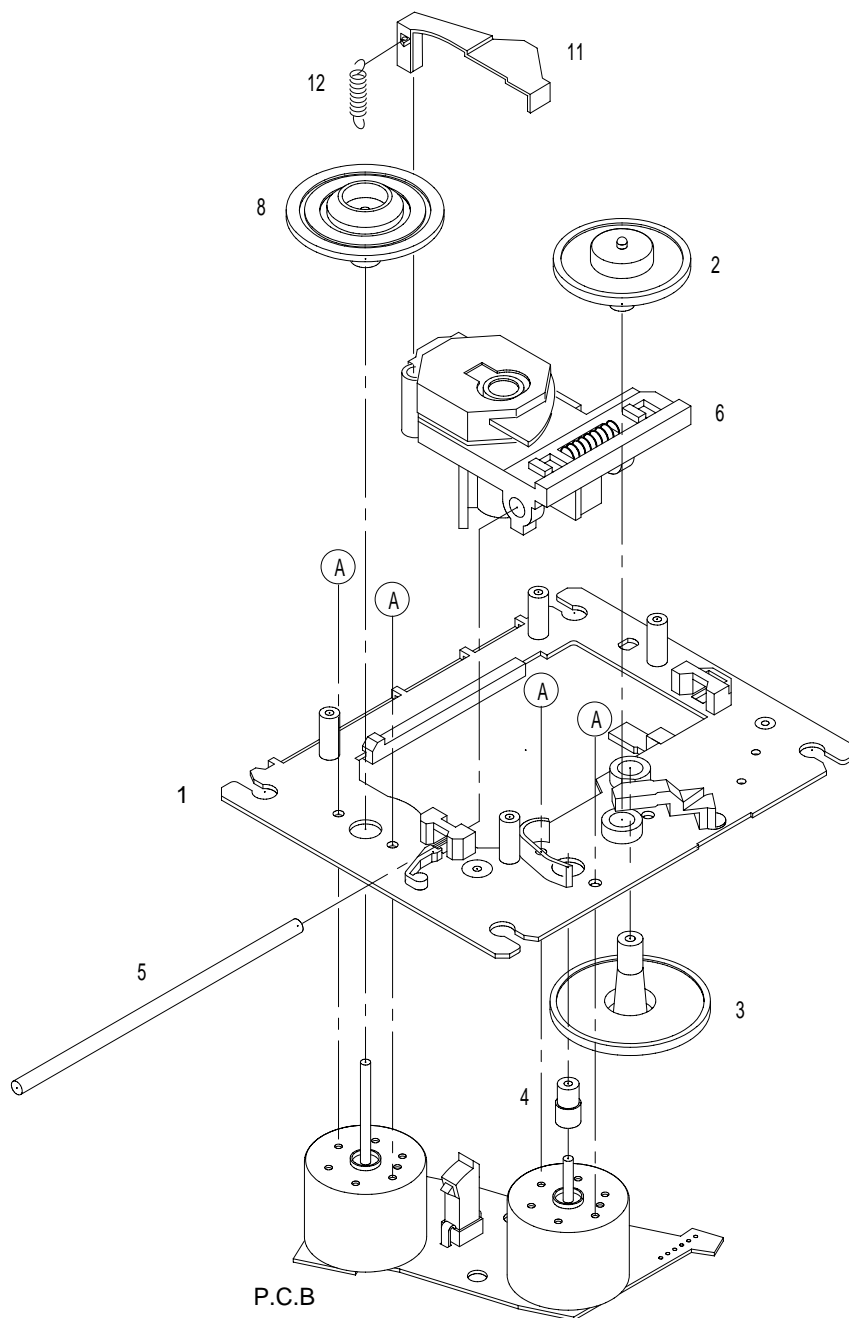# CD MECHANISM EXPLODED VIEW 1/1 (3ZG-2 E1)

CD MECHANISM PARTS LIST 1/1 (3ZG-2 E1)

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-ZG2-243-110		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-ZG2-240-010		SHAFT,SLIDE 3
6	87-A90-836-010		PICKUP,KSS-213F
8	83-ZG2-233-010		TURN TABLE,A5
11	83-ZG2-245-110		LEVER,SHUTTER
12	83-ZG2-250-010		SPR-E,SHT 2
A	87-261-032-210		SCREW V+2-3

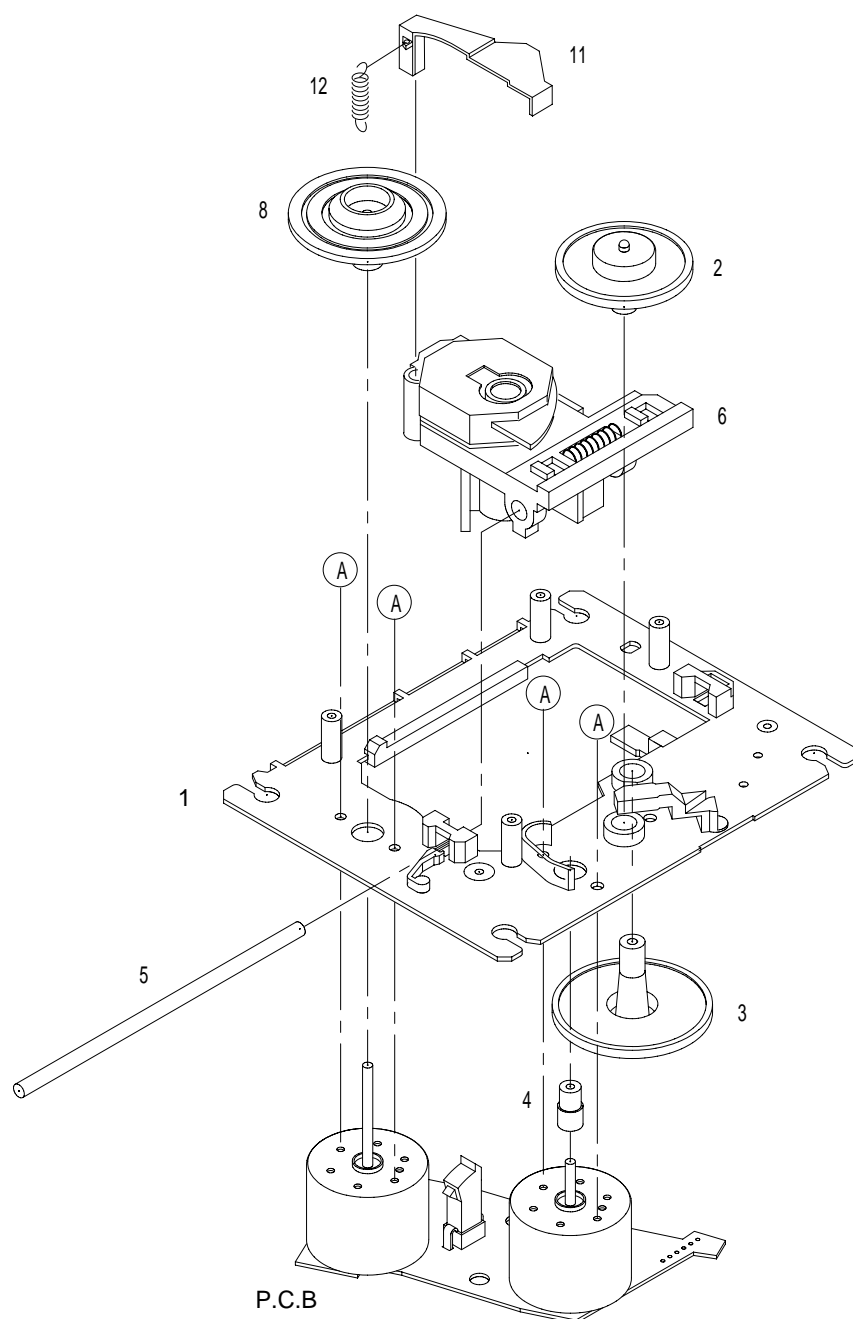# CD MECHANISM EXPLODED VIEW 1/1 (3ZG-2 E3)

P.C.B

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

> 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

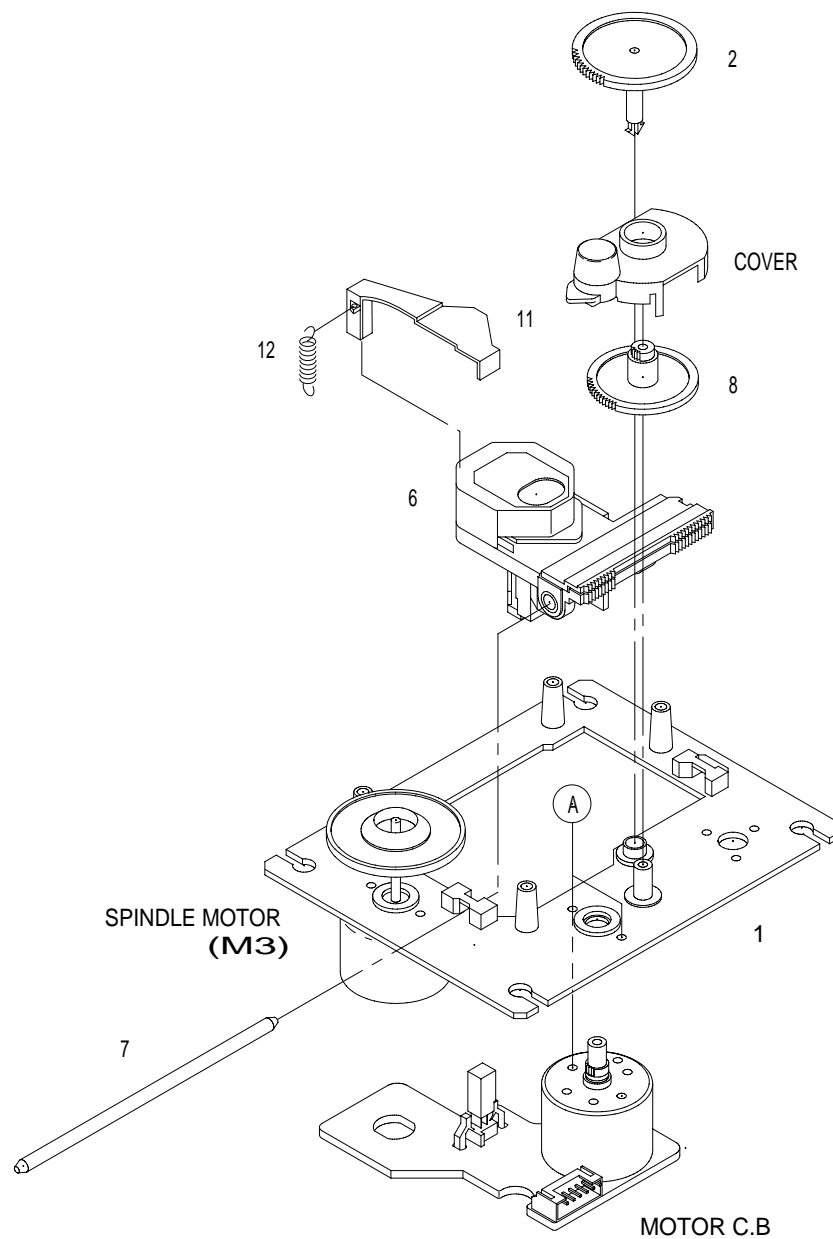# CD MECHANISM EXPLODED VIEW 1/1 (3ZG-2 E4)

P.C.B

CD MECHANISM PARTS LIST 1/1 (3ZG-2 E4)

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-ZG2-251-010		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 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

番号	連絡内容
G— —	
G— —	
G— —	

▶