

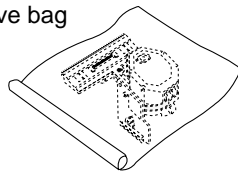
# SERVICING PRECAUTIONS

## NOTES REGARDING HANDLING OF THE PICK-UP

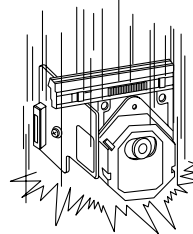
### 1. Notes for transport and storage

- 1) The pick-up should always be left in its conductive bag until immediately prior to use.
- 2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag

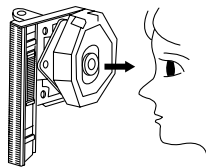


Drop impact



### 2. Repair notes

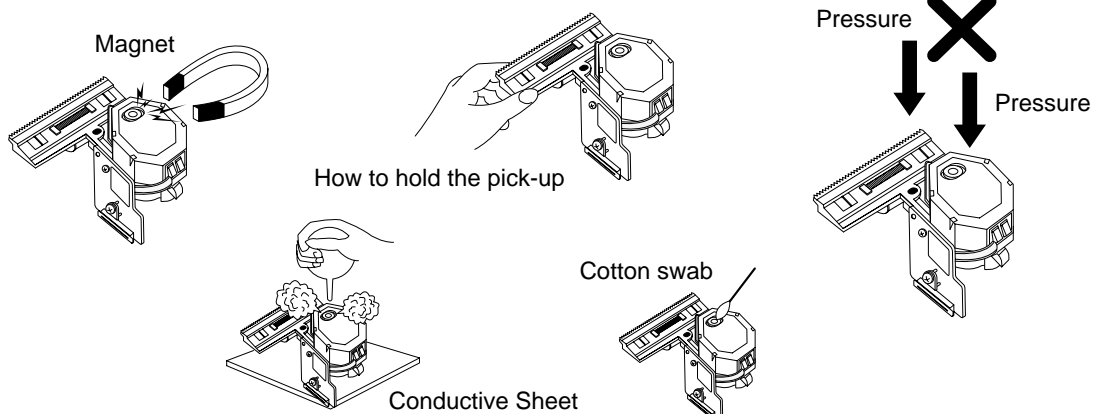
- 1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
- 2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
- 3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
- 4) Laser beams may damage the eyes!  
Absolutely never permit laser beams to enter the eyes!  
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

#### 5) Cleaning the lens surface

If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



#### 6) Never attempt to disassemble the pick-up.

Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

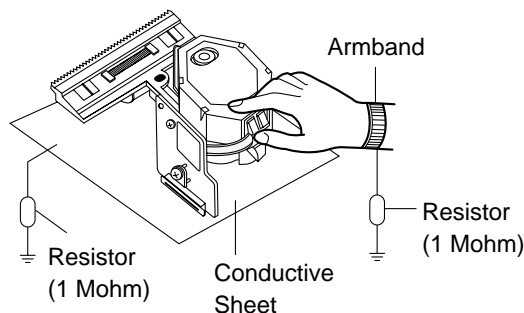
# NOTES REGARDING COMPACT DISC PLAYER REPAIRS

## 1. Preparations

- 1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
- 2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

## 2. Notes for repair

- 1) Before replacing a component part, first disconnect the power supply lead wire from the unit
- 2) All equipment, measuring instruments and tools must be grounded.
- 3) The workbench should be covered with a conductive sheet and grounded.  
When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
- 4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
- 5) Workers should be grounded by an armband (1MΩ)
- 6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
- 7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



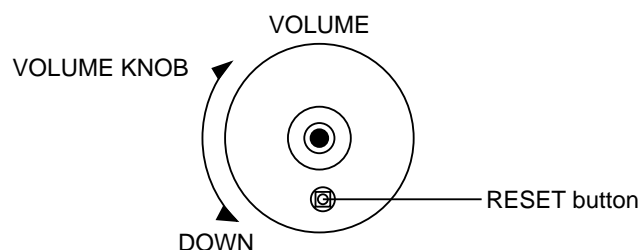
## CLEARING MALFUNCTION

You can reset your unit to initial status if malfunction occur(button malfunction, display, etc.).

Using a pointed object(such as driver), simply press the RESET button on the inside of the volume knob for more than 3 seconds.

If you reset your unit, you must reenter all its settings(stations, clock, timer)

- NOTE:** 1. To operate the RESET jump wire, pull the volume rotary knob and release it.  
2. If you wish to operate the RESET jump wire, it is necessary to unplug the power cord.



# ESD PRECAUTIONS

## Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

**CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.**

8. Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

# SPECIFICATIONS

## 1. AMP SECTION

Power Output (6 $\Omega$ , 2 channel, T.H.D. 10%) .....	100W+100W
T.H.D.....	0.15%
Frequency Response (-3dB down).....	30Hz~20kHz
Signal-to-noise Ratio .....	81dB
Input Sensitivity AUX .....	300 $\pm$ 50mV
Channel Difference 1kHz.....	2dB

## 2. TUNER SECTION

### 1) FM/OIRT

Frequency Range.....	87.5MHz~108MHz or 65.0MHz~74.0MHz & 87.5MHz~108MHz
Intermediate Frequency .....	10.7MHz
Sensitivity (69MHz/70MHz/71MHz/90.1MHz/98.1MHz/106.1MHz) .....	14dB
Signal-to-noise Ratio 98.1MHz(Mono/Stereo).....	63dB/58dB
Image Rejection 106.1MHz .....	38dB
IF Rejection 90MHz .....	85dB
Distortion 98MHz(Mono/Stereo) .....	0.7%/1.2%
Frequency Response (-3dB) .....	60Hz~14kHz
Stereo Separation (100Hz/1kHz/10kHz).....	28dB/28dB/23dB

### 2) AM(MW)

Frequency Range.....	522kHz~1,611kHz, 530kHz~1,720kHz or 530kHz~1,610kHz
Intermediate Frequency .....	450kHz
Usable Sensitivity .....	56dB
Image Rejection 1404kHz.....	25dB
IF Rejection 603kHz .....	45dB
Selectivity 1008kHz .....	38dB
Signal-to-noise Ratio 1008kHz .....	37dB
Distortion 1008kHz.....	1.6%
Frequency Response (-6dB) .....	100Hz~2000Hz

### 3) SW(OPTIONAL)

Frequency Range.....	5.8MHz~18MHz
Intermediate Frequency .....	450kHz
Usable Sensitivity .....	40dB
Signal-to-Noise Ratio.....	37dB
Distortion .....	2%

### 4) LW(OPTIONAL)

Frequency Range .....	153kHz~281kHz
Intermediate Frequency .....	450kHz
Usable Sensitivity .....	62dB
Signal-To-Noise Ratio (200kHz) .....	30dB
Distortion (200kHz) .....	3%

### 3. TAPE DECK SECTION

Tape Speed (MTT-111) / Normal Speed.....	3kHz ± 1.5%
Wow Flutter (MTT-111) .....	0.25%
Fast Forward and Rewind Time (C-60) .....	130sec
Frequency Response (6dB range) .....	125Hz~8kHz
Signal-to-noise Ratio (Playback/Record) .....	48dB/43dB
Distortion (Playback/Record) .....	2% / 3.5%
Crosstalk (Playback: 1kHz) .....	55dB/53dB
Channel Separation (Playback: 1kHz) .....	50dB/43dB
Erase Ratio .....	55dB

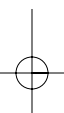
### 4. COMPACT DISC PLAYER SECTION

Frequency Response (40Hz-18kHz) .....	+0.5/-3.5dB
Signal-to-noise Ratio (1kHz) .....	73dB
Dynamic Range (1kHz).....	70dB
T.H.D. (1kHz) .....	0.4%
Separation (100Hz/1kHz/10kHz) .....	42dB/48dB/40dB
Access Time Short / Long.....	2sec/5sec

### 5. GENERAL

Power requirement.....	Refer to the back panel of unit
Power consumption .....	410W
Dimension (W x H x D).....	360 x 362 x 374 (mm)
Weight (net).....	10.0kg

**NOTE : Specification are subject to change without notice in the course of product improvement.**



# ADJUSTMENTS

This set has been aligned at the factory and normally will not require further adjustment. As a result, it is not recommended that any attempt is made to modificate any circuit. If any parts are replaced or if anyone tampers with the adjustment, realignment may be necessary.

## IMPORTANT

1. Check Power-source voltage.
2. Set the function switch to band being aligned.
3. Turn volume control to minimum unless otherwise noted.
4. Connect low side of signal source and output indicator to chassis ground unless otherwise specified.
5. Keep the signal input as low as possible to avoid AGC and AC action.

## TAPE DECK ADJUSTMENT

### 1. AZIMUTH ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
A Deck Playback	MTT-114	Speaker Out	DECK Screw	Maximum
B Deck Playback	MTT-114	Speaker Out	Azimuth Screw	Maximum

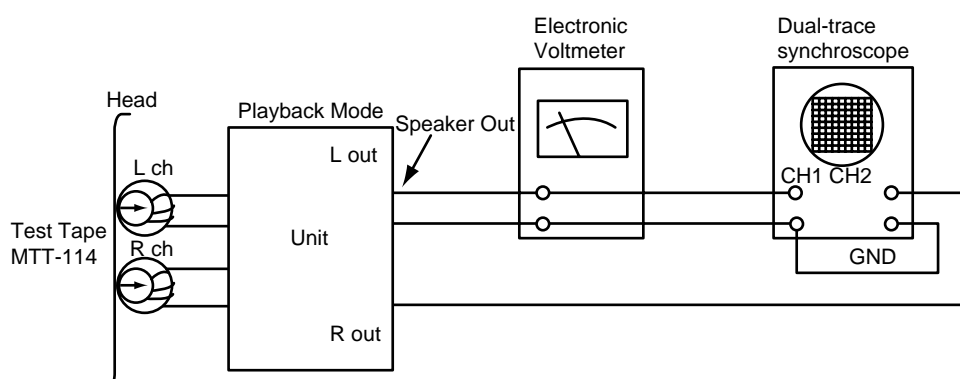


Figure 1. Azimuth Adjustment Connection Diagram

### 2. MOTOR SPEED ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for	Remark
Normal Speed	MTT-111	Speaker Out	VR201	3kHz $\pm$ 1%	
Hi-Speed	MTT-111	Speaker Out	more than 5.4kHz		High-Speed Dubbing Mode

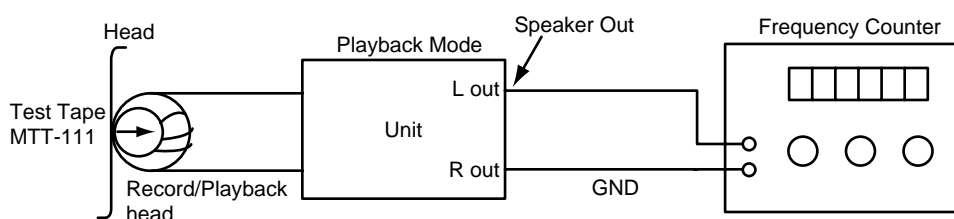


Figure 2. Motor Speed Adjustment Connection Diagram

### 3. RECORD BIAS ADJUSTMENT

Deck Mode	Test Tape	Test Point	Adjustment	Adjust for
Rec/Pause	MTT-5511	ERASE HEAD Wire(PN202)	L203	90kHz $\pm$ 5kHz

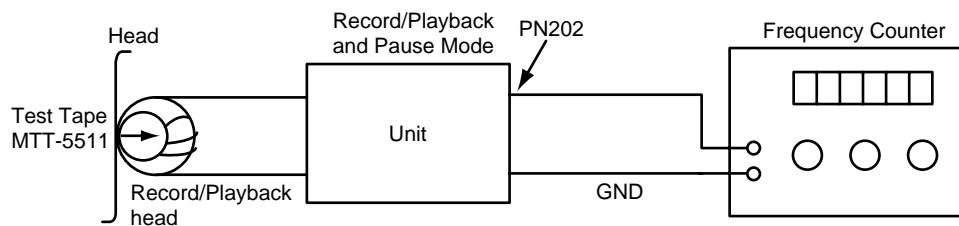


Figure 3. Record Bias Adjustment Connection Diagram

### 4. TUNER ADJUSTMENT

Item	Test Point	Adjustment	Adjust for
DC Voltage	Checker Pin TP1, TP2	L106	0V $\pm$ 50mV

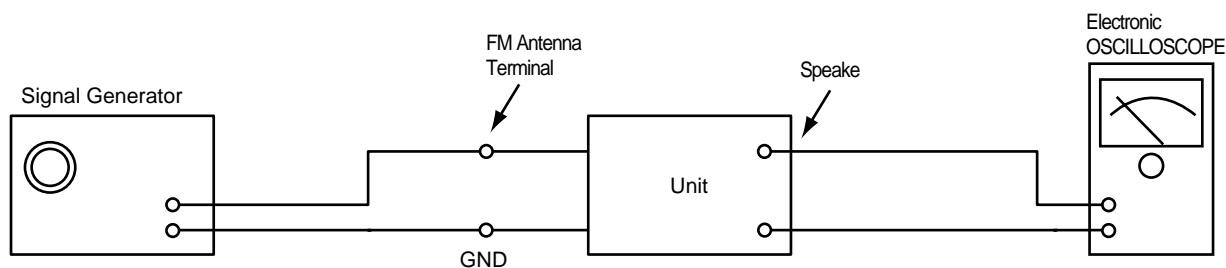
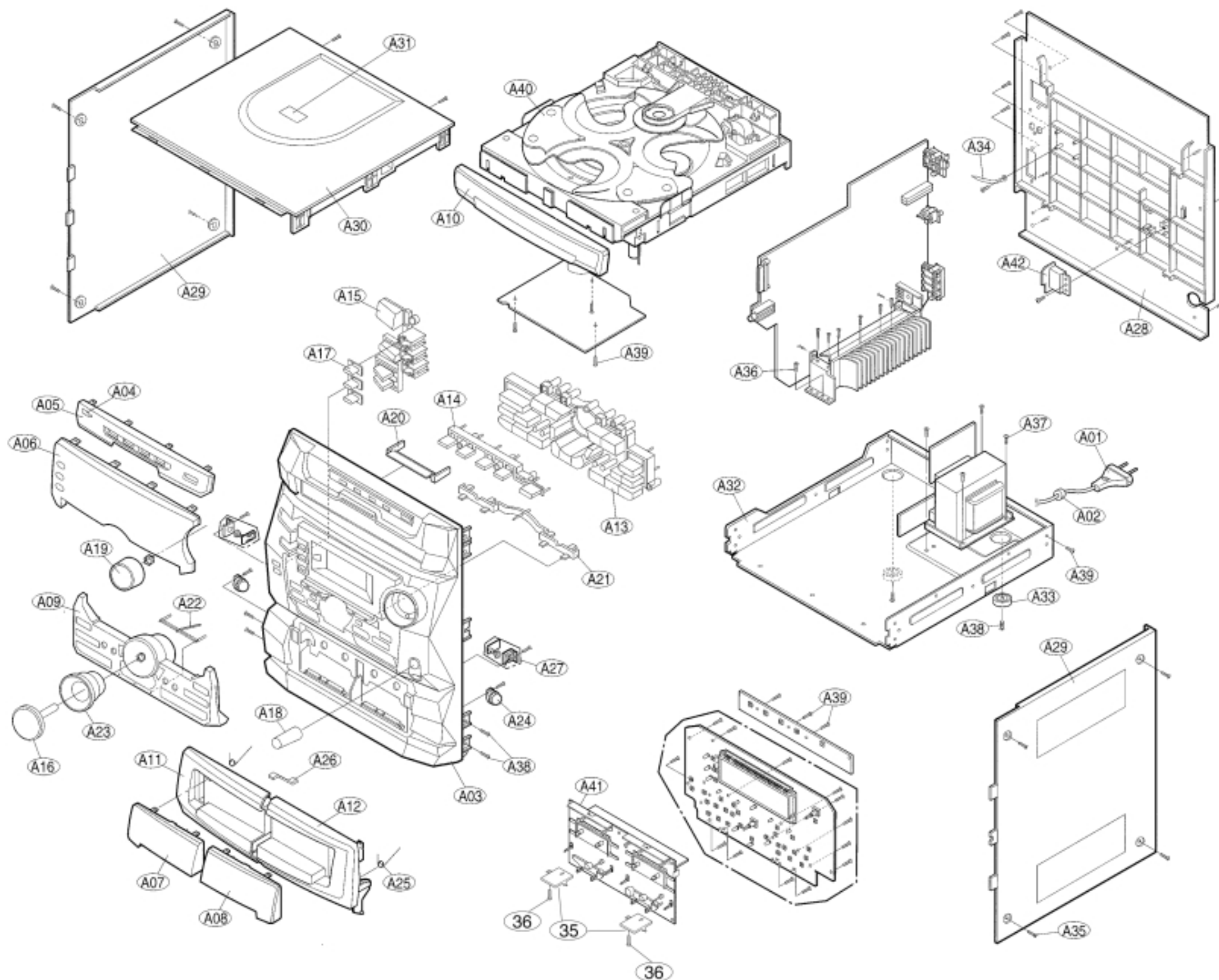


Figure 4. Tuner(S curve) Adjustment Connection Diagram

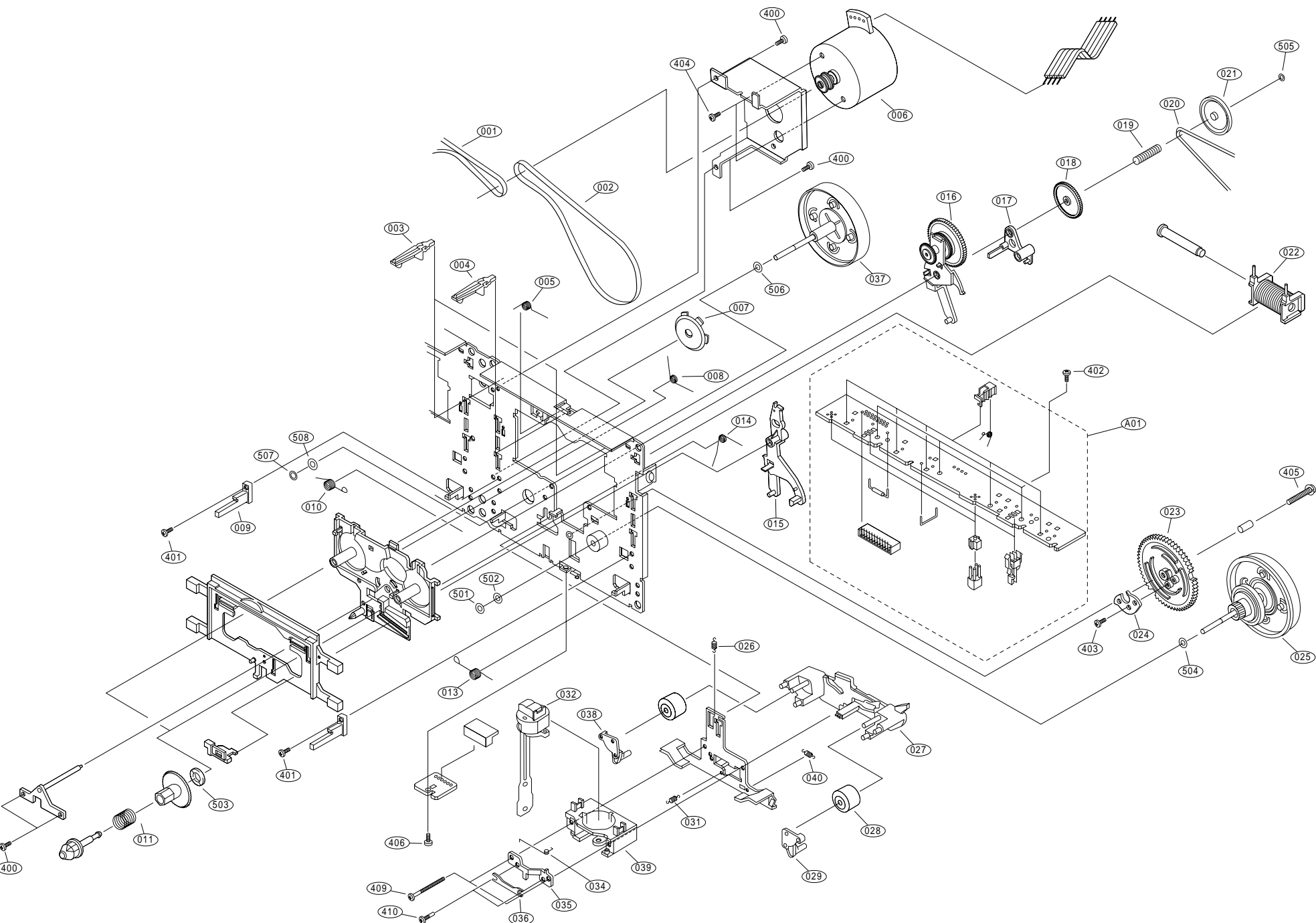


# EXPLODED VIEW/PARTS LIST

## • CABINET

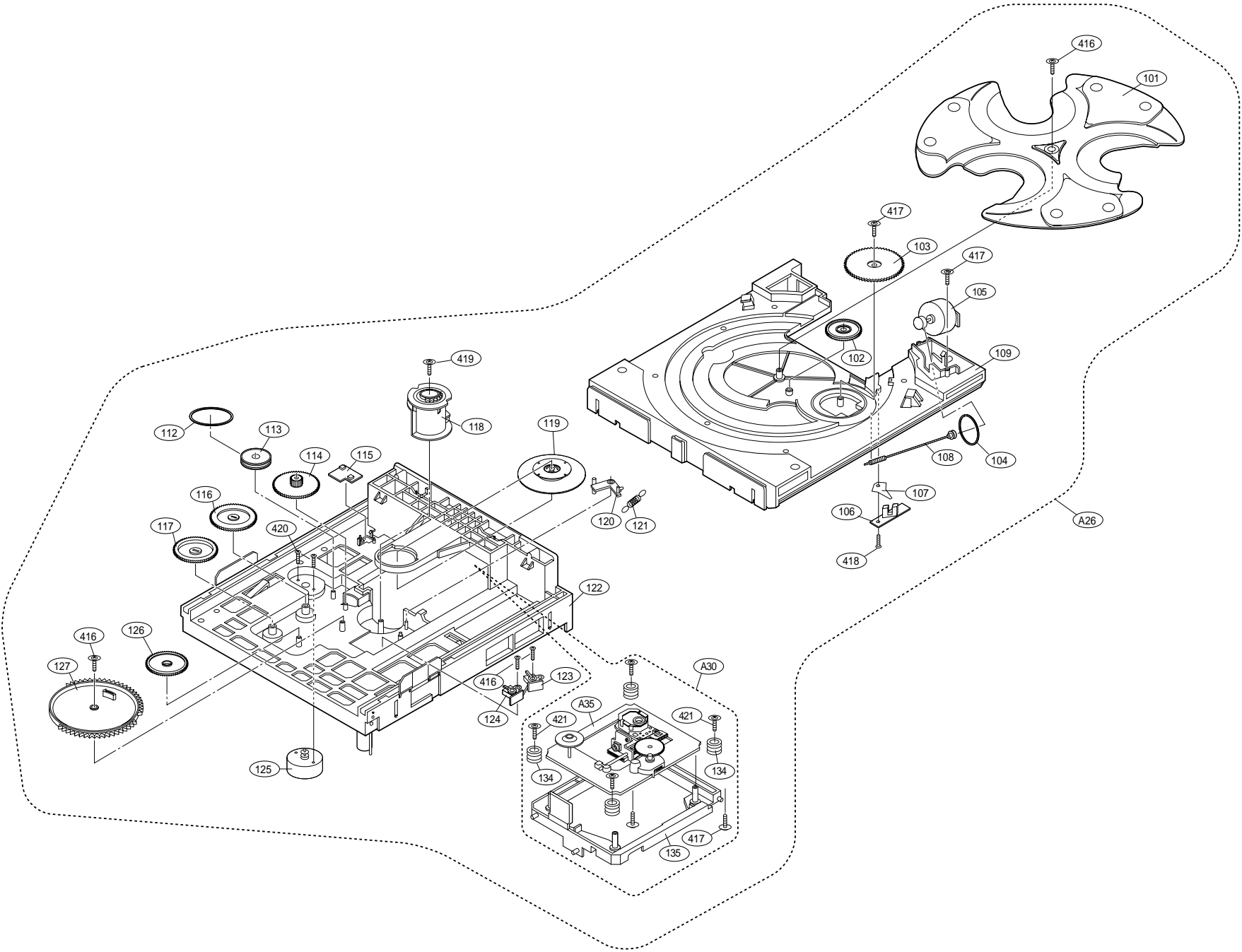


• TAPE DECK MECHANISM: AUTO REVERSE DECK



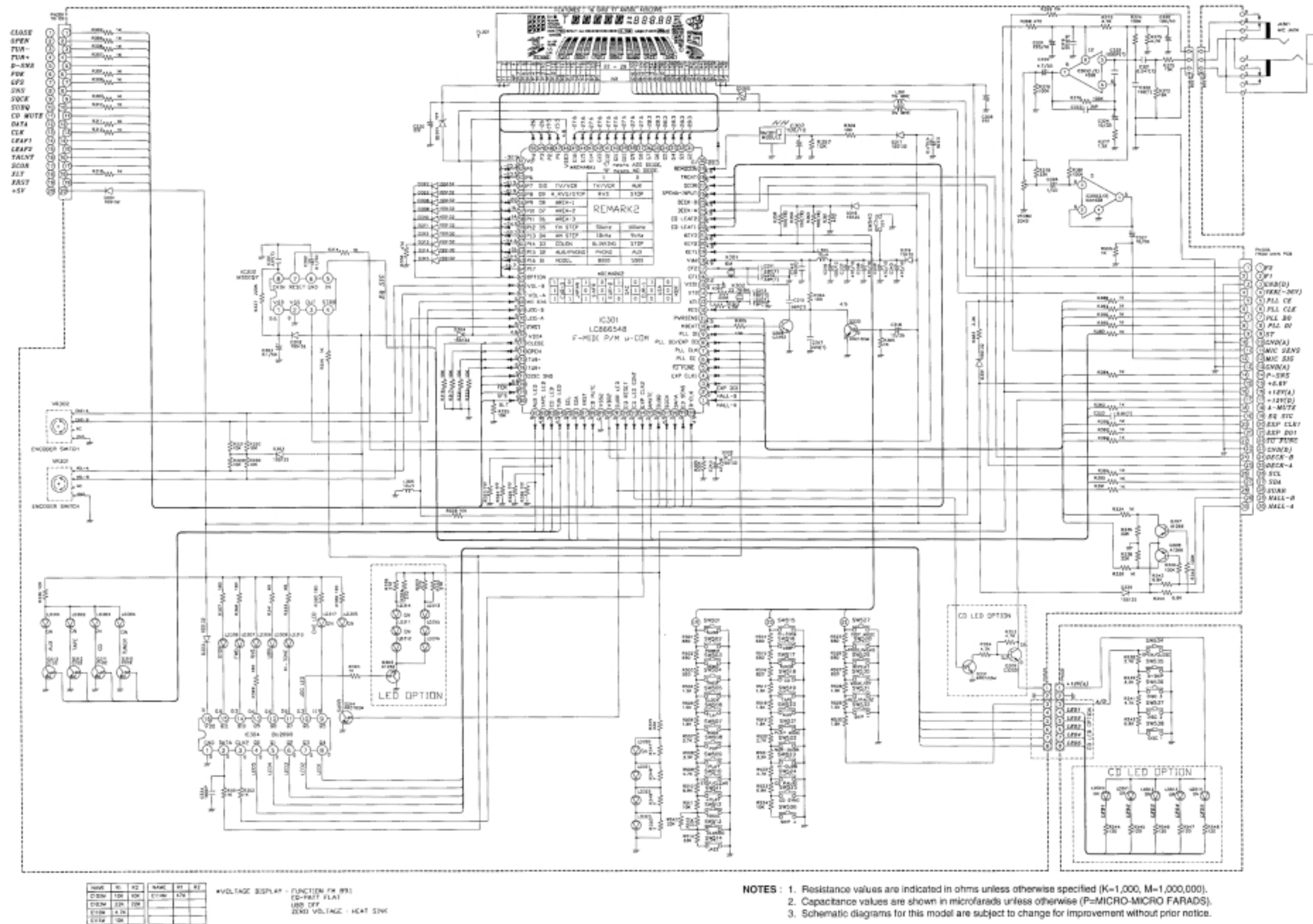
LOCA.NO.	PART NO.	SPECOFOCATION
A01	6768R-UP01A	50-093-4249 PCB AS
001	6768R-BP01B	02-084-4202 BELT/FELT
002	6768R-BP01A	02-084-4204 BELT/FELT
003	6768R-AP01D	50-239-4027 CWL44
004	6768R-AP01E	50-239-4026 ARM
005	6768R-SP01E	01-082-4645 SPRING
006	6768R-QP01A	50-093-4316 MOTOR
007	6768R-GP01A	50-093-4603 GEAR
008	6768R-SP01F	01-082-4598 SPRING
009	6768R-MP01C	50-219-4014 MOLD
010	6768R-SP01C	01-082-4652 SPRING
011	6768R-SP01A	01-081-4601 SPRING
013	6768R-SP01B	01-082-4651 SPRING
014	6768R-SP01G	0-082-4597 SPRING
015	6768R-AP01A	50-268-3016 ARM
016	6768R-GP01C	50-093-4069 GEAR
017	6789R-AP01C	50-239-4072 ARM
018	6768R-GP01D	50-222-4007 GEAR
019	6768R-SP01H	01-081-4657 SPRING
020	6768R-BP01C	02-083-4188 BELT/FELT
021	6768R-LP01A	50-223-4254 PULLEY
022	6768R-VP01A	50-093-4125 SOLENOID
023	6768R-GP01B	50-221-3009 GEAR
024	6768R-AP01B	50-139-4292 ARM
025	6768R-JP01B	50-093-3361 PULLEY
026	6768R-SP01D	01-080-4609 SPRING
027	6768R-DP01A	50-259-3342 LEVER
028	6768R-RP01A	22-027-41054 ROLLER
029	6768R-MP01A	50-219-4033 MOLD
031	6768R-SP01L	01-080-4649 SPRING
032	6768R-EP01A	50-093-4070 HEAD AY
033	6768R-JP01A	50-093-3360 PULLEY
034	6768R-SP01K	01-082-4650 SPRING
035	6768R-PP01A	50-119-4046 PRESS
036	6768R-PP01B	50-160-4108 PRESS
037	6768R-JP01C	50-093-3315 PULLEY
038	6768R-MP01D	50-219-4034 MOLD
040	6768R-SP01M	01-080-4607 SPRING
400	6768R-CP01A	GRE10A2003 SCREW
401	6768R-CP01B	GRE20A2005 SCREW
402	6768R-CP01C	GSE10A1704 SCREW
403	6768R-CP01D	GSL10A2004 SCREW
404	6768R-CP01E	GSP10A2603 SCREW
405	6768R-CP01F	GSP11A2012 SCREW
406	6768R-CP01G	GSE20A2004 SCREW
409	6768R-CP01L	GSD10A2018 SCREW
410	6768R-CP01M	03-300-4056 SCREW
501	6768R-WP01A	GWM19S035035 WASHER
502	6768R-WP01B	GWM17S0500035S WASHER
503	6768R-WP01C	GWM40X075010 WASHER
504	6768R-WP01D	GWP21X045020 WASHER
505	6768R-WP01E	GWM12X030040S WASHER
506	6768R-WP01H	GWM23X040020 WASHER
507	6768R-WP01F	GWM21X040040 WASHER
508	6768R-WP01G	GWM19X055035S WASHER

• CD MECHANISM

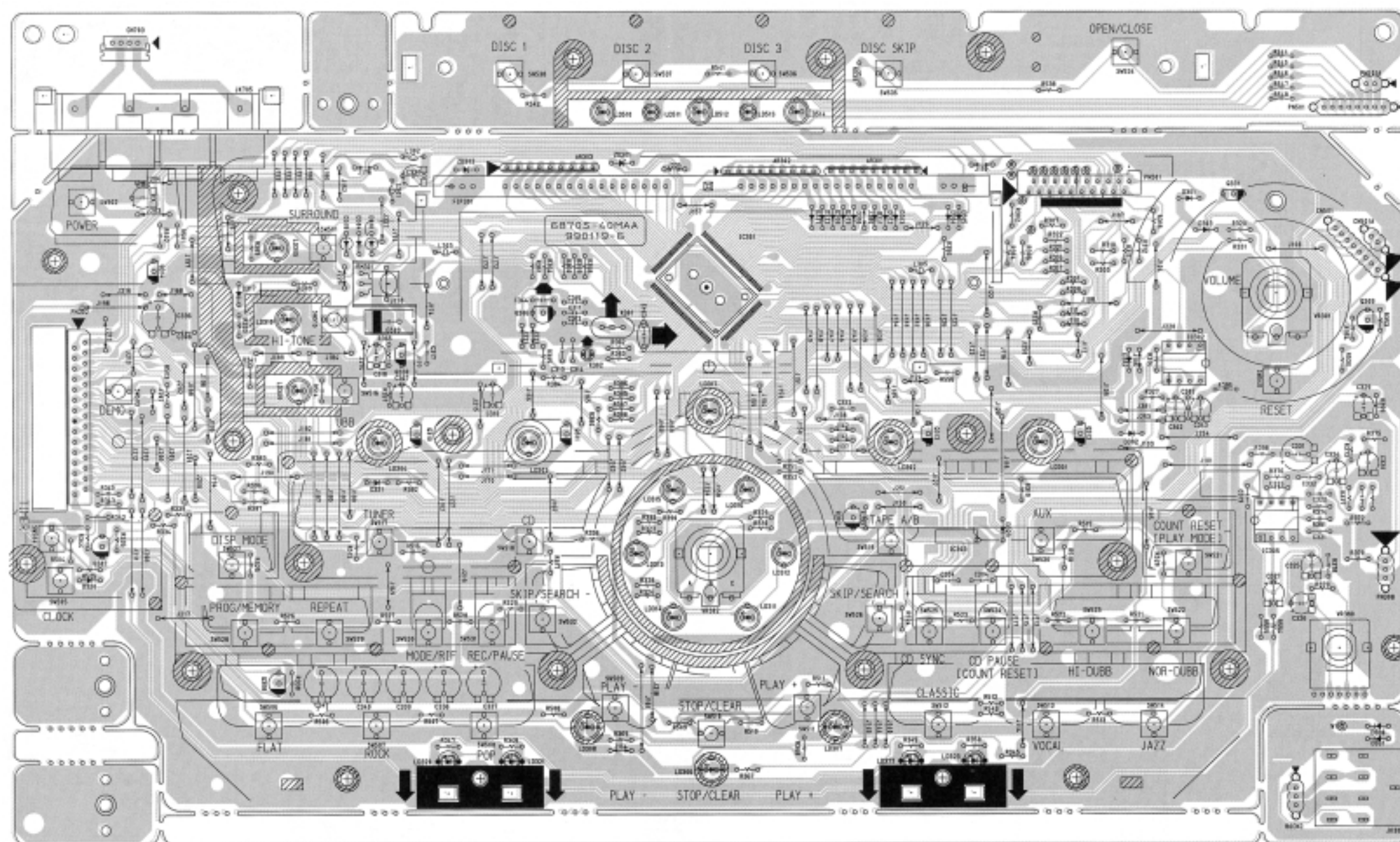


REF.NO.	PART NO.	DESCRIPTION	SPECOFOCATION
A30	3040SB0004A	BASE	PU ASSY(CDM-H1303)
A35	4405SCB001A	MECHANISM ASSY	KSM-213CCM SONY HI-FI FRONT LO
101	3390SB0002A	TRAY	DISC(CDM-H1303)
102	4470SB0011A	GEAR	TRAY B(CDM-H1303)
103	4470SB0010A	GEAR	TRAY A(CDM-H1303)
104	4400SB0001B	BELT	TRAY(CDM-H1303)
105	4680SBP002A	MOTOR(MECH)	ASSY TRAY
106	6871SF21RAD	PWB(PCB)ASSY	3CH M/D SENSOR PWB ASSY
107	4794SB0003A	GUIDE	WCRM(CDM-1303)
108	4371SB0002A	SHAFT ASSY	TRAY(CDM-H1303)
109	3390SB0001A	TRAY	LOADING(CDM-H1303)
112	4400SB0001A	BELT	MAIN(CDM-H1303)
113	4470SB0003A	GEAR	PULLEY(CDM-H1303)
114	4470SB0004A	GERA	LOADING(CDM-H1303)
115	6871SB21RAD	PWB(PCB)ASSY	3CH M/D U/D/O/C PWB ASSY
116	4470SB0006A	GEAR	PU DOWN(CDM-H1303)
117	4470SB0008A	GEAR	PU UP-B(CDM-H1303)
118	4471SB0001A	GEAR ASSY	GEAR CAM ASSY
119	4860SB0002A	CLAMP	CLAMP ASSY
120	4974SB0001A	GUIDE	CAM(CDM-H1303)
121	4970SBN002A	SPRING	CAM(CDM-H1303)
122	3040SB0002A	BASE	MAIN(CDM-H1303)
123	6871SD21RAD	PWB(PCB)ASSY	3CH M/D CAM PWB ASSY
124	6871SC21RAD	PWB(PCB)ASSY	3CH M/D OPEN PWB ASSY
125	4680SBP001A	MOTOR(MECH)	PULLEY ASSY(CDM-H1303)
126	4470SB0007A	GEAR	PU UP-A(CDM-H1303)
127	4470SB0005A	GEAR	MAIN(CDM-H1303)
134	4900SB0001A	DAMPER	DAMPER RUBBER
135	3040SB0003A	BASE	PU(CDM-H1303)
416	88H-0004	CD MECHA PARTS	3X12X12FNM
417	88H-0002	CD MECHA PARTS	3X9X12FZMY
418	353-025BAAA	SCREW	D3.0 L8.0 MSWR3/(BK)
419	88H-0003	CD MECHA PARTS	3X12X10FZMY
420	353S353F	SCREW	D2.6 L4.0 MSWR3/(BK)
421	6756SBX001A	CD MECHANISM PARTS	SCREW 2.6X10X10XFZMY CDM-H813

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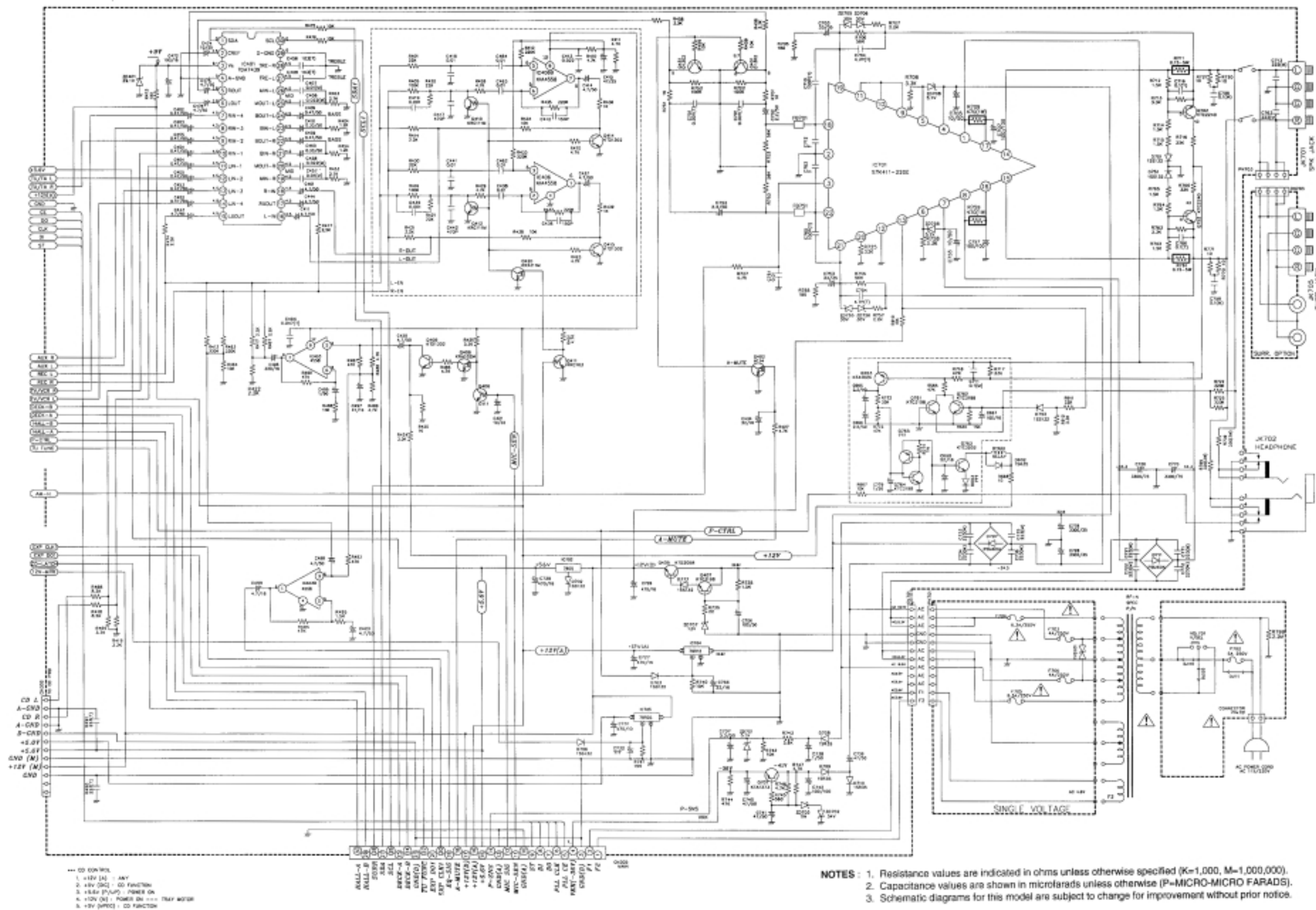
- FRONT P.C. BOARD



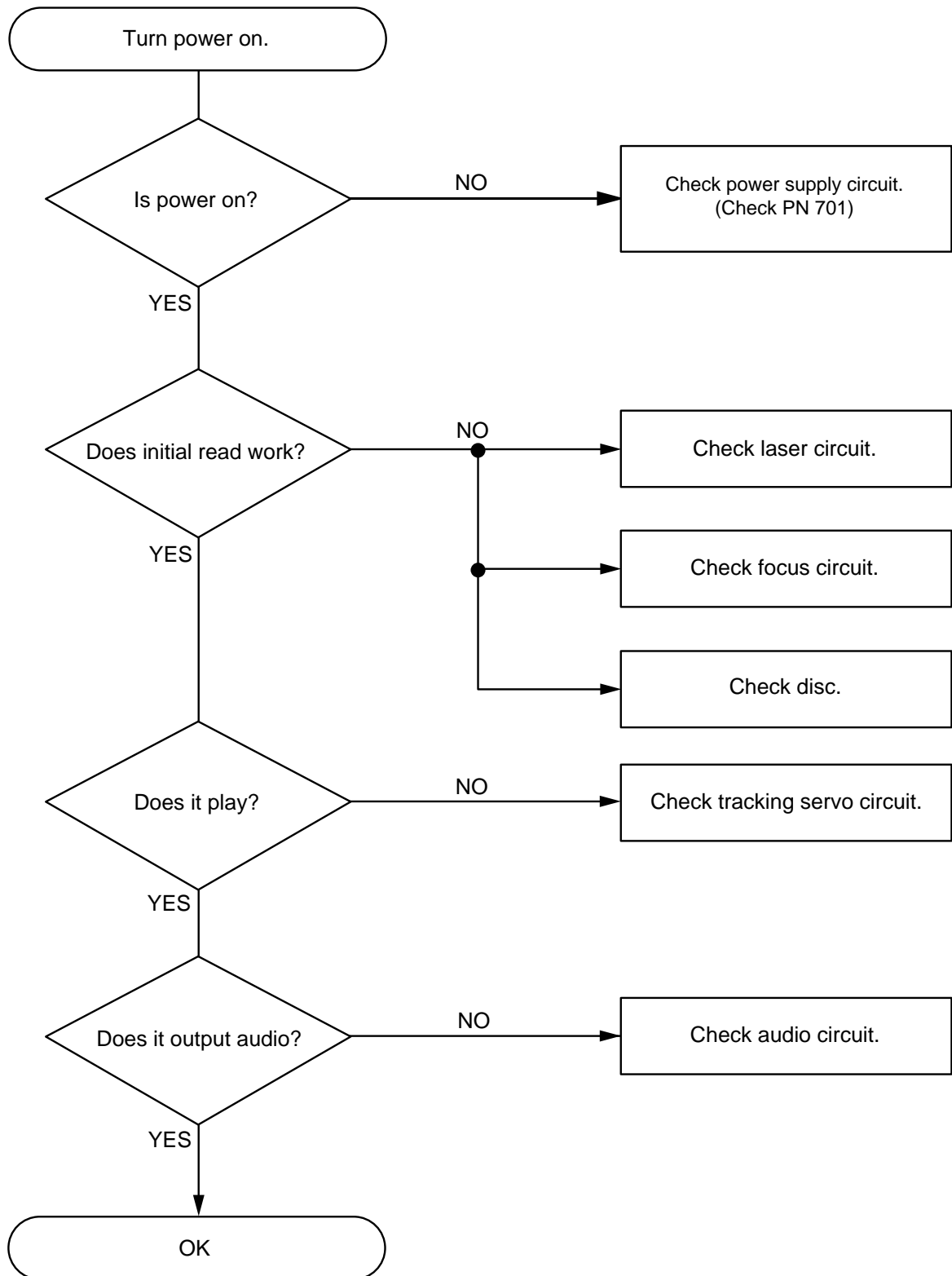


# SCHEMATIC DIAGRAMS

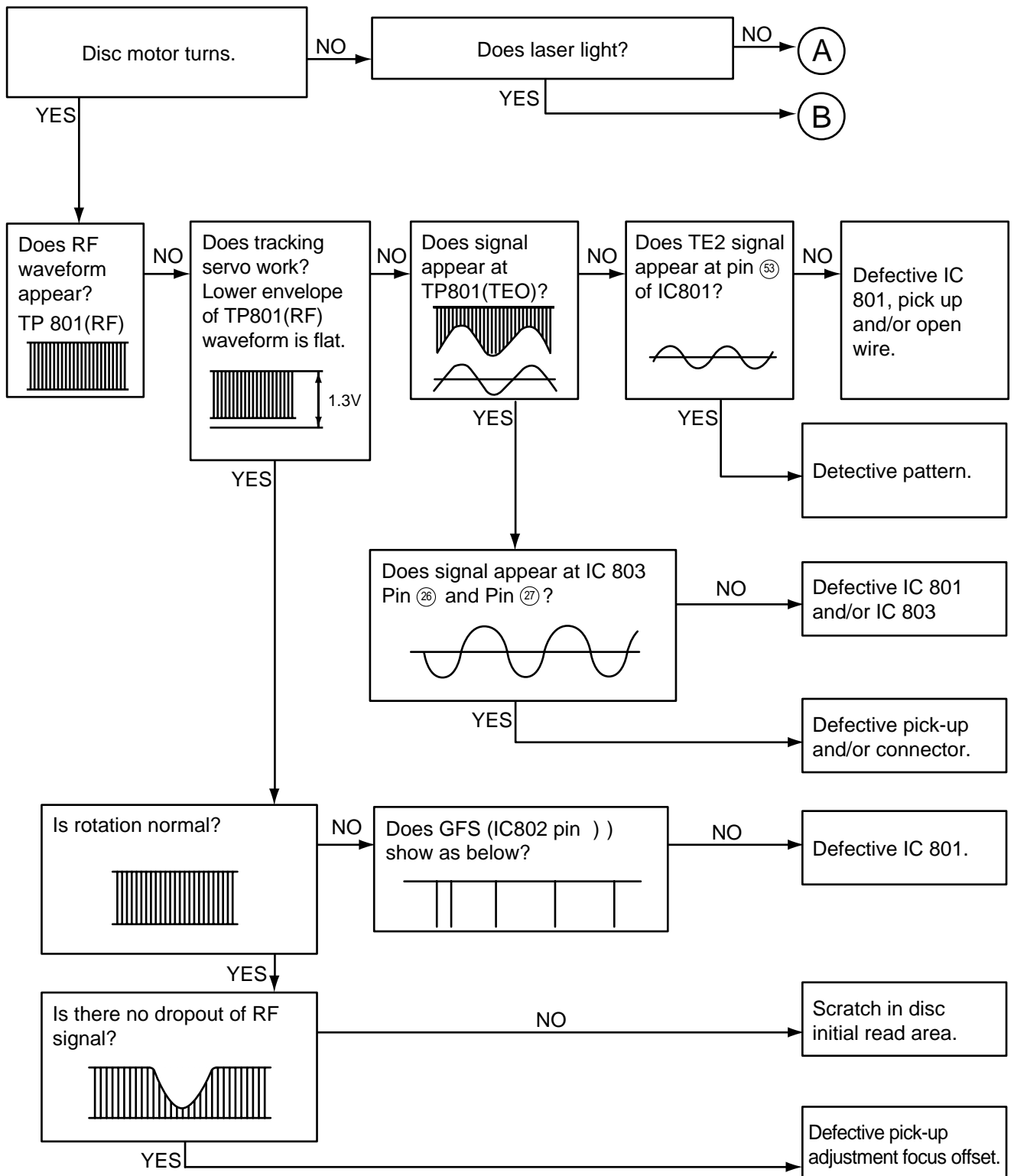
## • POWER CIRCUIT



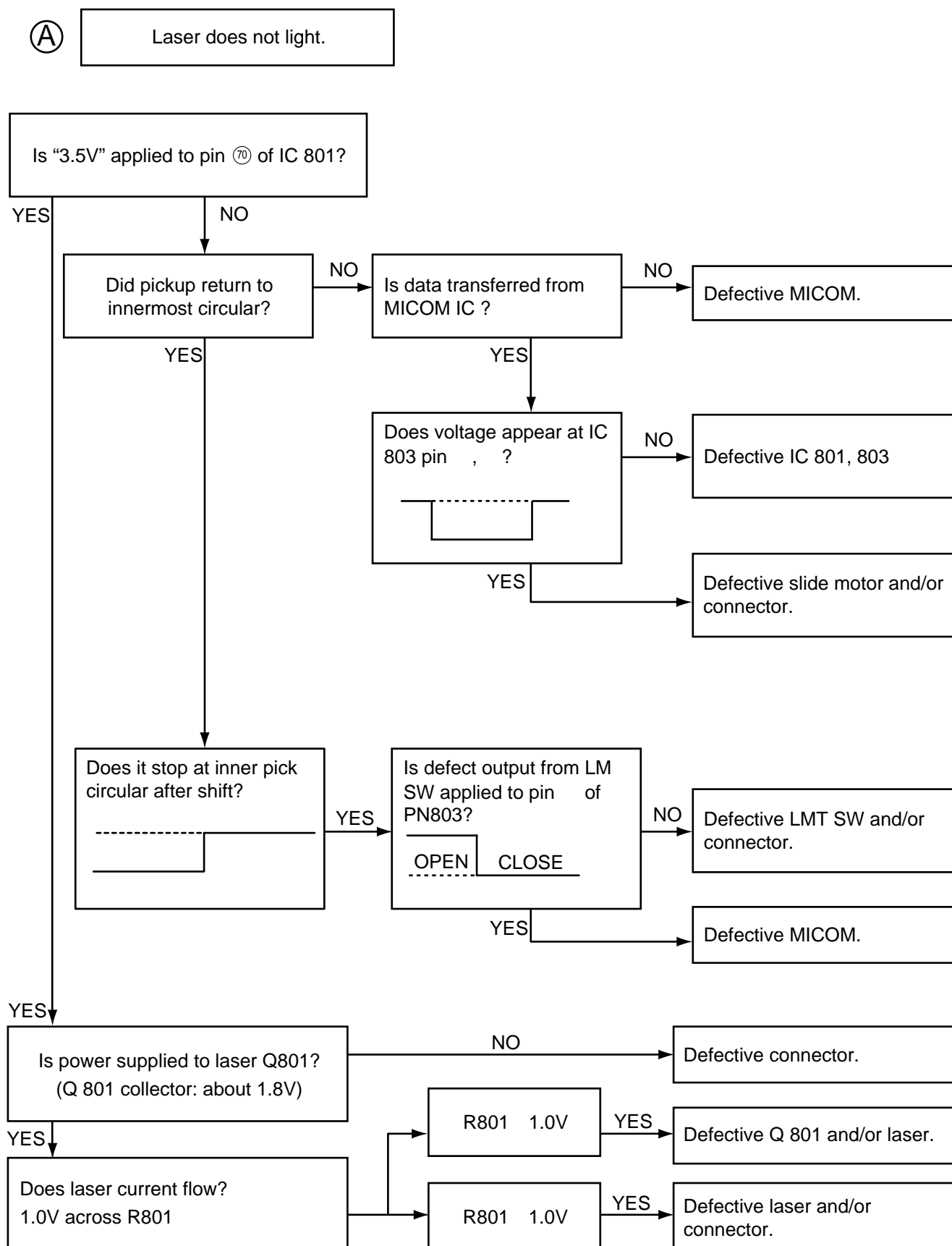
# TROUBLESHOOTING

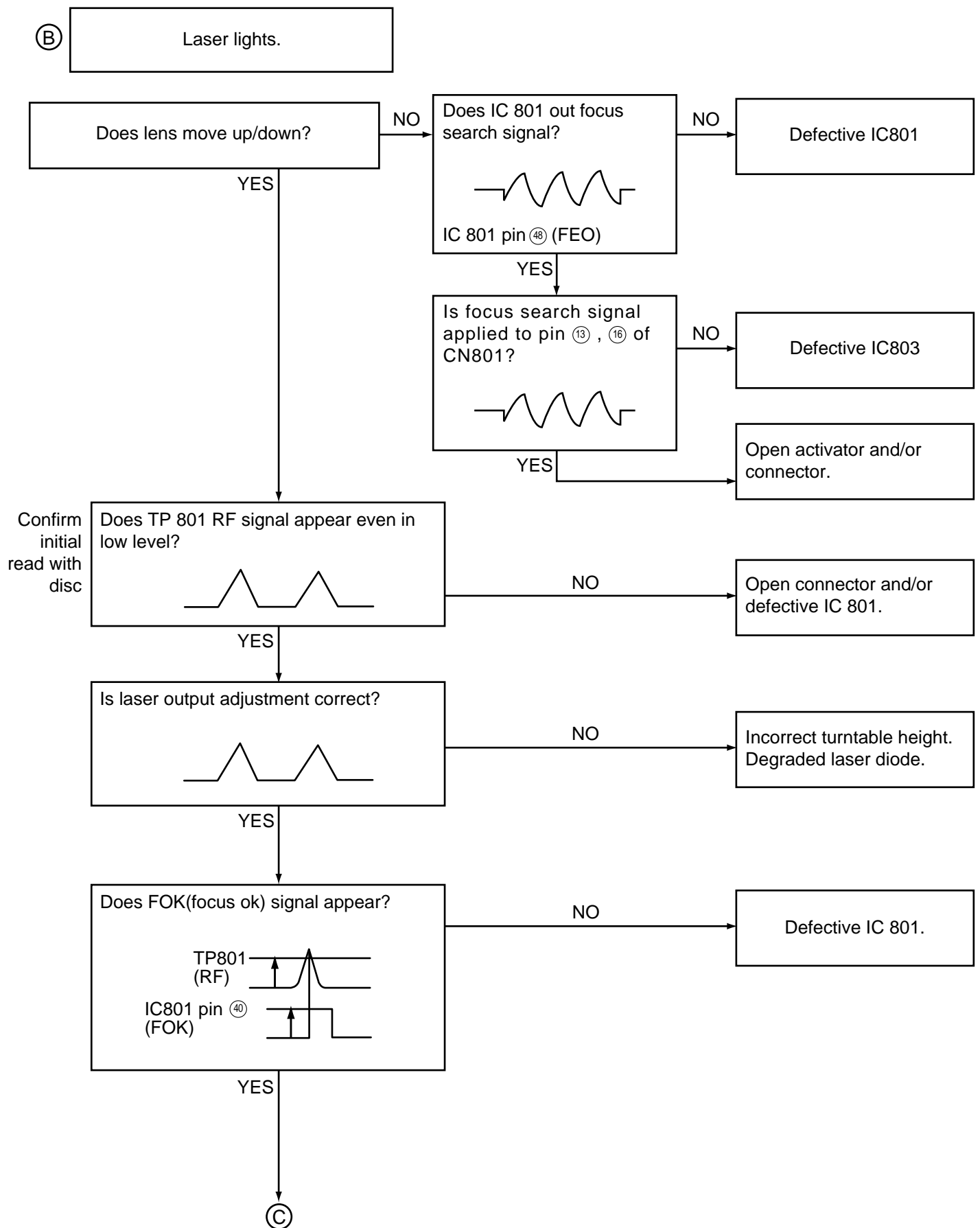


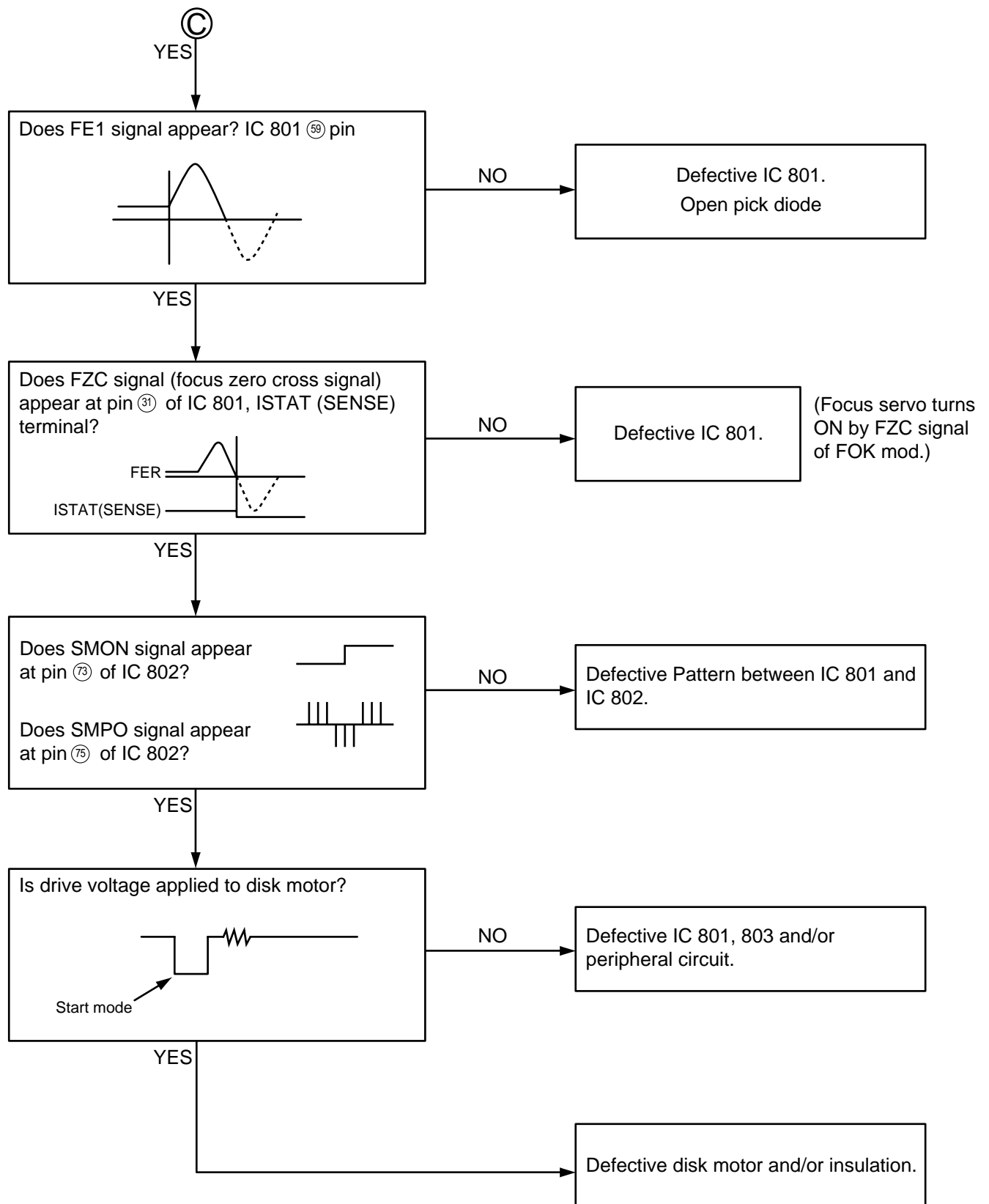
## Fails to initial read





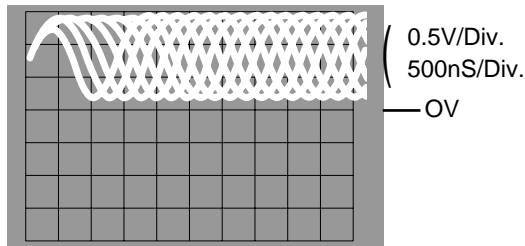




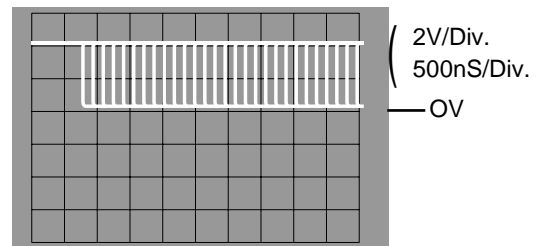


# WAVEFORMS OF MAJOR CHECK POINT

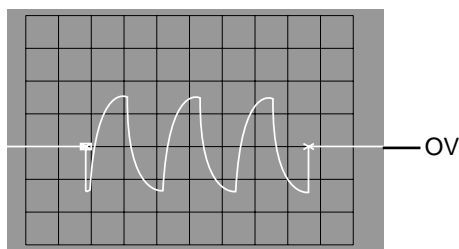
1. HF signal (RF signal ) waveform  
(Test Point TP801) during normal play



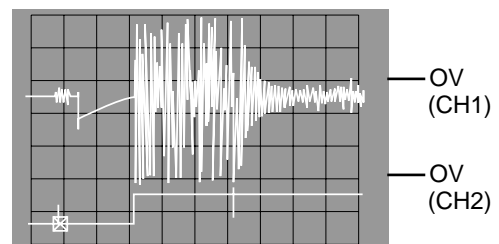
2. EFM signal (pin ③③ IC 801) waveform  
during Normal Play



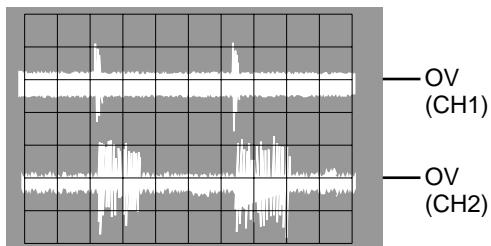
3. Focus coil drive waveform(Pin NO , of IC 803)  
• When focus search failed or there is no disc on the tray



- Focus coil drive waveform(pin NO , of IC803) and  
FOK (pin NO ④④ of IC 801) when focus search is  
accomplished

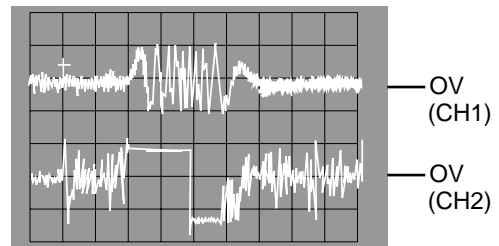


4. Tracking coil drive waveform (pin NO ②⑥ , ②⑦ of IC 803)  
and TEO during track traverse  
(1) When time division is 20nS/div



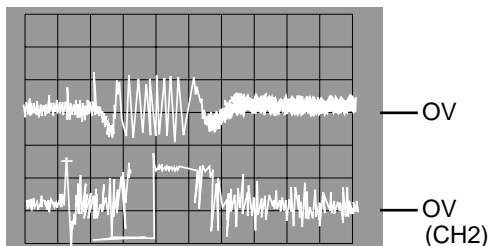
CH1 : TEO(TP801)  
1V/Div.  
CH2 : TRACK COIL DRIVE  
SIGNAL 2V/Div.

- (2) When time division 0.5nS/div.  
(During forward track traverse)



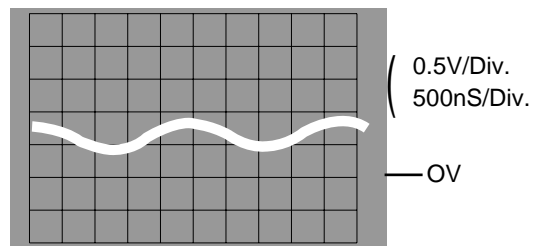
CH1 : TEO(TP801)  
1V/Div.  
CH2 : TRACKING COIL DRIVE  
SIGNAL 2V/Div.

- (3) When time division is 0.5nS/div.  
(During backward Track Traverse)

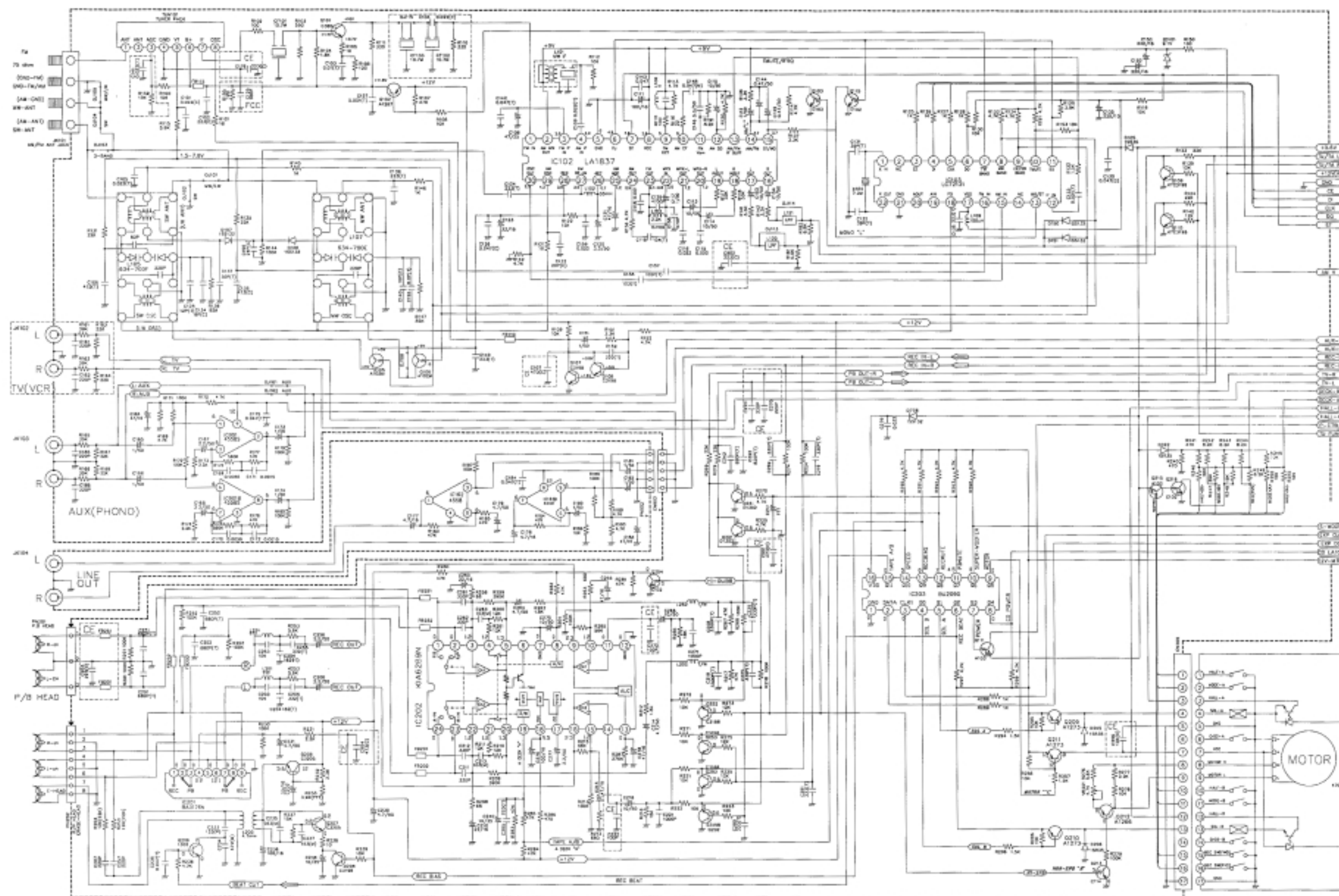


CH1 : TEO(TP801)  
1V/Div.  
CH2 : TRACKING COIL DRIVE  
SIGNAL 2V/Div.

5. Feed motor drive waveform(pin NO , of IC 803)  
During normal play



## • TUNER & DECK CIRCUIT

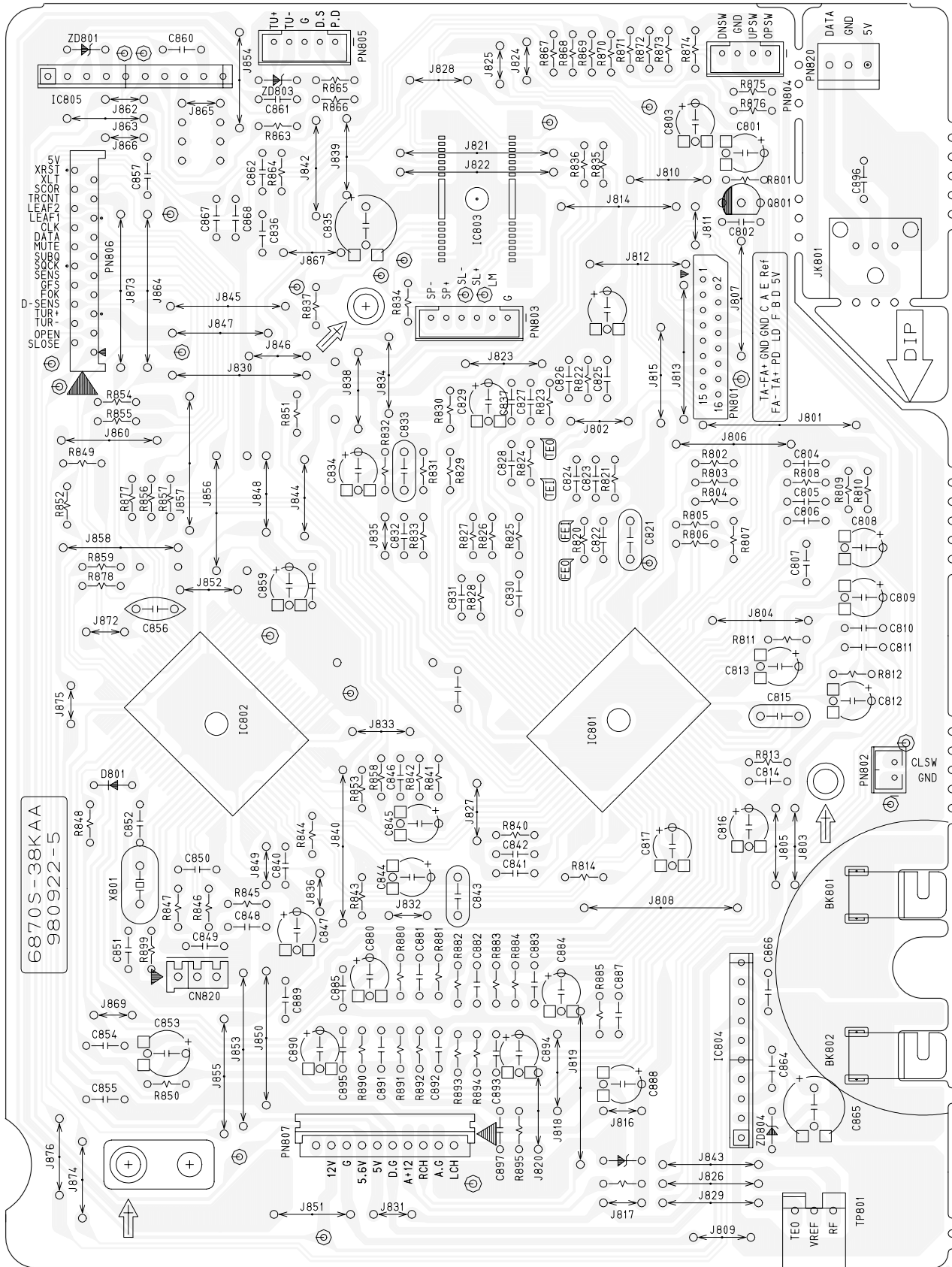


== NOTE  
LW BAND: CTR100P)---3450  
(315,1100-200---36,012)---30-4000

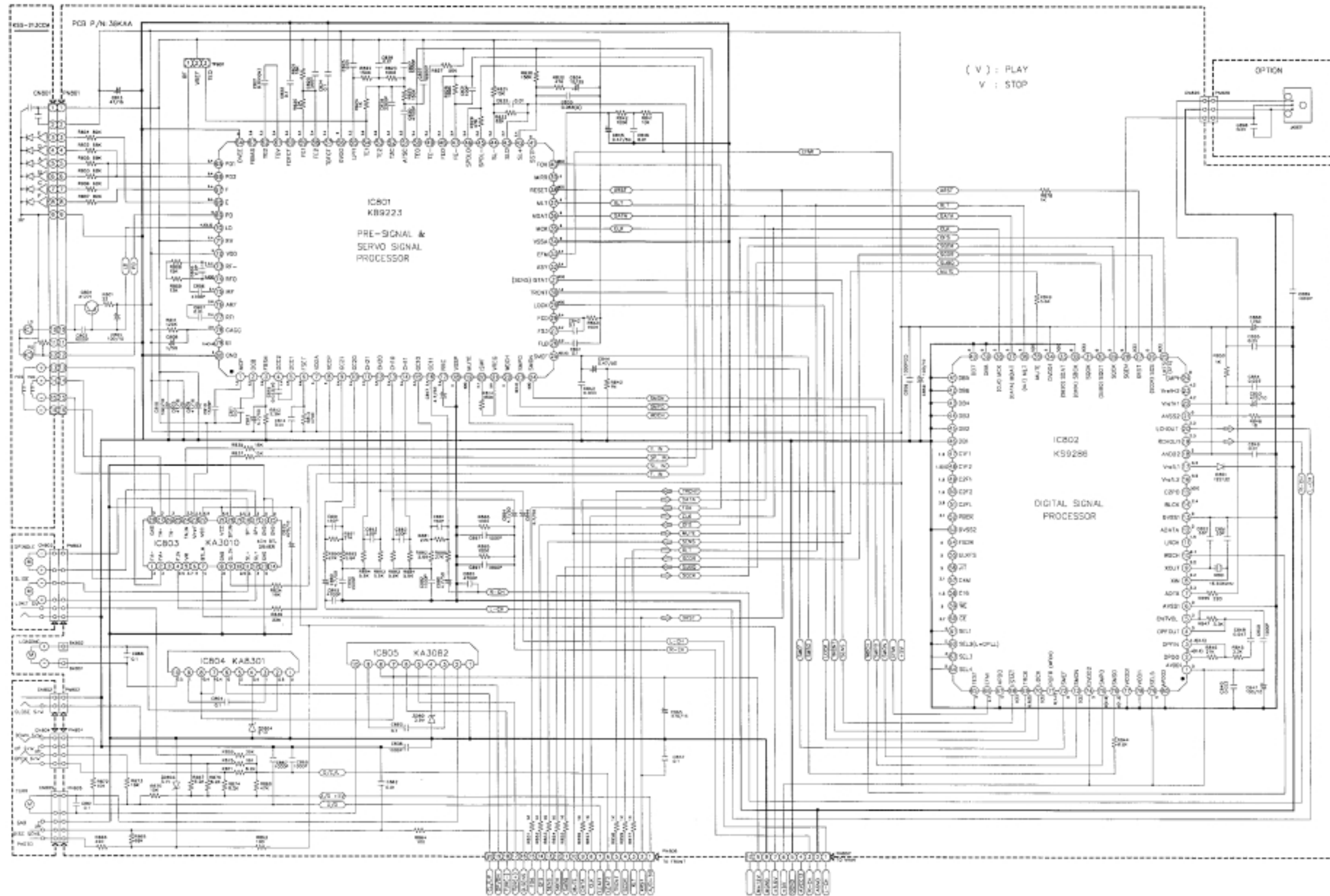
```
-- NOTE
PFI--SMD  R310(5.5K)--KOTL
           R309/314(15K--500K)---HO-WH-OT
```

**NOTES :** 1. Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).  
2. Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).  
3. Schematic diagrams for this model are subject to change for improvement without prior notice.

# • CD MAIN P.C. BOARD



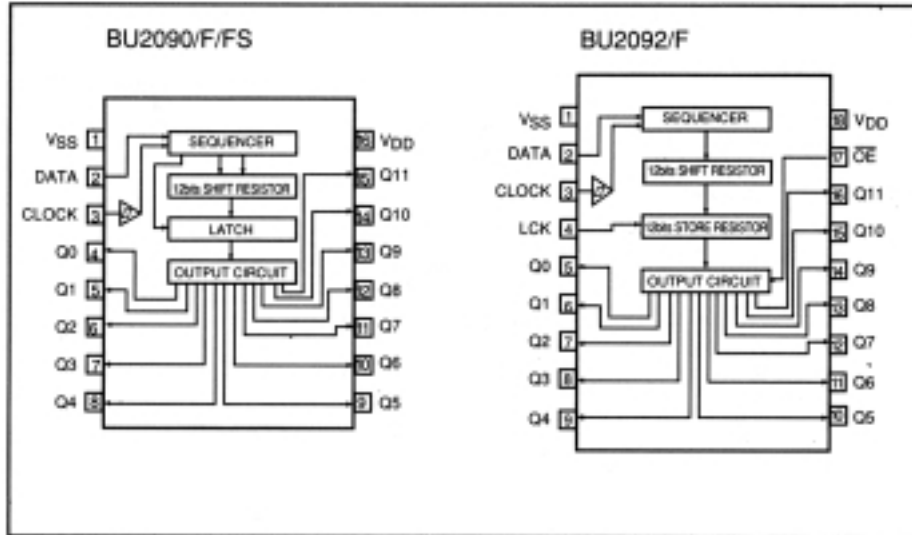
# • CD CIRCUIT



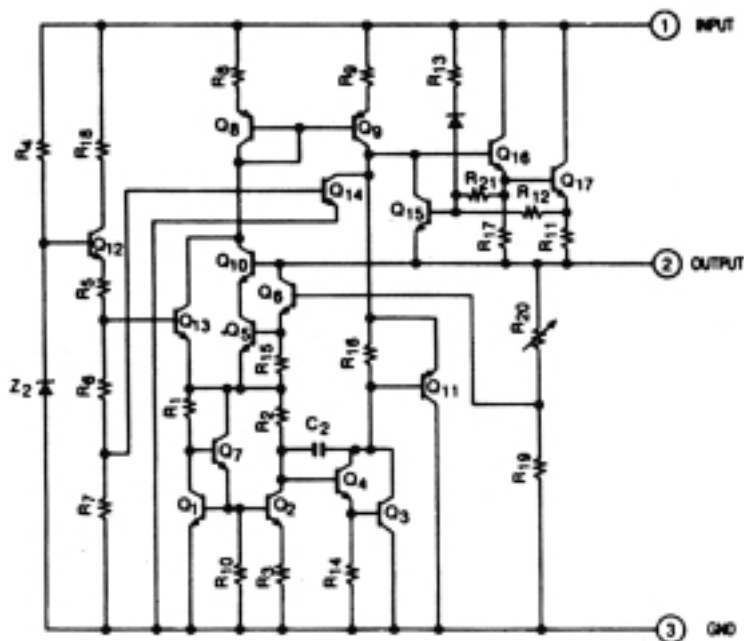
- NOTES : 1. Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).  
2. Capacitance values are shown in microfarads unless otherwise (P=MICRO-MICRO FARADS).  
3. Schematic diagrams for this model are subject to change for improvement without prior notice.

# INTERNAL BLOCK DIAGRAM OF ICs

BU2090/BU2090F/BU2090FS/BU2092/BU2092F

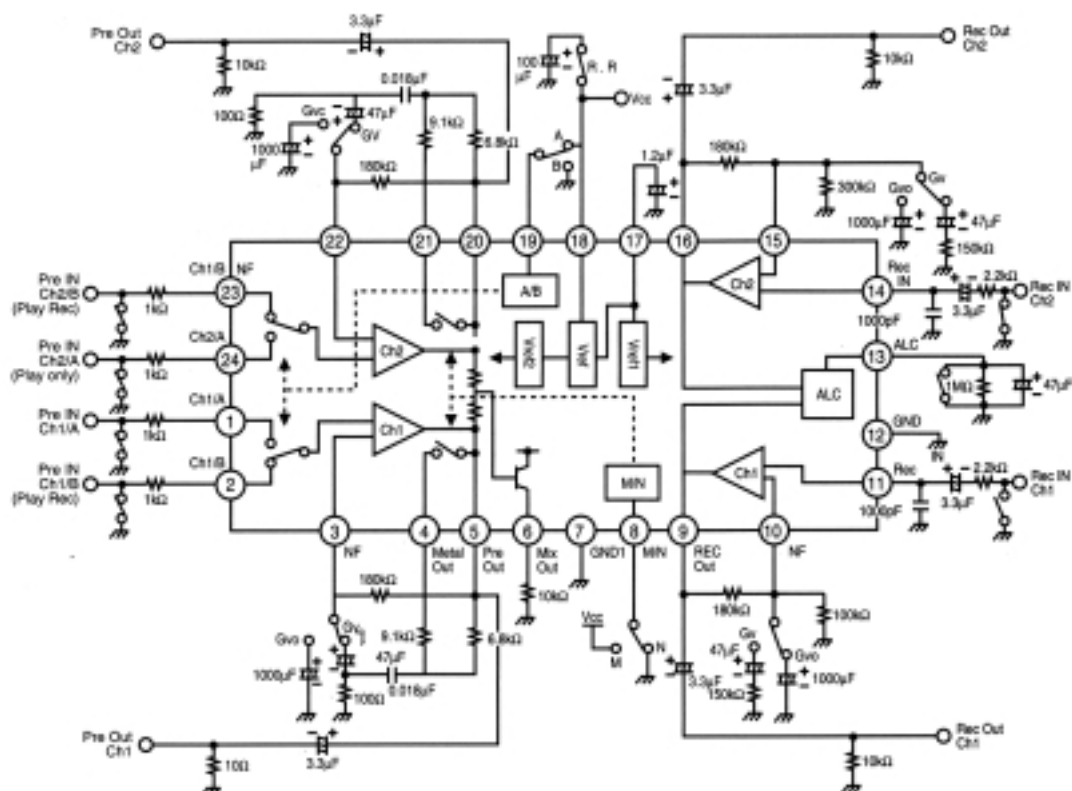


KIA78XXPI

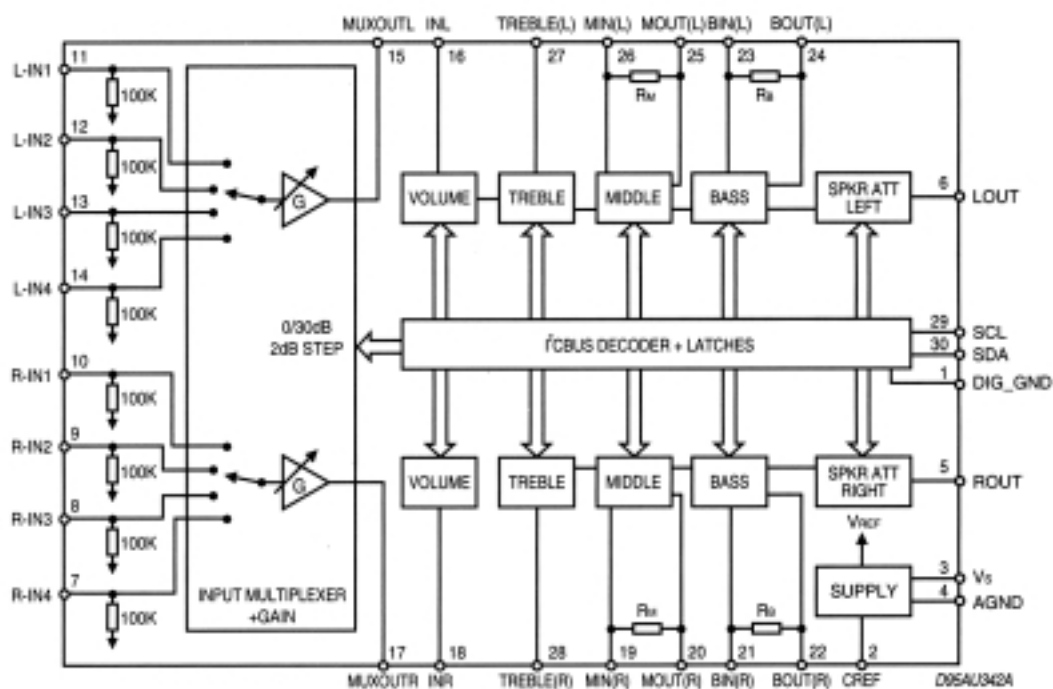




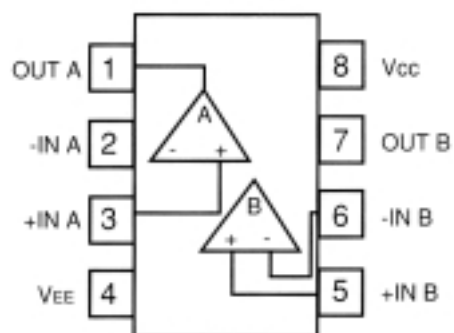
## KIA6289N



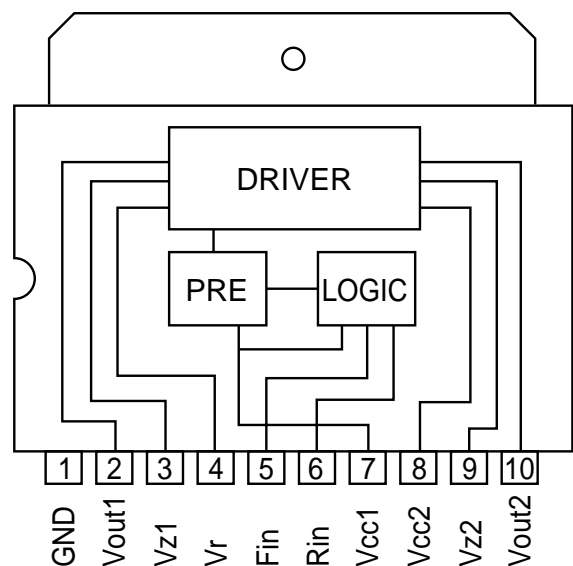
## TDA7439



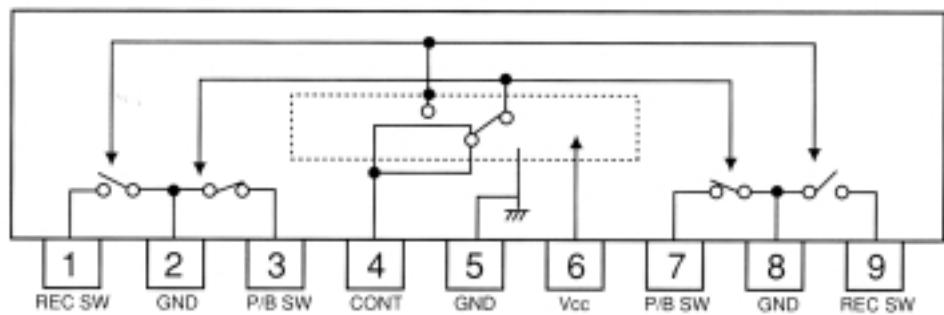
**KIA4558P, KIA4558F**



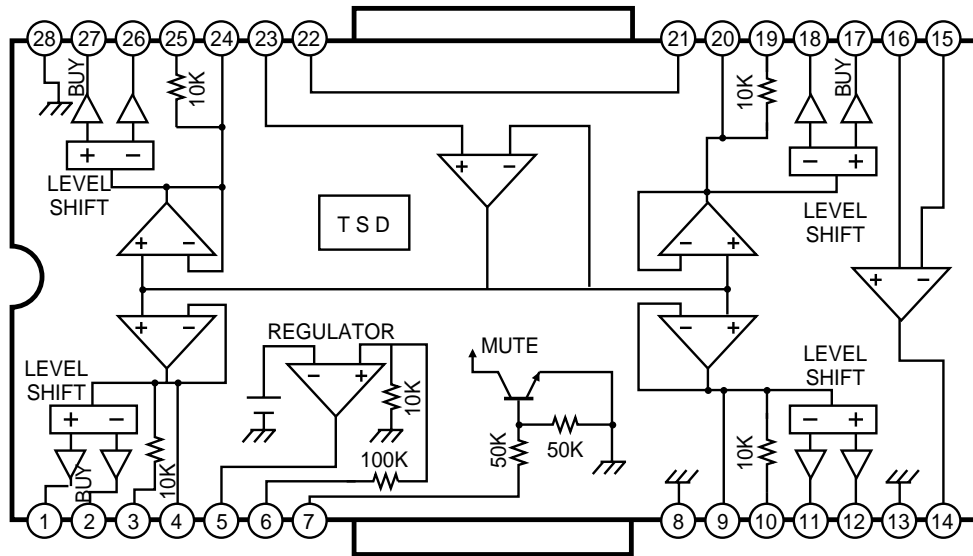
**KA8301**



**BA3126N**



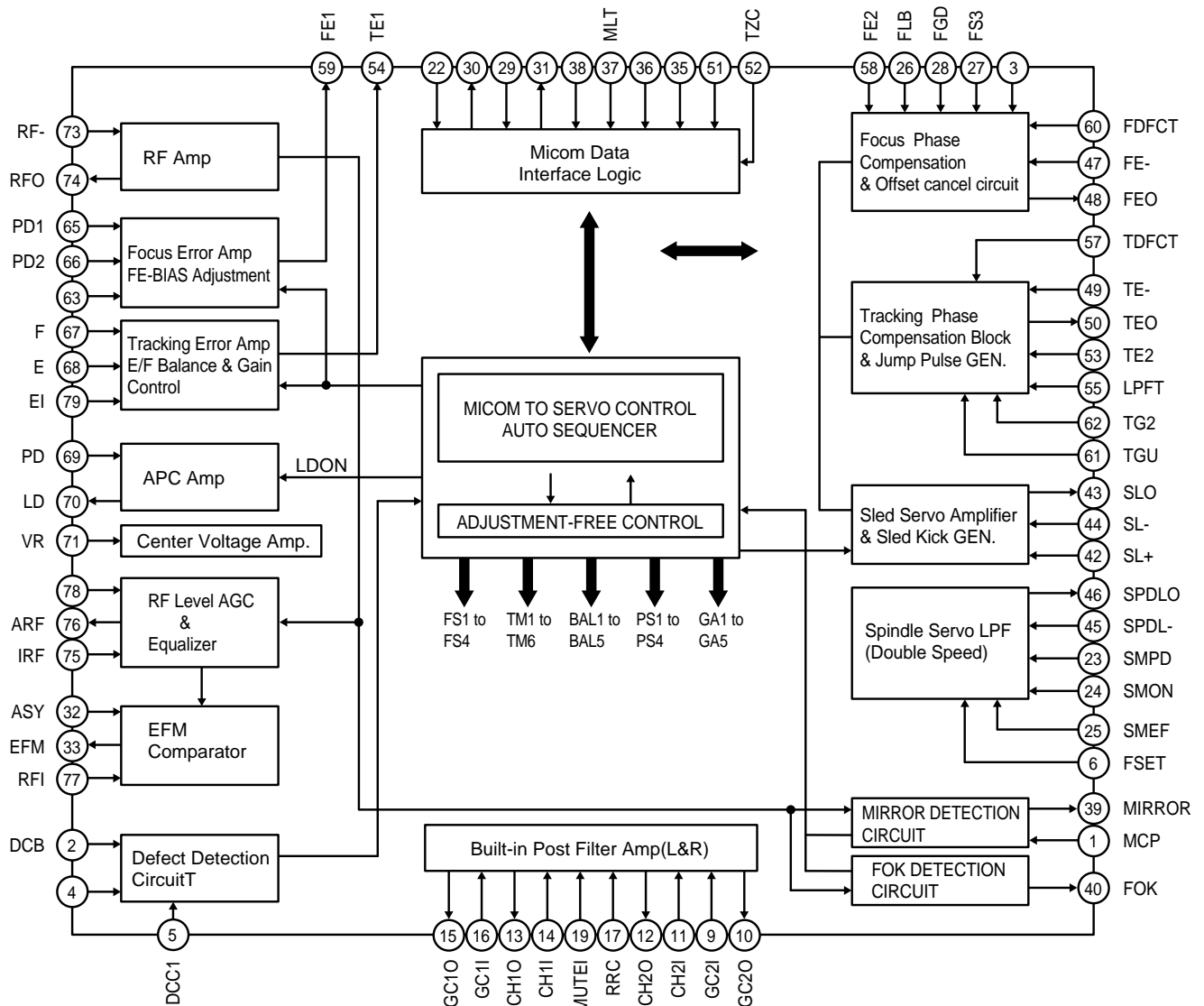
# KA3010



## PIN DESCRIPTION

Pin No.	Symbol	I/O	Description
1	DO1.1	O	DRIVE OUTPUT
2	DO1.2	O	DRIVE OUTPUT
3	DI1.1	I	DRIVE INPUT
4	DI1.2	I	DRIVE INPUT
5	REG		REGULATOR
6	REO	O	REGULATOR OUTPUT
7	MUTE		MUTE
8	GND1		GROUND
9	DI2.1	I	DRIVE INPUT
10	DI2.2	I	DRIVE INPUT
11	DO2.1	O	DRIVE OUTPUT
12	DO2.2	O	DRIVE OUTPUT
13	GND2		GROUND
14	OPOUT	O	OPAMP OUTPUT
15	OPIN (-)	I	OPAMP OUTPUT (-)
16	OPIN (+)	I	OPAMP INPUT (+)
17	DO3.1	O	DRIVE OUTPUT
18	DO3.2	O	DRIVE OUTPUT
19	DI3.1	I	DRIVE INPUT
20	DI3.2	I	DRIVE INPUT
21	VCC1		SUPPLY VOLTAGE
22	VCC2		SUPPLY VOLTAGE
23	VREF		2.5V BIAS VOLTAGE
24	DI4.1	I	DRIVE INPUT
25	DI4.2	I	DRIVE INPUT
26	DO4.1	O	DRIVE OUTPUT
27	DO4.2	O	DRIVE OUTPUT
28	GND3		GROUND

# KB9223

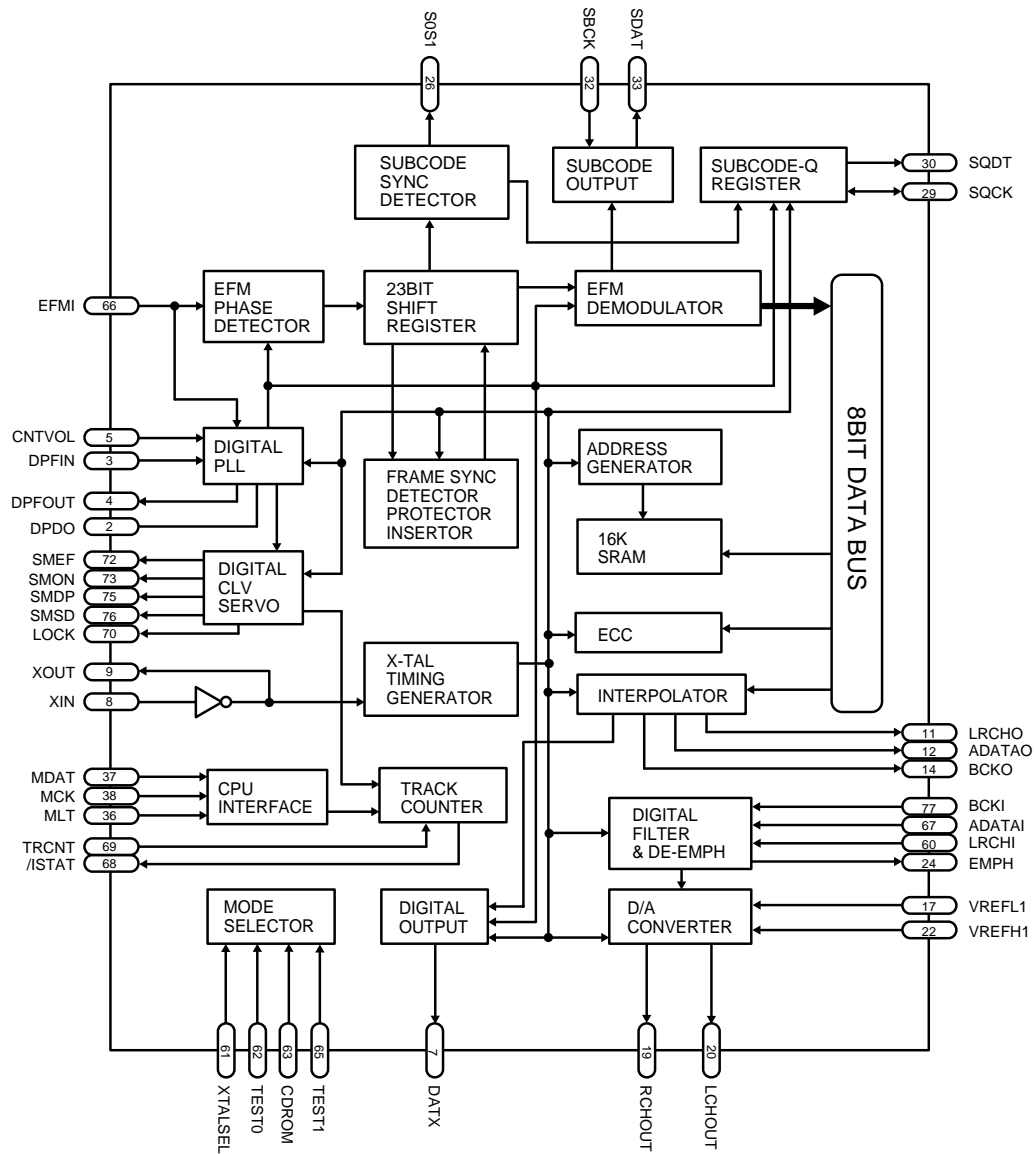


## PIN DESCRIPTION

Pin No.	System	Description
1	MCP	Capacitor connection pin for mirror hold
2	DCB	Capacitor connection pin for defect Bottom hold
3	FRSH.	Capacitor connection pin for time constant to generate focus search waveform
4	DCC2	The input pin through capacitor of defect bottom hold output
5	DCC1	The output pin of defect bottom hold
6	FSET	The peak frequency setting pin for focus, tracking servo and cut off frequency of CLV LPF
7	VDDA	Analog VCC for servo part
8	VCCP	VCC for post filter
9	GC2I	Amplifier negative input pin for gain and low pass filtering of DAC output CH2
10	GC2O	Amplifier output pin for gain and low pass filtering of DAC output CH2
11	CH2I	The input pin for post filter channel2
12	CH2O	The output pin for post filter channel2
13	CH1O	The output pin for post filter channel1
14	CH1I	The input pin for post filter channel1
15	GC1O	Amplifier output pin for gain and low pass filtering of DAC output CH1

Pin No.	System	Description
16	GC1I	Amplifier negative input pin for gain and low pass filtering of DAC output CH1
17	RRC	The pin for noise reduction of post filter bias
18	VSSP	VSS for post filter
19	MUTEI	The input pin for post filter muting control
20	ISSET	The input pin for current setting of focus search, track jump and sled kick voltage
21	VREG	The output pin of regulator
22	WDCK	The clock input pin for auto sequence
23	SMDP	The input pin of CLV control output pin SMDP of DSP
24	SMON	The input pin for spindle servo ON through SMON of DSP
25	SMEF	The input pin of provide for an external LPF time constant
26	FLB	Capacitor connection pin to perform rising low bandwidth of focus loop
27	FS3	The pin for high frequency gain change of focus loop with internal FS3 switch
28	FGD	Reducing high frequency gain with capacitor between FS3 pin
29	LOCK	Sled runaway prevention pin
30	TRCNT	Track count output pin
31	ISTAT	Internal status output pin
32	ASY	The input pin for asymmetry control
33	EFM	EFM comparator output pin
34	VSSA	Analog VSS for servo part
35	MCK	Micom clock input pin
36	MDATA	Micom data input pin
37	MLT	Micom data latch input pin
38	RESET	Reset input pin
39	MIRROR	The mirror output for test
40	FOK	The output pin of focus OK comparator
41	SSTOP	The pin for detection whether pick_up position is innermost or not
42	SL+	The noninverting input pin of sled servo amplifier
43	SLO	The output pin of sled servo amplifier
44	SL-	The inverting input pin of sled servo amplifier
45	SPDL-	The noninverting input pin of spindle servo amplifier
46	SPDLO	The output pin of spindle servo amplifier
47	FE-	The inverting input pin of focus servo amplifier
48	FEO	The output pin of focus servo amplifier
49	TE-	The inverting input pin of tracking servo amplifier
50	TEO	The output pin of tracking servo amplifier
51	ATSC	The input pin for Anti-shock detection
52	TZC	The comparator input pin for tracking zero crossing detection
53	TE2	Tracking servo input pin
54	TE1	Tracking error amplifier output pin
55	LPFT	The input pin of tracking error low pass filtering signal
56	DVDD	The power supply pin for logic circuit
57	TDFCT	The capacitor connection pin for tracking defect compensation
58	FE2	Focus servo input pin
59	FE1	Focus error amplifier output pin
60	FDFCT	The capacitor connection pin for focus defect compensation
61	TGU	The capacitor connection pin for high frequency tracking gain switch
62	TG2	The pin for high frequency gain change of tracking servo loop with internal TG2 switch
63	FEBIAS	Focus error bias voltage control pin
64	DVEE	The DVEE pin for logic circuit
65	PD1	The negative input pin of RF I/V amplifier1 (A+C signal)
66	PD2	The negative input pin of RF I/V amplifier2 (B+D signal)
67	F	The negative input pin of F I/V amplifier (F signal)
68	E	The negative input pin of E I/V amplifier (E signal)
69	PD	The input pin for APC
70	LD	The output pin for APC
71	VR	The output pin of (AVEE+AVCC)/2 voltage
72	VCC	VCC for RF part
73	RF-	RF summing amplifier inverting input pin
74	RFO	RF summing amplifier output pin
75	IRF	The input pin for AGC
76	ARF	The output pin for AGC
77	RFI	The input pin for EFM comparing
78	CAGC	The capacitor connection pin for AGC
79	EI	Feedback input pin of E I/V amplifier for EF Balance control
80	GND	GND for RF part

# KS9286

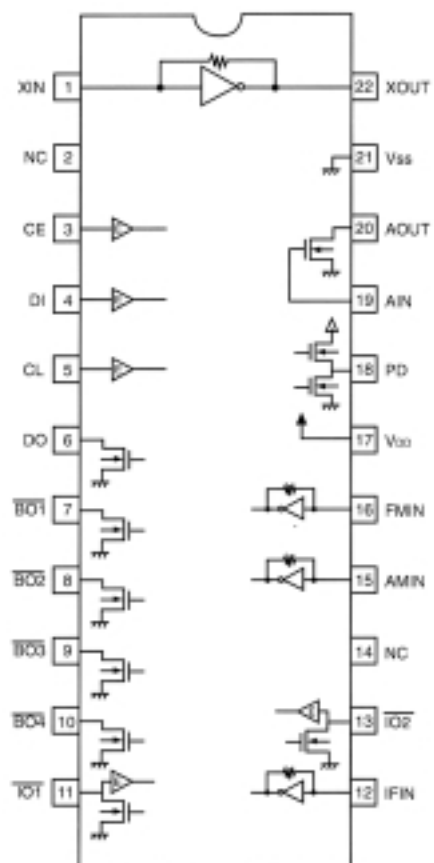


## PIN DESCRIPTION

Pin No.	Symbol	IO	Description
1	AVDD1	-	Analog VCC1
2	DPDO	O	Charge pump output for Digital PLL
3	DPFIN	I	Filter input for Digital PLL
4	DPFOUT	O	Filter output for Digital PLL
5	CNTVOL	I	VCO control voltage for Digital PLL
6	AVSS1	-	Analog Ground1
7	DATX	O	Digital Audio output data
8	XIN	I	X'tal oscillator input
9	XOUT	O	X'tal oscillator output
10	WDCHO	O	Word clock output of 48bit/Slot (88.2KHz)
11	LRCHO	O	Channel clock output of 48 bit/Slot (44.1KHz), 88.2KHz when ESP ON
12	ADATAO	O	Serial audio data output of 48 bit/Slot (MSB first), double speed output when ESP ON
13	DVSS1	-	Digital Ground1
14	BCKO	O	Audio data bit clock output of 48 bit/Slot (2.1168MHz), 4.2336MHz when ESP ON
15	C2PO	O	C2 Pointer for output audio data
16	VREFL2	I	Input terminal2 of reference voltage "L" (Floating)

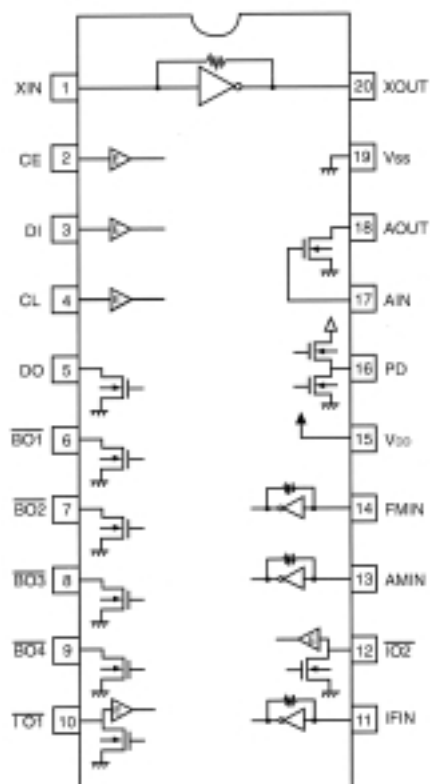
Pin No.	Symbol	IO	Description
17	VREFL1	I	Input terminal1 of reference voltage“ L ”(GND connection)
18	AVDD2	-	Analog VCC2
19	RCHOUT	O	Right-Channel audio output through D/A converter
20	LCHOUT	O	Left-Channel audio output through D/A converter
21	AVSS2	-	Analog ground2
22	VREFH1	I	Input terminal1 of reference voltage“ H ”(VDD connection)
23	VREFH2	I	Input terminal2 of reference voltage“ H ”(Floating)
24	EMPH	O	Emphasis/Non-Emphasis output, H: Emphasis ON, L: Emphasis OFF
25	LKFS	O	The Lock Status output of frame sync
26	S0S1	O	Output of subcode sync signal (S0+S1)
27	RESET	I	System reset at“ L ”
28	/ESP	I	ESP function ON/OFF control (‘ L ’: ESP function ON,“ H ’: ESP function OFF)
29	SQCK	I	Clock for output Subcode-Q data
30	SQDT	O	Serial output of Subcode-Q data
31	SQOK	O	The CRC (Cycle Redundancy Check) check result signal output of Subcode-Q
32	SBCK	I	Clock for output subcode data
33	SDAT	O	Subcode serial data output
34	DVDD1	-	Digital VDD1
35	MUTE	I	Mute control input (‘ H ’: Mute ON)
36	MLT	I	Latch Signal Input from Micom (Scmit Trigger)
37	MDAT	I	Signal data input from Micom (Scmit Trigger)
38	MCK	I	Signal clock Input from Micom (Scmit Trigger)
39	DB8	I/O	SRAM data I/O port 8 (MSB)
40	DB7	I/O	SRAM data I/O port 7
41	DB6	I/O	SRAM data I/O port 6
42	DB5	I/O	SRAM data I/O port 5
43	DB4	I/O	SRAM data I/O port 4
44	DB3	I/O	SRAM data I/O port 3
45	DB2	I/O	SRAM data I/O port 2
46	DB1	I/O	SRAM data I/O port 1 (LSB)
47	C1F1	I/O	Monitoring output for C1 error correction (RA1)
48	C1F2	I/O	Monitoring output for C1 error correction (RA2)
49	C2F1	I/O	Monitoring output for C2 error correction (RA3)
50	C2F2	I/O	Monitoring output for C2 error correction (RA4)
51	C2FL	I/O	C2 decoder flag (RA5,“ H ’: When one processing C2 code is impossible correction status.)
52	/PBCK	I/O	Output of VCO/2 (4.3218MHz) (RA6)
53	DVSS2	I/O	Digital ground 2
54	FSDW	I/O	Window or unprotected frame sync (RA7)
55	ULKFS	I/O	Frame sync protection state (RA8)
56	/JIT	I/O	Display of either RAM overflow onncerflow for ±4 frame jitter margin (RA9)
57	C4M	I/O	Only monitoring signal (4.2336M .. RA10)
58	C16M	I/O	16.9344MHz signal output (RA11)
59	/WE	I/O	Terminal for test
60	/CS	I/O	Terminal for test
61	XTALSEL	I	Mode Selection1 (H: 33.8688MHz, L: 16.9344MHz)
62	TEST0	I	TEST input terminal (GND connection)
63	CDROM	I	Mode Selection2 (H: CD-ROM, L: CDP)
64	SRAM	I	TEST input terminal (GND connection)
65	TEST1	I	TEST input terminal (GND connection)
66	EFMI	I	EFM signal input
67	ADATAI	I	Serial audio data input of 48 bit/Slot (MSB first)
68	/ISTAT	O	The internal status output
69	TRCNT	I	Tracking counter input signal
70	LOCK	O	Output signal of LKFS condition sampled PBFR/16 (if LKFS is“ H ”, LOCK is“ H ”, if LKFS is sampled“ L ”at least 8 times by PBFR/16, LOCK is“ L ”.)
71	PBFR	O	Write frame clock (Lock: 7.35KHz)
72	SMEF	O	LPF time constant control of the spindle servo error signal
73	SMON	O	ON/OFF control signal for spindle servo
74	DVDD2	-	Digital VDD2
75	SMDP	O	Spindle Motor drive (Rough control in the SPEED mode, Phase control in the PHASE mode)
76	SMSD	O	Spindle Motor drive (Velocity control in the PHASE mode)
77	BCKI	I	Audio data bit clock input of 48 bit/Slot (2.1168MHz)
78	TESTV	I	TEST input terminal (GND connection)
79	DSPEED	I	TEST input terminal (VDD connection)
80	LRCHI	I	Channel clock input of 48 bit/Slot (44.1KHz)

- **LC72131**



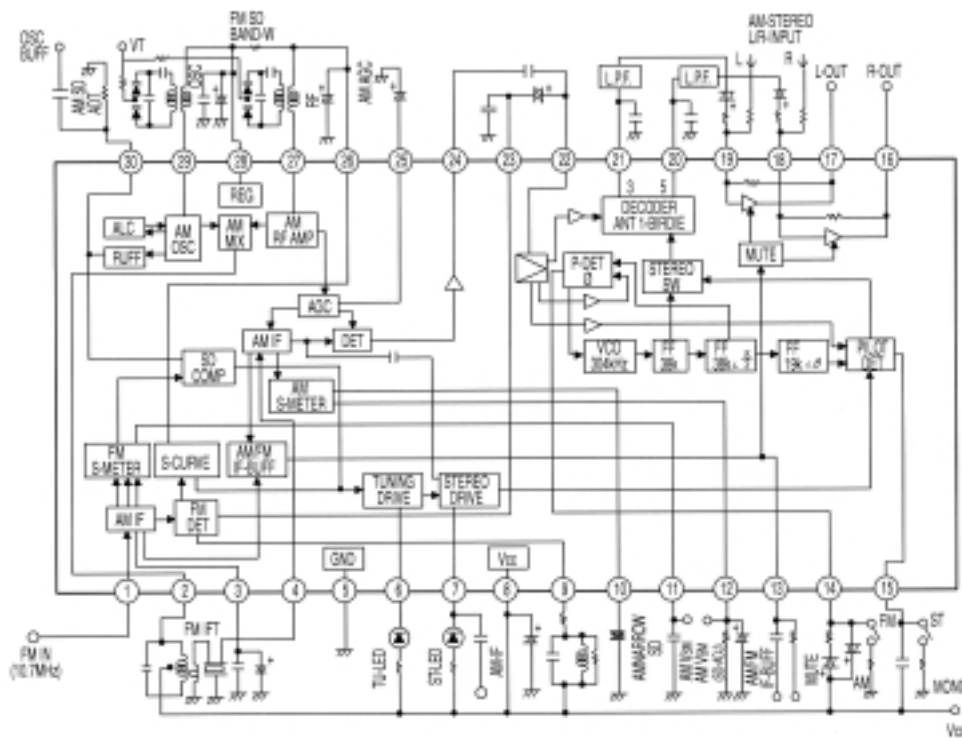
Top view

- **LC72131M**



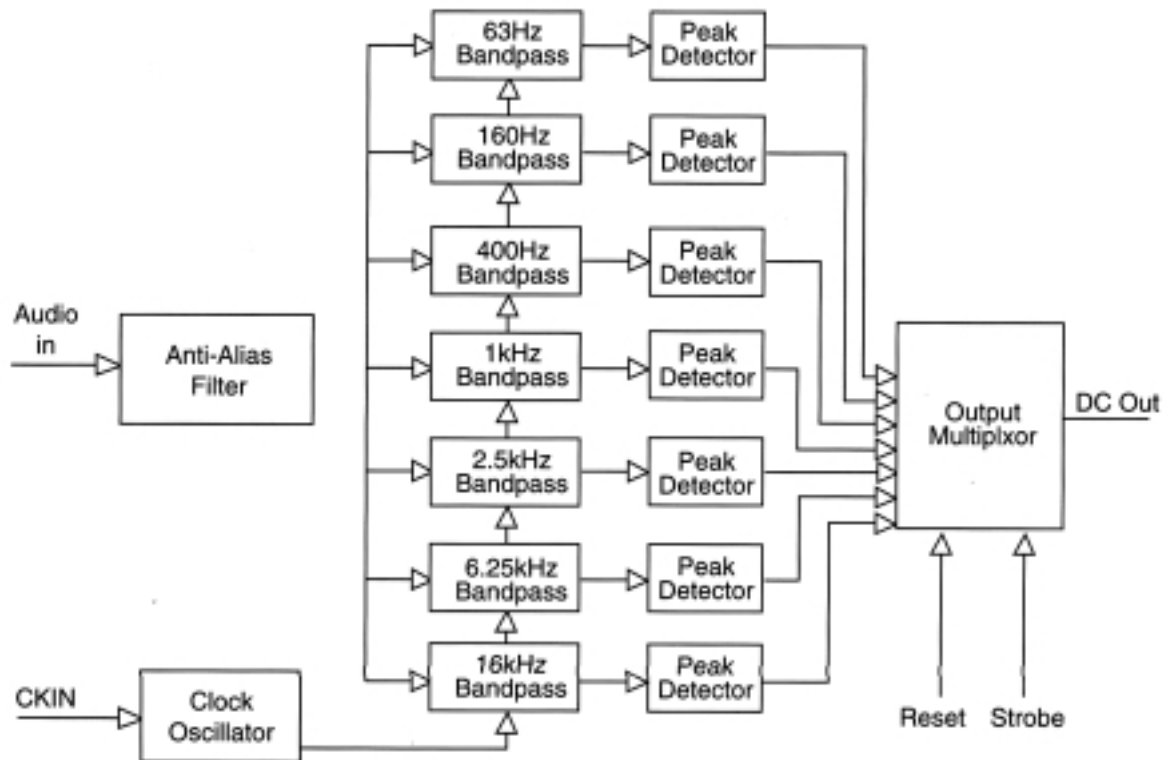
Top view

- **LA1837**

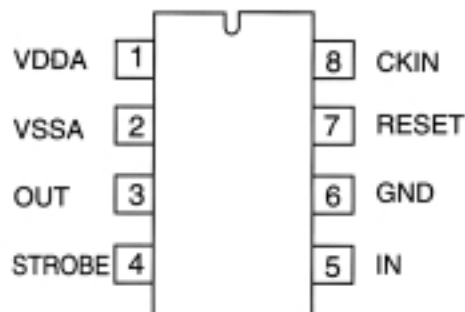




## • MSGEQ7



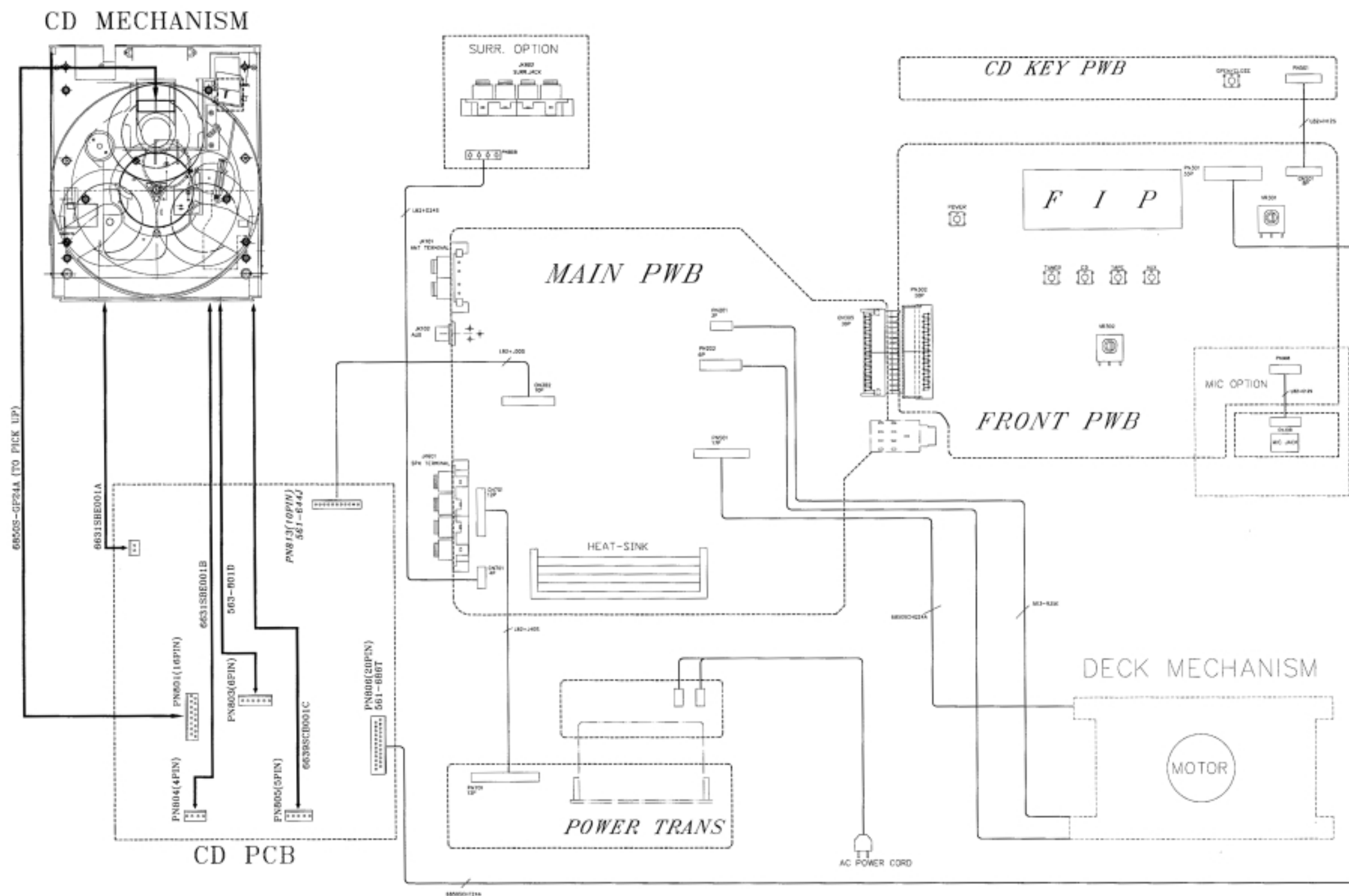
### PIN CONFIGURATION



### PIN DESCRIPTION

Pin No.	Symbol	Description
1	VDD	Positive Power Supply Typically 5 Volts
2	VSS	Negative Power Supply Typically 0 Volts
3	OUT	Multiplexed DC Output
4	STROBE	Channel Selection Pin
5	IN	Audio Input
6	GND	Internally Generated Ground Reference. Typically 2.5V
7	RESET	Resets Multiplexor
8	CKIN	Clock Oscillator Pin

# WIRING DIAGRAM



NOTES : Wiring diagram for this model are subject to change for improvement without prior notice.