



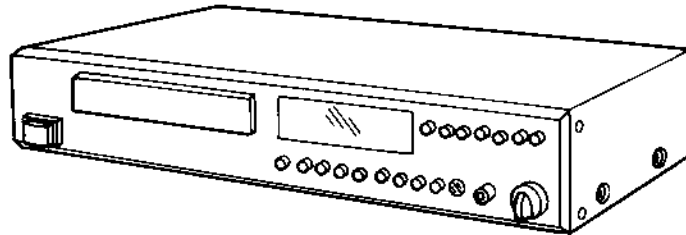
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# ADCOM<sup>®</sup>

## SERVICE MANUAL

### COMPACT DISC PLAYER

### GCD-575



#### DANGER

Invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM.

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#### SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine replacement parts. Especially critical parts in the power circuit block should not be replaced with any substitutes. Critical parts are marked with  $\Delta$  in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

#### SPECIFICATIONS

FREQUENCY RESPONSE	: 5 Hz ~ 20 kHz, +0.1, -0.5 dB	FORMAT	: Optical
SIGNAL-TO-NOISE RATIO	: 105 dB	LASER	: GaAlAs semiconductor
DYNAMIC RANGE	: 98 dB	SAMPLING RATE	: 176.4 kHz
THD	: 0.0025 %	QUANTIZATION BITS	: 16-bit linear
IMD (70 Hz difference)	: 5 kHz ~ 0.0018 %	POWER	: 120 V AC/60 Hz
	10 kHz ~ 0.0003 %	POWER CONSUMPTION	: 24 Watts
	15 kHz ~ 0.0015 %	CHASSIS DIMENSIONS	: 17" (430 mm) x
IMD (SMPTE)	: 0.0015 %		10-3/16" (260 mm) x 3" (76 mm)
CHANNEL SEPARATION (1 kHz)	: 95 dB	MAXIMUM DIMENSIONS	: 17" (430 mm) x 11-1/4" (285 mm)
INTERCHANNEL PHASE SHIFT	: 20 kHz — Less than 1.8°		x 3-7/16" (87 mm)
OUTPUT IMPEDANCE	: Fixed — 100 $\Omega$	WEIGHT	: 12 lbs. (5.5 kg.)
	Variable — 100 $\Omega$	ACCESSORIES	: Remote Transmitter AR-575
	Digital — 75 $\Omega$		Two AA, 1.5 V batteries
OUTPUT LEVEL	: Fixed — 2.5 V RMS		Low-loss audio cable
	Variable — Greater than 4.5 V		
	RMS		
	Digital — 0.5 V peak-to-peak		

## CAUTIONS REGARDING HANDLING OF THE LASER

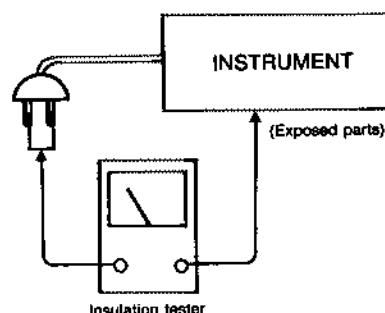
This device uses an invisible (near-infrared) laser to pick up signals recorded on the disc. Laser radiation does not leak from the unit during normal operation. However, when the top cover is removed care must be taken to avoid looking directly at the beam emitted by the laser. The laser's maximum rated power output from the lens is 0.4mW. However, when this is focused the power reaches  $1.3 \times 10^4 \text{ mW/cm}^2$ . Beside the laser diode, the pickup ass'y contains optical components such as the beam splitter, and lens, etc., as well as a 6-way photo diode, and is precisely constructed. Please do not disassemble the pickup ass'y as the optical components are very easily damaged by dust and dirt and the laser diode contains dangerous substances.

Check that exposed parts are properly insulated from the supply circuit before returning the instrument repaired to the customer.

- **Checking method**

Power switch is set to ON.

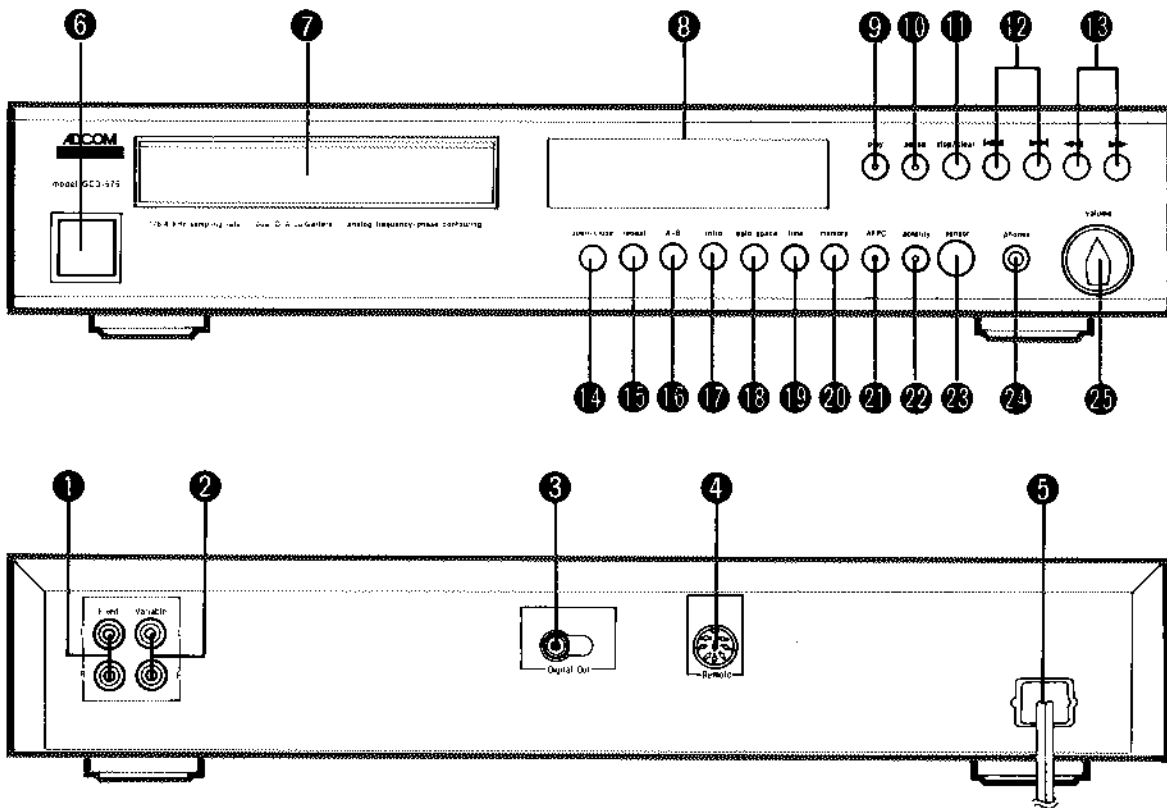
Next, measure the resistance value between both poles of the AC power supply plug, and the outside, ground connection of the RCA jacks on the rear panel. The resistance value must be 500 k $\Omega$  or more.



## FEATURES

- Very-low-impedance output (100 $\Omega$ )
- Dual digital-to-analog, 16-bit linear converters
- Triple-beam laser format
- 176.4kHz, four-times-oversampling filters
- Low-group-delay, digital and innovative analog filters
- Unique, selectable Analog Frequency/Phase Contouring circuitry
- High-grade-contact muting relays
- Direct-coupled audio amplifiers employ very fast, linear-gain semiconductors with circuitry based on the GFP-555
- OCL outputs with virtually no DC offset
- Fixed and variable outputs usable simultaneously
- Direct digital output
- Very-high-quality variable headphone output
- Selectable absolute polarity switch
- Outstanding interchannel phase coherence
- Reversible cast-metal feet with built-in "iso-points"
- Front-drawer loading
- Plays 3-inch CDs with no adaptor required
- Programs up to 24 tracks in any sequence
- Repeats disc, track, program or any selected sequence or phrase
- Fast-forward and fast-reverse scans are audible
- Displays simultaneously total tracks up to 20, track being played, programmed tracks, tracks to be played
- Timer displays elapsed time of track being played, total time elapsed on disc, time remaining on track, time remaining on disc

# FRONT AND REAR PANELS

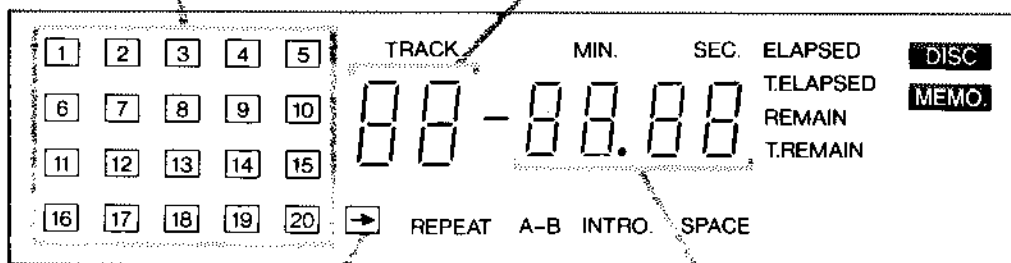


## Music Calendar

Displays the number of the tracks on the disc.

## TRACK Display

Displays the track number.



## Over Indicator

Lights when the number of tracks exceeds 20.

## Time Display

Displays the time.

- Output jacks (Fixed)
- Output jacks (Variable)
- Digital output jack
- Remote jack
- Power supply cord
- Power switch
- Tray
- Display panel

- Play button
- Pause button
- Stop/Clear button
- Track button
- FF/FR button
- Open/Close button
- Repeat button
- A—B button

- Intro button
- Auto space button
- Time button
- Memory button
- AFPC button
- Polarity button
- Sensor window
- Headphone jack
- Volume knob

## DISASSEMBLY

### Caution on Disassembly

Follow the notes below when disassembling the unit and reassembling it, to insure its safety and performance:

1. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
2. Remove tie-wraps or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to arrange the leads as they were before disassembly, and replace all tie-wraps and wire holders.
3. Be extremely careful with the devices sensitive to static electricity, and associated circuits, when servicing.

Step	Removal	Procedure	Figure
1	Cabinet	1. Screw . . . . . A x 1 2. Screw . . . . . B x 4 3. Rivet . . . . . C x 4	1
2	Front Panel	1. Screw . . . . . D x 6	2
3	Main P.C.B.	1. Screw . . . . . E x 2 2. Screw . . . . . F x 3 3. Snap . . . . . G x 2 4. Screw . . . . . H x 2	3
4	Phone P.C.B.	1. Knob . . . . . I x 1 2. Nut . . . . . J x 1 3. Stopper . . . . . K x 1	5
5	Control P.C.B.	1. Rivet . . . . . L x 7	4
6	Mechanism Unit	1. Screw . . . . . M x 3	3

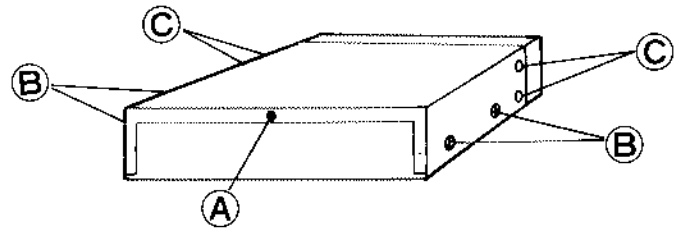


Figure 1

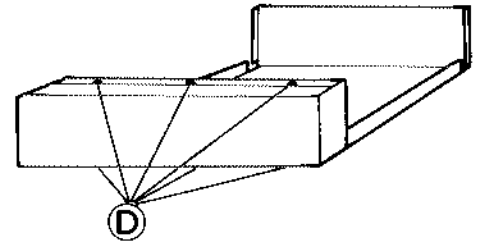


Figure 2

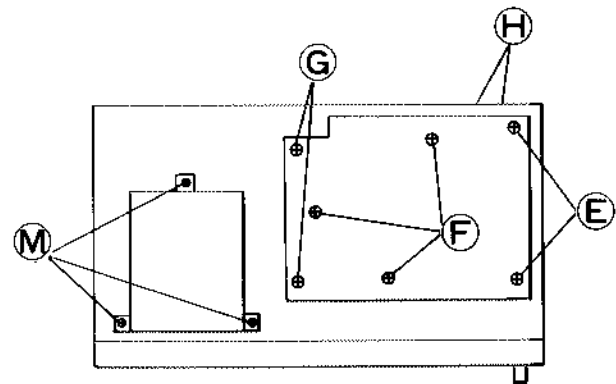


Figure 3

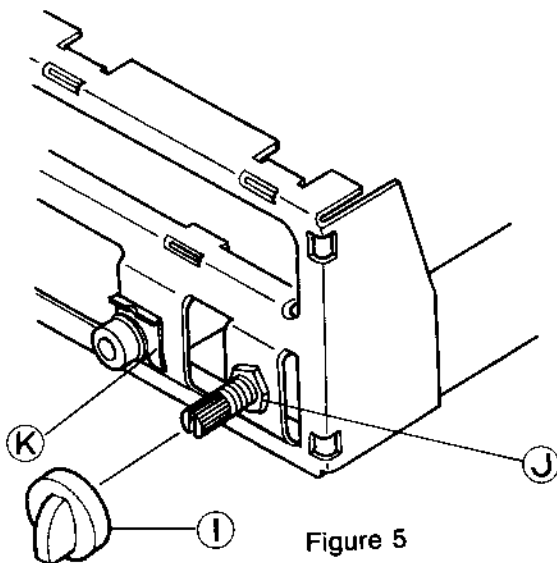


Figure 5

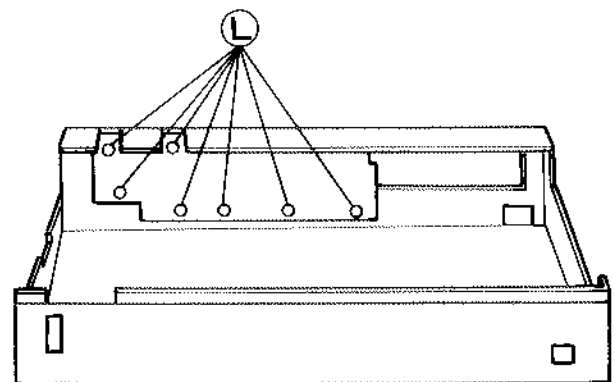


Figure 4

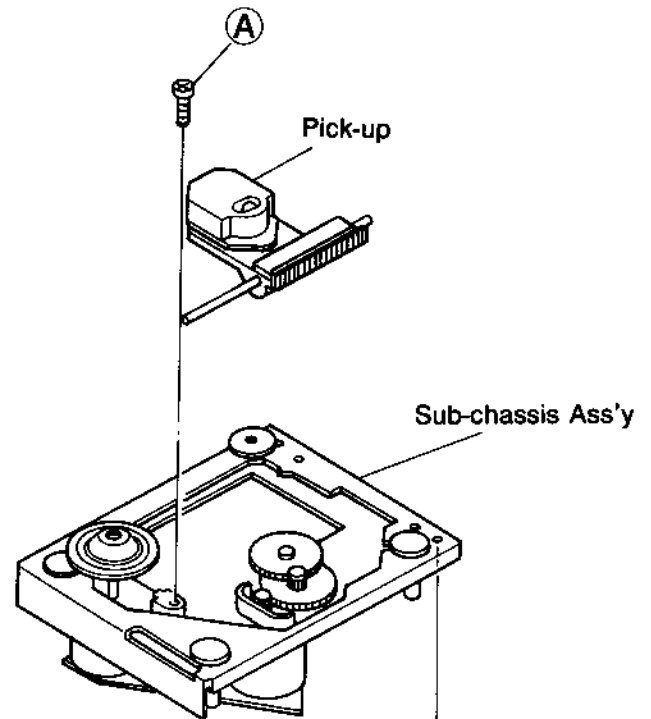
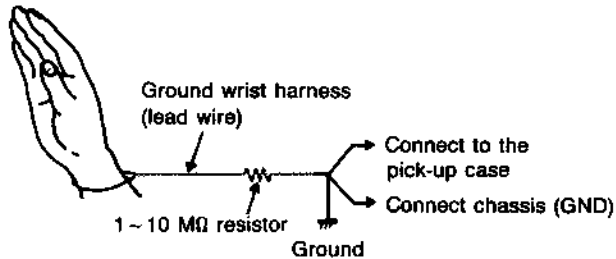
## DISASSEMBLY OF MECHANISM

### 1. Removing the pick-up.

- (1-1) Open the table.
- (1-2) Remove screw (A).
- (1-3) Take out the entire pick-up assembly, including the rail.

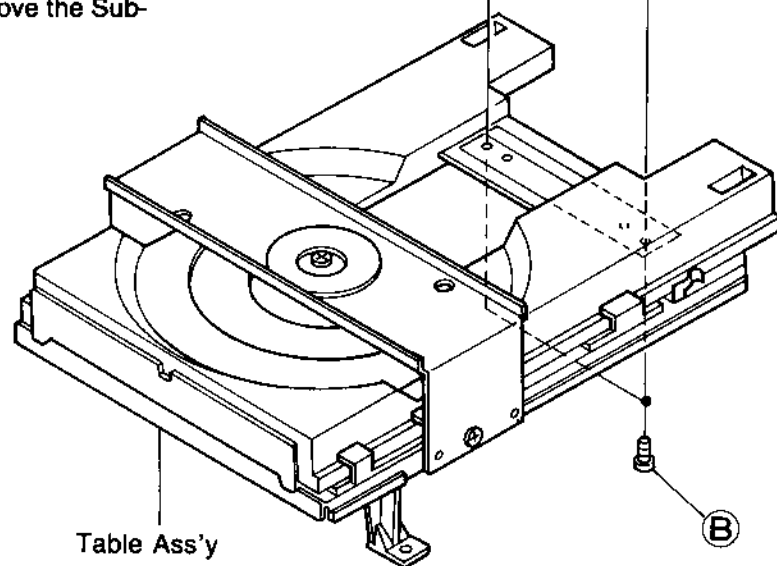
#### NOTE:

The pick-up is extremely sensitive to static electricity. Be sure to take adequate measures to protect the pick-up from static electricity when replacing or handling it.



### 2 Removing the Sub-chassis Ass'y

- (2-1) Open the table.
- (2-2) Remove screw (B), and then remove the Sub-chassis Ass'y.



# ADJUSTMENT PROCEDURES

## 1. Meters and Jigs

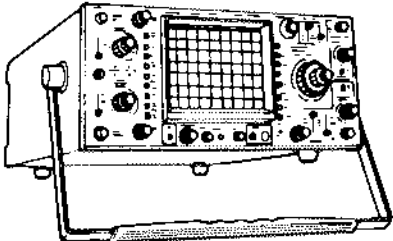


Figure 1

Oscilloscope (3 or more Modes, 100 MHz, X-Y Input capable)

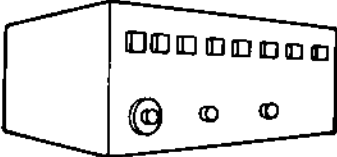
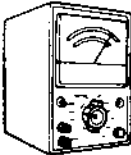


Figure 2

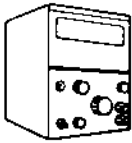
Audio Frequency Oscillator  
(Output impedance: 600Ω)



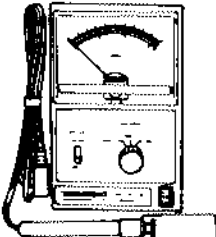
AC Voltmeter  
Figure 3



Distortion Meter  
Figure 4



Frequency Counter  
Figure 5



Optical Power Meter  
Figure 6

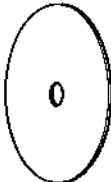


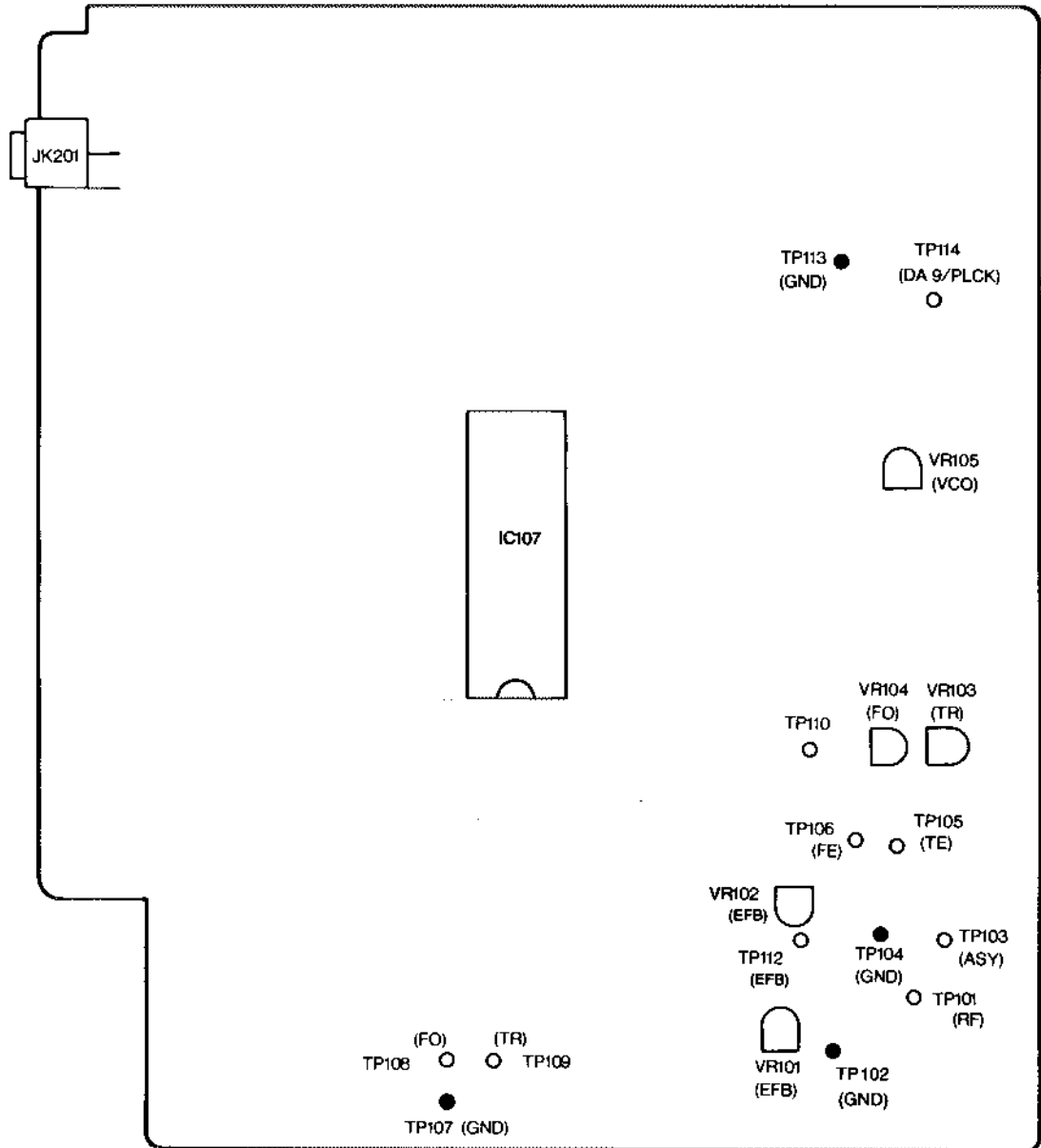
Figure 7

Test Discs  
Philips  
Philips

Test Sample 5  
Test Sample 5A

## 2. Adjustment Points

Main PWB VR, TP and IC placement diagram.





### 3. VCO Frequency Adjustment

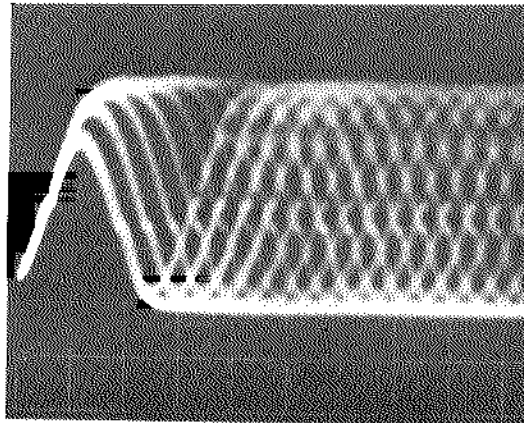
- (3-1) With no disc loaded, short TP103 (ASY) and TP104 (GND).
- (3-2) Connect the frequency counter (10/1 probe) to TP114 (DA9/PLCK) and TP113 (GND), and adjust VR105 so that  $4.305 \pm 0.005\text{MHz}$  is obtained.

### 4. Focus Offset Adjustment

- (4-1) With no disc loaded, connect the oscilloscope (10/1 probe) between TP106 (FE) and TP104 (GND).
- (4-2) Adjust VR102 so that a DC level value of  $0.0\text{V} \pm 0.01\text{V}$  is obtained.

### 5. Visual EFM Signal Adjustment

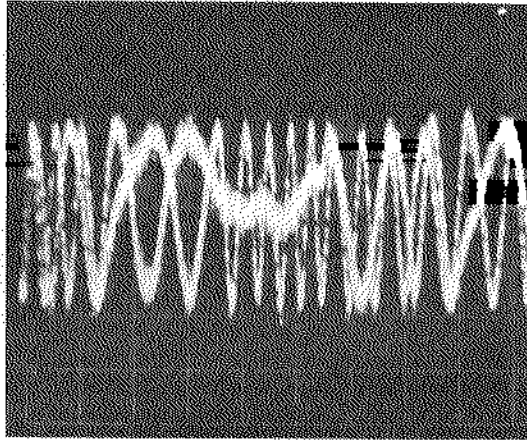
- (5-1) Connect the oscilloscope (10/1 probe) between TP101 (RF) and TP104 (GND).
- (5-2) Play the first track of the test disc (Philips Test Sample 5) and adjust VR102 so that the output waveform is clear (without blurring).



Range 0.2V, 0.5 $\mu$ S

## 6. E-F Balance Adjustment

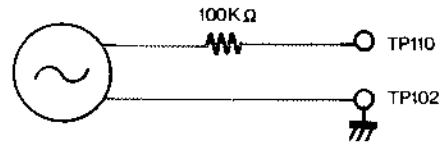
- (6-1) Connect the oscilloscope (10/1) to TP105 (TE) and TP104 (GND) and turn VR103 fully counter-clockwise.
- (6-2) Play the first track of the test disc (Philips Test Sample 5) and adjust VR101 so that the center of the output waveform comes within the range of  $0V \pm 0.1V$ .
- (6-3) Return VR103 to mechanical center.



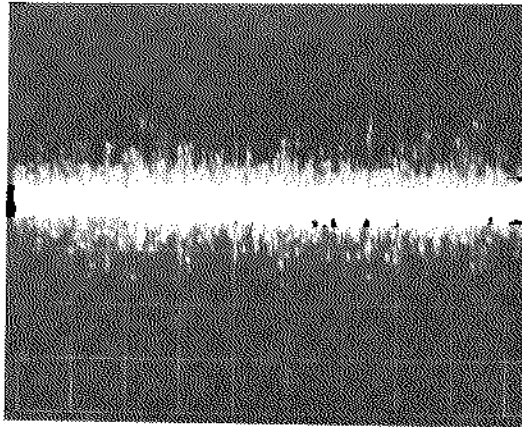
Range 0.5V, 2mS

## 7. Tracking Gain Adjustment

- (7-1) Connect the oscilloscope and AC voltmeter between TP109(TR) and TP107 (GND).
- (7-2) Connect a sine wave generator (0.5Vrms, 4kHz output) to TP110 and TP104 (GND) through a 100k $\Omega$  resistor.



- (7-3) Play the first track of the test disc (Philips Test Sample 5) and adjust VR103 so that the voltmeter reads  $0.7V, \pm 0.07$  Vrms.



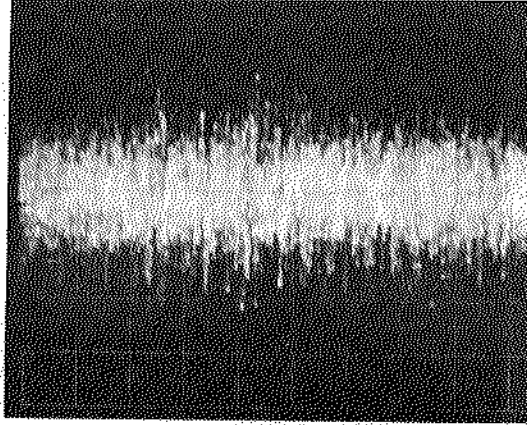
Range 1V, 2mS

## 8. Focus Gain Adjustment

Perform this adjustment last.

(8-1) Connect the oscilloscope and AC voltmeter between TP108 (FO) and TP107 (GND).

(8-2) Play the first track on the test disc (Philips Test Sample 5) and adjust VR104 so that the voltage is  $0.23\text{V}, \pm 0.01\text{ Vrms}$ .



Range 0.5V, 2mS

## 9. Operation Check

Use the Philips Test 5A test disc (814126-2) and check to make sure that the following portions can be played without track-jumping.

(9-1) Interruption

700 $\mu\text{m}$ , Track 8, 0'00" ~ 0'20"

(9-2) Black dot

600 $\mu\text{m}$ , Track 14 0'00" ~ Track 14 0'20"

(9-3) Simulated fingerprint

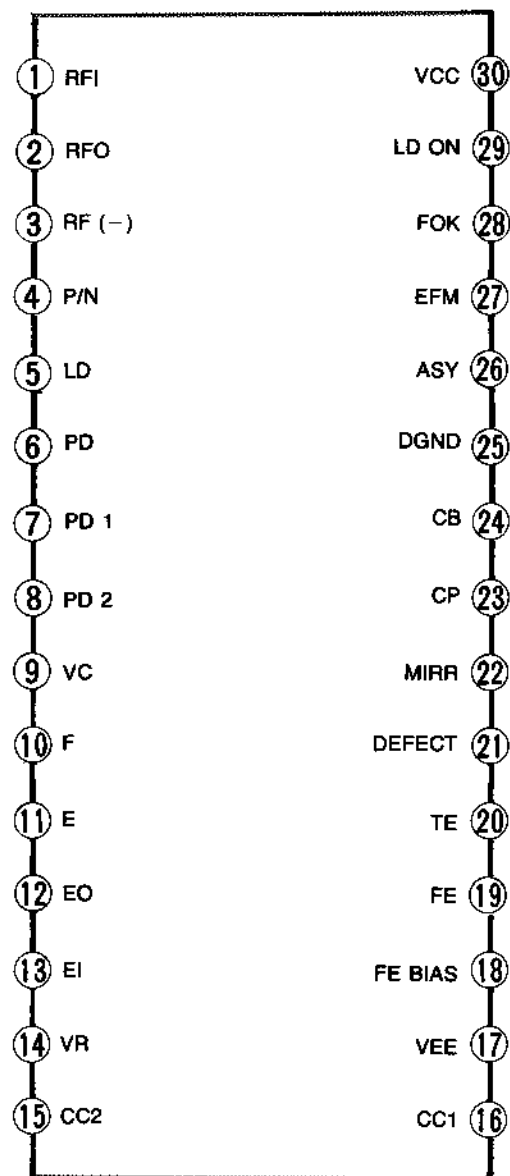
Track 18, 0'00" ~ 0'20"

# DESCRIPTION OF MISCELLANEOUS PARTS

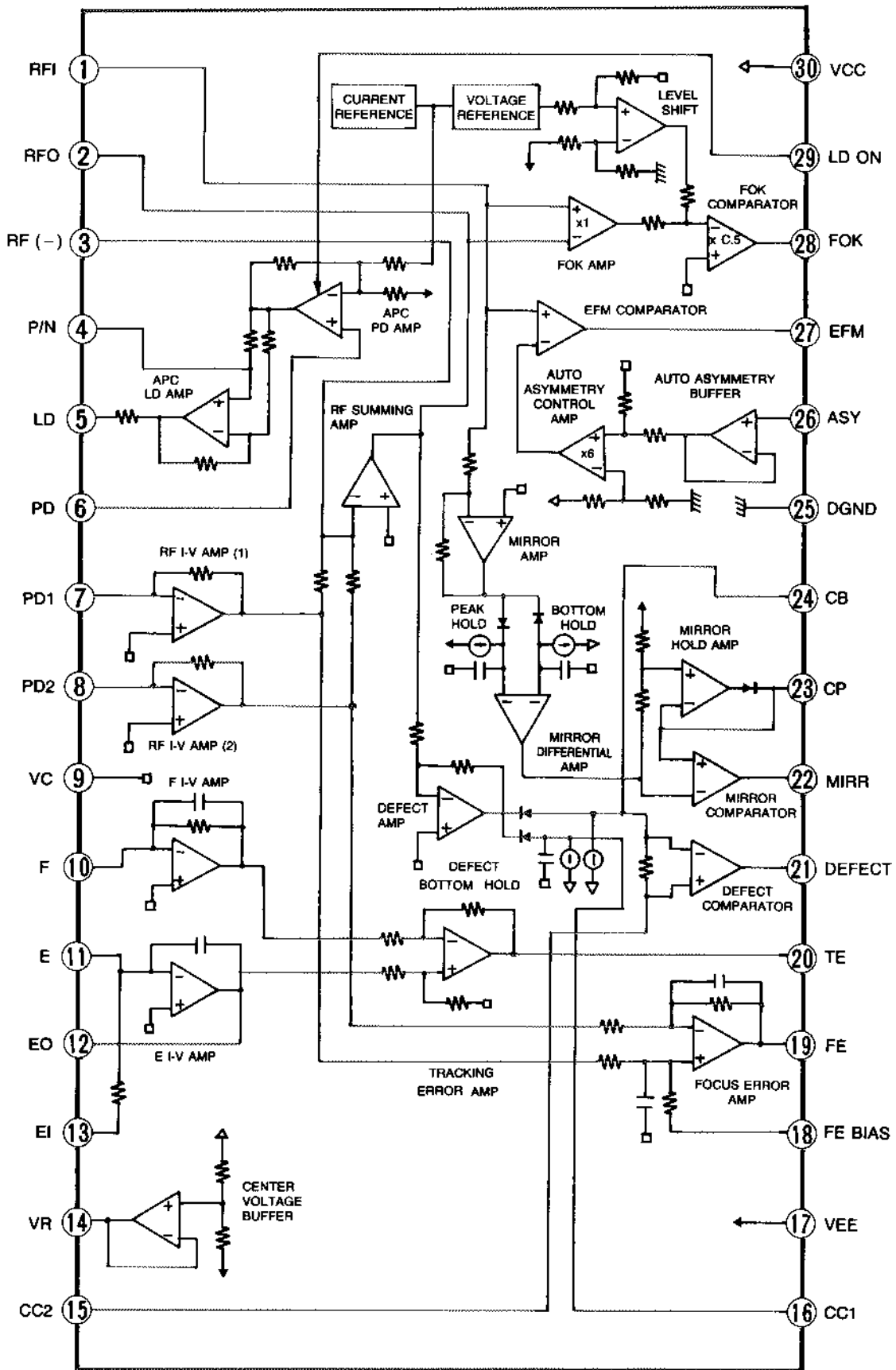
## 1. CXA1081M (IC101)

- FUNCTIONS
  - RF amplifier
  - Focus error amplifier
  - Tracking error amplifier
  - APC circuit
  - Auto asymmetry control amplifier
  - Focus OK detection circuit
  - Mirror detection circuit
  - Defect detection circuit
  - EFM comparator

### (1) External View



(2) Block Diagram



# PIN FUNCTIONS

TERMINAL NUMBER	SYMBOL	I/O	DC VOLTAGE (V)	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
1	RFI	I	0		RF Input Terminal
2	RFO	O	VRFO		RF Output Terminal
3	RF(-)	I	0		RF summing return input terminal.
4	P/N	I	0 (VC)		LD's P-sub/N-sub switching terminal.
5	LD	O	-1.8		APC LD amp output terminal. (DC voltage: when N-sub, and PD open)
6	PD	I	0		APC PD amp input terminal. (DC voltage: open)
7	PD1	I	0		RFI-V amp (1) inverted input terminal. Connected to the PIN diode A + C for current input.
8	PD2	I	0		RF I-V amp (2) inverted input terminal. Connected to the PIN diode B + D for current input.
9	VC	-	0		GND
10	F	I	0		F I-V amp inverted input terminal. Connected to the PIN diode F for current input.

TERMINAL NUMBER	SYMBOL	I/O	DC VOLTAGE (V)	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
11	E	I	0		E I-V amp inverted input terminal. Connected to the PIN diode E for for current input.
12	EO	O	0		E I-V amp output terminal.
13	EI	I	0		E I-V amp return input terminal. Used to adjust the gain of the E I-V amp.
20	TE	O	$V_{TEO}$		Tracking error amp output terminal.
14	VR	O	$V_{CVO}$		$(V_{OC} + V_{EE})/2$ DC voltage output terminal.
15	CC2	I	1.0		DEFECT Input Terminal
16	CC1	O	1.2		DEFECT bottom hold output terminal.
21	DEFECT	O	$V_{DFCTL}$		DEFECT comparator output terminal. (DC voltage: load of 10KΩ connected)
24	CB	I	0		DEFECT bottom hold condenser connection terminal.
17	$V_{EE}$	-	-2.5		$V_{CC}$ (-5V)
18	FE BIAS	I	0		Focus error amp non-inverted side bias terminal. Used for focus error amp CMR adjustment.
19	FE	O	$V_{FEO}$		Focus error amp output terminal.

TERMINAL NUMBER	SYMBOL	I/O	DC VOLTAGE (V)	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
22	MIRR	O	$V_{MIRL}$		MIRR comparator output terminal (DC voltage: load of 10K $\Omega$ connected)
23	CP	I	-1.3		MIRR hold condenser connection terminal. MIRR comparator non-inverted input.
25	DGND	-	-2.5		GND
26	ASY	I	-		Auto asymmetry control input terminal
27	EFM	O	$V_{EFMH}$		EFM comparator output terminal (DC voltage: load of 10K $\Omega$ connected)
28	FOK	O	$V_{FOKL}$		FOK comparator output terminal. (DC voltage: load of 10K $\Omega$ connected)
29	LD ON	I	-2.5 (DGND)		LD ON/OFF switching terminal. (DC voltage: when LD is ON)
30	$V_{cc}$	-	2.5		Positive power supply.

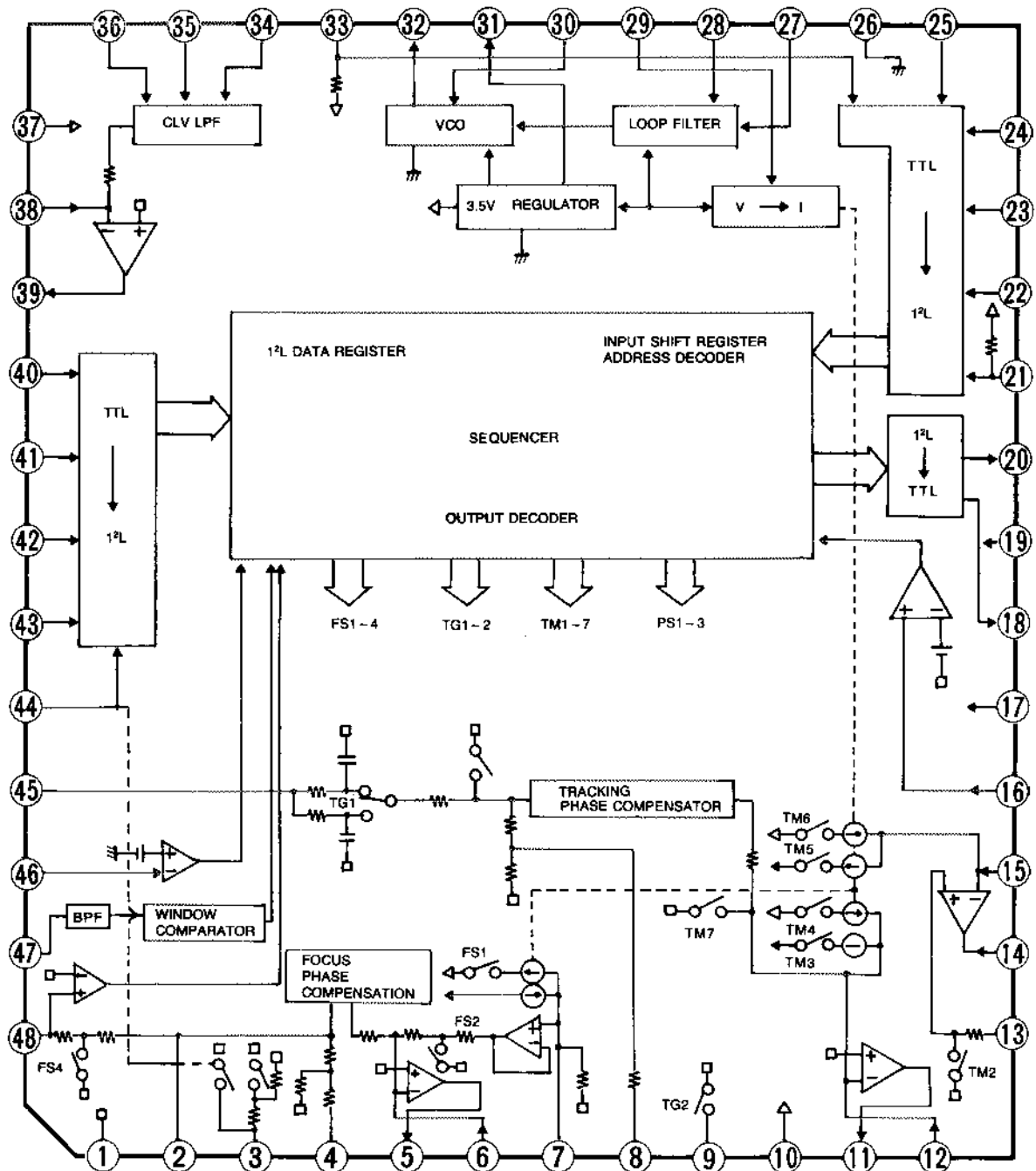


## 2 CXA1082AQ (IC102)

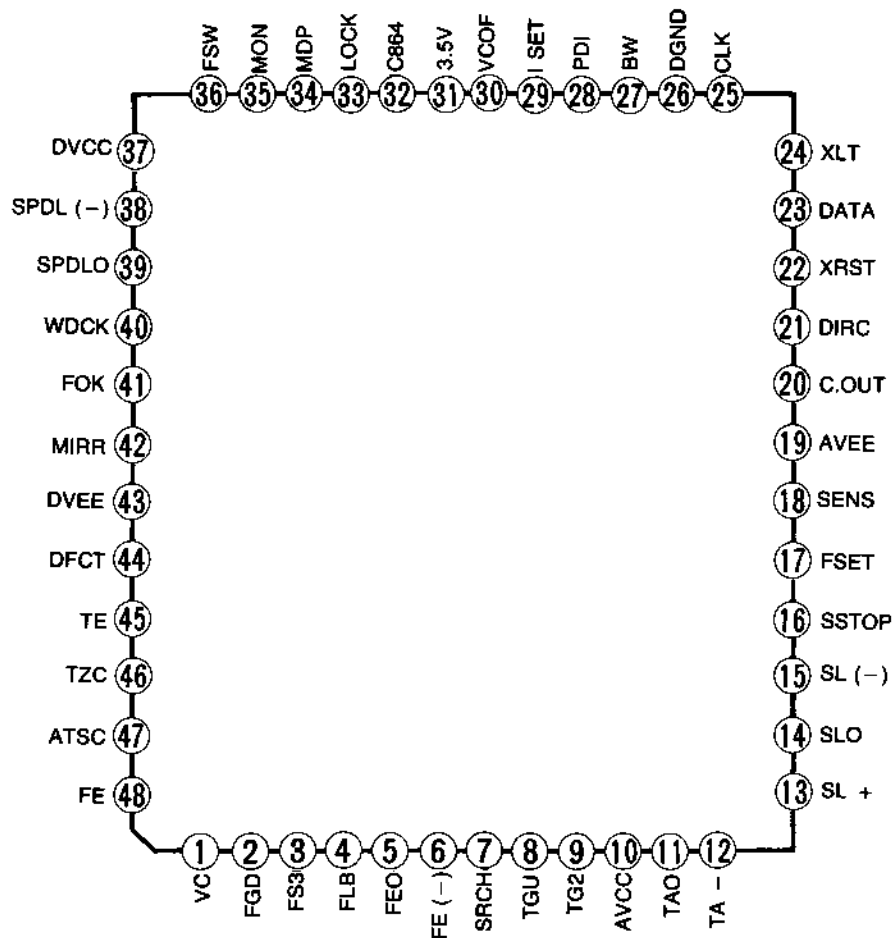
CXA1082AQ A CD Servo Signal Processor

- **FEATURES**
  - Focus servo control
  - Tracking servo control
  - Sled servo control
  - Spindle servo LPF, drive amplifier
  - EFM clock playback PLL filter 8.64MHz VCO
  - Auto sequencer RAM built-in

### 1 Block Diagram



## 2 External View



## 3 Pin Functions

TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
2	FGD		When lowering the high-range gain of the focus servo, a capacitor is inserted between this terminal and terminal 3.
3	FS3		The focus servo high-range gain is switched by turning the FS3 on and off.

TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
4	FLB		Focus servo external time constant circuit terminal for raising focus servo time constant.
5 11 14 39	FEO TAO SLO SPDLO		OP amp output terminals for driving power transistors.
6	FE -		Focus amp inverted input terminal.
7	SRCH		External time constant circuit terminal for producing the focus search waveform.
8	TGU		External time constant circuit terminal for switching the tracking high-range gain.
9	TG2		External time constant circuit terminal for switching the tracking high-range gain.

TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
12	TA -		Tracking amp inverted input terminal.
13	SL +		Sled amp non-inverted input terminal.
15	SL -		Sled amp inverted input terminal.
16	SSTOP		Limit SW ON/OFF detection signal terminal for detecting the innermost circumference of the disc.
17	FSET		Focus tracking phase compensation peak and CLV LPF servo-loop filter operating frequency setting terminal.
18 20	SENS C.OUT		Output terminal for microprocessor and interface.

TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
21 22 23 24 25 33	DIRECT XRST DATA XLT CLK LOCK		Input terminal for microprocessor and interface. 21 and 33 only have 47KΩ pull-up.
27	BW		External time constant circuit terminal for loop filter.
28	PDI		Terminal for input of CX23035/CXD1135 phase-comparator output PDO.
29	ISET		Provides the current which determines the height of the focus search, track jump, and sled skip.
30	VCOF		The free-running frequency of the VCO is roughly proportional to the resistance between this terminal and terminal 31.
32	C864		8.64MHz VCO output terminal.

TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
34	MDP		Connects the CX23035/CXD1135 MDP terminals.
35	MON		Connects the CX23035/CXD1135 MON terminals.
36	FSW		LPF external time constant circuit terminal for CLV servo error signal.
38	SPDL -		Spindle drive amp inverted input terminal.
40 41 42 44	WDCK FOK MIRR DFCT		Input terminal for interfacing with the microprocessor, etc.
45	TE		Tracking error signal input terminal.

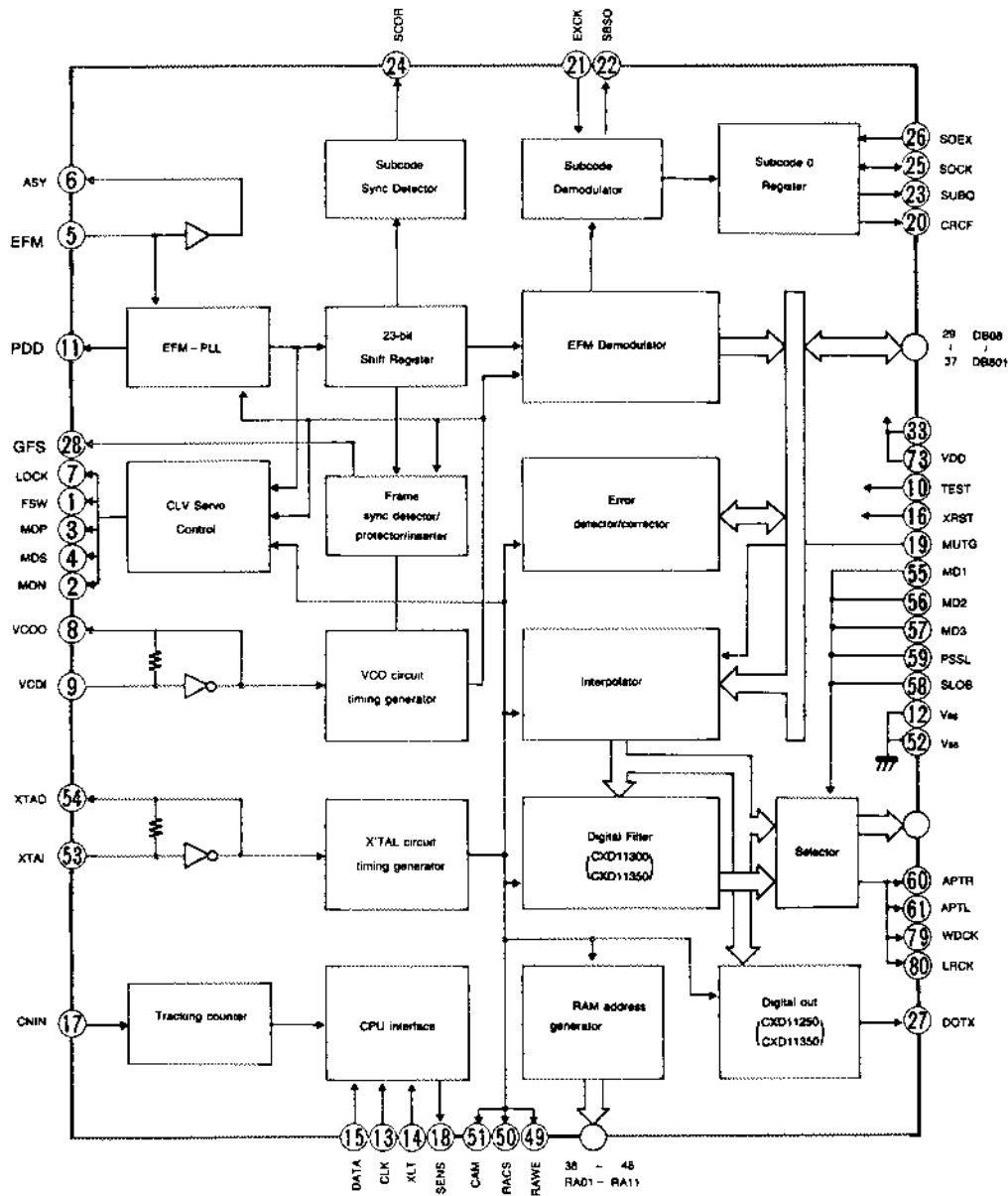
TERMINAL NUMBER	TERMINAL SYMBOL	EQUIVALENCE CIRCUIT DIAGRAM	EXPLANATION OF TERMINALS
46	TZC		Tracking zero cross comparator input terminal.
47	ATSC		Window comparator input terminal for ATSC detection.
48	FE		Focus error signal input terminal.

### 3 CXD1135Q (IC106)

CX1135Q CD digital signal processing

- **FUNCTIONS**
- 1 Bit-clock playback by EFM-PLL circuit
- 2 EFM data demodulation
- 3 Frame sync signal detection, protection, and insertion
- 4 Powerful error detection and correction
- 5 Hold by average value, previous value
- 6 Sub-code demodulation, and sub-code, Q-error detection
- 7 Spindle motor CLV servo
- 8 8-bit tracking counter
- 9 CPU interface through serial bus
- 10 Sub-code Q register
- 11 Digital filter
- 12 Digital audio interface output

### 1 Block Diagram





## 2 Pin Function

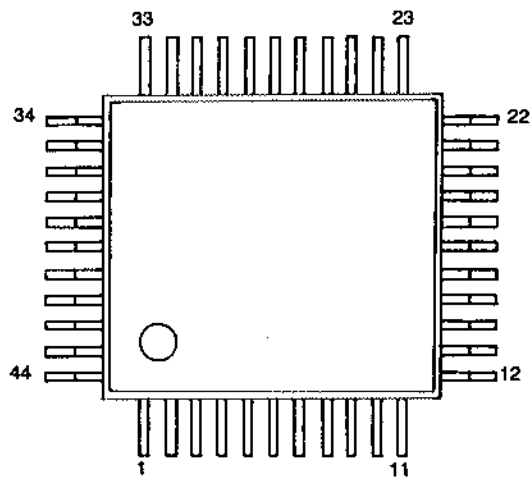
TERMINAL NUMBER	TERMINAL SYMBOL	I/O	EXPLANATION OF TERMINAL
1	FSW	O	Spindle motor output filter time constant switch output.
2	MON	O	Spindle motor ON/OFF control output.
3	MDP	O	Spindle motor drive output. Rough control during CLV-S mode, and phase control during CLV-P mode.
4	MDS	O	Spindle motor drive output. Speed control during CLV-P mode.
5	EFM	I	EFM signal input from RF amp.
6	ASY	O	Output for controlling the slice level of the EFM signal.
7	LOCK	O	Samples the GFS signal at WFCK/16 and outputs "H" if it is H, or outputs "L" if it is L eight consecutive times.
8	VCOO	O	VCO output. $f = 8.6436\text{MHz}$ when the EFM signal is locked.
9	VCOI	I	VCO input.
10	TEST	I	(0V)
11	PDO	O	Phase comparison output of the EFM signal and VCO/2.
12	V <sub>SS</sub>	-	GND (0V)
13	CLK	I	Serial data transmission clock input from the CPU. Latches data at the clock initialization edge.
14	XLT	I	Latch input from the CPU. Latches the 8 bit shift register data (serial data from CPU) to the registers.
15	DATA	I	Serial data input from the CPU.
16	XRST	I	System reset input. Reset by "L".
17	CNIN	I	Tracking pulse input.
18	SENS	O	Outputs the internal status corresponding to a given address.
19	MUTG	I	Muting input. When the ATTM of internal register A is "L", MUTG is normal when "L" and muted when "H".
20	CRCF	O	Outputs the result of the sub-code Q CRC check.
21	EXCK	I	Clock input for sub-code serial output.
22	SBSO	O	Sub-code serial output.
23	SUBQ	O	Sub-code Q output.
24	SCOR	O	Sub-code sync S0 + S1 output.
25	SQCK	I/O	Sub-code Q read clock.
26	SQEX	I	SQCK selection input.
27	DOTX	O	Digital out output. (Outputs WFCK when the CXD1130Q or DO is off.)
28	GFS	O	Outputs indication of the state of the frame sync lock.
29	DB08	I/O	External RAM data terminal DATA8 (MSB)
30	DB07	I/O	External RAM data terminal DATA7
31	DB06	I/O	External RAM data terminal DATA6
32	DB05	I/O	External RAM data terminal DATA5
33	VPP	-	Power supply (+5V)
34	DB04	I/O	External RAM data terminal DATA4
35	DB03	I/O	External RAM data terminal DATA3
36	DB02	I/O	External RAM data terminal DATA2
37	DB01	I/O	External RAM data terminal DATA1 (LSB)
38	RA01	O	Output of external RAM address ADDR01 (LSB)
39	RA02	O	Output of external RAM address ADDR02
40	RA03	O	Output of external RAM address ADDR03

TERMINAL NUMBER	TERMINAL SYMBOL	I/O	EXPLANATION OF TERMINAL
41	RA04	O	Output of external RAM address ADDR04
42	RA05	O	Output of external RAM address ADDR05
43	RA06	O	Output of external RAM address ADDR06
44	RA07	O	Output of external RAM address ADDR07
45	RA08	O	Output of external RAM address ADDR08
46	RA09	O	Output of external RAM address ADDR09
47	RA10	O	Output of external RAM address ADDR10
48	RA11	O	Output of external RAM address ADDR11 (MSB)
49	RAWE	O	Write enable signal output to external RAM. (Active when "L".)
50	RACS	O	Chip select signal output to external RAM. (Active when "L".)
51	C4M	O	1/2 demultiplication output for crystal.
52	V55	-	GND (0V)
53	XTAI	I	Crystal oscillator circuit input. $f = 8.4672\text{MHz}$ or $f = 16.934\text{MHz}$ , depending on the mode selection.
54	XTAO	O	Crystal oscillator circuit output. $f = 8.4672\text{MHz}$ or $f = 16.934\text{MHz}$ , depending on the mode selection.
55	MD1	I	Mode selection input 1.
56	MD2	I	Mode selection input 2.
57	MD3	I	Mode selection input 3.
58	SLOB	I	Code switch input for audio data output. 2's complement output when "L", and offset binary output when "H".
59	PSSL	I	Mode switch input for audio data output. Serial output when "L". Parallel output when "H".
60	APTR	O	Control output for aperture correction. "H" when R-ch.
61	APTL	O	Control output for aperture correction. "H" when L-ch.
62	DA01	O	DA01 (parallel audio data LSB) output when PSSL = "H" C1F1 output when PSSL = "L".
63	DA02	O	DA02 output when PSSL = "H". C1F2 output when PSSL = "L".
64	DA03	O	DA03 output when PSSL = "H". C2F1 output when PSSL = "L".
65	DA04	O	DA04 output when PSSL = "H". C2F2 output when PSSL = "L".
66	DA05	O	DA05 output when PSSL = "H". C2FL output when PSSL = "L".
67	DA06	O	DA06 output when PSSL = "H". C2PO output when PSSL = "L".
68	DA07	O	DA07 output when PSSL = "H". RFCK output when PSSL = "L".
69	DA08	O	DA08 output when PSSL = "H". WFCK output when PSSL = "L".
70	DA09	O	DA09 output when PSSL = "H". PLCK output when PSSL = "L".
71	DA10	O	DA10 output when PSSL = "H". UGFS output when PSSL = "L".
72	DA11	O	DA11 output when PSSL = "H". GTOP output when PSSL = "L".
73	VPP	-	Power supply (+5V)
74	DA12	O	DA12 output when PSSL = "H". RAOV output when PSSL = "L".
75	DA13	O	DA13 output when PSSL = "H". C4LR output when PSSL = "L".
76	DA14	O	DA14 output when PSSL = "H". C210 output when PSSL = "L".
77	DA15	O	DA15 output when PSSL = "H". C210 output when PSSL = "L".
78	DA16	O	DA16 (parallel audio data MSB) output when PSSL = "H". DATA output when PSSL = "L".
79	WDCK	O	Strobe signal output. 176.4kHz when DF on, and 88.2kHz when DF off.
80	LRCK	O	Strobe signal output. 88.2kHz when DF on, and 44.1kHz when DF off.

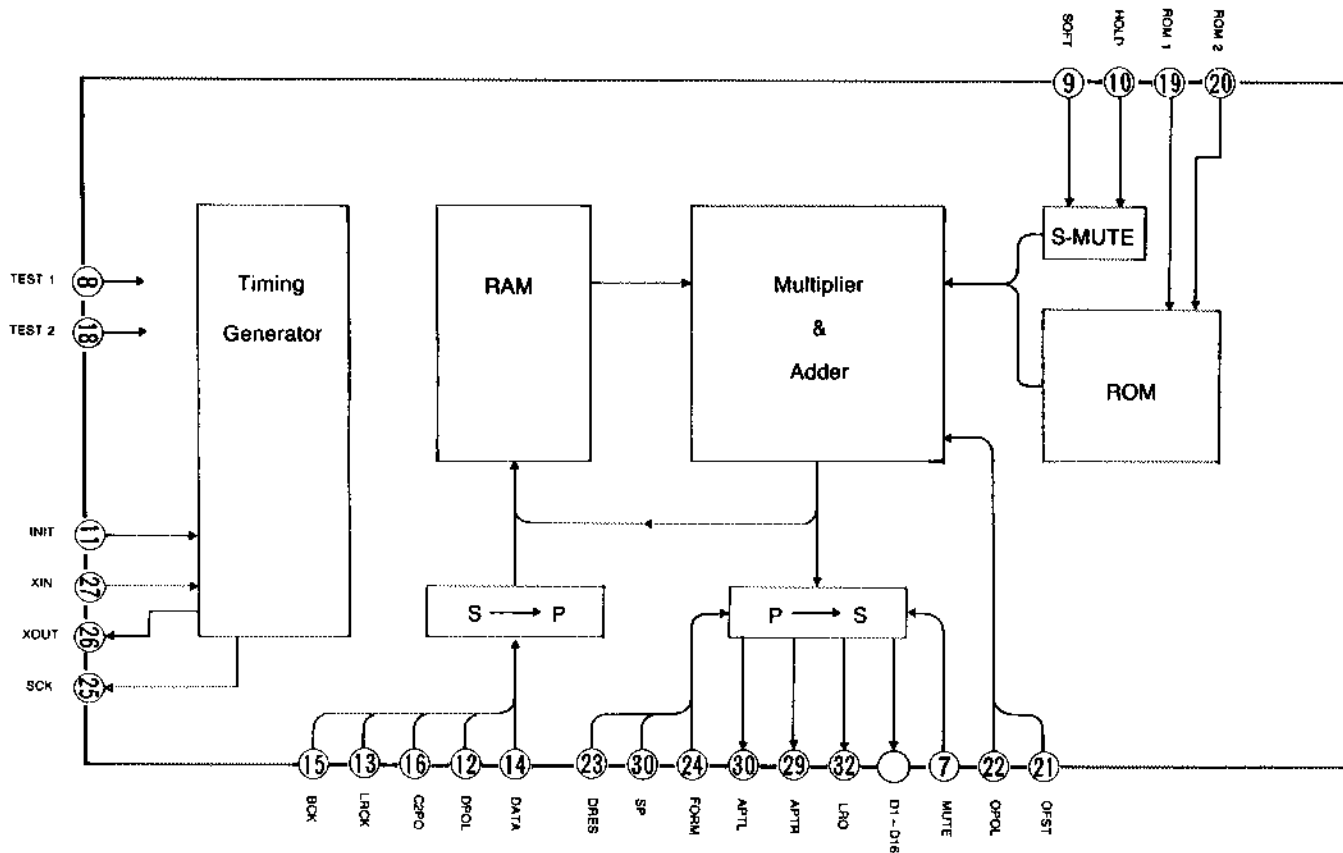
**NOTE :**

- C1F1 : □ Monitor output of the error correction status of C1 decode.
- C1F2 : □
- C2F1 : □ Monitor output of the error correction status of C2 decode.
- C2F2 : □
- C2FL : Correction status output. Becomes "H" when the C2 series currently being corrected is is incor-  
rectable.
- C2PO : C2 pointer indication output. Synchronous with the audio data output.
- RFCK : Read frame clock output. Crystal circuit's 7.35kHz.
- WFCK : Write frame clock output. 7.35kHz when locked on the crystal circuit.
- PLCK : VCO/2 output.  $f = 4.3218\text{MHz}$  when locked on the EFM signal.
- UGFS : Unprotected frame sync pattern output.
- GTOP : Indication output of the frame sync protection status.
- RAOV : Indication output of the  $\pm 4$  frame jitter absorption RAM overflow and underflow.
- C4LR : Strobe signal: 352.8kHz when DF is on, 176.4kHz when DF is off.
- C210 : Inverted output of C210
- C210 : Bit clock output. 4.2336MHz when DF on, 2.1168MHz when DF off.
- DATA : Serial data output of audio signal.

## 4 CXD1088Q (IC110) System Clock and Digital Filter



## 2 Block Diagram

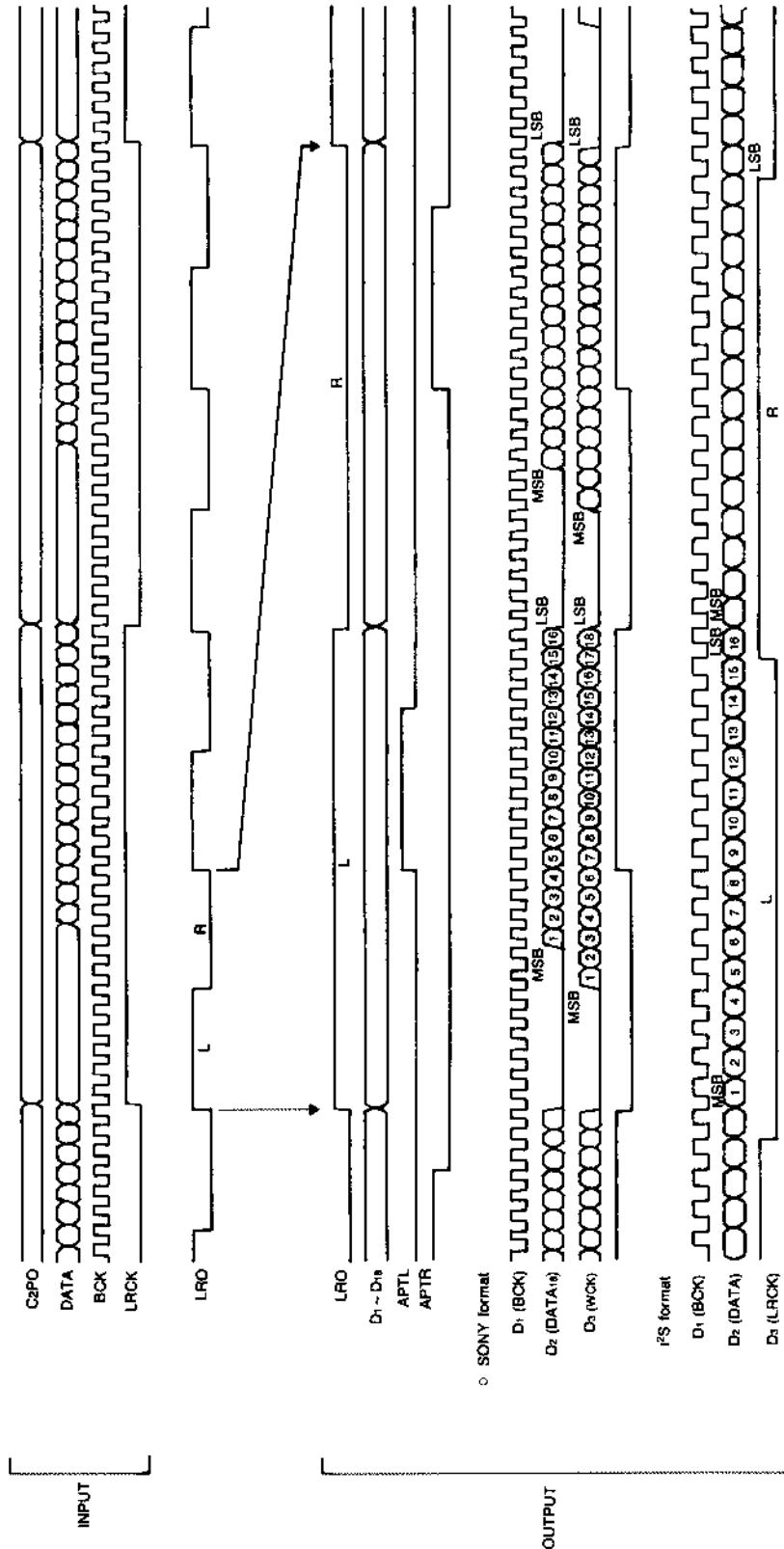


### 3 Pin Functions

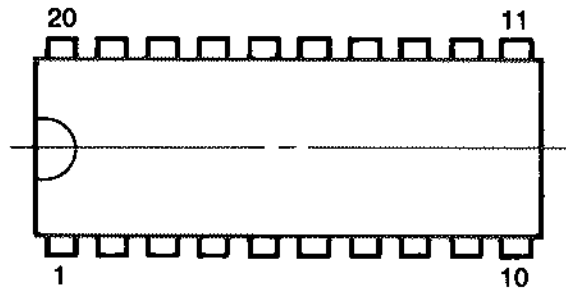
TERMINAL NUMBER	TERMINAL SYMBOL	I/O	EXPLANATION OF TERMINAL
1 ~ 5	D <sub>12</sub> ~ D <sub>16</sub>	O	D <sub>12</sub> ~ D <sub>16</sub> output when parallel. Fixed at "L" level when serial.
6	V <sub>SS</sub>	–	Power supply (0V)
7	MUTE	I	Sets the output to "0" or the offset value. "H" valid.
8	TEST1	I	Test terminal. Usually fixed at the "L" level during normal use.
9	SOFT	I	ON/OFF for soft muting. Mute when "H".
10	HOLD	I	Stops the mute operation.
11	INIT	I	Power on reset input. Active when "L".
12	DPOL	I	Inverts polarity of input data.
13	LRCK	I	LRCK input
14	DATA	I	16 bit x 2 serial data input.
15	BCK	I	BCK input
16	C2PO	I	Error flag input
17	V <sub>DD</sub>	–	+ Power supply (+5V)
18	TEST2	I	Test terminal. Fixed at the "L" level during normal use.
19	ROM1	I	83 ROM switching. Refer to filter characteristics.
20	ROM2	I	21 ROM switching. Refer to filter characteristics.
22	OPOL	I	Offset value polarity designation. "H" (+1%) "L" (–1%).
23	DRES	I	Data word length when Sony format serial output. "H" : 18 bit "L" : 16 bit
24	FORM	I	Output format designation.
25	SCK	O	System clock output for external IC. (384fs)
26	XOUT	O	Crystal oscillator circuit output. (384fs)
27	XIN	I	Crystal oscillator circuit input. (384fs)
28	V <sub>SS</sub>	–	– Power supply (0V)
29	APTR	O	Aperture clock for R channel.
30	APTL	O	Aperture clock for L channel.
31	SP	I	Serial/parallel switching for output. "H" : Parallel. "L" : Serial
32	LRO	O	LRCK output (4fs)
33	D <sub>1</sub>	O	D <sub>1</sub> (MSB) output when parallel. BCK output (4fs) when serial.
34	D <sub>2</sub>	O	D <sub>2</sub> output when parallel. DATA output (4fs) when serial.
35	D <sub>3</sub>	O	D <sub>3</sub> output when parallel. When serial: LRCK output (I <sup>2</sup> mode), WCK output (SONY mode)
36 ~ 38	D <sub>4</sub> ~ D <sub>6</sub>	O	D <sub>4</sub> ~ D <sub>6</sub> output when parallel. Fixed to the "L" level when serial.
39	VDD	–	+ Power supply (+5V)
40 ~ 44	D <sub>7</sub> ~ D <sub>11</sub>	O	D <sub>7</sub> ~ D <sub>11</sub> output when parallel. Fixed to the "L" level when serial.

# 4 I/O Timing

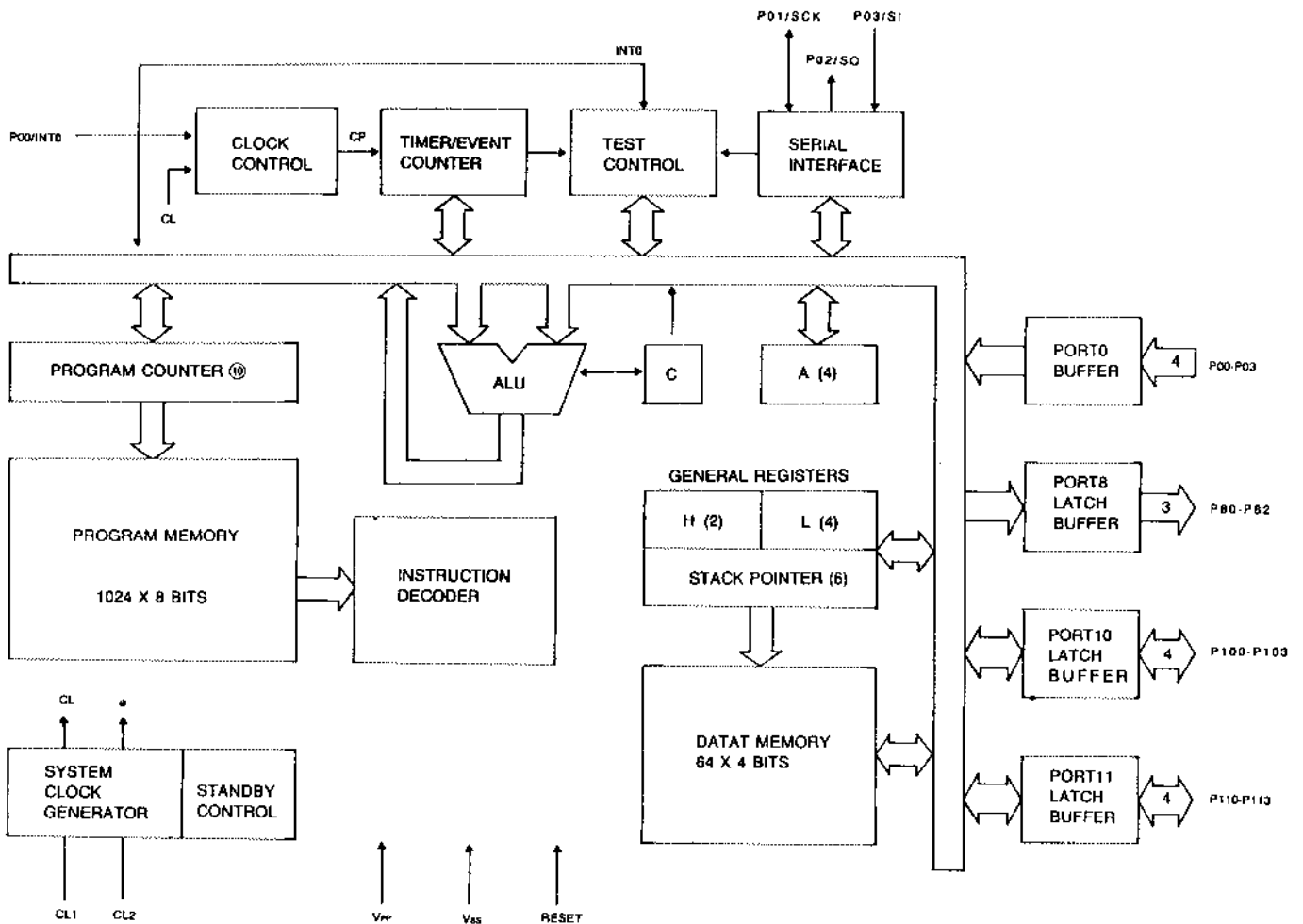
## Input/Output timing



**5.  $\mu$ PD 7564cs (IC108)**  
**Remote Control Decoder**  
**1 External View**



**2 Block Diagram**  
 **$\mu$ PD7564 block diagram**



### 3 Pin Functions

#### 1 Functions

TERMINAL NAME	I/O	DOUBLE TERMINAL	FUNCTION	WHEN RESET	I/O circuit type
P00	INPUT	INT0	4-bit input port (PORT 0) P00 doubles as the count clock (event pulse) input.	INPUT	S
P01	INPUT/	SCK			X
P02	OUTPUT	SO			W
P03	INPUT	SI			S
P80-P82	OUTPUT	—	3 bit output port (PORT 8) large current (15mA), medium-dielectric (12V) output	High-impedance	O
P100-P103	INPUT/ OUTPUT	—	4-bit input/output port (PORT 10) medium-current (10mA), medium-dielectric (12V) output	High-impedance or high-level output	P
P110-P113	INPUT/ OUTPUT	—	4-bit input/output port (PORT 11) medium-current (10mA), medium-dielectric (12V) output.		

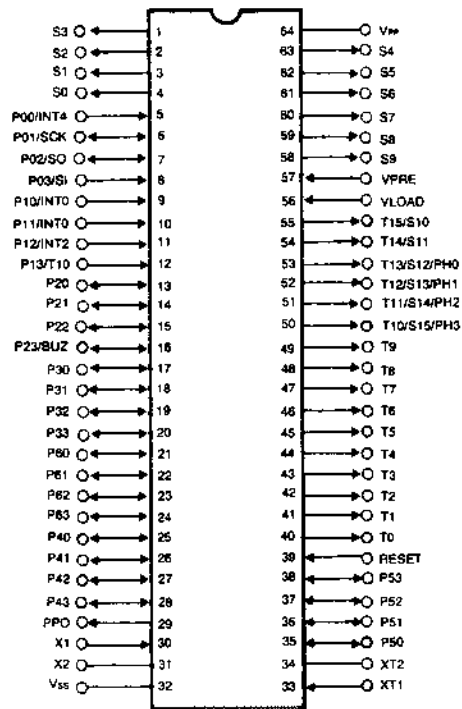
#### 2 Functions other than ports

TERMINAL NAME	I/O	DOUBLE TERMINAL	FUNCTION	WHEN RESET	I/O circuit type
INT0	INPUT	P00	Edge detection testable input terminal.		S
SCK	INPUT/ OUTPUT	P01	Serial clock input/output terminal.	INPUT	X
SO	OUTPUT	P02	Serial data output terminal.	INPUT	W
SI	INPUT	P03	Serial data input terminal.	INPUT	S
CL1			Ceramic oscillator connection terminal.		—
CL2					
RESET			System reset input terminal. (High level active) Pull down resistor can be built-in with mask option		R
V <sub>DD</sub>			Positive power supply terminal		
V <sub>SS</sub>			GND electrical potential terminal		

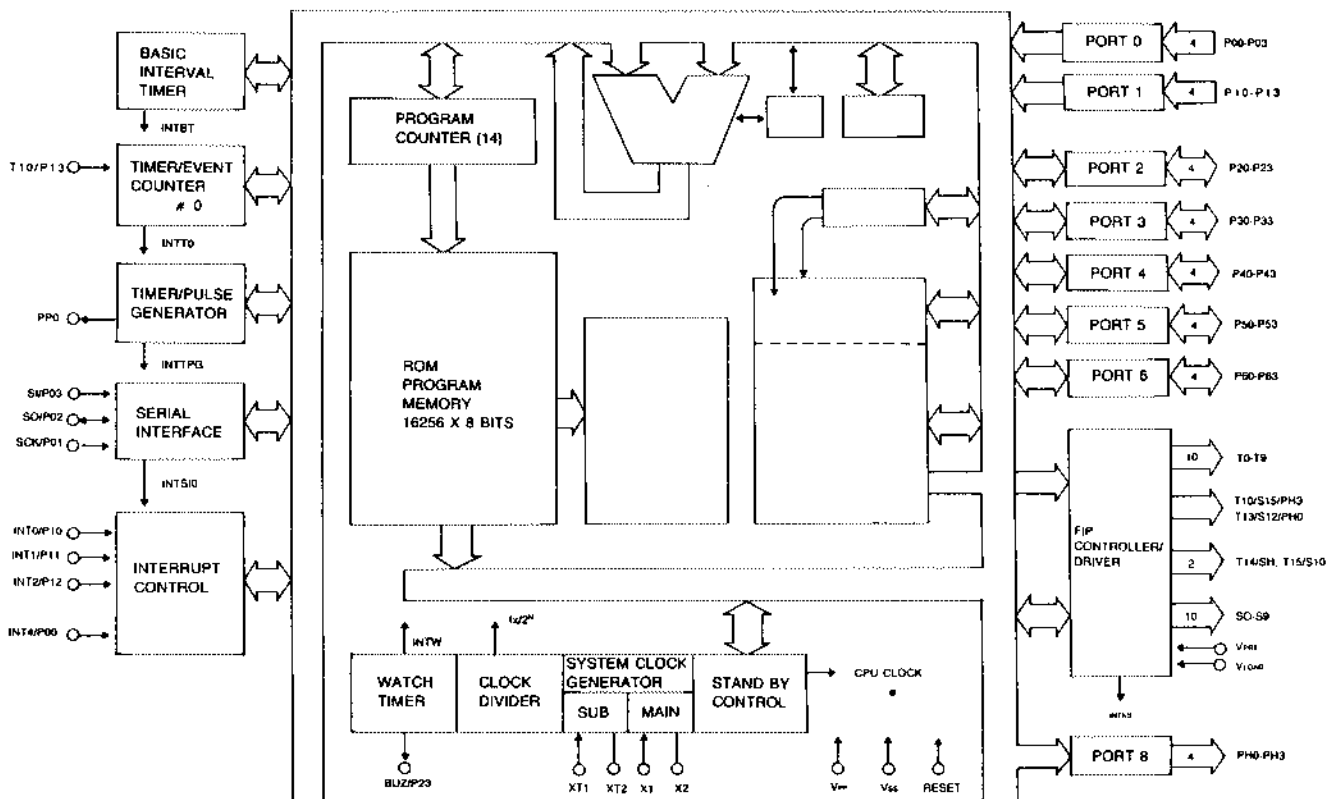


# 6 $\mu$ PD75216A (IC107) MICRO PROCESSOR

## 1 External View



## 2 Block Diagram



### 3 Pin Functions

#### Terminals other than ports

TERMINAL NAME	I/O	DOUBLE TERMINAL	FUNCTION		WHEN RESET	I/O circuit type
T0-T9	OUTPUT	——	FIP controller/driver terminal. Pull down resistance possible by bit. (Mask option).	High dielectric/large current output terminal for digit output.	Low level (with built-in pull down resistance) or high impedance (without pull down resistance)	I
T10/S15-T13/S12		PH3-PH0		High dielectric/large current output terminal for both digit and segment output. The extra port can be used as PORTH.		
T14/S11, T15/S10		——		High dielectric/large current output terminal for segment output. Static output also possible.		
S9		——		High dielectric output terminal for segment output.		
S0-S8		——		Timer/pulse generator pulse output terminal.		
PPO	OUTPUT	P13	External event/pulse input to the timer/event counter.		High impedance	D
T10	INPUT	P01	Serial clock input/output terminal.			(B)
SCK	INPUT/OUTPUT	P02	Serial data output terminal, or serial data input/output terminal.		Input	(F)
SO	INPUT/	P03	Serial data input terminal or normal data terminal.		Input	(G)
SI	OUTPUT	P00	Edge detection vector break input terminal (either edge detected).		Input	(B)
INT 4	INPUT	P10	Noise-eliminating edge detection vector break input terminal. (Edge to be detected is selectable).			(B)
INT 0	INPUT	P11	Edge detection testable input terminal (initialization edge detection).			(B)
INT 1		P12	Fixed frequency output terminal (used for the buzzer or the system clock's trimming).			
INT 2	INPUT	P23	Crystal/ceramic connection terminal for main system clock oscillation.			E
BUZ	INPUT	——	When using an external clock, input to X1 and input the reverse phase to X2.		Input	
X1, X2	INPUT/OUTPUT	——	Crystal connection terminal for sub system clock oscillation.			
XT1, XT2		——	When using an external clock, input to XT1 and open XT2.			(B)
RESET		——	System reset input terminal (low level active).			I
V <sub>PRE</sub>	INPUT	——	FIP controller/driver output buffer power supply terminal.			I
V <sub>LOAD</sub>		——	FIP controller/driver pull down resistance connection terminal.			
V <sub>DD</sub>		——	Positive power supply terminal.			
V <sub>SS</sub>		——	GND electric potential terminal.			

\* : The ○ circuit types in parentheses are have Schmidt Trigger inputs.

## Terminal Functions

### Port terminals

TERMINAL NAME	I/O	DOUBLE TERMINAL	FUNCTION	8 bit I/O	WHEN RESET	I/O circuit type	
P00	INPUT	INT 4	4-bit input port (PORT 0).	X	INPUT	(B)	
P01	INPUT/OUTPUT	SCK				(F)	
P02	INPUT/OUTPUT	SO				(G)	
P03	INPUT	SI				(B)	
P10	INPUT	INT 0	4-bit input port (PORT 1). Has noise elimination function	X	INPUT	(B)	
P11		INT 1					Has noise elimination function
P12		INT 2					
P13		T10					
P20	INPUT/OUTPUT	—	4-bit input/output port (PORT 2).	X	INPUT	E	
P21		—					
P22		—					
P23		BUZ					
P30-P33	INPUT/OUTPUT	—	Programmable 4-bit input/output port (PORT 3) Input/output can be set by bit.	O	INPUT	E	
P40-P43	INPUT/OUTPUT	—	4-bit input/output port (PORT 4) The LED can be driven directly.		INPUT	E	
P50-P53	INPUT/OUTPUT	—	4-bit input/output port (PORT 5) The LED can be driven directly.	X	INPUT	E	
P60-P63	INPUT/OUTPUT	—	Programmable input/output port (PORT 6). Input/output can be set by bit. Pull down resistance built-in. Perfect for key input.		INPUT	V	
PH0	OUTPUT	T13/S12	4-bit P-ch open-drain high-dielectric/large-current output port (PORT H). The LED can be driven directly. Pull-down resistance can be built-in (mask option).	X	Low level (when pull down resistance) or high impedance	I	
PH1		T12/S13					
PH2		T11/S14					
PH3		T10/S15					

\* : The circuit types in parentheses have Schmidt Trigger inputs.

# 7. TDA1541 (IC201)

## DUAL 16-BIT DAC

### Features

- Selectable two-channel input format: offset binary or two's complement.
- Internal timing and control circuit
- TTL compatible digital inputs
- High maximum input bit-rate and fast settling time

### (1) EXTERNAL VIEW

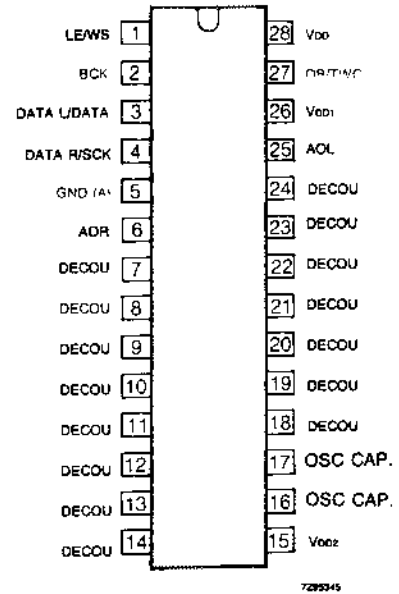


Fig. 2 Pinning diagram

### (2) BLOCK DIAGRAM

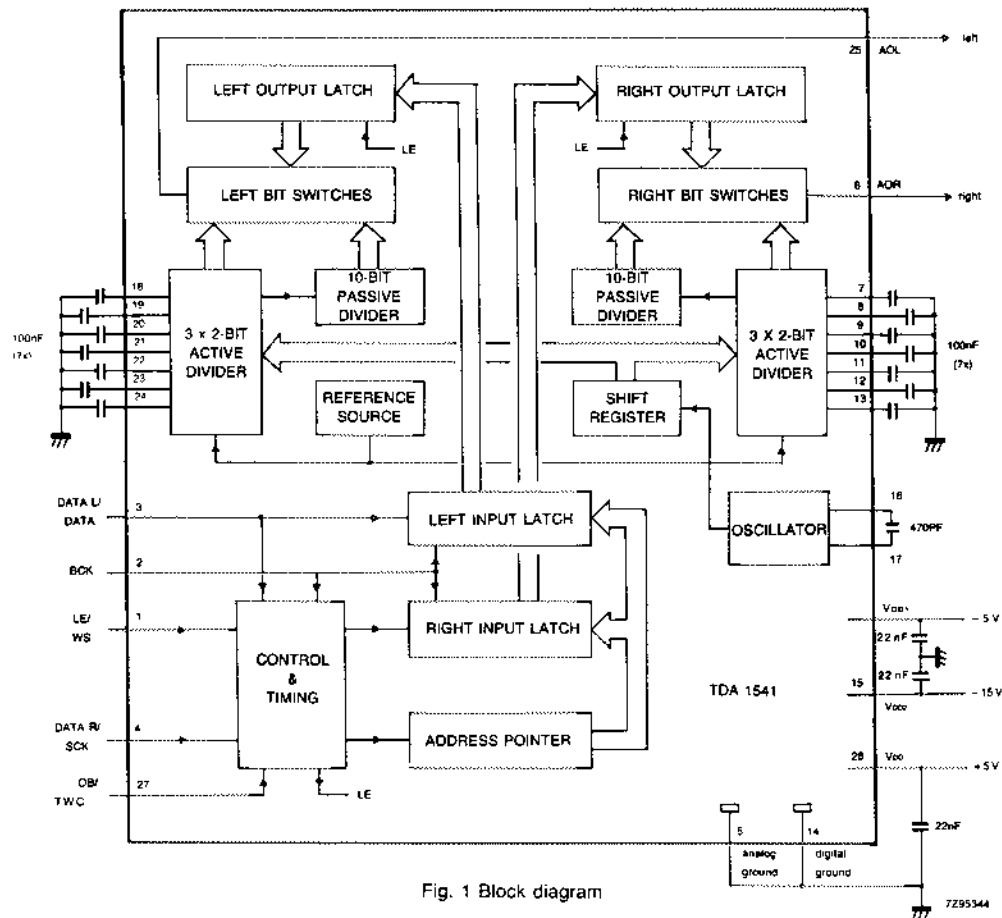


Fig. 1 Block diagram

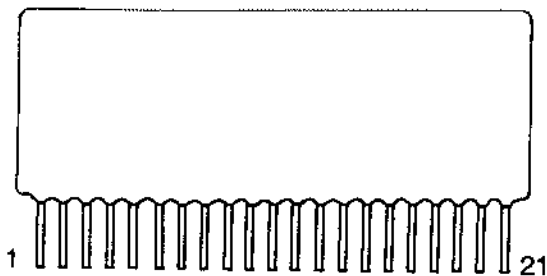
### (3) PIN FUNCTIONS

<b>PINNING</b>							
1	LE/WS	}	Latch enable input	15	V <sub>DD2</sub>	-15V supply voltage	
			Word select input	16	OSC CAP.		
2	BCK		Bit clock input	17	OSC CAP.		
3	DATA L/DATA*	}	Data left channel input	18	DECOU	} Decoupling	
			Data input (selected format)	19	DECOU		
4	DATA R/SYS*	}	Data right channel input	20	DECOU		
			System clock input	21	DECOU		
5	GND (A)		Analogue ground	22	DECOU		
6	AOR		Right channel output	23	DECOU		
7	DECOU	}	Decoupling	24	DECOU		
8	DECOU			25	AOL		Left channel output
9	DECOU			26	V <sub>DD1</sub>		-5V supply voltage
10	DECOU			27	OB/TWC		Mode selection input
11	DECOU			28	V <sub>DD</sub>	+5V supply voltage	
12	DECOU						
13	DECOU						
14	GND (D)		Digital ground				

## 8. WCP22D4C9TDA (IC202)

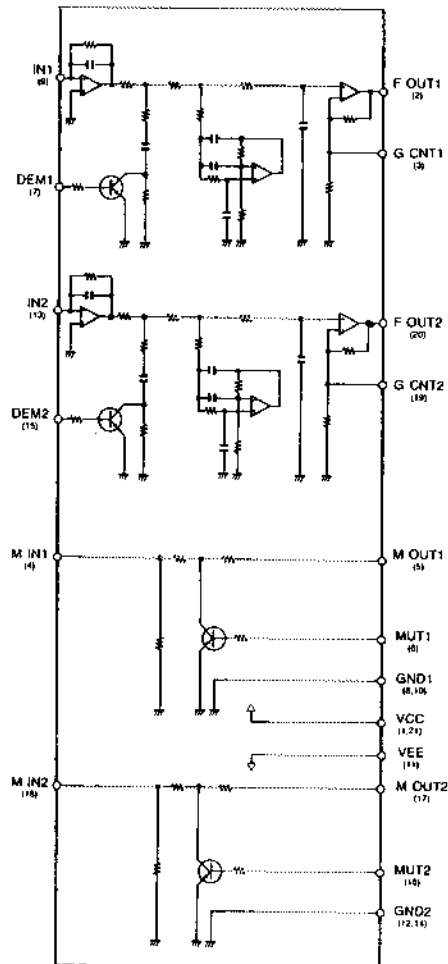
### Analog Filter with FDNR

#### (1) EXTERNAL VIEW

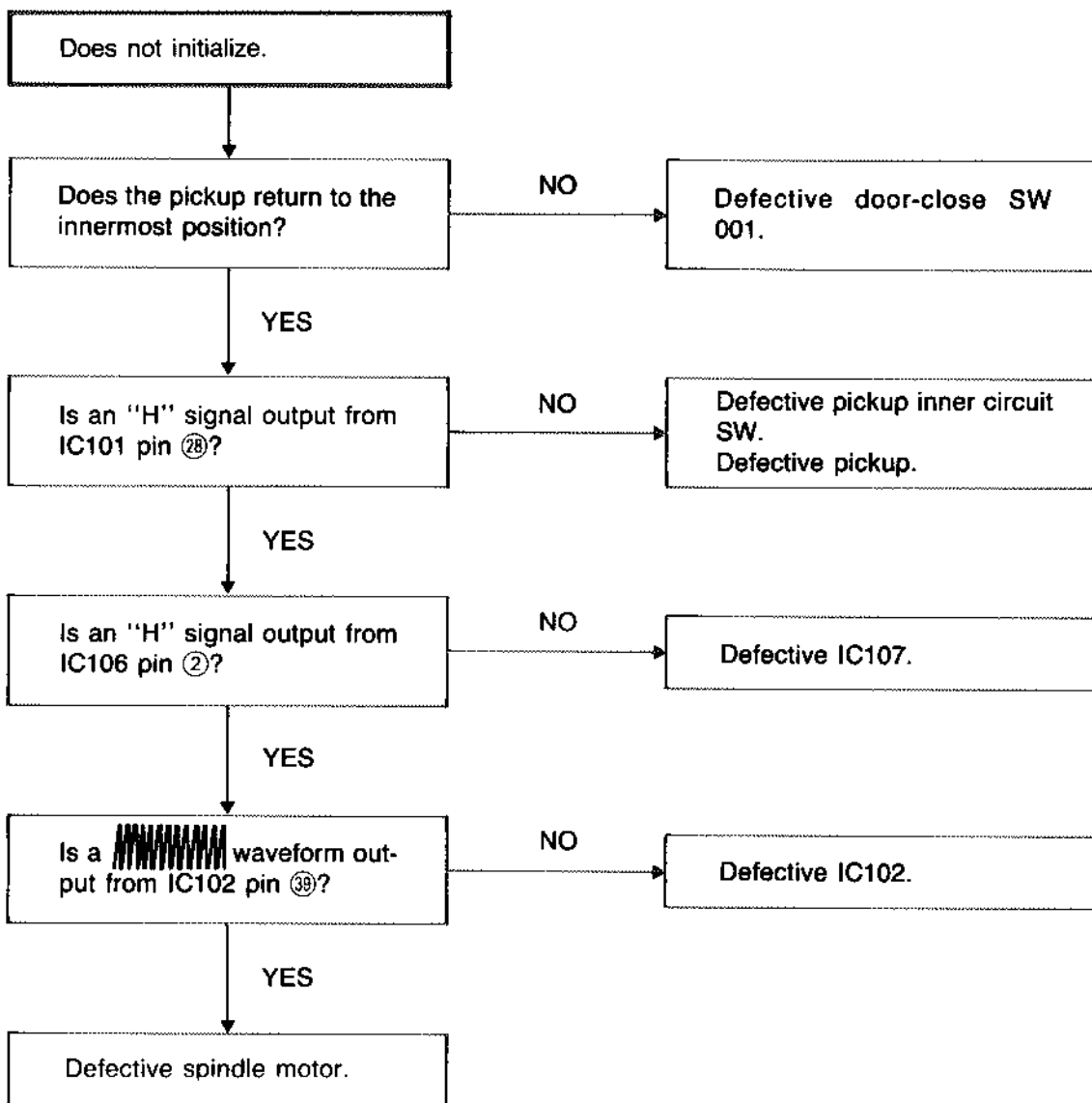


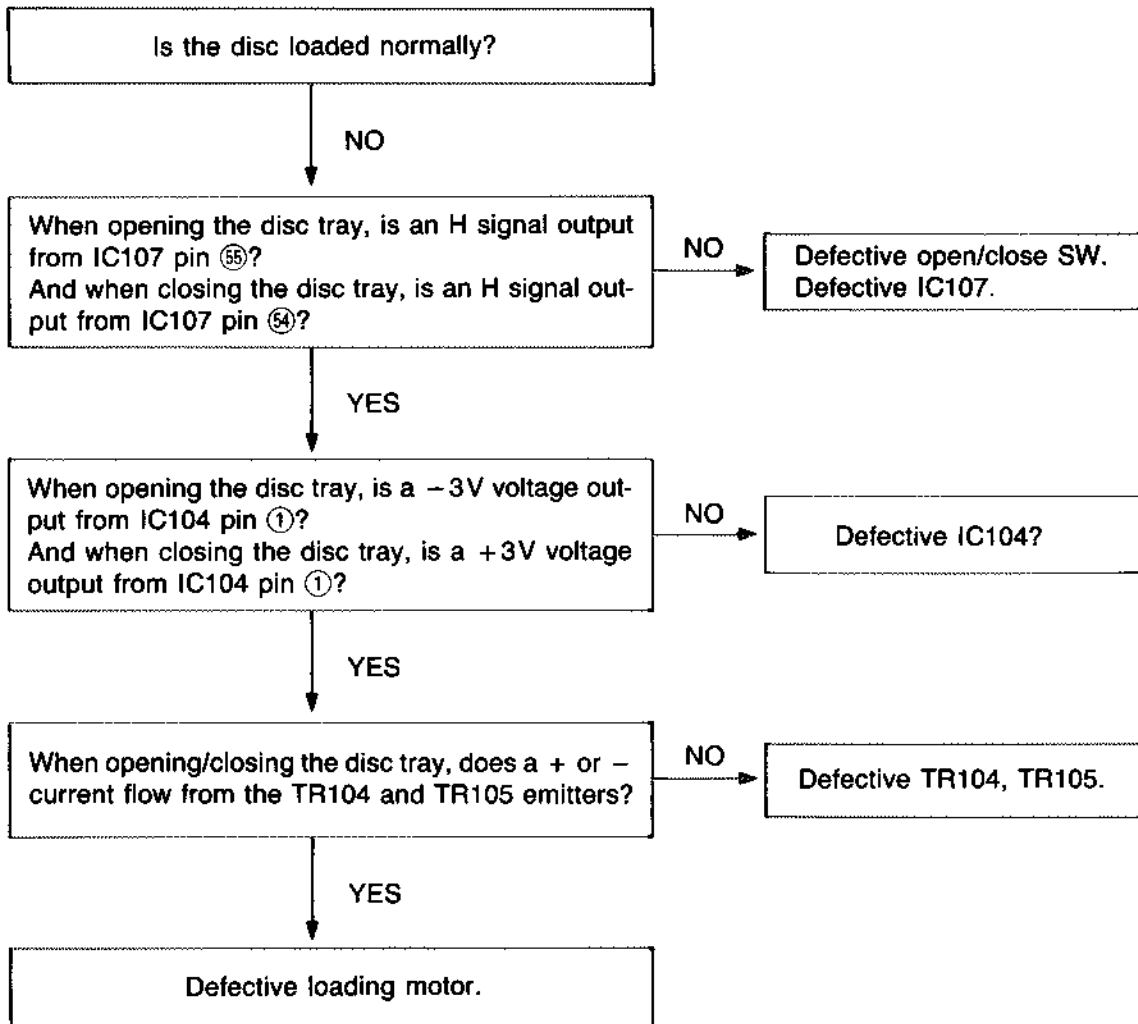
1. VCC	12. GND 2
2. F OUT 1	13. IN 2
3. G CNT 1	14. GND 2
4. M IN 1	15. DEM 2
5. M OUT 1	16. MUT 2
6. MUT 1	17. M OUT 2
7. DEM 1	18. M IN 2
8. GND 1	19. G CNT 2
9. IN 1	20. F OUT 2
10. GND 1	21. VCC
11. VEE	

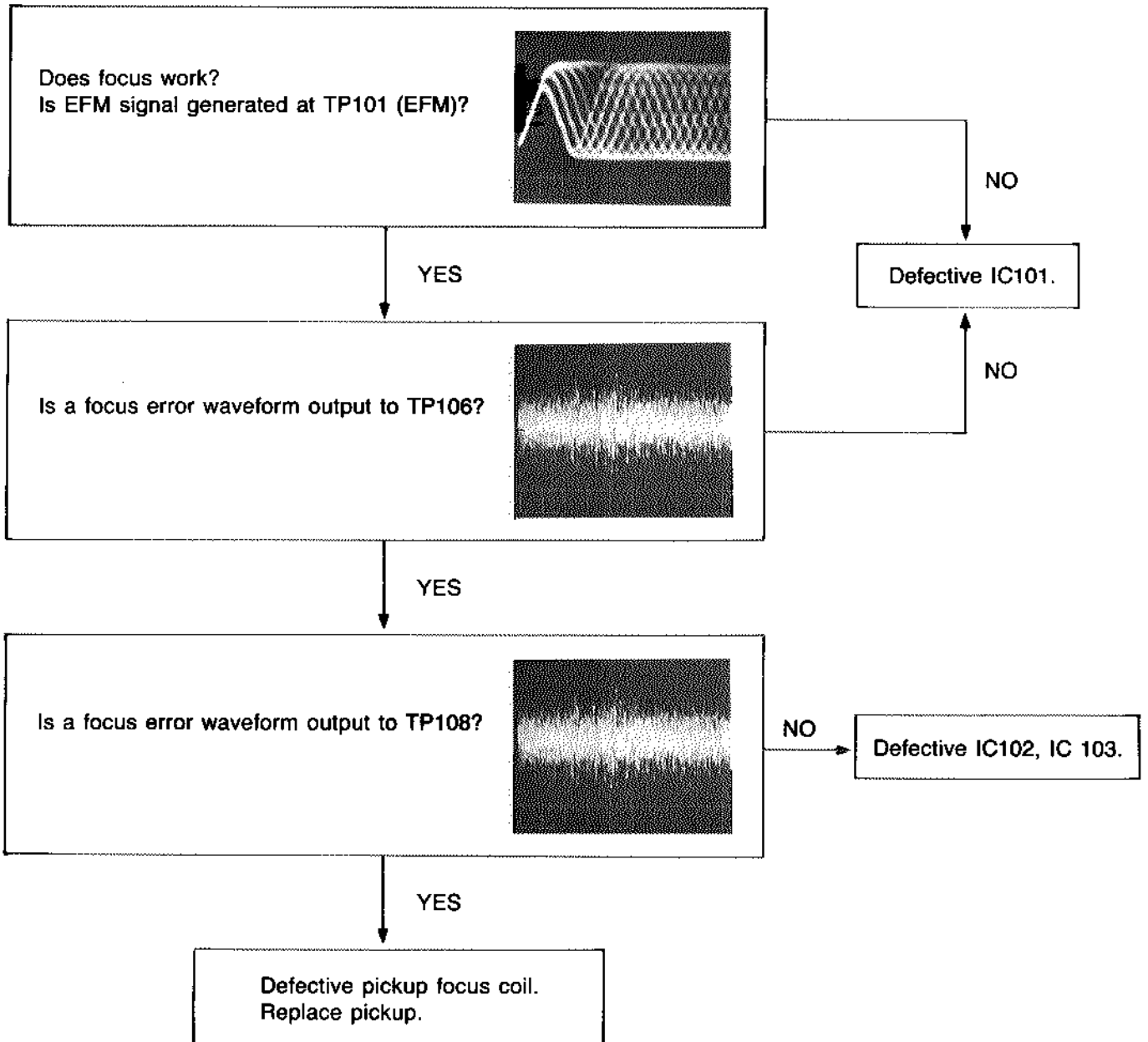
#### (2) BLOCK DIAGRAM



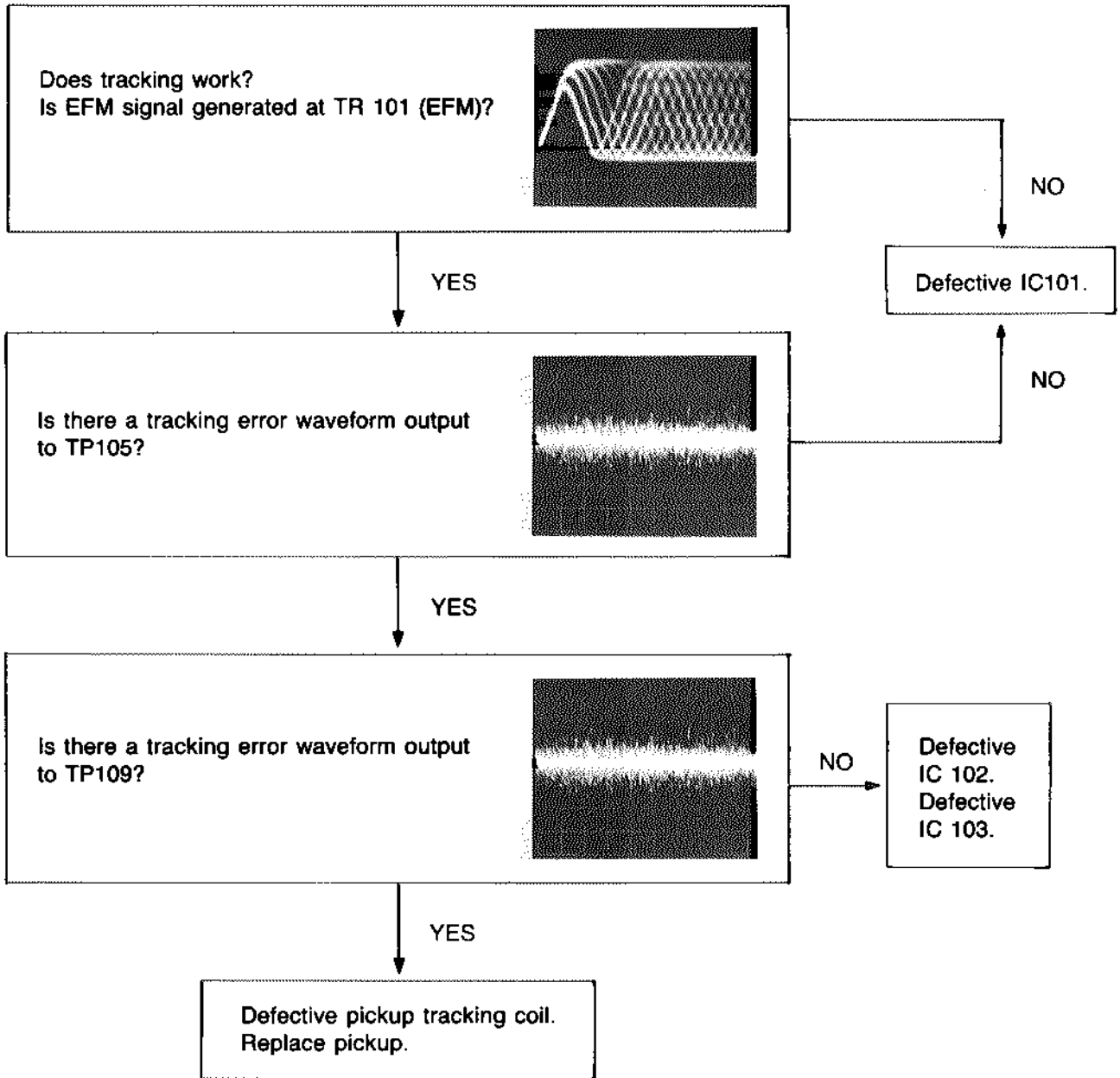
# TROUBLESHOOTING

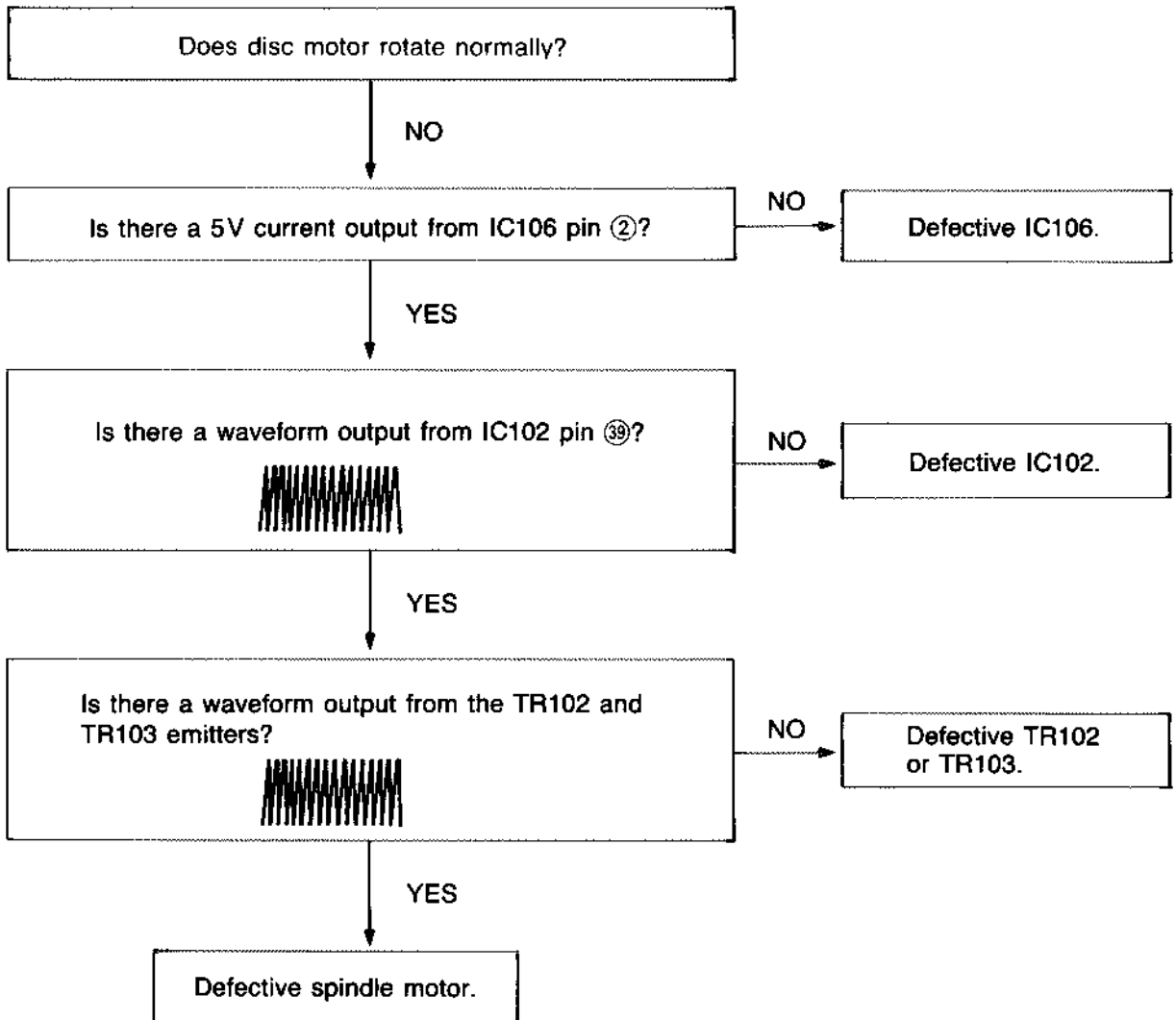






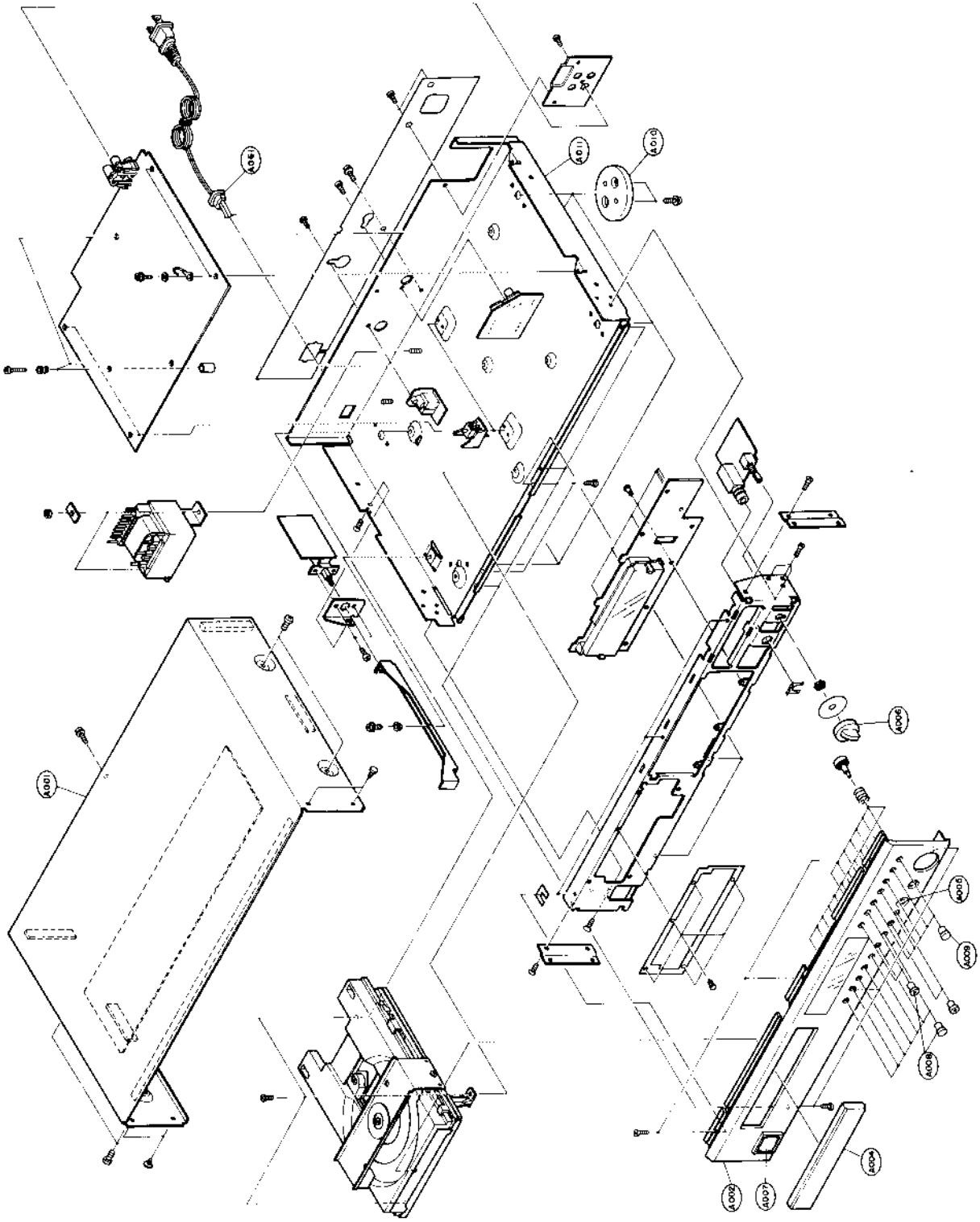




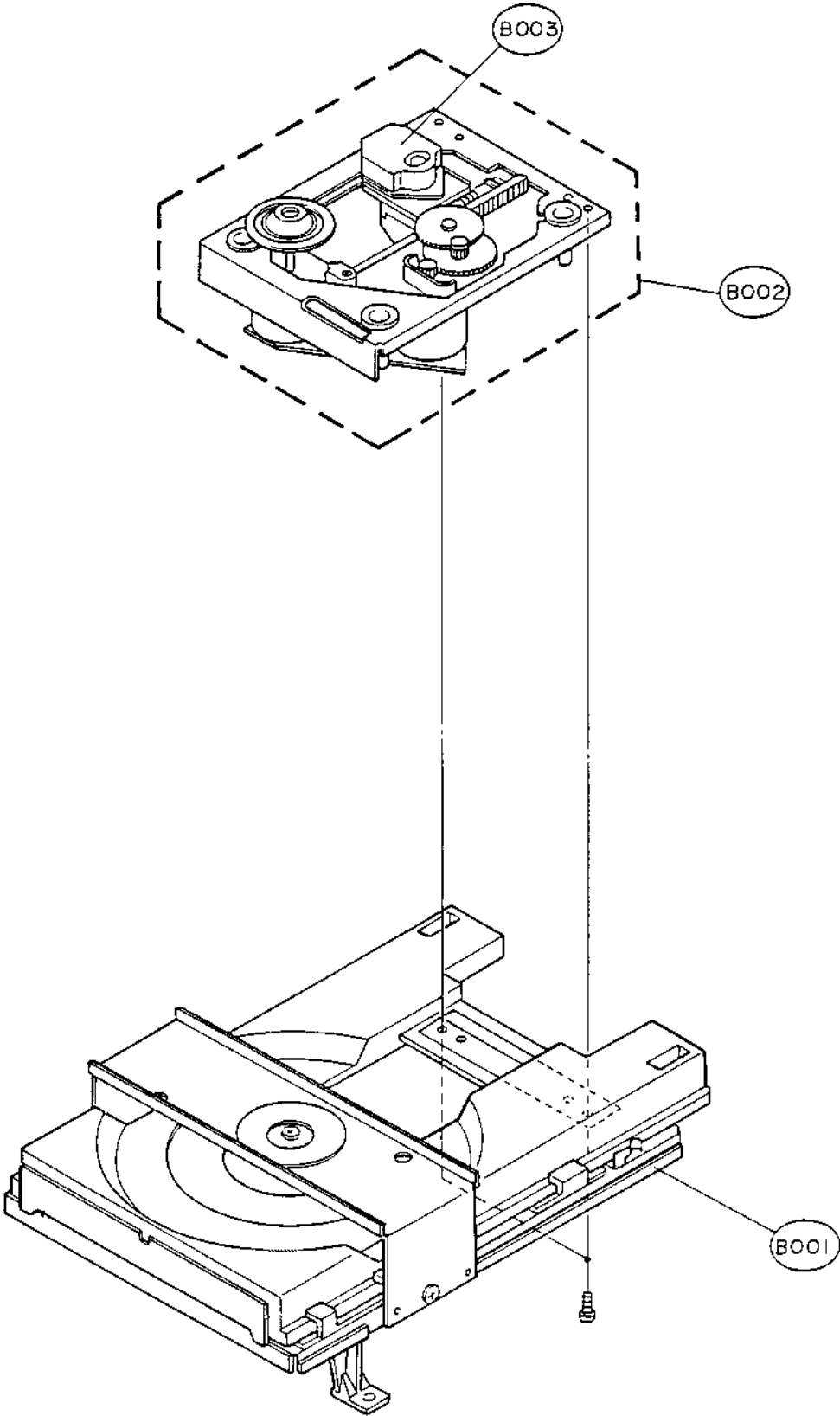


# EXPLODED VIEW

## CABINET AND CHASSIS ASSEMBLY



**MECHANISM ASSEMBLY**



# REPLACEMENT PARTS LIST MODEL : GDC-575 (B1)

CD..... Ceramic disc    EL..... Electrolytic    ST..... Styrol    ME..... Metal    CO..... Composition  
 CC . Cylindrical ceramic    MF..... Mylar, film    CF. Carbon film    MO..... Metal, oxide    FR ..... Fuse resistor

SYMBOL	PARTS NO	DESCRIPTION	SYMBOL	PARTS NO	DESCRIPTION
	***	IC	***		
IC101	37901188	IC CXA1081M	D101	360K1025	DIODE 1SS133
IC102	37901189	IC CXA1082AQ	D103	360K1025	DIODE 1SS133
IC103	37903227	IC STA341M	D106	360K1025	DIODE 1SS133
IC104	37101135	IC UPC4558C	D107	360K1025	DIODE 1SS133
IC105	37951265	IC MOS LC3517BML-15	D108	360K1025	DIODE 1SS133
IC106	37951210	IC MOS CXD1135Q	Δ D302	36902089	RECTIFIER BLOCK S1VB10
IC107	37951333	IC MOS UPD75216ACW-153	Δ D304	369K2131	DIODE MPG06D
IC108	37951177	IC UPD7564CS-061	Δ D305	369K2131	DIODE MPG06D
IC109	37903217	IC M51951ASL	Δ D306	369K2131	DIODE MPG06D
IC110	37951259	IC MOS CXD 1088Q	Δ D307	369K2131	DIODE MPG06D
IC201	37951323	IC MOS TDA 1541A N2	Δ D308	369K2131	DIODE MPG06D
IC202	39907029	FILTER WLP22D4C9TDA	D401	360K1025	DIODE 1SS133
IC203	37901203	IC ADCOM 6A	D402	360K1025	DIODE 1SS133
IC204	37901203	IC ADCOM 6A	D403	360K1025	DIODE 1SS133
Δ IC301	37901127	IC UPC7805H	D404	360K1025	DIODE 1SS133
Δ IC302	37901181	IC UPC 79L05	D501	360K1025	DIODE 1SS133
Δ IC303	37901127	IC UPC7805H	D502	360K1025	DIODE 1SS133
Δ IC304	37005029	IC UPC7905H	D503	360K1025	DIODE 1SS133
Δ IC305	37901123	IC UPC7815H	D504	360K1025	DIODE 1SS133
Δ IC306	37901124	IC UPC7915H	D505	360K1025	DIODE 1SS133
IC401	37903186	IC BA634	D506	360K1025	DIODE 1SS133
IC402	37903117	IC,UPC1237H	D507	360K1025	DIODE 1SS133
IC601	37101118	IC NJM4556D	ZD101	369K5178	ZENER DIODE RD9.1EB1(A)
IC701	37951157	IC MOS UPD74HC04C	Δ ZD301	369K5224	ZENER DIODE RD33EB2(A),AT
			Δ ZD302	369K5178	ZENER DIODE RD9.1EB1(A)
TR101	350K4412	TR,2SA952 L,AT	ZD401	369K5444	ZENER DIODE RD12JB1,AT
TR102	35962203	TR,2SD667C	ZD402	369K5462	ZENER DIODE RD22JB1,AT
TR103	35921903	TR,2SB647 C			
TR104	35962203	TR,2SD667C	*** TRANSFORMERS ***		
TR105	35921903	TR,2SB647 C	Δ T01	45006209	POWER TRANS
TR106	355D2709	DTC 114ES AT	T01	45006210	POWER TRANS (MULTI)
TR107	355D2711	TR,DTC144ES,AT			
TR108	355D2711	TR,DTC144ES,AT	*** VARIABLE RESISTORS ***		
TR110	355K2125	DTA114ES,AT	VR101	41951255	R,VARIABLE 22KB
TR111	355D2711	TR,DTC144ES,AT	VR102	41951257	R,VARIABLE 47KB
TR112	355K2105	TR,DTA144ES	VR103	41951255	R,VARIABLE 22KB
TR115	355D2711	TR,DTC144ES,AT	VR104	41951255	R,VARIABLE 22KB
TR201	355D2709	DTC 114ES AT	VR105	41952271	VM6CK-PVIS 1K
TR202	355K2125	DTA114ES,AT	VR601	41950591	VOLUME 5KA*2KEY
Δ TR301	35025517	TR,2SB744 Q			
TR401	355D2709	DTC 114ES AT	*** RELAYS & SWITCHES ***		
TR402	355D1908	TR,2SC2785(H)AT	RY401	65910073	RELAY DF (DC24V)
TR403	355K2105	TR,DTA144ES	RY402	65910073	RELAY DF (DC24V)
TR404	355K2105	TR,DTA144ES	RY403	65910073	RELAY DF (DC24V)
TR501	355D2711	TR,DTC144ES,AT	SW01	65904341	POWER SWITCH SDLO1P
TR502	355K2105	TR,DTA144ES	S501	65904494	TACT SW
TR503	355D2711	TR,DTC144ES,AT	S502	65904494	TACT SW
TR504	355K2105	TR,DTA144ES	S503	65904494	TACT SW
TR505	355D2711	TR,DTC144ES,AT	S504	65904494	TACT SW
TR506	355K2105	TR,DTA144ES	S505	65904494	TACT SW
TR507	355D2711	TR,DTC144ES,AT	S506	65904494	TACT SW
TR508	355K2105	TR,DTA144ES	S507	65904494	TACT SW
TR509	355D2711	TR,DTC144ES,AT	S508	65904507	TACT SWITCH LED RED
TR510	355K2105	TR,DTA144ES	S509	65904507	TACT SWITCH LED RED
TR511	355D2711	TR,DTC144ES,AT	S510	65904508	TACT SWITCH LED GREEN
			S511	65904507	TACT SWITCH LED RED
			S512	65904494	TACT SW
			S513	65904494	TACT SW
			S514	65904494	TACT SW
			S515	65904494	TACT SW
			S516	65904494	TACT SW

SYMBOL	PARTS NO	DESCRIPTION
*** COILS & FILTERS ***		
CF102	61919070	FILTER, CERAMIC CSB400P
LF01	61911223	LINE FILTER COIL
L101	610E2074	COIL FILTER 100KA.AT
L102	610E2074	COIL FILTER 100KA.AT
L103	610E2074	COIL FILTER 100KA.AT
L104	610E2074	COIL FILTER 100KA.AT
L105	610E2074	COIL FILTER 100KA.AT
L701	61052074	COIL FILTER 100KA
T701	61911227	PULSE TRANS (7.3*7.3)
*** PWB ASSYS ***		
PA01	87J69601	DIN JACK PWB FULL ASSY
PA02	87J69101	MAIN PWB FULL ASSY
PA03	87J69201	FRONT PWB FULL ASSY
PA04	87J69301	HEADPHONE PWB FULL ASSY
PA04	87J69401	DIG.OUT PWB FULL ASSY
PA05	87J69501	SW PWB FULL ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
CF101	79799559	REMOTE CONT. UNIT AR-575
DJ801	39080025	CERAMIC RESO. FCR 4.0MHZ
FIP	71905224	DIN SOKET 8P
HP601	67930089	FIP-9BAMS
HP601	70905627	JACK, HEAD PHONE
PC01	70802510	POWER SUPPLY CORD (10A)
RS501	79539009	IR RECIEVER SBX-1483-55
X101	64920203	XTAL 16.9344MHZ KD6586FUA
	OM00001943	BUTTON CONNECTOR, AC SWITCH
	OM10001955	BUTTON CONNECTOR, LED
	OM10000383	BUTTON CONNECTOR, BLIND
	W108000734	ADCOM, AUDIO CABLE
	BU00000645	BEZEL (BLACK), AC SWITCH
	BU00000670	BEZEL (WHITE), AC SWITCH
*** APPEARANCE PARTS ***		
	16287811	PUSH RIVET 3*4.5
	16876081	SCREW STB3*8*15BF
	18291091	CLAMPER, WIRE L94 WHITE
	18609861	BS DAMPER
	18768561	SERIAL LABEL
A001	18359061	CABINET
A002	18180373	FRONT PANEL ASSY
A002	18180381	FRONT PANEL ASSY (WHITE)
A003	18726022	MODEL NAME PLATE GCD-575
A003	18726101	MODEL NAME PLATE (MULTI)
A004	18412931	ORNAMENTAL PLATE (BLACK)
A004	18412941	ORNAMENTAL PLATE (WHITE)
A052	18540851	CHASSIS BASE (SE) ASSY
A058	18292401	HOLDER L=10
A060	18540901	FOOT
A061	18293241	WIRE CLAMPER #2271
A062	18293981	SPACER, HINGE
A063	19516371	WIRE CLAMPER-B
A005	OM00001931	SENSOR WINDOW
A006	KB10001217	VOLUME KNOB (BLACK)
A006	KB10001254	VOLUME KNOB (WHITH)
A007	KB20001342	PUSH BUTTON (BLACK), AC SWITCH
A007	KB20001410	PUSH BUTTON (WHITE), AC SWITCH
A008	KB20001366	PUSH BUTTON (BLACK), LED
A008	KB20001433	PUSH BUTTON (WHITE), LED
A009	KB20001354	PUSH BUTTON (BLACK), BLIND
A009	KB20001421	PUSH BUTTON (WHITE), BLIND

SYMBOL	PARTS NO	DESCRIPTION
*** PRINTED & PACKING MATERIALS ***		
	18813751	BAG, POLYETHYLENE
	18815791	CARTON BOX (GCD-575)
	18815801	SPACER(L)
	18815811	SPACER(R)
	19800561	POLYETHYLENE BAG
	19800672	BAG-B, POLYETHYLENE
	78925341	INSTRUCTION BOOK GCD-575
*** MECHANICAL PARTS ***		
	72952681	MECHA UNIT KSL-150A CM2
	72952721	MECHA UNIT KSL-150A CM4
B001	18940280	LOADING ASSY
B002	18940288	MECHANISM ASSY (KSM150A)
B003	18940287	PICK UP (KSS150A)
*** RESISTORS ***		
R101	409H2633	R, CARBON 22H 5% 1/4W
R102	401K5673	R, CARBON 1.0K 5% 1/6W
R103	401K5705	R, CARBON 22K 5% 1/6W
R105	401K5705	R, CARBON 22K 5% 1/6W
R106	401K5721	R, CARBON 100K 5% 1/6W
R107	401K5697	R, CARBON 10K 5% 1/6W
R108	401K5689	R, CARBON 4.7K 5% 1/6W
R109	401K5721	R, CARBON 100K 5% 1/6W
R110	401K5721	R, CARBON 100K 5% 1/6W
R111	401K5709	R, CARBON 33K 5% 1/6W
R112	401K5713	R, CARBON 47K 5% 1/6W
R113	401K5685	R, CARBON 3.3K 5% 1/6W
R114	401K5721	R, CARBON 100K 5% 1/6W
R115	401K5738	R, CARBON 510K 5% 1/6W
R117	401K5712	R, CARBON 43K 5% 1/6W
R118	409E0049	R, METAL 100K 1% 1/6W
R119	401K5697	R, CARBON 10K 5% 1/6W
R120	409E0049	R, METAL 100K 1% 1/6W
R121	401K5723	R, CARBON 120K 5% 1/6W
R122	401K5686	R, CARBON 3.6K 5% 1/6W
R123	401K5721	R, CARBON 100K 5% 1/6W
R124	401K5704	R, CARBON 20K 5% 1/6W
R125	401K5745	R, CARBON 1.0M 5% 1/6W
R126	401K5721	R, CARBON 100K 5% 1/6W
R127	401K5656	R, CARBON 200H 5% 1/6W
R128	401K5700	R, CARBON 13K 5% 1/6W
R129	401K5697	R, CARBON 10K 5% 1/6W
R130	401K5697	R, CARBON 10K 5% 1/6W
R131	401K5700	R, CARBON 13K 5% 1/6W
R132	401K5697	R, CARBON 10K 5% 1/6W
R133	401K5689	R, CARBON 4.7K 5% 1/6W
R134	401K5609	R, CARBON 2.2H 5% 1/6W
R135	401K5609	R, CARBON 2.2H 5% 1/6W
R136	401K5731	R, CARBON 270K 5% 1/6W
R137	401K5609	R, CARBON 2.2H 5% 1/6W
R138	401K5697	R, CARBON 10K 5% 1/6W
R140	401K5697	R, CARBON 10K 5% 1/6W
R141	401K5697	R, CARBON 10K 5% 1/6W
R142	401K5673	R, CARBON 1.0K 5% 1/6W
R143	401K5673	R, CARBON 1.0K 5% 1/6W
R145	401K5673	R, CARBON 1.0K 5% 1/6W
R146	401K5721	R, CARBON 100K 5% 1/6W
R150	401K5693	R, CARBON 6.8K 5% 1/6W
R151	401K5679	R, CARBON 1.8K 5% 1/6W

SYMBOL	PARTS NO	DESCRIPTION
R152	401K5649	R,CARBON 100H 5% 1/6W
R153	401K5689	R,CARBON 4.7K 5% 1/6W
R154	401K5653	R,CARBON 150H 5% 1/6W
R155	401K5697	R,CARBON 10K 5% 1/6W
R156	401K5697	R,CARBON 10K 5% 1/6W
R157	401K5697	R,CARBON 10K 5% 1/6W
R158	401K5697	R,CARBON 10K 5% 1/6W
R159	401K5717	R,CARBON 68K 5% 1/6W
R161	401K5673	R,CARBON 1.0K 5% 1/6W
R162	401K5673	R,CARBON 1.0K 5% 1/6W
R163	401K5721	R,CARBON 100K 5% 1/6W
R164	401K5673	R,CARBON 1.0K 5% 1/6W
R165	401K5673	R,CARBON 1.0K 5% 1/6W
R166	401K5673	R,CARBON 1.0K 5% 1/6W
R167	401K5713	R,CARBON 47K 5% 1/6W
R170	401K5713	R,CARBON 47K 5% 1/6W
R201	401K5681	R,CARBON 2.2K 5% 1/6W
R202	401K5689	R,CARBON 4.7K 5% 1/6W
R203	409E0063	R,METAL 49.9K 1% 1/4W
R204	409E0063	R,METAL 49.9K 1% 1/4W
R205	409E0052	R,METAL 604K 1% 1/4W
R206	409E0052	R,METAL 604K 1% 1/4W
R207	409E0053	R,METAL 5.11K 1% 1/4W
R208	409E0053	R,METAL 5.11K 1% 1/4W
R209	409E0054	R,METAL 6.19K 1% 1/4W
R210	409E0054	R,METAL 6.19K 1% 1/4W
R211	409E0059	R,METAL 100K 1% 1/4W
R212	409E0059	R,METAL 100K 1% 1/4W
R213	409E0055	R,METAL 3.9K 1% 1/4W
R214	409E0055	R,METAL 3.9K 1% 1/4W
R215	409E0056	R,METAL 4.12K 1% 1/4W
R216	409E0056	R,METAL 4.12K 1% 1/4W
R217	409E0057	R,METAL 1.3K 1% 1/4W
R218	409E0057	R,METAL 1.3K 1% 1/4W
R225	409E0055	R,METAL 3.9K 1% 1/4W
R226	409E0055	R,METAL 3.9K 1% 1/4W
R227	409E0059	R,METAL 100K 1% 1/4W
R228	409E0059	R,METAL 100K 1% 1/4W
R229	409E0061	R,METAL 5.9K 1% 1/4W
R230	409E0061	R,METAL 5.9K 1% 1/4W
R233	409E0058	R,METAL 9.1K 1% 1/4W
R235	409E0062	R,METAL 7.5K 1% 1/4W
R236	409E0062	R,METAL 7.5K 1% 1/4W
R301	40913109	R,CARBON 2.2H 5% 1/4W
Δ R302	40913109	R,CARBON 2.2H 5% 1/4W
R303	40913109	R,CARBON 2.2H 5% 1/4W
R304	401K5685	R,CARBON 3.3K 5% 1/6W
R307	409H2687	R,CARBON 3.9K 5% 1/4W
R401	401K5709	R,CARBON 33K 5% 1/6W
R404	401K5719	R,CARBON 82K 5% 1/6W
R405	401K5668	R,CARBON 620H 5% 1/6W
R406	401K5715	R,CARBON 56K 5% 1/6W
R407	409H2687	R,CARBON 3.9K 5% 1/4W
R408	401K5689	R,CARBON 4.7K 5% 1/6W
R409	401K5665	R,CARBON 470H 5% 1/6W
R410	401K5665	R,CARBON 470H 5% 1/6W
R501	401K5659	R,CARBON 270H 5% 1/6W
R502	401K5659	R,CARBON 270H 5% 1/6W
R503	401K5659	R,CARBON 270H 5% 1/6W
R504	401K5659	R,CARBON 270H 5% 1/6W
R603	409E0060	R,METAL 4.75K 1% 1/4W
R604	409E0060	R,METAL 4.75K 1% 1/4W
R605	409E0060	R,METAL 4.75K 1% 1/4W
R606	409E0060	R,METAL 4.75K 1% 1/4W
R607	409H2647	R,CARBON 82H 5% 1/4W
R608	409H2647	R,CARBON 82H 5% 1/4W

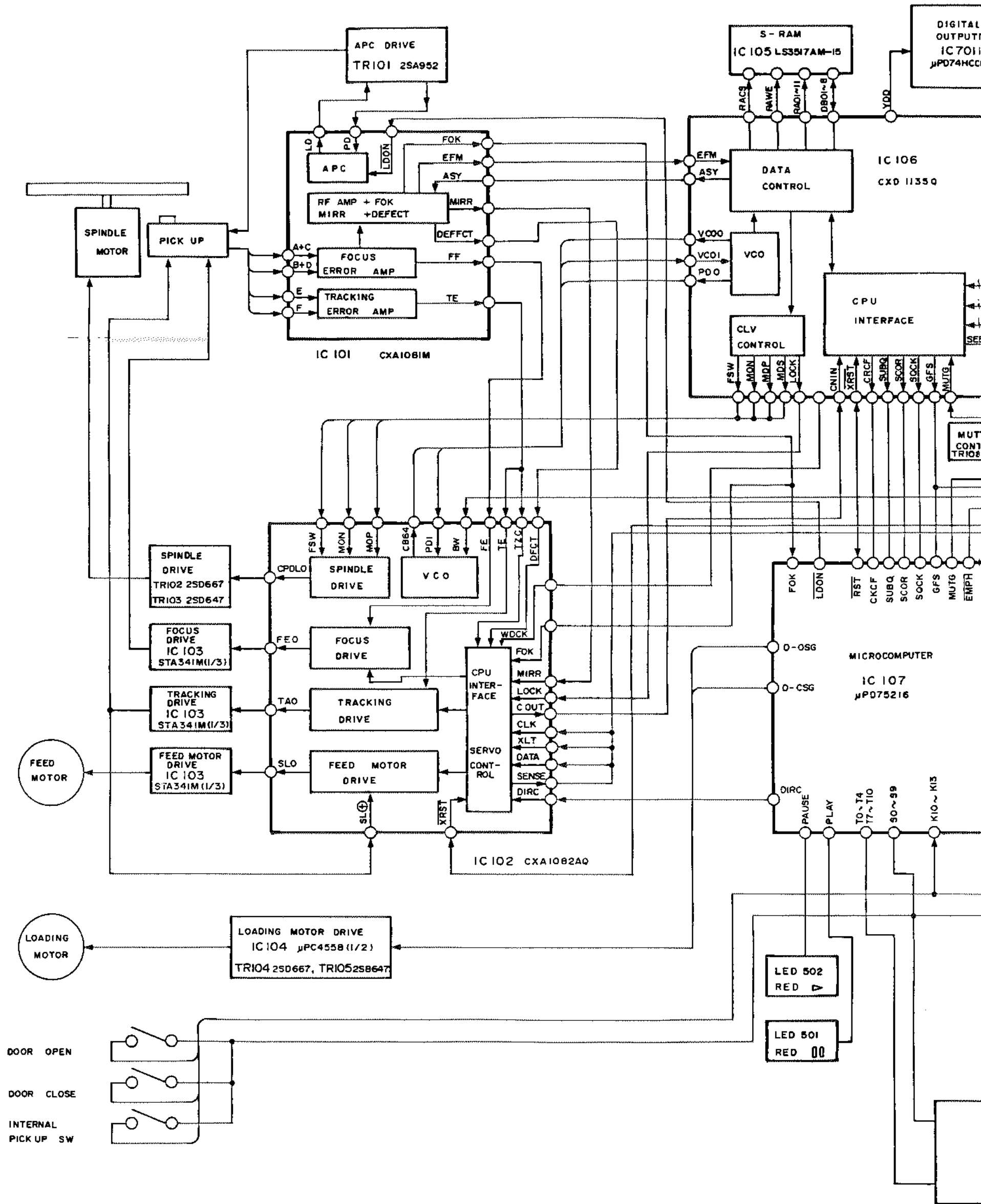
SYMBOL	PARTS NO	DESCRIPTION
R609	409H2625	R,CARBON 10H 5% 1/4W
R610	409H2625	R,CARBON 10H 5% 1/4W
R701	40107151	R,CARBON 120H 5% 1/6W
R702	40107146	R,CARBON 75H 5% 1/6W
R801	401K5673	R,CARBON 1.0K 5% 1/6W
R802	401K5673	R,CARBON 1.0K 5% 1/6W
*** CAPACITORS ***		
C01	42910036	C,CERAMIC 400V 4700PF
C101	439J3015	C,ELEC 10V 100UF
C102	421C0213	C,CERAMIC 50V 1000PF
C103	429G6505	C,FILM 50V 2200PF 5%
C104	439J3062	C,ELEC 50V 3.3UF
C105	421A0433	C,CERAMIC 50V 0.047UF
C106	429G6519	C,FILM 50V 0.033UF 5%
C107	421A0433	C,CERAMIC 50V 0.047UF
C108	439J3026	C,ELEC 16V 33UF
C109	429G6509	C,FILM 50V 4700PF 5%
C110	429G6513	C,FILM 50V 0.010UF 5%
C111	439J3059	C,ELEC 50V 0.47UF
C112	429G6513	C,FILM 50V 0.010UF 5%
C113	439J3026	C,ELEC 16V 33UF
C114	421A0433	C,CERAMIC 50V 0.047UF
C115	429G6505	C,FILM 50V 2200PF 5%
C116	429G6509	C,FILM 50V 4700PF 5%
C117	429G6525	C,FILM 50V 0.10UF 5%
C118	429G6521	C,FILM 50V 0.047UF 5%
C119	439J3063	C,ELEC 50V 4.7UF
C120	429G6525	C,FILM 50V 0.10UF 5%
C121	439J3014	C,ELEC 10V 47UF
C122	439J3015	C,ELEC 10V 100UF
C123	429G6516	C,FILM 50V 0.018UF 5%
C124	439J3014	C,ELEC 10V 47UF
C125	421J9001	C,CERAMIC 50V 0.1UF
C126	439J3060	C,ELEC 50V 1.0UF
C127	439J3063	C,ELEC 50V 4.7UF
C128	429G6505	C,FILM 50V 2200PF 5%
C129	423A1045	C,CERAMIC 50V 100PF
C130	439J3015	C,ELEC 10V 100UF
C131	429G6501	C,FILM 50V 1000PF 5%
C132	439J3059	C,ELEC 50V 0.47UF
C133	429G6519	C,FILM 50V 0.033UF 5%
C134	439J3064	C,ELEC 50V 10UF
C135	439J3064	C,ELEC 50V 10UF
C136	423A1045	C,CERAMIC 50V 100PF
C138	439J3064	C,ELEC 50V 10UF
C140	439J3041	C,ELEC 25V 100UF
C143	421A0433	C,CERAMIC 50V 0.047UF
C144	439J3064	C,ELEC 50V 10UF
C145	423A2028	C,CERAMIC 50V 20PF
C146	423A2028	C,CERAMIC 50V 20PF
C147	423A1053	C,CERAMIC 50V 220PF
C148	423A1053	C,CERAMIC 50V 220PF
C150	421A0433	C,CERAMIC 50V 0.047UF
C151	421A0433	C,CERAMIC 50V 0.047UF
C152	439J3064	C,ELEC 50V 10UF
C154	439J3064	C,ELEC 50V 10UF
C155	429G6513	C,FILM 50V 0.010UF 5%
C201	429G6913	C,FILM 50V 0.1UF
C202	429G6913	C,FILM 50V 0.1UF
C203	429G6913	C,FILM 50V 0.1UF
C204	429G6913	C,FILM 50V 0.1UF
C205	429G6913	C,FILM 50V 0.1UF

SYMBOL	PARTS NO	DESCRIPTION
C206	429G6913	C,FILM 50V 0.1UF
C207	429G6913	C,FILM 50V 0.1UF
C211	42977141	C,FILM 100V 680PF 5%
C212	429G6913	C,FILM 50V 0.1UF
C213	429G6913	C,FILM 50V 0.1UF
C214	429G6913	C,FILM 50V 0.1UF
C215	429G6913	C,FILM 50V 0.1UF
C216	429G6913	C,FILM 50V 0.1UF
C217	429G6913	C,FILM 50V 0.1UF
C218	429G6913	C,FILM 50V 0.1UF
C221	439A1454	C,ELEC 50V 10UF UTCS,AT
C222	439A1454	C,ELEC 50V 10UF UTCS,AT
C223	439I2337	C,ELEC 63V 22UF
C224	439I2337	C,ELEC 63V 22UF
C225	429G6917	C,METAL FILM 50V 0.22UF
C226	429G6917	C,POLYSTER 50V 30PF
C227	42978212	C,POLYSTER 50V 30PF
C228	42978212	C,FILM 50V 30PF
C233	429G6917	C,METAL FILM 50V 0.22UF
C234	429G6917	C,METAL FILM 50V 0.22UF
C235	429G6907	C,METAL FILM 50V 0.033UF
C236	429G6907	C,METAL FILM 50V 0.033UF
C237	429G6901	C,METAL FILM 50V 0.01UF
C241	421J9001	C,CERAMIC 50V 0.1UF
C242	421J9001	C,CERAMIC 50V 0.1UF
C243	421J9001	C,CERAMIC 50V 0.1UF
C244	421J9001	C,CERAMIC 50V 0.1UF
C251	429G6917	C,METAL FILM 50V 0.22UF
C252	429G6917	C,METAL FILM 50V 0.22UF
C253	42977158	C,FILM 100V 3600PF 5%
C254	42977158	C,FILM 100V 3600PF 5%
C255	42977158	C,FILM 100V 3600PF 5%
C256	42977158	C,FILM 100V 3600PF 5%
C303	439I1425	C,ELEC 16V 470UF
C304	439I1425	C,ELEC 16V 470UF
C305	439I1438	C,ELEC 25V 2200UF
C306	439I1438	C,ELEC 25V 2200UF
C308	439J3041	C,ELEC 25V 100UF
C309	439J3041	C,ELEC 25V 100UF
C310	439J3041	C,ELEC 25V 100UF
C311	439J3041	C,ELEC 25V 100UF
C312	439I1427	C,ELEC 10V 2200UF UTCS
C313	43920019	C,ELEC 16V 3300UF
C314	439J3066	C,ELEC 50V 33UF
C315	439J3066	C,ELEC 50V 33UF
C316	43993069	C,ELEC 50V 220UF
C318	439I1423	C,ELEC 16V 220UF
C319	439I1423	C,ELEC 16V 220UF
C401	439J3025	C,ELEC 16V 22UF
C402	439J3039	C,ELEC 25V 47UF
C403	439J3063	C,ELEC 50V 10UF
C404	421C0213	C,CERAMIC 50V 1000PF
C405	421A0433	C,CERAMIC 50V 0.047UF
C501	430A8108	C,ELEC 10V 100UF
C502	421A0433	C,CERAMIC 50V 0.047UF
C601	423A1015	C,CERAMIC 50V 10PF
C602	423A1015	C,CERAMIC 50V 10PF
C603	439A1420	C,ELEC 16V 33UF UTCS,AT
C604	439A1420	C,ELEC 16V 33UF UTCS,AT
C610	421A0433	C,CERAMIC 50V 0.047UF
C701	439I1351	C,ELEC 25V 47UF

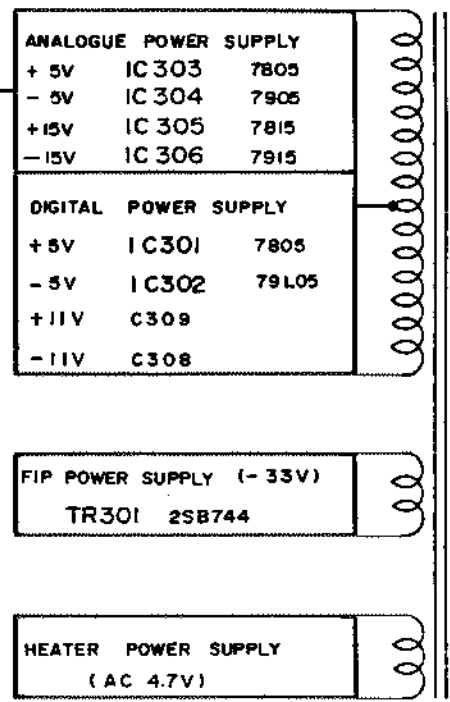
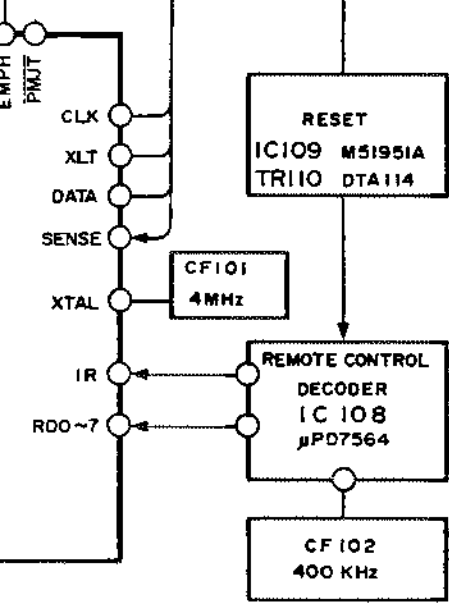
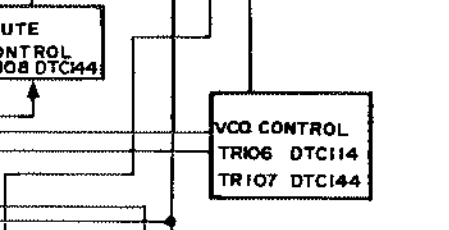
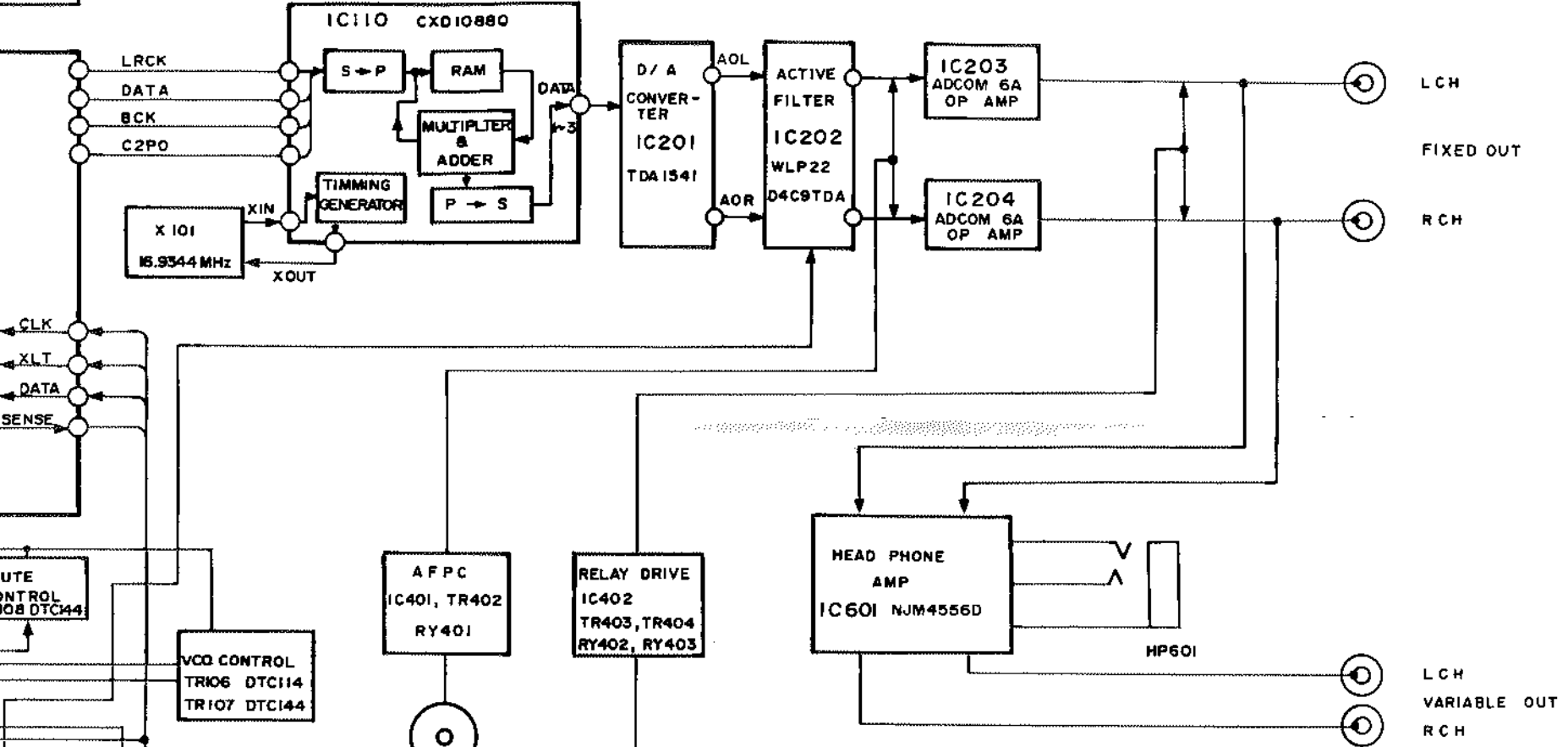
SYMBOL	PARTS NO	DESCRIPTION
C702	4211K425	C,CERAMIC 50V 0.01UF
C703	42311037	C,CERAMIC 50V 47PF
C704	439I1351	C,ELEC 25V 47UF
C705	42110933	C,CERAMIC 50V 0.047UF
C706	42331053	C,CERAMIC 50V 220PF
C707	42199001	C,CERAMIC 50V 0.1UF
C708	42199001	C,CERAMIC 50V 0.1UF



# BLOCK DIAGRAM



TOTAL  
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IC04



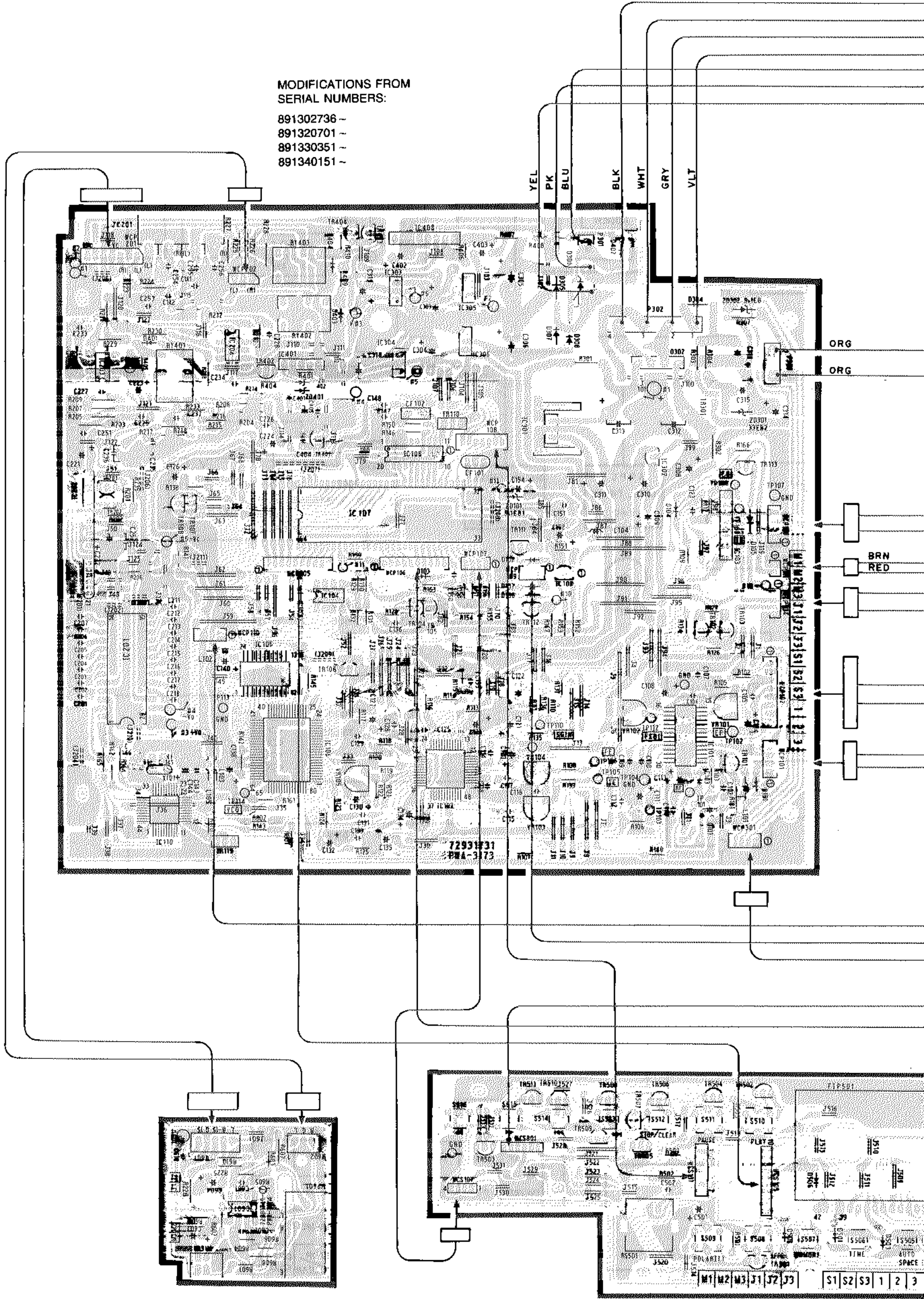
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PAUSE	FF	FR				
		POLARITY	A - B	REPEAT	MEMO	
TIME	INTRO	AUTO SPACE			STOP CLEAR	OPEN/CLOSE

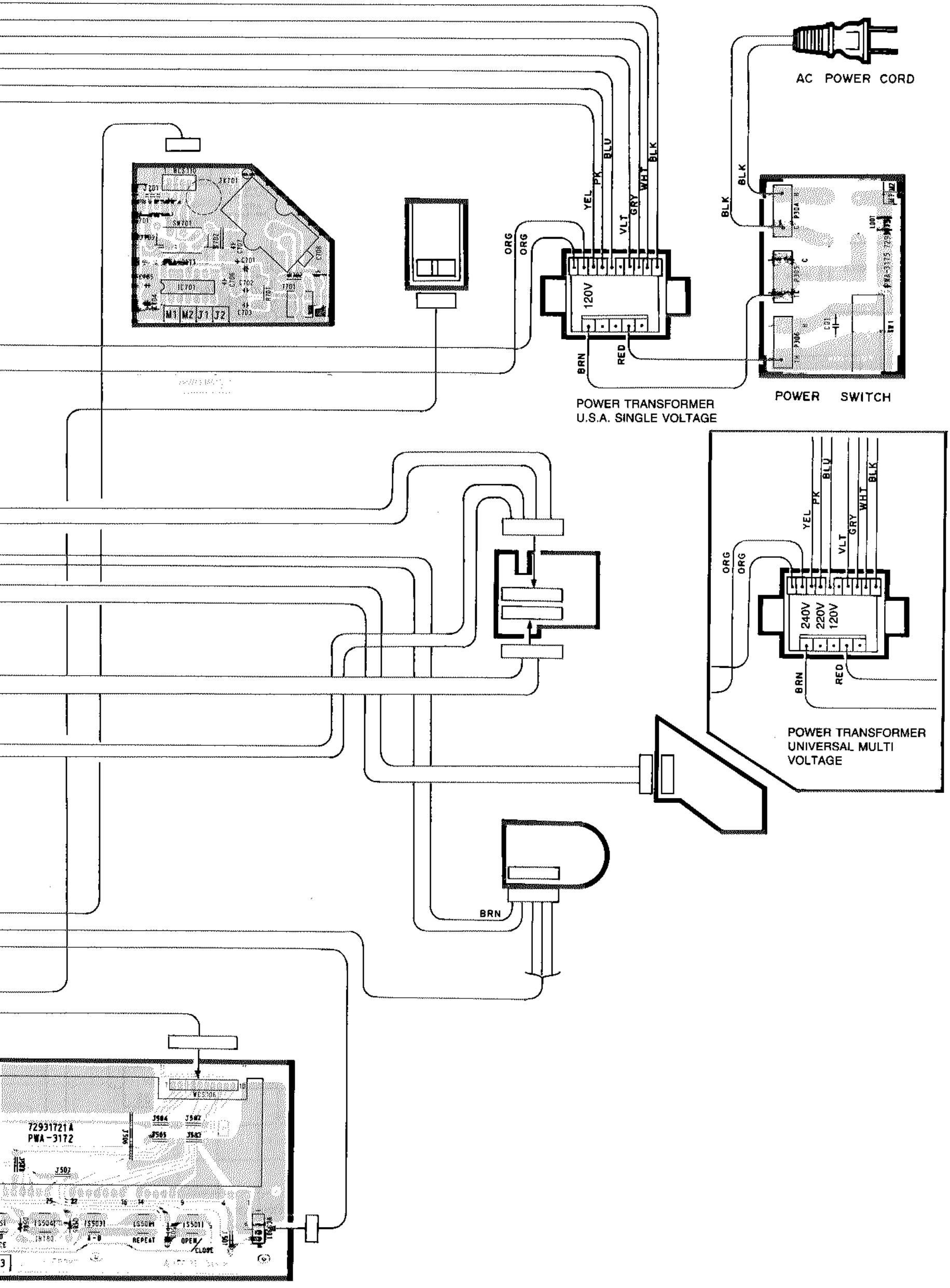
# PRINTED WIRING BOARD

(Up to the 600th unit produced)

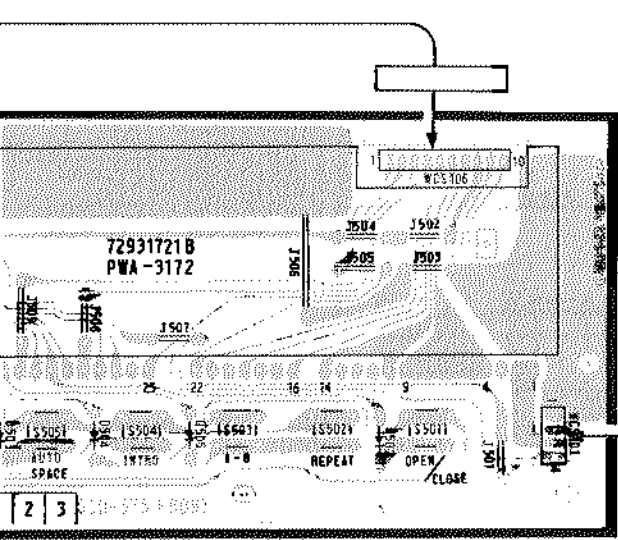
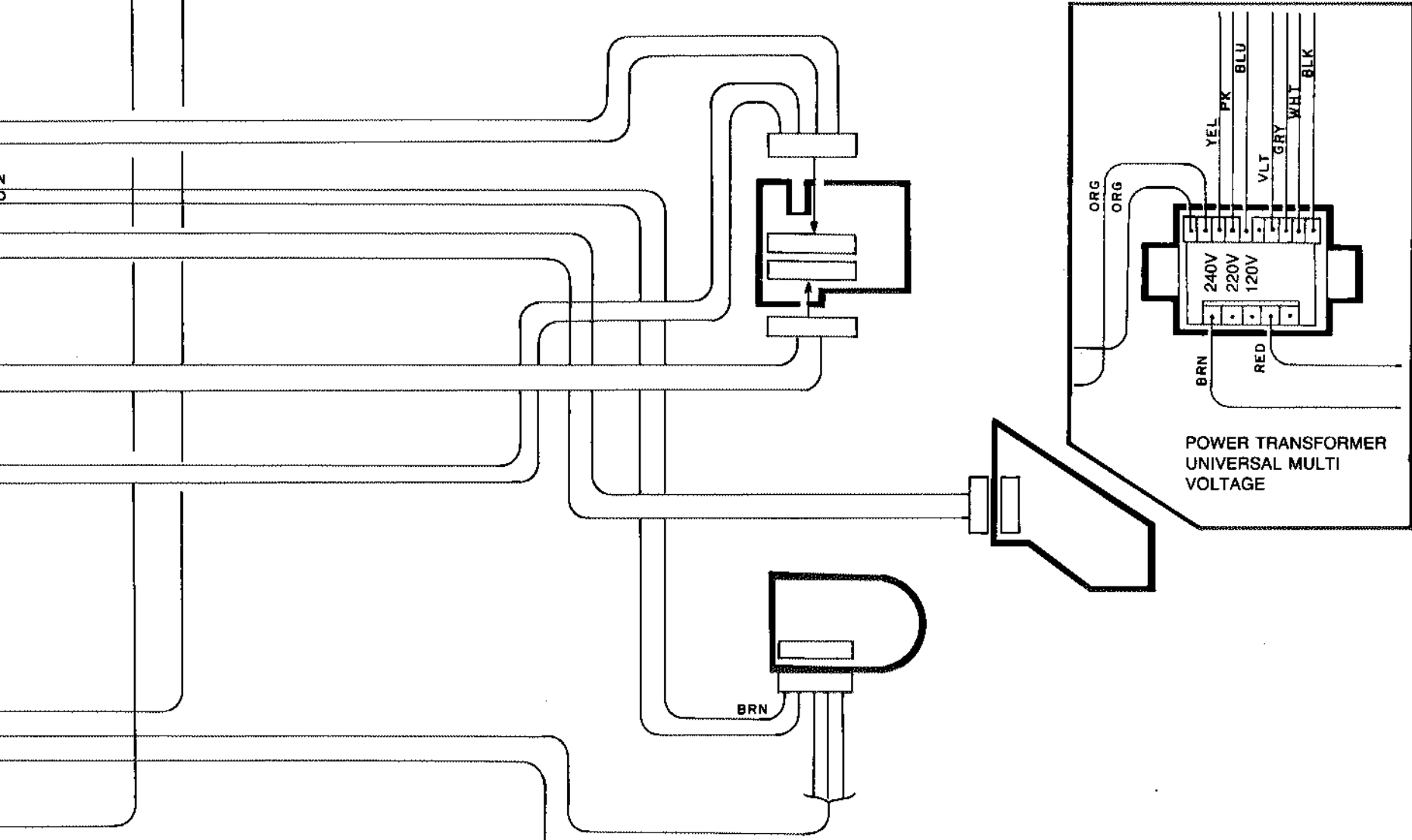
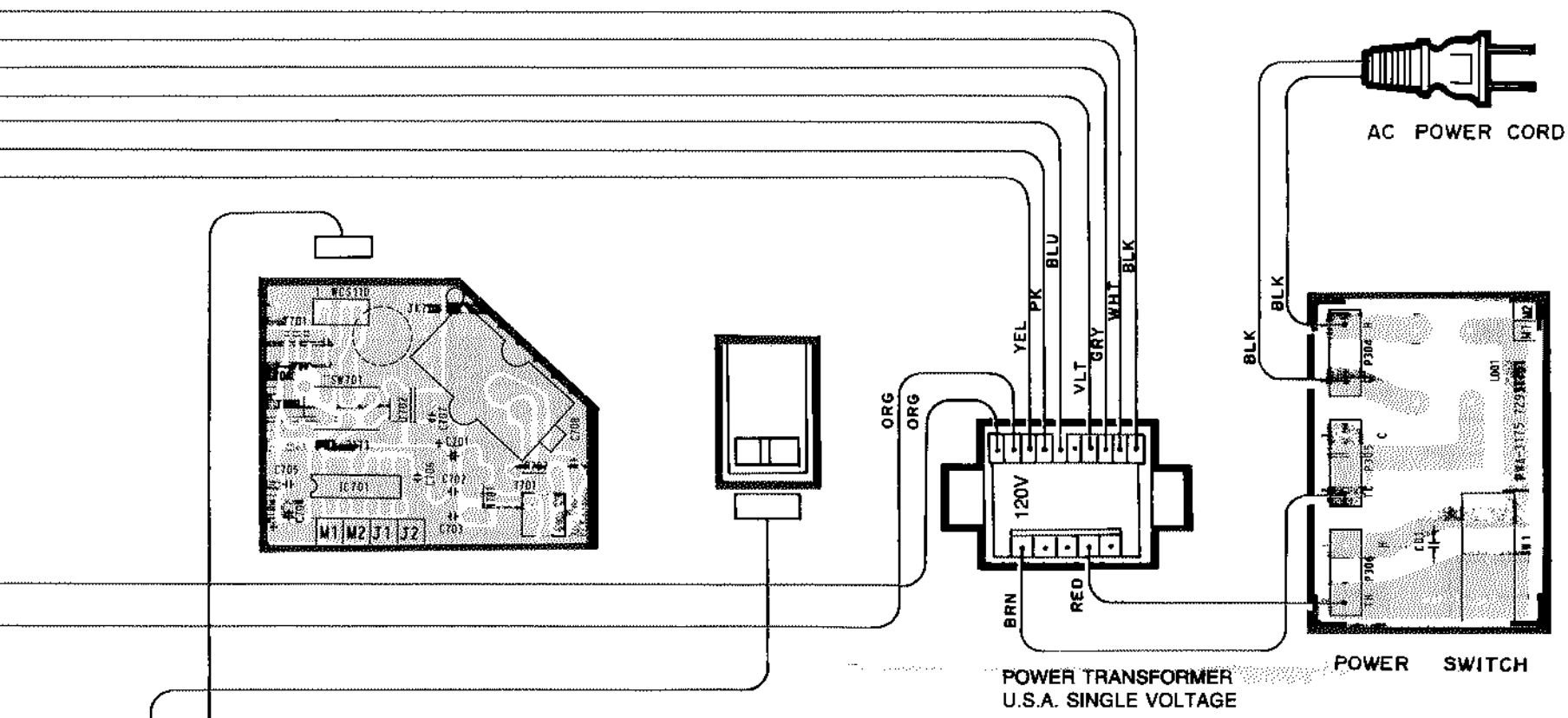
## MODIFICATIONS FROM SERIAL NUMBERS:

- 891302736 -
- 891320701 -
- 891330351 -
- 891340151 -











# CIRCUIT DIAGRAM

