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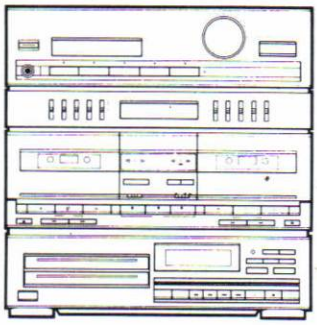
Service Manual



ORDER NO.
ARP1932

STEREO TWIN CD CASSETTE DECK AMPLIFIER

XD-Z53T

MODEL XD−Z53T HAS FOLLOWING VERSIONS:

Type	Power requirement	Export destination
HB	AC220V,240V (switchable)*	United Kingdom
HE	AC220V,240V (switchable)*	European continent
HEWZ	AC220V,240V (switchable)*	West Germany
KUC	AC120V only	U.S.A. and Canada

* Change the jumper wires of assembly board.

- This manual is applicable to the XD−Z53T/HB and HE types.
- As to the HE type, refer to page 22.
- As to the other types, refer to the applicable servise manuals.
- The XD−Z53T consists of a CD block and a deck amplifier block. For detalies, see page6. The CD block is descrived in pages23 to 82. The Deck amplifier block in pages 83 to 139.
- Ce manuel pour le servise comprend les explications en franćasis de réglage. (voir les pages 57 à 69 pour le bloc CD, et les pages 132 à 135 pour bloc de l'amplificateur.)
- Este manual de servicio trata del método ajuste escrite en español. (Vea las páginas79 a 82 para el bloque de CD, y las páginas136 a 139 para el bloque del amplificador/grabadora.)
- As to the system compositon,refer to the S−115CDT service manual(ARP1938)

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YV FEB. 1990 Printed in Japan

CONTENTS

1. SAFTEY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

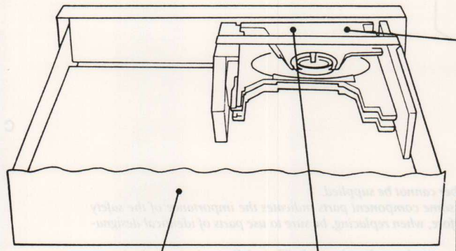
WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER :5mW
WAVELENGTH :780–785 nm

LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK (TWIN type)



HB model

CAUTION
INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM
PRW1018

HE model

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

CLASS 1
LASER PRODUCT
VRW-328

HE and HB models

Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF status of the U (S601) and L (S603) switches for detecting the disc clamp state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches U and L are OFF (H).
   Thus, the interlock will no longer function if switches U (S601) and L (S603) are deliberately shorted. Laser diode oscillation continues when pin 4, 5, or 29 of CXA1081S (IC1) is connected to ground or the terminals of Q1 are shorted to each other (fault condition).

2. If the fault condition described in 1 is induced with the cover open, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

2. SPECIFICATIONS

Twin CD cassette deck amplifier: XD-Z53T

Amplifier Section

DIN music power ··· 50 W + 50 W (1 kHz, T.H.D. 1 %, 8 ohms)
Continuous Power Output (DIN) ··· 33 W + 33 W (1 kHz, T.H.D. 1 %, 8 ohms)
Graphic equalizer frequency band ··· 100 Hz, 330 Hz, 1 kHz, 3.3 kHz, 10 kHz, ±7 dB
Signal-to-Noise Ratio (DIN, continuous Power/50 mW)
PHONO ··· 68 dB/60 dB
Total Harmonic Distortion
(40 Hz to 20,000 Hz, 15 W, 8 ohms)** ··· No more than 0.2 %
Input sensitivity/impedance
PHONO (MM) ··· 2.5 mV/47 kΩ
VIDEO ··· 150 mV/22 kΩ

Tape Deck Section

Systems ··· 4 track, 2-channel stereo
Heads ··· Recording/playback head × 1
Playback head × 1
Erasing head × 1
Motor ··· DC servo 2 speed motor × 2
Wow and Flutter ··· No more than 0.09 % (WRMS)
Fast Winding Time ··· Approximately 95 seconds (C-60 tape)
Frequency Response (−20 dB recording):
Normal tape ··· 35 Hz to 14,000 Hz ±6 dB (EIAJ)
CrO_2 tape ··· 35 Hz to 15,000 Hz ±6 dB (EIAJ)
Signal-to-Noise ratio
Dolby NR OFF ··· 56 dB (EIAJ)
Noise Reduction Effect
Dolby B type NR ON ··· More than 10 dB (at 5 kHz)

CD Section

Type ··· Compact disc digital audio system
Operating temperature ··· +5°C - +35°C (+41°F- +95°F)
Frequency response ··· 4 Hz - 20 kHz (+0.5 -1.5 dB)
S/N ··· 100 dB or more (EIAJ)
Dynamic range ··· 92 dB or more (EIAJ)
Channel separation ··· 93 dB or more (EIAJ)
Wow and flutter ··· Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Number of channels ··· 2 channels (stereo)

Miscellaneous

Power requirements ··· a.c. 240 Volts ~, 50/60 Hz
Power Consumption ··· 222 W
Dimensions ··· 360 (W) × 368 (H) × 341 (D) mm
Weight (without package) ··· 11.5 kg

Furnished Parts

Operating Instructions ··· 1
Remote control unit ··· 1
Dry cell batteries ··· 2
Control cord ··· 1

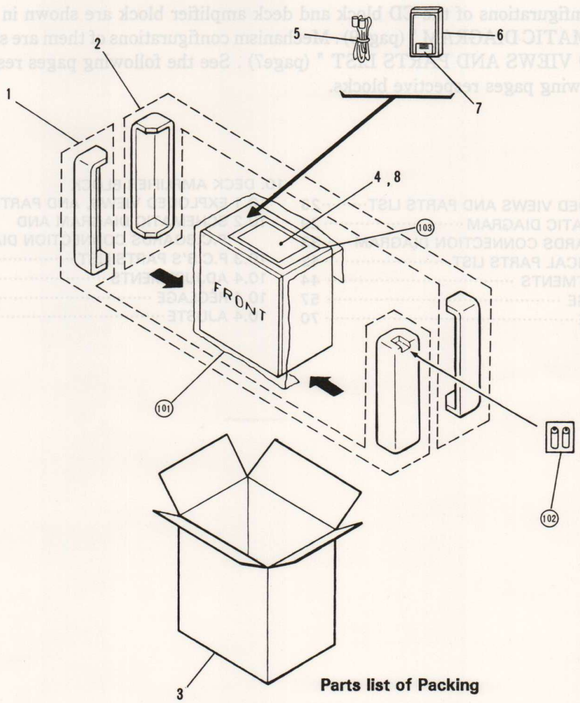
Accessories

EP Adaptor ··· 1

• *Specifications and design subject to possible modification without notice due to improvement.*

** *Measured By Audio Spectrum Analyzer.*

3. PACKING



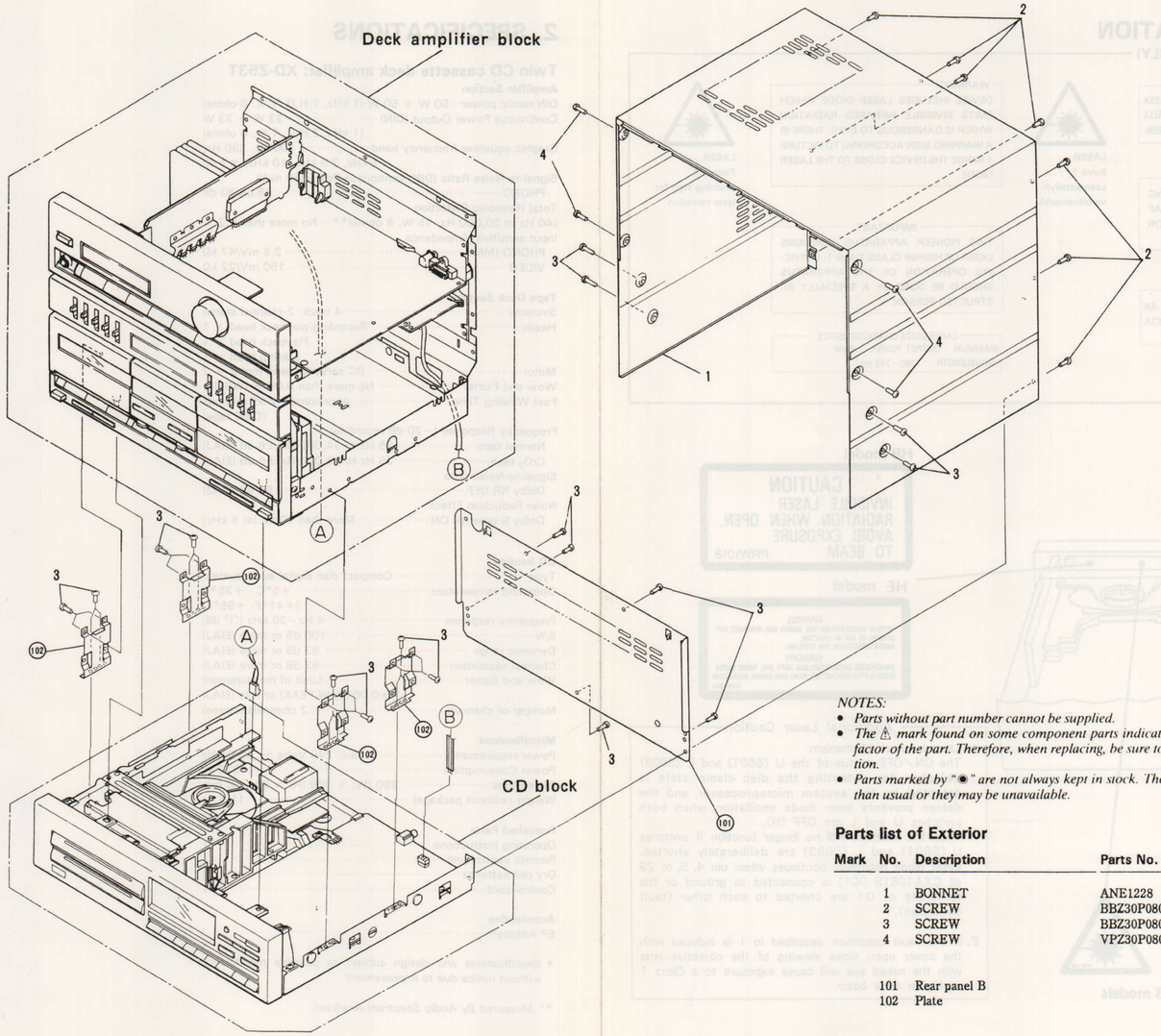
Parts list of Packing

Mark	No.	Description	Parts No.
	1	FRONT PAD (L.R)	AHA1327
	2	REAR PAD (L.R)	AHA1328
	3	PACKING CASE	AHD1803
	4	OPERATING INSTRUTIONS (English)	ARB1225
	5	CORD WITH PLUG	ADE−085
	6	REMOTE CONTROL UNIT (CU−DC019)	AXD1133
	7	BATTERY COVER	AZN1856
	8	CAUTION CARD	ARM1003
	101	SHEET	
	102	BATTERY	
	103	LITERATURE BAG	

4. CONFIGURATIONS OF CD BLOCK AND DECK AMPLIFIER BLOCK

Electrical configurations of the CD block and deck amplifier block are shown in " 4.2 OVER ALL SCHEMATIC DIAGRAM " (page9) . Mechanism configurations of them are shown in " 4.1 EXPLODED VIEWS AND PARTS LIST " (page7) . See the following pages respectively. See the following pages respective blocks.

4.1 EXPLODED VIEWS AND PARTS LIST

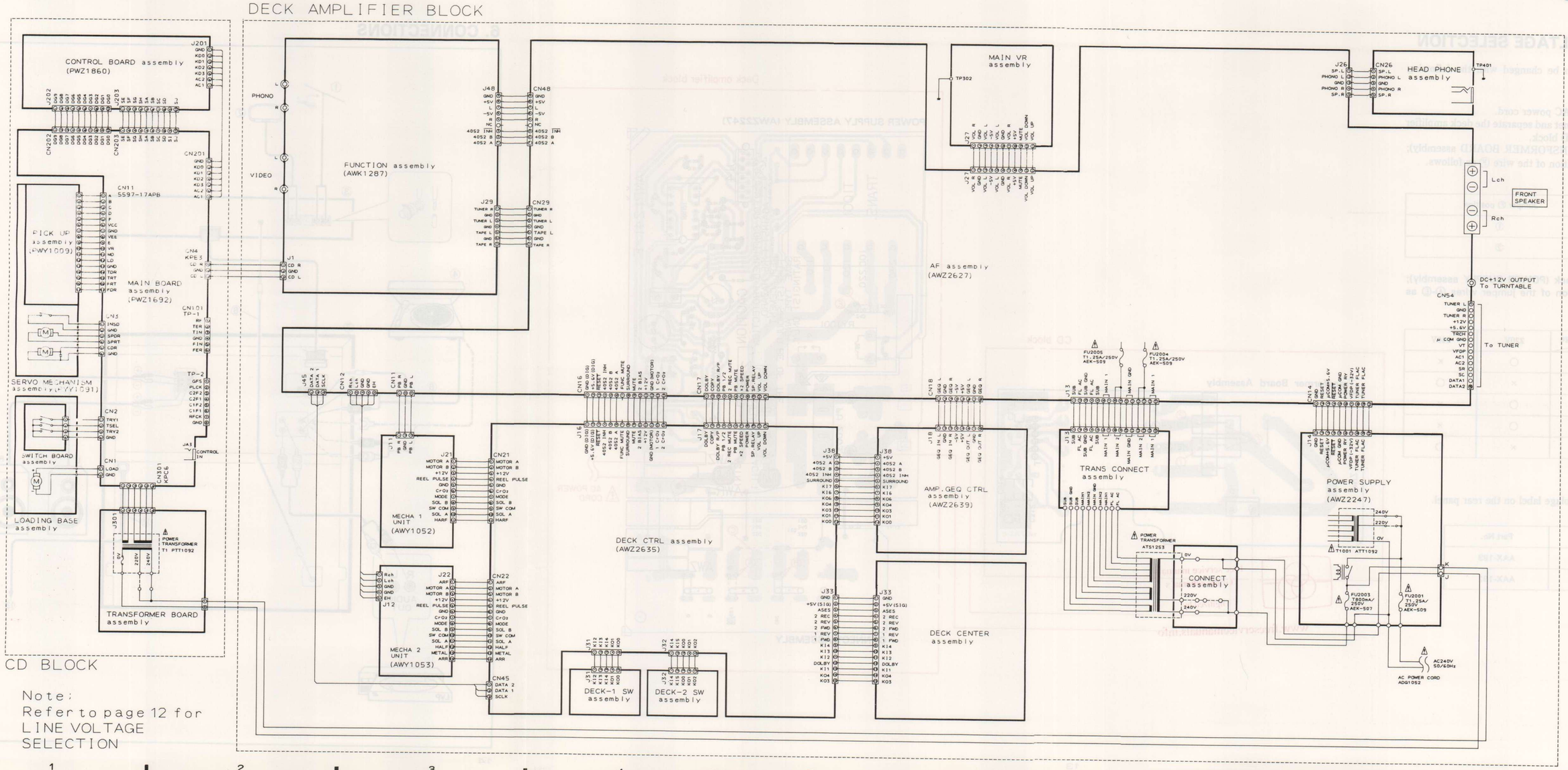


NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts list of Exterior

Mark	No.	Description	Parts No.
	1	BONNET	ANE1228
	2	SCREW	BBZ30P080FCU
	3	SCREW	BBZ30P080FZK
	4	SCREW	VPZ30P080FZK
	101	Rear panel B	
	102	Plate	

4.2 OVER ALL SCHEMATIC DIAGRAM



Note:
Refer to page 12 for
LINE VOLTAGE
SELECTION

5. LINE VOLTAGE SELECTION

- Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the bonnet and separate the deck amplifier block and the CD block.
3. CD block (TRANSFORMER BOARD assembly); change the position of the wire Ⓕ as follows.

Voltage	Jumper Ⓕ position
220V	①
240V	②

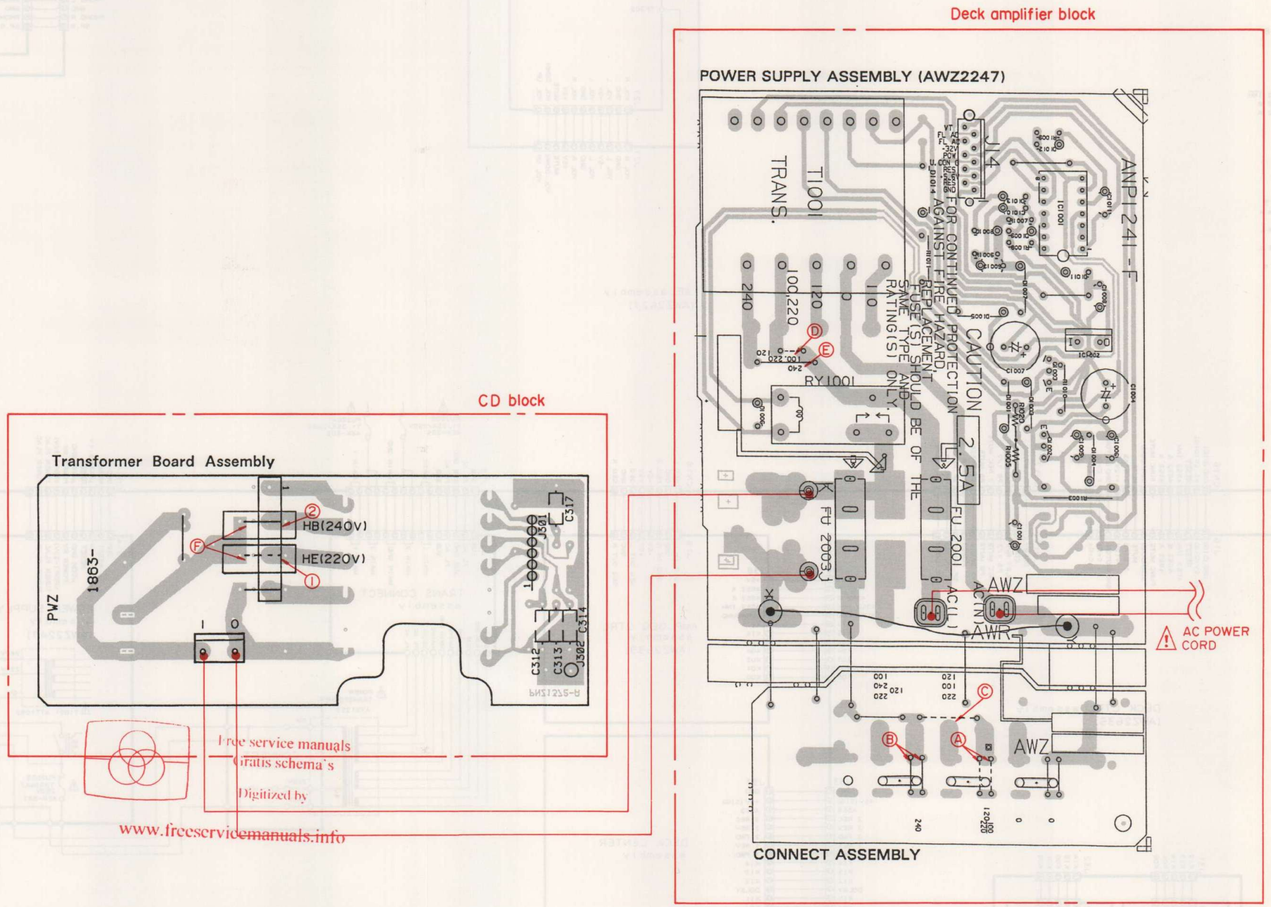
Deck amplifier block (POWER SUPPLY assembly); Change the position of the jumper wires Ⓐ-Ⓔ as follows.

Jumper wire \ Voltage	220V	240V
Ⓐ	○	×
Ⓑ	×	○
Ⓒ	○	×
Ⓓ	○	×
Ⓔ	×	○

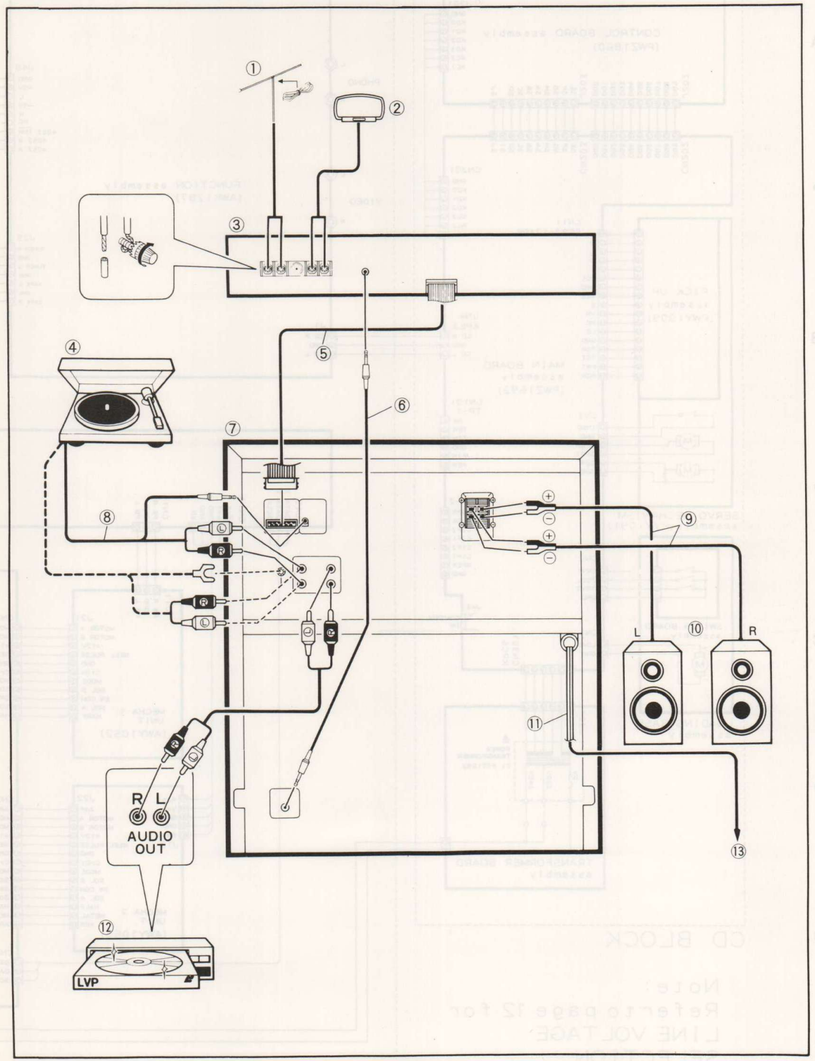
○: Be needed
×: Be needless

4. Stick the line volage label on the rear panel.

Description	Part No.
220Vlabel	AAX-193
240Vlabel	AAX-192



6. CONNECTIONS



Refer to page 3 for the connections diagram 1.
① Accessory FM T-type antenna
② Accessory AM loop antenna
③ FM/AM tuner (F-Z93L)
④ Turntable (PL-Z93)
⑤ Tuner input/output cord
⑥ Accessory control cord
⑦ Twin CD cassette deck amplifier
⑧ Turntable output cord
⑨ Speakers cord
⑩ Speaker system
⑪ Power cord
⑫ LD player or video cassette recorder (VCR)
⑬ AC wall socket

Plug the power cord into the AC wall socket outlet only after all the connections have been completed.

Proceed as follows with the set-up and connections.

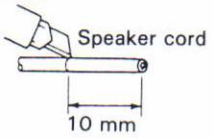
1. **Place the tuner on top of the CD cassette deck amplifier.**
2. **Connect the tuner input/output cord ⑤ to CD cassette deck amplifier.**
   TUNER CONNECTION
   Insert the connector until it locks, thus ensuring that it is connected. When disconnecting the connector, pull it in the opposite direction while pressing the left and right claws.
3. **Connect the FM T-type antenna ① and the AM loop antenna ② to the tuner's antenna terminals.**
   Connect the control cord ⑥
4. **Place the turntable on top of the tuner.**
5. **Connect the turntable's cords ⑧ to the CD cassette tape amplifier's jacks.**
   If using the turntable PL-Z93, connect the turntable's audio cords and power supply cord respectively to the CD cassette deck amplifier's PHONO jacks and DC 12V OUTPUT jack.
   If using a different turntable, connect its audio cord and ground cord.
6. **Use the "VIDEO" jacks for connection to the audio jacks of an LD player or VCR.**

NOTE:
- *Insert the plugs securely into the jacks. Improper connection can lead to sound distortion or malfunction.*
- *The white plug is for the left channel connection and the red plug for the right channel connection.*

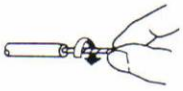
7. **Connect the speaker cords ⑨ to the SPEAKERS terminals.**
   Connect the "+" terminals on the CD cassette deck amplifier to the "+" terminals on the speakers, the "−" terminals on the CD cassette deck amplifier to the "−" terminals on the speakers.

Connecting the speaker cords.

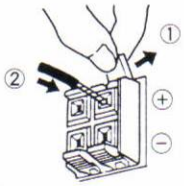
1. Cutter



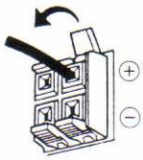
2. Twist the strands.



3. Push away.



4. Pull back.



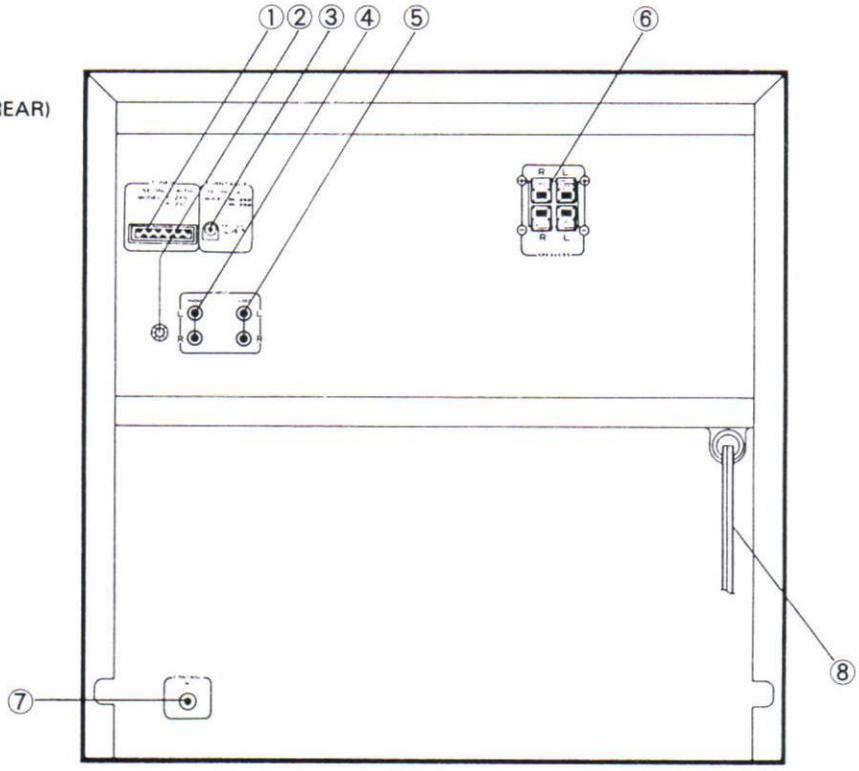
NOTE:
Do not allow the conductors of the cords to project out of the terminals or to come into contact with other conductors. A breakdown or failure may occur when conductors touch.

Speaker impedance
Connect speaker systems with a nominal impedance of between 6 and 16 Ω.

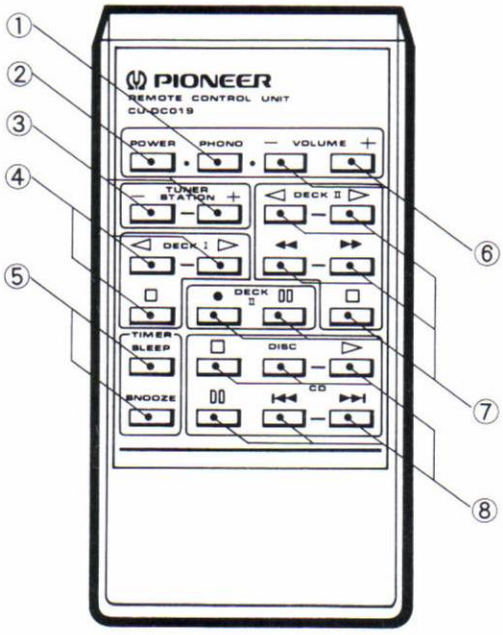
8. **Finally, connect the power cord ⑪ to the AC wall socket.**

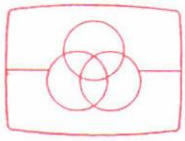
7. PANEL FACILITIES

XD-Z53T (REAR)

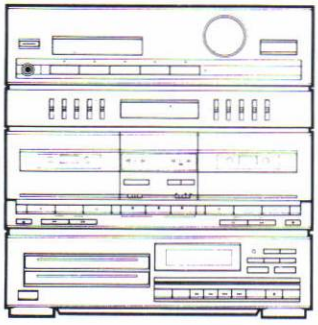


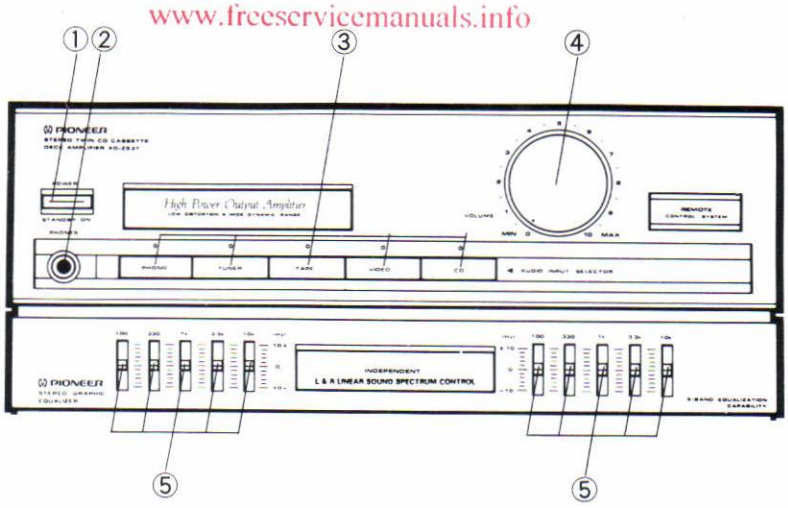
Remote control unit

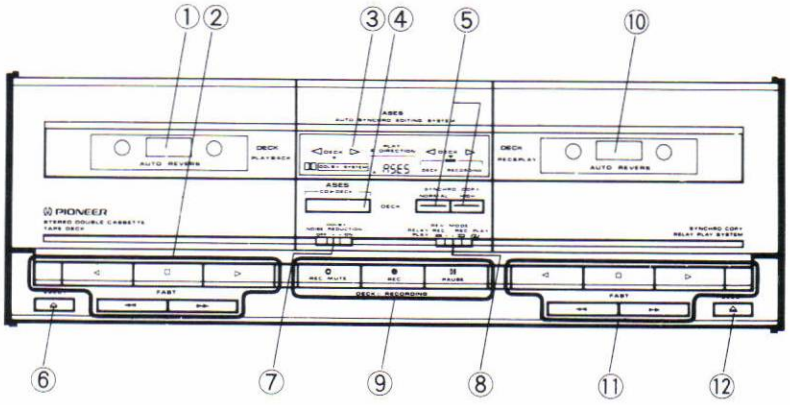




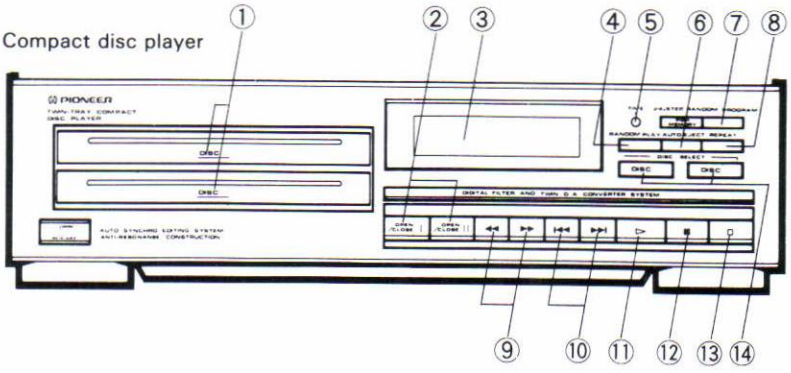
XD-Z53T (FRONT)







Compact disc player



REAR PANEL FACILITIES

Twin-CD cassette deck amplifier: XD-Z53T

① TUNER jacks
Connect the tuner input / output cord here.

② Ground terminal (GND)
Connect this to the ground terminal on the turntable (except for PL-Z93).

③ TURNTABLE (DC 12 V OUTPUT) jack
This jack supplies power to the turntable. (PL-Z93)

④ PHONO input jacks
Connect the output cord of the turntable to these jacks.

⑤ VIDEO input jacks
Connect to audio output jacks of LD player or VCR, etc.

⑥ SPEAKERS terminals
L: Connect the left speaker system as seen from the listening position.
R: Connect the right speaker system as seen from the listening position.

NOTE:
Connect a speaker system having a nominal impedance ranging from 6Ω to 16Ω

⑦ CONTROL IN jack
Connect to CD PLAYER CONTROL OUT jack of tuner (F-Z93L)

⑧ Power cord
Connect this to the AC wall socket.

FRONT PANEL FACILITIES

Twin-CD cassette deck amplifier: XD-Z53T

- Tapes can be played back on Deck I; tapes can be played back and recorded on Deck II.
- Sound can be recorded as adjusted by the graphic equalizer.

◪ Amplifier section/Graphic equalizer section

① POWER STANDBY/ON switch
This is the switch for electric power.
ON: When set to the ON position, power is supplied and the unit becomes operational.
STANDBY: When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain opetation readiness.
The tuner section display indicates only the time.

② PHONES (Headphone) jack
For stereo headphones.

NOTE:
There is no speaker output when headphones are plugged into the PHONES jack.

③ Input selector switches/indicators
[PHONO] Press to play records on a turntable connected to the PHONO jacks.
[TUNER] Press to listen to radio broadcast.
[TAPE] Press to listen to cassette tape.
[VIDEO] Press to listen to stereo component connected to the VIDEO jacks.
[CD] Press to listen to a CD.

④ VOLUME control

⑤ Graphic equalizer controls
Fine adjustment in sound quality are possible using the 5 controls on the graphic equalizer.

◪ Cassette Deck Section

① DECK I cassette door

② Deck I Operation switches
▷ **PLAY (FWD)** . . . For playing back a tape in the forward mode.
◁ **PLAY (REV)** . . . . For playing back a tape in the reverse mode.
□ **STOP** . . . . . For stopping the tape.
▶▶ **FAST** . . . . . Fast forward in forward mode, rewind in reverse mode.
◀◀ **FAST** . . . . . Rewind in forward mode, fast forward in reverse mode.

③ Operation indicators
ASES: Lights when the A.S.E.S. (Auto Synchro Editing System) is operating.
DECK II RECORDING: Lights when recording. Flashes when copying a tape.
Slow flashing = Normal copy
Rapid flashing = High speed copy
Direction (◁, ▷): Show direction of tape travel.

④ ASES(CD ▶ DECK Ⅱ) switch
Used for automatically recording a CD on cassette tape. (See page 30)

⑤ SYNCHRO COPY switches
Used for tape copying.
NORMAL: Copying from the Deck I tape to the Deck II tape at normal recording/playback speed.
HIGH: Copying at about twice normal tape speed. (Copies can be made in about half the NORMAL time.)

⑥ Deck I EJECT switch

⑦ DOLBY* NOISE REDUCTION (DOLBY NR) switch

Set this switch to the ON position to activate the DOLBY NR system.

- Tapes recorded using Dolby noise reduction should always be played back with the noise reduction system on. Sound quality will be adversely affected if played back with the system off, or if tapes recorded using a different noise reduction system are played back with the Dolby NR system on.
- It is recommended that tapes recorded with Dolby B type NR be so marked on the label. This will help prevent incorrect setting of the noise reduction switch during playback.

*

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"DOLBY" and the double-D symbol DD are trademarks of Dolby Laboratories Licensing Corporation.

⑧ REV (REVERSE) MODE switch

Switch position		During playback	During recording
RELAY PLAY	REC	Plays both tape sides. When one deck finishes playback, the other deck begins playback of both tape sides for 6 times. If there is a tape in only one deck, then that deck continuously plays both sides of the tape for 6 times.	Records on one side (Deck II only).
REC	PLAY	Plays both tape sides for 6 times.	Records on both sides (Deck II only).

⑨ DECK II RECORDING switches

REC MUTE (O) Used for creating a blank space between songs. The unrecorded space is created for as long as this switch is kept depressed during recording.

REC (●) To set to recording standby mode. Recording begins when you press the PLAY switch (◁ or ▷).

PAUSE (DD) Temporalily stops tape travel. Cancels pause mode when pressed again.

⑩ DECK II cassette door

⑪ Deck II Operation switches:

Same as Deck I operation switches ②.

⑫ DECK II EJECT switch

◪ CD player section

① DISC (I, II)

This is where the disc is set. When power is switched ON and the OPEN/CLOSE switch is pressed, the tray is ejected forward.
To insert the tray, press the OPEN/CLOSE switch, or lightly push the tray in with your finger. With the disc tray open, press the play switch to close the disc tray and start playback.

② OPEN/CLOSE switches (I, II)

Press when you wish to eject or load a disc. Each time the switch is pressed, the tray is alternately pushed out or pulled in.

I: Opens and closes DISC I.
II: Opens and closes DISC II.

③ Indicators

AUTO EJECT :	Lights during auto eject playback.
PGM :	Lights after programming (after program has been memorized).
RND :	Lights during random playback.
DISC :	Displays the disc number (I or II) of the disc to be played.
▷ :	Lights during playback.
DD :	Lights during temporarily interrupted playback.
TRACK :	Displays the current track number and index number (during noemal playback and programmed playback) or the track being programmed and the program steps during programming operation.
1 ► REP :	Lights during repeat playback of one track.
REP :	Lights during repeat play.
TIME/REM/TOTAL :	Changes each time the TIME switch is pressed.
• TIME :	Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).
• REM :	Displays the remaining time on the track being played. When the TIME switch is pressed again, the remaining time on the disc being played will be displayed.
• TOTAL :	Displays the total number of tracks on the disc (TRACK) and the overall playback time (minutes and seconds) of disc I. When the TIME switch is pressed again, the total number of tracks on the disc (TRACK) and the overall playback time of disc II will be displayed. During playback, the display goes on for about 5 seconds before changing to the TIME display.
M (minute) :	Displays the minutes of the elapsed time, total playback time, and remaining time.
S (second) :	Displays the seconds of the elapsed time, total playback time, and remaining time.
DISC I :	Displays DISC I.
DISC II :	Displays DISC II.

④ RANDOM PLAY switch
Press to begin random playback.

⑤ TIME switch
This switch selects the display mode of the indicator panel. Each time the switch is pressed, the indication changes from TIME, REM, to TOTAL in that order. (For details concerning the display contents, refer to the explanation about the indicators.)

⑥ AUTO EJECT switch
Press to perform auto eject playback.
When a disc is finished playing, the disc's disc tray will automatically eject. The other disc tray will close and playback will start. By replacing discs, continuous playback can be maintained.

⑦ PGM MEMORY switch (PROGRAM MEMORY)
Use to program a sequence of tracks.
- Press this switch after selecting a desired disc and track with DISC SELECT and track search switches. Tunes will be added to the program in the order in which they are specified.

⑧ REPEAT switch
Press this switch for repeat playback. Pressing the switch once, twice, or three times will change the repeat mode from single track repeat, all tracks repeat, and repeat playback cancellation.

⑨ Manual search switches
When the player is in playback or pause modes, these switches are pressed to perform fast forward or reverse operations to allow manual searching. These operations are only carried out during the time either switch is pressed.

⑩ Track search switches
During normal playback, programmed playback or pause modes, these switches are pressed to search for the desired track. Pressing either switch causes the player to advance to the next track or to the previous track. Even in stop mode, these switches can be used to select the desired track. Press the play switch to playback the desired track. If PGM MEMORY switch is pressed when the player is stopped to set the program mode, the performance time of each track is displayed each time (⏮, ⏭) switch is pressed.

⑪ Play switch (▷)
Press to begin playback, and to cancel the pause mode.

⑫ Pause switch (▯▯)
Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

⑬ Stop/clear switch (□)
Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
Press to clear a program. When pressed during stop mode, the program stored in memory is cleared.

⑭ DISC SELECT switches
DISC I: Use to select DISC I for playback or programming.
DISC II: Use to select DISC II for playback or programming.
- During playback, when the disc select switch for the disc not being played is pressed, the current playback will stop and playback of that disc will begin.

Remote control unit

① PHONO key
Sets function to PHONO.

② POWER key

③ TUNER STATION keys
- Before operation, memorize broadcast stations in the STATION CALL switches.

+ . . . . . Stations change in order in the upward direction.
− . . . . Stations change in order in the downward direction.

④ Deck I operation keys
▷ ..... Forward play
◁ ..... Reverse play
□ ..... Stop

⑤ Timer operation keys
SLEEP: Sets the sleep timer. Each time you press this key, the setting changes as shown here. The current setting is shown on the tuner display.
Power turns off when your set time has elapsed.

→ 90 → 60 → 30 →
(Approx. 90 minutes) (Approx. 60 minutes) (Approx. 30 minutes)
→ 00 →
(OFF)

If you press the SLEEP key during SLEEP operation, the display will show the time remaining till power turns off.

SNOOZE: Turns off power if pressed after timer playback begins. Timer playback begins again approx. 5 minutes later.

⑥ VOLUME + (UP)/− (DOWN) keys
When pressed, VOLUME on the amplifier is actually moved by a motor.

⑦ Deck II operation keys:
Same as Deck I operation switches ② (page 15) plus DECK II switches ⑨ (Exept for REC MUTE).

⑧ CD operation keys

▷ . . . . . Play
DISC . . . . . DISC selection
□ . . . . . Stop
□□ . . . . . Pause
⏮, ⏭ . . . . . Track search

The amplifier input selector automatically switches to the music source being operated when you press the CD playback (▷), cassette tape deck playback (◁, ▷), or tuner station controls.

NOTE:
It is not possible to operate the CD player section with the remote control unless the remote control cord is connected (refer to page 3).

Range of remote control (See page 11)

When the remote control unit is pointed at the remote sensor window on the tuner and any of its keys is pressed, the tuner and other components can be operated by remote control.
Distance: Within a range of approx. 7 meters from the remote sensor window on the tuner.
Angle: Within approx. 30 degrees from the center of the remote sensor window on the tuner.
Remote control will not be possible if there is an obstacle between the remote control unit itself and the remote sensor window on the tuner.
Performance of the remote control unit is adversely affected in the presence of strong fluorescent light. Keep such lights away, specially from the sensor window.

8. FOR HE TYPE

8.1 CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

The XD−Z53T/HE type is the same as the XD−Z53T/HB type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		HB type	HE type	
	POWER SUPPLY assembly	AWZ2247	AWZ2245	Deck amplifier block
	CONNECT assembly	Non supply	Non supply	Deck amplifier block
⚠	FU2001,FU2004,FU2005 Fuse (T1.25A/250V)	AEK−509	AEK−018	Deck amplifier block
⚠	FU2003 Fuse (T800mA/250V)	AEK−507	AEK−031	Deck amplifier block
⚠	AC Power cord	ADG1052	ADG1049	Deck amplifier block
	Operating instructions (English)	ARB1225	.....	Packing
	Operating instructions (Dutch,Spanish,Swedish,Portguese)	.....	ARC1201	Packing
	Operating instructions (English,French,German,Italian)	.....	ARE1155	Packing
	CD block	Non supply (240V)	Non supply (220V)	*1

*1 :
The only difference between the HB type CD block and the HE type CD block is connection of the power supply (220V and 240V).
For detailes, refer to LINE VOLTAGE SELECTION.

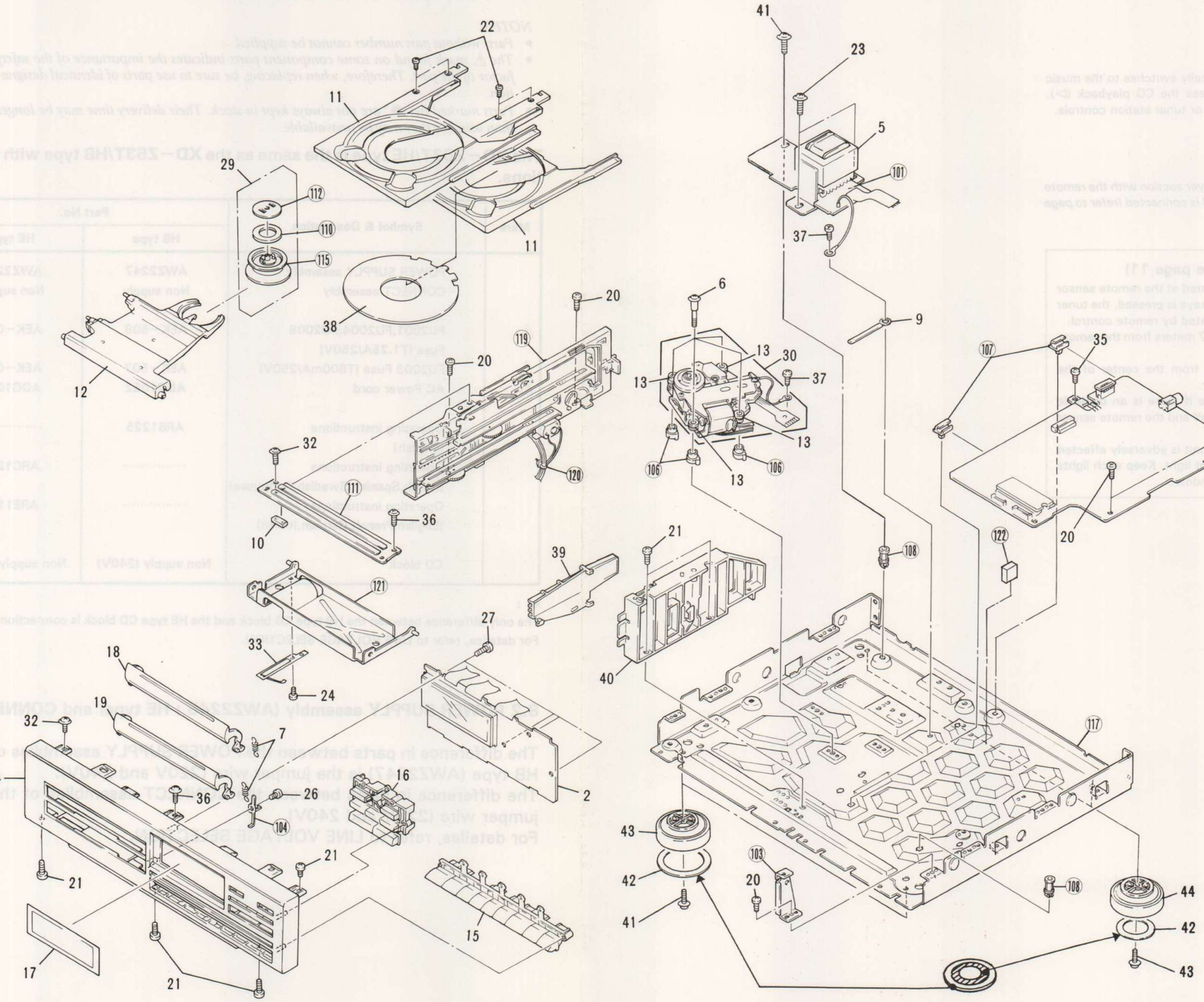
8.2 POWER SUPPLY assembly (AWZ2245 : HE type) and CONNECT assembly (HE type).

The difference in parts between the POWER SUPPLY assemblies of the HE type (AWZ2245) and the HB type (AWZ2247) is the jumper wire (220V and 240V).
The difference in parts between the CONNECT assemblies of the HE type and the HB type is the jumper wire (220V and 240V).
For detailes, refer to LINE VOLTAGE SELECTION.

9. CD BLOCK

9.1 EXPLODED VIEWS AND PARTS LIST

9.1.1 Exterior



NOTE: When using,divide into two.

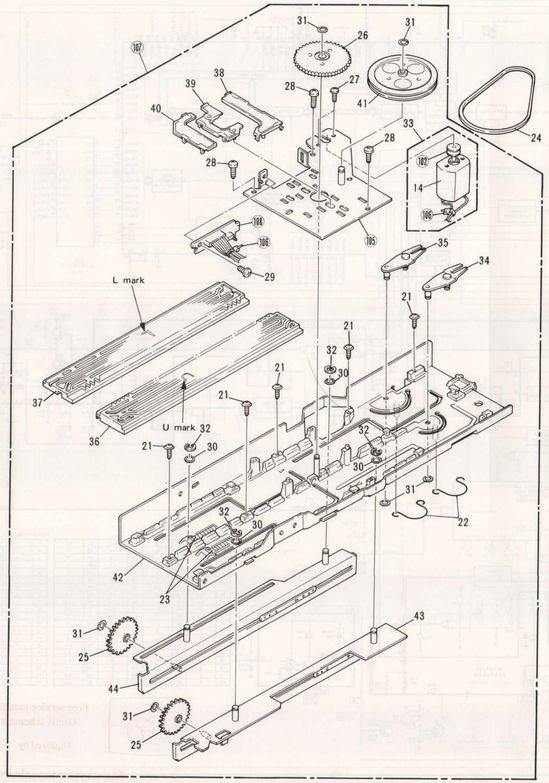
9.1.2 Parts List of Exterior

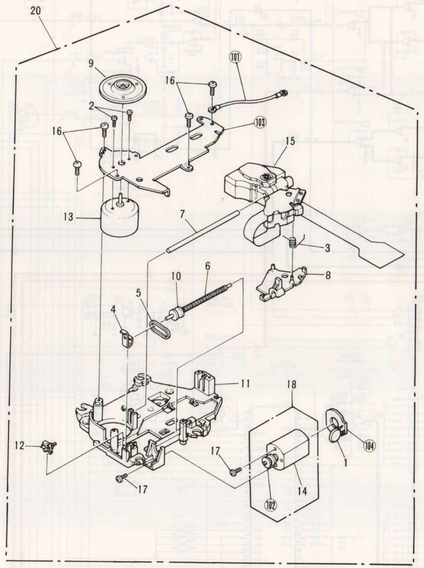
NOTES :
- Parts without part number cannot be supplied.
- The ⚠ mark found on some component parts indicates the impotance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark	No.	Part No.	Description
⚠⊙	1	PWZ1692	Main board assembly
⊙	2	PWZ1860	Control board assembly
	3		·····
	4		·····
⚠	5	PTT1092	Power transformer
	6	PBA1011	Screw
	7	PBH1072	Door spring
	8	PXA1201	Leg assembly
	9	RNH−184	Cord clamper
	10	PNM1011	Cushion rubber
	11	PNW1475	Tray
	12	PNW1723	Clamper holder
	13	PEB1014	Floating rubber
	14		·····
	15	PAC1444	O/C Button
	16	PAC1443	Disc Button
	17	PAM1398	Indicator Window
	18	PNW1710	Door 1
	19	PNW1711	Door 2
	20	BBZ30P060FMC	Screw
	21	BBZ30P080FZK	Screw
	22	BMZ20P040FZK	Screw
	23	IBZ40P080FCC	Screw
	24	PDZ26P050FMC	Screw
	25		·····
	26	PPZ30P050FMC	Screw
	27	PPZ30P100FMC	Screw
	28		·····
	29	PYY1088	Clamper assembly
	30	PYY1091	Servo mechanism assembly
	31		·····
	32	IBZ30P050FZK	Screw
	33	PBK1060	Plate spring
	34	PEA1034	Control panel unit
	35	BBZ30P080FCC	Screw
	36	IPZ30P080FMC	Screw
	37	PDZ30P050FMC	Screw
	38	PHC1043	Spacer (For packing)
	39	PNW1476	Guide
⊙	40	PNW1477	Guide base
	41	IBZ30P120FCC	Screw
	42	PNM1070	Stopper
	43	PNW1263	Insulator
	44	PNW1376	Insulator

Mark	No.	Part No.	Description
⚠	101		Transformer board assembly
	102		·····
	103		Angle
	104		Door plate
	105		·····
	106		Mechanism support
	107		Holder
	108		PCB spacer
	109		·····
	110		Magnet
	111		Joint plate
	112		Yoke
	113		·····
	114		·····
	115		Clamper
	116		·····
	117		Under base
	118		·····
	119		Loading base assembly
	120		Binder
	121		Synchronous lever
	122		Hold Rubber

9.1.3 Mechanism Section





9.1.4 Parts List of Mechanism Section

Mark	No.	Part No.	Description
	1	CGDYX104M25	Semiconductive ceramic capacitor
	2	PBA1037	Screw M2×2.5
	3	PBH1008	Drive spring
	4	PBK1057	Plate spring
	5	PEB1072	Belt
	6	PLA1003	Drive screw
	7	PLA1004	Guide bar
	8	PNW1578	Carriage plate
	9	PNW1064	Disc table
	10	PNW1066	Pulley
	11	PNW1520	Mechanism chassis
	12	PSH1003	Slide switch (S101, INSIDE)
	13	PYY1109	Spindle motor assembly (with oil)
	14	PXM1002	Motor (CARRIAGE, LOADING)
	15	PWY1009	Pick−up assembly
	16	BPZ20P080FZK	Screw
	17	PMZ20P030FMC	Screw
	18	PYY1025	Motor assembly (CARRIAGE)
	19		·····
	20	PYY1091	Servo mechanism assembly
	21	PBA1035	Screw
	22	PBH1074	Spring
	23	PBH1076	Spring
	24	PEB1106	Belt
	25	PNW1478	Sync gear
	26	PNW1486	Gear
	27	PMZ20P030FMC	Screw
	28	PPZ26P050FMC	Screw
	29	PSZ26P050FMC	Screw
	30	WA32L060C035	Washer
	31	WT26D047D025	Washer
	32	YE25FUC	E ring
	33	PYY1089	Motor assembly (LOADING)
	34	PNB1180	Auxiliary arm (U)
	35	PNB1181	Auxiliary arm (L)
	36	PNW1481	Rack (U)
	37	PNW1482	Rack (L)
	38	PNW1483	Switch lever (U)
	39	PNW1484	Switch lever (S)
	40	PNW1485	Switch lever (L)
	41	PNW1487	Gear pulley
	42	PNW1488	Loading base
⊙	43	PXT1025	Slide angle (U) unit
⊙	44	PXT1026	Slide angle (L) unit

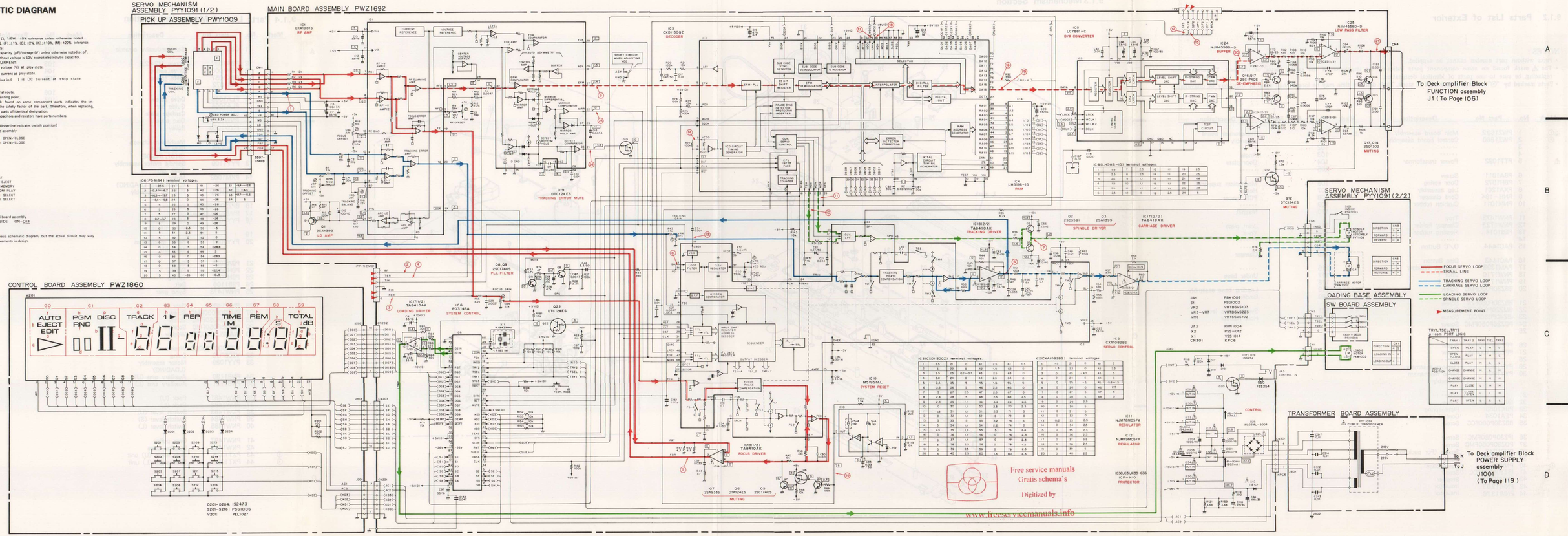
Mark	No.	Part No.	Description
	101		Earth lead unit
	102		Motor pulley
	103		Base plate
	104		Carriage M board
	105		Motor base
	106		Binder
	107		Loading base assembly
	108		SW board assembly

9.2 SCHEMATIC DIAGRAM

1. RESISTORS:
   Indicated in Ω. 1/16W. ±5% tolerance unless otherwise noted.
   k: kΩ, M: MΩ. (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance.
2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF.
   Indication without voltage is 50V except electrolytic capacitor.
3. VOLTAGE CURRENT:
   DC voltage (V) at play state.
   mA: DC current at play state.
   Value in ( ) is DC current at stop state.
4. OTHERS:
   Signal route.
   Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.
5. SWITCHES (Underline indicates switch position)
   Control board assembly
   S201 : DISC I OPEN/CLOSE
   S202 : DISC II OPEN/CLOSE
   S203 : ⏮
   S204 : ⏭
   S205 : ⏮
   S206 : ⏭
   S207 : ⏮
   S208 : ■
   S209 : TIME
   S210 : REPEAT
   S211 : AUTO EJECT
   S212 : PGM MEMORY
   S213 : RANDOM PLAY
   S214 : DISC I SELECT
   S215 : DISC II SELECT
   S216 : ■

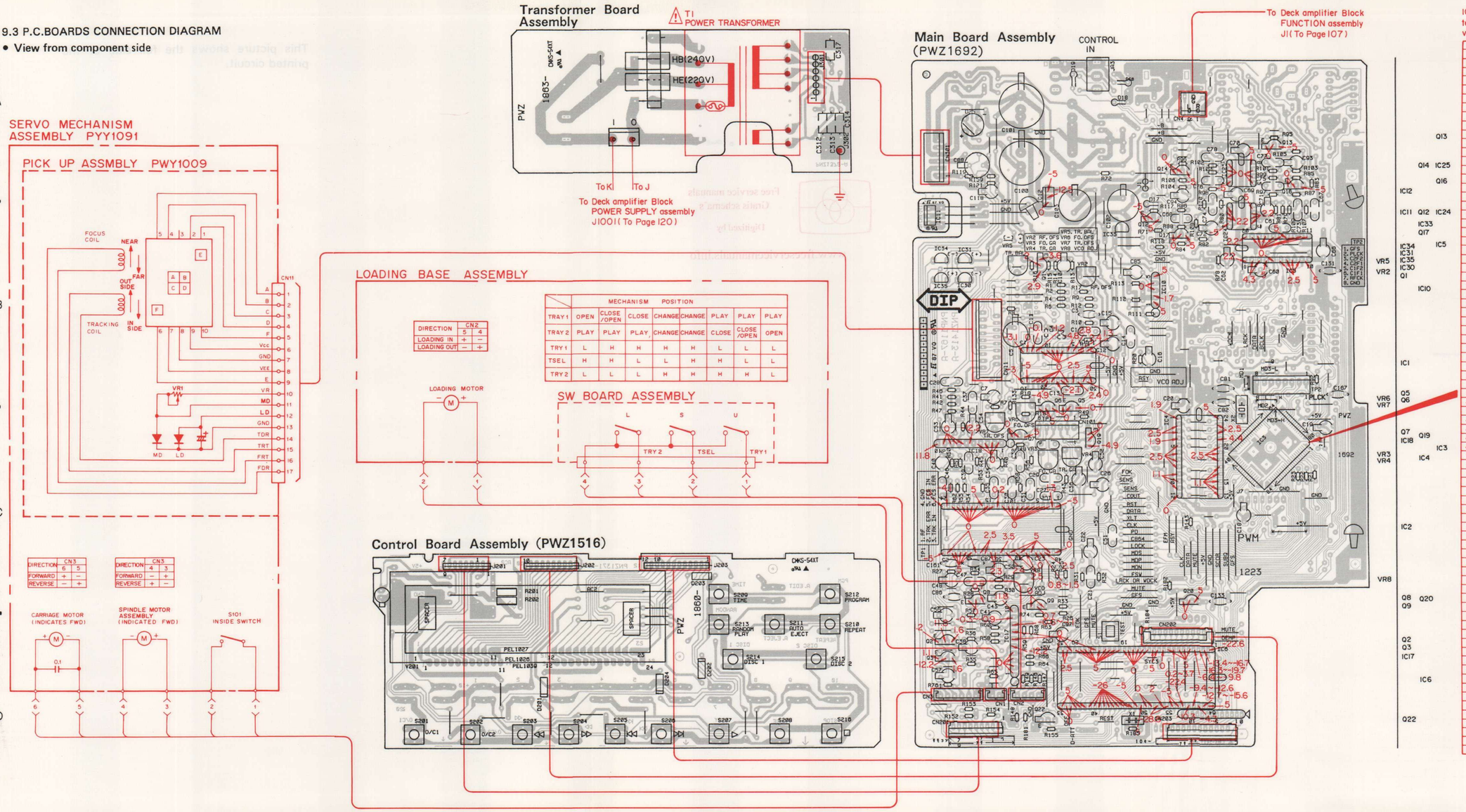
Outside of PC board assembly
S101 : INSIDE ON-OFF

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



9.3 P.C.BOARDS CONNECTION DIAGRAM

- View from component side

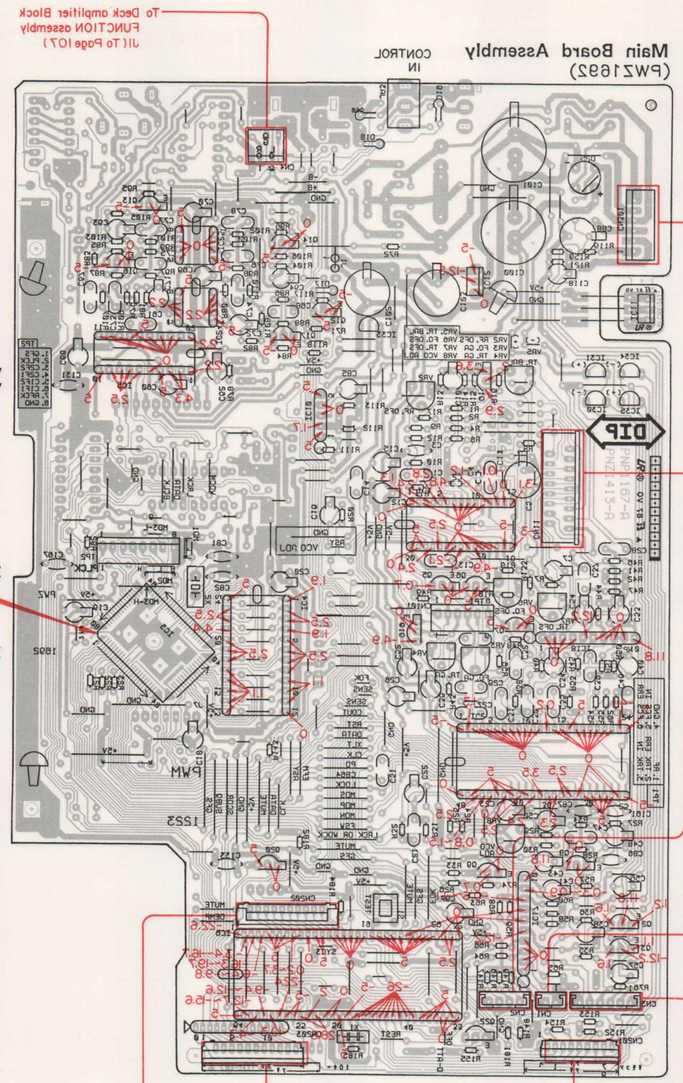


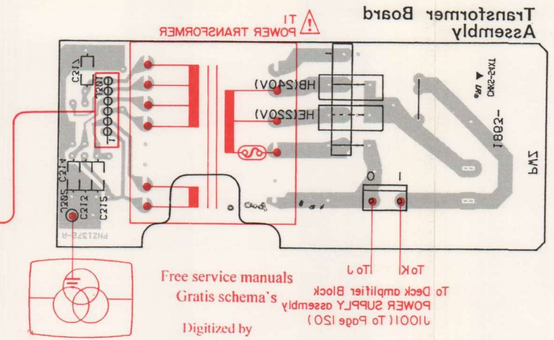
1	2.5
2	5
3	2.5
4	2.8
5	2.4
6	2.5
7	5
8	2.4
9	
10	0
11	1.8
12	0
13	
14	- 5
15	
16	
17	0
18	5
19	0
20	5
21	0
22	
23	0.2~3.7
24	0
25	5
26	
27	2.5
28	5
29	
30	1.1
31	
32	
33	5
34	1.1
35	
36	
37	
38	
39	2.5
40	
41	
42	1.9
43	2.5
44	
45	1.9
46	
47	2.5
48	
49	4.2
50	2.5
51	2.3
52	0
53	2.2
54	
55	5
56	
57	0
58	
59	
60	1.3
61	
62	
63	
64	0
65	
66	
67	
68	2.5
69	
70	2.3
71	5
72	0
73	5
74	0
75	2.4
76	2.3
77	
78	1.2
79	
80	2.5

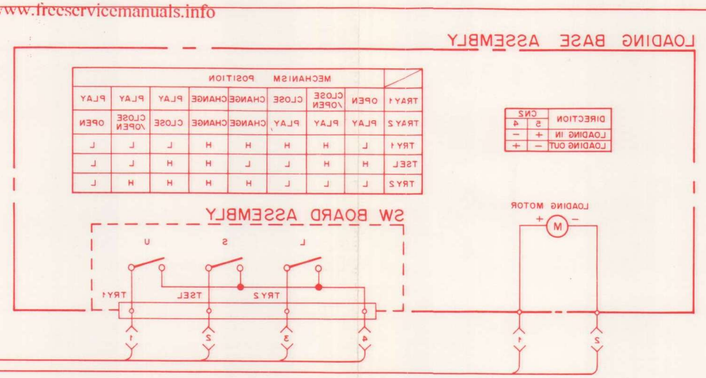
P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

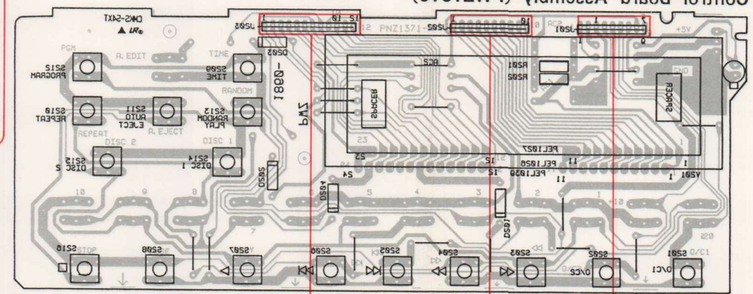
1 This P.C.B. connection diagram is viewed from the parts mounted side
2 The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table
3 The capacitor terminal marked with ▭ shows negative terminal
4 The diode marked with ○ shows cathode side
5 The transistor terminal marked with ▭ shows emitter

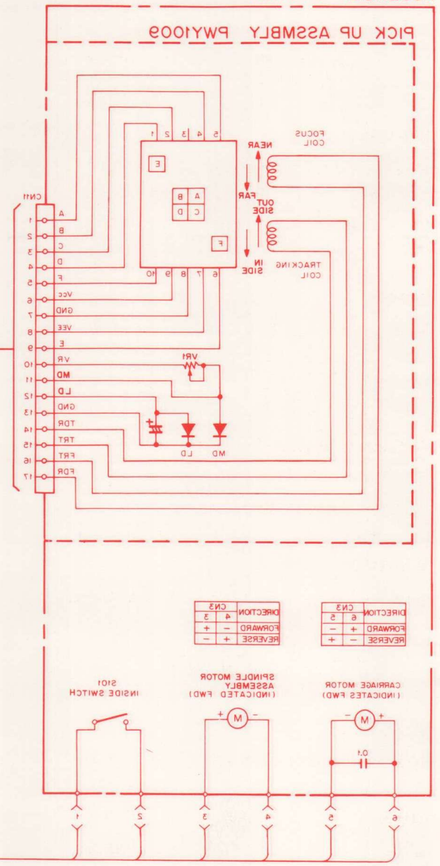
This picture shows the foil side of the printed circuit.

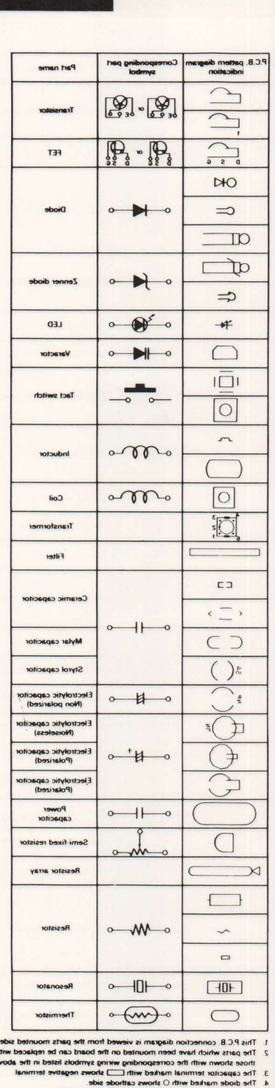












1 This P.C.B. connection diagram is viewed from the parts mounted side
2 The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table
3 The capacitor terminal marked with ▭ shows negative terminal
4 The diode marked with ○ shows cathode side
5 The transistor terminal marked with ▭ shows emitter

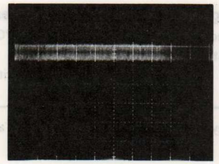
IC3(CXD1130Z) terminal voltages.

1	2.5
2	5
3	2.5
4	2.8
5	2.4
6	2.5
7	5
8	2.4
9	
10	0
11	1.8
12	0
13	
14	- 5
15	
16	
17	0
18	5
19	0
20	5
21	0
22	
23	0.2~3.7
24	0
25	5
26	
27	2.5
28	5
29	
30	1.1
31	
32	
33	5
34	
35	1.1
36	
37	
38	
39	2.5
40	
41	
42	1.5
43	2.5
44	
45	1.5
46	
47	2.5
48	
49	4.2
50	2.5
51	2.5
52	0
53	
54	2.2
55	5
56	
57	0
58	
59	
60	
61	1.3
62	
63	
64	0
65	
66	
67	
68	
69	2.5
70	
71	2.5
72	5
73	0
74	5
75	2.4
76	
77	2.5
78	1.2
79	
80	2.5

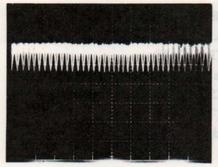
Wave Forms

NOTE : The encircled numbers denote measuring points in the schematic diagram.

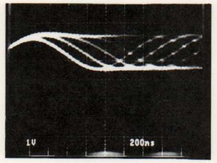
① CN11-5 Pin : PLAY MODE
50mV/div 5msec/div



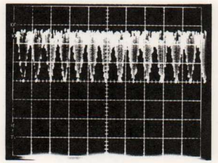
① CN11-5 Pin : SEARCH MODE
50mV/div 5msec/div



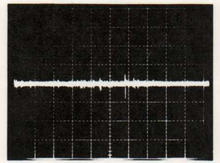
② TP1-1 Pin : PLAY MODE
1V/div 200nsec/div



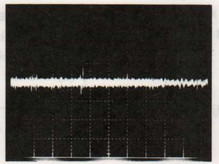
② TP1-1 Pin : SEARCH MODE
500mV/div 100μsec/div



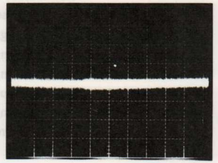
③ TP1-6 Pin : PLAY MODE
500mV/div 10msec/div



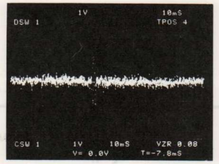
③ TP1-6 Pin : SEARCH MODE
500mV/div 10msec/div



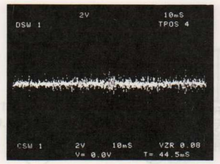
④ TP1-2 Pin : PLAY MODE
1V/div 10msec/div



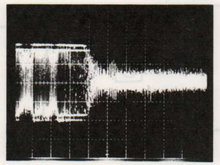
④ TP1-2 Pin : SEARCH MODE
1V/div 10msec/div



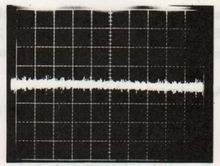
⑤ IC18-2 Pin : PLAY MODE
2V/div 10msec/div



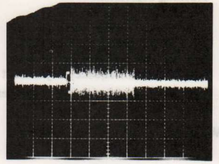
⑤ IC18-2 Pin : SEARCH MODE
2V/div 10msec/div



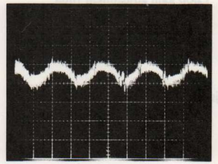
⑥ IC18-8 Pin : PLAY MODE
2V/div 10msec/div



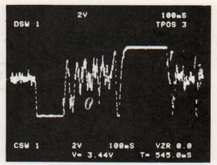
⑥ IC18-8 Pin : SEARCH MODE
2V/div 10msec/div



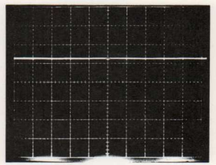
⑦ Q2 Emitter : PLAY MODE
2V/div 50msec/div



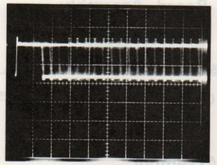
⑦ Q2 Emitter : SEARCH MODE
2V/div 100msec/div



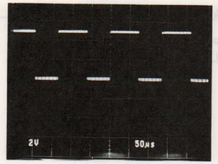
⑧ IC2-33, 34 Pin : PLAY MODE
2V/div 10msec/div



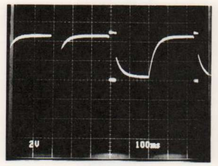
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



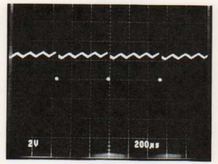
⑩ IC3-4 Pin : PLAY MODE
2V/div 50μsec/div



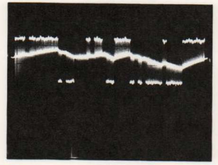
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



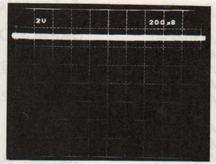
⑪ IC3-3 Pin : PLAY MODE
2V/div 200μsec/div



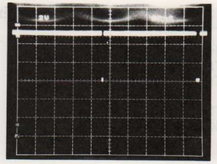
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



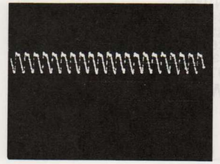
⑫ TP2-1 Pin : PLAY MODE
2V/div 200μsec/div



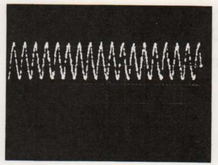
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



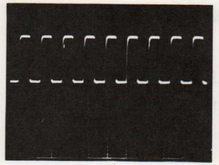
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



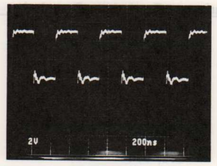
⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



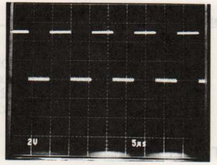
⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div



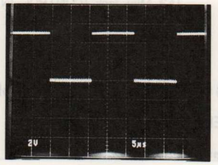
⑯ IC3-76 Pin : STOP MODE
2V/div 200nsec/div



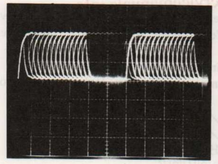
⑰ IC3-79 Pin : STOP MODE
2V/div 5μsec/div



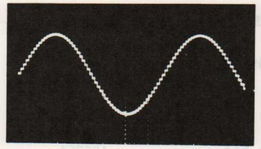
⑱ IC3-80 Pin : STOP MODE
2V/div 5μsec/div



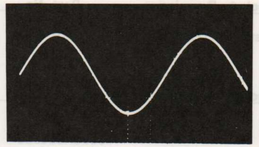
⑲ IC3-78 Pin : STOP MODE
2V/div 1μsec/div



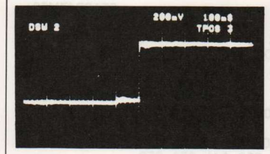
⑳ IC5-1 Pin : PLAY MODE
2V/div 50μsec/div



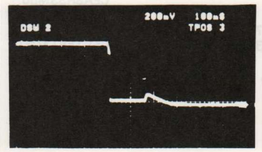
㉑ OUTPUT Lch : PLAY MODE
2V/div 50μsec/div



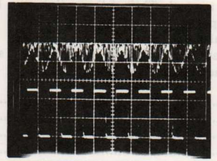
㉒ IC10-5 Pin : POWER ON
2V/div 100msec/div



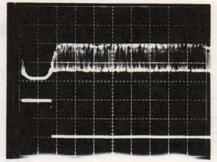
㉒ IC10-5 Pin : POWER OFF
2V/div 100msec/div



㉓ IC1-22 Pin : TRACKING OPEN
0.1msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-22 Pin : 2V/div



㉔ IC1-21 Pin : DFCT 0.5msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-21 Pin : 5V/div



9.4 ELECTRICAL PARTS LIST

NOTES :
- Parts without part number cannot be supplied.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The ⚠ mark found on some component parts indicates the impotance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	56×10^1	561	RD1/4PS 5 6 1 J
47k Ω	47×10^3	473	RD1/4PS 4 7 3 J
0.5 Ω	0R5		RN2H 0 R 5 K
1 Ω	010		RS1P 0 1 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	562×10^1	5621	RN1/4SR 5 6 2 1 F

Miscellaneous Parts

P. C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠⊙	Main board assembly	PWZ1692
⊙	Control board assembly	PWZ1860
	Transformer board assembly	
	Switch board assembly	

OTHERS

Mark	Symbol & Description	Part No.
⚠	Power transformer	PTT1092
	Semiconductive ceramic capacitor	CGDYX104M25
	S101 Slide switch (INSIDE)	PSH1003
	Spindle motor assembly (with oil)	PYY1109
	Motor (CARRIAGE, LOADING)	PXM1002
	Pick-up assembly	PWY1009
	Motor assembly (CARRIAGE)	PYY1025
	Motor assembly (LOADING)	PYY1089

⚠⊙Main Board Assembly (PWZ1692)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082BS
	IC3	CXD1130QZ
⚠	IC30, IC31, IC33-IC35	ICP-N10
	IC5	LC7881-C
	IC4	LH5116-15
	IC10	M51957AL
	IC24, IC25	NJM4558D-D
⚠	IC11	NJM78M05FA
⚠	IC12	NJM79M05FA
	IC6	PD3143A
⚠	IC17, IC18	TA8410AK
	Q6	DTA124ES
	Q12, Q19, Q20, Q22	DTC124ES
	Q1, Q3	2SA1399
	Q7	2SA933S
	Q5, Q8, Q9, Q16, Q17	2SC1740S
	Q2	2SC3581
	Q13, Q14	2SD1302
⚠	D25	WL02ML-5004
⚠	D10	11ES2
	D17-D19, D50	1SS254

SWITCH

Mark	Symbol & Description	Part No.
	S1 Tact switch (TEST)	PSG1002

CAPACITORS

Mark	Symbol & Description	Part No.
	C81, C82	CCCCH300J50
	C3	CCCCH390J50
	C87	CCCSL101J50
	C161	CCCSL221J50
	C40	CEANP4R7M25
	C2, C4	CCPUSL300J50
	C16, C22	CEASR47M50
	C10, C43	CEAS101M10
	C62, C88, C5	CEAS101M35
	C102, C103	CEAS102M10
	C71, C72, C93, C94	CEAS220M25
	C118	CEAS220M35
	C100, C101	CEAS222M16
	C48	CEAS3R3M50
	C7, C12, C15, C18, C20, C23, C26, C36, C38, C41, C50, C52-C54, C56, C57, C60, C66, C69, C70, C97	CEAS330M16
	C34	CEAS4R7M50
	C85	CEASR33M50
	C19	CEAS471M6R3
	C86, C167	CKCYF103Z50
	C131, C133	CKCYF473Z50
	C30, C51	CQMA102K50
	C14, C17, C46, C61	CQMA103K50

Mark	Symbol & Description	Part No.
	C31, C32, C35, C39	CQMA104K50
	C29	CQMA272J50
	C13	CQMA332J50
	C11, C21, C28, C37	CQMA333K50
	C77, C78	CQMA471J50
	C1, C27, C47	CQMA472J50
	C75, C76	CQMA561J50
	C73, C74	CQMA562J50
	C67, C68	CQMA683J50

RESISTORS

Mark	Symbol & Description	Part No.
	R30	RN 1/8 PQ3601F
	VR2 Semi-fixed resistor (10k)	VRTB6VS103
	VR3-VR7 Semi-fixed resistor (22k)	VRTB6VS223
	VR8 Semi-fixed resistor (1k)	VRTS6VS102
	Other resistors	RD 1/8 PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA3 Mini jack (CONTROL IN)	RKN1004
	X2 Crystal resonator	PSS-012
	X1 Ceramic resonator	VSS1014
	CN301 Connecter	KPC6
	CN4 Connecter	KPE3
	CN11 Connecter	5597-17APB

⊙Control Board Assembly (PWZ1860)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	D201-D204	1S2473

SWITCHES

Mark	Symbol & Description	Part No.
	S201-S216 Tact switch (OPEN/CLOSE DISC I, OPEN/CLOSE DISC II, ◀◀, ▶▶, ⏮, ⏭, ▶, ❚❚, TIME,REPEAT, AUTO EJECT, PGM, RAMDOM PLAY, DISC I, DISC II, ■)	PSG1006

RESISTORS

Mark	Symbol & Description	Part No.
	R201, R202	RD1/4PM101J

OTHER

Mark	Symbol & Description	Part No.
	V201 Fluorescent indicator tube	PEL1027

⚠Transformer Board Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C312-C314, C317	CKPYX103N25

Switch Board Assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S601-S603 Push switch (U, S, L)	PSH1008

9.5 ADJUSTMENTS

The adjustment items for this unit are shown below. Adjustments must be made in the order in which they are listed. As OPEN/CLOSE operation for disc tray 2 cannot be performed during test mode, use tray 1 for adjustments.

• Adjustment and check items
1. Tracking offset, focus offset and RF offset adjustments
2. RF level adjustment
3. LD (Laser Diode) power check
4. Focus lock and spindle lock check
5. Grating adjustment
6. Tracking adjustment
7. Tangential adjustment
8. Focus gain adjustment
9. Tracking gain adjustment
10. VCO free-run frequency adjustment
11. Confirmation of S character (focus error)

• Measuring Equipment
1. Dual trace oscilloscope
2. Laser power meter
3. Test disc (YEDS-7)
4. Loop gain adjustment filter
5. Signal generator
6. Frequency counter
7. Other general tools

Adjustment points

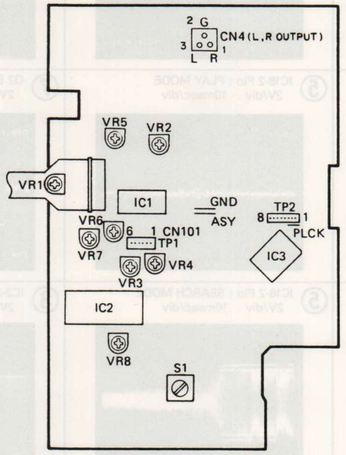


Fig. 9-1.

• Test Mode

Test mode setting and cancellation procedures
(1) To set the test mode, turn ON the power switch (S707) while holding the test mode switch (S1) down.
(2) The test mode is cancelled by turning the power switch OFF.

The functions of the keys in the test mode are outlined in Table 9-1.

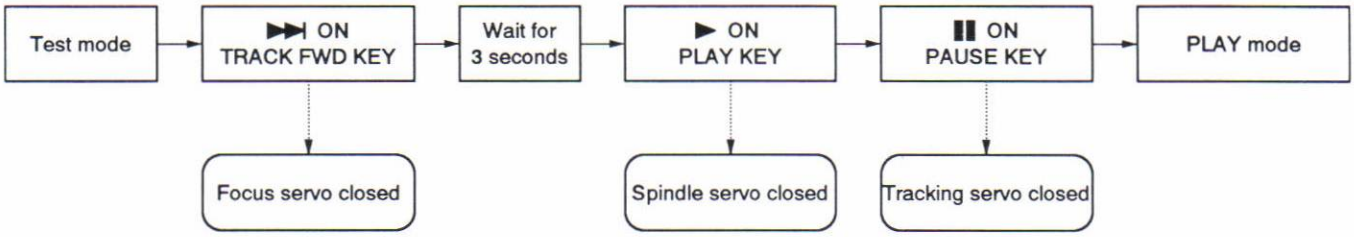
• Adjustment VRs (Variable Resistors) and Names

VR1: Laser power
VR2: RF offset (RF. OFS)
VR3: Focus gain (FCS. GAN)
VR4: Tracking gain (TRK. GAN)
VR5: Tracking balance (TRK. BAL)
VR6: Focus offset (FCS.OFS)
VR7: Tracking offset (TRK. OFS)
VR8: VCO free-run adjustment (VCO. ADJ)

In the test mode, the servos are closed and opened individually. Consequently, the servos must each be closed one at a time (in serial sequence) in order to set the unit to normal PLAY mode. Note also that during test mode the unit will not enter the PLAY mode when the PAUSE (❚❚) key is pressed alone.

Example: Switching from STOP to PLAY mode.

* In the test mode, the servos must be operated in serial sequence.



• **Key Functions In the Test Mode**

Symbol	Key name	Function during test mode	Description
▶▶❚	TRACK FWD	Focus servo close	Turns ON the laser diode, and raises/lowers the focusing actuator to close the focus servo. After closing disc tray 1, the tray is moved to PLAY position.
▶	PLAY	Spindle servo close	Closes the servo in the CLV-A mode after starting the spindle motor.
❚❚	PAUSE	Tracking servo close/open	Performs toggle operation:closes the tracking servo and sets to PLAY mode when pressed (provided the focus and spindle servos are closed), at which time the PAUSE indicator illuminates; opens the tracking servo when pressed again.
◀◀	MANUAL SEARCH REV	Carriage reversal (inward movement)	Moves carriage rapidly (3 cm/s) toward the center. Because there is no safety mechanism for stopping the carriage, release the key when the carriage reaches the innermost track.
▶▶	MANUAL SEARCH FWD	Carriage advance (outward movement)	Moves carriage rapidly (3 cm/s) toward the outer edge. Because there is no safety mechanism for stopping the carriage, release the key when the carriage reaches the outermost track.
■	STOP	Stop	Stops all servos and returns system to its initial state.
▲	OPEN/CLOSE Disc I	(Disc tray) open/close	Opens and closes the disc tray. However, pickup does not return to rest when opening, and remains stationary when closing the tray.

Table **9–1.**

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
1	**TRACKING OFFSET, FOCUS OFFSET, RF OFFSET ADJUSTMENT**					
				VR5 (TRK. BAL)	Tracking offset 45°	• Set to test mode. ※ • Turn VR5 TRK. BAL (tracking balance) counterclockwise about 45° from center position.
			TP1 Pin 2 (TRK. ERR)	VR7 (TRK. OFS)	0V ± 50 mV	• Adjust VR7 TRK.OFS (tracking offset) so that the TRK. ERR (tracking error) voltage at TP1 Pin 2 becomes 0V ± 50 mV.
			TP1 Pin 6 (FCS. ERR)	VR6 (FCS. OFS)	Focus offset 0V ± 50 mV	• Adjust VR6 FCS.OFS (focus offset) so that the FCS.ERR (focus error) voltage at TP1 Pin 6 becomes 0V ± 50 mV.
			TP1 Pin 1 (RF output)	VR2 (RF. OFS)	RF offset 100 mV ± 50 mV	• Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 Pin 1 becomes 100 mV ± 50 mV. Note: After performing tracking offset adjustment, be sure to perform "6. TRACKING BALANCE ADJUSTMENT."
2	**RF LEVEL ADJUSTMENT**					
			TP1 Pin 1 (RF output)	VR1 (laser power)	1.5V +0.2V −0V.	• Set to test mode. ※ • Play the test disc, connect the oscilloscope to TP1 Pin 1 (RF output), and measure the P-P voltage of the RF waveform. • Adjust so that the voltage becomes 1.5V +0.2V −0V.
3	**LD (LASER DIODE) POWER CHECK**					
					Less than 0.13 mW	• Set to test mode. ※ • Press the TRACK FWD (▶▶I) key to turn ON the LD (laser diode). • Place the sensor of the laser power meter directly above the objective lens and confirm that the output power of the LD does not exceed 0.13 mW.

※ see page 44

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
4	**FOCUS LOCK AND SPINDLE LOCK CHECK**					
	V 0.5V/div	H 100 msec /div	TP1 Pin 1 (RF output)		RF output exists Normal (clockwise) rotation	• Set test disc. • Set to test mode. ※ • Press the MANUAL SEARCH FWD (▶▶) key to move the pickup close to the center of the disc. • Observe the output of TP1 Pin 1 (RF output) on the oscilloscope. Confirm that the RF signal is output after pressing the TRACK FWD (▶▶I)key. • Press the PLAY (▶) key and confirm that the disc rotates at constant speed (approx. 30 rpm near center of disc) in the normal (clockwise) direction; make sure that the disc does not rotate too fast or counter-clockwise.
5	**GRATING ADJUSTMENT (1) (using an 8 cm disc)**					
						Note: This adjustment can only be performed using a 8 cm disc having pits over a diameter of 75 mm. • Set to test mode. ※ • Set the 8 cm disc. Shift the pickup to the outermost track so that it is positioned over pits and the pickup grating adjustment hole is visible from the hole in the servo mechanism (see Fig. 9–2.). • Press the TRACK FWD (▶▶I) and PLAY (▶) keys in sequence to close the focus servo and spindle servo (do not close the tracking servo). • Observe the waveform output of TP1 Pin 2 TRK.ERR (tracking error) on the oscilloscope, inserting a 4 kHz low-pass filter (see Fig. 9–3.).

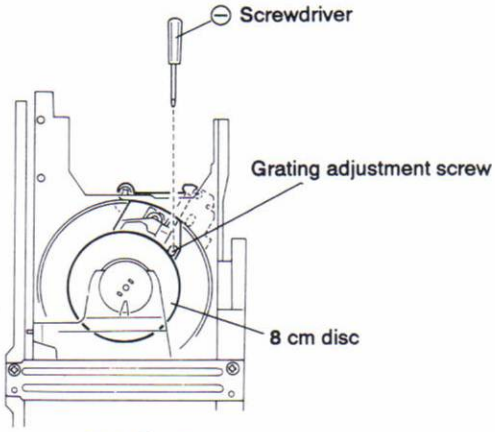


Fig. 9–2.

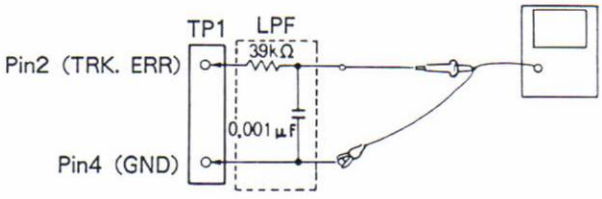


Fig. 9–3.

※ see page 44

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
	0.5V/div	5 msec/div	TP1 Pin 2 (TRK. ERR)	Grating Grating	Null Point Maximum amplitude	• Insert ⊖ screwdriver into the grating adjustment hole, and turn to find the null point (see Photo 9-1.). • Next, slowly turn ⊖ screwdriver in counterclockwise direction from the null point and adjust until the waveform (tracking error signal) reaches maximum amplitude (see Photo 9-2.). Note: Use caution since inserting ⊖ screwdriver forcefully will cause the pickup unit to float upward. • Finally, confirm that there is no major fluctuation in the P-P voltage of the tracking error signal (do not insert the cutoff 4 kHz low-pass filter) when the pickup is shifted to the innermost track and when the pickup is shifted to the outermost track. If there is a difference of more than ± 10%, re-adjust by turning the grating adjustment screw to the maximum amplitude point of the tracking error signal.
5	**GRATING ADJUSTMENT (2) (without 8 cm disc)**					
						Perform this adjustment when an 8 cm disc is not available and Grating adjustment (1) cannot be performed. Remove the tray 1 before performing this adjustment. • Removal of tray 1 1. Set tray 1 to OPEN position. 2. Remove screws Ⓒ1, Ⓒ2 holding tray 1 in Fig. 9-4. 3. Move tray 1 in the direction of arrow in Fig. 9-5, and as detaching projection Ⓑ of tray 1, free slide angle U unit from hook Ⓐ of tray 1. 4. Pull out tray 1 as raising its side of slide angle U unit slightly.

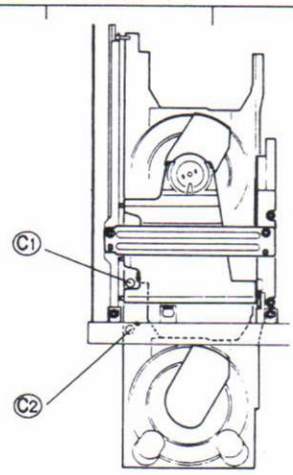


Fig. 9-4.

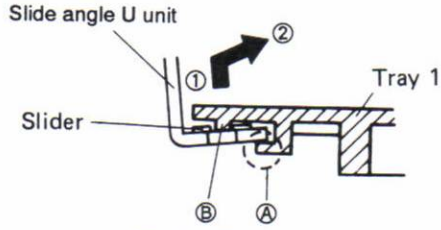


Fig. 9-5.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
						Note: This adjustment can only be performed using a disc having pits up to a diameter 115 mm. The test disc (YEDS-7) cannot be used. • Set to test mode. ※ • Set a disc. Shift the pickup to the outermost track so that it is positioned over pits and the pickup grating adjustment hole is visible from the hole in the servo mechanism (see Fig. 9-6.). • Press the TRACK FWD (▶▶I) and PLAY (▶) keys in sequence to close the focus servo and spindle servo (do not close the tracking servo). • Observe the waveform output of TP1 Pin 2 TRK. ERR (tracking error) on the oscilloscope, inserting a 4 kHz low-pass filter (see Fig. 9-7.).
	0.5V/div	5 msec/div	TP1 Pin 2 (TRK. ERR)	Grating	Null Point	• Insert ⊖ screwdriver into the grating adjustment hole, and turn to find the null point (see Photo 9-1.).
				Grating	Maximum amplitude	• Next, slowly turn ⊖ screwdriver in counterclockwise direction from the null point and adjust until the waveform (tracking error signal) reaches maximum amplitude (see Photo 9-2.). Note: Use caution since inserting ⊖ screwdriver forcefully will cause the pickup unit to float upward. • Finally, confirm that there is no major fluctuation in the P-P voltage of the tracking error signal (do not insert the cutoff 4 kHz low-pass filter) when the pickup is shifted to the innermost track and when the pickup is shifted to the outermost track. If there is a difference of more than ± 10%, re-adjust by turning the grating adjustment screw to the maximum amplitude point of the tracking error signal.

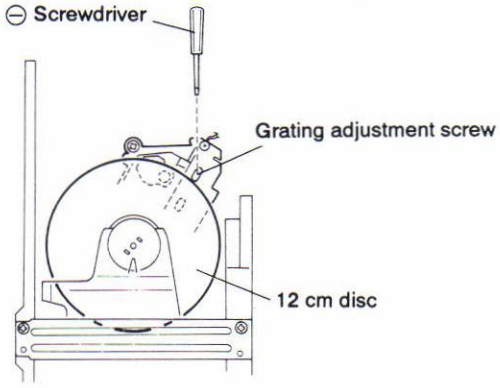


Fig. 9-6

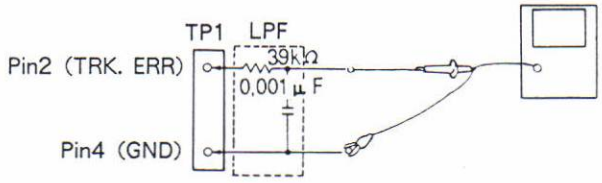


Fig. 9-7.

※ see page 44

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
						After completing adjustments, attach tray 1 in the following process. Remove front panel previously as it disturbs attachment of tray 1. 1. Set slide angle U unit to the foremost position (where opening of tray 1 is completed). 2. Set slider to the foremost position as shown in Fig. 9-8. 3. As shown by dotted line in Fig. 9-9, insert tray 1 aslant to the position that mounting holes of slider and tray 1 coincide (make sure that slider does not move backward). 4. Down tray 1 as pulling it to the right (toward guide). Do it as holding slider from below with finger. 5. Adjust position of tray 1 so that hook Ⓐ and projection Ⓑ are properly fixed as shown in Fig. 9-10. Also do it so that to engage synchronous gear with gear of tray 1. 6. Make sure that mounting holes of slider are being positioned in the center of tray 1's screw holes, and tighten screws in order of Ⓒ1, Ⓒ2. 7. After completing attachment of tray 1, with tray 1's complete-open state, make sure that mutual position shown in the portion Ⓔ 's enlarged illustration is being satisfied. If it does not, the adjustment must be made again from the beginning.

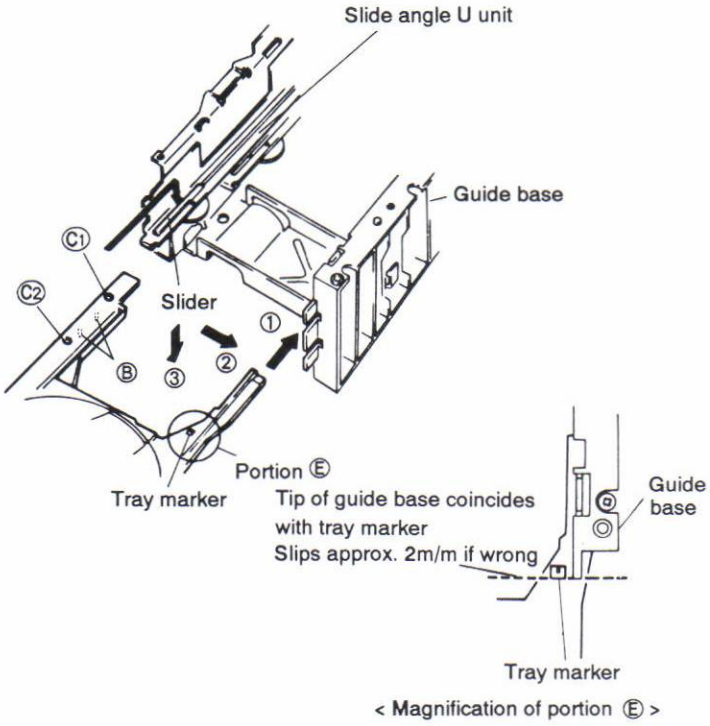


Fig. 9-8

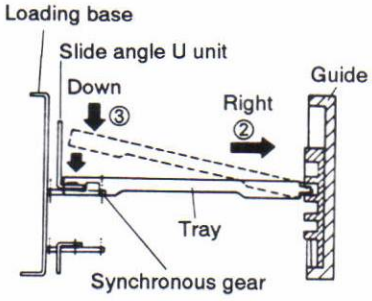


Fig. 9-9.

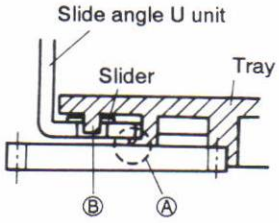


Fig. 9-10.

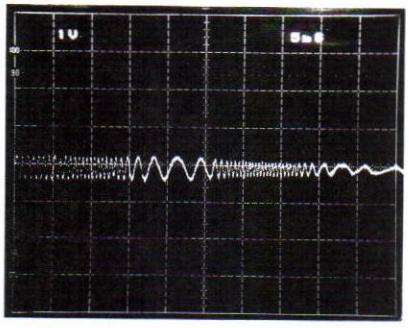


Photo 9-1. Null point waveform

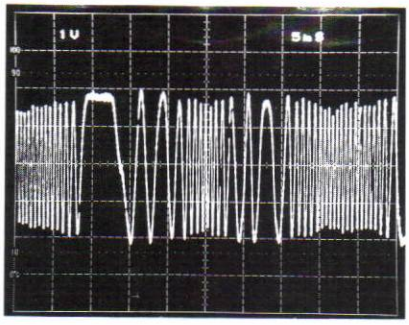


Photo 9-2. Maximum amplitude

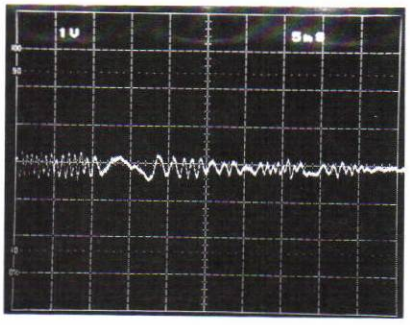
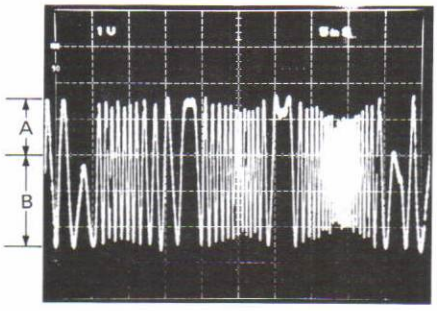


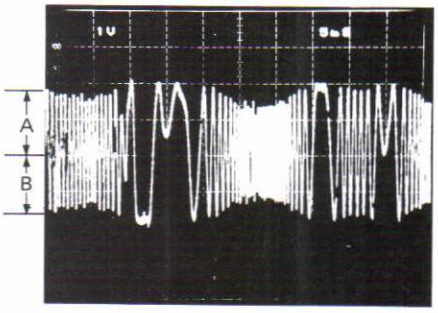
Photo 9-3. Waveform off Null Point

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
6	**TRACKING BALANCE ADJUSTMENT**					
	0.5V/div	5 msec/div	TP1 Pin 2 (TRK. ERR)	VR5 (TRK. BAL)		• Set the test disc. • Set to test mode. ※ • Press the MANUAL SEARCH FWD (▶▶) key to position the carriage near the center of the disc. • Press the TRACK FWD (▶▶I) key and then the PLAY (▶) key to cause the disc to rotate. • Observe the waveform output by TP1 Pin 2 TRK.ERR (tracking error) on the oscilloscope and adjust VR5 TRK. BAL (tracking balance) so that the DC component disappears from the tracking error signal.
7	**TANGENTIAL ADJUSTMENT**					
						• Set to test mode. ※ • Open tray 1 and set the disc. • Close tray 1. • Press the MANUAL SEARCH FWD (▶▶) key to position the pickup at the outermost track. • Rotate gear-pulley by hand in the direction indicated by the arrow and move tray 2 up so that the tangential adjustment screw section becomes visible. • Insert a hexagonal wrench into the tangential adjustment screw section from the right-aslant in the rear of mechanism. • Press the MANUAL SEARCH REV (◀◀) key to position the pickup somewhere at the middle of the tracks. • Press the TRACK FWD (▶▶I) key, PLAY (▶) key, and PAUSE (▮▮) key in that order to close all the servos (the pause indicator will illuminate).



A≠B

Photo 9–4. With DC component



A=B

Photo9–5. Without DC component

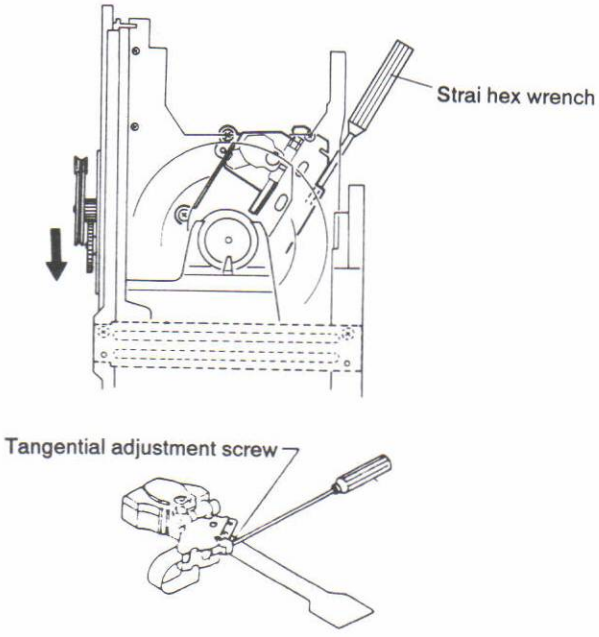
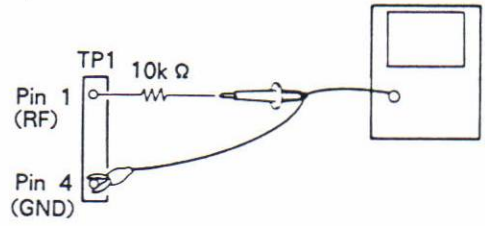


Fig. **9–11.**

※ see page 44

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
	V	H				
		200 ns/div	TP1 Pin 1 (RF output)	Tangential adjustment screw	Sharpest possible eye pattern	• Observe the waveform output by TP1 Pin 1 (RF output) on the oscilloscope and adjust the tangential adjustment screw to achieve the sharpest possible eye pattern. • The correct adjustment point is halfway between the two points where the eye pattern becomes blurred when rotating the tangential adjustment screw clockwise and then counterclockwise. When the whole waveform becomes clear, concentrate on sharpening the fine lines forming the diamond shape at the center of the eye pattern (see Photo 9 –6.). Adjust until the diamond shape consists of single thin lines.  Fig. 9–12. Note: Use a hexagonal wrench to keep the pickup in raised position while performing this adjustment.

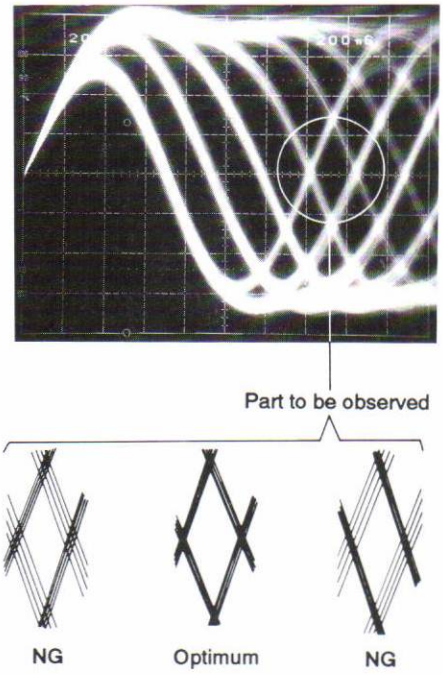


Photo 9–6.

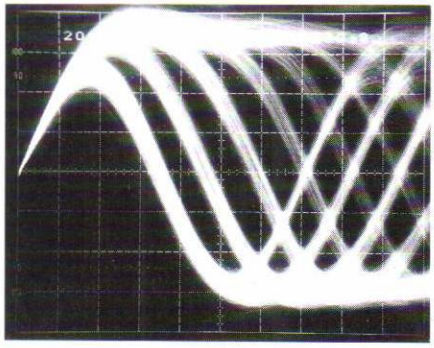


Photo 9–7.

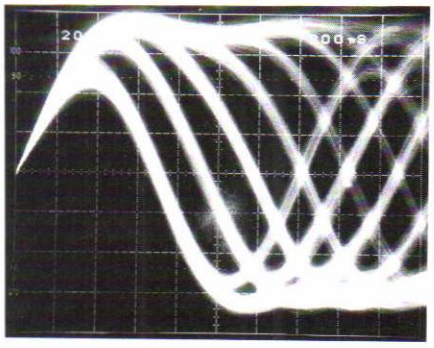
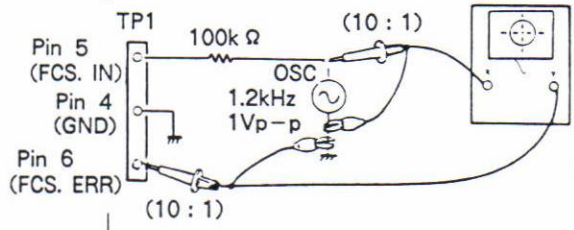
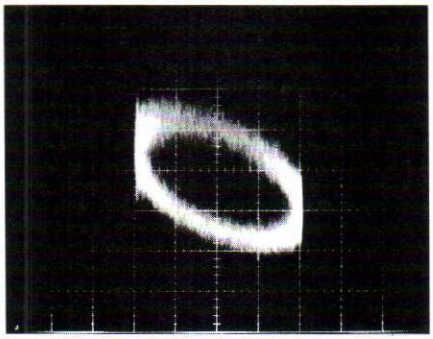
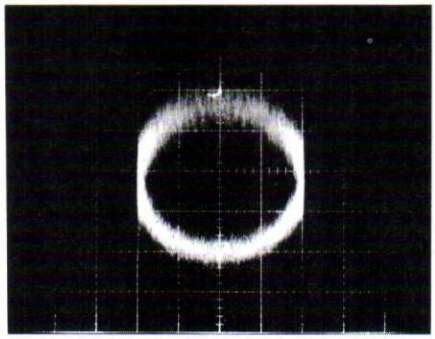
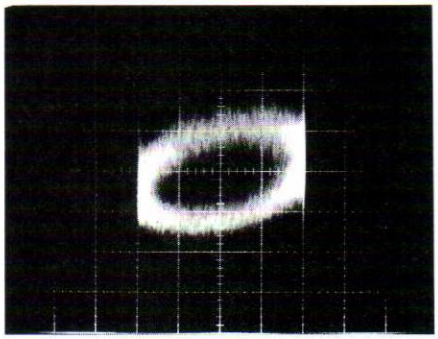


Photo 9–8.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
8	**FOCUS GAIN ADJUSTMENT**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (probe: 10:1)		X–axis TP1 Pin 5 (FCS. IN) Y–axis TP1 Pin 6 (FCS. ERR)	VR3 (FCS. GAN)	Phase difference of 90°	• With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 9–13. • Set to normal PLAY mode. • Turn ON the power of the oscillator and set it to output a 1.2 kHz 1 Vp–p signal. Note: Some oscillators discharge a DC voltage when power is turned on. In that case it is recommended to connect the oscillator after it has been turned on. • Adjust VR3 FCS.GAN (focus gain) so that the Lissajous figures form a horizontal circle on the oscilloscope (phase difference of 90°).  Fig. 9–13.


High gain
Photo 9–9.


Optimum gain
Photo 9–10.


Low gain
Photo 9–11.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
9	**TRACKING GAIN ADJUSTMENT**					
	CH1 (X) , CH2 (Y) 50 mV/div, 5 mV/div (probe: 10:1)		X–axis TP1 Pin 3 (TRK. IN) Y–axis TP1 Pin 2 (TRK. OUT)	VR4 (TRK. GAN)	Phase difference of 90°	• With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 9–14. • Set to normal PLAY mode. • Turn ON the power of the oscillator and set it to output a 1.2 kHz 2 Vp–p signal. Note: Some oscillators discharge a DC voltage when power is turned on. In that case it is recommended to connect the oscillator after it has been turned on. • Adjust VR4 TRK. GAN (tracking gain) so that the Lissajous figures form a horizontal circle on the oscilloscope (phase difference of 90°).

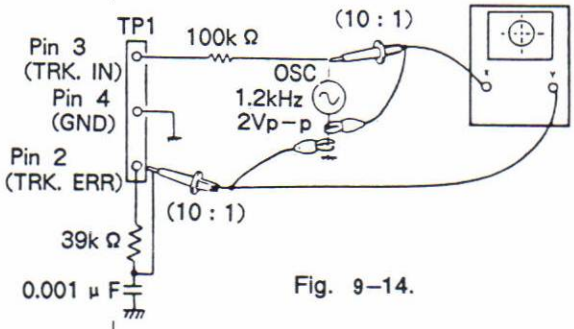
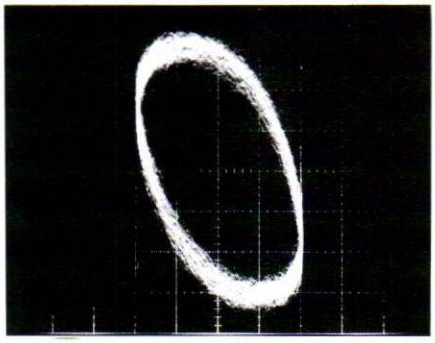
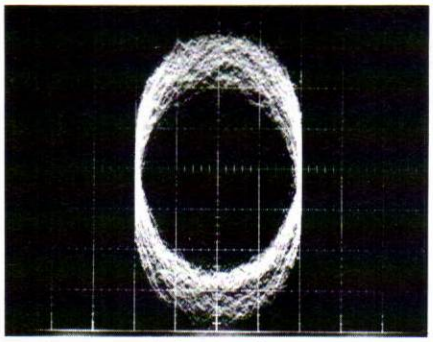


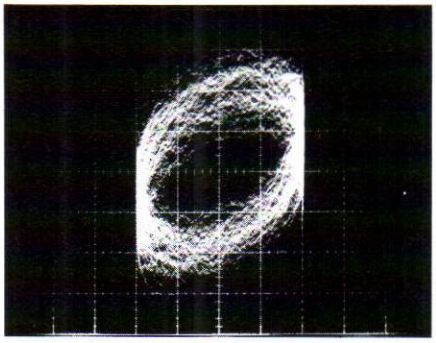
Fig. 9–14.



High gain
Photo 9–12.

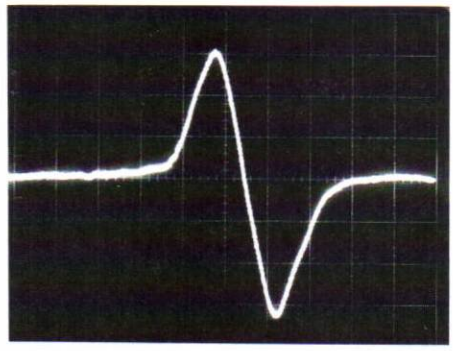


Optimum gain
Photo 9–13.



Low gain
Photo 9–14.

Step No.	Oscilloscope Setting		Test Points	Adjusting Points	Check Items/ Adjustment Specifications	Adjustment Procedure
	V	H				
10	**VCO FREE–RUN FREQUENCY ADJUSTMENT**					
			TP2 Pin 2 (PLCK)	VR8 (VCO. ADJ)	4.275 ± 0.025 MHz	• Set to test mode. ※ • Short–circuit the ASY and GND jumpers with ⊖ screwdriver or similar tool (see Fig. 9 –1.). • Connect a frequency counter capable of measuring frequencies of 10 MHz and above to the PLCK jumper. • Adjust VR8 VCO. ADJ (VCO free–run adjustment) so that the frequency counter reading becomes 4.275 ± 0.025 MHz.
11	**CONFIRMATION OF S CHARACTER (FOCUS ERROR)**					
			TP1 Pin 6 (FCS. ERR)			• Set to test mode. ※ • Short-circuit TP1 Pin 5 FCS. IN (focus in) and Pin 4 GND. • Observe the waveform output by TP1 Pin 6 FCS. ERR (focus error) when pressing the TRACK FWD (▶▶I) key.



Focus error

Photo 9–15.

※ see page 44

9.5 RÉGLAGE

Les éléments à régler pour cette unité sont indiqués ci–dessous. Les réglages doivent être effectués dans l'ordre où ils sont indiqués. L'opération d'ouverture/fermeture (OPEN/CLOSE) pour le plateau de disc 2 ne pouvant pas être effectuée pendant le mode d'essai, utiliser le plateau 1 pour les réglages.

• Eléments à régler et à contrôler

1. Réglage du décalage de suivi de piste, du décalage de focalisation et du décalage RF
2. Réglage du niveau RF
3. Contrôle de la puissance de la diode laser (LD)
4. Contrôle du verrouillage de focalisation et du verrouillage de moyeu
5. Réglage du réseau
6. Réglage de l'équilibrage du suivi de piste
7. Réglage tangentiel
8. Réglage du gain de focalisation
9. Réglage du gain de suivi de piste
10. Réglage de la fréquence continuelle du VCO
11. Vérification de la caractéristique S (erreur de focalisation)

• Matériel de mesure

1. Oscilloscope double trace
2. Appareil de mesure pour puissance laser
3. Disc d'essai (YEDS–7)
4. Filtre de réglage pour gain de boucle
5. Générateur de signal
6. Fréquencemètre
7. Outillage général divers

• Mode d'essai

Méthodes de réglage et d'annulation du mode d'essai

(1) Pour régler le mode d'essai, activer (ON) le contacteur d'alimentation (S707) tout en maintenant enfoncé le contacteur de mode d'essai (S1).

(2) Le mode d'essai est annulé en désactivant (OFF) le contacteur d'alimentation.

Les fonctions des touches dans le mode d'essai sont indiquées dans le tableau 9–1.

• Résistances variables (VR) de réglage et leurs noms

VR1: Puissance laser
VR2: Décalage RF (RF. OFS)
VR3: Gain de focalisation (FCS. GAN)
VR4: Gain de suivi de piste (TRK. GAN)
VR5: Equilibrage de suivi de piste (TRK. BAL)
VR6: Décalage de focalisation (FCS. OFS)
VR7: Décalage de suivi de piste (TRK. OFS)
VR8: Réglage du VCO (VCO. ADJ)

Points de réglage

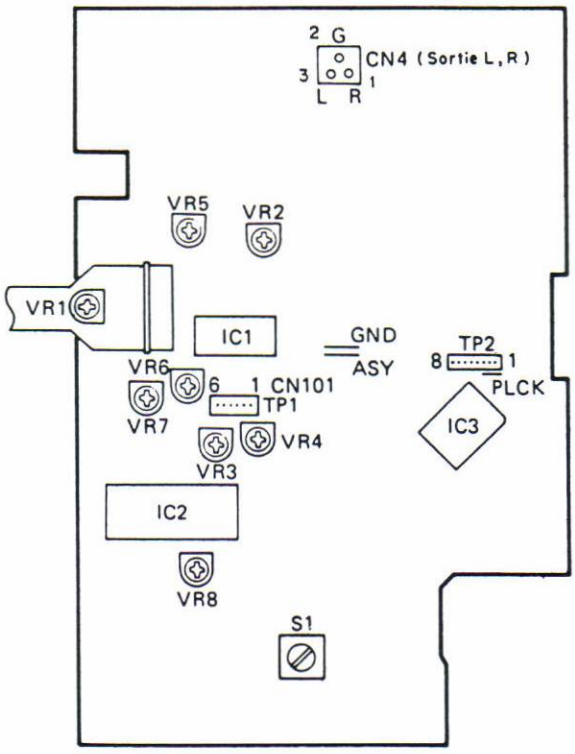
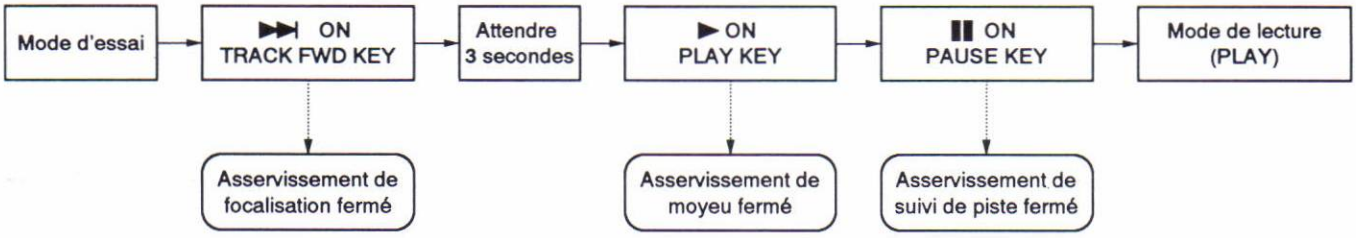


Fig. 9-1.

Dans le mode d'essai, les circuits d'asservissement sont fermés et ouverts individuellement. Par conséquent, les circuits d'asservissement doivent être fermés l'un après l'autre (séquentiellement) afin de régler l'unité dans le mode de lecture (PLAY) normal. Noter également que pendant le mode d'essai, l'unité ne passe pas dans le mode de lecture (PLAY) lorsque seule la touche de PAUSE (❚❚) est enfoncée.

Exemple: Commutation du mode d'arrêt (STOP) au mode de lecture (PLAY).

* Dans le mode d'essai, les circuits d'asservissement doivent être fermés séquentiellement.



• **Fonctions des touches dans le mode d'essai**

Symbole	Désignation de touche	Fonction pendant le mode d'essai	Description
▶▶|	TRACK FWD	Asservissement de focalisation fermé	Fait s'allumer la diode laser et soulève/abaisse l'actionneur de focalisation pour fermer l'asservissement de focalisation. Après la fermeture du plateau de disc 1, le plateau est amené sur la position de lecture (PLAY).
▶	PLAY	Asservissement de moyeu fermé	Ferme l'asservissement dans le mode CLV–A après le démarrage du moteur de moyeu.
❚❚	PAUSE	Asservissement de suivi de piste fermé/ouvert	Réalise l'opération de bascule: ferme l'asservissement de suivi de piste et règle sur le mode de lecture (PLAY) lorsque la touche est enfoncée (si les asservissements de focalisation et de moyeu sont fermés) et le voyant de PAUSE s'allume; ouvre l'asservissement de suivi de piste lorsqu'elle est de nouveau enfoncée.
◀◀	MANUAL SEARCH REV	Retour du chariot (mouvement vers l'intérieur)	Déplace le chariot rapidement (3 cm/s.) vers le centre du disc. Comme il n'y a pas de mécanisme de sécurité pour arrêter le chariot, relâcher la touche lorsque le chariot atteint la piste la plus intérieure.
▶▶	MANUAL SEARCH FWD	Avance du chariot (mouvement vers l'extérieur)	Déplace le chariot rapidement (3 cm/s.) vers le bord extérieur du disc. Comme il n'y a pas de mécanisme de sécurité pour arrêter le chariot, relâcher la touche lorsque le chariot atteint la piste la plus extérieure.
■	STOP	Arrêt	Arrête tous les asservissements et ramène le système à son état initial.
▲	OPEN/CLOSE Disc I	Ouverture/fermeture (plateau de disc)	Ouvre et ferme le plateau de disc. Le capteur ne revient cependant pas à sa position de repos lors de l'ouverture et il reste stationnaire lors de la fermeture du plateau.

Tableau 9–1.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
1.	**REGLAGE DU DECALAGE DE SUIVI DE PISTE, DU DECALAGE DE FOCALISATION ET DU DECALAGE RF**					
				VR5 (TRK. BAL)	Décalage de suivi de piste 45°	• Régler sur le mode d'essai. ※ • Tourner VR5 TRK. BAL (équilibrage de suivi de piste), dans le sens inverse des aiguilles d'une montre, d'environ 45° depuis la position centrale.
			TP1 Broche 2 (TRK. ERR)	VR7 (TRK. OFS)	0V ± 50 mV	• Régler VR7 TRK. OFS (décalage de suivi de piste) de sorte que la tension à la broche 2 de TP1 TRK. ERR (erreur de suivi de piste) devienne 0V ± 50 mV.
			TP1 Broche 6 (FCS. ERR)	VR6 (FCS. OFS)	Décalage de focalisation 0V ± 50 mV	• Régler VR6 FCS. OFS (décalage de focalisation) de sorte que la tension à la broche 6 de TP1 FCS. ERR (erreur de focalisation) devienne 0V ± 50 mV.
			TP1 Broche 1 (RF output)	VR2 (RF. OFS)	Décalage RF 100 mV ± 50 mV	• Régler VR2 RF. OFS (décalage RF) de sorte que la tension de sortie RF à la broche 1 de TP1 devienne 100 mV ± 50 mV. Note: Après avoir effectué le réglage du décalage de suivi de piste, toujours effectuer "6. REGLAGE DE L'EQUILIBRAGE DE SUIVI DE PISTE".
2.	**REGLAGE DU NIVEAU RF**					
			TP1 Broche 1 (RF output)	VR1 (puissance laser)	1,5V $^{+0,2V}_{-0V}$	• Régler sur le mode d'essai. ※ • Reproduire le disc d'essai, raccorder l'oscilloscope à la broche 1 de TP1 (sortie RF) et mesurer la tension c–c de la forme d'onde RF. • Régler de sorte que la tension devienne 1,5V $^{+0,2V}_{-0V}$.
3.	**CONTROLE DE LA PUISSANCE DE LA DIODE LASER (LD)**					
					Moins de 0,13 mW	• Régler sur le mode d'essai. ※ • Appuyer sur la touche d'avance de piste (TRACK FWD) (▶▶I) pour faire s'allumer la diode laser (LD). • Placer le détecteur de l'appareil de mesure pour puissance laser directement au-dessus de l'objectif et vérifier que la puissance de sortie de la diode laser ne dépasse pas 0,13 mW.

※ voir page 57

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
4.	**CONTROLE DU VERROUILLAGE DE FOCALISATION ET DU VERROUILLAGE DE MOYEU**					
	V 0,5V/div.	H 100 ms. /div.	TP1 Broche 1 (sortie RF)		Présence d'une sortie RF Rotation normale (sens des aiguilles d'une montre)	• Mettre en place le disc d'essai. • Régler sur le mode d'essai. ※ • Appuyer sur la touche de recherche manuelle en avant (MANUAL SEARCH FWD) (▶▶) pour amener le capteur près du centre du disc. • Observer la sortie de la broche 1 de TP1 (sortie RF) sur l'oscilloscope. Vérifier que le signal RF est sorti après avoir appuyé sur la touche d'avance de piste (TRACK FWD) (▶▶|). • Appuyer sur la touche de lecture (PLAY ▶) et vérifier que le disc tourne à une vitesse constante (approx. 30 tr/mn. près du centre du disc) dans le sens normal (sens des aiguilles d'une montre); vérifier que le disc ne tourne pas trop rapidement ou dans le sens inverse des aiguilles d'une montre.
5.	**REGLAGE DU RESEAU (1) (en utilisant un disc de 8 cm)**					
						Note: Ce réglage ne peut être effectué qu'en utilisant un disc de 8 cm ayant des microcuvettes sur un diamètre de 75 mm. • Régler sur le mode d'essai. ※ • Mettre en place le disc de 8 cm. Amener le capteur sur la piste la plus extérieure de sorte qu'il soit positionné sur les microcuvettes et que le trou de réglage du réseau du capteur soit visible par le trou dans le mécanisme d'asservissement (voir Fig. 9-2). • Appuyer en séquence sur les touches d'avance de piste (TRACK FWD) (▶▶|) et de lecture (PLAY) (▶) pour fermer l'asservissement de focalisation et l'asservissement de moyeu (ne pas fermer l'asservissement de suivi de piste). • Observer la forme d'onde sortie de la broche 2 de TP1 TRK. ERR (erreur de suivi de piste) sur l'oscilloscope, en insérant un filtre passe-bas de 4 kHz (voir la Fig. 9-3).

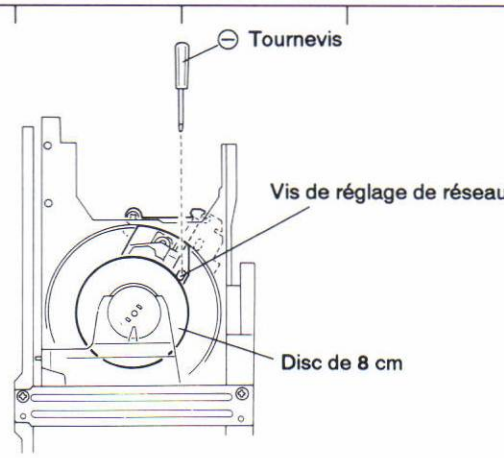


Fig. 9-2.

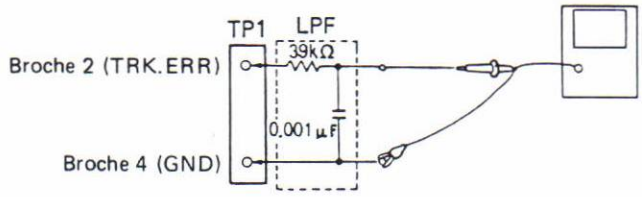


Fig. 9-3.

※ voir page 57

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
	0,5V/div.	5 ms./div.	TP1 Broche 2 (TRK. ERR)	Réseau Réseau	Point zéro Amplitude maximum	• Insérer un tournevis (–) dans le trou de réglage de réseau et tourner pour trouver le point zéro (voir la Photo 9 –1). • Tourner ensuite lentement le tournevis (–) dans le sens inverse des aiguilles d'une montre depuis le point zéro et régler jusqu'à ce que la forme d'onde (signal d'erreur de suivi de piste) atteigne son amplitude maximum (voir la Photo 9 –2). Note: Prendre des précautions car l'insertion de force du tournevis (–) fait flotter l'unité du capteur vers le haut. • Vérifier, finalement, qu'il n'y a pas de fluctuation majeure dans la tension c–c du signal d'erreur de suivi de piste (ne pas insérer de filtre de coupure passe–bas 4 kHz) lorsque le capteur est déplacé sur la piste la plus intérieure et lorsque le capteur est déplacé sur la piste la plus extérieure. S'il y a une différence de plus de ± 10%, rerégler en tournant la vis de réglage du réseau jusqu'au point d'amplitude maximum du signal d'erreur de suivi de piste.
5	**REGLAGE DU RESEAU (2) (sans disc de 8 cm)**					
						Effectuer ce réglage lorsqu'un disc de 8 cm n'est pas disponible et que le réglage du réseau (1) ne peut pas être effectué. Déposer le plateau 1 avant d'effectuer ce réglage. Dépose du plateau 1 1. Régler le plateau I sur la position ouverture (OPEN) 2. Déposer les vis (C1) et (C2) qui fixent le plateau dans la Fig. 9-4. 3. Déplacer le plateau dans la direction de la flèche de la Fig. 9-5 et en détachant la protubérence (B) du plateau 1, libérer le l'unité en U à angle de glissement du crochet (A) du plateau 1. 4. Retirer le plateau en soulevant légèrement le côté de l'unité en U à angle de glissement.

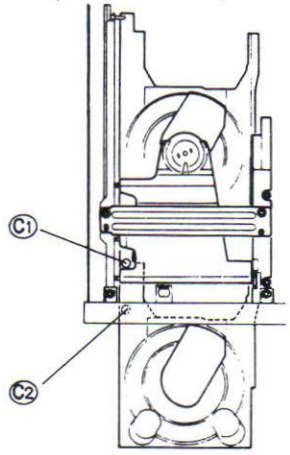


Fig. 9–4.

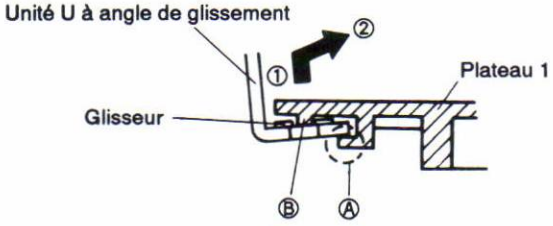


Fig. 9–5.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
						Note: Ce réglage ne peut être effectué qu'en utilisant un disc ayant des microcuvettes sur un diamètre de 115 mm maximum. Le disc d'essai (YEDS-7) ne peut pas être utilisé. • Régler sur le mode d'essai. ※ • Mettre en place un disc. Amener le capteur sur la piste la plus extérieure de sorte qu'il soit positionné sur les microcuvettes et que le trou de réglage du réseau du capteur soit visible par le trou dans le mécanisme d'asservissement (voir Fig. 9-6). • Appuyer en séquence sur les touches d'avance de piste (TRACK FWD) (▶▶|) et de lecture (PLAY) (▶) pour fermer l'asservissement de focalisation et l'asservissement de moyeu (ne pas fermer l'asservissement de suivi de piste). • Observer la forme d'onde sortie de la broche 2 de TP1 TRK. ERR (erreur de suivi de piste) sur l'oscilloscope, en insérant un filtre passe-bas de 4 kHz (voir la Fig. 9-7).
	0,5V/div.	5 ms./div.	TP1 Broche 2 (TRK.ERR)	Réseau Réseau	Point zéro Amplitude maximum	• Insérer un tournevis (–) dans le trou de réglage de réseau et tourner pour trouver le point zéro (voir la Photo 9-1). • Tourner ensuite lentement le tournevis (–) dans le sens inverse des aiguilles d'une montre depuis le point zéro et régler jusqu'à ce que la forme d'onde (signal d'erreur de suivi de piste) atteigne son amplitude maximum (voir la Photo 9-2). Note: Prendre des précautions car l'insertion de force du tournevis (–) fait flotter l'unité du capteur vers le haut. • Vérifier, finalement, qu'il n'y a pas de fluctuation majeure dans la tension c-c du signal d'erreur de suivi de piste (ne pas insérer de filtre de coupure passe-bas 4 kHz) lorsque le capteur est déplacé sur la piste la plus intérieure et lorsque le capteur est déplacé sur la piste la plus extérieure. S'il y a une différence de plus de ± 10%, rerégler en tournant la vis de réglage du réseau jusqu'au point d'amplitude maximum du signal d'erreur de suivi de piste.

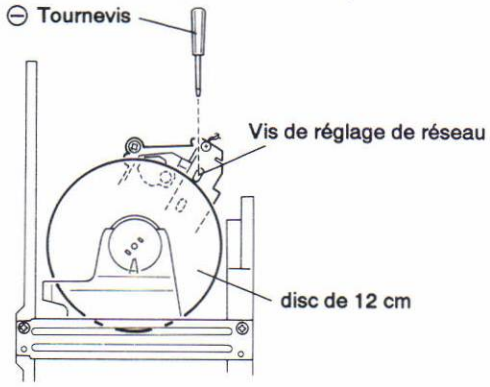


Fig. 9-6.

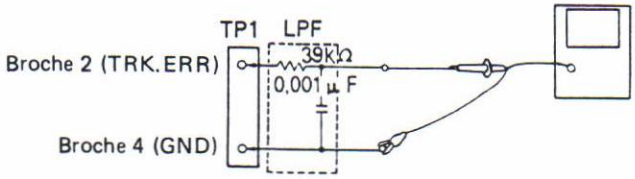


Fig. 9-7.

※ voir page 57

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				

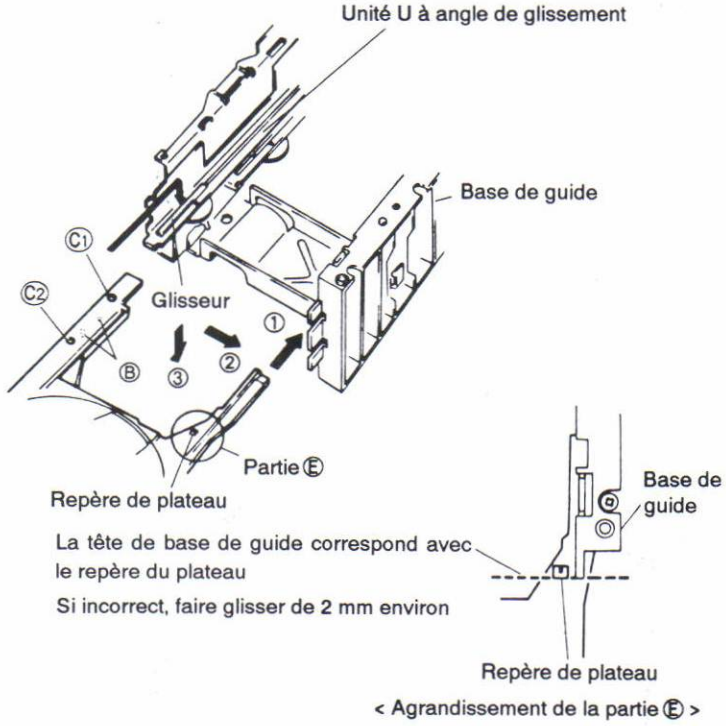


Fig. 9–8.

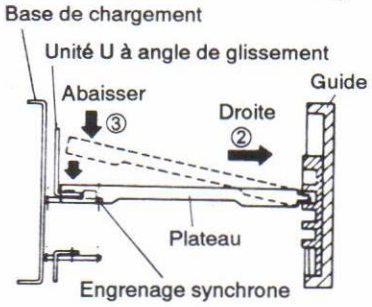


Fig. 9–9.

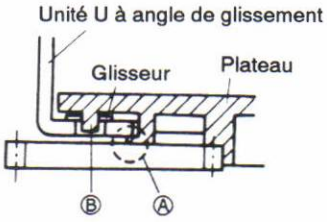


Fig. 9–10.

Après avoir terminé les réglages, remettre le plateau de 1 de la manière suivante.
Déposer le panneau frontal précédemment monté, qui gêne la mise en place du plateau de 1.

1. Régler l'unité ensemble en U à angle de glissement sur la position la plus avancée (où l'ouverture du plateau est totale).
2. Régler le glisseur sur la position la plus avancée comme indiqué sur la Fig. 9-8.
3. Comme indiqué par la ligne en pointillés de la Fig. 9-9, insérer l'oblique de plateau 1 à la position où les trous de montage du glisseur et du plateau 1 correspondent. (S'assurer que le glisseur ne revient pas en arrière).
4. Abaisser le plateau 1 tout en le tirant sur la droite (vers le guide). Procéder ainsi tout en soutenant le glisseur d'un doigt.
5. Régler la position du plateau 1 afin que le crochet Ⓐ et la protubérance Ⓑ soient fixés correctement, comme indiqué sur la Fig. 10-10. De plus, s'assurer que l'engrenage synchrone s'engage bien avec l'engrenage du plateau 1.
6. S'assurer que les trous de montage du glisseur sont bien positionnés sur les trous de vis du plateau 1 et resserrer la vis (C1), puis la vis (C2).
7. Après avoir terminé le montage du plateau 1, ouvrir complètement le plateau 1 et vérifier si la position mutuelle indiquée sur l'illustration agrandie de la partie Ⓔ est bien correcte.
   Sinon, les réglages doivent être recommencés depuis le début.

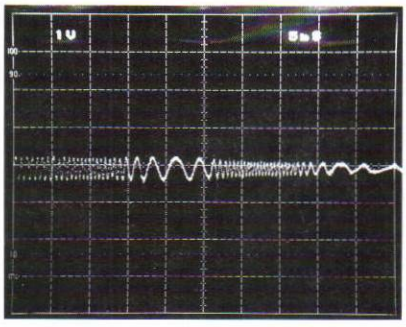


Photo 9–1. Forme d'onde de point zéro

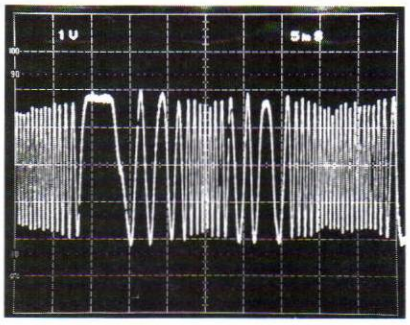


Photo 9–2. Amplitude maximum

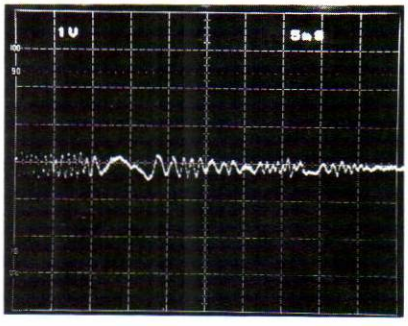
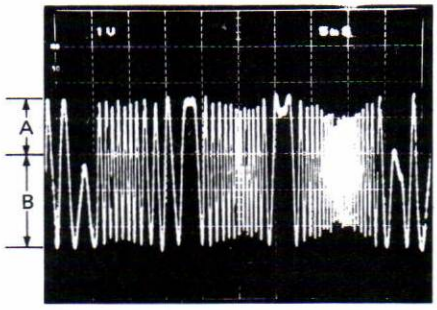
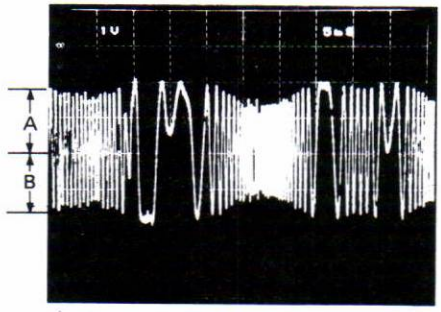


Photo 9–3. Forme d'onde sans point zéro

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
6.	**REGLAGE DE L'EQUILIBRAGE DU SUIVI DE PISTE**					
	0,5V/div.	5 ms./div.	TP1 Broche 2 (TRK.ERR)	VR5 (TRK.BAL)		• Mettre en place le disc d'essai. • Régler sur le mode d'essai. ※ • Appuyer sur la touche de recherche manuelle en avant (MANUAL SEARCH FWD) (▶▶) pour positionner le chariot près du centre du disc. • Appuyer sur la touche d'avance de piste (TRACK FWD) (▶▶I) puis sur la touche de lecture (PLAY) (▶) pour faire tourner le disc. • Observer la forme d'onde sortie par la broche 2 de TP1 TRK. ERR (erreur de suivi de piste) sur l'oscilloscope et régler VR5 TRK. BAL (équilibrage du suivi de piste) de sorte que la composante CC disparaisse du signal d'erreur de suivi de piste.
7.	**REGLAGE TANGENTIEL**					
						• Régler sur le mode d'essai. ※ • Ouvrir le plateau 1 et mettre en place le disc. • Fermer le plateau 1. • Appuyer sur la touche de recherche manuelle en avant (MANUAL SEARCH FWD) (▶▶) pour positionner le capteur sur la piste la plus extérieure. • Tourner à la main la poulie d'engrenage dans le sens indiqué par la flèche et déplacer le plateau 2 vers le haut de sorte que la section de la vis de réglage tangentiel devienne visible. • Insérer une clé à six pans dans la section de la vis de réglage tangentiel depuis l'oblique droite á l'arrière du mécanisme. • Appuyer sur la touche de recherche manuelle en arrière (MANUAL SEARCH REV) (◀◀) pour positionner le capteur vers le milieu des pistes. • Appuyer sur la touche d'avance de piste (TRACK FWD) (▶▶I), la touche de lecture (PLAY) (▶) et la touche de PAUSE (▮▮), dans cet ordre, pour fermer tous les asservissements (le voyant de pause s'allume).



A≠B



A=B

Photo 9–4. Avec composante CC

Photo 9–5. Sans composante CC

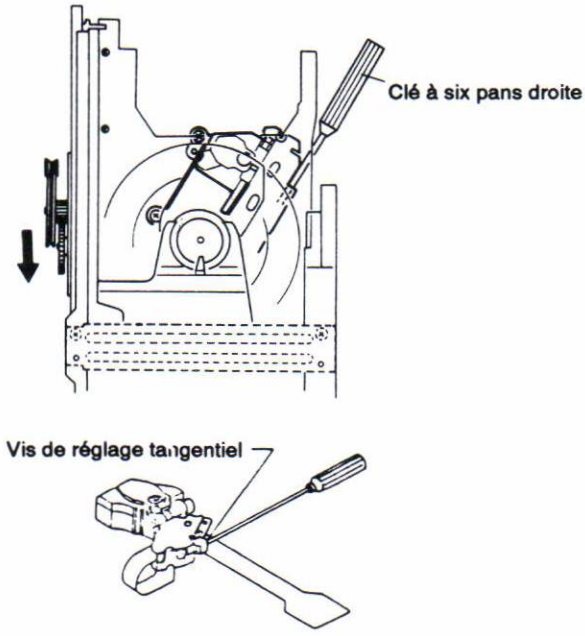
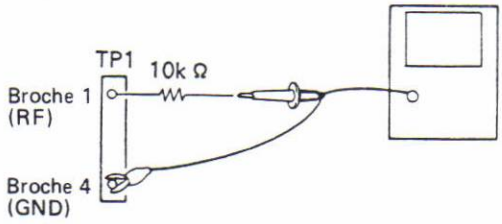


Fig. 9–11.

※ voir page 57

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
		200 ns./div.	TP1 Broche 1 (sortie RF)	Vis de réglage tangentiel	Mire la plus nette possible	• Observer la forme d'onde sortie par la broche 1 de TP1 (sortie RF) sur l'oscilloscope et ajuster la vis de réglage tangentiel afin d'obtenir la mire la plus nette possible. • Le point d'ajustement correct se situe à mi–chemin entre les deux points où la mire devient floue lorsque la vis de réglage tangentiel est tournée dans le sens des aiguilles d'une montre puis dans le sens inverse. Lorsque toute la forme d'onde devient claire, se concentrer sur la netteté des lignes fines composant la forme de diamant au centre de la mire (voir Photo 9 –6). Ajuster jusqu'à ce que la forme de diamant soit constituée de fines lignes séparées.  Fig. 9 –12. Note: Utiliser une clé à six pans pour maintenir le capteur en position élevée pendant que ce réglage est effectué.

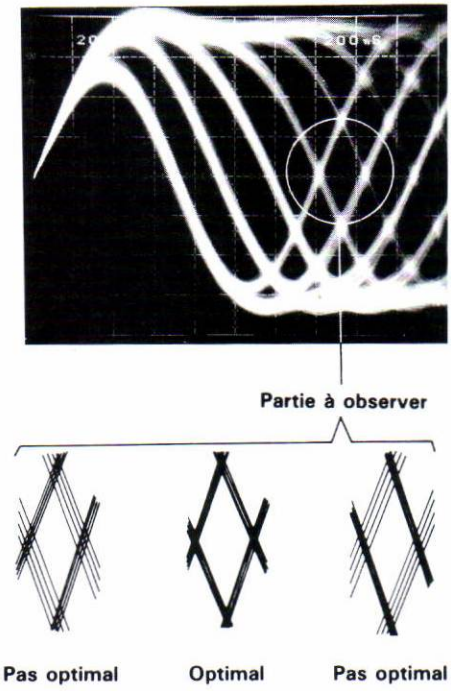


Photo 9 –6.

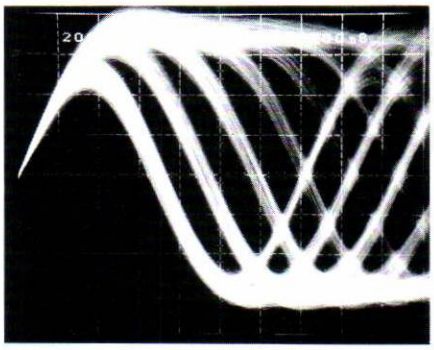


Photo 9 –7.

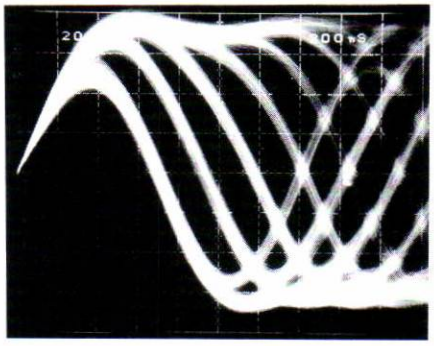


Photo 9 –8.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
8.	**REGLAGE DU GAIN DE FOCALISATION**					
	CH1 (X), CH2 (Y) 20 mV/div. 5 mV/div. (sonde: 10:1)		Axe X TP1 Broche 5 (FCS. IN) Axe Y TP1 Broche 6 (FCS. ERR)	VR3 (FCS. GAN)	Différence de phase de 90°	• L'alimentation de l'oscillateur étant coupée (OFF), raccorder l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 9 –13. • Régler sur le mode de lecture (PLAY) normal. • Mettre l'oscillateur sous tension (ON) et le régler pour sortir un signal de 1,2 kHz 1 Vc–c. Note: Certains oscillateurs déchargent une tension CC lorsque l'alimentation est activée. Dans ce cas, il est recommandé de raccorder l'oscillateur après qu'il a été mis sous tension. • Régler VR3 FCS. GAN (gain de focalisation) de sorte que les figures Lissajous forment un cercle horizontal sur l'oscilloscope (différence de phase de 90°).

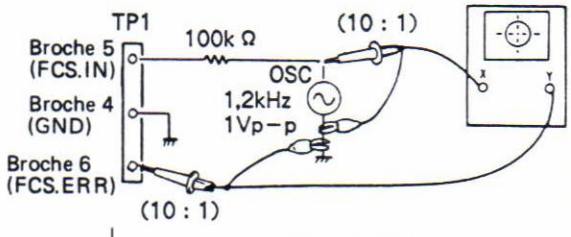
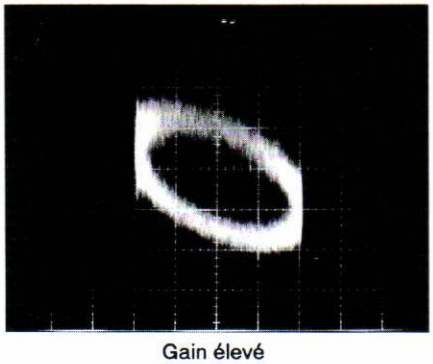
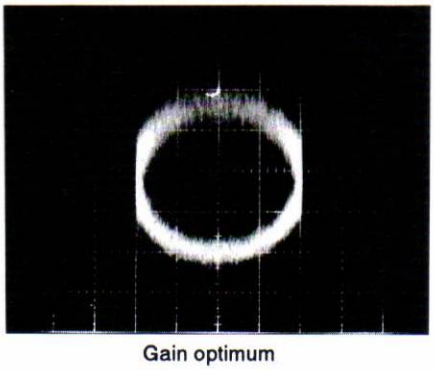


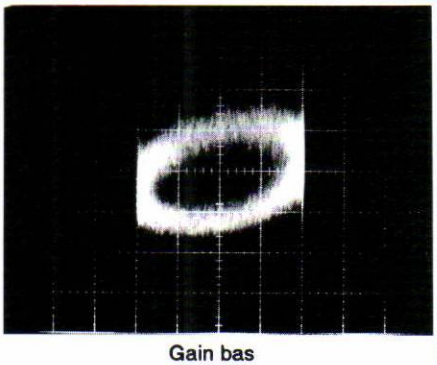
Fig. 9 –13.



Gain élevé
Photo 9 –9.



Gain optimum
Photo 9 –10.



Gain bas
Photo 9 –11.

Etape No.	Réglage de l'oscilloscope V	Réglage de l'oscilloscope H	Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
9.	**REGLAGE DU GAIN DE SUIVI DE PISTE**					
	CH1 (X), CH2 (Y) 50 mV/div. 5 mV/div. (sonde: 10:1)		Axe X TP1 Broche 3 (TRK. IN) Axe Y TP1 Broche 2 (TRK. OUT)	VR4 (TRK. GAN)	Différence de phase de 90°	• L'alimentation de l'oscillateur étant coupée (OFF), raccorder l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 9-14. • Régler sur le mode de lecture (PLAY) normal. • Mettre l'oscillateur sous tension (ON) et le régler pour sortir un signal de 1,2 kHz 2 Vc-c. Note: Certains oscillateurs déchargent une tension CC lorsque l'alimentation est activée. Dans ce cas, il est recommandé de raccorder l'oscillateur après qu'il a été mis sous tension. • Régler VR4 TRK.GAN (gain de suivi de piste) de sorte que les figures Lissajous forment un cercle horizontal sur l'oscilloscope (différence de phase de 90°).

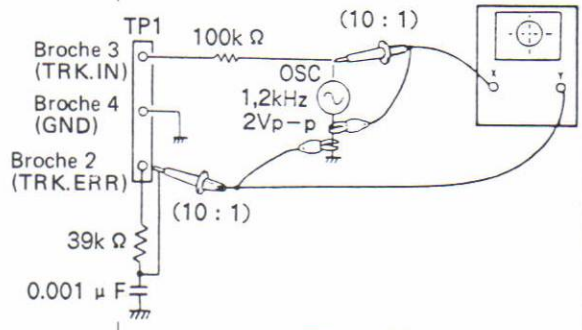
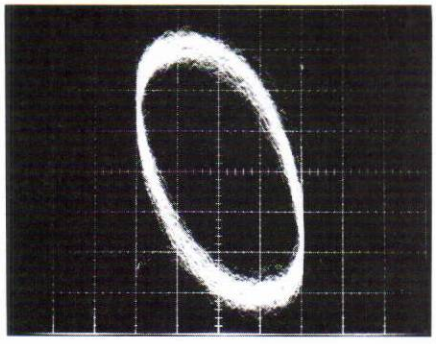
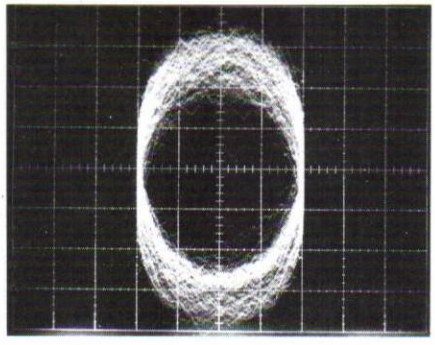


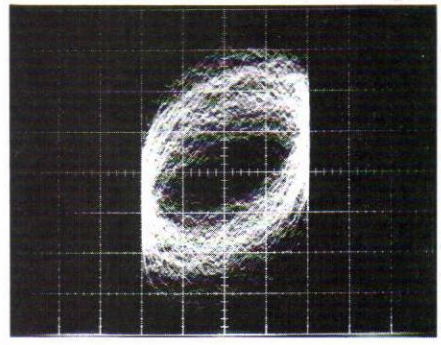
Fig. 9-14.



Gain élevé
Photo 9-12.

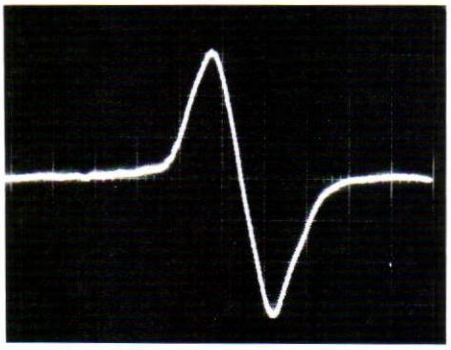


Gain optimum
Photo 9-13.



Gain bas
Photo 9-14.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Points de contrôle/ spécifications de réglage	Méthode de réglage
	V	H				
10.	**REGLAGE DE LA FREQUENCE CONTINUELLE DU VCO**					
			TP2 Broche 2 (PLCK)	VR8 (VCO. ADJ)	4,275 ± 0,025 MHz	• Régler sur le mode d'essai . ※ • Court–circuiter les ponts ASY et GND avec un tournevis (–) ou un outil similaire (voir Fig. 9 –1). • Raccorder un fréquencemètre capable de mesurer des fréquences de 10 MHz et plus au pont PLCK. • Régler VR8 VCO. ADJ (réglage continuel du VCO) de sorte que l'indication du fréquencemètre devienne 4,275 ± 0,025 MHz.
11.	**VERIFICATION DE LA CARACTERISTIQUE S (ERREUR DE FOCALISATION)**					
			TP1 Broche 6 (FCS. ERR)			• Régler sur le mode d'essai. ※ • Court-circuiter les broches de TP1 FCS et la broche 4 GND. • Observer la forme d'onde sortie par la broche 6 de TP1 FCS. ERR (erreur de focalisation) lorsque la touche d'avance de piste (TRACK FWD) (▶▶I) est enfoncée.



Focus error

Photo 9 –15.

※ voir page 57

9.5 AJUSTE

La lista de abajo muestra los ítems de ajuste de esta unidad. Los ajustes deben efectuarse en el orden indicado. Dado que la operación de abertura/cerrado de la bandeja de disco 2 no puede efectuarse en el modo de prueba, emplee la bandeja 1 para el ajuste.

• Items de ajuste y confirmación

1. Ajuste de error de seguimiento, enfoque y RF
2. Ajuste de nivel de RF
3. Confirmación de potencia del diodo laser (LD)
4. Confirmación de enclavamiento de enfoque y eje
5. Ajuste de retículo
6. Ajuste de seguimiento
7. Ajuste tangencial
8. Ajuste de ganancia de enfoque
9. Ajuste de ganancia de seguimiento
10. Ajuste de frecuencia propia del oscilador controlado por tensión
11. Confirmación de carácter S (error de enfoque)

• Equipo de medición

1. Osciloscopio de doble trazo
2. Medidor de potencia de laser
3. Disco de prueba (YEDS–7)
4. Filtro de ajuste de ganancia de bucle
5. Generador de señales
6. Contador de frecuencia
7. Herramientas de uso general

• Modo de prueba

Cómo establecer y cancelar el modo de prueba

(1) Para establecer el modo de prueba, coloque el interruptor de encendido (S707) en ON mientras mantiene el interruptor de modo de prueba (S1) presionado.
(2) Para cancelar el modo de prueba, coloque el interruptor de encendido en OFF.

Las funciones de las teclas en el modo de prueba están indicadas en la tabla **9–1**.

• Resistores variables (VR) de ajuste y sus nombres

VR1: Potencia de laser
VR2: Error de RF (RF. OFS)
VR3: Ganancia de enfoque (FCS. GAN)
VR4: Ganancia de seguimiento (TRK. GAN)
VR5: Equilibrio de seguimiento (TRK. BAL)
VR6: Error de enfoque (FCS. OFS)
VR7: Error de seguimiento (TRK. OFS)
VR8: Frecuencia propia de oscilador controlado por tensión (VCO. ADJ)

Puntos de ajuste

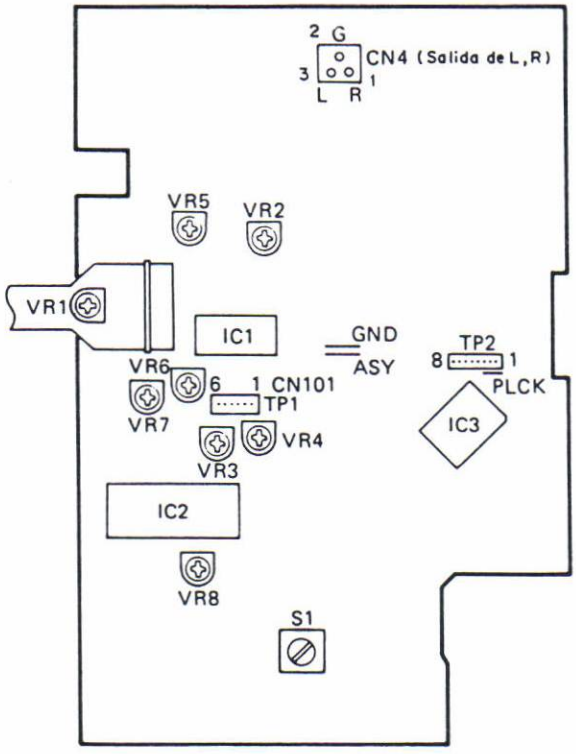
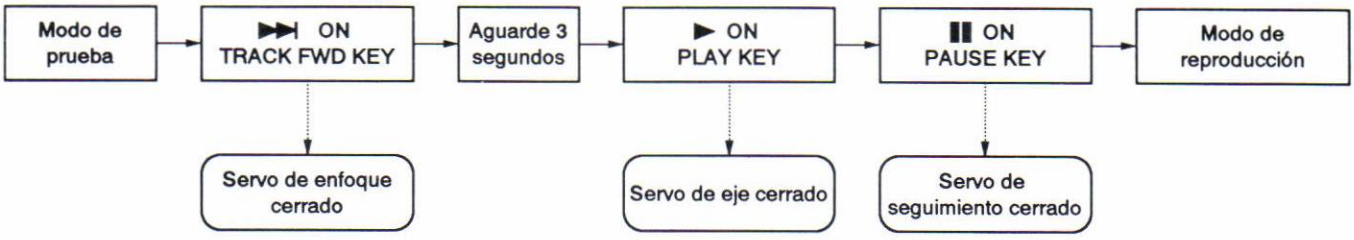


Fig. 9-1.

En el modo de prueba, los servos se abren y cierran independientemente. Por lo tanto, deben cerrarse uno a la vez (consecutivamente) para que la unidad permanezca en el modo de reproducción normal. Advierta también que en el modo de prueba la unidad no entrará en el modo de reproducción si se presiona solamente la tecla de pausa (❚❚).

Ejemplo: Cambiando del modo de parada al de reproducción

* En el modo de prueba, los servos deben activarse en forma consecutiva.



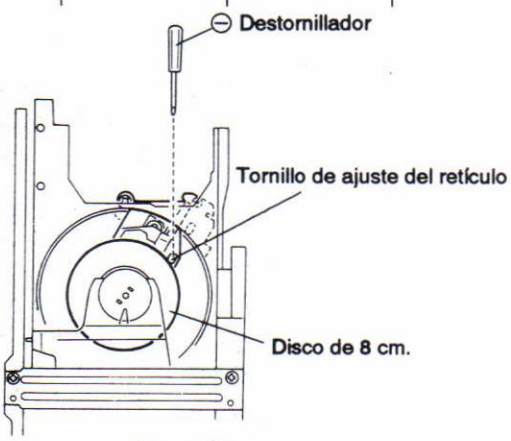
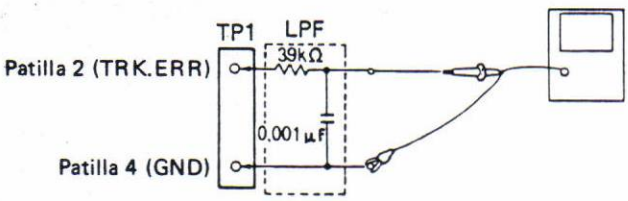
• **Funciones de las teclas en el modo de prueba**

Símbolo	Nombre de la tecla	Función en el modo de prueba	Descripción
▶▶|	TRACK FWD	Cerrar el servo de enfoque	Enciende el diodo laser y levanta/baja el actuador de enfoque para cerrar el servo de enfoque. Después de cerrar la bandeja de disco 1, la bandeja se mueve a la posición de reproducción.
▶	PLAY	Cerrar el servo de eje	Cierra el servo en el modo CLV–A después de arrancar el motor de eje.
❚❚	PAUSE	Abrir/cerrar el servo de seguimiento	Efectúa una operación de conexión oscilante: Cierra el servo de seguimiento y establece el modo de reproducción cuando se la presiona una vez (siempre y cuando los servos de enfoque y eje estén cerrados), iluminándose al mismo tiempo el indicador PAUSE, y abre el servo de seguimiento cuando se la presiona nuevamente.
◀◀	MANUAL SEARCH REV	Transportar el carro hacia el centro	Mueve el carro rápidamente (3 cm/s) hacia el centro del disco. Dado que no hay un sistema de seguridad para detener el carro, suelte la tecla cuando el carro llegue a la última pista del disco.
▶▶	MANUAL SEARCH FWD	Transportar el carro hacia afuera	Mueve el carro rápidamente (3 cm/s) hacia el borde exterior del disco. Dado que no hay un sistema de seguridad para detener el carro, suelte la tecla cuando éste llegue al borde exterior del disco.
■	STOP	Parada	Detiene todos los servos y vuelve el sistema a su estado inicial.
▲	OPEN/CLOSE Disc I	Abrir/cerrar la bandeja de disco	Abre y cierra la bandeja de disco. El captador no vuelve a la posición de reposo al abrir la bandeja, y permanece quieto al cerrarla.

Tabla 9–1.

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
1	**AJUSTE DE ERROR DE SEGUIMIENTO, ENFOQUE Y RF**					
						• Establezca el modo de prueba. ※
				VR5 (TRK. BAL)	Error de seguimiento 45°	• Gire VR5 TRK. BAL (equilibrio de seguimiento) en sentido antihorario a unos 45° de la posición central.
			Patilla 2 de TP1 1 (TRK. ERR)	VR7 (TRK. OFS)	0V ± 50 mV	• Ajuste VR7 TRK. OFS (error de seguimiento) de modo que la tensión de error de seguimiento (TRK. ERR) en la patilla 2 de TP1 sea 0V ± 50 mV.
			Patilla 6 de TP1 1 (FCS. ERR)	VR6 (FCS. OFS)	Error de enfoque 0V ± 50 mV	• Ajuste VR6 FCS. OFS (error de enfoque) de modo que la tensión de error de enfoque (FCS. ERR) en la patilla 6 de TP1 sea 0V ± 50 mV.
			Patilla 1 de TP1 (RF. output)	VR2 (RF. OFS)	Error de RF 100 mV ± 50 mV	• Ajuste VR2 RF. OFS (error de RF) de modo que la tensión de salida de RF en la patilla 1 de TP1 sea 100 mV ± 50 mV. Nota: Después de ajustar el error de seguimiento, no deje de ajustar el equilibrio de seguimiento como se indica en la sección 6.
2	**AJUSTE DE NIVEL DE RF**					
						• Establezca el modo de prueba. ※
			Patilla 1 de TP1 (RF output)	VR1 (potencia de laser)	1,5V +0,2V −0V	• Reproduzca el disco de prueba, conecte el osciloscopio a la patilla 1 de TP1 (salida de RF) y mida la tensión p–p de la onda de RF. • Ajuste de modo que la tensión sea 1,5V +0,2V −0V.
3	**CONFIRMACION DE POTENCIA DE DIODO LASER (LD)**					
						• Establezca el modo de prueba. ※
					Menor que 0,13 mW	• Presione la tecla TRACK FWD (▶▶I) para encender el diodo laser. • Coloque el sensor del medidor de potencia de laser exactamente sobre la lente del objetivo y confirme que la potencia de salida del laser no exceda 0,13 mW.

※ vea la página 70

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
4	**CONFIRMACION DE ENCLAVAMIENTO DE ENFOQUE Y EJE**					
	V 0,5V/div.	H 100 ms /div.	Patilla 1 de TP1 (salida de RF)		Existe salida de RF Rotación normal (en sentido horario)	• Coloque el disco de prueba. • Establezca el modo de prueba. ※ • Presione la tecla MANUAL SEARCH FWD (▶▶) y mueva el captador hasta cerca del centro del disco. • Observe la salida de la patilla 1 de TP1 en el osciloscopio. Confirme que la señal de RF sea emitida después de presionar la tecla TRACK FWD (▶▶I). • Presione la tecla PLAY (▶) y confirme que el disco gire a velocidad constante (aprox. 30 rpm con el captador cerca del centro del disco) en el sentido normal (horario); asegúrese de que el disco no gire demasiado rápido ni en sentido opuesto.
5	**AJUSTE DE RETICULO (1) (empleando un disco de 8 cm)**					
	 Fig. 9-2.  Fig. 9-3.					Nota: Este ajuste sólo puede efectuarse usando un disco de 8 cm con hoyos sobre un diámetro de 75 mm. • Establezca el modo de prueba. ※ • Coloque el disco de 8 cm. Mueva el captador a la pista exterior, ubicándolo sobre la zona con hoyos de modo que el orificio de ajuste de retículo de captador pueda verse por el orificio del servo-mecanismo (vea la Fig. 9-2). • Presione las teclas TRACK FWD (▶▶I) y PLAY (▶) consecutivamente para cerrar los servos de enfoque y eje (no cierre el servo de seguimiento). • Observe la forma de onda emitida por la patilla 2 de TP1 (TRK. ERR, error de seguimiento) en el osciloscopio, insertando un filtro de paso bajo de 4 kHz (vea la Fig. 19-3).

※ vea la página 70

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
	0,5 V/div.	5 ms/div.	Patilla 2 de TP1 (TRK.ERR)	Retículo Retículo	Punto cero Amplitud máxima	• Inserte un destornillador en el orificio de ajuste del retículo, y gírelo hasta encontrar el punto cero (vea la Foto 9 –1). • A continuación, gire lentamente el destornillador en sentido antihorario a partir del punto cero hasta que la forma de onda (señal de error de seguimiento) adquiera amplitud máxima (vea la Foto 9 –2). Nota: Inserte el destornillador cuidadosamente, pues hacerlo con demasiada fuerza haría levantar la unidad de captador. • Finalmente, confirme que no hayan mayores fluctuaciones en la tensión p–p de la señal de error de seguimiento (sin insertar el filtro de paso bajo de 4 kHz) al mover el captador a la pista interior o a la exterior. Si hubiera una diferencia mayor que ± 10%, repita el ajuste girando el tornillo de ajuste de retículo al punto de amplitud máxima de la señal de error de seguimiento.
5	**AJUSTE DE RETICULO (2) (sin disco de 8 cm)**					
						Utilice este método cuando no disponga de un disco de 8 cm y el procedimiento de ajuste de retículo (1) no sea posible. Antes de comenzar, extraiga la bandeja 1. • Extracción de la bandeja 1. 1. Poner la bandeja en la posición abierta (OPEN). 2. Sacar los tornillos (C1) y (C2) sujetando la bandeja como se ilustra en la Fig. 9 -4. 3. Mover la bandeja en la dirección de la flecha como se indica en la Fig. 9 –5 y, retirando la parte sobresaliente (B) de la misma, desenganchar la pieza en U del gancho (A). 4. Tirar de la bandeja levantando ligeramente la pieza en U de la corredera.

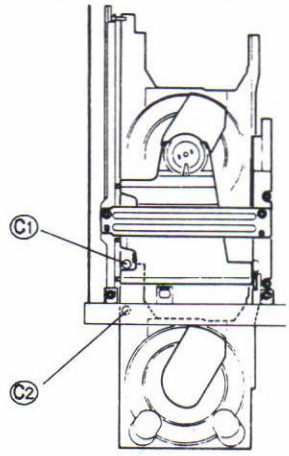


Fig. 9—4.

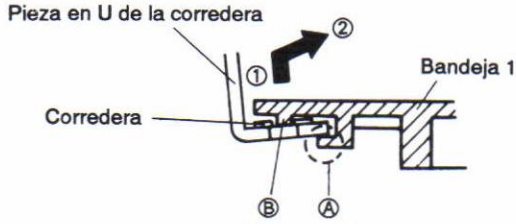


Fig. 9 –5.

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
						Nota: El disco empleado para este ajuste debe tener hoyos hasta un diámetro de 115 mm. El disco de prueba (YEDS-7) no puede utilizarse. • Establezca el modo de prueba. ※ • Coloque el disco. Mueva el captador a la pista exterior, ubicándolo sobre la zona con hoyos de modo que el orificio de ajuste de retículo de captador pueda verse por el orificio del servomecanismo (vea la Fig. 9-6). • Presione las teclas TRACK FWD (▶▶I) y PLAY (▶) consecutivamente para cerrar los servos de enfoque y eje (no cierre el servo de seguimiento).
						• Observe la forma de onda emitida por la patilla 2 de TP1 (TRK.ERR, error de seguimiento) en el osciloscopio, insertando un filtro de paso bajo de 4 kHz (vea la Fig. 9-7).
	0,5 V/div.	5 ms/div.	Patilla 2 de TP1 (TRK.ERR)	Retículo Retículo	Punto cero Amplitud máxima	• Inserte un destornillador en el orificio de ajuste del retículo, y gírelo hasta encontrar el punto cero (vea la Foto 9-1). • A continuación, gire lentamente el destornillador en sentido antihorario a partir del punto cero hasta que la forma de onda (señal de error de seguimiento) adquiera amplitud máxima (vea la Foto 9-2). Nota: Inserte el destornillador cuidadosamente, pues hacerlo con demasiada fuerza haría levantar la unidad de captador. • Finalmente, confirme que no hayan mayores fluctuaciones en la tensión p-p de la señal de error de seguimiento (sin insertar el filtro de paso bajo de 4 kHz) al mover el captador a la pista interior o a la exterior. Si hubiera una diferencia mayor que ± 10%, repita el ajuste girando el tornillo de ajuste de retículo al punto de amplitud máxima de la señal de error de seguimiento.

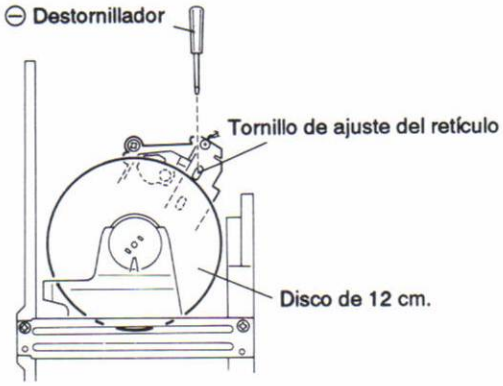


Fig. 9-6.

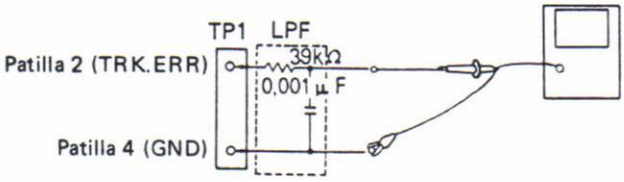


Fig. 9-7.

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Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				

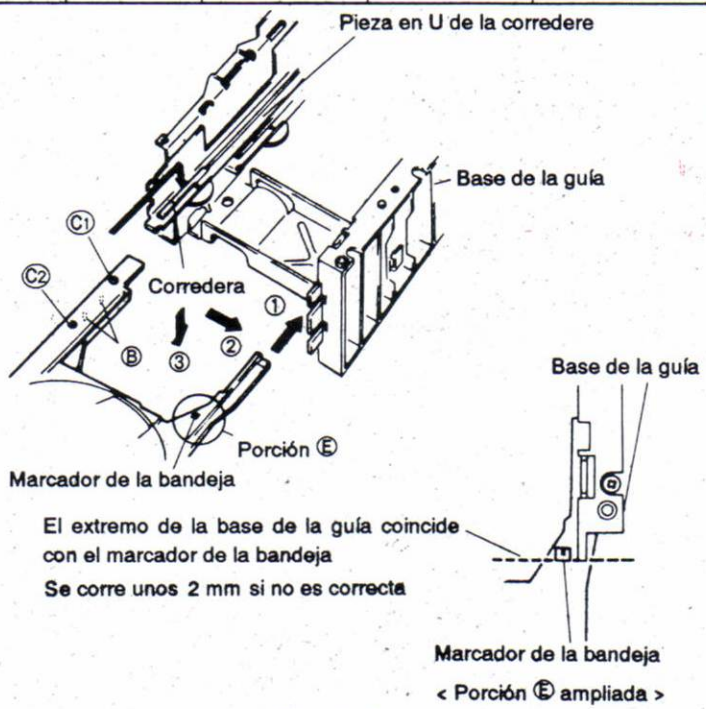


Fig. 9 -8.

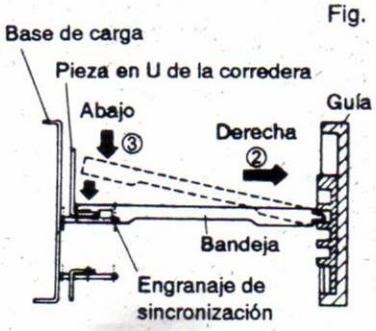


Fig. 9 -9.

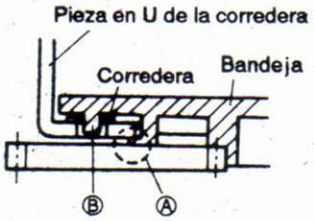


Fig. 9–10.

Después de terminar todos los ajustes, fijar la bandeja 1 de la manera siguiente:
En primer lugar, desmontar el panel frontal, pues impide el montaje de la bandeja 1.

1. Poner la pieza en U en la posición más avanzada (bandeja totalmente abierta).
2. Poner la corredera en la posición más avanzada como se ilustra en la Fig. 9 -8.
3. Como ilustra la linea punteada en la Fig. 9 -9, introducir la bandeja hasta la posición en que sus agujeros coincidan con los de la corredera (asegúrese de que la corredera no se deslice hacia atrás).
4. Bajar la bandeja empujándola hacia la derecha (hacia la guía), mientras se sostiene la corredera desde abajo con un dedo.
5. Ajustar la posición de la bandeja de manera que el gancho Ⓐ y la parte sobresaliente Ⓑ queden en la posición correcta según se ilustra en la Fig. 9 -10.
   Comprobar que el engranaje de sincronización engrana correctamente con el de la bandeja.
6. Comprobar que los agujeros de montaje de la corredera coinciden con los del centro de la bandeja. Apretar los tornillos C1 y C2 en este orden.
7. Después de terminar el montaje, abrir completamente la bandeja y comprobar que las piezas ocupan las posiciones ilustradas en la porción Ⓔ ampliada.
   Si la posición no es satisfactoria, se debe repetir el ajuste nuevamente desde el comienzo.

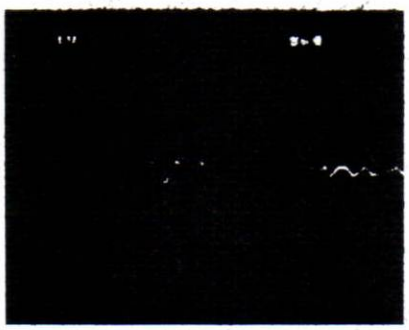


Foto 9 -1. Forma de onda de punto cero

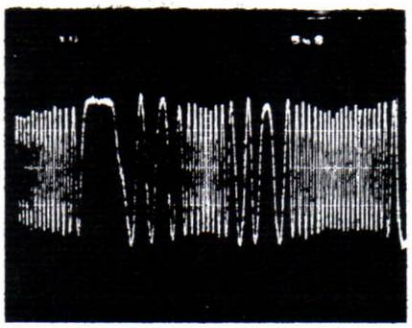
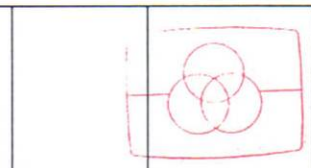
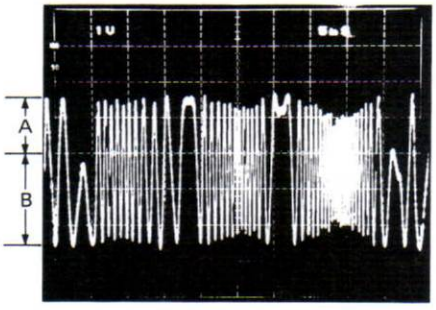


Foto 9 -2. Amplitud máxima

Foto 9 -3. Forma de onda fuera del punto cero

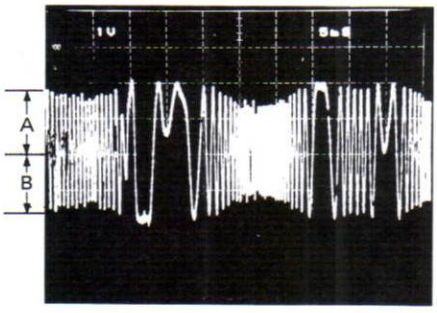
Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
6	**AJUSTE DE EQUILIBRIO DE SEGUIMIENTO**					
	0,5 V/div.	5 ms/div.	Patilla 2 de TP1 (TRK. ERR)	VR5 (TRK. BAL)		• Coloque el disco de prueba. • Establezca el modo de prueba. ※ • Presione la tecla MANUAL SEARCH FWD (▶▶) y mueva el carro hasta cerca del centro del disco. • Presione la tecla TRACK FWD (▶▶I) y después la tecla PLAY (▶) para hacer girar al disco. • Observe la forma de onda emitida por la patilla 2 de TP1, TRK. ERR (error de seguimiento) en el osciloscopio, y ajuste VR5 TRK. BAL (equilibrio de seguimiento) de modo que la componente de CC desaparezca de la señal de error de seguimiento.





A≠B

Foto 9 –4. Con componente de CC



A=B

Foto 9 –5. Sin componente de CC

7	**AJUSTE TANGENCIAL**					
						• Establezca el modo de prueba. ※ • Abra la bandeja 1 y coloque el disco. • Cierre la bandeja 1. • Presione la tecla MANUAL SEARCH FWD (▶▶) y mueva el captador hasta la pista exterior. • Gire la polea engranaje con la mano en el sentido indicado por la flecha, y mueva la bandeja 2 hacia arriba de modo que la sección del tornillo de ajuste tangencial quede a la vista. • Inserte una llave hexagonal en la sección del tornillo de ajuste tangencial desde la derecha y en forma oblicua, a través de la parte posterior del mecanismo. • Presione la tecla MANUAL SEARCH REV (◀◀) para ubicar el captador en un lugar cualquiera en medio del disco. • Presione las teclas TRACK FWD (▶▶I), PLAY (▶) y PAUSE (II) en este orden para cerrar todos los servos (se encenderá el indicador de pausa).

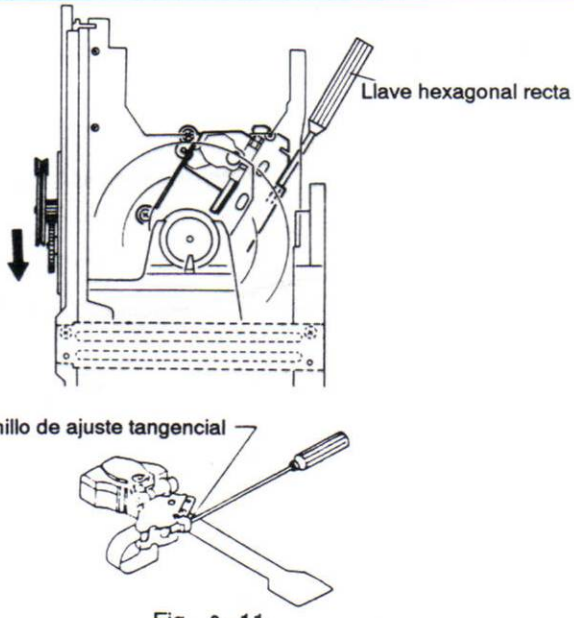
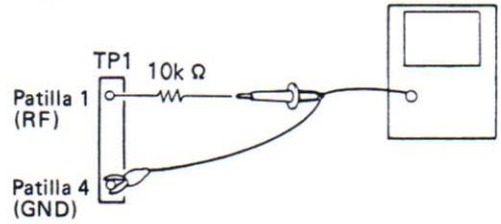


Fig. 9 –11.

※ vea la página 70

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
		200 ns/div.	TP1 Patilla 1 (salida de RF)	Tornillo de ajuste tangencial	Imagen de prueba más nítida posible	• Observe la forma de onda emitida por la patilla 1 de TP1 (salida de RF) en el osciloscopio y ajuste el tornillo de ajuste tangencial hasta obtener la imagen de prueba más nítida posible. • El punto de ajuste correcto se encuentra entre los dos puntos en que la imagen de prueba se vuelve borrosa al girar el tornillo de ajuste tangencial en sentido horario y después en sentido antihorario. Cuando la forma de onda se aclare en su totalidad, trate de hacer nítidas las líneas finas que forman la figura de diamante en el centro de la imagen de prueba (vea la Foto 9 -6). Ajuste hasta que la figura de diamante esté compuesta de líneas finas simples.  Fig. 9 -12. Nota: Emplee una llave hexagonal para mantener el captador levantado durante este ajuste.

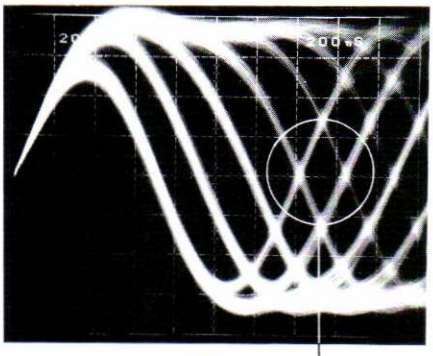


写真-7

Parte a ser observada

No es óptimo

Optimo

No es óptimo

Foto 9 –6.

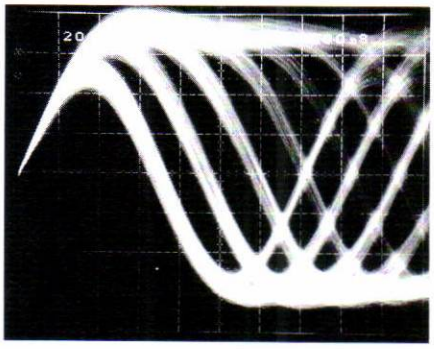


Foto 9 –7.

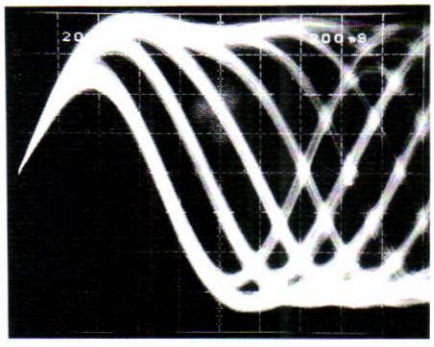


Foto 9 –8.

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
8	**AJUSTE DE GANANCIA DE ENFOQUE**					
	Canal 1 (x), canal 2 (y) 20 mV/div., 5 mV/div. (sonda: 10:1)		Eje de las "x" Patilla 5 de TP1 (FCS.IN) Eje de las "y" Patilla 6 de TP1 (FCS.ERR)	VR3 (FCS.GAN)	Diferencia de fase 90°	• Con el oscilador apagado, conecte el osciloscopio y el oscilador como lo ilustra la Fig. 9-13. • Establezca el modo de reproducción normal. • Encienda el oscilador y ajústelo para emitir una señal de 1,2 kHz y 1 Vp-p. Nota: Algunos osciladores descargan una tensión de CC al ser encendidos. En este caso es recomendable conectar el oscilador después de encenderlo. • Ajuste VR3 (FCS. GAN, ganancia de enfoque) de modo que la figura de Lissajous se vea como un círculo horizontal en el osciloscopio (diferencia de fase 90°).

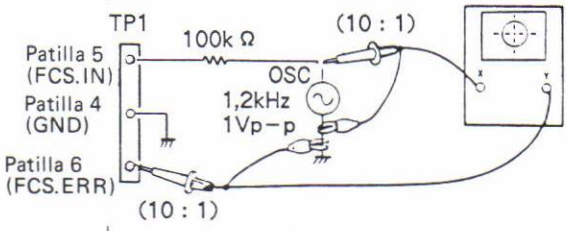
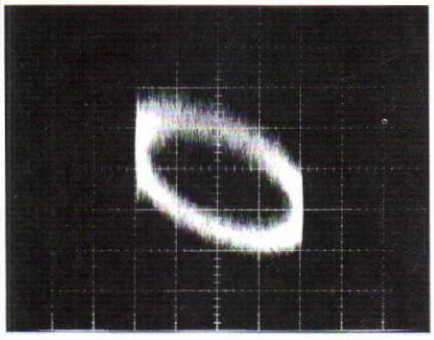
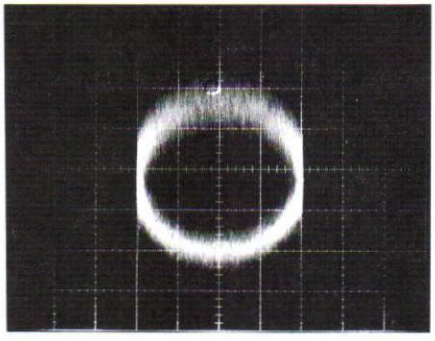


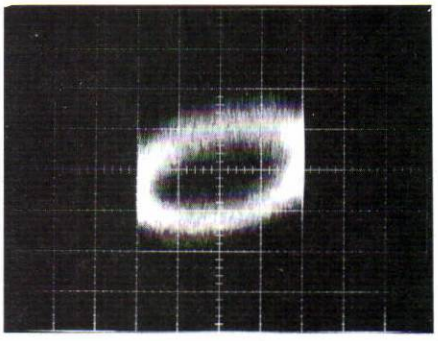
Fig. 9-13.



Alta ganancia
Foto 9-9.



Ganancia óptima
Foto 9-10.



Baja ganancia
Foto 9-11.

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
9	**AJUSTE DE GANANCIA DE SEGUIMIENTO**					
	Canal 1 (x), canal 2 (y) 50 mV/div., 5 mV/div. (sonda: 10:1)		Eje de las "x" Patilla 3 de TP1 (TRK. IN) Eje de las "y" Patilla 2 de TP1 (TRK. OUT)	VR4 (TRK. GAN)	Diferencia de fase 90°	• Con el oscilador apagado, conecte el osciloscopio y el oscilador como lo ilustra la Fig. 9-14. • Establezca el modo de reproducción normal. • Encienda el oscilador y ajústelo para emitir una señal de 1,2 kHz y 2 Vp-p. Nota: Algunos osciladores descargan una tensión de CC al ser encendidos. En este caso es recomendable conectar el oscilador después de encenderlo. • Ajuste VR4 (TRK. GAN, ganancia de enfoque) de modo que la figura de Lissajous se vea como un círculo horizontal en el osciloscopio (diferencia de fase 90°).

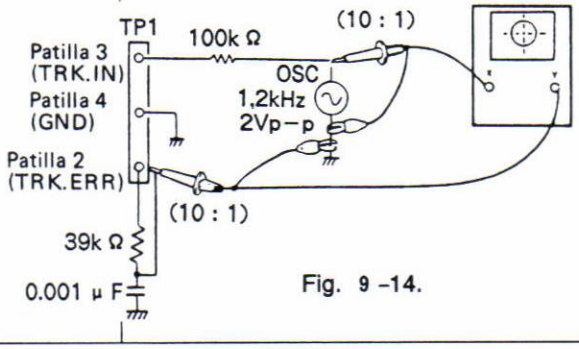
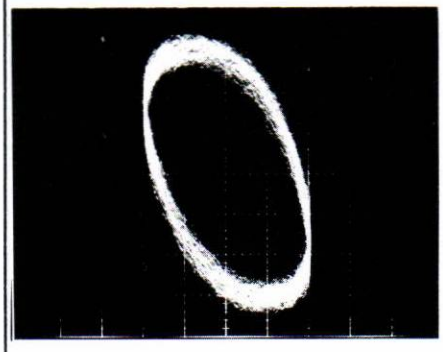
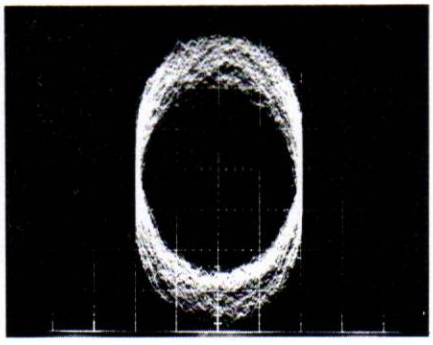


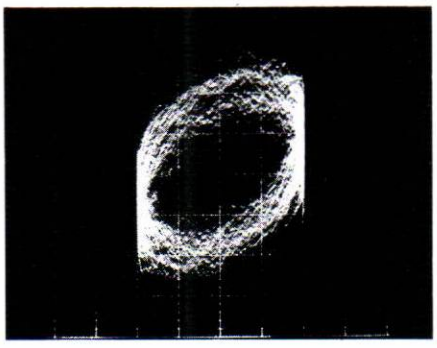
Fig. 9-14.



Alta ganancia
Foto 9-12.

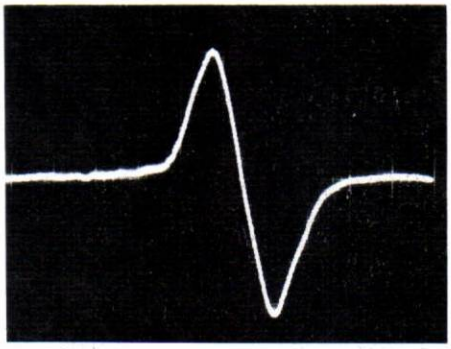


Ganancia óptima
Foto 9-13.



Baja ganancia
Foto 9-14.

Paso N°	Ajuste del osciloscopio		Puntos de confirmación	Puntos de ajuste	Items de confirmación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
10	**AJUSTE DE FRECUENCIA PROPIA DEL OSCILADOR CONTROLADO POR TENSION**					
			Patilla 2 de TP2 (PLCK)	VR8 (VCO. ADJ)	4.275 ± 0,025 MHz	• Establezca el modo de prueba. ※ • Ponga en cortocircuito los contactos ASY y GND con un destornillador o herramienta similar (vea la Fig. 9–1). • Conecte un contador de frecuencia capaz de medir frecuencias de 10 MHz y mayores al puente PLCK. • Ajuste VR8 (VCO. ADJ, ajuste de frecuencia libre del oscilador controlado por tensión) de modo que el contador de frecuencia indique 4,275 ± 0,025 MHz.
11	**CONFIRMACION DEL CARACTER S (ERROR DE ENFOQUE)**					
			Patilla 6 de TP1 (FCS. ERR)			• Establezca el modo de prueba. ※ • Cortocircuite el contacto 5 de TP1 FCS. IN (entrada de enfoque) y el contacto 4 a tierra. • Observe la forma de onda emitida por la patilla 6 de TP1 (FCS.ERR, error de enfoque) al presionar la tecla TRACK FWD (▶▶I).



Focus error

Foto 9 –15.

※ vea la página 70

10.DECK AMPLIFIER BLOCK

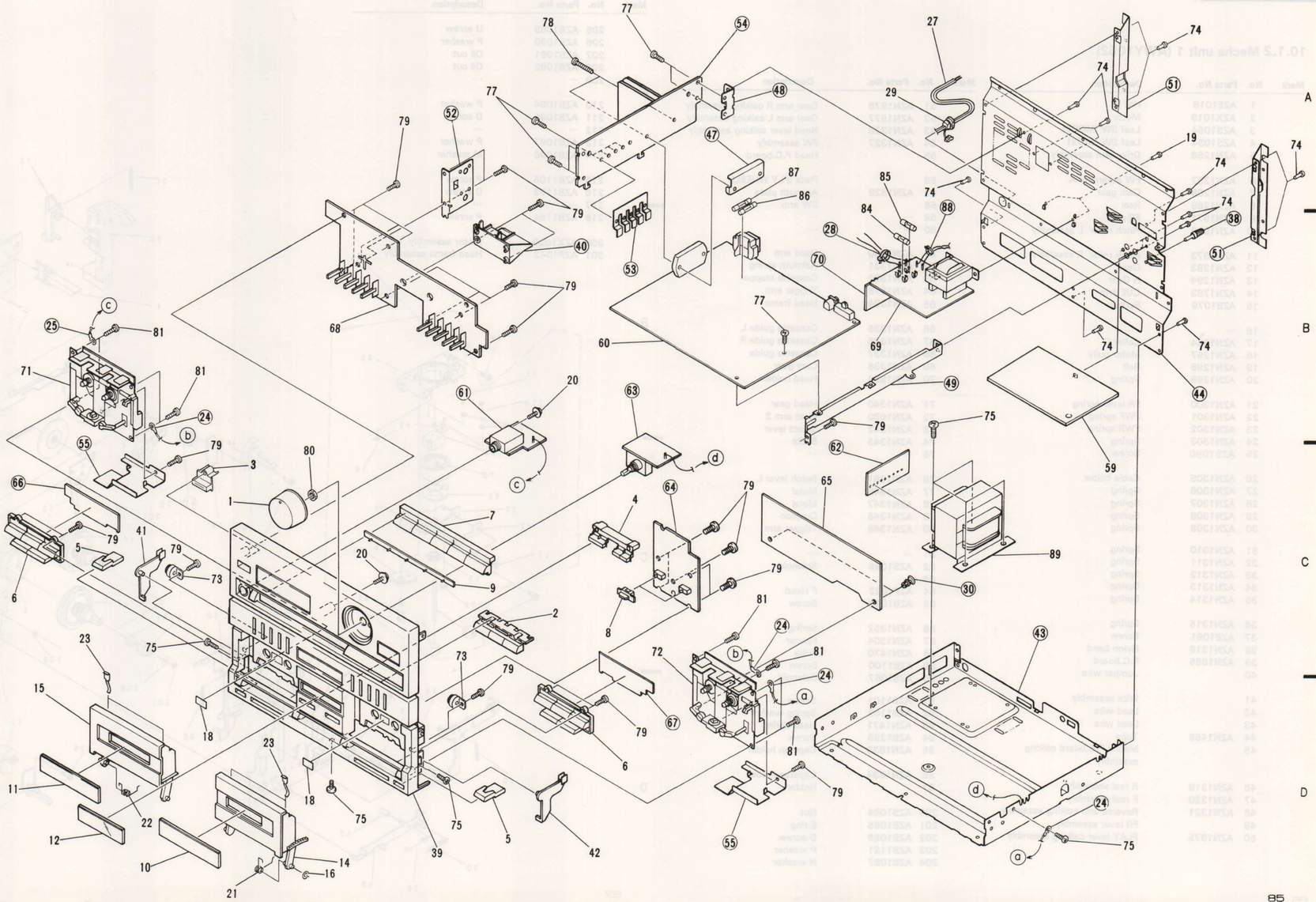
10.1 EXPLODED VIEWS AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

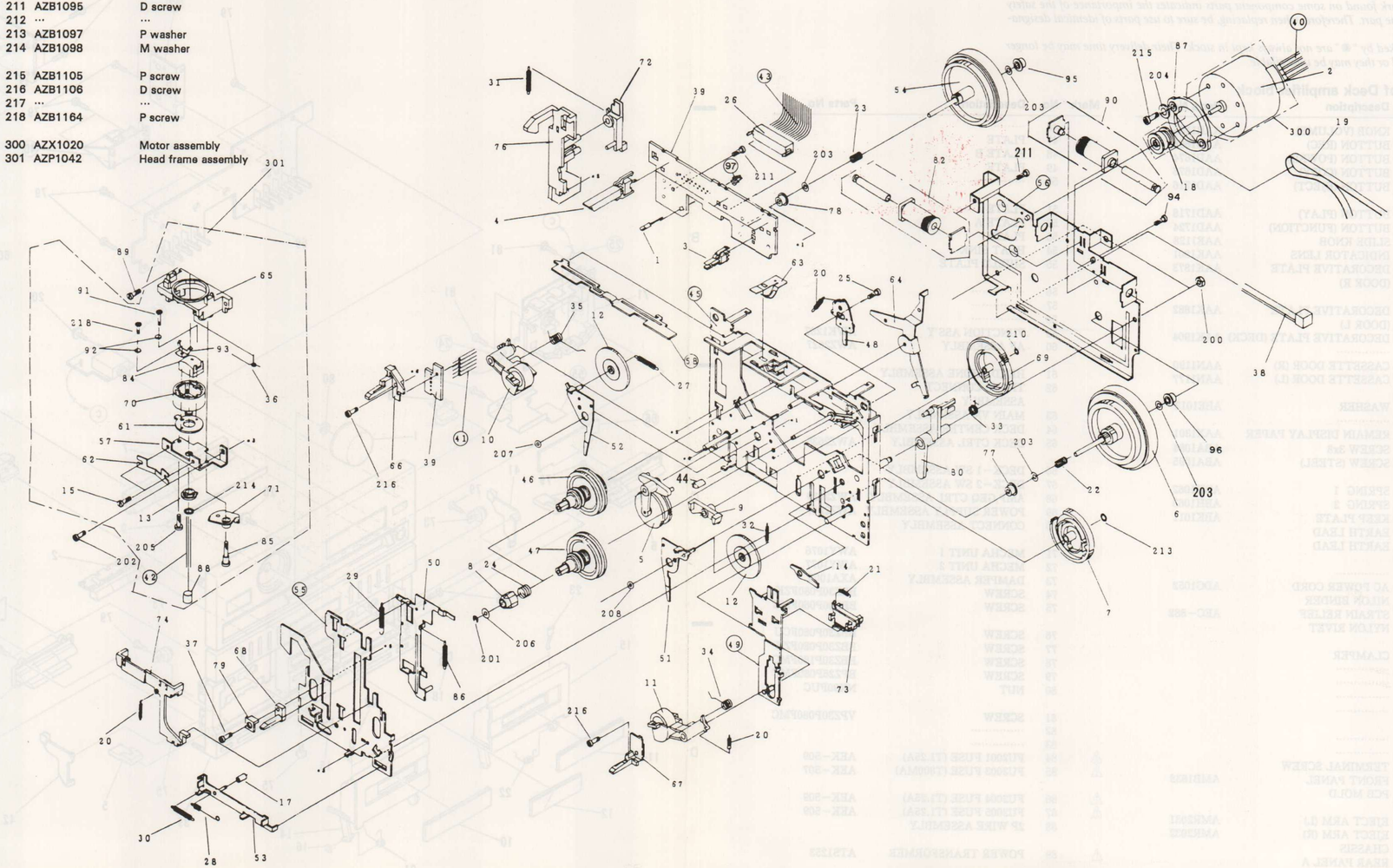
Parts list of Deck amplifier block

Mark	No.	Description	Parts No.
	1	KNOB (VOLUME)	AAB1135
	2	BUTTON (REC)	AAD1668
	3	BUTTON (POWER)	AAD1674
	4	BUTTON (COPY)	AAD1676
	5	BUTTON (EJECT)	AAD1716
	6	BUTTON (PLAY)	AAD1718
	7	BUTTON (FUNCTION)	AAD1724
	8	SLIDE KNOB	AAE1128
	9	INDICATOR LENS	AAK1801
	10	DECORATIVE PLATE (DOOR R)	AAK1873
	11	DECORATIVE PLATE (DOOR L)	AAK1882
	12	DECORATIVE PLATE (DECK)	AAK1904
	13	.....	
	14	CASSETTE DOOR (R)	AAN1190
	15	CASSETTE DOOR (L)	AAN1177
	16	WASHER	ABE1013
	17	.....	
	18	REMAIN DISPLAY PAPER	AAX1301
	19	SCREW 3x8	ABA1084
	20	SCREW (STEEL)	ABA1095
	21	SPRING 1	ABH1062
	22	SPRING 2	ABH1063
	23	KEEP PLATE	ABK1011
	24	EARTH LEAD	
	25	EARTH LEAD	
	26	.....	
	27	AC POWER CORD	ADG1052
	28	NILON BINDER	
	29	STRAIN RELIEF	AEC−882
	30	NYLON RIVET	
	31	CLAMPER	
	32	.....	
	33	.....	
	34	.....	
	35	.....	
	36	.....	
	37	.....	
	38	TERMINAL SCREW	
	39	FRONT PANEL	AMB1638
	40	PCB MOLD	
	41	EJECT ARM (L)	AMR2031
	42	EJECT ARM (R)	AMR2032
	43	CHASSIS	
	44	REAR PANEL A	
	45	.....	
	46	.....	
	47	PLATE	
	48	PLATE B	
	49	PLATE	
	50	.....	
	51	PLATE	
	52	PLATE A	
	53	PLATE	
	54	HEAT SINK	
	55	SHIELD PLATE	
	56	.....	
	57	.....	
	58	.....	
	59	FUNCTION ASS'Y	AWK1287
	60	AF ASSEMBLY	AWZ2627
	61	HEAD PHONE ASSEMBLY	
	62	TRANS CONNECT ASSEMBLY	
	63	MAIN VR ASSEMBLY	
	64	DECK CENTER ASSEMBLY	
	65	DECK CTRL ASSEMBLY	AWZ2635
	66	DECK−1 SW ASSEMBLY	
	67	DECK−2 SW ASSEMBLY	
	68	AMP,GEQ CTRL ASSEMBLY	AWZ2639
	69	POWER SUPPLY ASSEMBLY	AWZ2247
	70	CONNECT ASSEMBLY	
	71	MECHA UNIT 1	AWY1076
	72	MECHA UNIT 2	AWY1077
	73	DAMPER ASSEMBLY	AXA1008
	74	SCREW	BBZ30P080FZK
	75	SCREW	BBZ30P060FMC
	76	SCREW	BBZ30P080FCU
	77	SCREW	BBZ30P080FZK
	78	SCREW	BBZ30P180FMC
	79	SCREW	BPZ26P080FMC
	80	NUT	NK90FUC
	81	SCREW	VPZ30P080FMC
	82	.....	
	83	.....	
⚠	84	FU2001 FUSE (T1.25A)	AEK−509
⚠	85	FU2003 FUSE (T800MA)	AEK−507
⚠	86	FU2004 FUSE (T1.25A)	AEK−509
⚠	87	FU2005 FUSE (T1.25A)	AEK−509
	88	2P WIRE ASSEMBLY	
⚠	89	POWER TRANSFORMER	ATS1253



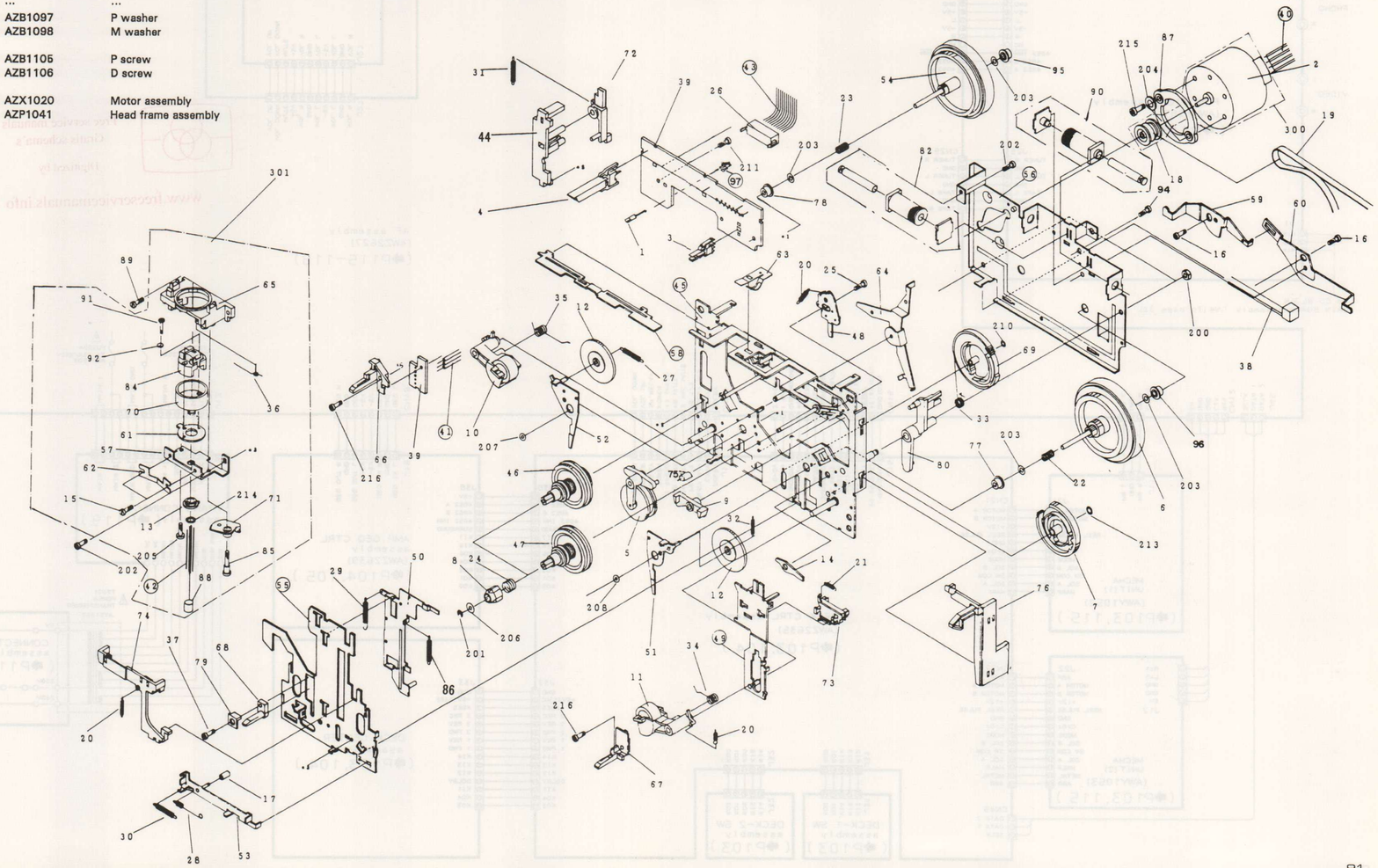
10.1.2 Mecha unit 1 (AWY1052)

Mark	No.	Parts No.	Description
	1	AZE1018	Hall IC
	2	AZX1019	Motor
	3	AZS1054	Leaf SW (MODE)
	4	AZS1034	Leaf SW (CrO2)
	5	AZN1286	Drive arm assembly
	6	AZN1287	FW assembly A
	7	AZN1288	Cam gear
	8	AZN1289	Reel
	9	AZN1971	FR arm
	10	AZN1972	Pinch roller L assembly
	11	AZN1973	Pinch roller R assembly
	12	AZN1293	Gear
	13	AZN1294	H Gear
	14	AZN1793	CUE arm
	15	AZB1079	Screw
	16	···	···
	17	AZN1984	Collar C
	18	AZN1297	Motor pully
	19	AZN1298	Belt
	20	AZN1299	Spring
	21	AZN1300	FR lever spring
	22	AZN1301	FWF spring
	23	AZN1302	FWR spring
	24	AZN1303	Spring
	25	AZB1080	Screw
	26	AZN1305	Cable holder
	27	AZN1306	Spring
	28	AZN1307	Spring
	29	AZN1308	Spring
	30	AZN1309	Spring
	31	AZN1310	Spring
	32	AZN1311	Spring
	33	AZN1312	Spring
	34	AZN1313	Spring
	35	AZN1314	Spring
	36	AZN1315	Spring
	37	AZB1081	Screw
	38	AZN1316	Nylon band
	39	AZN1995	P.C.board
	40		Jumper wire
	41		Wire assembly
	42		Lead wire
	43		Lead wire
	44	AZN1468	Tube
	45		Mecha P.C.board calking assembly
	46	AZN1319	R reel assembly
	47	AZN1320	F reel assembly
	48	AZN1321	Reverse arm calking assembly
	49		FR lever assembly
	50	AZN1975	PLAY lever calking assembly
	51	AZN1976	Gear arm R calking assembly
	52	AZN1977	Gear arm L calking assembly
	53	AZN1326	Head lever calking assembly
	54	AZN1327	FW assembly
	55		Head P.C.board
	56		Plate (FLY WHEEL)
	57	AZN1328	Azimuth plate
	58		SW arm
	59	···	···
	60	···	···
	61	AZN1330	Head arm
	62	AZN1331	Azimuth spring
	63	AZN1332	Cassette stopper
	64	AZN1978	Trigger arm
	65	AZN1334	Head frame
	66	AZN1335	Cassette guide L
	67	AZN1336	Cassette guide R
	68	AZN1337	Cassette guide
	69	AZN1338	Cam gear
	70	AZN1994	Head holder
	71	AZN1340	Head gear
	72	AZN1980	Eject arm 2
	73	AZN1342	Select lever
	74	AZN1343	Brake
	75	···	···
	76	AZN1981	Ratch lever L
	77	AZN1346	Metal
	78	AZN1347	Metal
	79	AZN1348	Cushion
	80	AZN1349	Trigger arm
	81	···	···
	82	AZS1085	Solenoid
	83	···	···
	84	AZP1022	P Head
	85	AZB1099	Screw
	86	AZN1352	Spring
	87	AZN1304	Spacer
	88	AZN1470	Tube
	89	AZB1100	Screw
	90	AZS1087	Solenoid
	91	AZB1101	Screw
	92	AZB1102	Spring washer
	93	AZN1471	Head spring
	94	AZB1298	Screw
	95	AZN1833	Capstan holder
	96	AZN1834	Capstan holder
	97		Holder
	200	AZB1084	Nut
	201	AZB1085	E ring
	202	AZB1086	D screw
	203	AZB1121	P washer
	204	AZB1087	N washer
	205	AZB1089	U screw
	206	AZB1090	P washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	···	···
	210	AZB1094	P washer
	211	AZB1095	D screw
	212	···	···
	213	AZB1097	P washer
	214	AZB1098	M washer
	215	AZB1105	P screw
	216	AZB1106	D screw
	217	···	···
	218	AZB1164	P screw
	300	AZX1020	Motor assembly
	301	AZP1042	Head frame assembly



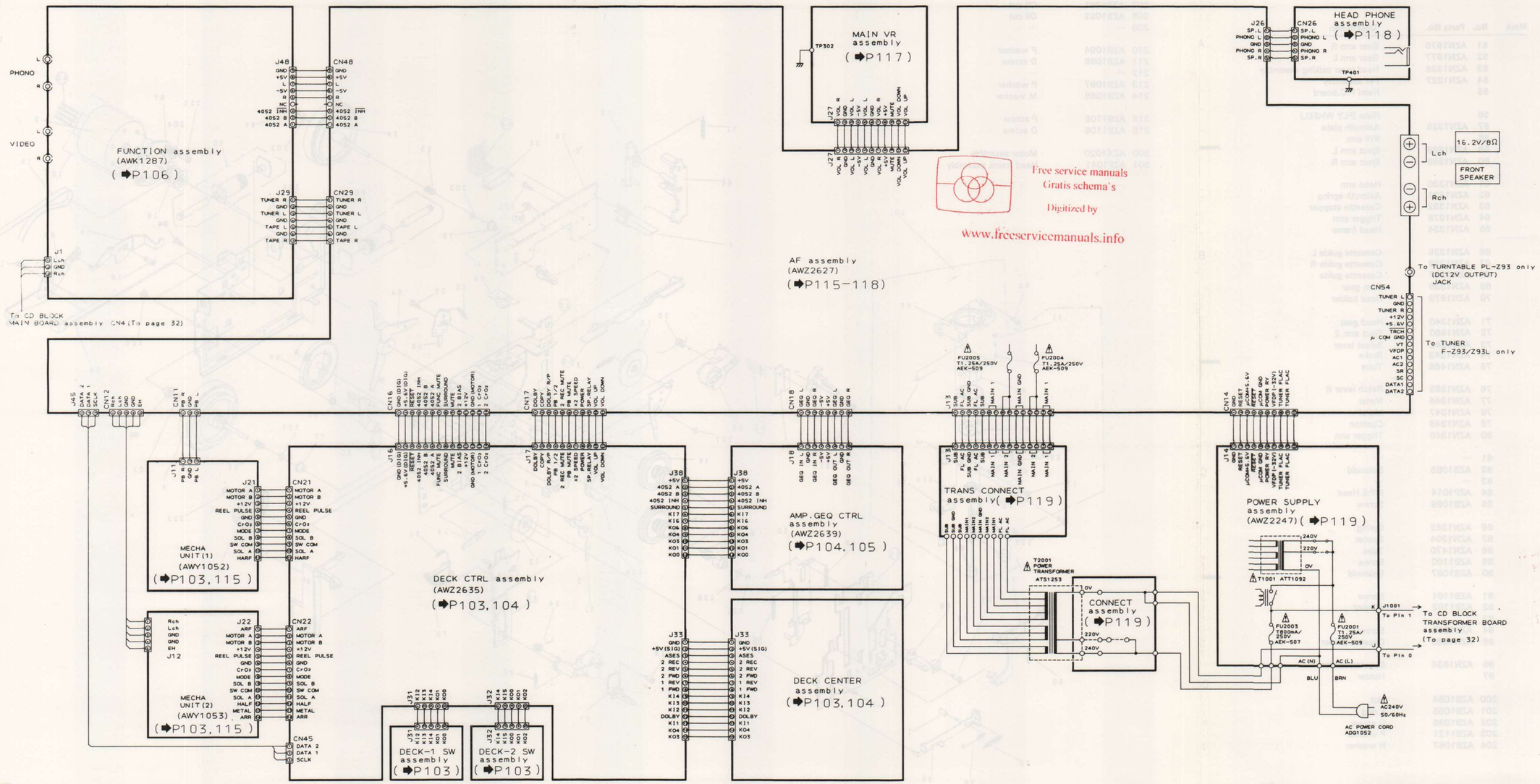
10.1.3 Mecha unit 2 (AWY1053)

Mark	No.	Parts No.	Description
	1	AZE1018	Hall IC
	2	AZX1019	Motor
	3	AZS1054	Leaf SW (MODE)
	4	AZS1034	Leaf SW (CrO2)
	5	AZN1286	Drive arm assembly
	6	AZN1287	FW assembly A
	7	AZN1288	Cam gear
	8	AZN1289	Reel
	9	AZN1971	FR arm
	10	AZN1972	Pinch roller L assembly
	11	AZN1973	Pinch roller R assembly
	12	AZN1293	Gear
	13	AZN1294	H Gear
	14	AZN1793	CUE arm
	15	AZB1079	Screw
	16	AZB1080	Screw
	17	AZN1984	Collar C
	18	AZN1297	Motor pully
	19	AZN1298	Belt
	20	AZN1299	Spring
	21	AZN1300	FR lever spring
	22	AZN1301	FWF spring
	23	AZN1302	FWR spring
	24	AZN1303	Spring
	25	AZB1080	Screw
	26	AZN1305	Cable holder
	27	AZN1306	Spring
	28	AZN1307	Spring
	29	AZN1308	Spring
	30	AZN1309	Spring
	31	AZN1310	Spring
	32	AZN1311	Spring
	33	AZN1312	Spring
	34	AZN1313	Spring
	35	AZN1314	Spring
	36	AZN1315	Spring
	37	AZB1081	Screw
	38	AZN1316	Nylon band
	39	AZN1983	P.C.board
	40		Jumper wire
	41		Wire assembly
	42		Lead wire
	43		Lead wire
	44	AZN1344	Eject lever L
	45		Mecha P.C.board calking assembly
	46	AZN1319	R reel assembly
	47	AZN1320	F reel assembly
	48	AZN1321	Reverse arm calking assembly
	49		FR lever assembly
	50	AZN1975	PLAY lever calking assembly
	51	AZN1976	Gear arm R
	52	AZN1977	Gear arm L
	53	AZN1326	Head lever calking assembly
	54	AZN1327	FW assembly
	55		Head P.C.board
	56		Plate (FLY WHEEL)
	57	AZN1328	Azimuth plate
	58		SW arm
	59	AZN1988	Eject arm L
	60	AZN1989	Eject arm R
	61	AZN1330	Head arm
	62	AZN1331	Azimuth spring
	63	AZN1332	Cassette stopper
	64	AZN1978	Trigger arm
	65	AZN1334	Head frame
	66	AZN1335	Cassette guide L
	67	AZN1336	Cassette guide R
	68	AZN1337	Cassette guide
	69	AZN1338	Cam gear
	70	AZN1979	Head holder
	71	AZN1340	Head gear
	72	AZN1980	Eject arm 2
	73	AZN1342	Select lever
	74	AZN1343	Brake
	75	AZN1468	Tube
	76	AZN1985	Ratch lever R
	77	AZN1346	Metal
	78	AZN1347	Metal
	79	AZN1348	Cushion
	80	AZN1349	Trigger arm
	81	...	...
	82	AZS1085	Solenoid
	83	...	...
	84	AZP1014	R/P/E Head
	85	AZB1099	Screw
	86	AZN1352	Spring
	87	AZN1304	Spacer
	88	AZN1470	Tube
	89	AZB1100	Screw
	90	AZS1087	Solenoid
	91	AZB1101	Screw
	92	AZB1102	Washer
	93		...
	94	AZB1298	Screw
	95	AZN1833	Capstan holder
	96	AZN1834	Capstan holder
	97		Holder
	200	AZB1084	Nut
	201	AZB1085	E ring
	202	AZB1086	D screw
	203	AZB1121	P washer
	204	AZB1087	N washer
	205	AZB1089	U screw
	206	AZB1090	P washer
	207	AZB1091	Oil cut
	208	AZB1092	Oil cut
	209	...	...
	210	AZB1094	P washer
	211	AZB1095	D screw
	212	...	...
	213	AZB1097	P washer
	214	AZB1098	M washer
	215	AZB1105	P screw
	216	AZB1106	D screw
	300	AZX1020	Motor assembly
	301	AZP1041	Head frame assembly



10.2 SCHEMATIC DIAGRAMS AND P.C.BOARD CONNECTION DIAGRAMS

10.2.1 Over all schematic diagram



1. RESISTORS:
Indicated in Ω, ¼W, ⅙W.±5% tolerance unless otherwise noted k:kΩ, M:MΩ, (F):±1%, (G):±2%, (K):±10% (M); ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p:pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
: Signal voltage at (33W + 33W 8Ω)output (1kHz)
: DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
⇦ mA: DC current at no input signal

4. OTHERS:
➡: Signal route.
⊘: Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

DECK-1 SW assembly
- S811 1FWD
- S812 1REV
- S813 1FF
- S814 1REW
- S815 1STOP

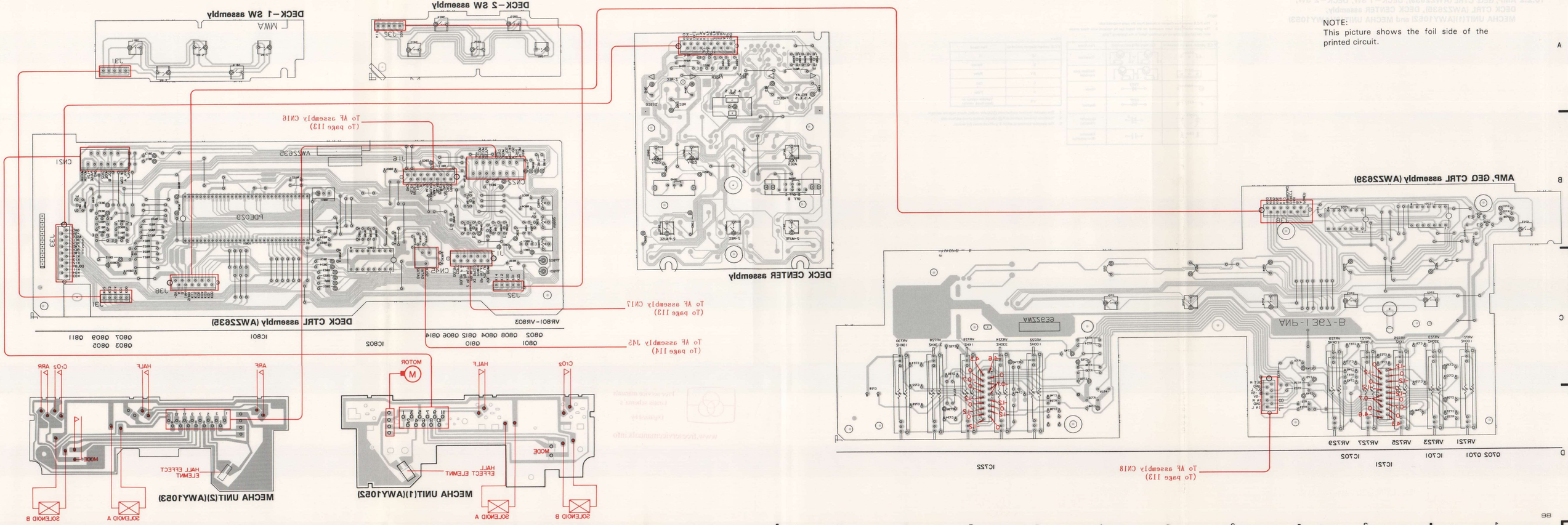
DECK-2 SW assembly
- S821 2FWD
- S822 2REV
- S823 2FF
- S824 2REW
- S825 2STOP

DECK CENTER assembly
- S848 DOLBY OFF—ON
- S849 REVERSE MODE
- S853 COPY
- S861 DECK-2 REC
- S862 HI-SPEED COPY
- S871 DECK-2 MUTE
- S872 A.S.E.S
- S875 DECK-2 PAUSE

AMP.GEQ CTRL assembly
- S701 CD
- S702 PHONO
- S703 TUNER
- S704 TAPE
- S705 VIDEO
- S707 POWER

The underline indicates the switch position

NOTE:
This picture shows the foil side of the printed circuit.



10.2.2 AMP, GEQ CTRL (AWZ2639), DECK−1 SW, DECK−2 SW, DECK CTRL (AWZ2635), DECK CENTER assembly, MECHA UNIT(1)(AWY1052) and MECHA UNIT(2)(AWY1053)

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

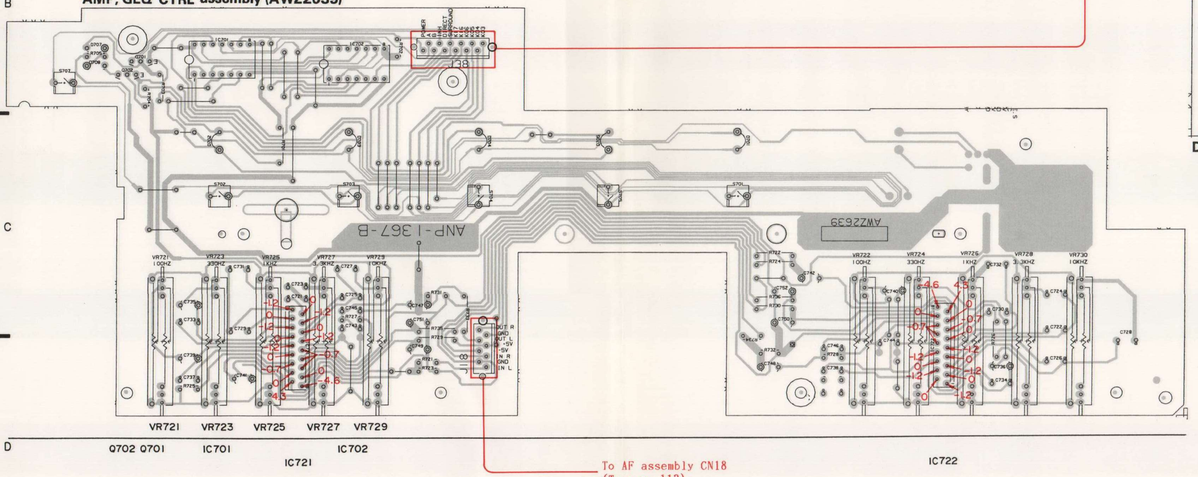
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504	Q504	Transistor
Q215	Q215	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	C513	Capacitor (Polarity)
C518	C518	Capacitor (Non-polarity)

Others

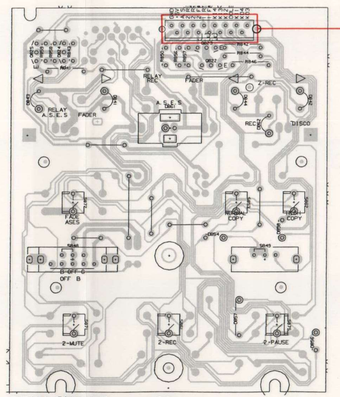
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ◎(double circles) shows negative termianl.
4. The diode terminal marked with ◎(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

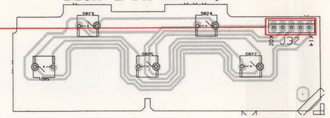
AMP, GEQ CTRL assembly (AWZ2639)



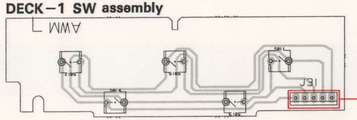
DECK CENTER assembly



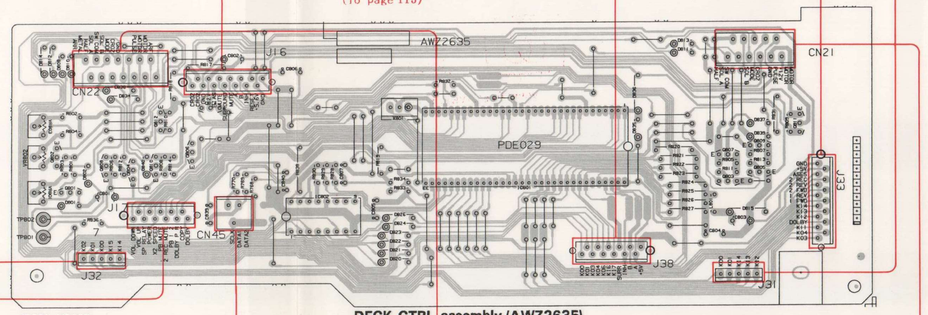
DECK−2 SW assembly

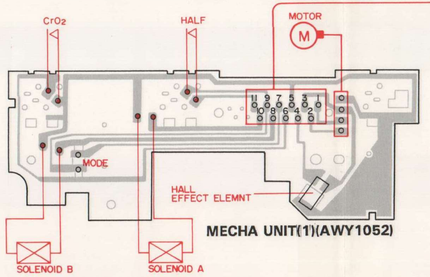


DECK−1 SW assembly

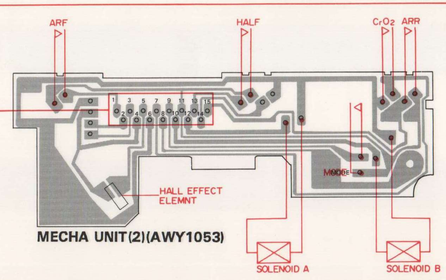


DECK CTRL assembly (AWZ2635)

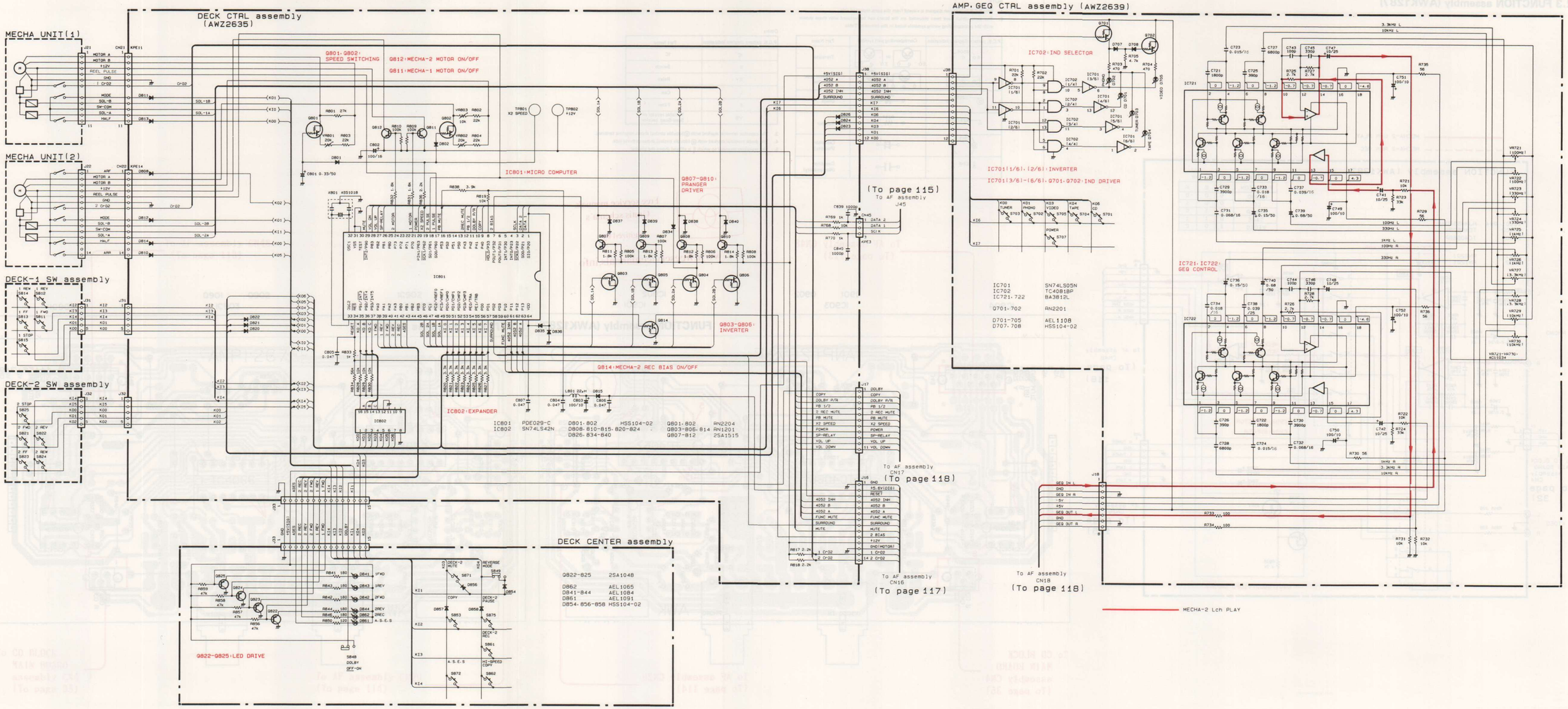




MECHA UNIT(1)(AWY1052)



MECHA UNIT(2)(AWY1053)



10.2.3 FUNCTION assembly (AWK1287)

NOTE

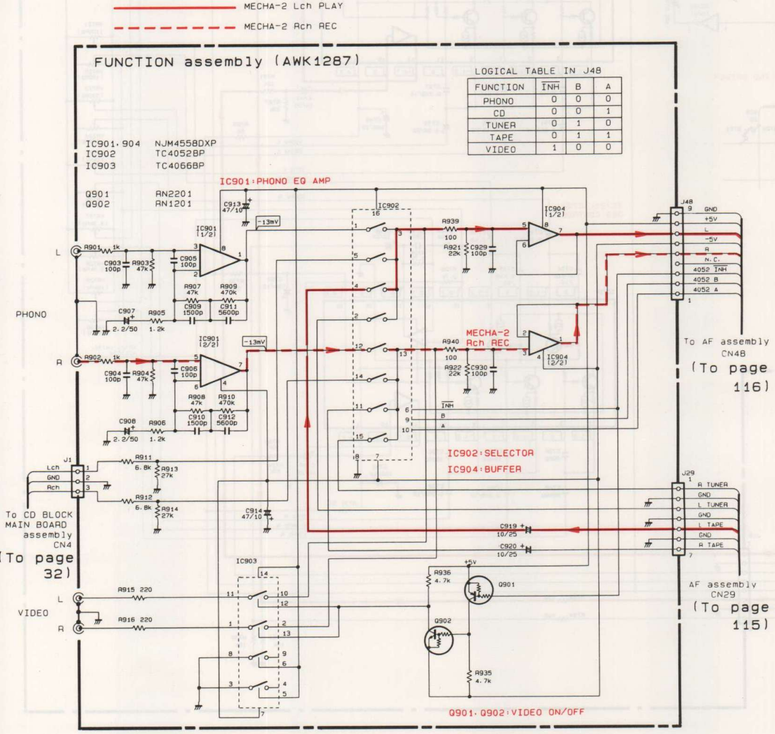
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E C B	E C B or E C B	Transistor
Q215 C E B	E C B or E C B	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513	+	Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

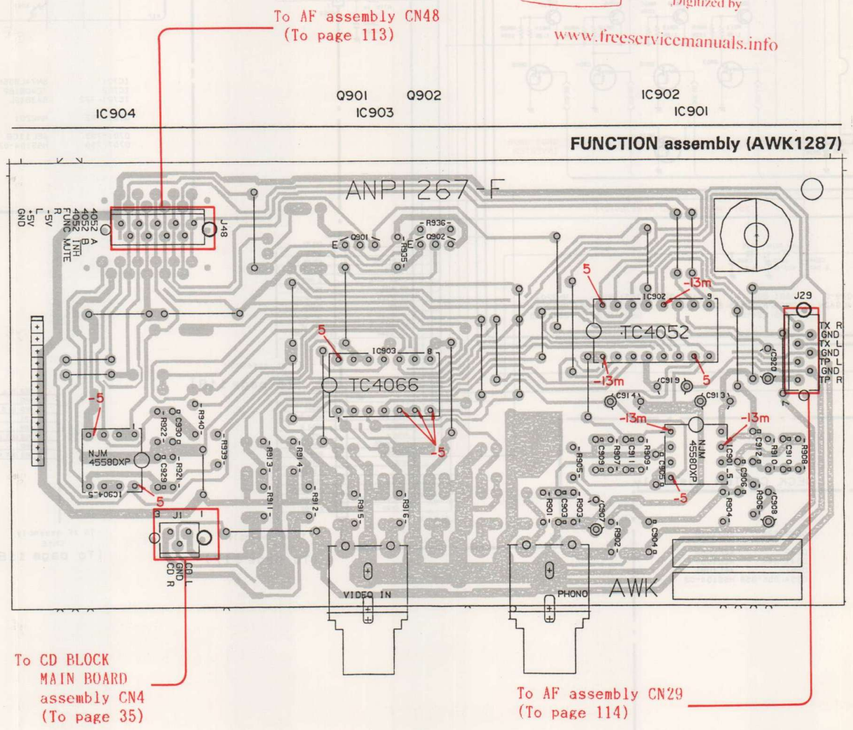
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

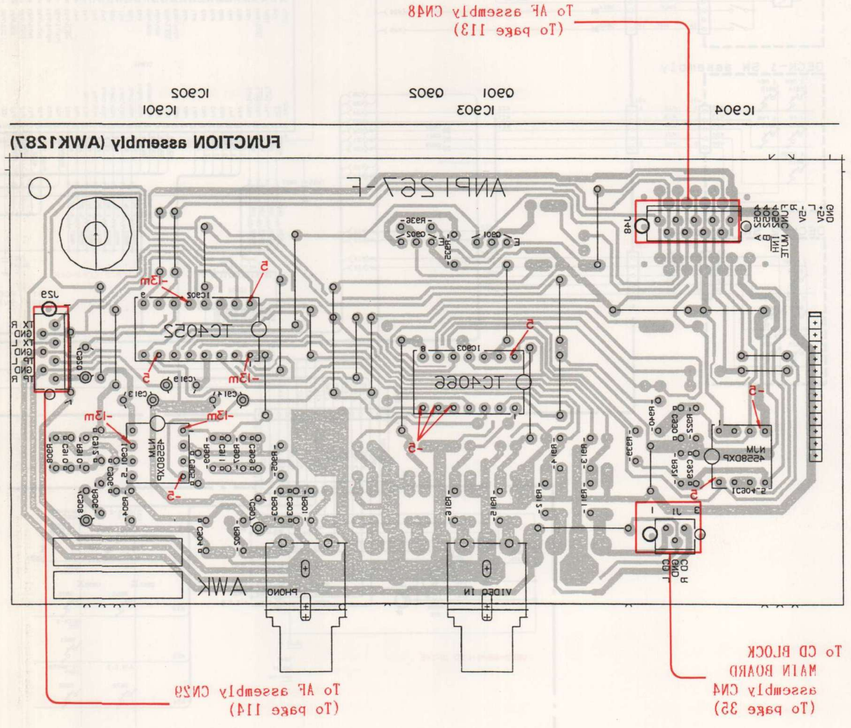
3. The capactor terminal marked with ⊖ (double circles) shows negatine termiani.
4. The diode terminal marked with ⊖ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

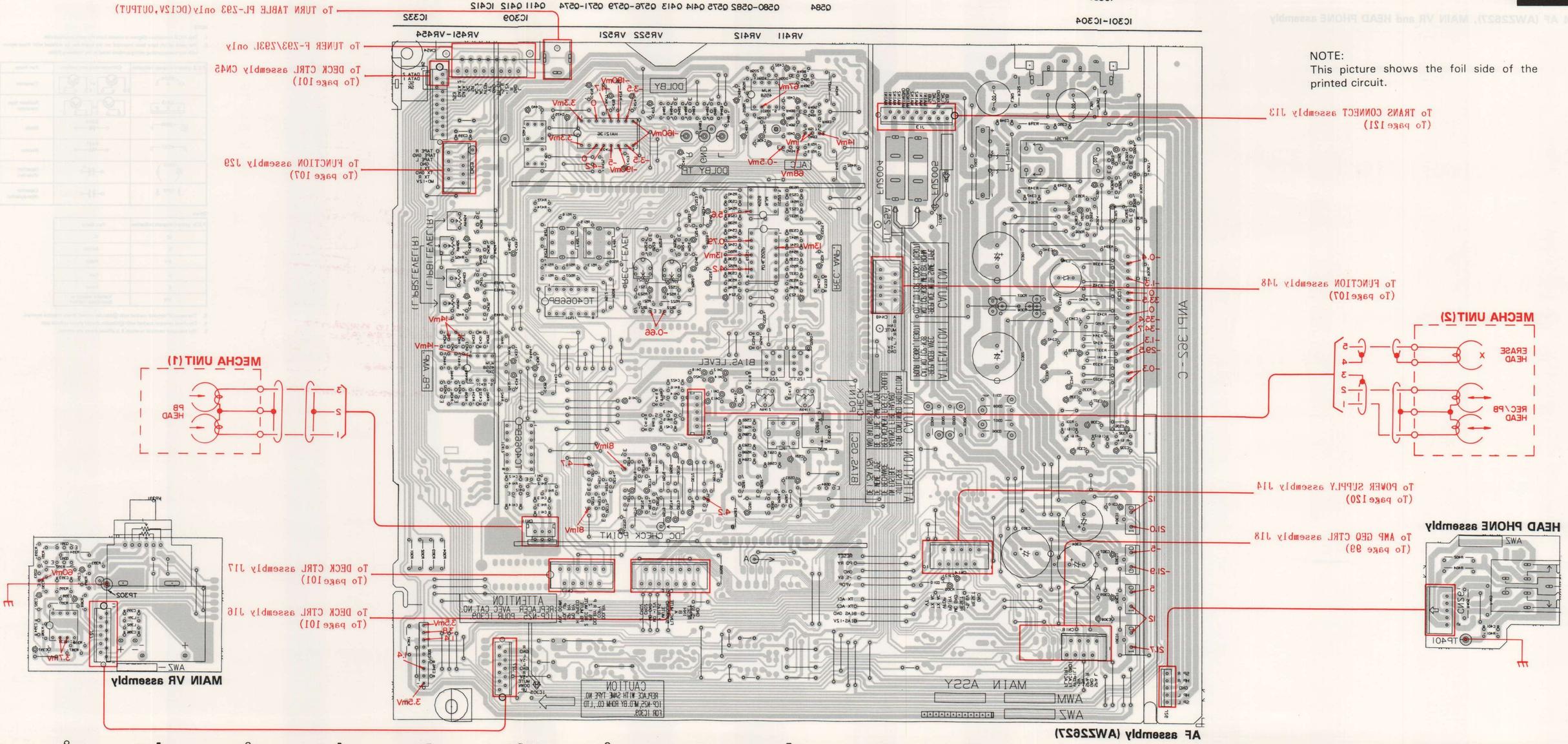


LOGICAL TABLE IN J48

FUNCTION	INH	B	A
PHONO	0	0	0
CD	0	0	1
TUNER	0	1	0
TAPE	0	1	1
VIDEO	1	0	0

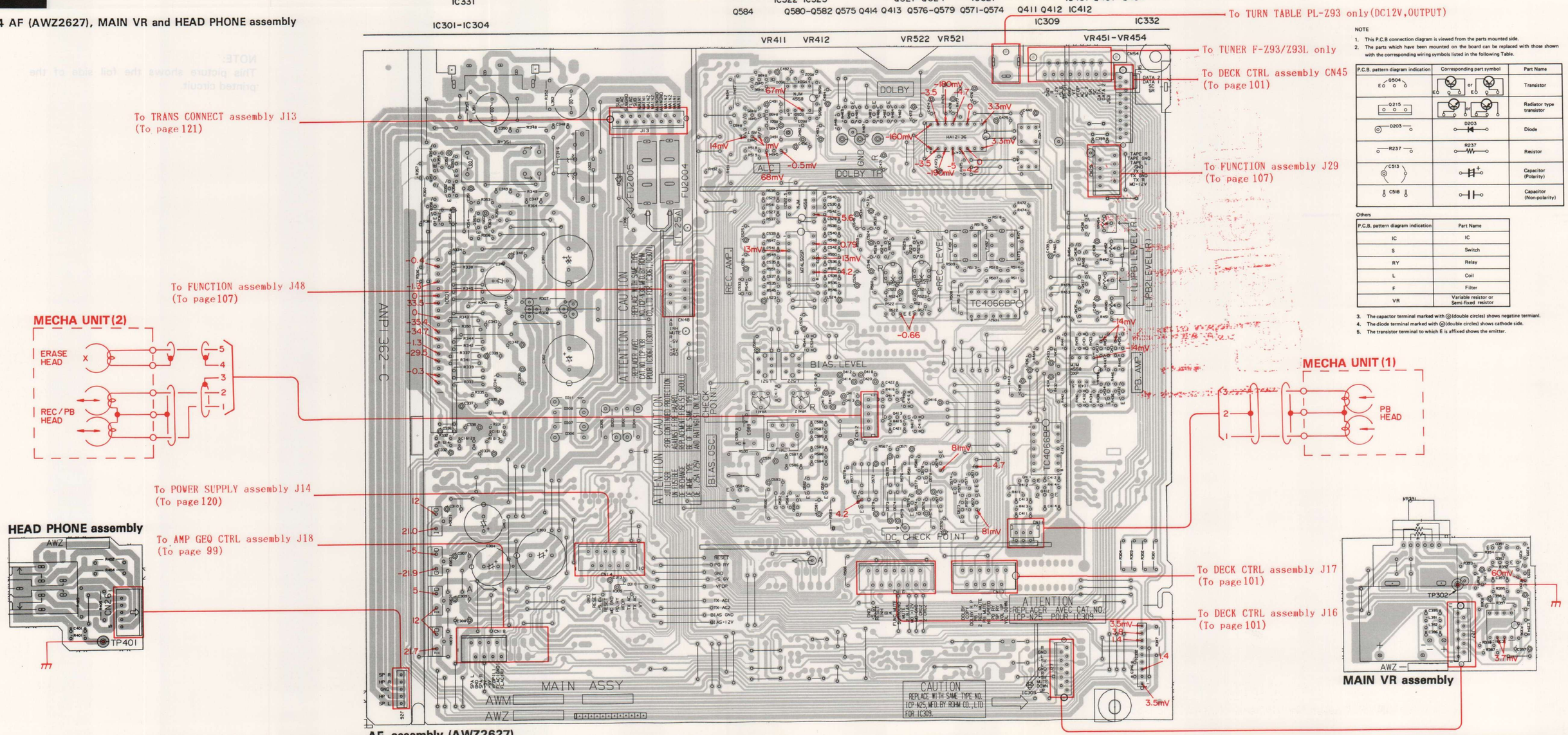






NOTE:
This picture shows the foil side of the printed circuit.

10.2.4 AF (AWZ2627), MAIN VR and HEAD PHONE assembly



NOTE

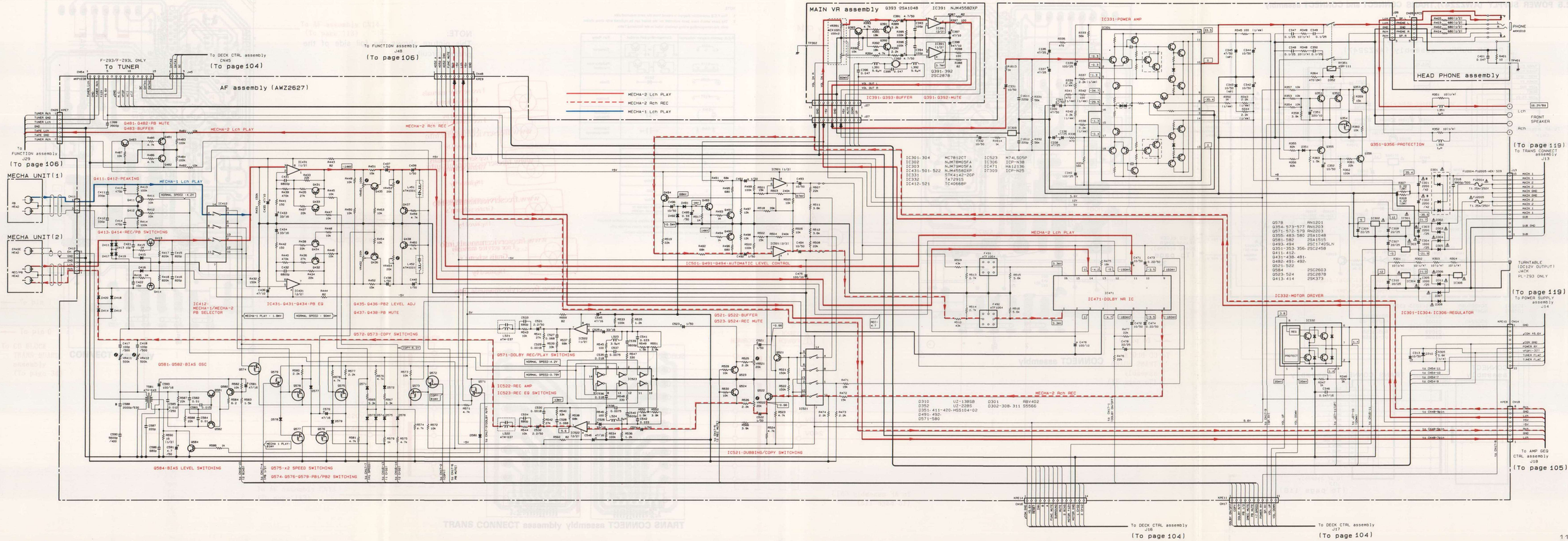
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504		Transistor
Q215		Radiator type transistor
D203		Diode
R237		Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

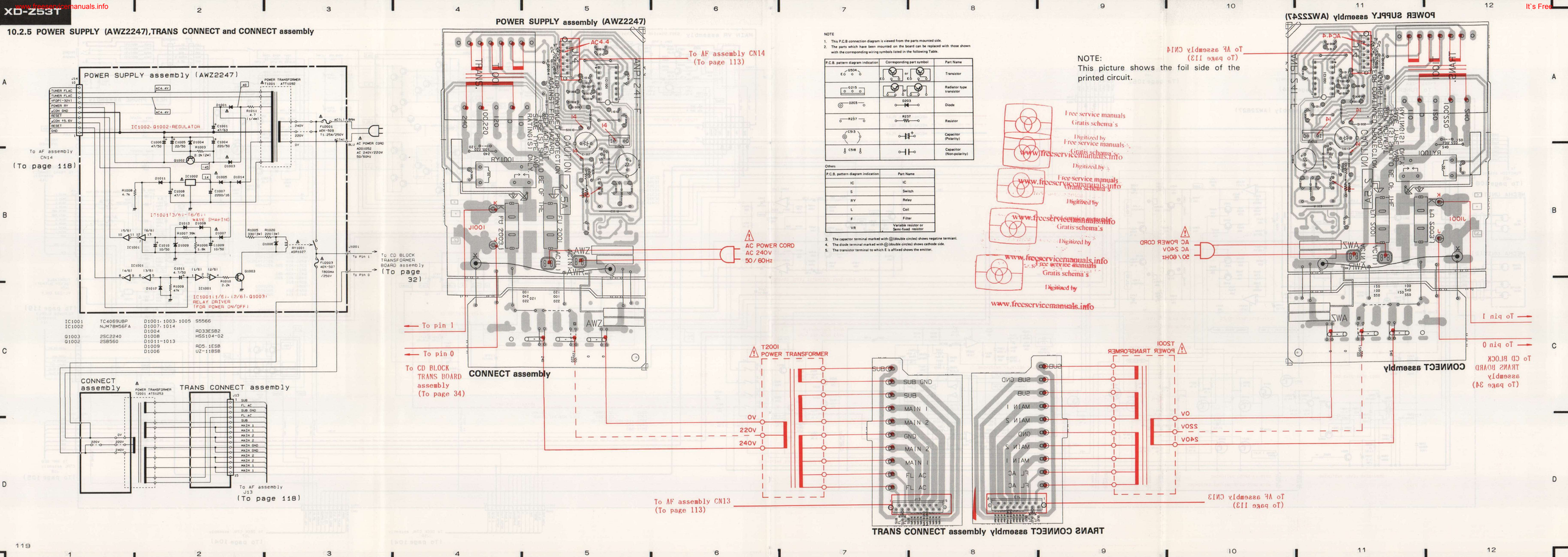
Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ◎(double circles) shows negatine termianl.
4. The diode terminal marked with ◎(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.



10.2.5 POWER SUPPLY (AWZ2247),TRANS CONNECT and CONNECT assembly



NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504		Transistor
Q215		Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊖(double circles) shows negative terminal.
4. The diode terminal marked with ⊖(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

NOTE:
This picture shows the foil side of the printed circuit.

10.3 P.C.B 's PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Mark	No.	Description	Parts No.
FUNCTION assembly (AWK1287)			
SEMICONDUCTOR			
	IC901	OP−AMP IC	NJM4558DXP
	IC902	LOGIC IC	TC4052BP
	IC903	LOGIC IC	TC4066BP
	IC904	OP−AMP IC	NJM4558DXP
	Q901	TRANSISTOR	RN2201
	Q902	TRANSISTOR	RN1201
CAPACITORS			
	C903−906	CERAMIC CAPACITOR	CCCSL101J50
	C907,908	ELECTR.CAPACITOR	CEAS2R2M50
	C909,910	CERAMIC CAPACITOR	CKCYB152K50
	C911,912	CERAMIC CAPACITOR	CKCYB562K50
	C913, 914	ELECTR.CAPACITOR	CEAS470M10
	C919, 920	ELECTR.CAPACITOR	CEAS100M25
	C929, 930	CERAMIC CAPACITOR	CCCSL101J50
RESISTORS			
	All resistors		RD1/8PM□□□J
OTHERS			
		JACK−2P (VIDEO)	AKB1086
		JACK 2−P (PHONO)	AKB1088
AF ASSY (AWZ2627)			
SEMICONDUCTORS			
	IC301	REGURATOR IC	MC7812CT
	IC302	REGULATOR IC	NJM78M05FA
	IC303	REGULATOR IC	NJM79M05FA
	IC304	REGURATOR IC	MC7812CT
	IC306	IC PROTECTOR	ICP−N38
	IC309	IC PROTECTOR	ICP−N25
	IC331	AUDIO IC	STK4142−2GP
	IC332	MECHANISM DRIVER IC	TA7291S
	IC412	LOGIC IC	TC4066BP
	IC431	OP−AMP IC	NJM4558DXP
	IC471	DOLBY−B IC	HA12136
	IC501	OP−AMP IC	NJM4558DXP
	IC521	LOGIC IC	TC4066BP
	IC522	OP−AMP IC	NJM4558DXP
	IC523	LOGIC IC	M74LS05P
	Q351−353	TRANSISTOR	2SC2458
	Q354	TRANSISTOR	RN1203
	Q355	TRANSISTOR	2SA1048
	Q356	TRANSISTOR	2SC2458
	Q411,412	TRANSISTOR	2SC2458
	Q413,414	N−FET	2SK373
	Q431−438	TRANSISTOR	2SC2458
	Q481,482	TRANSISTOR	2SC2458
	Q483	TRANSISTOR	2SA1048
	Q491,492	TRANSISTOR	2SC2458
	Q493,494	TRANSISTOR	2SC1740SLN
	Q521,522	TRANSISTOR	2SC2458
	Q523,524	TRANSISTOR	2SC2878
	Q571,572	TRANSISTOR	RN2203
	Q573−577	TRANSISTOR	RN1203
	Q578	TRANSISTOR	RN1201
	Q579	TRANSISTOR	RN2203
	Q580	TRANSISTOR	2SA1048
	Q581,582	TRANSISTOR	2SA1515
	Q584	TRANSISTOR	2SC2603
	D301	DIODE	RBV402
	D302−308	DIODE	S5566
	D310	ZENER DIODE	UZ−13BSB
	D311	DIODE	S5566
	D351	DIODE	HSS104−02

Mark	No.	Description	Parts No.
	D352	ZENER DIODE	UZ−22BS
	D411−420	DIODE	HSS104−02
	D491,492	DIODE	HSS104−02
	D571−580	DIODE	HSS104−02
RELAY			
	RY351	RELAY	ASR−111
COILS & TRANSFORMER			
	F491,492	DOLBY FILTER	ATF1064
	L351,352	COIL(1μH)	ATH−133
	L451,452	COIL	ATM1001
	L521,522	COIL	ATM−037
	L523,524	INDUCTOR (3.9 mH)	LTA392J
	T581	OSC TRANSFORMER	ATX−043
CAPACITORS			
	C1611,1612	CERAMIC CAPACITOR	CCCSL221J50
	C301,302	ELECTR.CAPACITOR (2200pF/42V)	ACH1109
	C303	ELECTR.CAPACITOR	CEAS222M25
	C304,305	ELECTR.CAPACITOR	CEAS102M25
	C307−310	ELECTR.CAPACITOR	CEAS220M25
	C313	ELECTR.CAPACITOR	CEAS100M50
	C316	CERAMIC CAPACITOR	CKDYB392K500
	C330	ELECTR.CAPACITOR	CEAS470M50
	C331,332	ELECTR.CAPACITOR	CEAS100M50
	C335	ELECTR.CAPACITOR	CEAS470M25
	C336	ELECTR.CAPACITOR	CEHAQ470M25
	C337,338	ELECTR.CAPACITOR	CEAS470M25
	C339,340	ELECTR.CAPACITOR	CEAS101M25
	C341	ELECTR.CAPACITOR	CEAS470M50
	C342	ELECTR.CAPACITOR	CEAS100M50
	C343	ELECTR.CAPACITOR	CEANP100M50
	C344	ELECTR.CAPACITOR	CEAS100M50
	C345	ELECTR.CAPACITOR	CEANP470M50
	C346	CERAMIC CAPACITOR	CKDYX473M16
	C347−350	CERAMIC CAPACITOR	CKCYX104M25
	C351	ELECTR.CAPACITOR	CEAS221M10
	C352	ELECTR.CAPACITOR	CEAS100M50
	C399	CERAMIC CAPACITOR	CKDYB392K50
	C411,412	CERAMIC CAPACITOR	CKMYB331K50
	C413,414	CERAMIC CAPACITOR	CKMYB471K50
	C415,416	CERAMIC CAPACITOR	CKMYB821K50
	C417,418	CERAMIC CAPACITOR	CCCSL101K500
	C421,422	CERAMIC CAPACITOR	CCMSL100D50
	C431,432	MYLOR FILM CAPACITOR	CQMA682J50
	C433,434	ELECTR.CAPACITOR	CEAS330M16
	C435,436	ELECTR.CAPACITOR	CEAS470M10
	C437,438	ELECTR.CAPACITOR	CEAS010M50
	C439,440	ELECTR.CAPACITOR	CEAS010M50
	C471,472	ELECTR.CAPACITOR	CEAS100M50
	C473,474	ELECTR.CAPACITOR	CEASR22M50
	C475,476	ELECTR.CAPACITOR	CEAS101M10
	C478	ELECTR.CAPACITOR	CEAS220M25
	C491,492	ELECTR.CAPACITOR	CEAS010M50
	C493,494	ELECTR.CAPACITOR	CEAS100M50
	C495	ELECTR.CAPACITOR	CEASR33M50
	C496	ELECTR.CAPACITOR	CEAS100M50
	C521−524	ELECTR.CAPACITOR	CEAS010M50
	C525,526	ELECTR.CAPACITOR	CEAS330M16
	C527,528	AUDIO FILM CAPACITOR	CFTXA683J50
	C529,530	CERAMIC CAPACITOR	CKCYB182K50
	C531,532	ELECTR.CAPACITOR	CEAS2R2M50
	C533,534	CERAMIC CAPACITOR	CKMYB681K50
	C535,536	MYLOR FILM CAPACITOR	CQMA183J50
	C537,538	MYLOR FILM CAPACITOR	CQMA752J50
	C539,540	CERAMIC CAPACITOR	CKCYB562K50
	C541,542	AUDIO FILM CAPACITOR	CFTXA333J50
	C545,546	ELECTR.CAPACITOR	CEAS470M16
	C570	ELECTR.CAPACITOR	CEAS470M16
	C581	ELECTR.CAPACITOR	CEAS470M16
	C582	MYLOR FILM CAPACITOR	CQMA103K50
	C583	MYLOR FILM CAPACITOR	CQMA153K50
	C584	MYLOR FILM CAPACITOR	CQMA103K50
	C585	MYLOR FILM CAPACITOR	CQMA123K250
	C586	CERAMIC CAPACITOR	CKMYB681K50
	C587	CERAMIC CAPACITOR	CKMYB221K50
	C588	CQPA (2000pF/630V)	ACE1020
	C590	MYLOR FILM CAPACITOR	CQMA562K400
	C591	ELECTR.CAPACITOR	CEAS4R7M50
	C593	ELECTR.CAPACITOR	CEAS101M16
RESISTORS			
	R301−304	CARBON FILM RESISTOR	RD1/4PM100J
	R305	CARBON FILM RESISTOR	RD1/4PM562J
	R307,308	METAL OXIDE RESISTOR	RS2LMFR22J
	R337−340	CARBON FILM RESISTOR	RD1/4PM222J
	R341	CARBON FILM RESISTOR	RD1/4PMFL471J
	R342	CARBON FILM RESISTOR	RD1/4PMFL101J
	R343,344	CARBON FILM RESISTOR	RD1/4PM222J
	R345	CARBON FILM RESISTOR	RD1/4PMFL101J

Mark	No.	Description	Parts No.
	R348,349	CARBON FILM RESISTOR	RD1/4PM100J
	R350	CARBON FILM RESISTOR	RD1/4PMFL102J
	R351,352	CARBON FILM RESISTOR	RD1/4PMFL100J
	R364	METAL OXIDE RESISTOR	RS2LMF471J
	R590	CARBON FILM RESISTOR	RD1/2PM150J
	VR411,412	VR (500kΩ)	VRTM6V504
	VR451,452	VR (100kΩ)	VRTM6H104
	VR453,454	VR (20kΩ)	VRTM6H203
	VR521,522	VR (22kΩ)	ACP1026
	Other resistors		RD1/8PM□□□J

OTHERS

		TERMINAL 4−P (SPEAKER)	AKE1012
		JACK (PL DC+12V)	AKN−203
		Socket 15−P (To TUNER)	AKP1038
	CN14	JUMPER CONNECTOR 10P	KPE10
	CN16	JUMPER CONNECTOR 14P	KPE14
	CN17	JUMPER CONNECTOR 11P	KPE11
	CN18	JUMPER CONNECTOR 8P	KPE8
	CN29	JUMPER CONNECTOR 7P	KPE7
	CN48	JUMPER CONNECTOR 9P	KPE9

HEAD PHONE assembly

CAPACITOR

	C401	CERAMIC CAPACITOR	CKCYF473Z50

RESISTORS

	R401	CARBON FILM RESISTOR	RD1/8PM100J
	R402−405	CARBON FILM RESISTOR	RD1/2PMF681J

OTHERS

		JACK (HEAD PHONE)	AKN1010
	CN26	JUMPER CONNECTOR 5P	KPC5

TRANS CONNECT assembly

No parts are suppllied with the TRANS CONNECT assembly.

MAIN VR assembly

SEMICONDUCTORS

	IC391	OP−AMP IC	NJM4558DXP
	Q391,392	TRANSISTOR	2SC2878
	Q393	TRANSISTOR	2SA1048

COILS

	L391,392	AXIAL INDUCTOR (5.6μH)	LAU5R6K

CAPACITORS

	C391,392	ELECTR.CAPACITOR	CEAS4R7M50
	C393,394	CERAMIC CAPACITOR	CCMSL101J50
	C395,396	CERAMIC CAPACITOR	CKCYF473Z50
	C397,398	ELECTR.CAPACITOR	CEAS470M10

RESISTORS

	VR391	VR (100kΩ×2)	ACX1021
	Other resistors		RD1/8PM□□□J

DECK CENTER assembly

SEMICONDUCTORS

	Q822−825	TRANSISTOR	2SA1048
	D841−844	LED	AEL1084
	D854	DIODE	HSS104−02
	D856−858	DIODE	HSS104−02
	D861	LED	AEL1091
	D862	LED (RED)	AEL1065

SWITCHES

	S848,849	SWITCH	ASH1014
	S853	SWITCH	ASG1034
	S861,862	SWITCH	ASG1034
	S871,872	SWITCH	ASG1034
	S875	SWITCH	ASG1034

RESISTORS

	All resistors		RD1/8PM□□□J

Mark	No.	Description	Parts No.
DECK CTRL assembly (AWZ2635)			
SEMICONDUCTORS			
	IC801		PDE029−C
	IC802	LOGIC IC	SN74LS42N
	Q801,802	TRANSISTOR	RN2204
	Q803−806	TRANSISTOR	RN1201
	Q807−812	TRANSISTOR	2SA1515
	Q814	TRANSISTOR	RN1201
	D801,802	DIODE	HSS104−02
	D808	DIODE	HSS104−02
	D810−815	DIODE	HSS104−02
	D820−824	DIODE	HSS104−02
	D826	DIODE	HSS104−02
	D834−840	DIODE	HSS104−02
COIL			
	L801	AXIAL INDUCTOR (22μH)	LAU220K
CAPACITORS			
	C801	ELECTR.CAPACITOR	CEASR33M50
	C802	ELECTR.CAPACITOR	CEAS101M16
	C803	ELECTR.CAPACITOR	CEAS101M10
	C804−807	CERAMIC CAPACITOR	CKCYF473Z50
	C839,840	CERAMIC CAPACITOR	CKCYB102K50
RESISTORS			
	VR801,802	VR (20kΩ)	VRTM6H203
	VR803	VR (10kΩ)	VRTM6H103
	Other resistors		RD1/8PM□□□J
OTHERS			
	CN21	JUMPER CONNECTOR 11P	KPE11
	CN22	JUMPER CONNECTOR 14P	KPE14
	CN45	JUMPER CONNECTOR 3P	KPE3
	X801	Ceramic resonator	ASS1018
DECK−1 SW assembly			
SWITCHES			
	S811−815	SWITCH	ASG1034
DECK−2 SW assembly			
SWITCHES			
	S821−825	SWITCH	ASG1034

Mark	No.	Description	Parts No.
AMP,GEQ CTRL assembly (AWZ2639)			
SEMICONDUCTORS			
	IC701	LOGIC IC	SN74LS05N
	IC702	LOGIC IC	TC4081BP
	IC721,722	AUDIO IC	BA3812L
	Q701,702	TRANSISTOR	RN2201
	D701−705	LED(RED)	AEL1108
	D707,708	DIODE	HSS104−02
SWITCHES			
	S701−705	SWITCH	ASG1034
	S707	SWITCH	ASG1034
CAPACITORS			
	C721,722	CERAMIC CAPACITOR	CKDYB182K50
	C723,724	CERAMIC CAPACITOR	CKDYX153M16
	C725,726	CERAMIC CAPACITOR	CKDYB391K50
	C727,728	CERAMIC CAPACITOR	CKDYB682K50
	C729,730	CERAMIC CAPACITOR	CKDYB392K50
	C731,732	CERAMIC CAPACITOR	CKCYX683M16
	C733,734	CERAMIC CAPACITOR	CKDYX183M16
	C735,736	ELECTR.CAPACITOR	CEJAR15M50
	C737	CERAMIC CAPACITOR	CKDYX393M16
	C738	CERAMIC CAPACITOR	CKDYX393M25
	C739,740	ELECTR.CAPACITOR	CEJAR68M50
	C741	ELECTR.CAPACITOR	CEJA100M25
	C742	ELECTR.CAPACITOR	CEAS100M25
	C743,744	CERAMIC CAPACITOR	CCMSL101J50
	C745,746	CERAMIC CAPACITOR	CKDYB331K50
	C747,748	ELECTR.CAPACITOR	CEAS100M25
	C749−752	ELECTR.CAPACITOR	CEAS101M10
RESISTORS			
	VR721−730	VR (30kΩ)	ACU1034
	Other resistors		RD1/8PM□□□J
POWER SUPPLY assembly (AWZ2247)			
SEMICONDUCTORS			
	IC1001	LOGIC IC	TC4069UBP
	IC1002	REGULATOR IC	NJM78M56FA
	Q1002	TRANSISTOR	2SB560
	Q1003	TRANSISTOR	2SC2240
	D1001	DIODE	S5566
	D1003	DIODE	S5566
	D1004	ZENER DIODE	RD33ESB2
	D1005	DIODE	S5566
	D1006	ZENER DIODE	UZ−11BSB
	D1007	DIODE	S5566
	D1008	DIODE	HSS104−02
	D1009	ZENER DIODE	RD5.1ESB

Mark	No.	Description	Parts No.
	D1011−1013	DIODE	HSS104−02
	D1014	DIODE	S5566
RELAY			
⚠	RY1001	RELAY	ASR1027
TRANSFORMER			
⚠	T1001	POWER TRANSFORMER	ATT1092
CAPACITORS			
	C1001	ELECTR.CAPACITOR	CEAS470M63
	C1004	ELECTR.CAPACITOR	CEAS221M50
	C1005	ELECTR.CAPACITOR	CEHAQ220M50
	C1006	ELECTR.CAPACITOR	CEAS470M50
	C1007	ELECTR.CAPACITOR	CEAS222M16
	C1008	ELECTR.CAPACITOR	CEAS470M16
	C1009,1010	ELECTR.CAPACITOR	CEAS100M50
	C1011	ELECTR.CAPACITOR	CEAS4R7M50
RESISTORS			
	R1003	METAL OXIDE RESISTOR	RS2LMF222J
	R1005	METAL OXIDE RESISTOR	RS3PMF331J
	R1011	CARBON FILM RESISTOR	RD1/4PMFL4R7J
	R1020	METAL OXIDE RESISTOR	RS3PMF221J
	Other resistors		RD1/8PM□□□J

CONNECT assembly

No parts are supplied with the CONNECT assembly.

10.4 ADJUSTMENTS

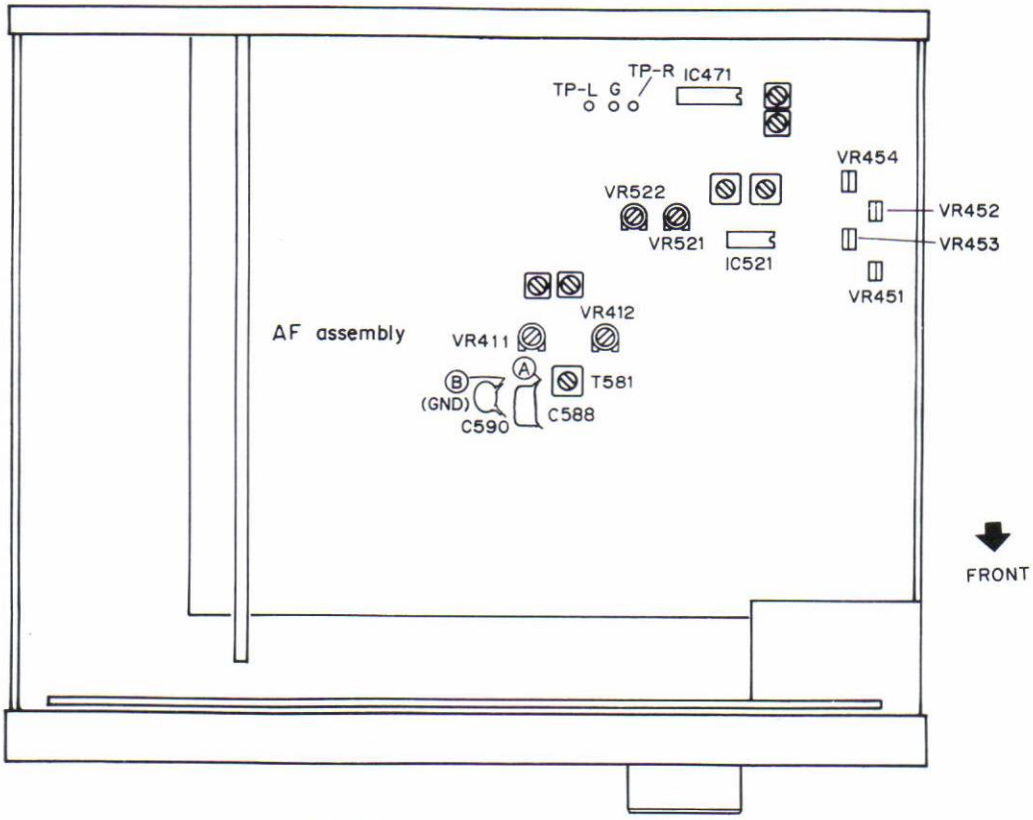


Fig 10 .1. Adjustment location

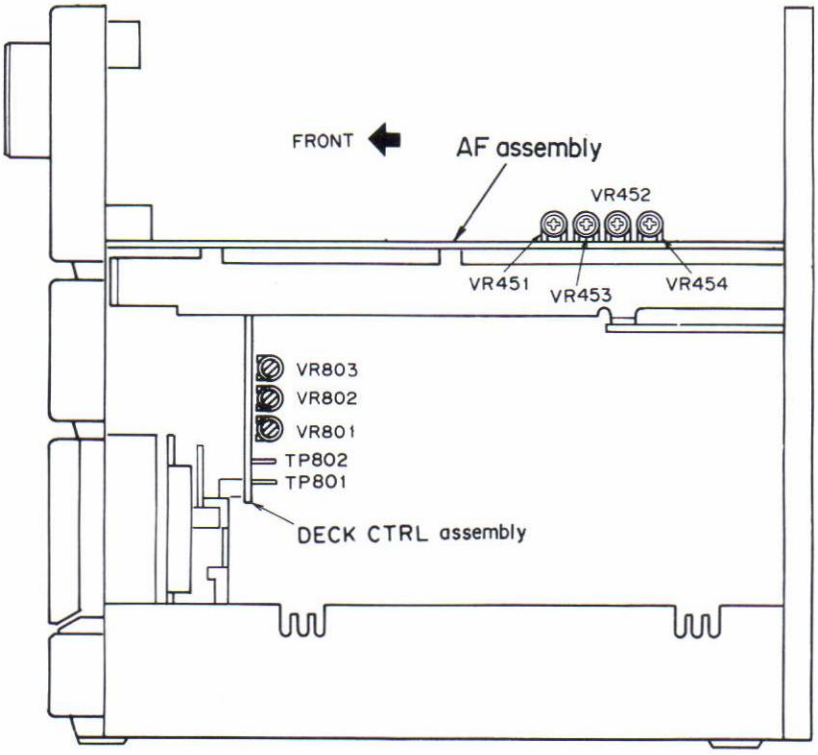


Fig 10 .2. Adjustment location

- Adjustment and measurement are usually made in the AF assembly, unless specified otherwise.
- Set the graphic equalizer to FLAT. Depending on the country of destination, the unit may be equipped with a MIC mixing volume control.
  If a MIC mixing volume control is built in, please set to the MIN position.
- The function should always be set to "TAPE" unless otherwise specified.

Adjustment of Mechanical System

- Test tape: STD-301 (3 kHz, 30 min)
- Setting of double speed mode: Short-circuit TP801 and TP802 of the DECK CTRL assembly. To release the mode, break the short circuit.

1. Adjustment of tape speed

No.	Mode	Input signal & Test tape	Adjustment location		Measuring location	Adjustment value	Remarks
1	PLAY	Playback the STD-301 tape to 3 kHz.	Deck I	DECK CTRL Assembly VR801	TP-L (Lch)	Press the PLAY SW and adjust the frequency to 3010 Hz ±10 Hz. Make sure that the wow and flutter is within 0.2 %.	
2	PLAY (Double speed mode)			—		Press the PLAY SW in double speed mode and confirm that the frequency is 6000 Hz ±1000 Hz. Note down the figure.	Release the double speed mode after adjustment.
3	PLAY (Double speed mode)		Deck II	DECK CTRL Assembly VR803	TP-R (Rch)	Press the PLAY SW in double speed mode and adjust the frequency to be within ±30 Hz of the figure recorded at step No. 2.	Release the double speed mode after adjustment.
4	PLAY			DECK CTRL Assembly VR802		Press the PLAY SW and adjust the frequency to 3010 Hz ±10 Hz. Make sure that the wow and flutter is within 0.2 %.	

Adjustment of Electric System

■ Check and conduct the following before adjusting the electric system.

1. Adjustment of tape speed has been completed.
2. Clean and demagnetize the head using a head eraser.
3. When measured, the level should be 0 dBV = 1 Vrms.
4. Use side A of the specified tape for adjustment.
   STD-331B: For adjustment of playback system.
   STD-630: NORMAL blank tape
5. Prepare the following measuring devices:
   AC millivoltmeter, Low-frequency oscillator, Attenuator, Oscilloscope
6. Adjust both L and R channels, unless specified otherwise.
7. Set the DOLBY NR switches to OFF, unless specified otherwise.
8. Warm up the unit for several minutes before adjustment. Especially before adjusting the frequency characteristics of recording and playback, warm up for 3 to 5 minutes in REC/PLAY mode.
9. Make sure to follow the proper order of the adjustment procedure. Any change in the order may cause an imperfect result.

List of Adjustment

Deck I

1. Head azimuth adjustment
2. Playback level adjustment

Deck II

1. Head azimuth adjustment
2. Playback level adjustment
3. Bias oscillation frequency adjustment
4. Recording level adjustment
5. Adjustment frequency characteristics of recording / playback

Checking of Deck II

1. Make sure the ALC is operating properly.

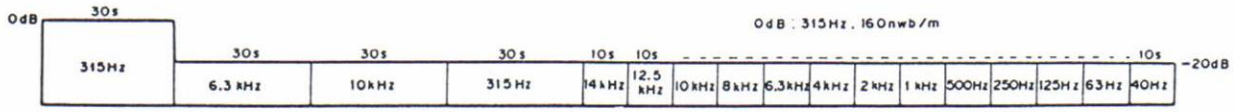


Fig 10 .3 **Test tape STD-331B**

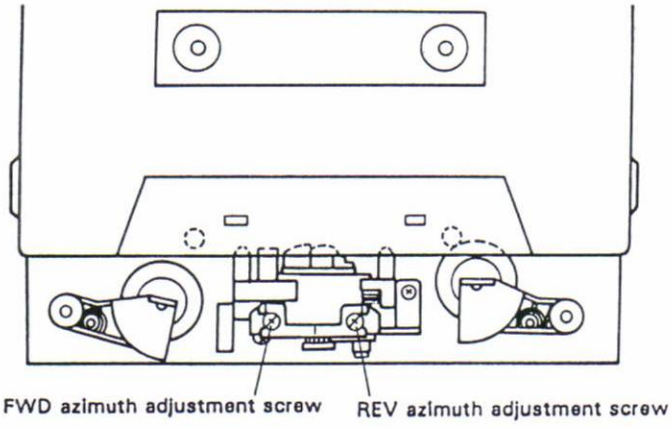


Fig 10 . 4 **Head azimuth adjustment**

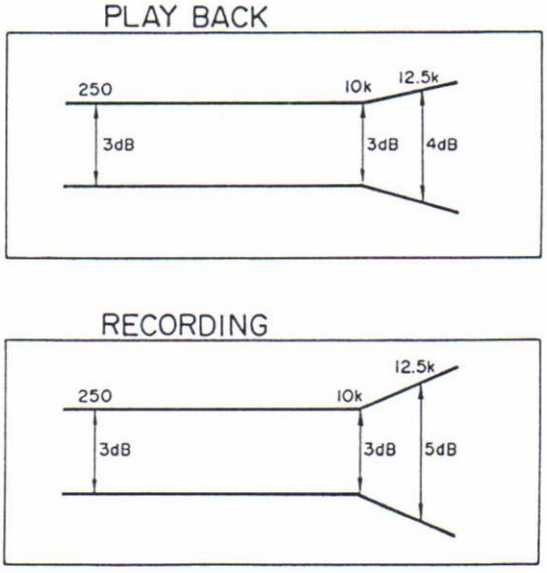


Fig 10 .5 **Frequency characteristics**

• Head Adjustment of Deck I

- Deck I is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, −20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR453 (Lch) VR454 (Rch)	TP-L (Lch) TP-R (Rch)	−6.7 dBV	

• Head Adjustment of Deck II

- Deck II is provided with an automatic tape selector mechanism.
- Note: Do not switch over FWD and REV while the driver is inserted.

1. Head Azimuth Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (10 kHz, −20 dB).	Head azimuth adjustment screw (Fig.10-4)	TP-L (Lch) TP-R (Rch)	Maximum playback signal level	Lock the screw with screw lock after completing adjustment.

2. Playback Level Adjustment

- Be sure to make a careful adjustment, as the adjustment determines the DOLBY NR level for playback.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	PLAY	Playback the test tape STD-331B (315 Hz, 0 dB).	VR451 (Lch) VR452 (Rch)	TP-L (Lch) TP-R (Rch)	−6.7 dBV	

3. Bias oscillation frequency adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Load the test tape STD-630 and set to record mode.	——	Area between Ⓐ and Ⓑ (AF Assembly) shown in Fig.10-1.	The oscillation frequency is 105 kHz ±1 kHz.	

4. Recording Level Adjustment

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	−7.7 dBV	
2	NORM	REC/PLAY	Record and playback the test tape STD-630 (315 Hz).	VR521 (Lch) VR522 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the recording and correction so that the playback level of 315 Hz is −6.7 dBV.	

5. Adjustment of frequency characteristics of recording/playback

- As this procedure is for adjustment of the recording bias, be careful not to increase the distortion rate by under-adjusting the bias.

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	−27.7 dBV	
2	NORM	REC/PLAY	Record and playback the test tape STD-630 (315 Hz and 10 kHz).	VR411 (Lch) VR412 (Rch)	TP-L (Lch) TP-R (Rch)	Repeat the correction so that the playback level of 10 kHz remains 0 ±0.5 dB in relation to 315 Hz.	

• Checking Procedure for Deck II

1. Action of ALC

Procedure	Tape selector	Mode	Input signal/test tape	Adjustment location	Measuring location	Checking value	Remarks
1	NORM	REC	Apply a signal of 315 Hz to the CD input terminal and set the function to "CD".	Input signal level	TP-L (Lch) TP-R (Rch)	−7.7 dBV	
2				+10 dB against the input level of step 1.		−2.7 dBV ±2.5 dB	

10.4 RÉGLAGE

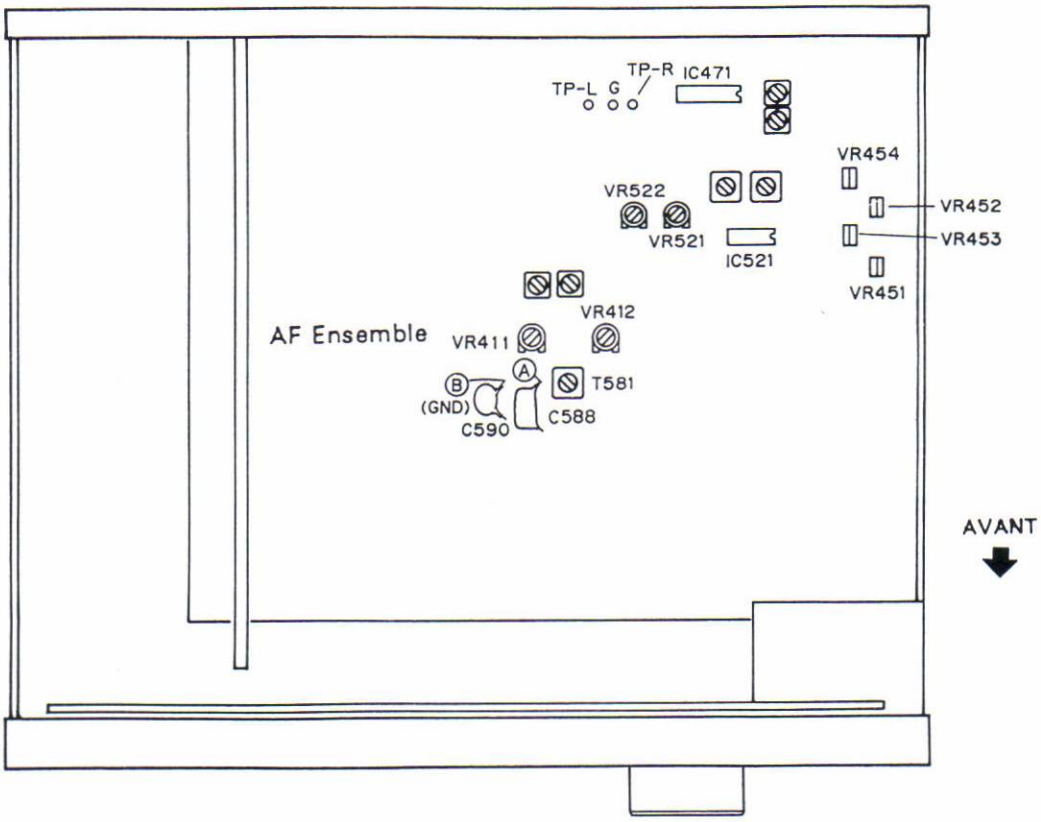


Fig 10.1 **Points de réglage**

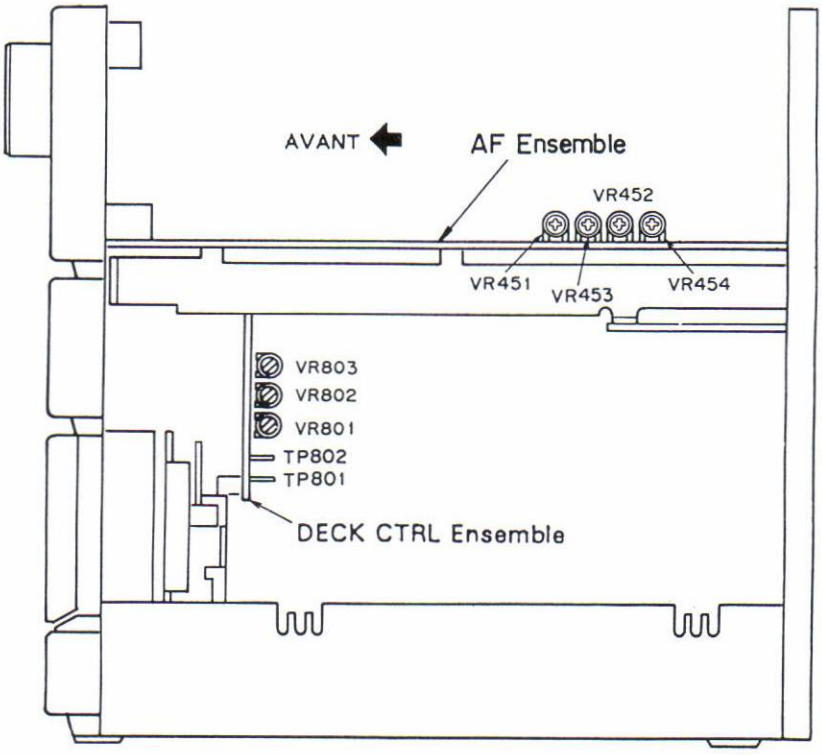


Fig 10.2 **Points de réglage**

- Les réglages et les mesures sont généralement faits dans l'ensemble AF, à moins de spécification contraire.
- Régler l'égaliseur graphique sur FLAT, selon le pays de destination, l'unité peut être équipée d'une commande de volume de mixage de micro.
  Si une commande de volume de mixage de micro est incorporée, prière de la régler à la position minimum.
- La fonction doit toujours être réglée sur "TAPE" à moins de spécification contraire.

Réglages mécaniques

- Bande d'étalonnage: STD-301 (3 kHz, 30 mn.)
- Réglage du mode de vitesse double: Court-circuiter TP801 et TP802 de l'ensemble de commande. Pour libérer le mode, ouvrir le court-circuit.

1. Réglage de la vitesse de bande

No.	Mode	Signal appiligeé /bande d'étalonnage	Emplacement du réglage		Emplacement du point de mesure	Valeur relevée	Dbservations
1	PLAY	Reproduire la bande STD-301 par 3 kHz.	Platine I	ENSEMBLE COMM. PLATINE VR801	TP-L (can. G)	Appuyer sur le contacteur PLAY et régler la fréquence sur 3010 Hz ±10 Hz. Vérifier que le pleurage et scintillement est dans la limite de 0,2%.	
2	PLAY (Mode de vitesse double)			—		Appuyer sur le contacteur PLAY dans le mode de vitesse double et vérifier que la fréquence est 6000 Hz ±1000 Hz. Noter le chiffre.	Libérer le mode de vitesse double après le réglage.
3	PLAY (Mode de vitesse double)		Platine II	ENSEMBLE COMM. PLATINE VR803	TP-R (can. D)	Appuyer sur le contacteur PLAY dans le mode de vitesse double et régler la fréquence pour qu'elle soit dans la limite de ±30 Hz du chiffre noté dans l'étape No. 2.	Libérer le mode de vitesse double après le réglage.
4	PLAY			ENSEMBLE COMM. PLATINE VR802		Appuyer sur le contacteur PLAY et régler la fréquence sur 3010 Hz ±10 Hz. Vérifier que le pleurage et scintillement est dans la limite de 0.2%.	

Réglages électriques

■ Vérifier les points suivants et effectuer les opérations suivantes avant procéder aux réglages électriques.

1. Le réglage de la vitesse de bande a été complété.
2. Nettoyer et démagnétiser la tête avec un démagnétiseur de tête.
3. Lors de la mesure, le niveau doit être de 0 dBV = 1 Vepp.
4. Utiliser la face A de la bande spécifiée pour le réglage. STD-331B: Pour le réglage du système de lecture.
   STD-630: Bande vierge NORMAL
5. Préparer les instruments de mesure suivants:
   Millivoltmètre CA, oscillateur à basse fréquence, éatténnateur et oscilloscope.
6. Régler les deux canaux L (gauche) et R (droit), sauf spécification contraire.
7. Régler les commutateurs DOLBY NR sur la position OFF, sauf spécification contraire.
8. Laisser chauffer l'appareil pendant plusieurs minutes avant le réglage. En particulier avant d'effectuer le réglage de la réponse en fréquence d'enregistrement et de lecture, laisser chauffer l'appareil pendant 3 à 5 minutes dans le mode d'enregistrement/lecture (REC/PLAY).
9. Toujours suivre l'ordre spécifié de la méthde réglage. Tout changement de l'ordre peut provoquer des résultats imparfaits.

Liste des réglages

Platine I

1. Azimut de la tête
2. Niveau de lecture

Platine II

1. Azimut de la tête
2. Niveau de lecture
3. Réglage de fréquence d'oscillation de polarisation
4. Niveau d'enregistrement
5. Réponse en fréquence d'enregistrement / lecture

Vérification des Platine II

1. Vérifier que le ALC fonctionne correctement.

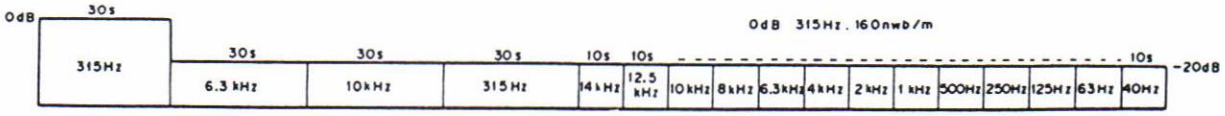


Fig 10.3 **Bande d'étalommge STD-331B**

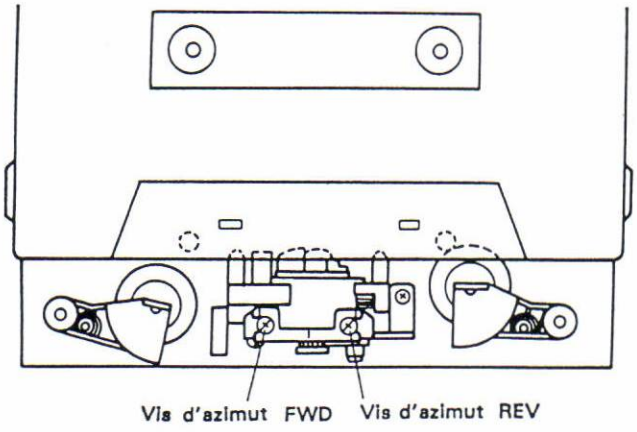


Fig 10.4 **Réglage d'azimut de la tête**

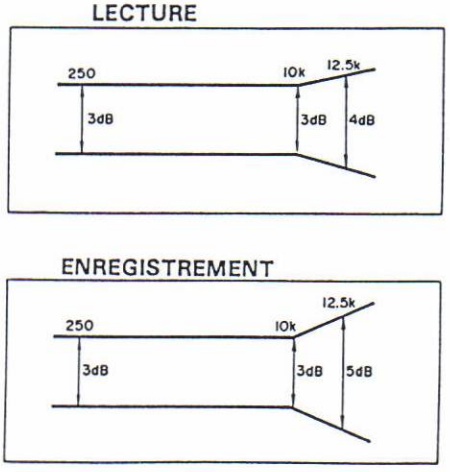


Fig 10.5 **Réponse en fréquence**

• Réglage de la Platine I

- La Platine I est équipée d'un mécanisme de sélection automatique de bande.
- Remarque: Ne pas commuter entre le sens avant (FWD) et le sens arrière (REV) pendant que le tournevis est inséré.

1. Réglage d'azimut de la tête

Opération	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Observations
1	NORM	PLAY	Reproduire la bande d'étalonnage STD-331B (10 kHz, −20 dB).	Vis de réglage d'ézimut de tête (Fig.1 -4)	TP-L (can. G) TP-R (can. D)	Niveau maximum du signal de lecture	Une fois le réglage terminé, bloquer la vis avec un frein de vis.

2. Réglage du niveau de lecture

- Toujours effectuer un réglage minutieux, car la valeur réglée sera le niveau Dolby pour la lecture.

Opération	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Observations
1	NORM	PLAY	Reproduire la bande d'éealonnfe STD-331B (315 kHz, 0 dB)	VR453 (can. G) VR454 (can. D)	TP-L (can. G) TP-R (can. D)	−6.7 dBV	

• Réglage de la Platine II

- La Platine II est équipée d'un mécanisme de sélection automatique de bande.
- Remarque: Ne pas commuter entre le sens avant (FWD) et le sens arrière (REV) pendant que le tournevis est inséré.

1. Réglage d'azimut de la tête

Opération	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Observations
1	NORM	PLAY	Reproduire la bande d'étalonnage STD-331B (10 kHz, −20 dB).	Vis de réglage d'ézimut de tête (Fig.10-4)	TP-L (can. G) TP-R (can. D)	Niveau maximum du signal de lecture	Une fois le réglage terminé, bloquer la vis avec un frein de vis.

2. Réglage du niveau de lecture

- Toujours effectuer un réglage minutieux, car la valeur réglée sera le niveau Dolby pour la lecture.

Opéra-tion	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Obserrations
1	NORM	PLAY	Reproduire la bande d'éealonnfe STD-331B (315 kHz, 0 dB)	VR451 (can. G) VR452 (can. D)	TP-L (can. G) TP-R (can. D)	−6.7 dBV	

3. Réglage de fréquence d'oscillation de polarisation

Opéra-tion	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Obserrations
1	NORM	REC	Charger la bande d'éealonnage STD-630 et régler dans le mode d'enregistrement.	——	Partie entre Ⓐ et Ⓑ (ensemble d'enregistre-ment (AF)) indiquée sur la Fig.10-1.	La fréquence d'oscillation est de 105 kHz ±1 kHz.	

4. Réglage du niveau d'enregistrement

Opéra-tion	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Obserrations
1	NORM	REC	Appliquer un signal de 315 Hz à la borne d'entrée CD et régler la fonction sur "CD".	Niveau du signal d'entrée	TP-L (can. G) TP-R (can. D)	−7.7 dBV	
2	NORM	REC / PLAY	Enregistrer et reproduire la bande d'étalonnageSTD-630 (315 Hz).	VR521 (can. G) VR522 (can. D)	TP-L (can. G) TP-R (can. D)	Répéter l'enregistrement et la correction de sorte que le niveau de lecture de 315 Hz soit de −6.7 dBV.	

5. Réglage de la réponsen fréquence d'enregistrement/lecture

- Cette opération réglant la polarisation d'enregistrement, faire attention de ne pas augmenter la distorsion par un réglage insuffisant de la polarisation.

Opéra-tion	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Obserrations
1	NORM	REC	Appliquer un signal de 315 Hz à la borne d'entrée CD et régler la fonction sur "CD".	Niveau du signal d'entrée	TP-L (can. G) TP-R (can. D)	−27.7 dBV	
2	NORM	REC / PLAY	Enregistrer et reproduire la bande d'étalonnage STD-630 (315 Hz et 10 kHz).	VR411 (can. G) VR412 (can. D)	TP-L (can. G) TP-R (can. D)	Répéter la correction de sorte que le niveau de lecture de 10 kHz soit de 0 ±0.5 dB en relation avec 315 Hz.	

• Vérification de la Platine II

1. Action du ALC

Opéra-tion	Sélecteur de bande	Mode	Signal appiligeé / bande d'étalonnage	Emplacement du réglage	Emplacement du point de mesure	Valeur mesurée	Obserrations
1	NORM	REC	Appliquer un signal de 315 Hz à la borne d'entrée CD et régler la fonction sur "CD".	Niveau du signal d'entrée	TP-L (can. G) TP-R (can. D)	−7.7 dBV	
2				+10 dB par rapport au niveau d'entrée de l'étape 1.		−2.7 dBV ±2.5 dB	

10.4 AJUSTE

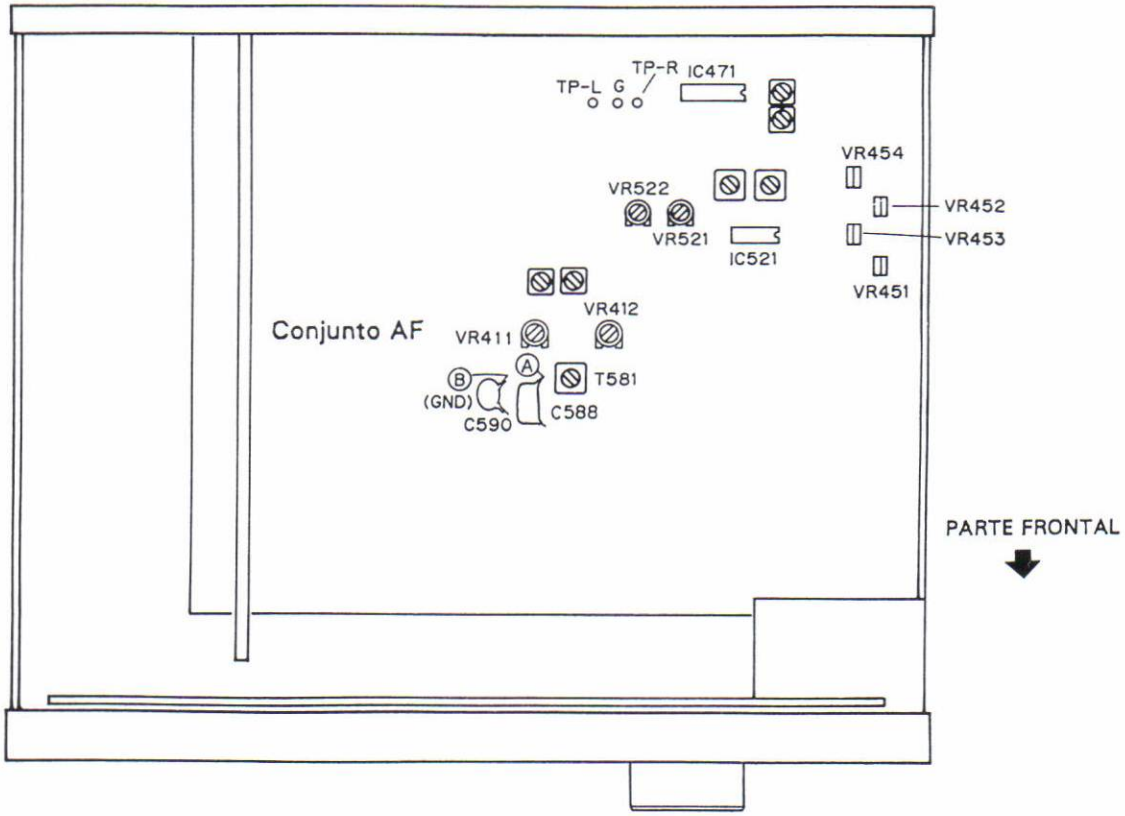


Fig 10.1 **Punto de ajuste**

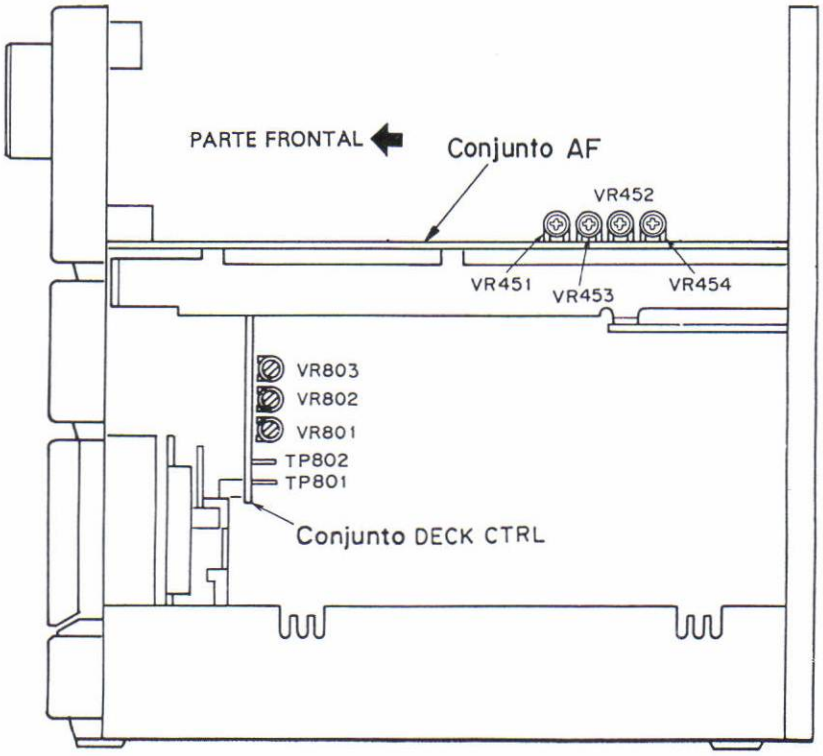


Fig 10 .2 **Punto de ajuste**

- El ajuste y la medición se realizarán normalmente en el conjunto AF, a menos que se especifique otra cosa.
- Desactive (FLAT) el ecualizador gráfico. Dependiendo del pàis de destino, el aparatopuede estar provisto de un control de volumen de mezcla microfónica (MIC).
  Se está provisto de un control de volumen de mezcla microfónica (MIC), ajústelo a la posición MIN.
- La función deberá estar ajustada siempre a "TAPE"; a menos que se especifique otra cosa.

Ajuste del sistema mecánico

- Cinta de prueba: STD-301 (3 kHz, 30 min)
- Ajuste del modo de velocidad doble: Cortocircuite TP801 y TP802 del conjunto de control. Para desactivar el modo, abra el cortocircuito.

1. Ajuste de la velocidad de la cinta

N°	Modo	Señal de enerada/ cinea de prueba	Punto de ajuste		Punto de medición	Valor de ajuste	Observaciones
1	PLAY	Reproducci' on de la cinta STDy301 a 3 kHz	Sección I	VR801 del conjunto DECK CTRL	TP-L (canal izquierdo)	Presione PLAY SW y ajuste la frecuencia a 3010 Hz ±10 Hz. Cerciórese de que la fluctuación y el efecto de trémolo estén dentro de los límites del 0.2%.	
2	PLAY (Modo de velocidad doble)			—		Presione PLAY SW en el modo de velocidad doble y compruebe si la frecuencia es 6000 Hz ±1000 Hz. Anote el valor.	Después del ajuste, desactive el modo de velocidad doble.
3	PLAY (Modo de velocidad doble)		Sección II	VR803 del conjunto DECK CTRL	TP-R (canal derecho)	Presione PLAY SW en el modo de velocidad doble y ajuste la frecuencia de forma que quede a ±30 Hz del valor anotado en el paso N°2.	Después del ajuste, desactive el modo de velocidad doble.
4	PLAY			VR802 del conjunto DECK CTRL		Presione PLAY SW y ajuste la frecuencia a 3010 Hz ±10 Hz. Cerciórese de que la fluctuación y el efecto de trémolo estén dentro de los límites del 0.2%.	

Ajuste del sistema eléctrico

■Antes de ajustar el sistema eléctrico, compruebe y realice lo siguiente.

1. El ajuste de la velocidad de la cinta ha finalizado.
2. Limpie y desmagnetice la cabeza empleando un desmagnetizador de cabezas.
3. Cuando se mida, el nivel devel debe ser de 0 dBV = 1V rms.
4. Emplee el lado A de la cinta especificada para realizar el ajuste.
   STD-331B: Para ajuste del sistema de reproducción.
   STD-630: Cinta en blanco NORMAL
5. Prepare los dispositivos de medición siguientes: Milivoltímetro de CA, oscilador de baja frecuencia, atenuador, y osciloscopio
6. Ajuste ambos canales, izquierdo y derecho, a menos que se especifique otra cosa.
7. Ponga los interruptores DOLBY NR en OFF, a menos que se especifique otra cosa.
8. Antes del ajuste, deje que la unidad se caliente durante varios minutos.
   Especialmente antes de ajustar las características de frecuencia de grabación y reproducción, deje que se caliente durante 3 a 5 minutos en el modo REC/PLAY.
9. Cerciórese de seguir el orden apropiado del procedimiento de ajuste. Cualquier cambio en el orden podría causar un resultado imperfecto.

Lista de adjuste

Sección I

1. Azimut de la cabeza
2. Nivel de reproducción

Sección II

1. Azimut de la cabeza
2. Nivel de reproducción
3. Ajuste de la frecuencia de oscilación de polarización
4. Nivel de grabación
5. Características de frecuencia de grabación/reproducción

Comprobación de la seccione II

1. Cerciórese de que ALC esté funcionando adecuadamente.

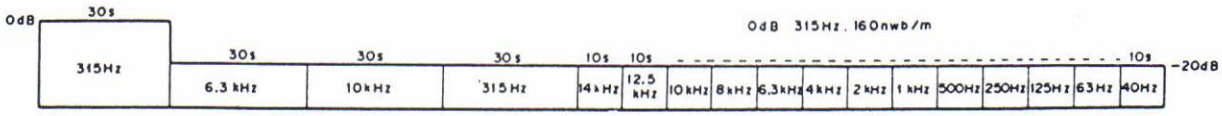


Fig 10.3 Cinta de prueba STD-331B

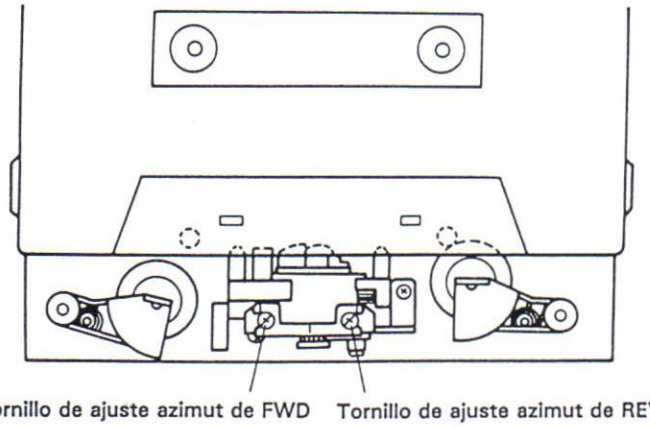
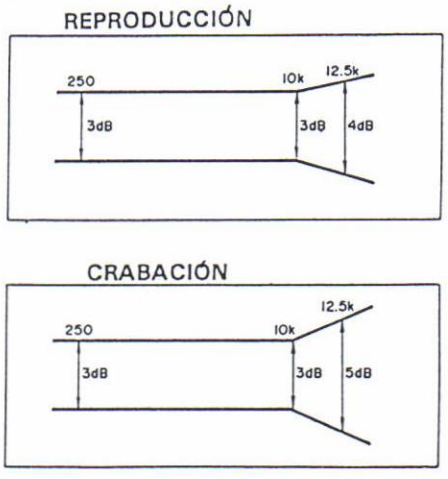


Fig 10.4 Ajuste del azimut de la cabeza



10.5 Características de frecuencia

• Ajuste de la sección I

- La sección I dispone de un mecanismo selector automático de cinta.
- Nota: No cambie a FWD ni a REV mientras el destornillador esté insertado.

1. Ajuste azimutal de la cabeza

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	PLAY	Ponga la cinta de prueba STD-331B en reproducción (10 kHz, −20 dB).	Tornillo de ajuste azimutal de la cabeza (Fig. 10-4)	TP-L (canal izquierdo) TP-R (canal derecho)	Nivel máximo de la señal de reproducción	Bloguee el tornillo con bloqueador de tornillos después de haber terminado el ajuste.

2. Ajuste del nivel de reproducción

- Tenga mucho cuidado durante el ajuste, ya que el valor ajustado será el nivel Dolby fijado para reproducción.

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	PLAY	Ponga la cinta de prueba STD-331B en reproducción (315 Hz, 0 dB).	VR453 (canal izquierdo) VR454 (canal derecho)	TP-L (canal izquierdo) TP-R (canal derecho)	−6.7 dBV	

• Ajuste de la sección II

- La sección II dispone de un mecanismo selector automático de cinta.
- Nota: No cambie a FWD ni a REV mientras el destornillador esté insertado.

1. Ajuste azimutal de la cabeza

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	PLAY	Ponga la cinta de prueba STD-331B en reproducción (10 kHz, −20 dB).	Tornillo de ajuste azimutal de la cabeza (Fig. 10-4)	TP-L (canal izquierdo) TP-R (canal derecho)	Nivel máximo de la señal de reproducción	Bloguee el tornillo con bloqueador de tornillos después de haber terminado el ajuste.

2. Ajuste del nivel de reproducción

- Tenga mucho cuidado durante el ajuste, ya que el valor ajustado será el nivel Dolby fijado para reproducción.

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	PLAY	Ponga la cinta de prueba STD-331B en reproducción (315 Hz, 0 dB).	VR451 (canal izquierdo) VR452 (canal derecho)	TP-L (canal izquierdo) TP-R (canal derecho)	−6.7 dBV	

3. Ajuste de la frecuencia de oscilación de polarización

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	REC	Cargue la cinta de prueba STD-630 y establezca el modo de grabación.	——	Área entre Ⓐ y Ⓑ (conjunto de AF) mostrada en la Fig. 10-1.	La frecuencia de oscilación es de 105 kHz ±1 kHz.	

4. Ajuste del nivel de grabación

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	REC	Aplique una señal de 315 Hz al terminal de entrada CD y ajuste la función a "CD".	Nivel de la señal de entrada	TP-L (canal izquierdo) TP-R (canal derecho)	−7.7 dBV	
2	NORM	REC / PLAY	Grabe y reproduzca la cinta de prueba STD-630 (315 Hz).	VR521 (canal izquierdo) VR522 (canal derecho)	TP-L (canal izquierdo) TP-R (canal derecho)	Grabe y reproduzca la cinta de prueba de forma que el nivel de reproducción de 315 Hz sea de −6.7 dBV.	

5. Ajuste de las características de frecuencia de grabación/reproducción

- Como este procedimiento es para el ajuste de la polarización de grabación, tenga cuidado de no aumentar el valor de distorsión mediante el subajuste de la polarización.

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	REC	Aplique una señal de 315 Hz al terminal de entrada CD y ajuste la función a "CD".	Nivel de la señal de entrada	TP-L (canal izquierdo) TP-R (canal derecho)	−27.7 dBV	
2	NORM	REC / PLAY	Grabe y reproduzca la cinta de prueba STD-630 (315 Hz y 10 kHz).	VR411 (canal izquierdo) VR412 (canal derecho)	TP-L (canal izquierdo) TP-R (canal derecho)	Repita la corrección de forma que el nivel de reproducción de 10 kHz sea de 0 ±0.5 dB en relación con 315 Hz.	

• Procedimiento de comprobación para seccion II

1. Acción del ALC

Procedimiento	Selector de cinta	Modo	Señal de entrada / cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	NORM	REC	Aplique una señal de 315 Hz al terminal de entrada CD y ajuste la función a "CD".	Nivel de la señal de entrada	TP-L (canal izquierdo) TP-R (canal derecho)	−7.7 dBV	
2				+10 dB contra el nivel de entrada del paso 1.		−2.7 dBV ±2.5 dB	