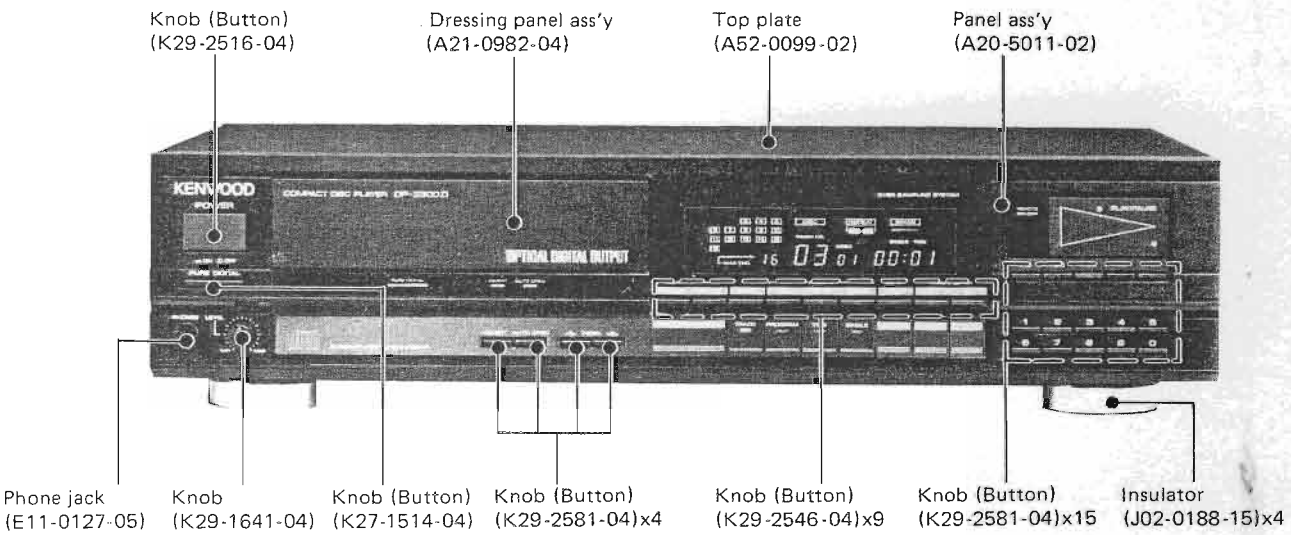
COMPACT DISC PLAYER

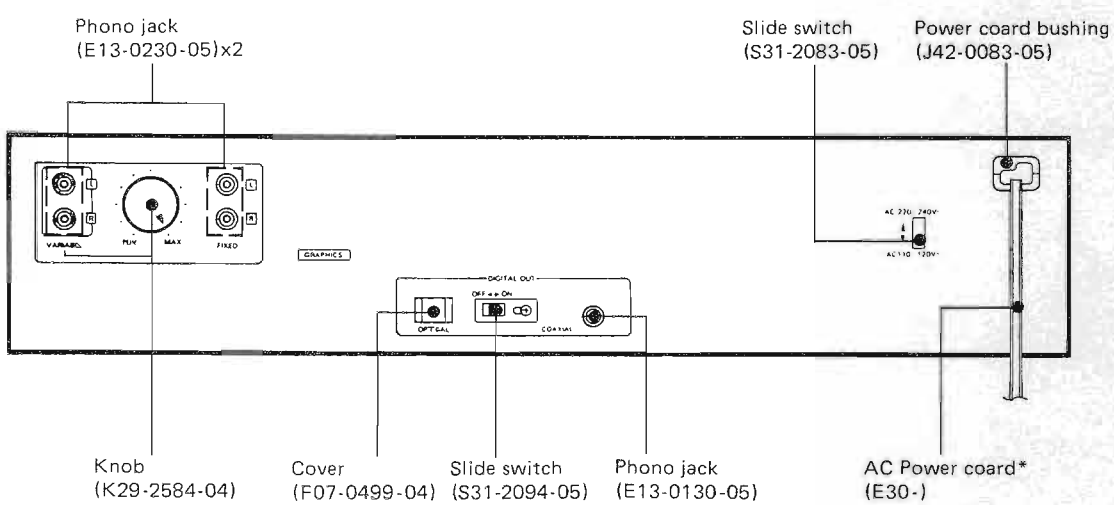
DP-3300D

SERVICE MANUAL

KENWOOD

B51-3179-00 (O) 2289





In complicance with Federal Regulations, following are reproductions of labels on, or inside the product relating to laser product safety.

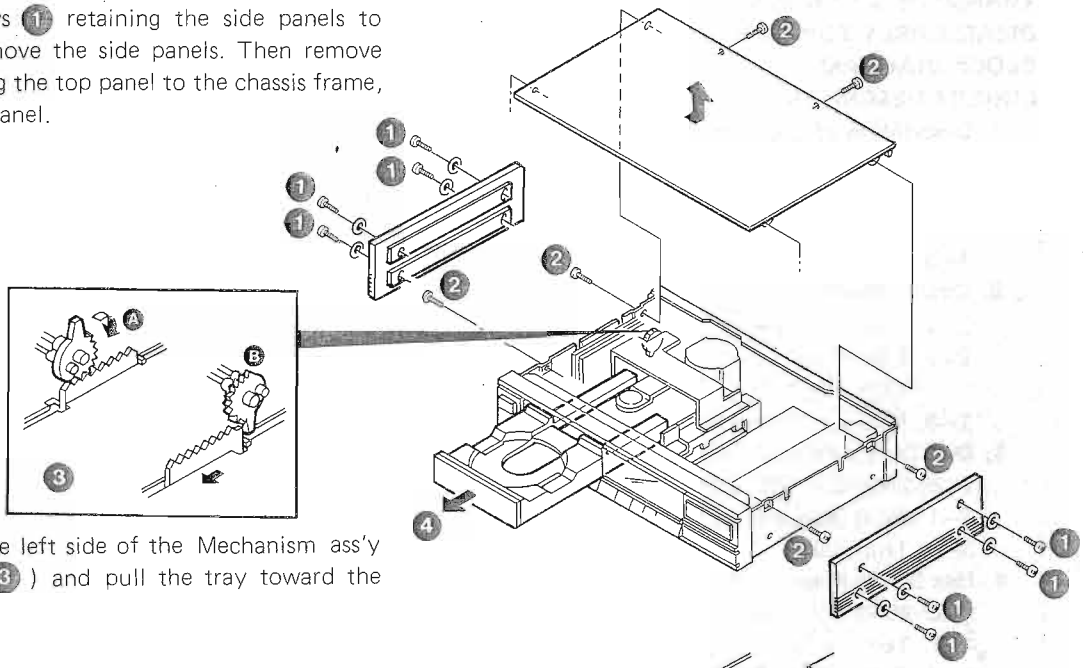
KENWOOD-Corp. certifies this equipment conforms to DHHS Regulations No. 21 CFR 1040. 10, Chapter 1, Subchapter J.

DANGER : Laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.

*Refer to parts list on page 51.

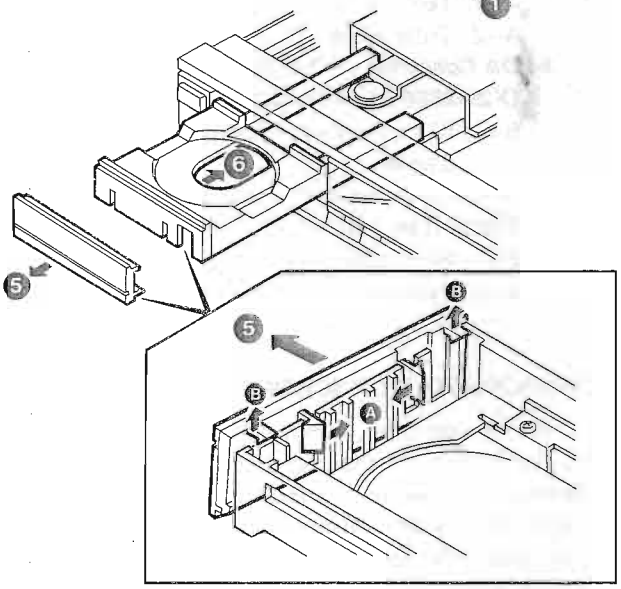
DISASSEMBLY FOR REPAIR

1. Remove eight screws (1) retaining the side panels to the chassis, and remove the side panels. Then remove six screws (2) fixing the top panel to the chassis frame, and remove the top panel.

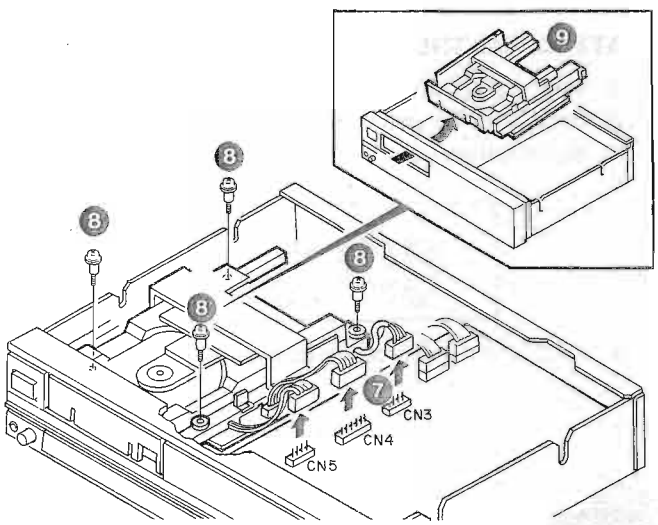


2. Move the gear on the left side of the Mechanism ass'y with your finger (3) and pull the tray toward the front (4).

3. Pull up the four claws on the tray panel in the direction of the arrows and remove the tray panel by pulling it out in the direction (5).
4. Push the tray back (6).



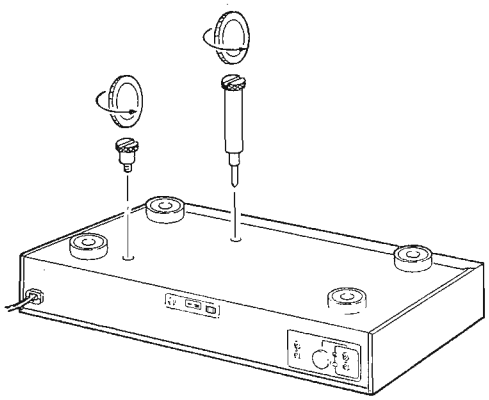
5. Disconnect three connectors (CN3, CN4, CN5) from the CD Player unit (X32-1090-11) (7).
6. Remove four screws (8) retaining the Mechanism ass'y and remove the Mechanism ass'y by pulling it slightly backward then upward (9).



CONTENTS/TRANSPORTATION SCREW

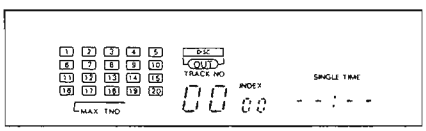
TRANSPORTATION SCREW

Before operation, remove the two red screws attached to the bottom of the unit used during transport from the factory. Remove both screws using a coin, etc. and, after removing, retain them together with the Warranty card and other documents. When the unit is to be transported again, be sure replace the two screws to their original position.



ATTACHING THE TRANSPORTATION SCREWS

1. Turn the power ON without loading disc.
2. Turn OFF the power after the display shows the following indication.

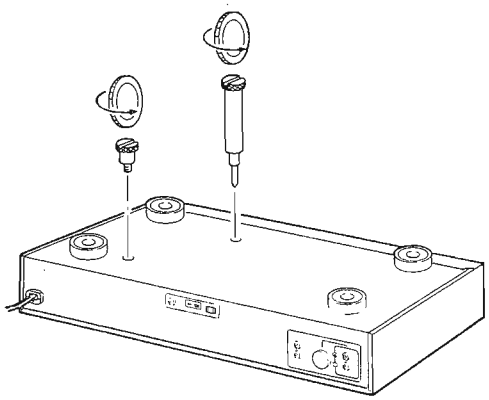


3. Install the transportation screws.

CONTENTS/TRANSPORTATION SCREW

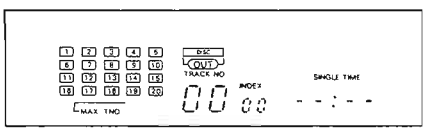
TRANSPORTATION SCREW

Before operation, remove the two red screws attached to the bottom of the unit used during transport from the factory. Remove both screws using a coin, etc. and, after removing, retain them together with the Warranty card and other documents. When the unit is to be transported again, be sure replace the two screws to their original position.



ATTACHING THE TRANSPORTATION SCREWS

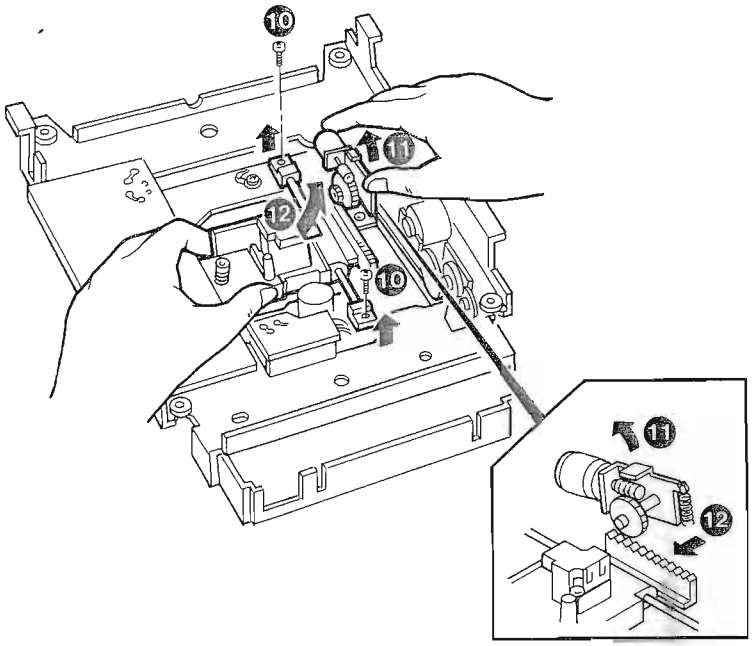
1. Turn the power ON without loading disc.
2. Turn OFF the power after the display shows the following indication.



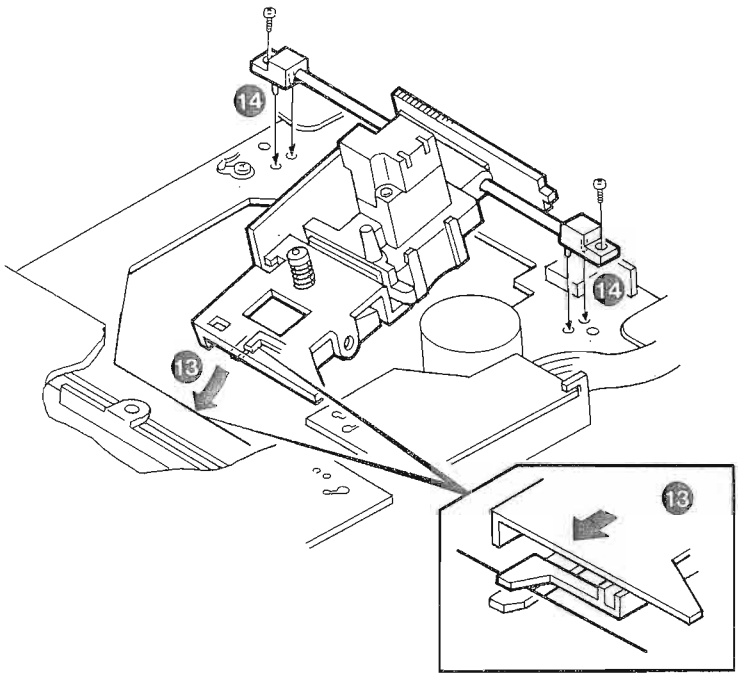
3. Install the transportation screws.

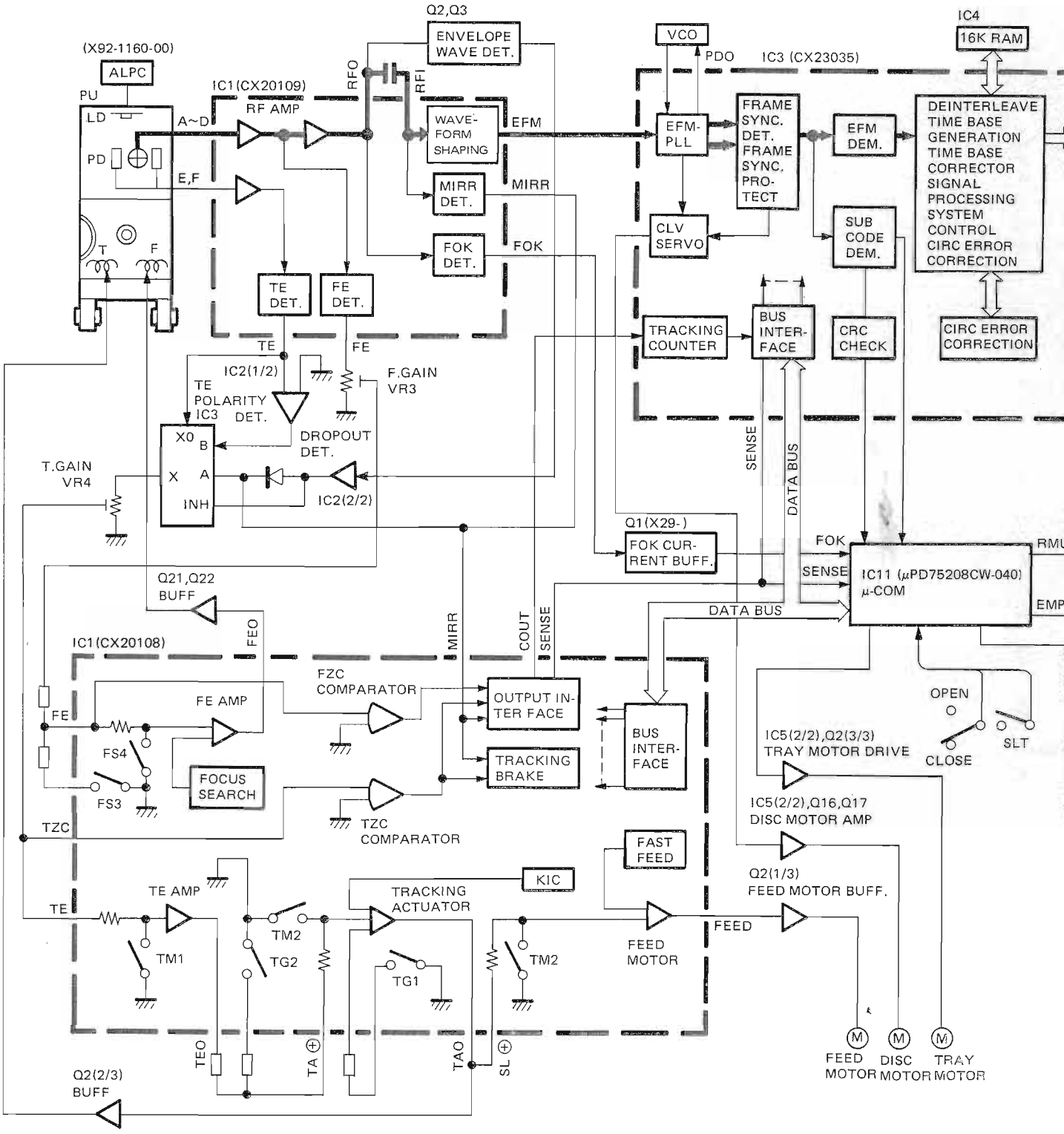
DISASSEMBLY FOR REPAIR

7. Turn the Mechanism ass'y upside down, remove two screws (10) fixing the rod and, while lifting the motor block diagonally upward ((11)), pull the pickup in the direction of the arrow ((12)).



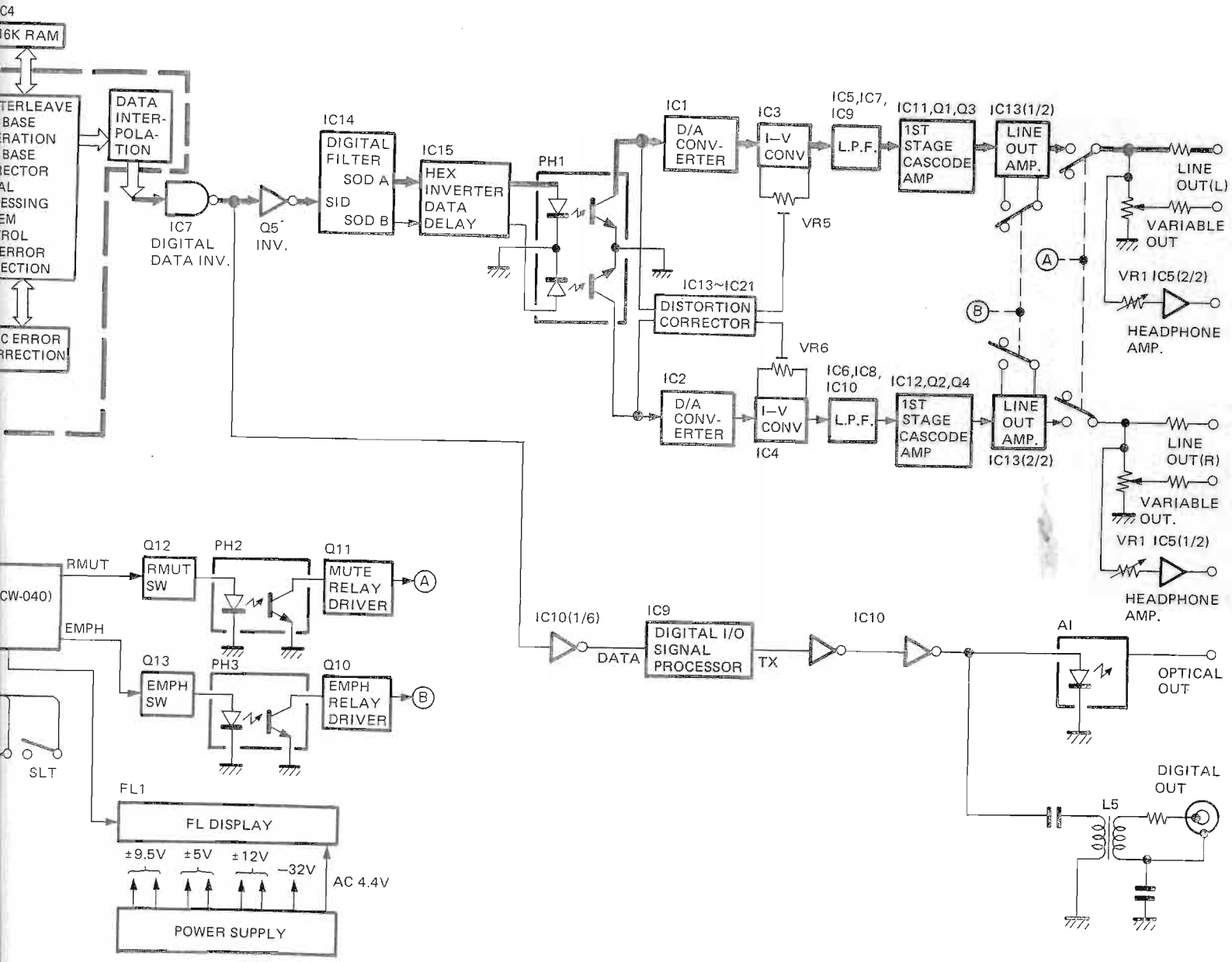
8. When assembling the pickup block, insert the chassis of the Mechanism ass'y in the direction of arrow (13). Align the position of the screws and secure them ((14)).




(X92-1160-00)
ALPC
PU
LD
PD
A~D
E,F
T
F
IC1(CX20109)
RF AMP
RFO
RFI
Q2,Q3
ENVELOPE WAVE DET.
WAVE-FORM SHAPING
EFM
MIRR DET.
MIRR
FOK DET.
FOK
TE DET.
FE DET.
TE
FE
IC2(1/2)
TE POLARITY DET.
IC3
F.GAIN VR3
DROPOUT DET.
X0
B
X
A
INH
IC2(2/2)
T.GAIN VR4
Q21,Q22 BUFF
FEO
IC1(CX20108)
FE
FE AMP
FS4
FS3
FOCUS SEARCH
FZC COMPARATOR
TZC
TZC COMPARATOR
MIRR
COUT
SENSE
OUTPUT IN-TER FACE
TRACKING BRAKE
BUS INTER-FACE
TE
TE AMP
TM1
TM2
TG2
TG1
TRACKING ACTUATOR
KIC
FAST FEED
FEED MOTOR
FEED
TEO
TA
TAO
SL
Q2(2/3) BUFF
VCO
PDO
IC3 (CX23035)
EFM-PLL
FRAME SYNC. DET. FRAME SYNC. PRO-TECT
EFM DEM.
IC4
16K RAM
DEINTERLEAVE TIME BASE GENERATION TIME BASE CORRECTOR SIGNAL PROCESSING SYSTEM CONTROL CIRC ERROR CORRECTION
CLV SERVO
SUB CODE DEM.
TRACKING COUNTER
BUS INTER-FACE
CRC CHECK
CIRC ERROR CORRECTION
SENSE
DATA BUS
Q1(X29-)
FOK CUR-RENT BUFF.
FOK
SENSE
DATA BUS
IC11 (μPD75208CW-040) μ-COM
RMU
EMP
OPEN
CLOSE
SLT
IC5(2/2),Q2(3/3) TRAY MOTOR DRIVE
IC5(2/2),Q16,Q17 DISC MOTOR AMP
Q2(1/3) FEED MOTOR BUFF.
FEED MOTOR
DISC MOTOR
TRAY MOTOR

0D DP-3300D

OCK DIAGRAM



CIRCUIT DESCRIPTION

1. Description of components

1–1. DAC UNIT (X25-2860-11)

Component		Use/Function	Operation/Condition/Compatibility
IC1,IC2	PCM56P-K	D/A converter	Converts digital value into agalog quantity.
IC3,IC4	NJM5532D-D	I–V converter	(1/2) : Converts DAC current input into voltage. (2/2) : Generates offset voltage for distortion correction.
IC5~IC10	NJM5532D-D	Op amp.	Forms a GIC (General Impedance Converter) with LPF.
IC11,IC12	μPA68HA	Dual FET	Forms the 1st stage of output amp. in the final stage.
IC13	CX20197	Op amp.	Amplifier device of output amp.
IC14	SM5804B	Digital filter	Digital filter with 4-fold oversampling.
IC15	TC74HC04F	HEX inverter	Inverts the logic of digital filter output and delays data.
IC16	TA79L006P	3-terminal regulator	(–) power for DAC.
IC17	TA78L006AP	3-terminal regulator	(+) power for DAC.
IC18,IC19	TC74HC74P	Dual D flip-flop	Used in distortion corrector circuit.
IC20	TC74HC393P	Dual 4-bit binary counter	Used in distortion corrector circuit.
IC21	TC74HC04P	HEX inverter	Used in distortion corrector circuit.
PH1	T95-0035-05	Photocoupler	Interface between digital filter and DAC (Used for data).
PH2	T95-0036-05	Photocoupler	Interface between DAC and X32 (Emphasis).
PH3	T95-0036-05	Photocoupler	Interface between DAC and X32 (Muting).
Q1~Q4	2SC945(A)(Q,P)	Transistor	Used in cascode stage of 1st stage of output amp.
Q5,Q6	2SK170(V)	FET	Regulated power supply for constant-voltage circuit of 1st stage of output amp.
Q7,Q8	2SC945(A)(Q,P)	Transistor	Regulated power supply for differential amp. of 1st stage of output amp.
Q10	DTC114YFF	Switch	De-emphasis relay driver.
Q11	DTC114YFF	Switch	Muting relay driver.
Q12	DTC114YFF	Switch	Emphasis photocoupler driver.
Q13	DTC114YFF	Switch	Muting photocoupler driver.
Q14	2SA733(A),(Q,P)	Switch	Used for supplying voltage to the photocoupler output.
D1,D2	RD5.1JS(B)	Zener diode	Supplies potential to the cascode stage of 1st stage of output amp.
D3,D4	RD5.1JS(B)	Zener diode	Determines the potential of constant-current circuit of differential amp of 1st stage of output amp.
D5,D6	RD10ES(B)	Zener diode	Reference power supply for constant-voltage circuit of 1st stage of output amp.
D8	1SS176	Switch	Protects IC16 against counter-withstanding voltage.
D10,D11	1SS176	Switch	Used for countermeasure against static electricity.
D12,D13	1SS133 or 1SS176	Switch	Used for short-circuiting counter-electromotive voltage of relay.
D14	RD10ES(B)	Zener diode	Determines the operating voltage of transistor SW Q14.
D15	1SS176	Switch	Protects IC17 against counter-withstanding voltage.

Table 1–1

1–2. CONTROL UNIT (X29-1780-00)

Component		Use/Function	Operation/Condition/Compatibility
IC1	CX20109	Optical pickup preamp.	Focusing error signal generation, tracking error signal generation, RF signal generation and phase compensation, auto-symmetry correction circuit.
IC2(1/2)	M5218P	Tracking error polarity detector	When tracking error is (+) : + 4V output. When (–) : –4V output.
IC2(2/2)	M5218P	Flaw detector level comparator	Normally : –4V output. When flaw is detected : + 5V output.
IC3	μPD4053BC	Tracking error signal select switch	The error signal supplied to the tracking servo circuit is selected according to the logic of the MIRR signal supplied via pin 11. When MIRR is "L" : Normal tracking error signal. When MIRR is "H" : Constant voltage at + 0.5V or –0.5V. The polarity of the constant voltage supplied when the MIRR signal is "H" is selected according to the tracking error polarity detector output supplied via pin 10. When "H" : + 0.5V, When "L" : –0.5V. The error signal supplied to the tracking servo circuit is determined according to the polarity of the flaw detector output supplied via pin 6. When "L" : Error signal is supplied to the tracking servo circuit. When "H" : Error signal is not supplied to the tracking servo circuit.

Table 1–2

Component		Use/Function	Operation/Condition/Compatibility
Q1	2SC945(A)(Q,P)	FOK current buffer	Goes "H" when a signal is output from the pickup.
Q2	2SC945(A)(Q,P)	RF signal enveloped detector	Detects the + side envelope of RF signal. (Small time constant)
Q3	2SC945(A)(Q,P)	RF signal enveloped detector	Detects the + side envelope of RF signal. (Large time constant)
D1,D2	1SS176 or 1SS131	Switch	When IC2(2/2) output becomes –4V, the switches function to p vent the negative potential to be applied to pin 6 of IC3.
D3,D4	1SS176 or 1SS131	Switch	When IC2(1/2) output becomes –4V, the switches function to p vent the negative potential to be applied to pin 10 of IC3.
D5	1SS176 or 1SS131	Switch	When the flaw detector level goes "H" by detecting a flaw, the s turns the MIRR signal also "H".

Table 1–2

1–3. CD PLAYER UNIT (X32-1090-11)

Component		Use/Function	Operation/Condition/Compatibility
IC1	CX20108	Servo IC	Generates search pulses for focusing servo, tracking servo and feed m servo.
IC2	M51951ASL	Reset IC	Generates microprocessor reset pulse.
IC3	CX23035	Signal processor IC	EFM decoder, correction/interpolation circuit, PLL circuit, CLV circ
IC4	CXK5816M	RAM	Signal processor RAM (16K).
IC5	NJM4558D	Op amp.	(1/2) : PLL compensator circuit (LPF + amp.). (2/2) : CLV compensator circuit (LPF + level shifter).
IC6	NJM4558D	Op amp.	(1/2) : CLV compensator circuit (amp.). (2/2) : Tray driver circuit.
IC7	TC74HC00P	NAND gate	Digital data inverter circuit.
IC8	TC74HC08P	AND gate (switch)	Controls digital signal supply to DAC.
IC9	CXD1075P	Digital output signal modulator IC	Converts digital audio data into Sony/Philips digital I/O format to g transmission signal.
IC10	TC74HCU04P	HEX inverter	IC9 demodulation signal amp, pulse transformer driver.
IC11	μPD75208CW-040	Microprocessor	Controls display, key-input processing and servo IC.
IC12~IC15	LB1294	High-voltage withstanding buff.	Interface circuit between microprocessor and FL display.
IC16	AN7805F	3-terminal regulator	+ 5V regulated voltage for digital and PLL lines.
IC17	AN7905F	3-terminal regulator	–5V regulated voltage for digital and PLL lines.
IC18	AN7805F	3-terminal regulator	+ 5V regulated voltage for servo line.
IC19	AN7905F	3-terminal regulator	–5V regulated voltage for servo line.
IC20	M5218P	Op amp.	Error amp of ±12V constant-voltage regulated circuit for DAC.
IC21	TC74HC74P	Dual D flip-flop	Digital data inverter circuit.
Q1	2SC945(A)(Q,P)	Switch	For logic inversion using pre-digital SW.
Q2	STA341M	Current amplifier transistor	Current buffer for tracking actuator, feed motor and tray motor dr circuitry.
Q3	DTC124EN	Digital transistor switch	Used to prevent operation of eye-pattern center sampling circuit w the disc motor is not driven.
Q4	DTA124EN	Digital transistor switch	Logic inversion and level shifting of MON output from CX23035.
Q5	2SC1923(R,O)	Inverter	Inverts digital data at high speed and amplifies the current.
Q6	2SA733(A)(Q,P)	Switch	Discharges –5V DAC unit to 0V.
Q7	2SC945(A),(Q,P)	Switch	Supplies –5V to DAC unit.
Q8	2SC3246	Switch	An emitter-follower used for supplying + 5V to DAC unit.
Q9	2SA992(F,E)	Switch	Controls SWs Q6 and Q7.
Q10	2SC1845(E,F)	Switch	Controls potential at base of Q8.
Q11	2SK246(Y,GR)	Switch	Eliminates offset of motor driver circuit while motor is stopped.
Q12	2SA733(A)(Q,P)	Switch	Turns –5V for laser power ON/OFF.
Q13	2SK246(Y,GR)	Constant-voltage regulated power supply	Power supply in the constant-voltage regulated laser power supply

Table 1–3

CIRCUIT DESCRIPTION

Component		Use/Function	Operation/Condition/Compatibility
Q14	2SC945(A)(Q,P)	Ripple filter	Transistor ripple filter for constant-voltage regulated V_{DD} supply circuit for FL drivers ICs (IC12 to IC15).
Q15	2SA1286	Ripple filter	Transistor ripple filter for constant-voltage laser power supply circuit.
Q16	2SC3246	Current buffer	Current buffer for disc motor driver circuit.
Q17	2SA1286	Current buffer	Current buffer for disc motor driver circuit.
Q18	2SC945(A)(Q,P)	Switch	Inverts the logic of pre-digital SW.
Q19	2SA733(A)(Q,P)	Switch	Connects the low muting potential in DAC unit to GND.
Q20	2SC945(A)(Q,P)	Switch	Control SW used to set ±12V regulated DAC unit power to ±0V.
Q21	2SA1286	Current buffer	Current buffer for focus actuator driver circuit.
Q22	2SD1266	Current buffer	Current buffer for focus actuator driver circuit.
Q23	2SD1266	Ripple filter	Transistor ripple filter for + 12V regulated DAC unit power supply circuit.
Q24	2SB941(P)	Ripple filter	Transistor ripple filter for −12V regulated DAC unit power supply circuit.
D1	1SS176	Switch	Pre-digital SW.
D2	1SS176	Switch	Diode SW used for key scanning in test mode.
D3	1SS176	Switch	Time-constant SW for quick discharge of C45.
D4	1SS176	Switch	Used to prevent variation of MUTE and EMPH digital audio data during searching, etc.
D5	RD6.8ES(B2)	Zener diode	Provides reference potential for constant-voltage regulated V_{DD} supply circuit for FL driver ICs (IC12 to IC15).
D6,D7	DSM1A1	Rectifier diodes	Used for voltage multiplying rectifier.
D8	RD8.2ES(B)	Zener diode	Used to maintain FL display erase potential.
D9	1SS176	Switch	Diode SW used to interrupt optical output while the digital output SW is OFF. OFF.
D10	RD2.7ES(B)	Switch	Used to decrease ±12V DAC power quickly when power is turned OFF.
D11	RD6.2JS(B2)	Zener diode	Provides reference potential for ±12V regulated DAC power supply circuit.
D12~D15	1SS176	Switch	Diode SW used for countermeasure against static electricity in digital output.
D16,D17	1SS176	Switch	Diode used for countermeasure against static electricity.
D18~D20	1SS176	Switch	Diode SW connected to limit SW.
D21	RD5.6ES(B2)	Zener diode	Provides reference potential for −5V laser power.
D22	1B4B41	Rectifier diode	Rectifier diode bridge for servo and digital lines.
D23	1B4B41	Rectifier diode	Rectifier diode bridge for DAC line.
D24	1SV147	Vari-cap	Vari-cap in VCO circuit of PLL.

Table 1–3

2. Circuit description

2–1. DAC Interface circuit (X25-2860-11)

The digital line and analog line of the DP-3300D are separated by transmitting DAC digital audio data using photocouplers. Although the photocouplers are of the high-speed type, the photocoupler outputs still include a time lag of approx. 20ns. To compensate for this delay, an inverter is used with BCK and two inverters are used with 176.5kHz used for LATCH signal.

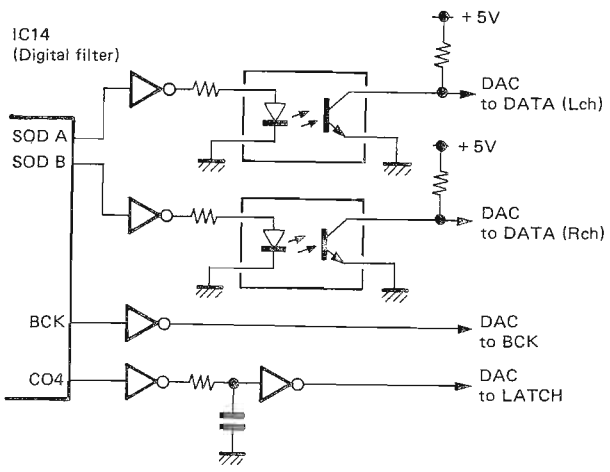


Fig. 2–1 DAC Interface circuit

CIRCUIT DESCRIPTION

2–2. Distortion correction circuit (X25-2860-11)

In Fig. 2–2, D-FF1, D-FF2, BC1 and BC2 form the circuit which extracts the data logic of the digital audio data's 15th bit which is immediately after the MSB, and delays the logic by DATA. For the details of the operation, please refer to the timing chart in Fig. 2–3.

The DAC has been designed to accept the connection of the circuit which compensates for the error of the current value corresponding to the value of the MSB. The circuit consists of semi-fixed resistor VR1 and resistors R1 to R3.

OP1 is used to add/subtract the current compensating the error corresponding to the value of the 15th bit to/from the D/A converted current. Therefore, when the current corresponding to the 15th bit is output from the DAC according to the logic of the 15th bit, the current passes through OP1 so that the error corresponding to the value of the 15th bit is eliminated. If the current corresponding to the 15th bit is not output from the DAC, the output from OP1 becomes 0V, so that the compensation current is not applied to the D/A converted current output from the DAC.

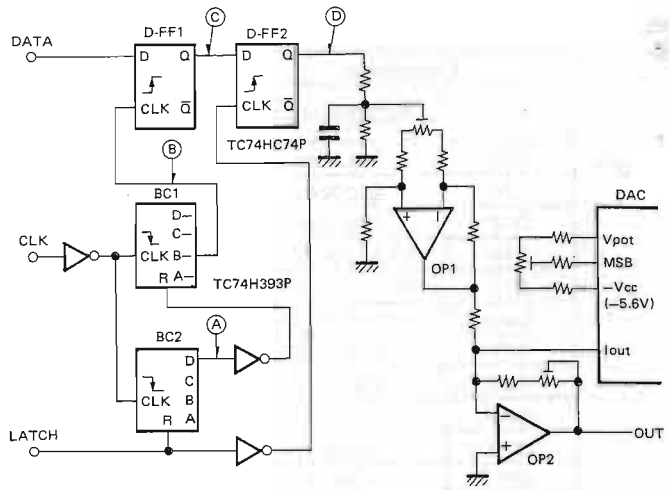


Fig. 2–2 Distortion correction circuit

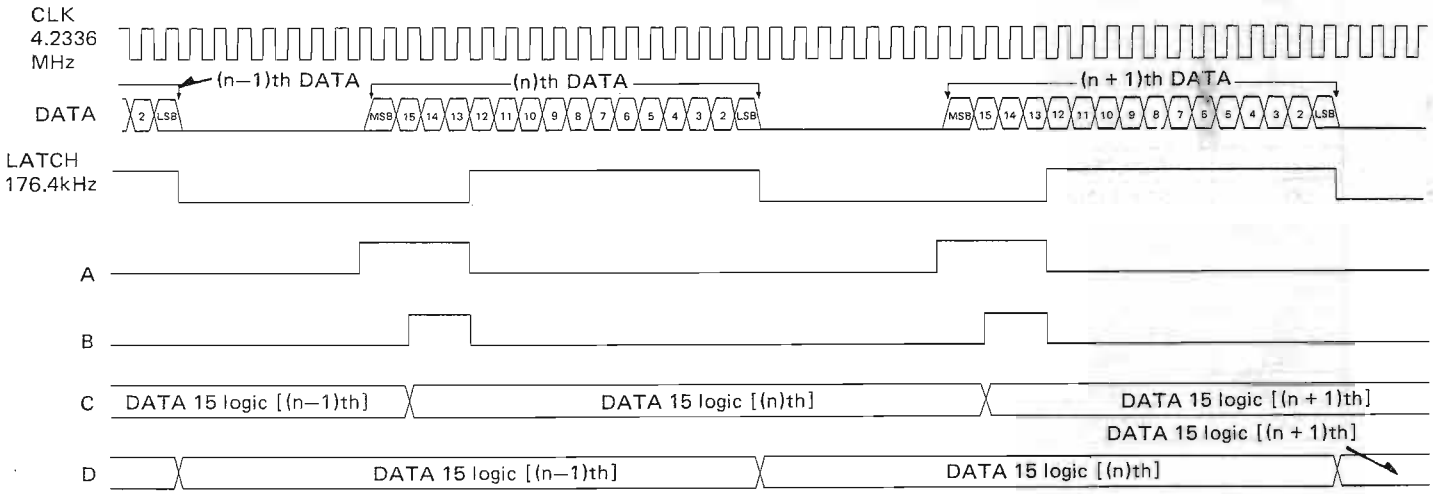


Fig. 2–3 Timing chart of distortion correction circuit

2–3. Dropout controller circuit (X29-1780-00)

With conventional servo systems, tracking error signal TE from pin 17 TE of CX20189 are output directly at pin 1 of CN3. However, with the DP-3300D, the waveform of TE is shaped, the shape of waveform TE varies while it passes through IC3. The operations and waveforms in this process are as follows.

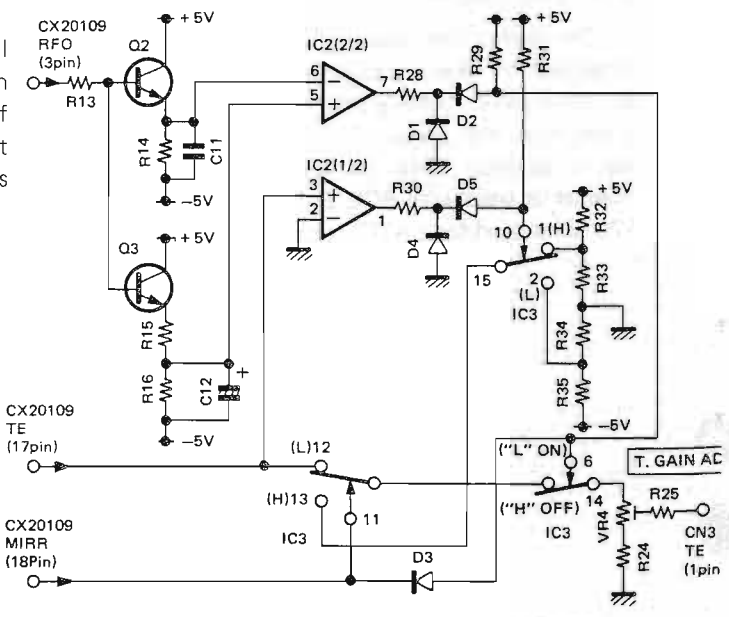


Fig. 2–4 Dropout controller circuit

CIRCUIT DESCRIPTION

● **In case of the disc contains scratch:**

If the disc contains a scratch as shown in Fig. 2–5(a), the RF signal may lack the positive side envelope. Q2 and Q3 have different time constants, but they are both used for tracking the positive envelope. When the signal with a large time constant is divided by R15 and R16, the signal waveform becomes as shown by the dotted line in Fig. 2–5 (b). With signals that have a small time constant, the waveform becomes as shown by the solid line in the same figure.

Therefore, at the point of the scratch, the level shown by the solid line drops below the level shown by the dotted line, and the output from IC2(2/2) pin 7 will be inverted. (Fig. 2–5(c))

This signal is shaped by D1 and D2, and applied to IC3 pin 6. When IC3 pin 6 goes "H", IC3 sets the SW to OPEN, and VR4 and R24 set TE to GND level so that the tracking error signal does not go to the next stage. This means that TE is 0V only while "H" is applied to IC3 pin 6, and the waveform as shonw in Fig. 2–5(e) is output as TE from CN3 pin 1. "H" level is also applied to MIRR via D3 at this period. However, as the control of IC3 pin 6 has priority over it. TE of CN3 goes GND level regardless of the variation of MIRR.

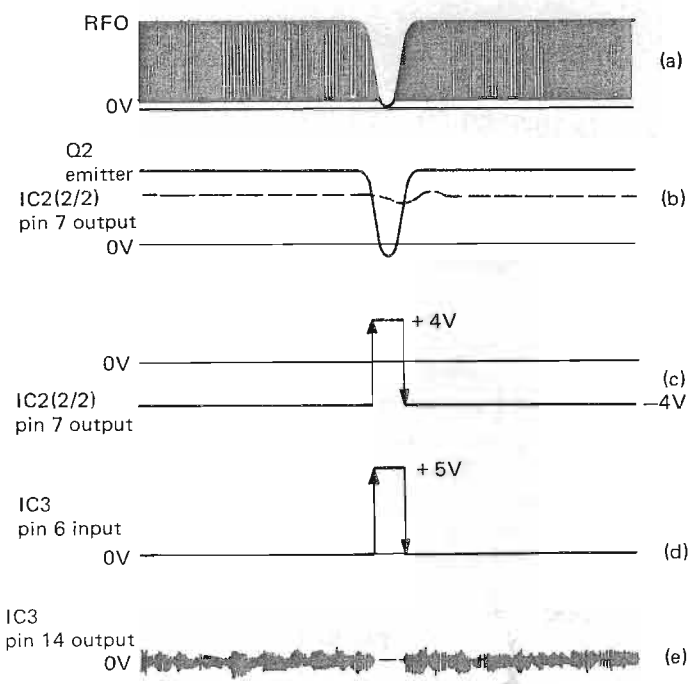


Fig. 2–5

● **In case of the disc envelope lacks lower side (when only focusing servo is used in test mode, etc.) :**

As shown in Fig. 2–6(a), when there is not variation in the positive side envelope of the RF signal, the status of IC3 pin 6 remains "L" and the SW is kept conductive.

When the RF signal lacks lower-side envelope, the MIRR signal goes "H" and, as a result, the SW controlled by IC3 pin 11 is changed from pin 12, which is the TE signal input from CX20109, to pin 13. Pin 13 is applied with a constant voltage of + 0.5V or –0.5V from the SW controlled by IC3 pin 10. The polarity of the constant voltage, + 0.5V or –0.5V, is determined by the signal from IC2(1/2). (Fig. 2–6(b) to (e))

Therefore, when the MIRR signal goes "H", the polarity of the tracking error signal from CX20109 is detected.

When the polarity is positive, a voltage of + 0.5V is applied to IC3 pin 13 via pin 15, and output from IC3 pin 14. When it is negative, a volgage of –0.5V is output from IC3 pin 14 via the same routing.

When the MIRR signal returns to "L", IC3 pin 14 outputs the TE signal from CX20109. (Fig. 2–6(f), (g))

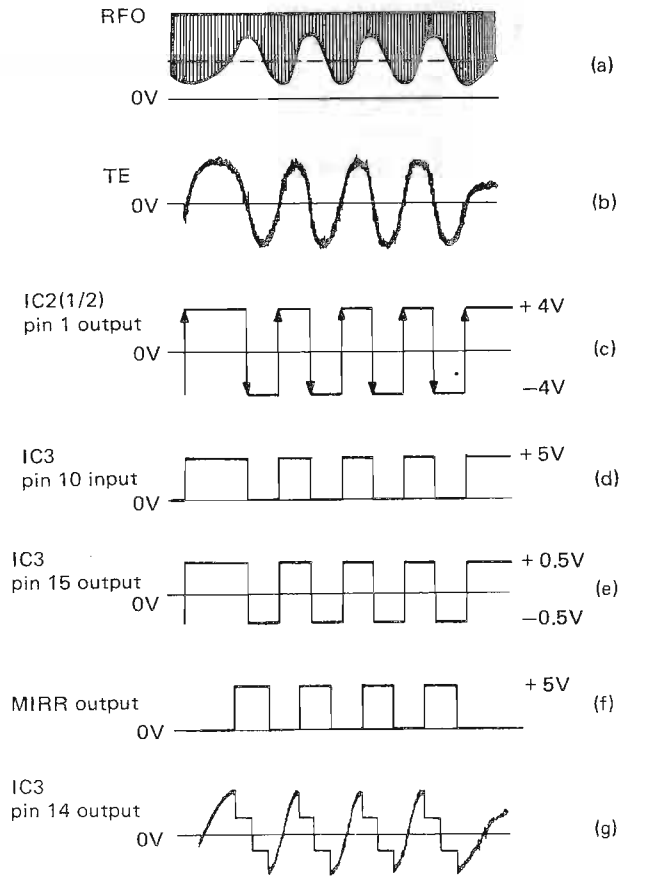


Fig. 2–6

CIRCUIT DESCRIPTION

3. Dual D Flip-Flop IC : TC74HC74F (X25-2850-00 : IC1,IC4)

3–1. Block diagram

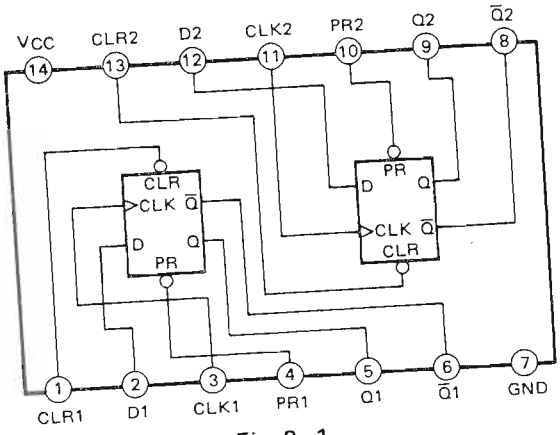


Fig. 3–1

3–2. Truth table

Inputs				Outputs	
PR	CLR	CLK	D	Q	Q̄
L	H	X	X	H	L
H	L	X	X	L	H
L	L	X	X	H*	H*
H	H	↑	H	H	L
H	H	↑	L	L	H
H	H	L	X	Q_0	$\bar{Q}_0$

Q0 : Condition before input
* : Unstable

Table 3–1

4. Hex D Flip-Flop IC : TC74HC174F (X25-2850-00 : IC3)

4–1. Terminal connection diagram

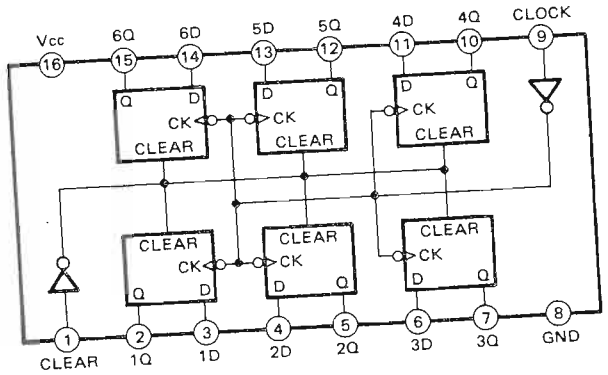


Fig. 4–1

4–2. Truth table

Inputs			Outputs
Clear	Clock	D	Q
L	X	X	L
H	↑	H	H
H	↑	L	L
H	L	X	Q_0

Table 4–1

5. DA Converter : PCM56P-K (X25-2860-11 : IC1, IC2)

5–1. Block diagram/ Terminal connection diagram

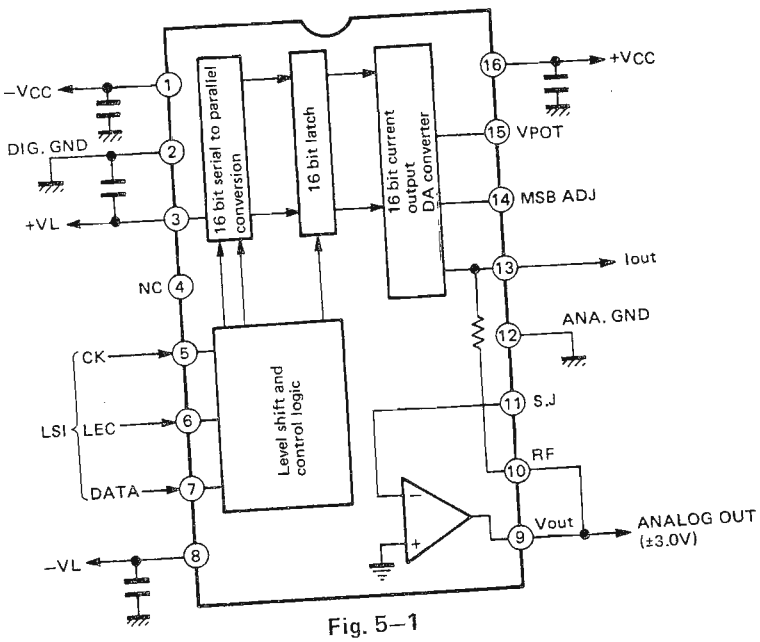


Fig. 5–1

CIRCUIT DESCRIPTION

5–2. Explanation of terminals

Terminal No.	Terminal name	Function	Terminal No.	Terminal name	Function
1	–Vcc	Analog negative power supply.	9	Vout	Voltage output
2	DIG GND	Digital ground.	10	RF	Feedback resistor.
3	+ VL	Logic positive power supply.	11	S.J	Summing junction (op amp. input).
4	NC	No connection.	12	ANA GND	Analog ground.
5	CK	Clock input.	13	Iout	Current output.
6	LEC	Latch enable control input.	14	MSB ADJ	MSB adjustment terminal.
7	DATA	Data input.	15	V POT	Potentiometer terminal.
8	–VL	Logic negative power supply	16	+ Vcc	Analog positive power supply.

Table 5–1

6. Digital filter : SM5804B (X25-2860-11 : IC4)

6–1. Block diagram

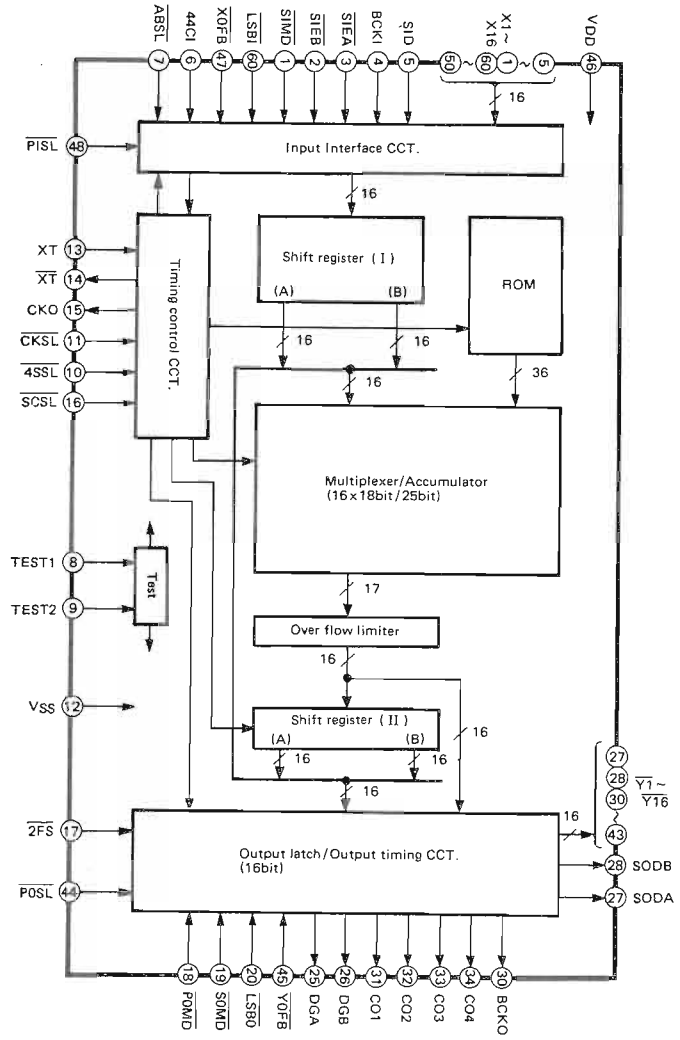


Fig. 6–1

6–2. Explanation of terminals

Terminal No.	Terminal name	I/O	Function
1	$\overline{SIMD}$	I	Serial input mode select.
2	$\overline{SIEB}$	I	B ch serial input enable.
3	$\overline{SIEA}$	I	A ch serial input enable.
4	BCKI	I	Serial input bit-clock input.
5	SID	I	Serial input data.
11	$\overline{CKSL}$	I	$\overline{CKSL}$ = "H" for external clock input.
12	Vss	–	GND power supply terminal (0V).
13	XT	I	Clock input when $\overline{CKSL}$ = "H".
18	$\overline{POMD}$	I	$\overline{POMD}$ = "L" for in-phase parallel output mode
19	$\overline{SOMD}$	I	$\overline{SOMD}$ = "L" during serial output.
20	$\overline{LSBO}$	I	$\overline{LSBO}$ = "H" for MSB-first serial.
27	SODA	O	A ch serial data output.
28	SODB	O	B ch serial data output.
30	BCKO	O	Serial output bit-clock output.
34	CO4	O	Serial output control clock 4.
44	$\overline{POSL}$	I	$\overline{POSL}$ = "H" for serial output mode.
45	$\overline{YOFB}$	I	$\overline{YOFB}$ = "H" for 2's complement display output.
46	VDD	–	Positive power supply terminal (+ 5V).
47	$\overline{XOFB}$	I	$\overline{XOFB}$ = "H" for 2's complement display input.
48	$\overline{PISL}$	I	$\overline{PISL}$ = "H" for serial input mode.
60	$\overline{LSBI}$	I	$\overline{LSBI}$ = "H" for MSB-first serial input.

Table 6–1

6–3. Explanation of functions

● **Basic configuration of filter**

This LSI makes it possible to 4-fold oversampling output of both L and R channels from a single chip. When the sampling frequency of the input is 44.1kHz, the output rate is 176.4kHz.

This LSI incorporates two stages of linear-phase FIR (non-cyclic) filters connected in series. The 1st stage output is the 2-fold oversampling output, and the 2nd stage output is the 4-fold oversampling output.

Fig. 6–2 shows the simplified diagram of filter configuration. The 1st stage filter (DF1) is an 80-step FIR type filter, and the 2nd stage filter (DF2) is a 15-step FIR type filter. Both filters have the 2-fold oversampling function, so that a total of 4-fold oversampling output can be obtained.

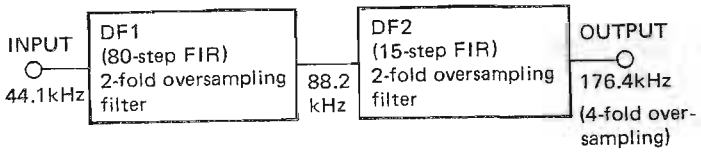


Fig. 6–2

7. Signal processor IC : CX23035 (X32-1090-11 : IC3)

7–1. Block diagram

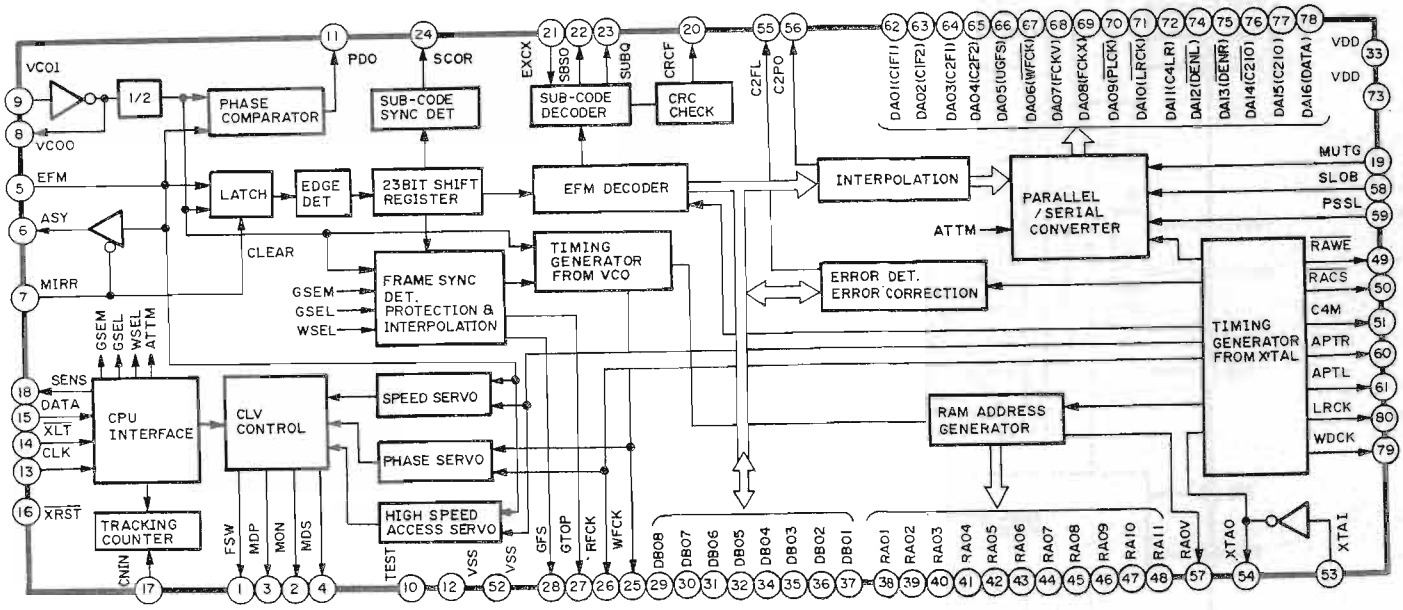


Fig. 7–1

7–2. Explanation of terminals

Terminal No.	Terminal name	I/O	Function
1	FSW	O	Spindle motor output filter time constant switching output.
2	MON	O	Spindle motor ON/OFF control output.
3	MDP	O	Spindle motor drive output. Rough speed control in CLV-S mode, phase control in CLV-P mode.
4	MDS	O	Spindle motor drive output. Speed control in CLV-P mode.
5	EFM	I	EFM signal input from RF amp.
6	ASY	O	EFM signal slice level control output.
7	MIRR	I	MIRROR input from RF amp.
8	VCOO	O	VCO output. f = 8.6436MHz when locked to EFM signal.
9	VCOI	I	VCO input.
10	TEST	I	(0V).
11	PDO	O	Phase comparison output between EFM signal and VCO/2.
12	Vss	–	GND (0V).
13	CLK	I	Serial data transfer clock input from CPU. Data is latched at rising edge of clock.
14	$\overline{XLT}$	I	Latch input from CPU. Data from 8-bit shift register (serial data from CPU) is latched in each register.
15	DATA	I	Serial data input from CPU.
16	$\overline{XRST}$	I	System reset input. Reset at "L".
17	CNIN	I	Tracking pulse input.
18	SENSE	O	Output of internal status in correspondence to address.
19	MUTG	I	Muting input. When ATTM of internal register A is "L", MUTG : "L" for normal status and MUTG : "H" for soundless state.
20	CRCF	O	Subcode Q CRC check result output.
21	EXCK	I	Clock input for serial subcode output.
22	SBSO	O	Serial subcode output.
23	SUBQ	O	Subcode Q output.
24	SCOR	O	Subcode sync S0 + S1 output.
25	WFCK	O	Write Frame Clock output. f = 7.35kHz when frame sync is locked.
28	GFS	O	Frame sync lock status display output.
29	DB08	I/O	External RAM data terminal. DATA 8. (MSB).
30	DB07	I/O	External RAM data terminal. DATA 7.
31	DB06	I/O	External RAM data terminal. DATA 6.
32	DB05	I/O	External RAM data terminal. DATA 5.
33	VDD	–	Power supply (+ 5V).
34	DB04	I/O	External RAM data terminal. DATA 4.
35	DB03	I/O	External RAM data terminal. DATA 3.
36	DB02	I/O	External RAM data terminal. DATA 2.
37	DB01	I/O	External RAM data terminal. DATA 1 (LSB).
38	RA01	O	External RAM address output. ADDR01 (LSB).
39	RA02	O	External RAM address output. ADDR02.
40	RA03	O	External RAM address output. ADDR03
41	RA04	O	External RAM address output. ADDR04.
42	RA05	O	External RAM address output. ADDR05.
43	RA06	O	External RAM address output. ADDR06.
44	RA07	O	External RAM address output. ADDR07.
45	RA08	O	External RAM address output. ADDR08.
46	RA09	O	External RAM address output. ADDR09.
47	RA10	O	External RAM address output. ADDR10.
48	RA11	O	External RAM address output. ADDR11 (MSB).
49	$\overline{RAWE}$	O	Write Enable output to external RAM. (Active when "L")
50	$\overline{RACS}$	O	Chip Select output to external RAM. (Active when "L").

Table 7–1

CIRCUIT DESCRIPTION

Terminal No.	Terminal name	I/O	Function
51	C4M	O	X'tal 1/2 divided output. f = 4.2336MHz.
52	Vss	–	GND (0V).
53	XTA	I	X'tal oscillator input. f = 8.4672MHz.
56	C2PO	O	C2 pointer display output. Synchronized with audio data output.
58	SLOB	I	Audio data output code switching input. "L" for 2's complement output, "H" for offset binary output.
59	PSSL	I	Audio data output mode switching input. "L" for serial output, "H" for parallel output.
70	DA09	O	DA09 output when PSSL = "H". $\overline{PLCK}$ output when PSSL = "L".
73	VDD	–	Power supply (+ 5V).
74	DA12	O	DA12 output when PSSL = "H". $\overline{DENL}$ output when PSSL = "L".
75	DA13	O	DA13 output when PSSL = "H". $\overline{DENR}$ output when PSSL = "L".
76	DA14	O	DA14 output when PSSL = "H". $\overline{C210}$ output when PSSL = "L".
78	DA16	O	DA16 output (MSB of parallel audio data) when PSSL = "H", DATA output when PSSL = "L".
80	LRCK	O	44.1kHz strobe signal output.

Table 7–1

Notes) PLCK : VCO/2 output. f = 4.3218MHz when locked with EFM signal.
DENL : L CH serial data enable signal.
DENR : R CH serial data enable signal.
$\overline{C210}$: Inverted $\overline{C210}$ output.
C210 : Bit clock output. f = 2.1168MHz.
DATA : Audio signal serial data output.

8. Digital output signal demodulator IC : CXD1075P (X32-1090-11 : IC9)

8–1. Block diagram

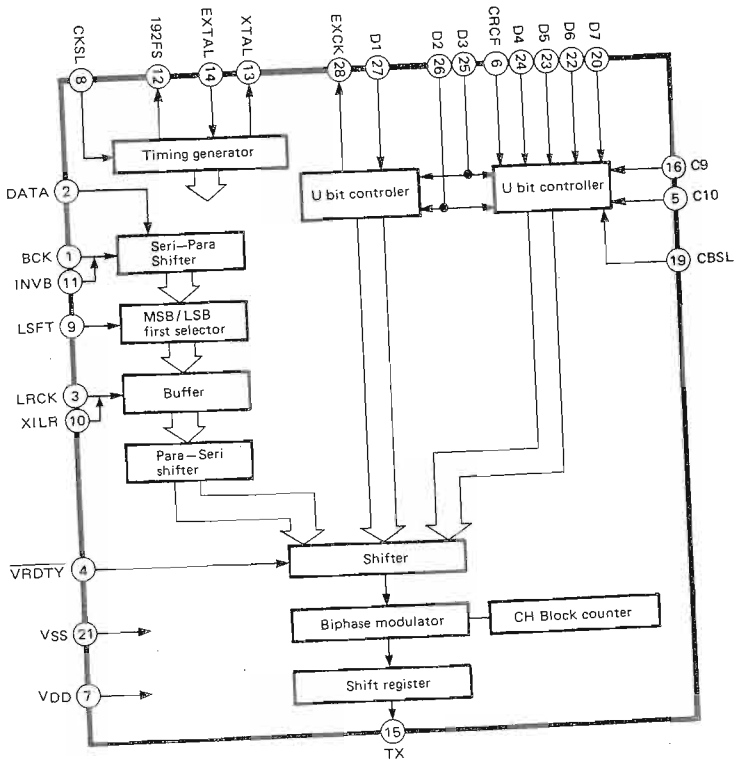


Fig. 8–1

8–2. Terminal connection diagram

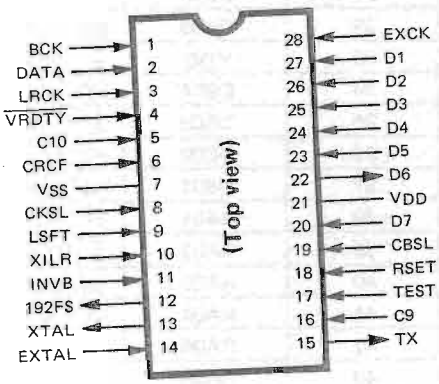


Fig. 8–2

CIRCIUT DESCRIPTION

8–3. Explanation of terminals

Terminal No.	Symbol	I/O	Function
1	BCK	I	Bit clock input. Connect the clock which shifts out data in the external digital audio data output circuit.
2	DATA	I	Digital audio data input (NRZ).
3	LRCK	I	Clock input for L/R channel identification of digital audio data input. The frequency is equal to Fs (sampling frequency).
4	$\overline{\text{VRDTY}}$	I	Validity flag input. "H" flag is used when the data is being processed by interpolation, etc.
5	C10	I	C-bit category code C10 presetting input.
6	CRCF	I	C-bit block start sync input. When CX23035 is used, connected this terminal to the CRCF output (pin 12), In other cases, the signal is fixed at "H".
7	Vss	–	GND.
8	CKSL	I	Input for selecting if the reference clock is EXTAL or its 1/3.
9	LSFT	I	Input for selecting between LSB first and MSB first operation.
10	XILR	I	Input for selecting between LRCK "H" and "L".
11	INVB	I	Input for selecting if BCK timing used is the rise or fall.
12	192Fs	O	Clock output for use as CD master clock when CD is connected. The frequency is 192 times the sampling frequency.
13	XTAL	O	When a X'tal oscillator is used, it is connected across this pin and EXTAL (pin 14).
14	EXTAL	I	When a X'tal oscillator is used, it is connected across this pin and XTAL (pin 13). In other cases, this pin is used for external clock input.
15	TX	O	Output of transmission data converted into the digital interface format.
16	C9	I	C-bit category code C9 presetting input.
17	TEST	I	Test mode select input. Fixed at "L" in normal operation.
18	RSET	I	LSI operation start/stop input. "H" during operation.
19	CBSL	I	Input for selecting if the C-bit input is serial or parallel.
20	D7	I	C4 (Emphasis information) presetting input when C-bit input is parallel.
21	VDD	–	+ 5V.
22	D6	I	C3 (Copy Inhibit information) presetting input when C-bit input is parallel.
23	D5	I	C2 (ID1) presetting input when C-bit input is parallel.
24	D4	I	C1 (ID0) presetting input when C-bit input is parallel. When it is serial, used as SUBQ input which provides C1 to C4.
25	D3	I	SCOR input which indicates the start of subcode block to be included in U-bit data.
26	D2	I	WFCK input which indicates the frame of subcode to be included in U-bit data.
27	D1	I	Serial input for subcode to be included in U-bit data. (Connected to SBSO).
28	EXCK	O	Clock output to be supplied to the external subcode output cirucit in order to shift subcode out. (Connect EXCK).

Table 8–1

8–4. Explanation of functions

- **Selector pins**

For increased freedom in the selection of the signal processor LSI IC, the digital output signal demodulator IC is equipped with various selectors that can select the internal functions according to the signal processor LSI IC used.

TEST (pin 17) : Test mode setting input. Fixed at "L".

RSET (pin 18) : When TEST is "L", the signal demodulator LSI IC operates when RSET is "H" and stops when it is "L". When the LSI is not operating, only 192Fs is output normally while other outputs are fixed.

The following five pins are the selector pins which sets the signal processor LSI IC.

Terminal No.	Symbol	Description
8	CKSL	Fixed at "H" when EXTAL input is 384Fs, "L" when it is 128 Fs.
9	LSFT	Fixed at "H" when DATA input is MSB first, and "L" when it is LSB first.
10	XILR	Fixed at "L" when LRCK input is L-ch and "H", "H" when it is "L".
11	INVB	Fixed at "L" when DATA is shifted at the falling edge of BCK, "H" when it is shifted at the rising edge.
19	CBSL	Fixed at "L" when C-bit input is serial, "H" when it is parallel.

Table 8–2

The modes of the signal processor LSI IC are set by the above methods.

CIRCUIT DESCRIPTION

● **Input signal description (ex. CX23035)**

1) Digital audio data

This LSI uses 16-bit serial digital audio data, and the data bits are arranged from backward with respect to LRCK. As the period of clock BCK is equal to the data bit rate, more than 16 clocks are required for each word.

For example, when the signal processor LSI connected is CX23035, which is a CD signal processor, LRCK is "H" during the L-ch audio data and "L" during the R-ch audio data, and the audio data is shifted in MSB-first mode at the fall of BCK. These factors can be set by the above-mentioned selector pins.

2) Master clock

When a 1-sample/48-clock one-chip CD IC (CX23035) is used, a X'tal oscillator of 3 x 128Fs = 16.9344MHz shall be connected across XTAL (pin 13) and EXTAL (pin 14). The internal circuitray of this LSI IC uses the 1/3 clock, which is 5.6MHz, as the master clock, while the CD uses the output from 192Fs (pin 12) as the master clock (3 x 128Fs/2 = 8.4672MHz).

It is also possible to connect a 128Fs (5.6448MHz) X'tal oscillator across XTAL and EXTAL and to use it as the common master clock with the signal processor LSI.

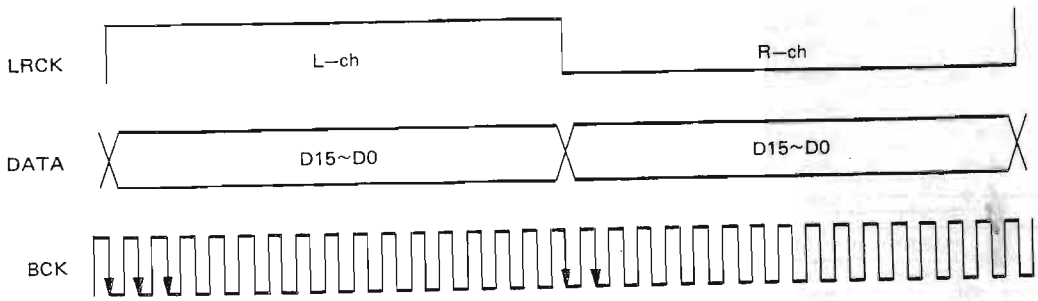


Fig. 8–3

3) Channel status data

By connecting D2 (pin 26) with the write frame clock output terminal (WFCK) of the CD LSI, D3 (pin 25) with the subcode sync S0 + S1 output terminal (SCOR), D4 (pin 24) with the subcode Q output terminal (SUBQ) and CRCK (pin 6) with the subcode Q error flag terminal (CRCF), it becomes possible to read respectively the ID0, ID1, COPY INHIBIT and EMPHASIS information from SUBQ and to set them on the specified positions of the C-bit data. However, when there is no terminal corresponding to CRCF, it shall be fixed at "H".

The category code (subcode bits 9 and 10) is input in DC via C9 (pin 16) and C10 (pin 5). With the CD, the category code is (C9, C10) = (1, 0) so the bits are fixed at C9 = "H" and C10 = "L".

Note : D4 (SUBQ) is read at the rise of D2 (WFCK), latched and, when CRCF = "H", loaded as the C-bit data at the fall of D3 (SCOR). If CRCF = "L", the previous value is held.

With this LSI, it is also possible to input the chanel status data in parallel. In this case, ID0, ID1, COPY, EMPHASIS and category code are input respectively to D4, D5, D6, D7 and C9 and C10 by direct DC inputs.

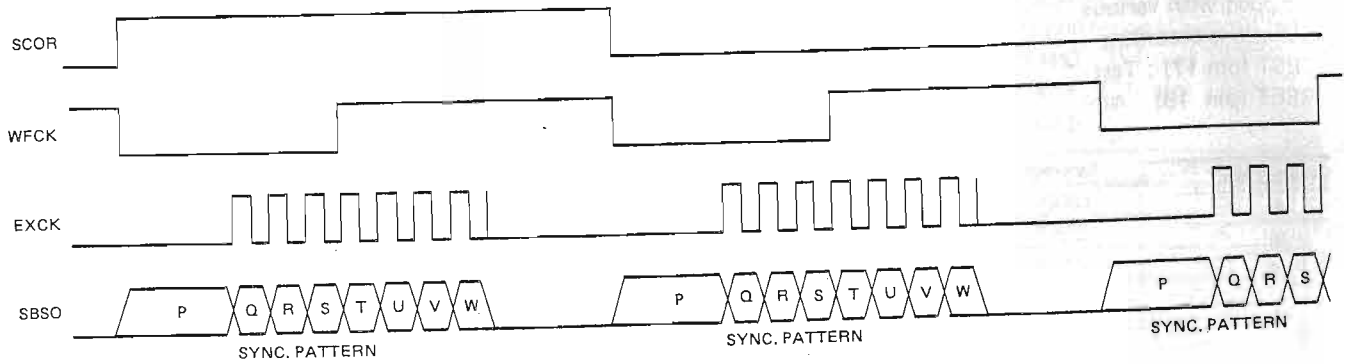


Fig. 8–4

CIRCUIT DESCRIPTION

4) User-definable data

The U-bit data is reserved for including the CD subcode. Similarly to C-bit data, the CD subcode can be superimposed by supplying the CD LSI output directly to the signal demodulator LSI.

When WFCK is input to D2 (pin 26) and SCOR to D3 (pin 25), EXCK (pin 28) is output. When EXCK is input to CD LSI, it outputs SBSO (subcode data), which is input to D1 (pin 27).

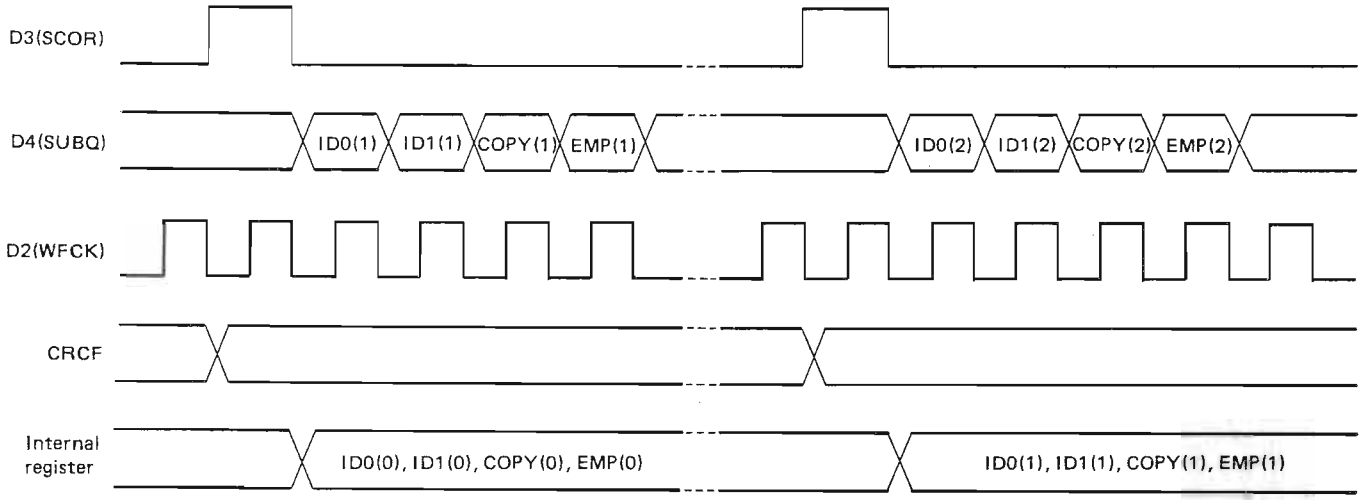


Fig. 8–5

5) Validity flag

For validity flag, apply the flag synchronized with LRCK to VRDTY (pin 4) as shown in Fig. 8–6.

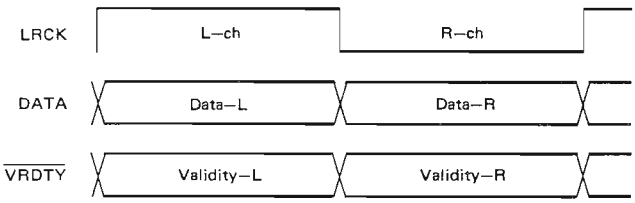


Fig. 8–6

CIRCUIT DESCRIPTION

9. Microcomputer : μPD75208CW-040 (X32-1090-11 : IC11)

9–1. Terminal connection diagram

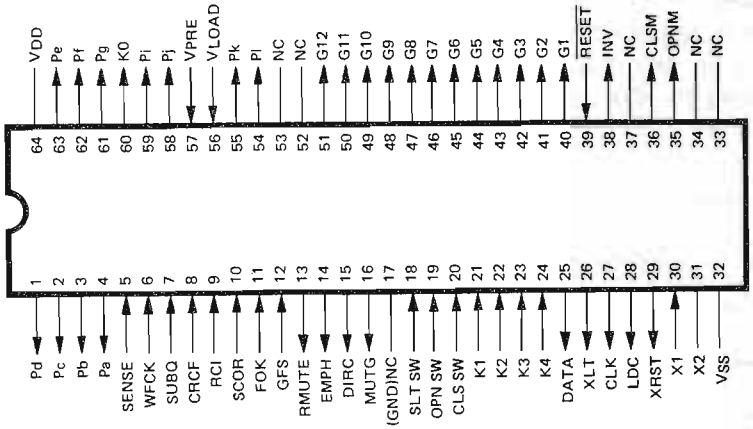


Fig. 9–1

9–2. Explanation of terminals

Terminal No.	Terminal name	I/O	Function
1~4	Pd~Pa	O	FL tube segment display outputs.
5	SENSE	I	SENSE signal input (from CX23035, CX20108).
6	WFCK	I	Q data readout clock input (from CX23035).
7	SUBQ	I	Q data input (from CX23035).
8	CRCF	I	Q data CRC OK ("H") input (from CX23035).
9	RCI	I	Remote control signal input.
10	SCOR	I	Q data sync signal input (from CX23035).
11	FOK	I	Focus OK ("H") input (from CX20109).
12	GFS	I	EMF sync OK ("H") input (from CX23035).
13	RMUTE	O	Relay muting ON/OFF ("L"/"H") signal output.
14	EMPH	O	Emphasis ON/OFF ("L"/"H") signal output.
15	DIRC	O	DIRC signal output (to CX20109).
16	MUTG	O	MUTG signal output for muting ON/OFF ("H"/"L") (to CX23035).
18	SLT SW	I	Start limit SW signal input (SW ON : "L").
19	OPN SW	I	Tray open SW signal input (SW ON : "L").
20	CLS SW	I	Tray close SW signal input (SW ON : "L").
21~24	K1~K4	I	Main unit key inputs.
25	DATA	O	Control data signal output (to CX23035, CX20108).
26	XLT	O	Control data latch signal output (to CX23035, CX20108).
27	CLK	O	Control data clock signal output (to CX23035, CX20108).
28	LDC	O	Laser ON/OFF ("H"/"L") signal output.
29	XRTS	O	Control reset signal output (to CX23035, CX20108).
30	X1	I	Clock oscillation X'tal connection terminals.
31	X2	O	(Oscillation frequency = 4.194MHz).
32	Vss	–	GND.
35	OPNM	O	Tray open/close signal output. Normally OPNM : "L" and CLSM : "L".
36	CLSM	O	For opening, OPNM : "H" and CLSM : "L". For closing, OPNM : "L" and CLSM : "H".
38	INV	O	Invert ON/OFF ("H"/"L") signal output.
39	$\overline{\text{RESET}}$	I	Reset signal input.
40~51	G1~G12	O	FL tube digit display output.
54	Pl	O	FL tube segment display output.
55	Pk	O	
56	VLOAD	I	GND.
57	VPRE	I	GND.
58	Pj	O	FL tube segment display output.
59	Pi	O	
60	KO	O	Key sense output signal.
61~63	Pg~Pe	O	FL tube segment display output.
64	VDD	–	+ 5V.

Table 9–1

ADJUSTMENT

1. Adjustment

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	PLAYER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	VCO ADJUSTMENT	–	Connect an f-counter across TP11 (GND) of X32-1090-11 and TP10 (PLCK)	Tray open, or stop mode	Turn core of coil of L2 of X32-1090-11 (A/4).	4.32MHz	(a)
2	LASER POWER CHECK (When PU seems to be defective)	–	Place an optical power meter on the pickup.	Tray-open. Connect TP8 of X32-1090-11 (A/4) to GND. ① During test mode, set the CHECK key ON. Tray opens and the LD is turned ON.	–	OK if from 100 μW to 200 μW.	(b)
3	RF OFFSET CHECK	–	Connect an oscilloscope to pin 2 (RF) of CN4 of X29-1780-00.(A/4). Connect the oscilloscope's GND to TP1 (GND).	Tray open, or stop mode.	–	Adjust to approx. -0.70 (V).	(c)
4	TEST MODE SETTING	Place test disc Type 4 on the tray, and complete loading.	Short-circuit the connector of CN10 of X32-1090-11(A/4).	Turn POWER SW OFF then ON again.	–	Check that the display is 01 00.	(d)
5	TANGENTIAL SETTING	Place test disc Type 4 on the tray, and complete loading.	Connect an oscilloscope to pin 2 (RF) of CN4 of X29-1090-00.	Press CHECK key. The laser will be focused. (Test mode)	Hex recessed screw below mechanism	The display shall be 03 00. and the amplitude maximum.	(e)
6	FOCUSING OFFSET COARSE ADJUSTMENT	Place test disc Type 4 on the tray, and complete loading.	Connect an oscilloscope to pin 2 (RF) of CN4 of X29-1090-00.	Press CHECK key. The laser will be focused. (Test mode)	Turn VR2 of X29-1780-00.	Maximum amplitude.	(e)
7	T.ERROR BALANCE COARSE ADJUSTMENT	Place test disc Type 4 on the tray, and complete loading.	Connect oscilloscope CH1 to pin 2 (RF) of CN4 of X29-1780-00, and connect CH2 to pin 3 (TE).	Press CHECK key. The laser will be focused. (Test mode)	Turn VR1 of X29-1780-00.	Adjust so that T.ERROR amplitude is symmetrical above and below 0 (V). (Photo 5)	(f)
8	TANGENTIAL AND FOCUSING OFFSET FINE ADJUSTMENTS	Place test disc Type 4 on the tray, and complete loading.	Connect an oscilloscope to pin 2 (RF) of CN4 of X29-1780-00.	Press PLAY key. (Tracing will start.) (Test mode)	VR2 of X29-1780-00, hex recessed screw below mechanism.	Turn VR2 and hex recessed screw alternately to obtain optimum waveform.	(e)
9	T.ERROR BALANCE FINE ADJUSTMENT	Place test disc Type 4 on the tray, and complete loading.	Connect oscilloscope CH1 to pin 2 (RF) of CN4 of X29-1780-00, and connect CH2 to pin 3 (TE).	Press CHECK key. (Focusing servo only mode) (Test mode)	Turn VR1 of X29-1780-00.	Adjust so that T.ERROR amplitude is symmetrical above and below 0 (V). (Photo 5)	(f)
10	FOCUS GAIN ADJUSTMENT	Place a test disc on the tray and complete loading. Apply 700Hz, 0.4 Vrms to pin 2 of CN2 of X29-1780-00.	Connect L.P.F to pin 1 of CN2 of X29-1780-00, and connect an oscilloscope or AC voltmeter.	Turn POWER SW OFF then ON again. Then press PLAY key to start normal play.	Turn VR3 of X29-1780-00.	Adjust so that the AC voltmeter or oscilloscope indicate 40 mVrms.	(g)
11	TRACKING GAIN ADJUSTMENT	Place a test disc on the tray and complete loading. Apply 900Hz, 0.4 Vrms to pin 4 of CN2 of X29-1780-00.	Connect L.P.F to pin 5 of CN2 of X29-1780-00, and connect an oscilloscope or AC voltmeter.	Normal play	Turn VR4 of X29-1780-00.	Adjust so that the AC voltmeter or oscilloscope indicate 40 mVrms.	(g)

ADJUSTMENT

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	PLAYER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
12	DAC ADJUSTMENT	Test disc Type 4	Connect a millivoltmeter to the output terminal.	Play 1 kHz, 0 dB signal.	Turn VR1 of X25-2860-11 for L ch VR2 for R ch.	Adjust so that the output is between 1.9 and 2.0 Vrms.	(h)

2. Effective keys in the Test mode and their functions

No.	Input key	Function	T. No. display
1	PLAY	(1) Focus servo . . . . . ON. (2) Tracking servo . . . . . ON. (3) Feed servo . . . . . ON. When the key is pressed in the Stop mode, the servoes are switched ON automatically in the order from (1) to (3).	TRACK NO. 05 ↓ Displayed for a few seconds after (1) to (3). ↓ Disc's Track No. is displayed.
2	CHECK	(1) Focus servo . . . . . ON. (2) Tracking servo . . . . . OFF. (3) Feed servo . . . . . OFF.	TRACK NO. 03
3	CLEAR	(1) Focus servo . . . . . ON. (2) Tracking servo . . . . . ON. (3) Feed servo . . . . . OFF.	TRACK NO. 04
4	STOP	(1) Focus servo . . . . . OFF. (2) Tracking servo . . . . . OFF. (3) Feed servo . . . . . OFF.	TRACK NO. 01
5	REPEAT	(1) Tray : Open. (2) Laser . . . . . ON.	TRACK NO. 02
6	FF (▶▶)	In Stop mode : Moves the PU slightly to the outer tracks. With feed servo ON : Switches the tracking gain to "H".	
7	FR (◀◀)	In Stop mode : Moves the PU slightly to the inner tracks. With feed servo ON : Switches the tracking gain to "L".	
8	OPEN/CLOSE	Release the Test mode and opens the tray.	

Table 1

Note : How to enter the test mode

Short-circuit connector CN10 of the CD Player unit (X32-1090-11) (A/4), turn Power switch OFF, then turn Power switch ON again.

ADJUSTMENT

3. Diffraction grating

While adjusting the refraction grid, be sure that the grids are completely misaligned.

- While in the test mode*1, press CHECK key*2 to set only the focusing servo ON.

*1 Test mode :
To enter this mode, short-circuit connector CN10 of the CD Player unit (X32-1090-11) (A/4), and turn Power switch OFF then ON again.

*2 CHECK key :
For details, refer to Table 1.

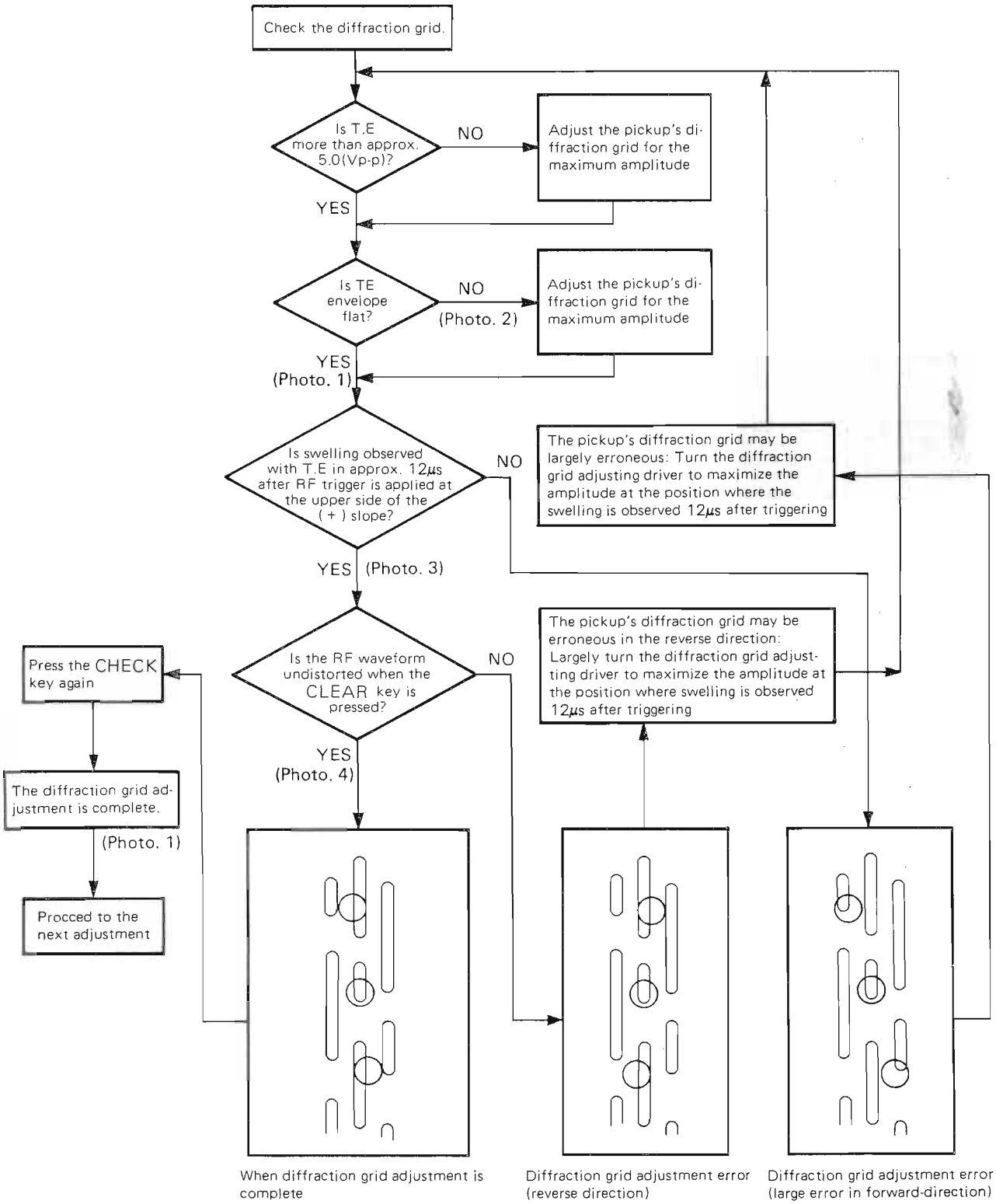


Fig. 1

REGLAGE

1. Réglage

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE SORTIE	REGLAGE DE LA LECTURE	POINT D'ALIGNEMENT	ALIGNER POUR	FIG.
1	AJUSTEMENT VCO	–	Raccorder un compteur-f en travers de TP11 (GND) de X32-1090-11. et TP10 (PLCK).	Tiroir ouvert ou mode d'arrêt	Tourner le noyau de la bobine de L2 de X32-1090-11. (A/4).	4.32MHz	(a)
2	VERIFICATION DE PUISSANCE DU LASER (quand PU semble défectueux)	–	Placer un compteur de puissance optique au-dessus du capteur.	Tiroir-ouvert. Raccorder TP8 de X32-1090-11 (A/4) à GND. ① En mode de test, régler la touche CHECK sur ON. Le tiroir s'ouvre et DL est mise sur ON.	–	Correct si entre 100 μW et 200 μW.	(b)
3	VERIFICATION D'OFFSET RF	–	Raccorder un oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00.(A/4). Raccorder GND de l'oscilloscope à TP1 (GND).	Tiroir ouvert ou mode d'arrêt	–	Acceptable si aux environs de -0.70 (V).	(c)
4	REGLAGE DE MODE DE TEST	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Court-circuiter le connecteur de CN10 de X32-1090-11(A/4).	Méttre l'interrupteur POWER sur OFF puis sur ON.	–	Vérifier que l'affichage est 01 oo.	(d)
5	REGLAGE TANGENTIEL	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Raccorder un oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00.	Presser la touche CHECK. Le laser sera mise au point. (Mode de test)	Vis hexagonale sous le mécanisme	L'affichage doit être 03 oo et l'amplitude maximum.	(e)
6	AJUSTEMENT APPROXIMATIF DE L'OFFSET DE MISE AU POINT	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Raccorder un oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00.	Presser la touche CHECK. Le laser sera mise au point. (Mode de test)	Tourner VR2 de X29-1780-00.	Amplitude maximum	(e)
7	AJUSTEMENT APPROXIMATIF DE BALANCE T.ERROR	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Connecter le canal 1 de l'oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00 et raccorder le canal 2 à la broche 3 (TE).	Presser la touche CHECK. Le laser sera mise au point. (Mode de test)	Tourner VR1 de X29-1780-00.	Ajuster pour que l'amplitude T.ERROR soit symétrique en-dessus et au-dessous de 0 (V). (Photo 5)	(f)
8	AJUSTEMENTS PRECIS DE L'OFFSET TANGENTIEL ET DE MISE AU POINT.	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Raccorder un oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00.	Presser la touche PLAY. (Le tracage commencera.) (Mode de test)	VR2 de X29-1780-00, vis hexagonale sous le mécanisme.	Tourner alternativement VR2 et la vis hexagonale pour obtenir une forme d'onde optima.	(e)
9	AJUSTEMENT PRECIS DE BALANCE T.ERROR	Placer un disque test de type 4 sur le tiroir et effectuer le chargement.	Connecter le canal 1 de l'oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00 et raccoder le canal 2 à la broche 3 (TE).	Presser la touche CHECK. (Mode d'asservissement de mise au point seulement) (Mode de test)	Tourner VR1 de X29-1780-00.	Ajuster pour que l'amplitude T.ERROR soit symétrique en-dessus et au-dessous de 0 (V). (Photo 5)	(f)
10	AJUSTEMENT DE GAIN DE MISE AU POINT	Placer un disque test ayant le moins de défaut possible et effectuer le chargement. Appliquer un signal 700 Hz, 0,4 V à la broche 2 de CN2 de X29-1780-00.	Connecter L.P.F. à la broche 1 de CN2 de X29-1780-00 et raccorder un oscilloscope ou un voltmétre CA.	Mettre l'interrupteur POWER sur OFF puis à nouveau sur ON. Et presser la touche PLAY pour commencer la lecture normale.	Tourner VR3 de X29-1780-00.	Ajuster pour que le voltmétre CA ou l'oscilloscope indique 40 mVrms.	(g)
11	AJUSTEMENT DE GAIN D'ALIGNEMENT	Placer un disque test ayant le moins de défaut possible et effectuer le chargement. Appliquer un signal 900 Hz, 0,4 V à la broche 4 de CN2 de X29-1780-00.	Connecter L.P.f. à la broche 5 de CN2 de X29-1780-00 et raccorder un oscilloscope ou un voltmétre CA.	Lectuer normale	Tourner VR4 de X29-1780-00.	Ajuster pour que le voltmétre CA ou l'oscilloscope indique 40 mVrms.	(g)
12	AJUSTEMENT DAC	Disque test Type 4	Raccorder un millivoltmétre à la borne de sortie.	Lire un signal 1kHz, 0 dB.	Tourner VR1 de X25-2860-11 pour le canal G et VR2 pour le canal D.	Ajuster pour obtenir le niveau de sortie entre 1,9 et 2,0 Vrms.	(h)

REGLAGE

2. Touches fonctionnant en mode de test et leurs fonctions

N°	Touche d'entrée	Fonction	Affichage T. No.
1	PLAY	(1) Asservissement de mist au point . . . . . ON. (2) Asservissement d'alignement . . . . . ON. (3) Asservissement d'alimentation . . . . . ON. Quand la touche est pressé en mode d'arrêt, les asservissements sont automatiquement commutés sur ON dans l'ordre de (1) à (3).	TRACK NO. 05 ↓ Affiché pendant quelques secondes après (1) à (3). ↓ Le numéro de piste du disque est affiché.
2	CHECK	(1) Asservissement de mise au point . . . . . ON. (2) Asservissement d'alignement . . . . . OFF. (3) Asservissement d'alimentation . . . . . OFF.	TRACK NO. 03
3	CLEAR	(1) Asservissement de mise au point . . . . . ON. (2) Asservissement d'alignement . . . . . ON. (3) Asservissement d'alimentation . . . . . OFF.	TRACK NO 04
4	STOP	(1) Asservissement de mise au point . . . . . OFF. (2) Asservissement d'alignement . . . . . OFF. (3) Asservissement d'alimentation . . . . . OFF.	TRACK NO. 01
5	REPEAT	(1) Tiroir : Ouvert. (2) Laser . . . . . ON.	TRACK NO 02
6	FF (▶▶)	En mode d'arrêt : Déplace légèrement le capteur vers les pistes externes. Avec l'asservissement d'alimentation sur ON : Commute le gain d'alignement sur "H".	
7	FR (◀◀)	En mode d'arrêt : Déplace légèrement le capteur vers les pistes internes. Avec l'asservissement d'alimentation sur ON : Commute le gain d'alignement sur "L".	
8	OPEN/CLOSE	Relâche le mode de test et ouvre le tiroir.	

Tableau 1

Remarque : Pour entrer en mode de test

Court-circuiter connecteur CN10 du lecteur CD (X32-1090-11) (A/4), mettre l'interrupteur d'alimentation sur OFF puis mettre l'interrupteur d'alimentation à nouveau sur ON.

REGLAGE

3. Réseau de diffraction

Tout en adjustant le réseau de réfraction, s'assurer que les grilles, sont complètement désalignées.

- En mode de test*1, presser la touche CHECK*2 pour mettre uniquement l'asservissement de mist au point sur ON.

*1 Mode de test :

Pour entrer ce mode, court-circuiter connecteur CN10 du lecteur CD (X32-1090-11) (A/4) et mettre l'interrupteur d'alimentation sur OFF puis a nouveau sur ON.

*2 Touche CHECK :

Pour plus de détails, se référer au Tableau 1.

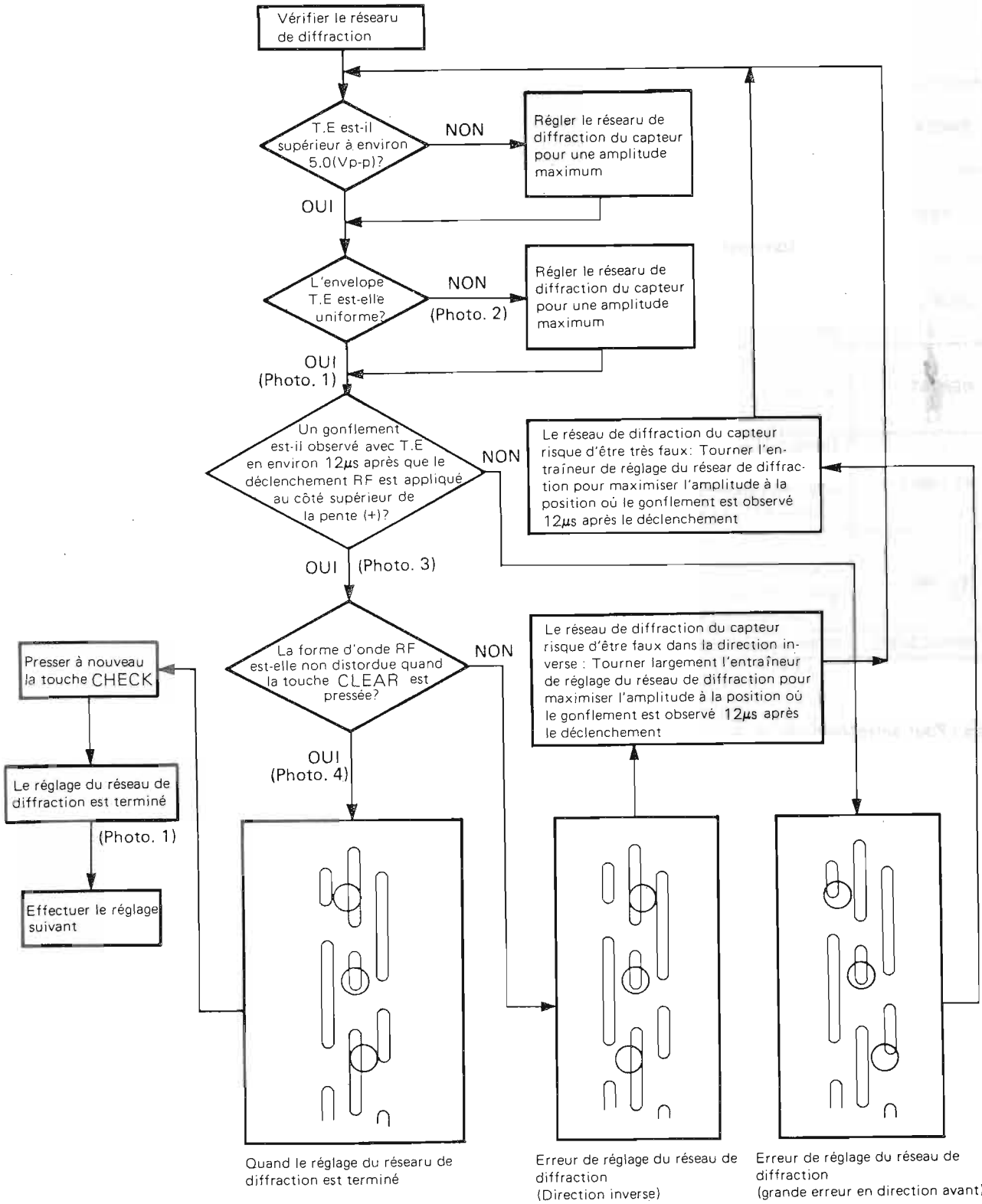


Fig. 1

ABGLEICH

1. Abgleich

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	SPIELER-EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB
1	VCO-EINSTELLUNG	–	Einen Frequenzzähler zwischen TP11 (GND) von X32-1090-11 und TP10 (PLCK) anschließen.	Träger geöffnet oder Stop-Betriebsart	Den Kern der Spule von L2 von X32-1090-11 (A/4) drehen.	4.32MH	(a)
2	PRÜFUNG DER LASERLEISTUNG (Wenn PU defekt zu sein scheint)	–	Einen Optikleistungsmeter auf den abnehmer setzen.	Träger-geöffnet TP8 von X32-1090-11(A/4) an GND anschließen. ①In der Test-Betriebsart die CHECK-Taste auf ON stellen. Der Träger öffnet sich, und der LD wird auf ON gestellt.	–	Akzeptabel, wenn zwischen 100 μW und 200 μW.	(b)
3	RF-VERSATZ-PRÜFUNG	–	Ein Oszilloskop an Stift 2 (RF) von CN4 von X29-1780-00 anschließen. GND des Oszilloskops an TP1 (GND) anschließen.	Träger geöffnet oder Stop-Betriebsart	–	Akzeptable, wenn etwa -0.70 (V).	(c)
4	TESTMODUS-EINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Den Stecker von CN10 von X32-1090-11(A/4) Kurzschließen.	Den POWER-Schalter auf OFF und dann wieder auf ON stellen.	–	Auf dem Display muß 01 oo angezeigt werden.	(d)
5	TANGENTIAL-EINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Ein Oszilloskop an Stift 2 (RF) von CN4 von X29-1780-00 anschließen.	Die CHECK-Taste drücken. Der Laser fokussiert. (Testmodus)	Innensechskant-schraube unter Mechanismus	Das Display muß 03 oo anzeigen und die Amplitude maximal sein.	(e)
6	FOKUSVERSATZ-GROBEINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Ein Osziollskop an Stift 2 (RF) von CN4 von X29-1780-00 anschließen.	Die CHECK-Taste drücken. Der Laser fokussiert. (Testmodus)	VR2 von X29-1780-00 drehen.	Maximal Amplitude	(e)
7	T. ERROR-BALANCE-GROBEINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Kanal 1 des Oszilloskops an Stift 2 (RF) und Kanal 2 an Stift 3 (TE) von CN4 von X29-1780-00 anschließen.	Die CHECK-Taste drücken. Der Laser fokussiert. (Testmodus)	VR1 von X29-1780-00 drehen.	So einstellen, daß die T.ERROR-Amplitude unter und über 0 (V) symmetrisch ist. (Foto 5)	(f)
8	TANGENTIAL-UND FOKUSVERSATZ-FEINEINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Ein Oszilloskop an Stift 2 (RF) von CN4 von X29-1780-00 anschließen.	Die PLAY-Taste drücken. (Die Spurhaltung startet.) (Testmodus)	VR2 von X29-1780-00, Innensechskant-schraube unter Mechanismus	VR2 und die Innensechskantschraube abwechselnd drehen, um die optimale wellenform zu erhalten.	(e)
9	T. ERROR-BALANCE-FEINEINSTELLUNG	Testdisc Type 4 auf Träger legen und Laden durchführen.	Kanal 1 des Oszilloskops an Stift 2 (RF) und Kanal 2 an Stift 3 (TE) von CN4 von X29-1780-00 anschließen.	Die CHECK-Taste drücken. (nur Fokusservo-Modus) (Testmodus)	VR1 von X29-1780-00 drehen.	So einstellen, daß die T.ERROR-Amplitude unter und über 0 (V) symmetrisch ist. (Foto 5)	(f)
10	FOCUSGAIN EINSTELLUNG	Eine mäglichst einwandfreie Testdisc auflegen und das Laden druchführen. Ein Signal von 700 Hz, 0,4 V an Stift 2 von CN2 von X29-1780-00 anlegen.	L.P.F. an Stift 1 von CN2 von X29-1780-00 und ein Oszilloskop oder ein Wechselstrom-Voltmeter anschließen.	Den POWER-Schalter auf OFF und wieder auf ON stellen. Die PLAY-Taste drücken, um die normale Wiedergabe zu starten.	VR3 von X29-1780-00 drehen.	So einstellen, daß das Wechselstrom-Voltmeter oder Oszilloskop 40mVrms anzeigt.	(g)
11	TRACKINGGAIN EINSTELLUNG	Eine möglichst einwandfreie Testdisc auflegen und das Laden druchführen. Ein Signal von 900 Hz, 0,4 V an Stift 4 von CN2 von X29-1780-00 anlegen.	L.P.F. an Stift 5 von CN2 von X29-1780-00 und ein Oszilloskop oder ein Wechselstrom-Voltmeter anschließen.	Normale wiedergabe	VR4 von X29-1780-00 drehen.	So einstellen, daß das Wechselstrom-Voltmeter oder Oszilloskop 40mVrms anzeigt.	(g)
12	DAC-EINSTELLUNG	Testdisc Type 4	Ein Millivoltmeter an den Ausgangsanschluß anschließen.	Ein 1 kHz, 0 dB Signal wiedergeben.	VR1 von X25-2860-11 für den linken und VR2 für den rechten Kanal drehen.	So einstellen, daß ein Ausgangspegel von 1,9 bis 2,0 Vrms erhalten wird.	(h)

ABGLEICH

2. Wirksame Tasten im Testmodus und ihre Funktionen

No.	Eingabetaste	Funktion	T. No. Anzeige
1	PLAY	(1) Fokusservo . . . . . ON. (2) Spurhalteservo . . . . . ON. (3) Vorschubservo . . . . . ON. Wenn die Taste in der Stop-Betriebsart gedrückt wird, werden die Servos automatisch in der Reihen-folge von (1) bis (3) eingeschaltet.	TRACK NO. 05 ↓ Anzeige für einige Sekunden nach (1) bis (3). ↓ Angeige der Titel-Nr. der Disc.
2	CHECK	(1) Fokusservo . . . . . ON. (2) Spurhalteservo . . . . . OFF. (3) Vorschubservo . . . . . OFF.	TRACK NO. 03
3	CLEAR	(1) Fokusservo . . . . . ON. (2) Spurhalteservo . . . . . ON. (3) Vorschubservo . . . . . OFF.	TRACK NO. 04
4	STOP	(1) Fokusservo . . . . . OFF. (2) Spurhalteservo . . . . . OFF. (3) Vorschubservo . . . . . OFF.	TRACK NO. 01
5	REPEAT	(1) Träger : Offen (2) Laser . . . . . ON.	TRACK NO 02
6	FF (▶▶)	In der Stop-Betriebsart : Bewegt den Tonabnehmer geringfügig zu den außeren Spuren hin. Bei Vorschubservo ON : Schaltet die Spurhalte-Verstärkung auf "H".	
7	FR (◀◀)	In der Stop-Betriebsart : Bewegt den Tonabnehmer geringfügig zu den inneren Spuren hin. Bei Vorschubservo ON : Schaltet die Spurhalte-Verstärkung auf "L".	
8	OPEN/CLOSE	Den Testmodus ausschalten, der Träger wird geöffnet.	

Tabelle 1

Hinweis : Aktivieren des Testmodus

CN10 von verbindungsklemme der CD-Spieler-Einheit (X32-1090-11) (A/4) kurzschließen, dann den Netzschalter aus- und wieder einschalten.

ABGLEICH

3. Diffraktionsgitter

Beit der Einstellung des Brechungsgitters darauf achten, daß die Gitter vollkommen nichtfluchtend sind.

- Im Testmodus*1 die CHECK-Taste*2 drücken, um nur den Fokusservo einzuschalten.

*1 Testmodus :
Zum Aktivieren dieses Modus CN10 von Verbindungsklemme der Spieler-Einheit (X32-1090-11) (A/4) kurzschließen, dann den Netzschalter aus und wieder einschalten.

*2 CHECK-Taste :
Für Einzelheiten siehe Tabelle 1.

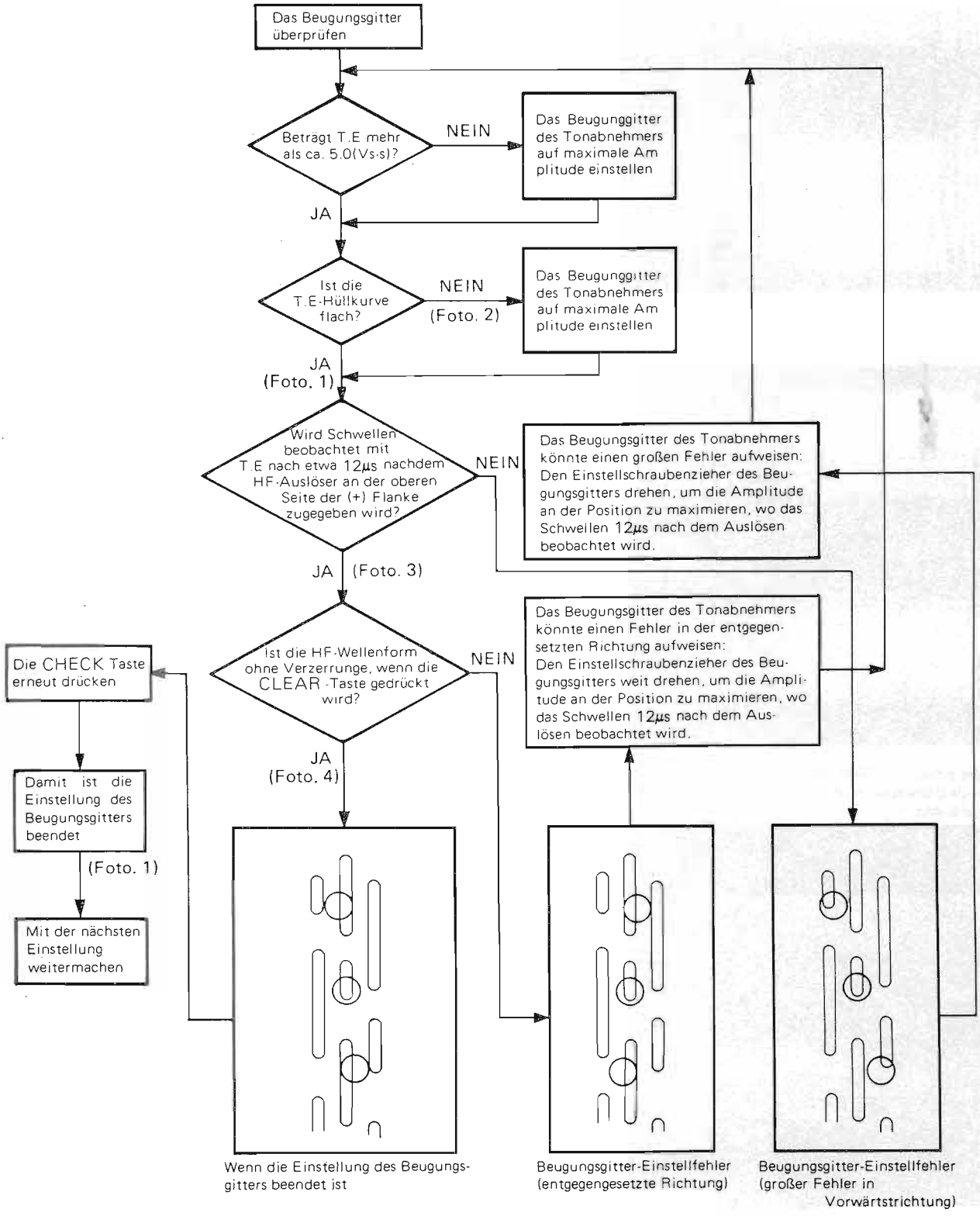
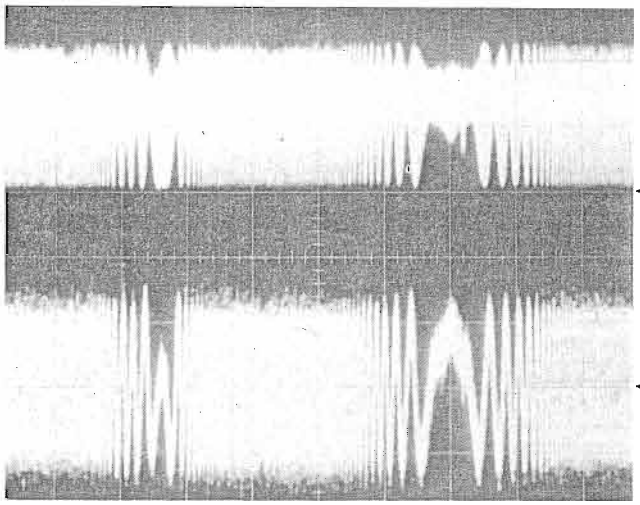


Abb. 1

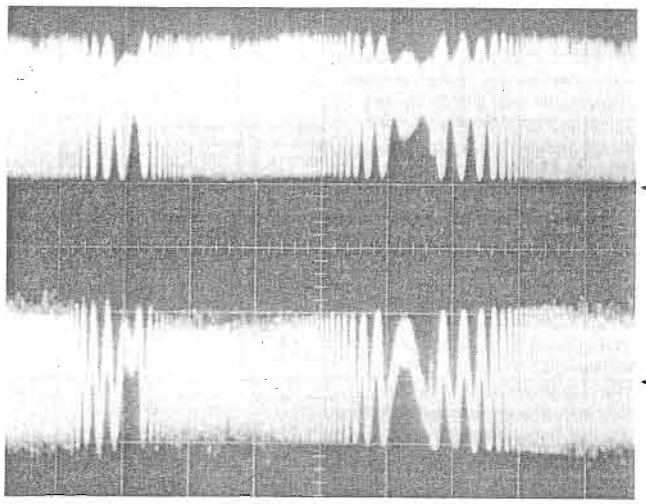
ADJUSTMENT/REGLAGE/ABGLEICH

4. Description of Signal Waveforms, Connection of Measuring Instruments/Description des formes d'onde des signaux, connexion des instruments de mesure/Beschreibung der Signal-Wellenformen, Anschluß der Meßinstrumente



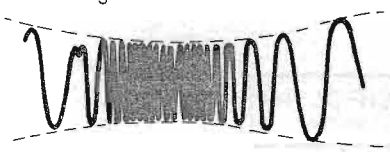
(Photo. 1)
(Photo. 1)
(Foto. 1)

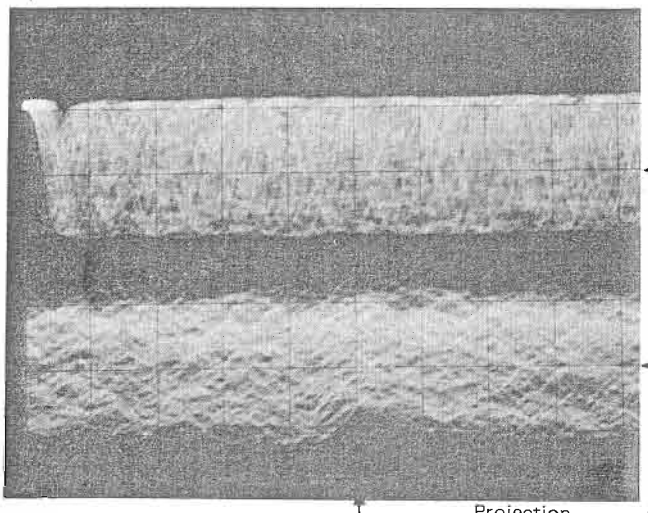
- RF signal and T.Error signal after diffraction grating adjustment.
- Signal RF et signal T.Error après ajustement de réseau de diffraction.
- RF-Signal und T.Error-Signal nach Diffraktions-gitter-Einstellung.



(Photo. 2)
(Photo. 2)
(Foto. 2)

- RF signal and T.Error signal when there is small diffraction grating position error.
- The T.Error signal level is small, and the envelope is as shown in the diagram below.
- Signal RF et signal T.Error quand il y a une petite erreur de position du réseau de diffraction.
- Le niveau de signal T.Error est petit et l'envelope est telle qu'indiquée dans le diagramme ci-dessous.
- RF-Signal und T.Error-Signal bei kleinem Diffraktions-gitter-Positionierungsfehler.
- Der T.Error-Signalpegel ist klein, und die Hüll-kurve ist wie in der Abbildung unten.

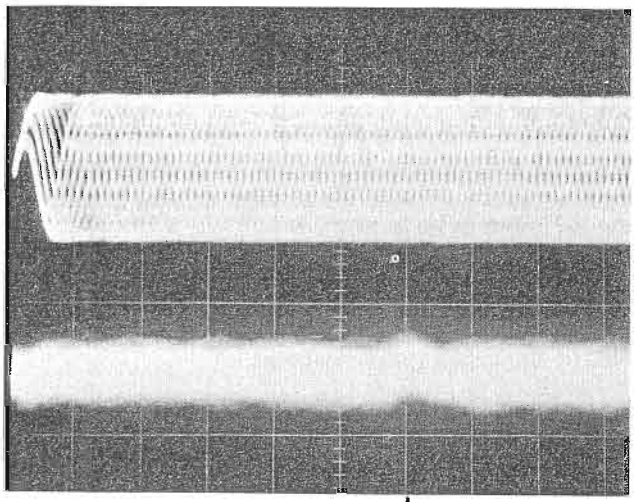




(Photo. 3)
(Photo. 3)
(Foto. 3)

- RF signal and T.Error signal in test mode (with focusing ON).
- When the sub-beam traces the same bit series as the main beam during diffraction grating adjustment, bringing the RF trigger point to the position shown in the Photo causes a "projection" to be observies in the T.Error waveform.
- Le signal RF et le signal T.Error en mode de test (avec la mise au point sur ON).
- Quand un faisceau auxiliaire tracela même série de bits que le faisceau principal pendant l'ajustement de réseau de diffraction, l'apport du point de déclenchement RF à la position indiquée dans la photo provoque une "projection" qui s'observe dans la forme d'onde d' T.Error.
- RF-Signal und T.Error-Signal im Testmodus (bei eingeschalteter Fokussierung).
- Wenn der Nebenstrahl die gleiche Bitreihe wie der Hauptstrahl während der Diffraktionsgitter-Einstellung verfolgt und den RF-Triggerpunkt auf die im Foto gezeigte Position bringt, wird eine "Hervorstehung" verursacht, die in der T.Error-Wellenform beobachtet werden kann.

ADJUSTMENT/REGLAGE/ABGLEICH



CH1 RF
1.0V/div

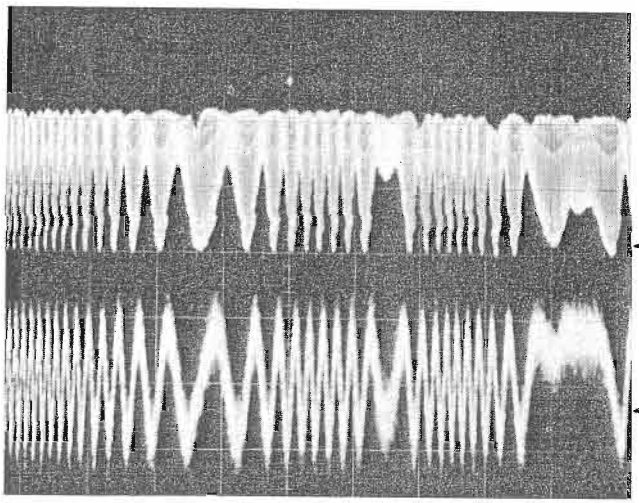
CH2 E.Spot
0.1V/div
AC coupling for
CH2 only
Couplage CA pour canal 2 seulement
AC-Kopplung nur für Kanal 2

(2μsec/div)

Projection
Projection
Hervorstehung

(Photo. 4)
(Photo. 4)
(Foto. 4)

- RF signal and E.Spot signal in test mode (PLAY).
- If the diffraction grating has been adjusted properly, the influence of triggering is observed on the E.Spot waveform of approx. 12μs after RF signal, in the form of a projection.
- Signal RF et signal E.Spot en mode de test (PLAY).
- Si le réseau de diffraction a été ajusté correctement, l'influence du déclenchement s'observe sur la forme d'onde E.Spot d'environ 12μs après le signal RF, sous la forme d'une projection.
- RF-Signal und E.Spot-Signal im Testmodus (PLAY).
- Wenn das Diffraktionsgitter richtig eingestellt wurde, wird der Einfluß des Triggers in der E.Spot-Wellenform etwa 12μs nach dem RF-Signal in der Form einer Hervorstehung beobachtet.



CH1 RF
1.0V/div

0(V)

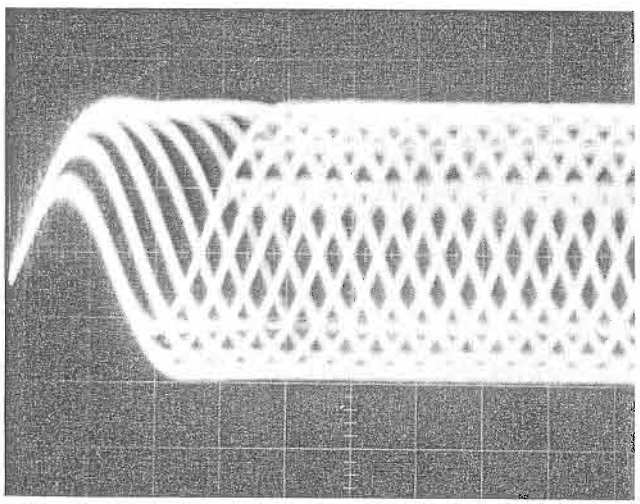
CH2 T.Error
2.0V/div

0(V)

(20msec/div)

(Photo. 5)
(Photo. 5)
(Foto. 5)

- RF signal and T.Error signal; in test mode (Focusing ON). (Disc type 3)
- Adjust T.Error so that the waveform is symmetrical above and below 0V. (VR1 of X29-1780-00)
- Signal RF et signal T.Error; en mode test (mise au point ON). (Disque de type 3)
- Ajuster T.Error pour que la forme d'onde soit symétrique en-dessus et au-dessous de 0V. (VR1 de X29-1780-00)
- RF-Signal und T.Error-Signal; im Testmodus (Fokussierung eingeschaltet). (Disc-Typ 3)
- T.Error so einstellen, daß die Wellenform über und unter 0V symmetrisch ist. (VR1 von X29-1780-00)



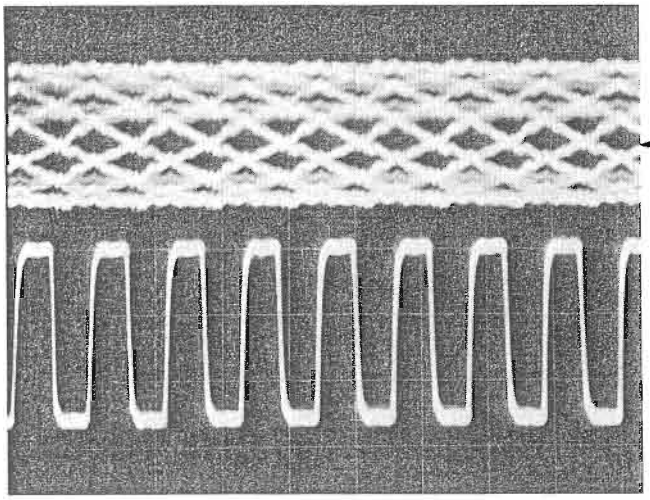
RF signal
0.5V/div

(0.5μsec/div)

(Photo. 6)
(Photo. 6)
(Foto. 6)

- RF signal in test mode (PLAY).
- Perform the tangential and focusing offset adjustments so that each of the center cross points are focused into one point on the display. The crossing points above and below the center shall also be displayed clearly.
- Signal RF en mode de test (PLAY).
- Effectuer les ajustements d'offset tangentiel et de mise au point pour que chacun des points de croisement central soit mis au point sur un point de l'affichage. Les points de croisement au-dessus et en-dessous du centre doivent aussi être affichés clairement.
- RF-Signal im Testmodus (PLAY).
- Die Tangential- und Fokusversatz-Einstellungen so durchführen, daß jeder der mittleren Kreuzungspunkte in einem Punkt auf dem Display fokussiert wird. Auch die Kreuzungspunkte über und unter der Mitte müssen klar angezeigt werden.

ADJUSTMENT/REGLAGE/ABGLEICH

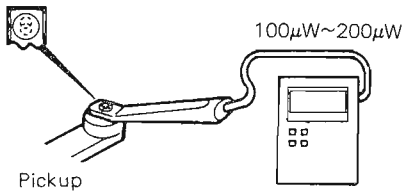


(Photo. 7)
(Photo. 7)
(Foto. 7)

- RF signal and PLCK signal in test mode (PLAY).
- When the synch system is normal, the cross points at the center of the eye pattern shall coincide with the PLCK fall points.
- Le signal RF et le signal PLCK en mode de test (PLAY).
- Quand le système sync est normal, les points de croisement au centre de la forme oculaire doivent coïncider avec les points de chute PLCK.
- RF-Signal und PLCK-Signal im Testmodus (PLAY).
- Wenn das Sync-System normal ist, müssen die Kreuzungspunkte in der Mitte des Augenmusters mit den PLCK-Fallpunkten zusammenfallen.

ADJUSTMENT/REGLAGE/ABGLEICH

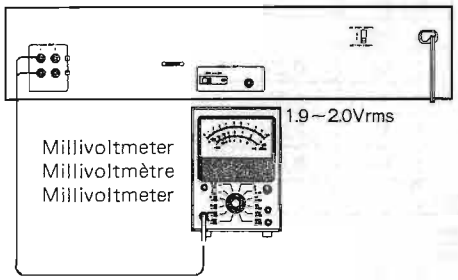
(b)



Pickup
Capteur
Abnehmer

Optical power meter
Compteur de puissance optique
Optikleistungsmesser

(h)



• DIFFRACTION GRATING ADJUSTMENT (PU)

No.	ITEM	INPUT SETTINGS	OUTPUT SETTINGS	PLAYER SETTINGS	ALIGNMENT POINTS	ALIGN FOR	FIG.
1	DIFFRACTION GRATING ADJUSTMENT (PU)	place test disc Type 4 on the tray, and complete. loading.	Connect oscilloscope CH1 to pin 2 (RF) of CN4 of X29-1780-00, and connect CH2 to its pin 3 (TE).	Press CHECK Key. (Focusing servo only mode) (Test mode)	Pickup adjusting hole. Use a grid driver.	See Fig. 1.	(f)

• ADJUSTMENT DE RESEAU DE DIFFRACTION (PU)

N°	ITEM	REGLAGE DE L'ENTREE	REGLAGE DE SORTIE	REGLAGE DE LA LECTEUR	POINS D'ALIGNEMENT	ALIGNER POUR	FIG.
1	AJUSTEMENT DE RESEAU DE DIFFRACTION (PU)	Placer un disque test de Type 4 sur le tiroir et effectuer le chargement.	Connecter le canal 1 de l'oscilloscope à la broche 2 (RF) de CN4 de X29-1780-00 et raccorder le canal 2 à la broche 3 (TE).	Presser la touche CHECK. (Mode d'asservissement de mise au point seulement) (Mode de test)	Trou d'ajustement du capteur. Utiliser un tournevis.	Voir la figure 1.	(f)

• DIFFRAKTIONSGITTER-EINSTELLUNG (PU)

NR.	GEGENSTAND	EINGANGS-EINSTELLUNG	AUSGANGS-EINSTELLUNG	SPIELER EINSTELLUNG	ABGLEICH-PUNKTE	ABGLEICHEN FÜR	ABB.
1	DIFFRAKTION-SGITTER-EINSTELLUNG (PU)	Testdisc Type 4 auf Träger legen und laden druchführen.	Kanal 1 des Oszilloskops an Stift 2 (RF) und kanal 2 an Stift 3 (TE) von CN4 von X29-1780-00 anschließen.	Die CHECK-Taste drücken. (nur fokusservo-Modus) (Testmodus)	Abnehmer-Einstellöffnung. Einen Gitterschrauben-zieher verwenden.	Siehe Abb. 1.	(f)

ADJUSTMENT/REGLAGE/ABGLEICH

VOLTAGE CHECK TABLE

(X25-2850-00)

IC1 (TC74HC74F)

1	3.5V	9	0V
2	1.6V	10	5.0V
3	0.3V	11	0.3V
4	5.0V	12	1.6V
5	0V	13	3.5V
6	5.0V	14	5.0V
7	0V (GND)		

IC2 (TD62554S)

1~3	0V	6	0.2V
4	5.0V	7~9	2.3V
5	0V (GND)		

IC3 (TC74HC174F)

1	3.5V	11	1.9V
2~5	5.0V	12	0V
6~8	0V	13,14	1.6V
9	0.3V	15	0V
10	5.0V	16	5.0V

(X25-2860-11)

IC1,IC2 (PCM56P-K)

1	−5.6V	9	0V
2	0V	10	NC
3	5V	11	0V
4	NC	12	0V
5	–	13	0V
6	–	14	NC
7	–	15	1.9V
8	−5V	16	5.6V

IC3~IC10 (NJM5532D-D)

1	0V	5	0V
2	0V	6	0V
3	0V	7	0V
4	−12V	8	12V

IC13 (CX20197)

1	0V	5	7.6V
2	7.6V	6	7.6V
3	7.6V	7	0V
4	−12V	8	12V

IC16 (TA79L006P)

GND	0V
IN	−12.0V
OUT	5.6V

IC17 (TA78L006AP)

GND	0V
IN	12.0V
OUT	5.6V

(X29-1780-00)

IC1 (CX20109)

1~12	0V	21	5.0V
13	−5.0V	22	−5.6V
14~18	0V	23	5.0V
19	−2.0V	24	5.0V

IC2 (M5218P)

1	−3.5V	6	−1.3V
2,3	0V	7	−3.5V
4	−5.0V	8	5.0V

IC3 (μPD4053BC)

1	0.5V	13	−0.5V
2	−0.5V	14	0V
3~6	0V	15	−0.5V
7	−5.0V	16	5.0V
8~12	0V		

(X32-1090-11)

IC1 (CX20108)

1~6	0V	21	0.7V
7~10	5.0V	22	0V
11~13	0V	23	0.6V
14	−4.3V	24,25	0V
15	5.0V	26	5.0V
16	0V	27	−0.6V
17	−5.0V	28~30	0V
19,20	0V		

IC5 (NJM4558D)

1	–	5	2.5V
2	0V	6	2.5V
3	0V	7	0V
4	−5.0V	8	5.0V

IC6 (NJM4558D)

1	0V	5	0V
2	−0.6V	6	0V
3	0.6V	7	0V
4	−9.5V	8	−9.5V

IC9 (CXD1075P)

1	2.4V	15	0V
2	0V	16	5.0V
3	2.5V	17	0V
4	5.0V	18	0.5V
5~7	0V	19,20	0V
8,9	5.0V	21	5.0V
10,11	0V	22~25	0V
12	2.0V	26	2.5V
13	1.6V	27	0V
14	0.4V	28	5.0V

IC11 (μPD75208CW-040)

1~4	1.9V	32	0V
5	0V	33	0V
6	2.5V	35,36	0V
7,8	0V	39	5.0V
9	4.9V	40	3.4V
10~13	0V	41~51	0.4V
14~16	5.0V	54	1.9V
18,19	0.5V	55	2.7V
20	5.0V	56,57	0V
21	0.5V	58,59	1.9V
22~24	0V	60	0V
25~27	5.0V	61,62	1.5V
28	0V	63	1.9V
29	5.0V	64	5.0V
30,31	2.3V		

IC16 (AN7805F)

1	9.5V
2	5.0V
3	0V

IC17 (AN7905F)

1	−5V
2	0V
3	−9.5V

IC18 (AN7805F)

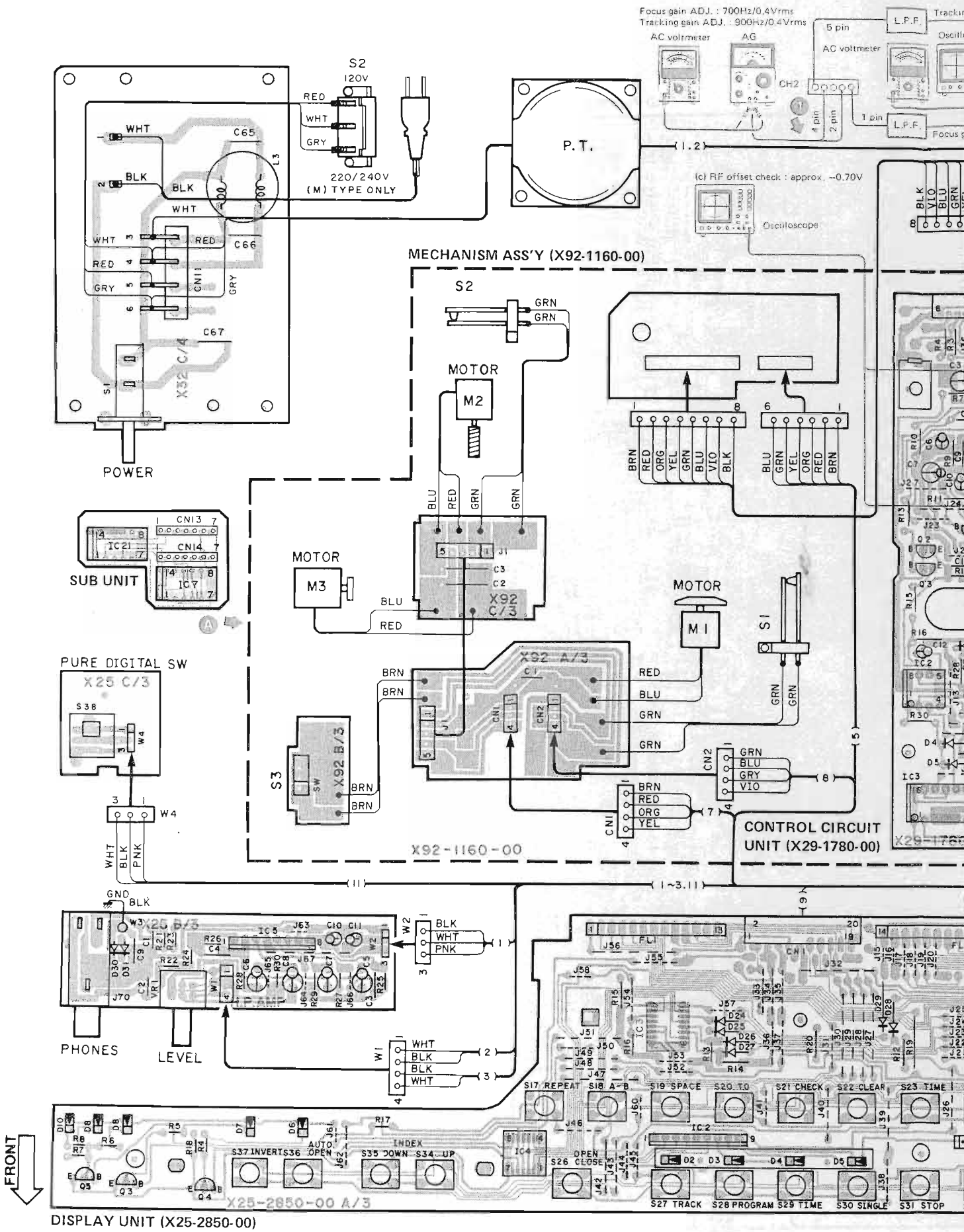
1	9.5V
2	5.0V
3	0V

IC19 (AN7905F)

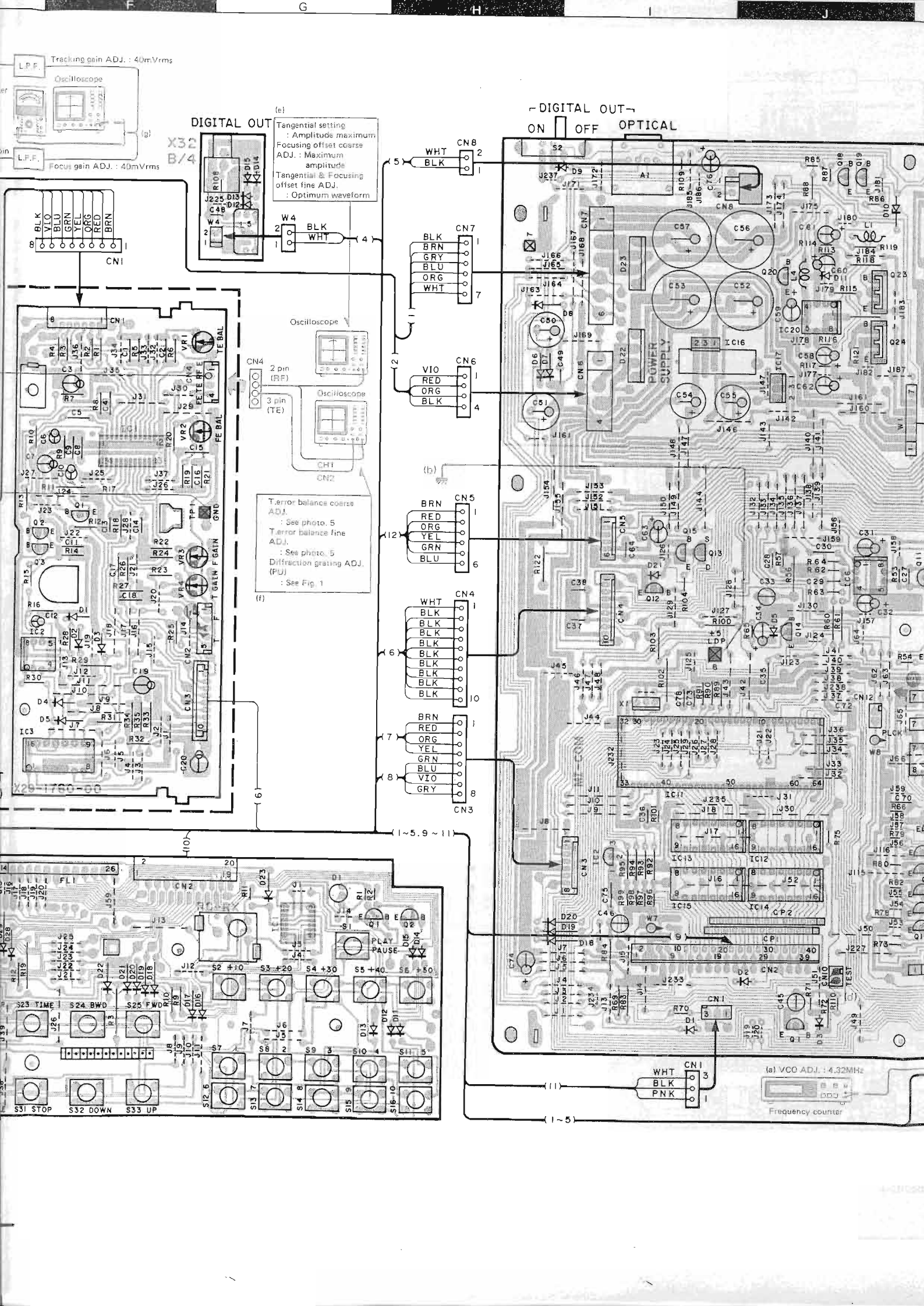
1	0V
2	−5.0V
3	−9.5V

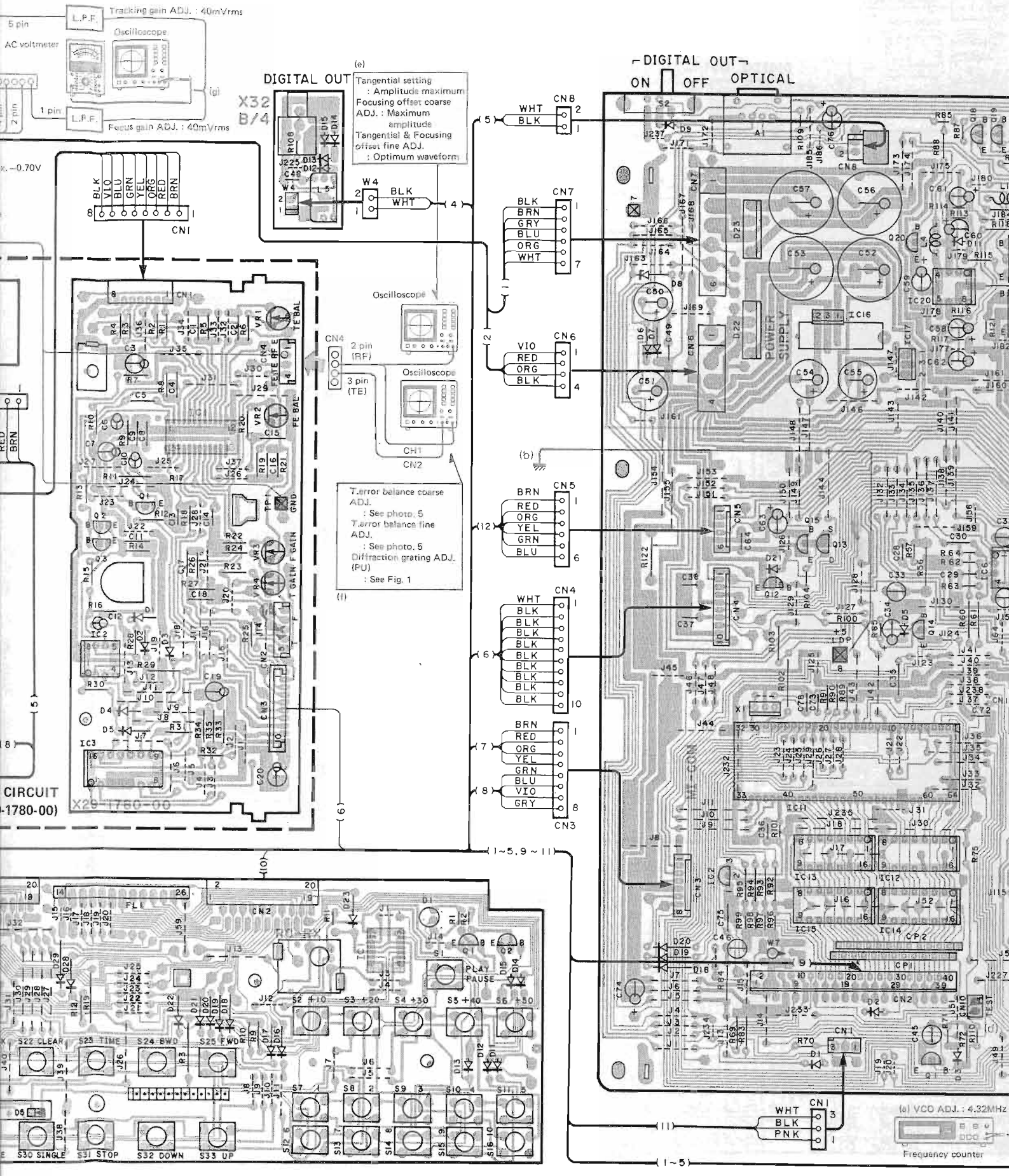
Remarks : These voltages are the values in STOP mode.

PC BOARD (COMPONENT SIDE VIEW)



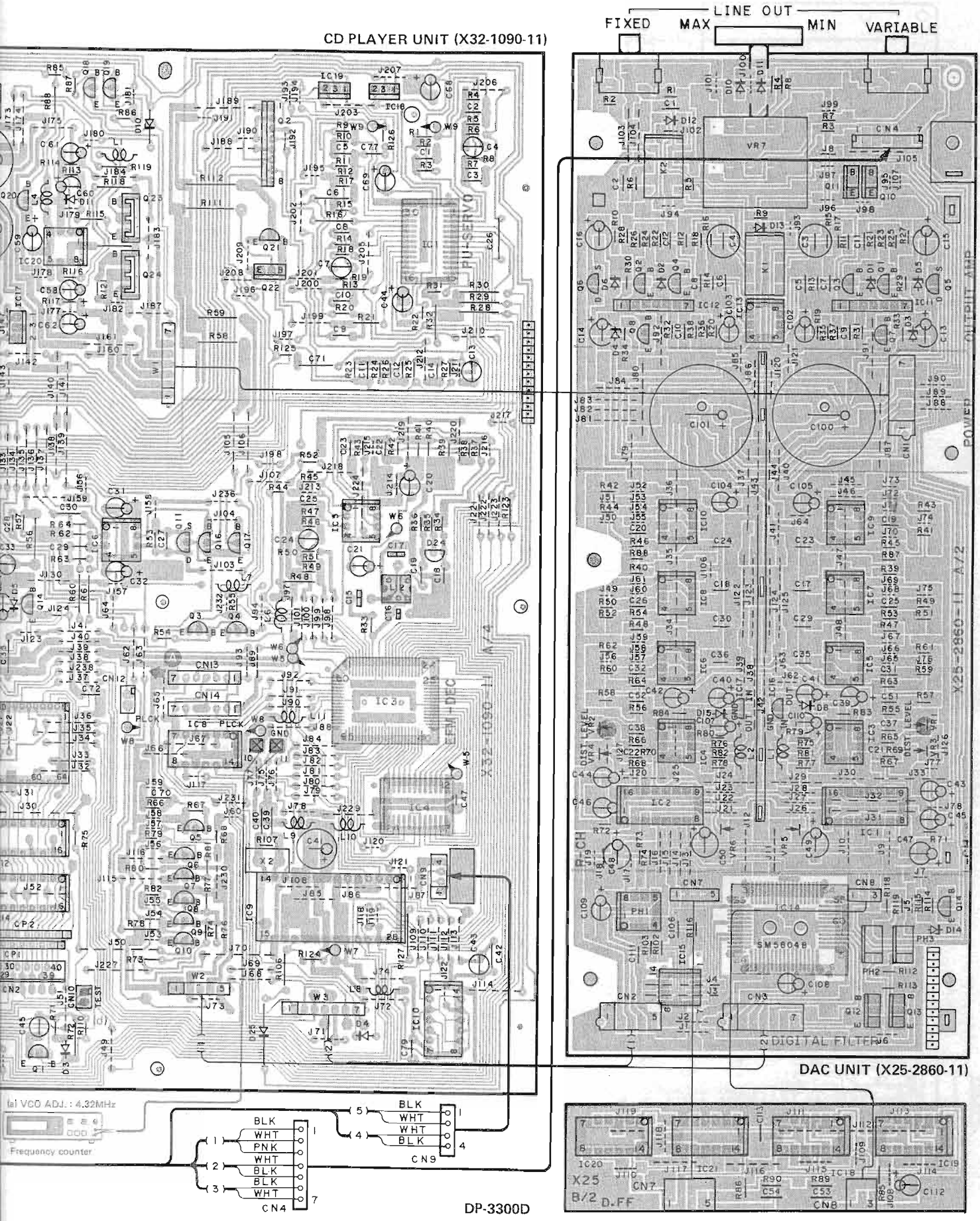
Refer to the schematic diagram for the values of resistors and capacitors.


F
G
H
I
J
L.P.F.
Tracking gain ADJ. : 40mVrms
Oscilloscope
(g)
Focus gain ADJ. : 40mVrms
DIGITAL OUT
X32
B/4
(e)
Tangential setting
: Amplitude maximum
Focusing offset coarse ADJ. : Maximum amplitude
Tangential & Focusing offset fine ADJ.
: Optimum waveform
W4
BLK
WHT
BLK VIO BLU GRN YEL ORG RED BRN
CN1
CN8
CN7
CN6
CN5
CN4
CN3
WHT BLK
BLK BRN GRY BLU ORG WHT
VIO RED ORG BLK
BRN RED ORG YEL GRN BLU
WHT BLK BLK BLK BLK BLK BLK BLK BLK BLK
BRN RED ORG YEL GRN BLU VIO GRY
Oscilloscope
CN4
2 pin (RF)
3 pin (TE)
CH1
CN2
T.error balance coarse ADJ.
: See photo. 5
T.error balance fine ADJ.
: See photo. 5
Diffraction grating ADJ. (PU)
: See Fig. 1
(f)
(b)
DIGITAL OUT
ON OFF OPTICAL
S2
POWER SUPPLY
IC16
TE BAL
FE BAL
T GAIN
F GAIN
TP1
GND
X29-1780-00
FL1
S1 PLAY PAUSE
S2 +10
S3 +20
S4 +30
S5 +40
S6 +50
S23 TIME
S24 REV
S25 FWD
S31 STOP
S32 DOWN
S33 UP
(1~5.9~11)
(10)
(6)
(11)
(1~5)
WHT BLK PNK
CN1
(a) VCO ADJ. : 4.32MHz
Frequency counter
(d)
CP1
CP2
IC11
IC12
IC13
IC14
IC15
PLCK
TEST

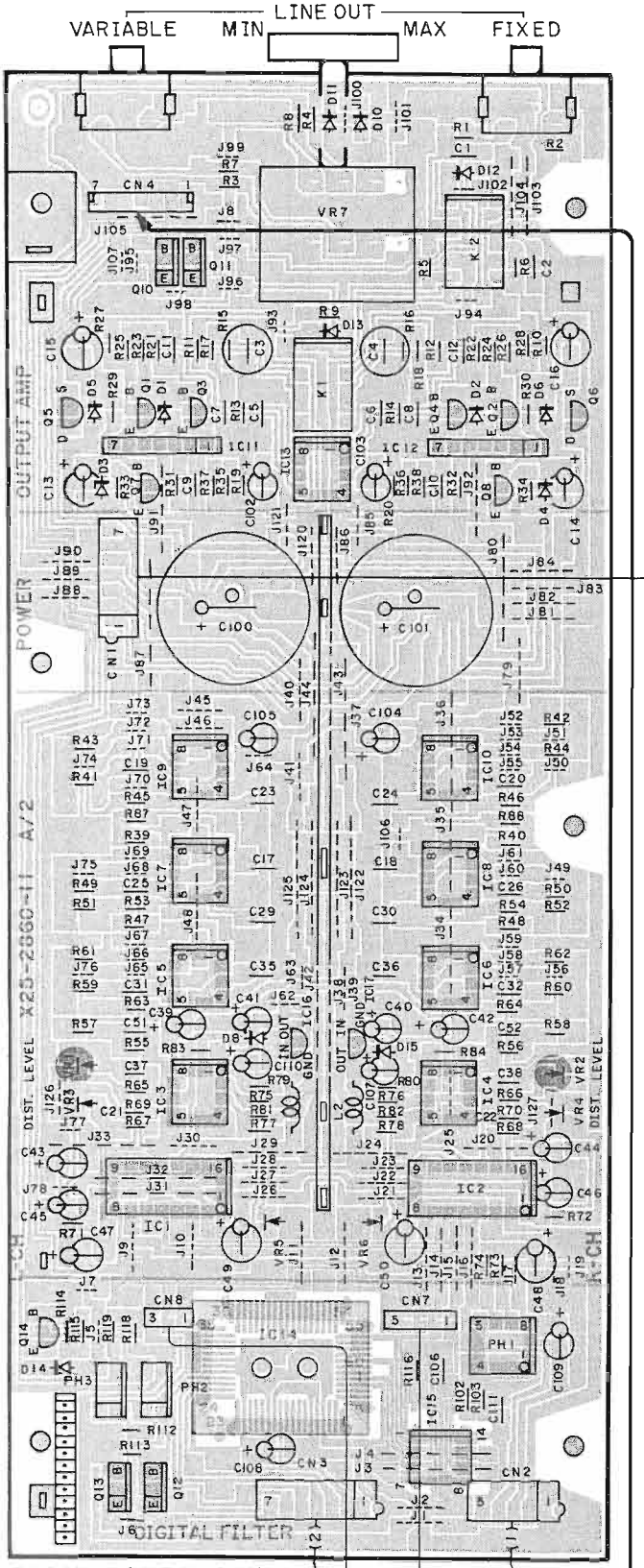

L.P.F.
Tracking gain ADJ. : 40mVrms
5 pin
AC voltmeter
Oscilloscope
(g)
1 pin
L.P.F.
Focus gain ADJ. : 40mVrms
DIGITAL OUT
X32
B/4
(e)
Tangential setting
: Amplitude maximum
Focusing offset coarse
ADJ. : Maximum
amplitude
Tangential & Focusing
offset fine ADJ.
: Optimum waveform
W4
BLK
WHT
CN1
BLK
VIO
BLU
GRN
YEL
ORG
RED
BRN
CN4
2 pin
(RF)
3 pin
(TE)
Oscilloscope
Oscilloscope
CH1
CN2
T.error balance coarse
ADJ.
: See photo. 5
T.error balance fine
ADJ.
: See photo. 5
Diffraction grating ADJ.
(PU)
: See Fig. 1
(f)
CN8
WHT
BLK
CN7
BLK
BRN
GRY
BLU
ORG
WHT
CN6
VIO
RED
ORG
BLK
CN5
BRN
RED
ORG
YEL
GRN
BLU
CN4
WHT
BLK
BLK
BLK
BLK
BLK
BLK
BLK
BLK
CN3
BRN
RED
ORG
YEL
GRN
BLU
VIO
GRY
DIGITAL OUT
ON
OFF
OPTICAL
POWER SUPPLY
CIRCUIT
-1780-00)
X29-1780-00
CN2
PLAY
PAUSE
S1
S2 +10
S3 +20
S4 +30
S5 +40
S6 +50
S22 CLEAR
S23 TIME
S24 BWD
S25 FWD
S30 SINGLE
S31 STOP
S32 DOWN
S33 UP
CN1
WHT
BLK
PNK
(a) VCO ADJ. : 4.32MHz
Frequency counter
(b)
(c)
(d)
1~5, 9~11
1~5

citors.

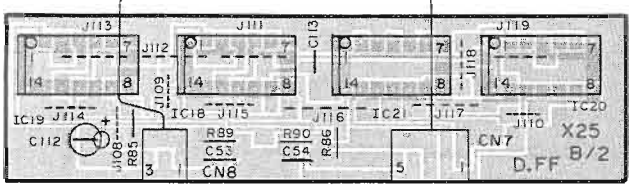
J K L M N


CD PLAYER UNIT (X32-1090-11)
LINE OUT
FIXED
MAX
MIN
VARIABLE
DAC UNIT (X25-2860-11)
DP-3300D
(a) VCO ADJ. : 4.32MHz
Frequency counter
BLK
WHT
PNK
WHT
BLK
BLK
WHT
CN4
CN9
DIGITAL FILTER
SM5804B
PHI
PH2
PH3
R-CH
POWER OUTPUT AMP
X25-2860-11 A/2
X32-1090-11 A/4
EFM-DEC
PLCK
DIST LEVEL
X25 B/2 D-FF

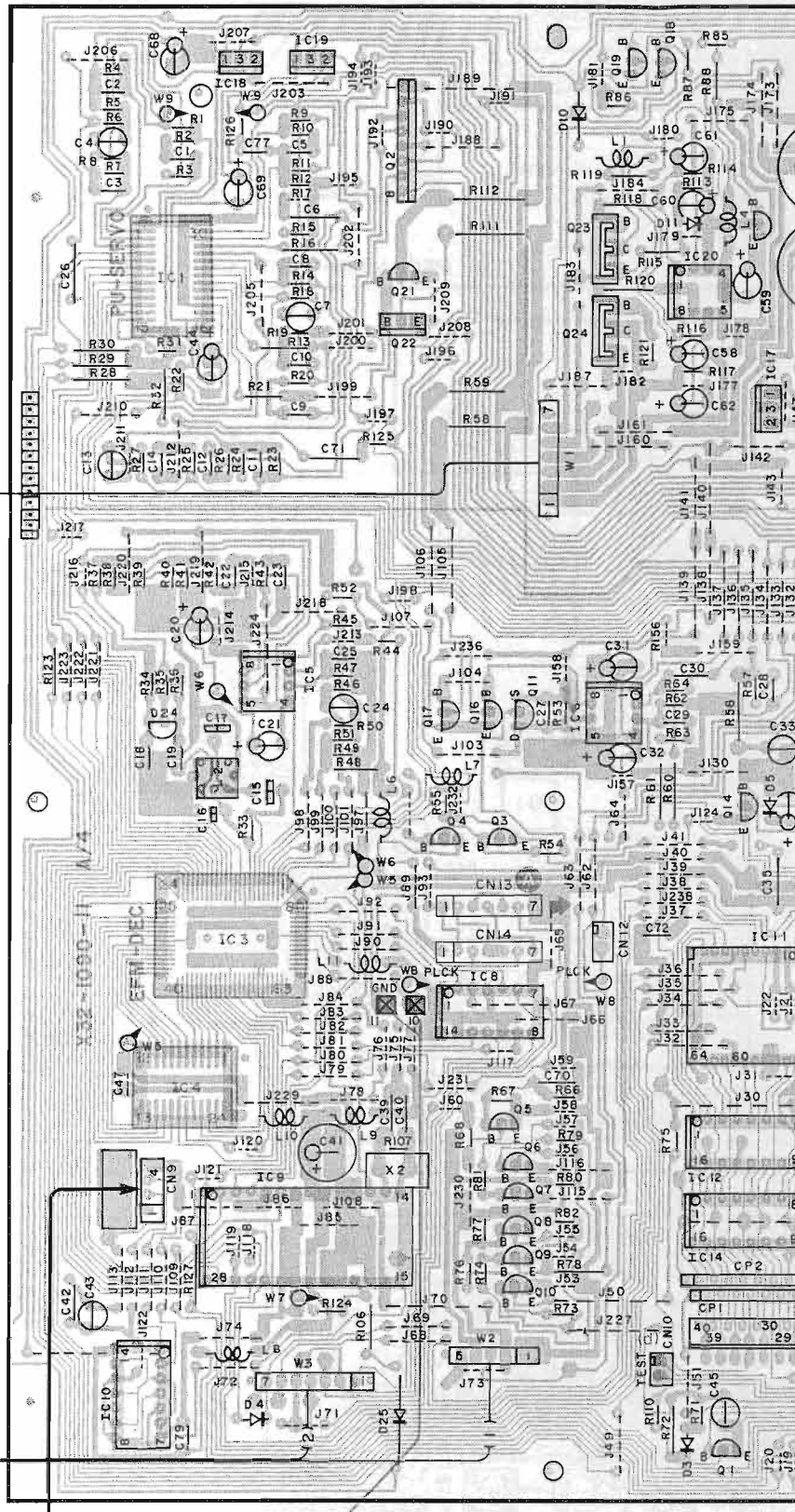
PC BOARD (FOIL SIDE VIEW)

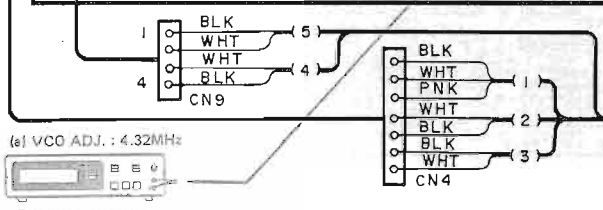


DAC UNIT (X25-2860-11)



CD PLAYER UNIT (X32-1090-11)

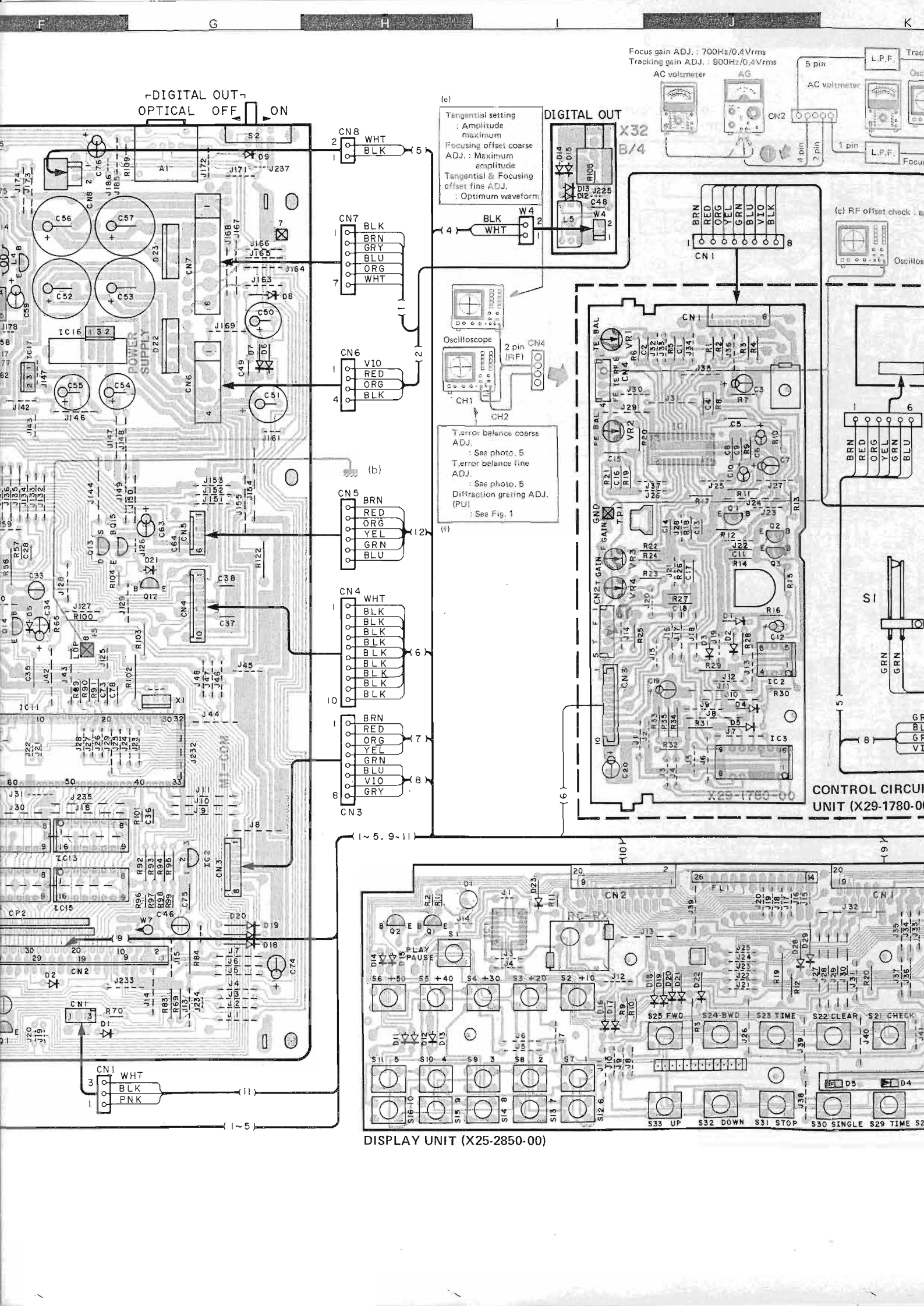


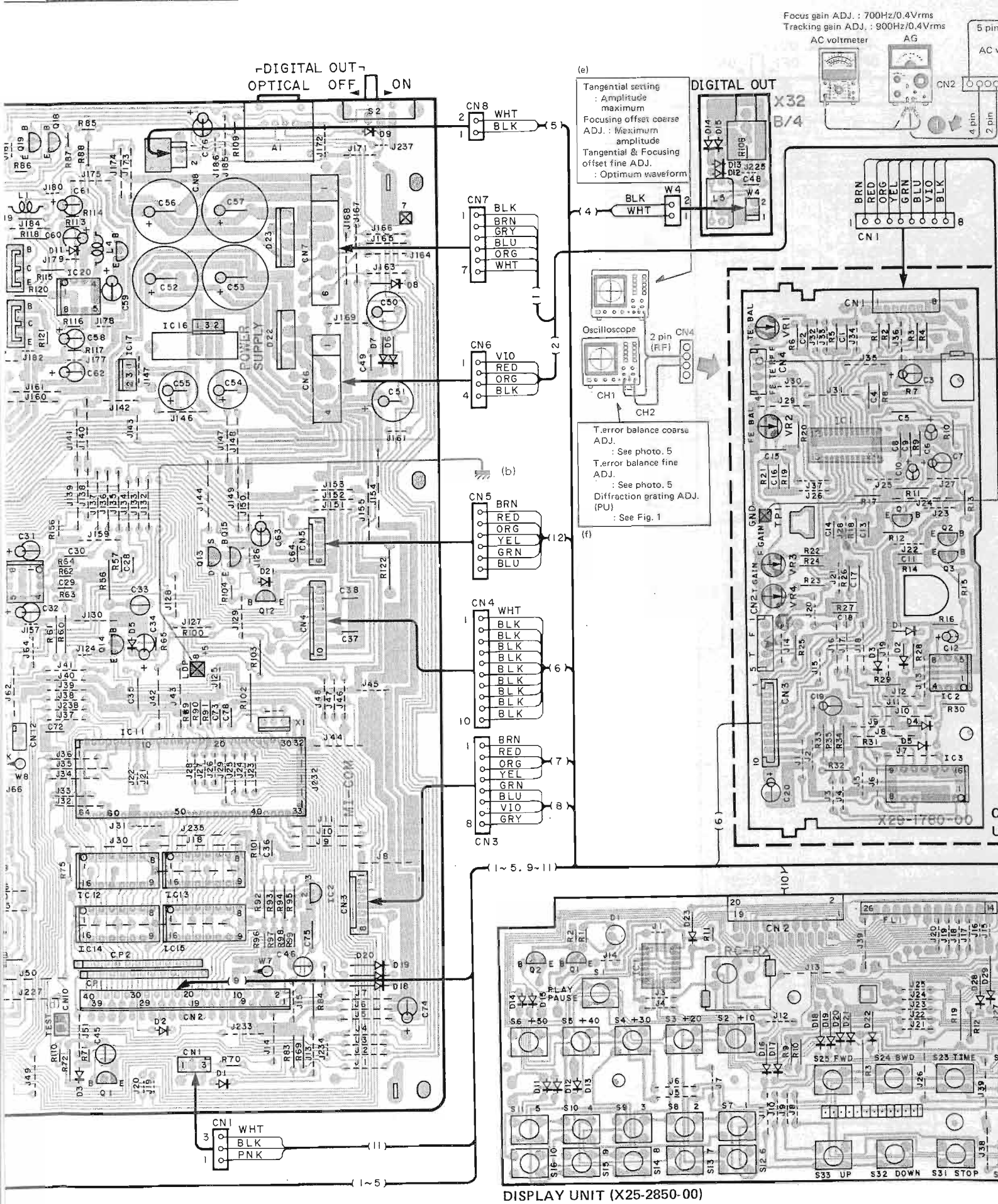


(a) VCO ADJ. : 4.32MHz

Frequency counter

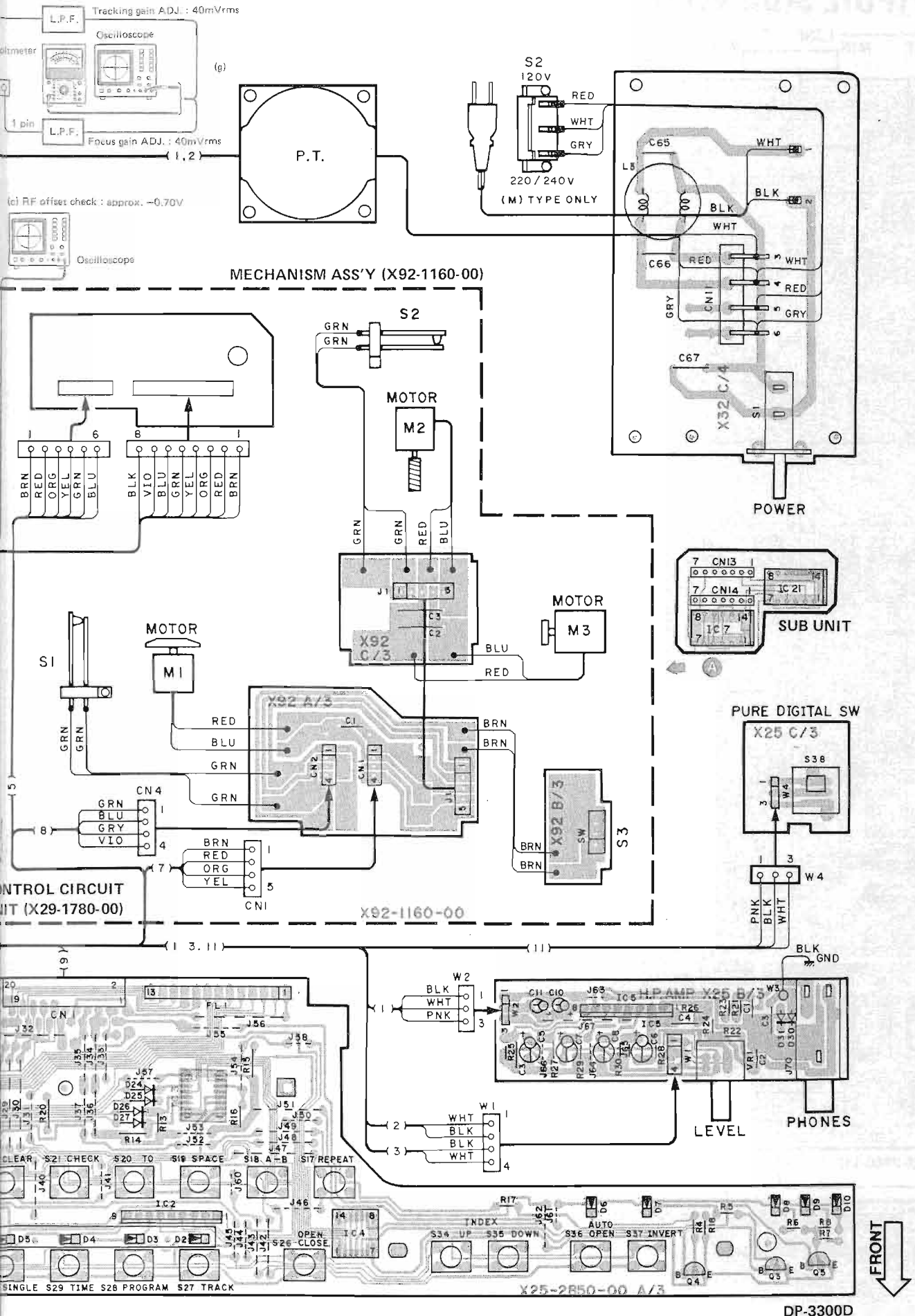
Refer to the schematic diagram for the values of resistors and capacitors.


F
G
H
I
J
K
DIGITAL OUT
OPTICAL OFF ON
S2
A1
CN8
WHT
BLK
CN7
BLK
BRN
GRY
BLU
ORG
WHT
CN6
VIO
RED
ORG
BLK
CN5
BRN
RED
ORG
YEL
GRN
BLU
CN4
WHT
BLK
CN3
BRN
RED
ORG
YEL
GRN
BLU
VIO
GRY
CN1
WHT
BLK
PNK
POWER SUPPLY
(b)
(e)
Tangential setting
: Amplitude maximum
Focusing offset coarse ADJ. : Maximum amplitude
Tangential & Focusing offset fine ADJ.
: Optimum waveform
DIGITAL OUT
X32
B/4
W4
BLK
WHT
Oscilloscope
2 pin
(RF)
CN4
CH1
CH2
T.error balance coarse ADJ.
: See photo. 5
T.error balance fine ADJ.
: See photo. 5
Diffraction grating ADJ. (PU)
: See Fig. 1
(f)
Focus gain ADJ. : 700Hz/0.4Vrms
Tracking gain ADJ. : 900Hz/0.4Vrms
AC voltmeter
AG
CN2
5 pin
4 pin
2 pin
1 pin
L.P.F.
(c) RF offset check : a
Oscillos
CN1
BRN
RED
ORG
YEL
GRN
BLU
VIO
BLK
CONTROL CIRCUI
UNIT (X29-1780-0
X29-1780-00
SI
GRN
(1~5, 9~11)
(1~5)
DISPLAY UNIT (X25-2850-00)
PLAY PAUSE
S6 +50
S5 +40
S4 +30
S3 +20
S2 +10
S25 FWD
S24 BWD
S23 TIME
S22 CLEAR
S21 CHECK
S33 UP
S32 DOWN
S31 STOP
S30 SINGLE
S29 TIME

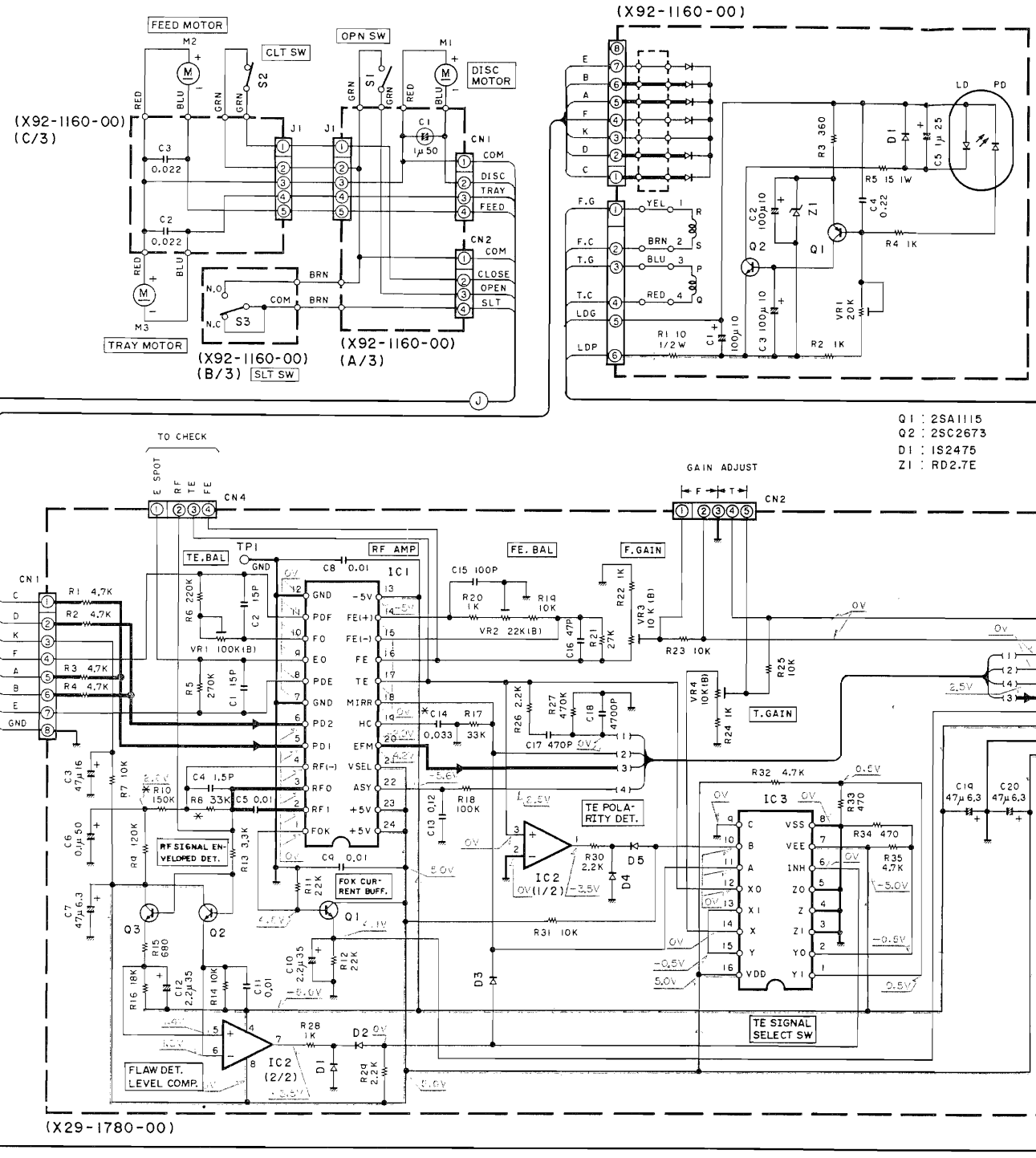


DISPLAY UNIT (X25-2850-00)

itors.


L.P.F.
Tracking gain ADJ. : 40mVrms
Oscilloscope
(g)
1 pin
L.P.F.
Focus gain ADJ. : 40mVrms
(1,2)
P.T.
S2
120V
RED
WHT
GRY
220/240V
(M) TYPE ONLY
(c) RF offset check : approx. −0.70V
Oscilloscope
MECHANISM ASS'Y (X92-1160-00)
S2
GRN
GRN
MOTOR
M2
BRN RED ORG YEL GRN BLU
BLK VIO BLU GRN YEL ORG RED BRN
GRN GRN RED BLU
X92 C/3
MOTOR
M3
BLU
RED
MOTOR
M1
S1
GRN GRN
RED
BLU
GRN
GRN
X92 A/3
C1
CN2
CN1
J1
BRN
BRN
X92 B/3
SW
S3
CN4
GRN
BLU
GRY
VIO
BRN
RED
ORG
YEL
CN1
NTROL CIRCUIT
IT (X29-1780-00)
X92-1160-00
C65
WHT
L5
BLK
BLK
WHT
C66
RED
WHT
RED
GRY
GRY
CN11
C67
X32 C/4
S1
POWER
7 CN13
7 CN14
IC 21
IC 7
SUB UNIT
PURE DIGITAL SW
X25 C/3
S38
W4
PNK
BLK
WHT
BLK
GND
W2
BLK
WHT
PNK
H.P AMP X25 B/3
IC5
W3
LEVEL
PHONES
W1
WHT
BLK
BLK
WHT
CN1
J32
J56
J55
J58
J57
D24
D25
D26
D27
R14
R13
R16
J51
J50
J49
J48
J47
J53
J52
CLEAR
S21 CHECK
S20 TO
S19 SPACE
S18 A-B
S17 REPEAT
J40
J41
J60
J46
IC2
IC4
D5
D4
D3
D2
J45
J44
J43
J42
OPEN
S26 CLOSE
R17
INDEX
S34 UP
S35 DOWN
AUTO
S36 OPEN
S37 INVERT
D6
D7
R5
R6
R8
R7
D8
D9
D10
Q4
Q3
Q5
SINGLE S29 TIME S28 PROGRAM S27 TRACK
X25-2850-00 A/3
FRONT

DP-3300D



(X29-1780-00)
IC1 : CX20190
IC2 : M5218P
IC3 : μPD4053BC
or BU4053B

Q1~3 : 2SC945(A)(Q,P)

D1~5 : ISS176 or ISS131

(X32-1090-11)
IC1 : CX20108
IC2 : M5195IASL
IC3 : CX23035
IC4 : CXK5816M
or HM6116FP-4
IC5,6 : NJM4558D

IC8 : TC74HC08P
IC9 : CXD1075P
IC10 : TC74HCU04P
IC11 : μPD75208CW-040
IC12~15 : LB1294
IC16, 18 : AN7805F
IC17, 19 : AN7905F
IC20 : M5218P

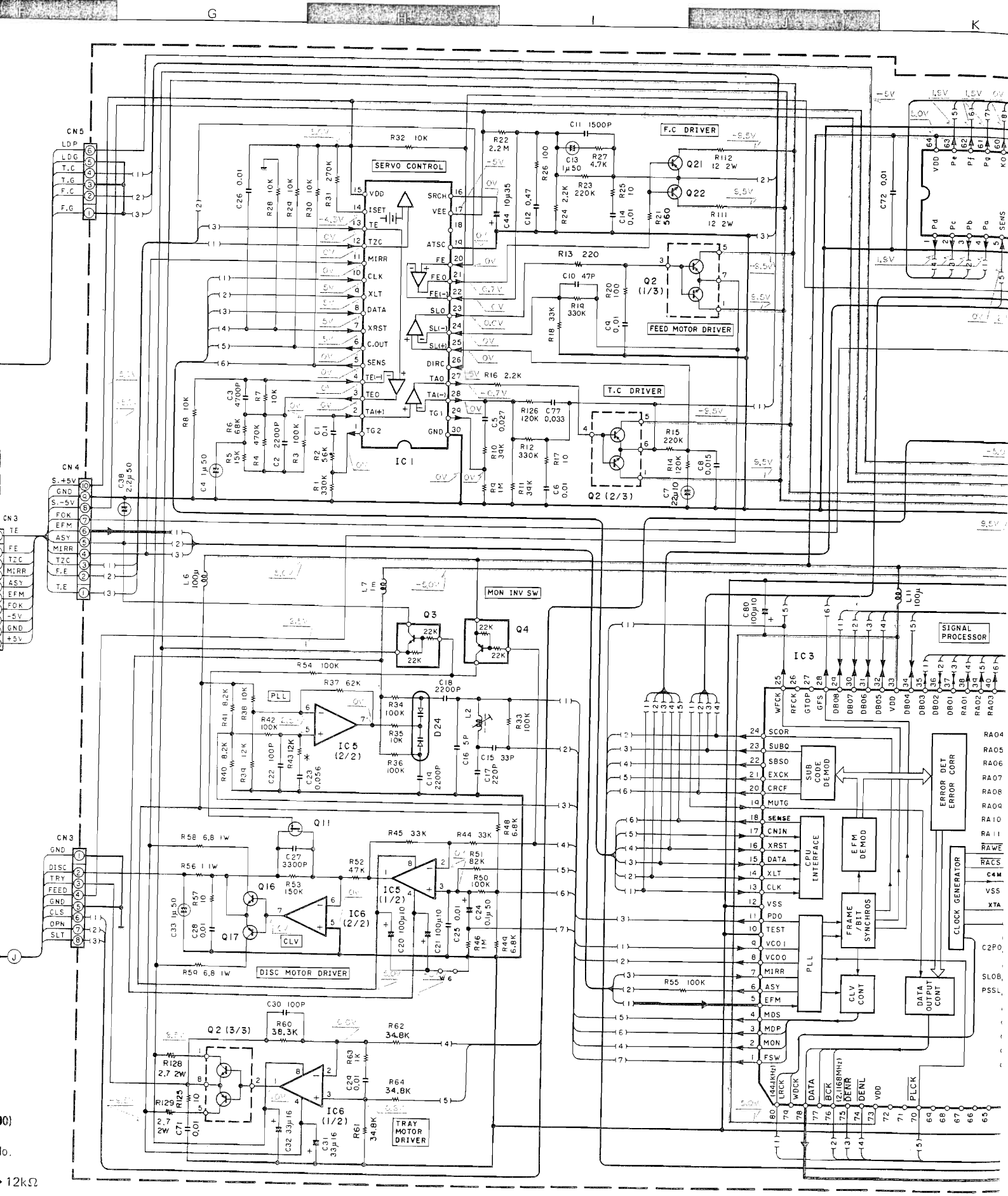
Q1,7,14,19,20 : 2SC945(A)(Q,P)
or 2SC1740S(Q,R)
Q2 : STA341M
Q3 : DTC124EN
Q4 : DTA124EN
Q5 : 2SC1923(R,O)
Q6,12,18 : 2SA733(A)(Q,P)
or 2SA933S(Q,R)
Q8,16 : 2SC3246
Q9 : 2SA992(F,E)
Q10 : 2SC1845(F,E)
Q11,13 : 2SK246(Y,GR)
Q15,17,21 : 2SA1286
Q22,23 : 2SD1266(P)
Q24 : 2SB941(P)

D1~4,9,12~20,25 : ISS176 or ISS133
D5 : HZS6.8N(B2)
or RD6.8ES(B2)
D6,7 : DSM1A1
D8 : HZS8.2N(B)
or RD8.2ES(B)
D10 : HZS2.7N(B)
or RD2.7ES(B)
D11 : HZS6.2S(B2)
or RD6.2JS(B2)
D21 : HZS5.6N(B2)
or RD5.6ES(B2)
D22,23 : 1B4B41
D24 : ISV147

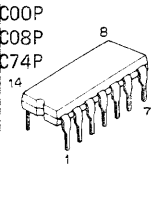
(X32-1090-00)
Note *
After serial No.
6ZL80001
R43 33kΩ → 1

29-1780-00)
te *
er serial No.
ZL80001
33kΩ → 22kΩ
0 150kΩ → Delete
4 0.033μF → 1000pF

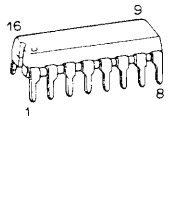
TA124EN
DTC124EN 2SC1845
2SA1286 2SC1923
2SA733(A) 2SC3246
2SA992 2SC945(A)
2SD1266
2SA933S
2SC1740S
2SB941
2SK246
NJM4558D
TC74HCU
TC74HC0
TC74HC0
TC74HC7
14



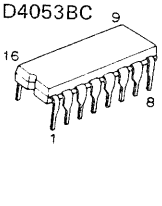
CU04P
C00P
C08P
C74P



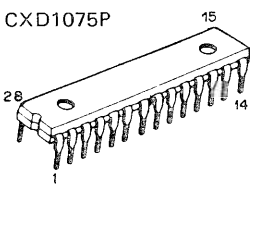
LB1294



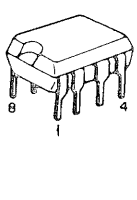
BU4053B
μPD4053BC



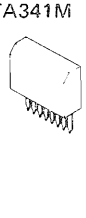
CXD1075P



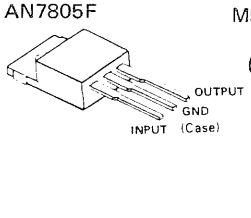
M5218P



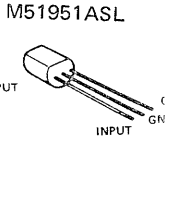
STA341M

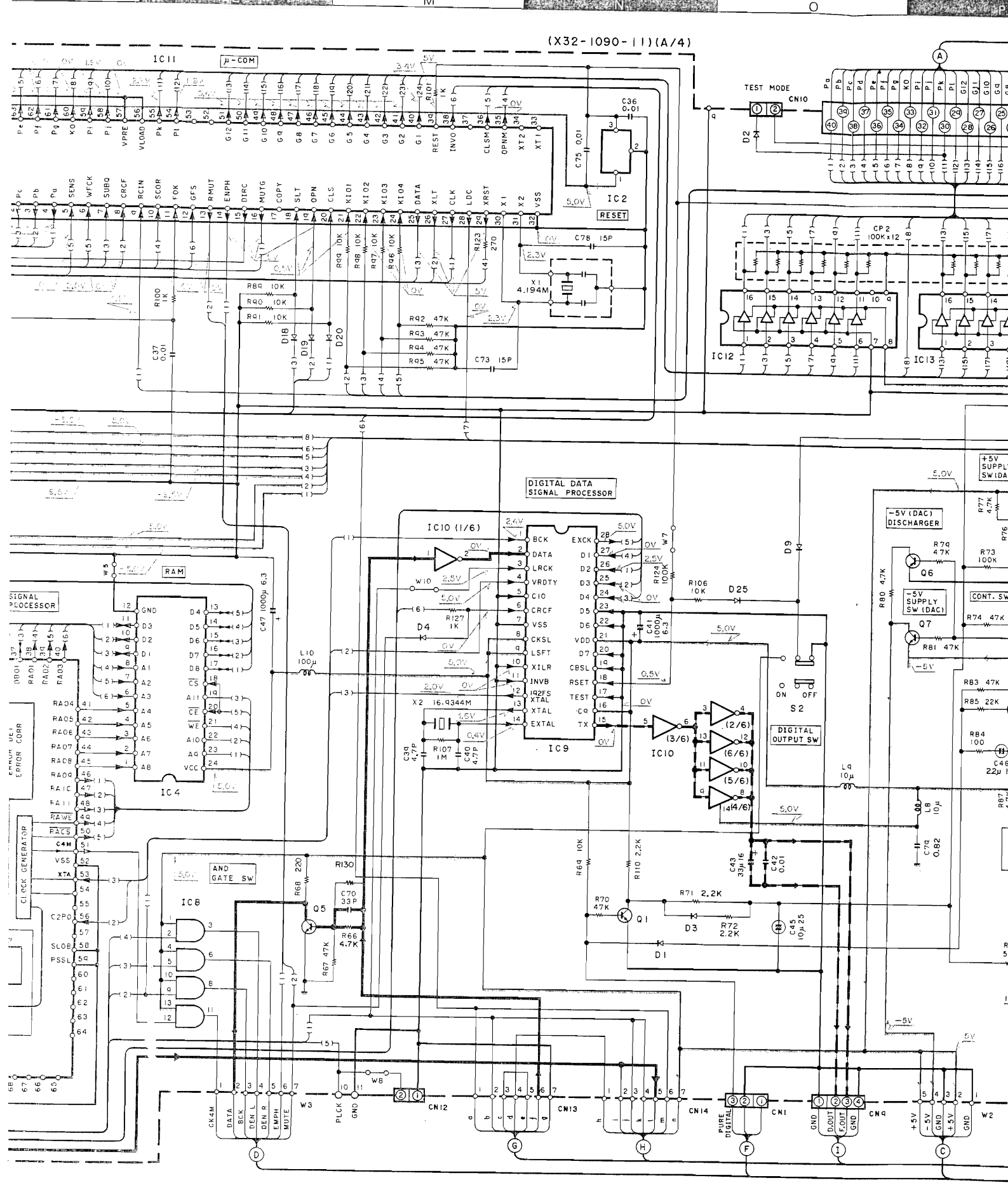


AN7805F

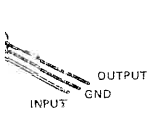


M51951ASL

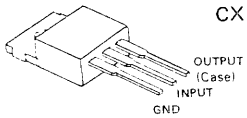




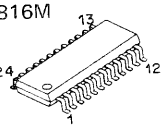
1ASL



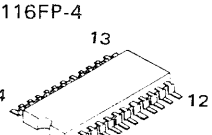
AN7905F



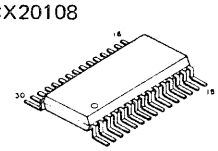
CX20109
CXK5816M



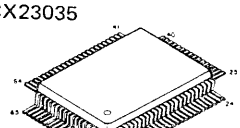
HM6116FP-4



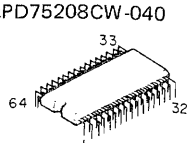
CX20108



CX23035



μPD75208CW-040



CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

* D.C. voltages are to be measured with a high impedance voltmeter. Values may slightly differ due to variations between individual instruments and/or units.

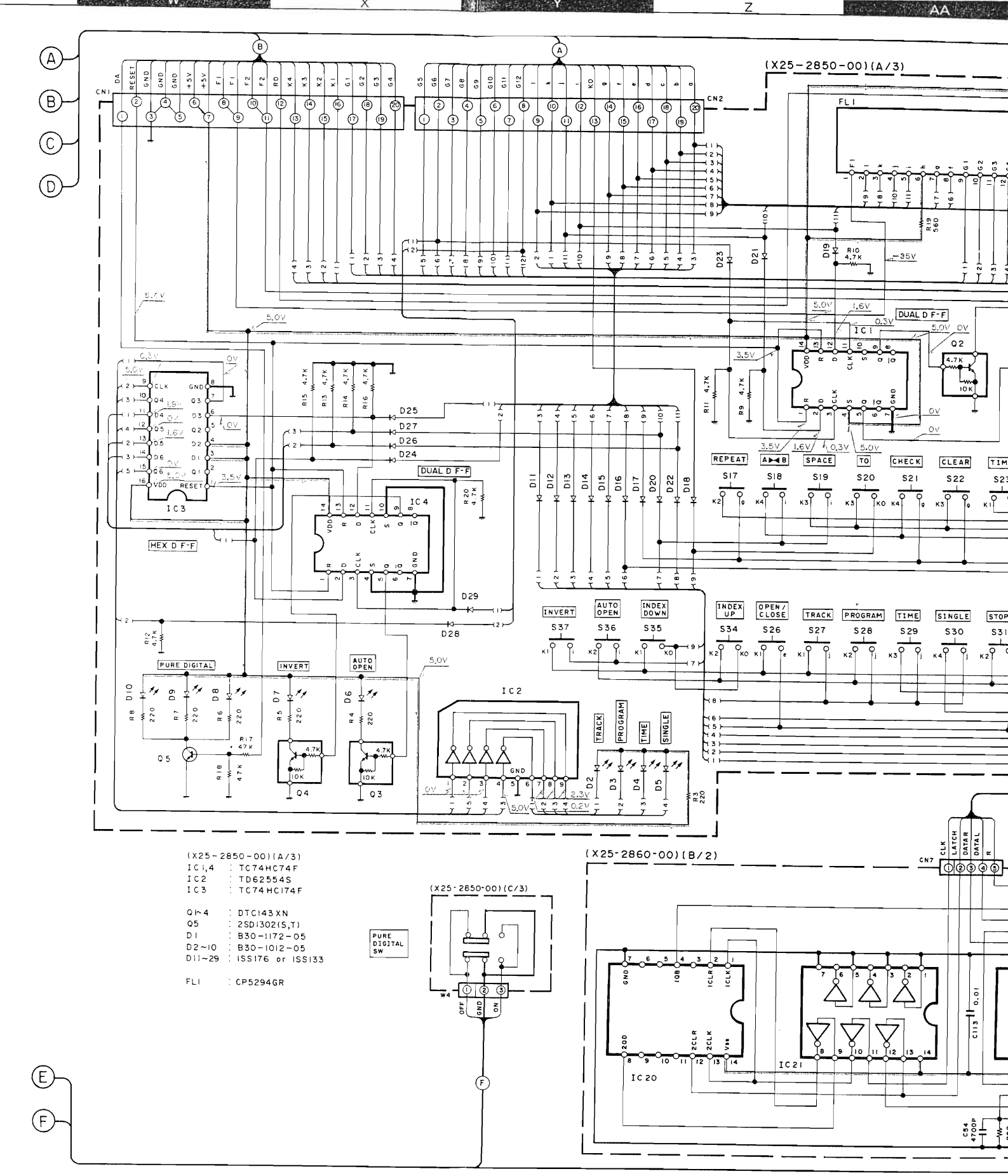
* Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédence. Les valeurs peuvent différer légèrement en fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

* Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei können die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig

Remarks : These voltages are the values in STOP mode.

DP-3300D

KENWOOD

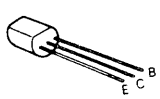
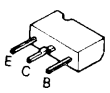
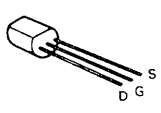
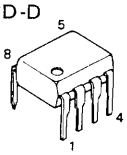
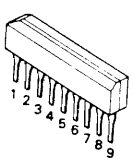
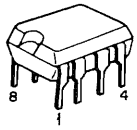
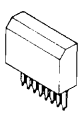
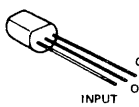


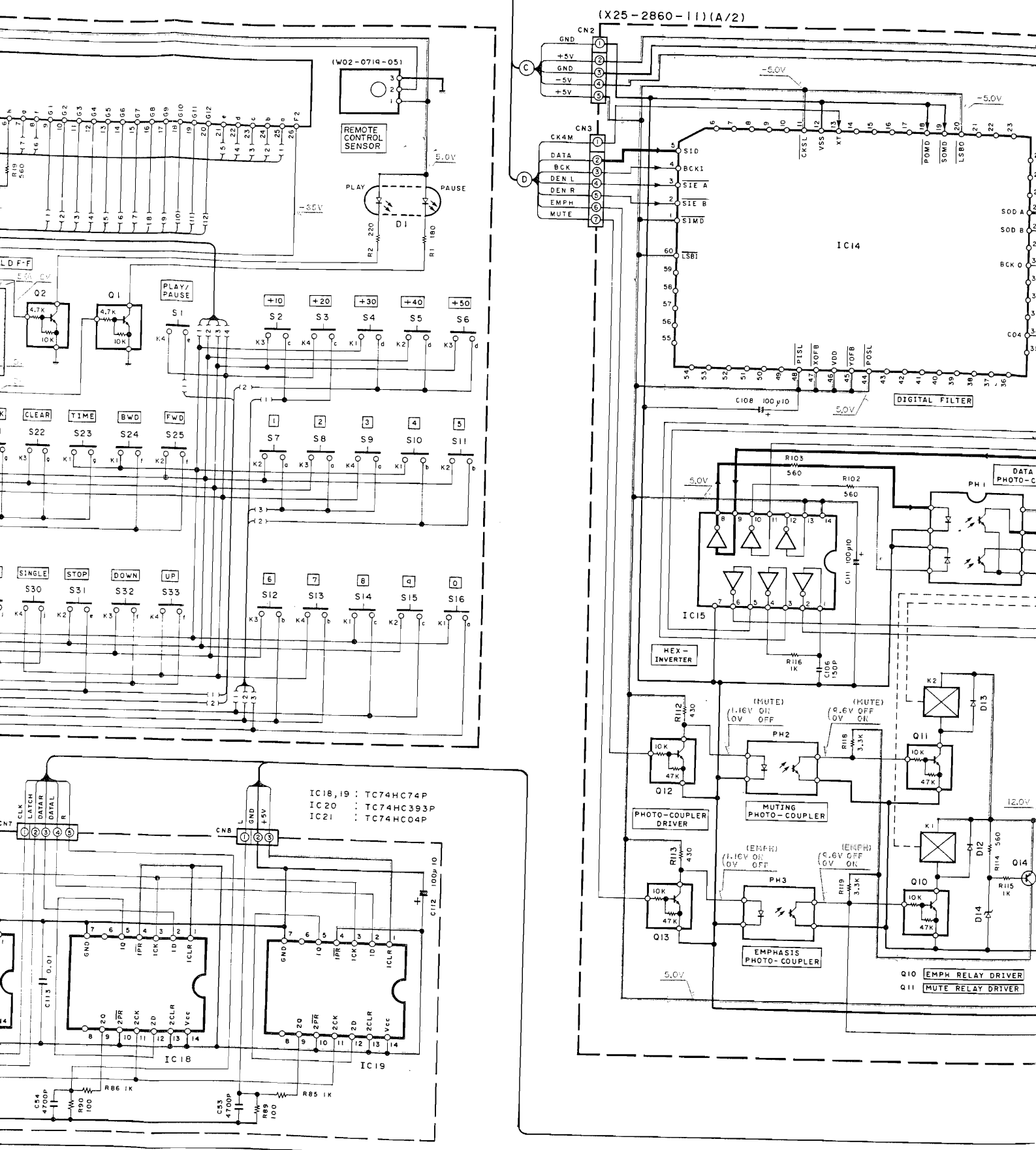
(X25-2850-00)(A/3)
IC1,4 : TC74HC74F
IC2 : TD62554S
IC3 : TC74HC174F

Q1~4 : DTC143XN
Q5 : 2SD1302(S,T)
D1 : B30-1172-05
D2~10 : B30-1012-05
D11~29 : ISS176 or ISS133

FL1 : CP5294GR

DTC143XN 2SC945(A) 2SA733(A), 2SD1302 | DTC114YFF | 2SK170 | NJM5532D-D | TD62554S | CX20197 | M5218L | TA78L006AP



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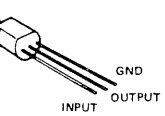
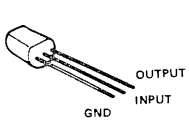
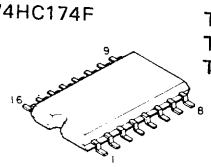


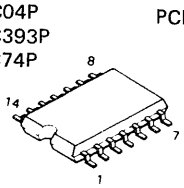
TA79L006P



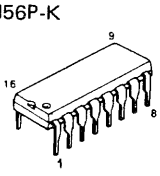
TC74HC174F



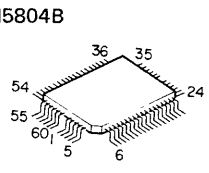
TC74HC04P
TC74HC393P
TC74HC74P



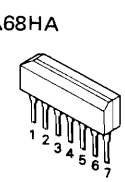
PCM56P-K

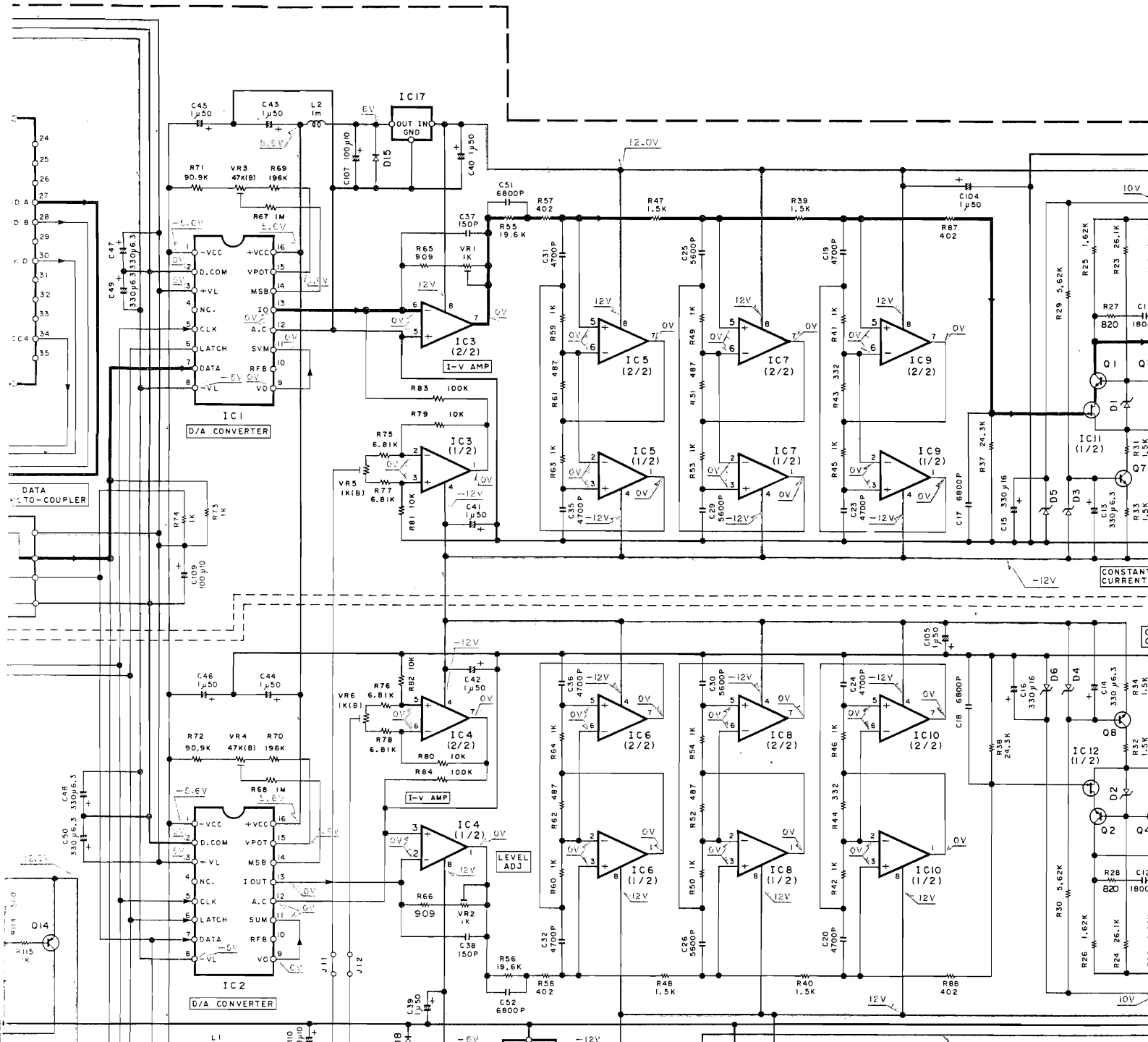


SM5804B



μPA68HA



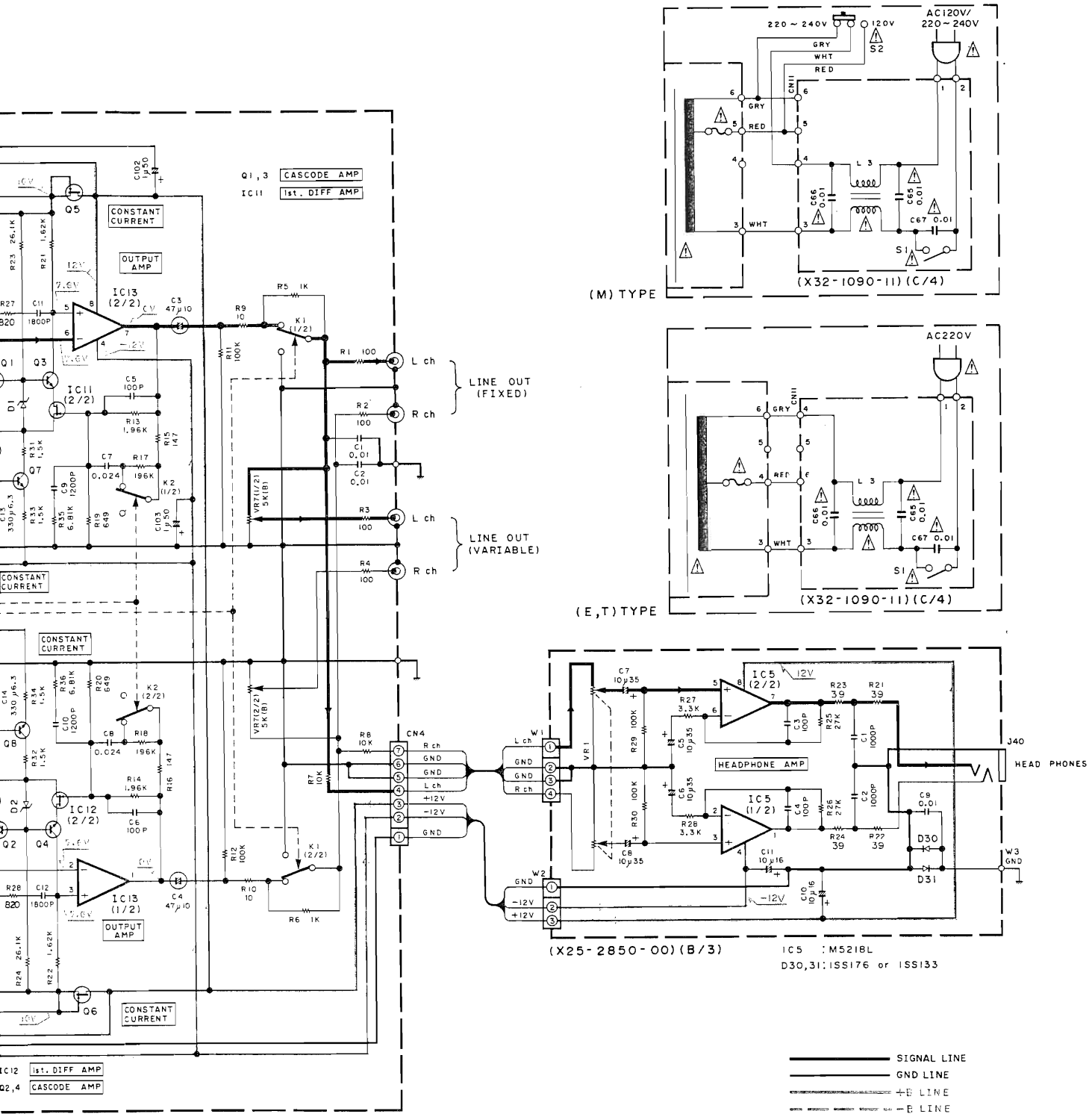


(X25-2860-11)(A/2)			
IC1, 2	: PCM56P-K	Q1~4, 7, 8	: 2
IC3~10, 13	: NJM5532D-D	Q5, 6	: 2
IC11, 12	: μPA68HA	Q10~13	: D
IC14	: SM5804B	Q14	: 2
IC15	: TC74HC04F		
IC16	: TA79L006P	D1~4	: R
IC17	: TA78L006AP	D5, 6, 14	: R
		D8, 12, 13, 15	: I

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

e DC voltages are as measured with a h voltmeter. Values may vary slightly du between individual instruments or/and u

Remarks : These voltages are the



(M) TYPE (X32-1090-11)(C/4)

(E,T) TYPE (X32-1090-11)(C/4)

(X25-2850-00)(B/3)

IC5 : M5218L
D30,31: ISS176 or ISS133

SIGNAL LINE
GND LINE
+B LINE
-B LINE

: 2SC945(A)(Q,P)
: 2SK170(V)
: DTC114YFF
: 2SA733(A)(Q,P)

: RD5.1JS(B) or HZS5.1S(B)
: RD10ES(B) or HZS10N(B)
,15 : ISS133 or ISS176

DP-3300D(K)(2/2)

s with a high impedance voltmeter. Values may vary due to variations between units.

Les tensions c.c. doivent être mesurées avec un voltmètre à haute impédance. Les valeurs peuvent différer légèrement du fait des variations inhérentes aux appareils et aux instruments de mesure individuels.

Die angegebenen Gleichspannungswerte wurden mit einem hochohmigen Voltmeter gemessen. Dabei schwanken die Meßwerte aufgrund von Unterschieden zwischen einzelnen Instrumenten oder Geräten u.U. geringfügig.

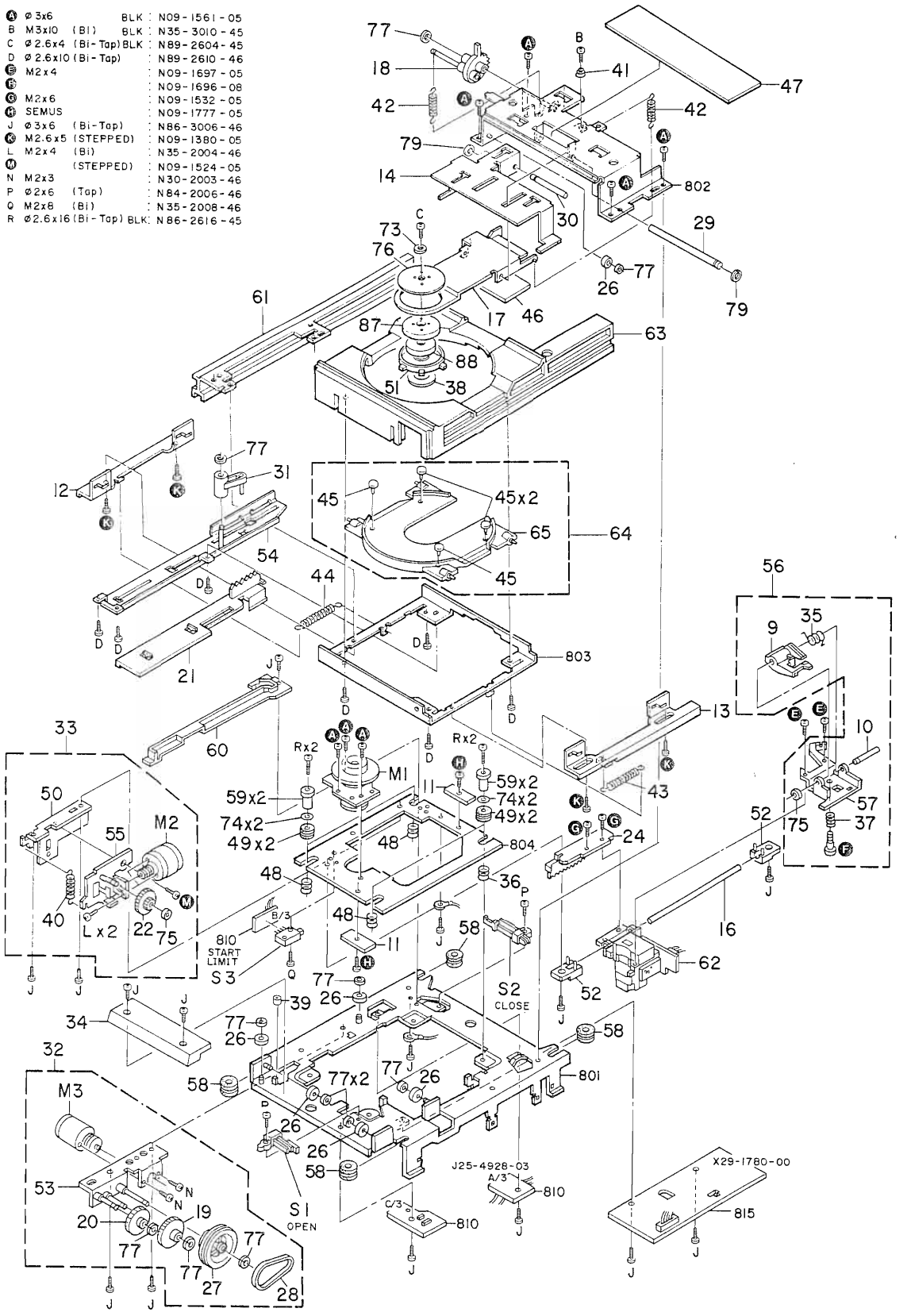
s are the values in STOP mode

DP-3300D

KENWOOD

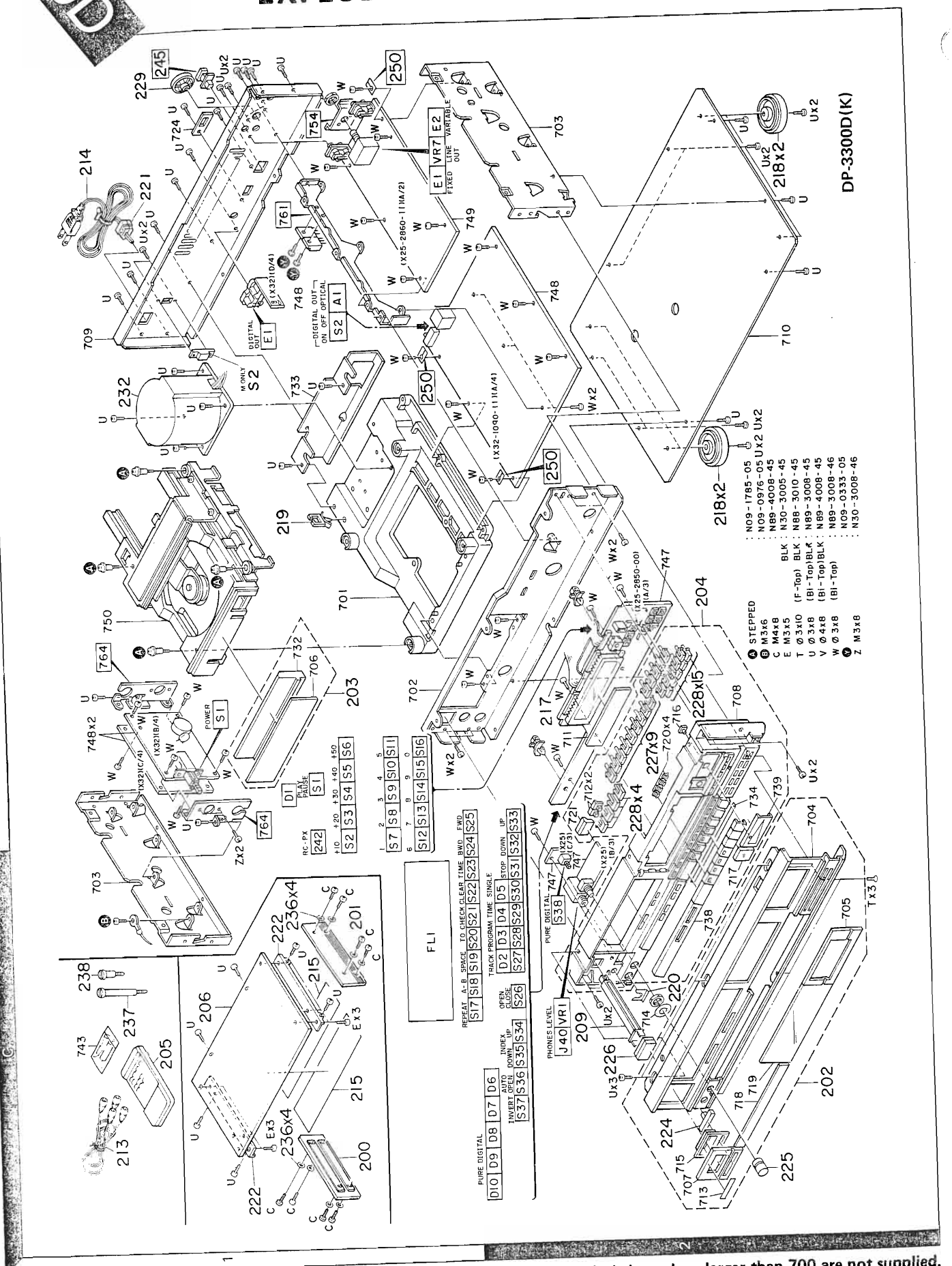
EXPLODED VIEW (MECHANISM)

A	Ø3x6		BLK	: N09-1561-05
B	M3x10	(BI)	BLK	: N35-3010-45
C	Ø2.6x4	(Bi-Tap)	BLK	: N89-2604-45
D	Ø2.6x10	(Bi-Tap)		: N89-2610-46
E	M2x4			: N09-1697-05
F				: N09-1696-08
G	M2x6			: N09-1532-05
H	SEMUS			: N09-1777-05
J	Ø3x6	(Bi-Tap)		: N86-3006-46
K	M2.6x5	(STEPPED)		: N09-1380-05
L	M2x4	(Bi)		: N35-2004-46
M		(STEPPED)		: N09-1524-05
N	M2x3			: N30-2003-46
P	Ø2x6	(Tap)		: N84-2006-46
Q	M2x8	(Bi)		: N35-2008-46
R	Ø2.6x16	(Bi-Tap)	BLK	: N86-2616-45



DP-3300D(K)

EXPLODED VIEW (UNIT)



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

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			DP-3300D			
200	1C		A50-0141-03	SIDE PLATE (L)		
201	1C		A50-0142-03	SIDE PLATE (R)		
202	2C	*	A20-5011-02	PANEL ASSY		
203	1D	*	A21-0982-04	DRESSING PANEL ASSY(TRAY)		
204	2D	*	A22-0598-02	SUB PANEL ASSY		
205	1C	*	A70-0152-05	REMOTE CONTROLLER ASSY		
206	1C		A52-0099-02	TOP PLATE		
-			B46-0092-03	WARRANTY CARD	K	
-			B46-0121-03	WARRANTY CARD	P	
-			B46-0122-13	WARRANTY CARD	E	
-			B46-0143-03	WARRANTY CARD	T	
-		*	B50-6578-10	INSTRUCTION MANUAL(ENGLISH)	KPME	
-		*	B50-6579-10	INSTRUCTION MANUAL(FRENCH)	PME	
-		*	B50-6580-10	INSTRUCTION MANUAL(SPANISH)	M	
-		*	B50-6581-00	INSTRUCTION MANUAL(ENGLISH)	T	
-		*	B50-6582-10	INSTRUCTION MANUAL(G,D,I)	E	
-			B58-0269-04	CAUTION CARD	K	
-			B58-0400-04	CAUTION CARD		
-		*	B58-0833-04	CAUTION CARD		
209	2C	*	D21-1157-04	EXTENSION SHAFT		
213	1C		E30-0505-05	AUDIO CORD		
⚠ 214	1E		E30-0459-05	AC POWER CORD	E	
⚠ 214	1E		E30-0780-05	AC POWER CORD	KP	
⚠ 214	1E		E30-0812-05	AC POWER CORD	M	
⚠ 214	1E		E30-1416-05	AC POWER CORD	T	
215	1C		G16-0140-03	SHEET (TOP PLATE)		
-		*	H01-7410-04	ITEM CARTON CASE		
-		*	H10-3379-02	POLYSTYRENE FOAMED FIXTURE(L)		
-		*	H10-3380-02	POLYSTYRENE FOAMED FIXTURE(R)		
-			H20-0417-04	PROTECTION COVER(460X370X360)	M	
-			H25-0232-04	PROTECTION BAG (235X350X0.03)		
-		*	H25-0289-04	PROTECTION BAG (850X400X0.05)	KPTE	
217	2D	*	J25-4925-03	PRINTED WIRING BOARD(FPC)		
218	2D,2E	*	J02-0188-15	INSULATOR		
219	1D	*	J19-2808-05	HOLDER		
220	2C		J21-3326-05	JACK MOUNTING HARDWARE		
⚠ 221	1E		J42-0083-05	POWER CORD BUSHING		
222	1C		J21-3898-03	MOUNTING HARDWARE(TOP PLATE)		
-			J61-0033-05	WIRE BAND		
-			J61-0070-05	WIRE BAND		
-			J61-0307-05	WIRE BAND		
224	2C		K27-1514-04	KNOB (BUTTON) PURE DIGITAL		
225	2C		K29-1641-04	KNOB (LEVEL)		
226	2C		K29-2516-04	KNOB (BUTTON) POWER		
227	2D		K29-2546-04	KNOB (BUTTON)		
228	2D		K29-2581-04	KNOB (BUTTON) CHANNEL,ETC		
229	1E	*	K29-2584-04	KNOB (OUT VR)		
⚠ 232	1E	*	L01-7404-05	POWER TRANSFORMER		

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236	1C		N19-1040-04	FLAT WASHER (SIDE PLATE)		
237	1C	*	N09-1691-05	STEPPED SCREW (LONG)		
238	1C	*	N09-1735-05	STEPPED SCREW (SHORT)		
A	1D	*	N09-1785-05	STEPPED SCREW (MECHA)		
B	1C		N09-0976-05	TAPTITE SCREW (M3X6)		
⚠ S2	1E		S31-2083-05	SLIDE SWITCH (POWER TYPE)	M	
DISPLAY UNIT (X25-2850-00)						
D1	1D	*	B30-1172-05	LED (PLAY/PAUSE)		
D2 -10	2C,1D		B30-1012-05	LED(SLP-981C-50)PURE DIGITAL		
C1 ,2			CF92FV1H102J	MF 1000PF J		
C3 ,4			C91-0745-05	CERAMIC 100PF K		
C5 -8			CE04KW1V100M	ELECTRO 10UF 35WV		
C9			C91-0769-05	CERAMIC 0.01UF M		
C10 ,11			CE04JW1C100M	ELECTRO 10UF 16WV		
C12			CK45FB1H102K	CERAMIC 1000PF K		
J40	2C		E11-0127-05	PHONE JACK (3P)		
VR1	2C	*	R10-4027-05	POTENTIOMETER (LEVEL)		
S1 -37	2C,1D		S40-1064-05	PUSH SWITCH		
S38	2C		S40-2323-05	PUSH SWITCH (PURE DIGITAL)		
D11 -15			1SS133	DIODE		
D11 -15			1SS176	DIODE		
D16 -29			1SS133	DIODE		
D16 -29			1SS176	DIODE		
D30 ,31			1SS133	DIODE		
D30 ,31			1SS176	DIODE		
FL1	1C	*	CP5294GR	FLUORESCENT INDICATOR TUBE		
IC1		*	TC74HC74F	IC(D-FLIP FLOP)		
IC2			TD62554S	IC(4CH TRANSISTOR ARRAY)		
IC3		*	TC74HC174F	IC(D-FLIP FLOP)		
IC4		*	TC74HC74F	IC(D-FLIP FLOP)		
IC5			M5218L	IC(OP AMP X2)		
Q1 -4		*	DTC143XN	DIGITAL TRANSISTOR		
Q5		*	2SD1302(S,T)	TRANSISTOR		
242	1C		W02-0719-05	ELECTRIC CIRCUIT MODULE		
DAC UNIT (X25-2860-11)						
C1 ,2			CF92FV1H103J	MF 0.010UF J		
C3 ,4			C90-1334-05	NP-ELEC 47UF 10WV		
C5 ,6			CQ09FS1H101JZS	POLYSTY 100PF J		
C7 ,8		*	CQ93HP2A243J	MYLAR 0.024UF J		
C9 ,10			CQ93HP2A122J	MYLAR 1200PF J		
C11 ,12		*	CQ09FS1H182JZS	POLYSTY 1800PF J		
C13 ,14			CE04KW0J331M	ELECTRO 330UF 6.3WV		
C15 ,16			CE04KW1C331M	ELECTRO 330UF 16WV		
C17 ,18		*	CQ93HP2A682G	MYLAR 6800PF G		
C19 ,20			CQ93HP2A472J	MYLAR 4700PF J		
C23 ,24			CQ93HP2A472J	MYLAR 4700PF J		
C25 ,26			CQ93HP2A562J	MYLAR 5600PF J		
C29 ,30			CQ93HP2A562J	MYLAR 5600PF J		
C31 ,32			CQ93HP2A472J	MYLAR 4700PF J		
C35 ,36			CQ93HP2A472J	MYLAR 4700PF J		

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C37 ,38			CQ09FS1H151JZS	POLYSTY 150PF J		
C39 -46			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C47 -50			CE04KW0J331M	ELECTRO 330UF 6.3WV		
C51 ,52		*	CQ93HP2A682G	MYLAR 6800PF G		
C53 ,54			CF92FV1H472J	MF 4700PF J		
C100,101		*	C90-1471-05	ELECTRO 4700UF 16WV		
C102-105			CE04KW1H010M	ELECTRO 1.0UF 50WV		
C106			CC45FSL1H151J	CERAMIC 150PF J		
C107-110			CE04KW1A101M	ELECTRO 100UF 10WV		
C111			CF92FV1H103J	MF 0.010UF J		
C112			CE04KW1A101M	ELECTRO 100UF 10WV		
C113			CF92FV1H103J	MF 0.010UF J		
250	1E		E23-0149-05	TERMINAL		
E1 ,2	1E		E13-0230-05	PHONO JACK(2P) FIXED,VARIABLE		
L1 ,2			L40-1021-13	SMALL FIXED INDUCTOR(1.0MH,K)		
R1 -4			RN14BK2C1000F	RN 100.0 F 1/6W		
R5 ,6			RN14BK2C1001F	RN 1.00K F 1/6W		
R7 ,8			RN14BK2C1002F	RN 10.0K F 1/6W		
R9 ,10			RN14BK2C10R0F	RN 10.0 F 1/6W		
R11 ,12			RN14BK2C1003F	RN 100K F 1/6W		
R13 ,14			RN14BK2C1961F	RN 1.96K F 1/6W		
R15 ,16			RN14BK2C1470F	RN 147.0 F 1/6W		
R17 ,18		*	RN14BK2C1963F	RN 196K F 1/6W		
R19 ,20		*	RN14BK2C6490F	RN 649.0 F 1/6W		
R21 ,22			RN14BK2C1621F	RN 1.62K F 1/6W		
R23 ,24			RN14BK2C2612F	RN 26.1K F 1/6W		
R25 ,26			RN14BK2C1621F	RN 1.62K F 1/6W		
R29 ,30			RN14BK2C5621F	RN 5.62K F 1/6W		
R31 -34		*	RN14BK2C1501F	RN 1.50K F 1/6W		
R35 ,36			RN14BK2C6811F	RN 6.81K F 1/6W		
R37 ,38		*	RN14BK2C2432F	RN 24.3K F 1/6W		
R39 ,40		*	RN14BK2C1501F	RN 1.50K F 1/6W		
R41 ,42			RN14BK2C1001F	RN 1.00K F 1/6W		
R43 ,44		*	RN14BK2C3320F	RN 332.0 F 1/6W		
R45 ,46			RN14BK2C1001F	RN 1.00K F 1/6W		
R47 ,48		*	RN14BK2C1501F	RN 1.50K F 1/6W		
R49 ,50			RN14BK2C1001F	RN 1.00K F 1/6W		
R51 ,52		*	RN14BK2C487DF	RN 487.0 F 1/6W		
R53 ,54			RN14BK2C1001F	RN 1.00K F 1/6W		
R55 ,56		*	RN14BK2C1962F	RN 19.6K F 1/6W		
R57 ,58		*	RN14BK2C4020F	RN 402.0 F 1/6W		
R59 ,60			RN14BK2C1001F	RN 1.00K F 1/6W		
R61 ,62		*	RN14BK2C4870F	RN 487.0 F 1/6W		
R63 ,64			RN14BK2C1001F	RN 1.00K F 1/6W		
R65 ,66			RN14BK2C9090F	RN 909.0 F 1/6W		
R69 ,70		*	RN14BK2C1963F	RN 196K F 1/6W		
R71 ,72			RN14BK2C9092F	RN 90.9K F 1/6W		
R75 -78			RN14BK2C6811F	RN 6.81K F 1/6W		
R79 -82			RN14BK2C1002F	RN 10.0K F 1/6W		
R83 ,84			RN14BK2C1003F	RN 100K F 1/6W		
R87 ,88		*	RN14BK2C4020F	RN 402.0 F 1/6W		
VR1 ,2		*	R12-1054-05	TRIMMING POT. (VCO,LEVEL)		
VR3 ,4		*	R12-3083-05	TRIMMING POT. (MSB ADJ)		

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VR5 ,6		*	R12-1054-05	TRIMMING POT. (LSB ADJ)		
VR7	1E	*	R10-2002-05	POTENTIOMETER (LINE OUT)		
K1 ,2			S51-2074-05	MAGNETIC RELAY		
PH1		*	T95-0035-05	OPTO ISOLATOR		
PH2 ,3		*	T95-0036-05	OPTO ISOLATOR		
D1 -4		*	HZS5.1S(B)	ZENER DIODE		
D1 -4			RD5.1JS(B)	ZENER DIODE		
D5 ,6		*	HZS10N(B)	ZENER DIODE		
D5 ,6		*	RD10ES(B)	ZENER DIODE		
D8			1SS133	DIODE		
D8			1SS176	DIODE		
D12 ,13			1SS133	DIODE		
D12 ,13			1SS176	DIODE		
D14		*	HZS10N(B)	ZENER DIODE		
D14		*	RD10ES(B)	ZENER DIODE		
D15			1SS133	DIODE		
D15			1SS176	DIODE		
IC1 ,2		*	PCM56P-K	IC(DA CONVERTER)		
IC3 -10			NJM5532D-D	IC(OP AMP X2)		
IC11,12		*	UPA68HA	DUAL FET		
IC13			NJM5532D-D	IC(OP AMP X2)		
IC14		*	SM5804B	IC(DIGITAL FILTER FOR CD)		
IC15		*	TC74HC04F	IC(HEX INVERTER)		
IC16		*	TA79L006P	IC(VOLTAGE REGULATOR/ +24V)		
IC17		*	TA78L006AP	IC(VOLTAGE REGULATOR/ +6V)		
IC18,19		*	TC74HC74P	IC(D-FLIP FLOP)		
IC20		*	TC74HC393P	IC(DUAL BINARY COUNTER)		
IC21		*	TC74HC04P	IC(HEX INVERTER)		
Q1 -4			2SC945(A)(Q,P)	TRANSISTOR		
Q5 ,6			2SK170(V)	FET		
Q7 ,8			2SC945(A)(Q,P)	TRANSISTOR		
Q10 -13			DTC114YFF	DIGITAL TRANSISTOR		
Q14			2SA733(A)(Q,P)	TRANSISTOR		

CD PLAYER UNIT (X32-1090-11)

C1			CF92FV1H104J	MF	0.10UF	J	
C2			CF92FV1H222J	MF	2200PF	J	
C3			CF92FV1H472J	MF	4700PF	J	
C4			C90-1349-05	NP-ELEC	1UF	50WV	
C5			CF92FV1H273J	MF	0.027UF	J	
C6			C91-0769-05	CERAMIC	0.01UF	M	
C7			C90-1333-05	NP-ELEC	10UF	25WV	
C8			CF92FV1H153J	MF	0.015UF	J	
C9			CK45FF1H103Z	CERAMIC	0.010UF	Z	
C10			CC45FSL1H470J	CERAMIC	47PF	J	
C11			CF92FV1H152J	MF	1500PF	J	
C12			CF92FV1H474J	MF	0.47UF	J	
C13			C90-1349-05	NP-ELEC	1UF	50WV	
C14			CK45FF1H103Z	CERAMIC	0.010UF	Z	
C15			CC45FUJ1H330J	CERAMIC	33PF	J	
C16			CC45FUJ1H050C	CERAMIC	5.0PF	C	
C17			CC45FUJ1H221J	CERAMIC	220PF	J	
C18			CK45FB1H222K	CERAMIC	2200PF	K	
C19			CK45FB1H222K	CERAMIC	2200PF	K	

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C20 ,21			CE04KW1A101M	ELECTRO 100UF 10WV		
C22			CC45FSL1H101J	CERAMIC 100PF J		
C23			CF92FV1H563J	MF 0.056UF J		
C24			CE04KW1H0R1M	ELECTRO 0.1UF 50WV		
C25			CF92FV1H103J	MF 0.010UF J		
C26			C91-0769-05	CERAMIC 0.01UF M		
C27			CK45FB1H332K	CERAMIC 3300PF K		
C28 ,29			CK45FF1H103Z	CERAMIC 0.010UF Z		
C30			C91-0745-05	CERAMIC 100PF K		
C31 ,32			CE04KW1C330M	ELECTRO 33UF 16WV		
C33			C90-1349-05	NP-ELEC 1UF 50WV		
C34			CE04KW1C330M	ELECTRO 33UF 16WV		
C36 ,37			CK45FF1H103Z	CERAMIC 0.010UF Z		
C38			C90-1350-05	NP-ELEC 2.2UF 50WV		
C39 ,40			C91-0717-05	CERAMIC 4.7PF K		
C41			CE04KW0J102M	ELECTRO 1000UF 6.3WV		
C42			C91-0769-05	CERAMIC 0.01UF M		
C43			CE04KW1C330M	ELECTRO 33UF 16WV		
C44			CE04KW1V100M	ELECTRO 10UF 35WV		
C45			C90-1332-05	NP-ELEC 10UF 25WV		
C46			C90-1333-05	NP-ELEC 10UF 25WV		
C47			CE04KW0J102M	ELECTRO 1000UF 6.3WV		
C48 ,49			CK45FF1H103Z	CERAMIC 0.010UF Z		
C50 ,51			CE04KW1H221M	ELECTRO 220UF 50WV		
C52 ,53			CE04KW1E332M	ELECTRO 3300UF 25WV		
C54 ,55			CE04KW0J102M	ELECTRO 1000UF 6.3WV		
C56 ,57			CE04KW1E332M	ELECTRO 3300UF 25WV		
C58 ,59			CE04KW1E101M	ELECTRO 100UF 25WV		
C60			CE04KW1A101M	ELECTRO 100UF 10WV		
C61 -63			CE04KW1C330M	ELECTRO 33UF 16WV		
C64			CK45FF1H103Z	CERAMIC 0.010UF Z		
⚠ C65 -67			C91-0647-05	CERAMIC 0.01UF P		
C68 ,69			CE04KW1C330M	ELECTRO 33UF 16WV		
C70			C91-0733-05	CERAMIC 33PF J		
C71			C91-0769-05	CERAMIC 0.01UF M		
C72			CK45FF1H103Z	CERAMIC 0.010UF Z		
C73			CC45FCH1H150J	CERAMIC 15PF J		
C74			CE04KW1A101M	ELECTRO 100UF 10WV		
C75			C91-0769-05	CERAMIC 0.01UF M		
C76			CE04KW1A101M	ELECTRO 100UF 10WV		
C77			CF92FV1H333J	MF 0.033UF J		
C78			CC45FCH1H150J	CERAMIC 15PF J		
C79			CF92FV1H564J	MF 0.56UF J		
E1	1E	*	E13-0130-05	PHONO JACK (DIGITAL OUTPUT		
245	1E	*	F07-0499-04	COVER		
L1			L40-1021-12	SMALL FIXED INDUCTOR(1.0MH,K)		
L2			L32-0328-15	OSCILATING COIL		
⚠ L3		*	L79-0733-05	LINE FILTER		
L4			L40-1021-12	SMALL FIXED INDUCTOR(1.0MH,K)		
L5		*	L39-0142-05	MATCHING COIL		
L6 ,7		*	L40-1011-17	SMALL FIXED INDUCTOR(100UH,K)		
L8 ,9			L40-1001-17	SMALL FIXED INDUCTOR(10UH,K)		
L10 ,11		*	L40-1011-17	SMALL FIXED INDUCTOR(100UH,K)		

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X1			L78-0209-05	RESONATOR (4.194MHZ)		
X2		*	L77-1114-05	CRYSTAL RESONATOR		
Y	1E		N09-0333-05	TAPPING SCREW (Ø3X12)		
CP1 ,2			R90-0272-05	MULTI-COMP 100KX12 J 1/6W		
R56			RS14KB3A1R0J	FL-PROOF RS 1.0 J 1W		
R58 ,59		*	RS14KB3A6R8J	FL-PROOF RS 6.8 J 1W		
R60 ,61		*	RN14BK2C3482F	RN 34.8K F 1/6W		
R62			RN14BK2C3832F	RN 38.3K F 1/6W		
R64			RN14BK2C3832F	RN 38.3K F 1/6W		
R111,112			RS14KB3D120J	FL-PROOF RS 12 J 2W		
R122			RS14KB3A472J	FL-PROOF RS 4.7K J 1W		
R128,129			RS14KB3D2R7J	FL-PROOF RS 2.7 J 2W		
⚠ S1	1D		S40-1103-05	PUSH SWITCH (POWER TYPE)		
S2	1E		S31-2094-05	SLIDE SWITCH (DIGITAL OUTPUT		
D1 -4			1SS133	DIODE		
D1 -4			1SS176	DIODE		
D5			HZS6.8N(B2)	ZENER DIODE		
D5			RD6.8ES(B2)	ZENER DIODE		
D6 ,7			DSM1A1	DIODE		
D8			HZS8.2N(B)	ZENER DIODE		
D8			RD8.2ES(B)	ZENER DIODE		
D9			1SS133	DIODE		
D9			1SS176	DIODE		
D10			1SS133	DIODE		
D10			1SS176	DIODE		
D11			HZS7.5S(B)	ZENER DIODE		
D11			RD7.5JS(B)	ZENER DIODE		
D12 -15			1SS133	DIODE		
D12 -15			1SS176	DIODE		
D18 -20			1SS133	DIODE		
D18 -20			1SS176	DIODE		
D21			HZS5.6N(B2)	ZENER DIODE		
D21			RD5.6ES(B2)	ZENER DIODE		
D22 ,23			1B4B41	DIODE		
D24			1SV147	VARISTOR		
D25			1SS133	DIODE		
D25			1SS176	DIODE		
IC1			CX20108	IC(CD SERVO)		
IC2			M51951ASL	IC(SYSTEM RESET)		
IC3			CX23035	IC(DIGITAL SIGNAL PROCESSOR)		
IC4			CXK5816M	IC(2K BYTE X8 RAM (CMOS))		
IC4			HM6116FP-4	IC(16K RAM)		
IC5 ,6			NJM4558D	IC(OP AMP X2)		
IC7			TC74HC00P	IC(QUAD 2-INPUT NAND GATE)		
IC8		*	TC74HC08P	IC(AND X2)		
IC9		*	CXD1075P	IC(DIGITAL AUDIO DATA)		
IC10			TC74HCU04P	IC(HEX INVERTER)		
IC11		*	UPD75208CW-040	IC(MICROPROCESSOR)		
IC12-15			LB1294	IC(6CH DARLINGTON DRIVER)		
IC16			AN7805F	IC(VOLTAGE REGULATOR/ +15V)		
IC17			AN7905F	IC(VOLTAGE REGULATOR/ -5V)		
IC18			AN7805F	IC(VOLTAGE REGULATOR/ +15V)		
IC19			AN7905F	IC(VOLTAGE REGULATOR/ -5V)		

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IC20			M5220P	IC(OP AMP X2)		
IC21			TC74HC74P	IC(D-FLIP FLOP)		
Q1			2SC1740S(Q,R)	TRANSISTOR		
Q1			2SC945(A)(Q,P)	TRANSISTOR		
Q2			STA341M	TRANSISTOR		
Q3			DTC124EN	DIGITAL TRANSISTOR		
Q4			DTA124EN	DIGITAL TRANSISTOR		
Q5		＊	2SC1923(R,O)	TRANSISTOR		
Q6			2SA733(A)(Q,P)	TRANSISTOR		
Q6			2SA933S(Q,R)	TRANSISTOR		
Q7			2SC1740S(Q,R)	TRANSISTOR		
Q7			2SC945(A)(Q,P)	TRANSISTOR		
Q8			2SC3246	TRANSISTOR		
Q9			2SA992(F,E)	TRANSISTOR		
Q10			2SC1845(F,E)	TRANSISTOR		
Q11			2SK246(Y,GR)	FET		
Q12			2SA733(A)(Q,P)	TRANSISTOR		
Q12			2SA933S(Q,R)	TRANSISTOR		
Q13			2SK246(Y,GR)	FET		
Q14			2SC1740S(Q,R)	TRANSISTOR		
Q14			2SC945(A)(Q,P)	TRANSISTOR		
Q15			2SA1286	TRANSISTOR		
Q16			2SC3246	TRANSISTOR		
Q17			2SA1286	TRANSISTOR		
Q18			2SC1740S(Q,R)	TRANSISTOR		
Q18			2SC945(A)(Q,P)	TRANSISTOR		
Q19			2SA733(A)(Q,P)	TRANSISTOR		
Q19			2SA933S(Q,R)	TRANSISTOR		
Q20			2SC1740S(Q,R)	TRANSISTOR		
Q20			2SC945(A)(Q,P)	TRANSISTOR		
Q21			2SA1286	TRANSISTOR		
Q22 ,23			2SD1266(P)	TRANSISTOR		
Q24			2SB941(P)	TRANSISTOR		
A1	1E	＊	W02-0737-05	TRANSMITTING ASSY		
MECHANISM ASS'Y (X92-1160-00)						
C1		＊	C90-1349-05	NP-ELEC 1UF 50WV		
C2 ,3			C91-0085-05	CERAMIC 0.022UF N		
9	2B	＊	D10-1761-08	LEVER		
10	2B	＊	D14-0162-04	ROLLER		
11	2A,3A	＊	D91-0071-04	SUB WEIGHT		
12	2A		D10-1266-03	SLIDER (L)		
13	2B		D10-1267-03	SLIDER (R)		
14	1A		D10-1545-03	SLIDER		
16	3B		D10-1270-14	ROD		
17	1B		D10-1546-03	ARM (CLAMPER)		
18	1A		D12-0105-15	CAM		
19	3A		D13-0159-08	GEAR		
20	3A		D13-0160-08	GEAR		
21	2A		D13-0161-03	GEAR		
22	3A		D13-0365-08	GEAR		
24	2B	＊	D13-0366-05	LACK (GEAR)		
26	3A,1B		D14-0107-04	ROLLER		
27	3A		D15-0220-08	PULLEY		

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28	3A		D16-0104-08	BELT		
29	1B		D21-1051-04	SHAFT		
30	1B		D21-1052-04	SHAFT		
31	2A		D32-0122-04	STOPPER		
32	3A	*	D40-0378-05	DRIVE MECHANISM ASSY(TRAY)		
33	2A	*	D40-0379-05	DRIVE MECHANISM ASSY(P.U)		
34	3A	*	F07-0503-04	COVER		
35	2B	*	G01-1916-08	TORSION COIL SPRING		
36	2B	*	G01-1924-04	COMPRESSION SPRING(FRONT-L)		
37	2B		G01-1926-08	COMPRESSION SPRING		
38	1B	*	G10-0113-04	NON-WOVEN FABRIC		
39	3A		G13-0189-04	CUSHION		
40	3A		G01-1915-08	EXTENSION SPRING		
41	1B		G01-0675-04	COMPRESSION SPRING		
42	1A,1B		G01-1523-04	EXTENSION SPRING(CLAMPER)		
43	2B		G01-1524-04	EXTENSION SPRING		
44	2A		G01-1525-04	EXTENSION SPRING		
45	2A,2B		G13-0182-04	CUSHION		
46	1B		G16-0117-04	SHEET (38X38X2)		
47	1B		G16-0134-04	SHEET (38X152X1)		
48	2A,3A	*	G01-1925-04	COMPRESSION SPRING		
49	2A,2B	*	J02-0192-05	INSULATOR		
50	2A		J21-3908-08	MOUNTING HARDWARE		
51	1A		J11-0066-14	CLAMPER		
52	2B,3B		J19-2153-04	HOLDER		
53	3A		J21-3507-08	MOUNTING HARDWARE ASSY		
54	2A		J21-3713-03	MOUNTING HARDWARE ASSY		
55	2A		J21-3909-08	MOUNTING HARDWARE		
56	2B	*	J21-3912-05	MOUNTING HARDWARE ASSY(MOTOR)		
57	2B	*	J21-3913-08	MOUNTING HARDWARE		
58	3A,3B	*	J42-0142-04	BUSHING (CHASSIS)		
59	2A,2B	*	J31-0282-04	COLLAR		
60	2A		J90-0143-03	GUIDE (STOPPER)		
61	1A		J90-0157-03	RAIL		
62	3B	*	J91-0315-05	PICKUP (DG-2)		
63	1B		J99-0029-02	TRAY		
64	2B		J99-0030-03	TRAY		
65	2B		J99-0031-03	TRAY		
-			J61-0307-05	WIRE BAND		
73	1A		N15-1026-45	FLAT WASHER (Ø2.6)		
74	2A,2B	*	N19-1072-04	FLAT WASHER		
75	3A		N19-0366-04	FLAT WASHER (Ø2.1)		
76	1A		N19-0945-04	FLAT WASHER (YOKE)		
77	1A,1B		N19-0891-04	FLAT WASHER (CHASSIS)		
79	1A,1B		N29-0207-04	RETAINING RING (Ø2.5)		
A	2A		N09-1561-05	TAPTITE SCREW (Ø3X6)MOTOR		
E	2B	*	N09-1697-05	MACHINE SCREW (M2X4)		
F	2B	*	N09-1696-08	MACHINE SCREW (AZIMUTH)		
G	2B		N09-1532-05	TAPTITE SCREW (M2X6)		
H	3A,2B	*	N09-1777-05	SEMS (TAPTITE SCREW)		
K	2A,2B		N09-1380-05	STEPPED SCREW (M2.6X5)		
M	3A		N09-1524-05	STEPPED SCREW		

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S1 ,2	3A,3B		S46-1045-05	LEAF SWITCH (OPEN/CLOSE)		
S3	3A	*	S40-1101-05	PUSH SWITCH (START LIMIT)		
B7	1A	*	T50-1036-04	YOKE		
B8	1B		T99-0222-05	MAGNET		
M1	2A	*	T42-0407-04	MOTOR ASSY (SPINDLE)		
M2	2A		T42-0405-08	MOTOR ASSY		
M3	3A		T42-0049-25	MOTOR ASSY		
CONTROL CIRCUIT UNIT (X29-1780-00)						
C1 ,2			C91-0725-05	CERAMIC 15PF J		
C3			CE04KW1C470M	ELECTRO 47UF 16WV		
C4		*	C91-0711-05	CERAMIC 1.5PF M		
C5			C91-0769-05	CERAMIC 0.01UF M		
C7			CE04JW0J470M	ELECTRO 47UF 6.3WV		
C8 ,9			C91-0769-05	CERAMIC 0.01UF M		
C10		*	CE04JW1V2R2M	ELECTRO 2.2UF 35WV		
C11			C91-0769-05	CERAMIC 0.01UF M		
C12		*	CE04JW1V2R2M	ELECTRO 2.2UF 35WV		
C13			CF92FV1H124J	MF 0.12UF J		
C14			CF92FV1H102J	MF 1000PF J		
C15			C91-0745-05	CERAMIC 100PF K		
C16			C91-0737-05	CERAMIC 47PF J		
C17			C91-0753-05	CERAMIC 470PF K		
C18			C91-0765-05	CERAMIC 0.0047UF M		
C19 ,20			CE04JW0J470M	ELECTRO 47UF 6.3WV		
VR1			R12-5046-05	TRIMMING POT. (100K) TE. BAL		
VR2			R12-3097-05	TRIMMING POT. (22K) FE. BAL		
VR3 ,4			R12-3096-05	TRIMMING POT. (10K) T/F GAIN		
D1 -5			1SS131	DIODE		
D1 -5			1SS176	DIODE		
IC1			CX-20109	IC(RF AMP FOR 3-BEAM PICK-UP)		
IC2			M5218P	IC(OP AMP X2)		
IC3			BU4053B	IC(3-INPUT 2CH MPX/DE-MPX)		
IC3			UPD4053BC	IC(3-INPUT 2CH MPX/DE-MPX)		
Q1 -3			2SC945(A)(Q,P)	TRANSISTOR		

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DP-3300D

SPECIFICATIONS

Audio

Frequency response	1 Hz ~ 20 kHz
Signal -to-Noise ratio	more than 105 dB
Dynamic range	more than 97 dB
Total harmonic distortion	0.001 % or less (1 kHz, THD) 0.003% (THD, + Noise)
Channel separation	more than 115 dB
Wow & flutter	Below measurable limit (±0.001 %, W PEAK)
Line output level	FIXED: 2.0 V VARIABLE: 0 ~ 2.0 V
Headphones output level/impedance	25 mW/32 ohms (With level control)
Digital output	Optical output: −15 dBm ~ −21 dBm (wave length 650 nm) Coaxial output: 0.5 Vp-p (75 Ω)

Format

Type	Compact disc player
Read system	Non-contact optical pick-up system
Laser pick-up	GaAlAs, λ = 800 nm
Spindle speed	About 500 rpm — 200 rpm
Error correction	Cross Interleave Read Solomon Code
Number of channels	2 channels

General

Power consumptions	25 W
Dimentions	W: 440 mm (17-5/16″) H: 108 mm (4-1/4″) D: 316 mm (12-7/16″)
Weight (Net)	10 kg (22 lb)

Accessories

RCA pin-plug cords	1
Remote control unit (RC-P3300D)	1
Batteries "R6" (AA)	2

Remote control unit

Model	RC-P3300D
System	Infrared beam pulse
Power requirements	DC 3 V: R6 (AA) × 2
Dimentions	H: 157 mm (6-3/16″) W: 68 mm (2-11/16″) D: 18 mm (11/16″)
Weight	115 g (0.253 lb) (With batteries)

Note:

We follow a policy of advancements in development. For this reason specifications may be changed without notice.

Note :

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S.A. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

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