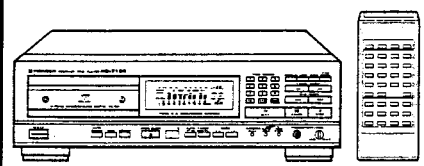
PIONEER®
The future of sound and vision.

Service Manual



ORDER NO.
ARP1558

COMPACT DISC PLAYER

PD-7100

PD-7100-S

MODEL PD-7100 and PD-7100-S HAVE FIVE VERSIONS:

Type	Applicable model		Power requirement	Destination
	PD-7100	PD-7100-S		
KU	○	—	AC120V only	U.S.A
KC	○	—	AC120V only	Canada
HEM	○	○	AC220V,240V (switchable)	European continent
HB	○	—	AC220V,240V (switchable)	United Kingdom
SD	○	—	AC110V,120V–127V,220V,240V (switchable)	Kingdom of SaudiArabia and general market

- This manual is applicable to the KU, KC, HEM, HB and SD types.
- For the KC, HEM, HB and SD types, refer to pages 87–89.
- The PD-7100-S is the same as the PD-7100 except for the color.
- Ce manual pour le service comprend les explications en français de réglage.
- Este manual de servicio trata del método ajuste escrito en español.

CONTENTS

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YI JUNE. 1988 Printed in Japan.

1. SAFETY INFORMATION

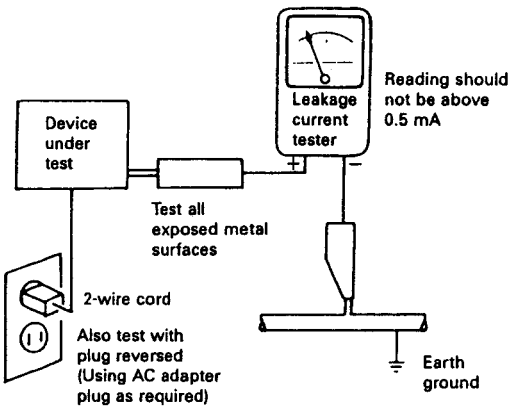
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120 V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VAROITUS!

LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA INFRAPUNASÄTEILYÄ LAITTEEN SISÄLLÄ ON LASERDIODIN LÄHEISYYDESSÄ KUVAN 1. MUKAINEN VAROITUSMERKKI.

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.

LASER
Picture 1
Warning sign for laser radiation

ADVERSEL:

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

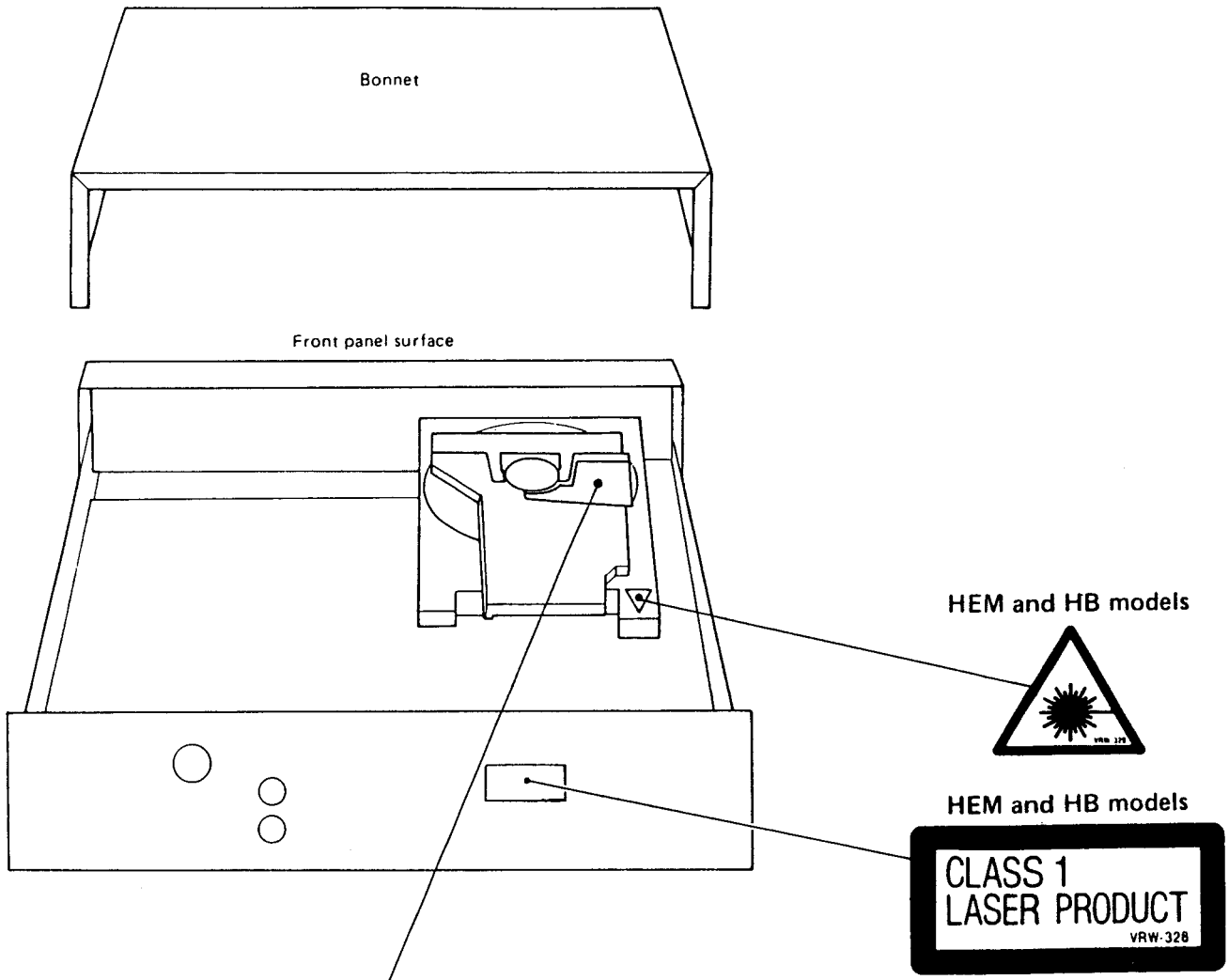
IMPORTANT

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

VIKTIGT

APARATEN INNEHÅLLER LASER AV HÖGRE KLASS ÄN 1. INGREPP I APPARATEN BÖR GÖRAS AV SPECIELLT UTBILDAD PERSONAL.

LABEL CHECK



HB model

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

HEM model

CAUTION
LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM
ADVARSEL
FARE FOR USYNLIG LASERSTRÅLING VED ÅBNING AF DÆKSEL.
UNDGÅ AT UDSÆTTE ØJNENE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL
(ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
PRW-175

ADDITIONAL LASER PRECAUTIONS

1. Laser Interlock Mechanism
   The clamp switch (S102) detects the completion of the Load in operation, and the ON/OFF status of the clamp switch is in turn detected by the microcomputer. The laser diode is designed not to oscillate while the clamp switch is in OFF status.
   Consequently, if S102 is accidentally short-circuited, the interlock mechanism will become incapable of operation.
   Moreover, when short-circuiting occurs between Pins 4 or 5 of CXA1081S (IC 1) and GND, or between Pin 29 of CXA1081S (IC 1) and GND, or between the terminals of Q1 (a Fault Condition will occur in all three cases), the laser diode will oscillate continuously.
   Note that during TEST Mode (see page 36), the interlock mechanism does not operate.
2. While the bonnet is in opened status, if the pickup is positioned to allow direct visibility of the objective lens at the outer periphery from the outer diameter of the disc clamper (80-mm diameter), the pickup can be flooded with radiation of more than class 1 of the laser optical system during any Fault Condition in Item 1 above or during TEST Mode.

2. SPECIFICATIONS AND PANEL FACILITIES

2−1. SPECIFICATION

1. General

Type ..... Compact disc digital audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1 kHz
Quantized bit number: 16 bit linear
Power requirements
European models ..... AC 220 V, 50/60 Hz
U.S., Canadian models ..... AC 120 V, 60 Hz
Power consumption ..... 11 W
Operating temperature ..... +5°C - +35°C
(+41°F - +95°F)
Weight ..... 6.0 kg (13 lb, 4 oz)
External dimensions .....
420(W) x 315(D) x 123(H) mm
16-9/16(W) x 12-13/32(D) x 4-27/32(H) in

2. Audio section

Frequency response ..... 2 Hz - 20 kHz (±0.5 dB)(EIAJ)
Signal-to-noise ratio ..... 106 dB or more (EIAJ)
Dynamic range ..... 96 dB or more (EIAJ)
Channel separation ..... 100 dB or more (EIAJ)
Total harmonic distortion ..... 0.003 or less (EIAJ)
Output voltage ..... 2.2 V ± 0.5 V (EIAJ)
Wow and flutter ..... Limit of measurement
(± 0.001% W.PEAK) or less (EIAJ)
Number of channels ..... 2 channels (stereo)
Digital output ..... Coaxial output: 0.5 Vp-p (75Ω)
Optical output: −15 dBm to −20 dBm
(wavelength 660 nm)

3. Output terminal

Optical digital output terminal
Coaxial digital output terminal
Subcode output terminal (U.S. model only)
Audio line output terminal
Headphone jack (with volume control)

4. Functions

- Play
- Pause
- Stop
- Manual search
- Track search
- Index search
- Direct selection
- Single track repeat
- All track repeat
- Programmed repeat
- Random play repeat
- Programmed random play repeat
- Music Window repeat
- Programmed playback (up to 24 tracks)
- Pause program
- Program check
- Program correction
- Program clear
- Add-on program
- Auto program editing
- Time fade editing (Fade time variation)
- Music Window (Fade time variation)
- One touch fade (Fade time variation)
- Digital level control (remote control)
- Random play
- Programmed random play
- Auto space
- Timer start

5. Accessories

- Remote control unit 1
- Size AAA/R03 dry cell batteries 2
- Output cable 1
- Operating instructions 1

NOTE:
Specifications and design subject to possible modifications without notice, due to improvement.

[FOR U.S. MODEL]
CAUTION

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- The use of optical instruments with this product will increase eye hazard.

INFORMATION TO USER [FOR U.S. MODEL]

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

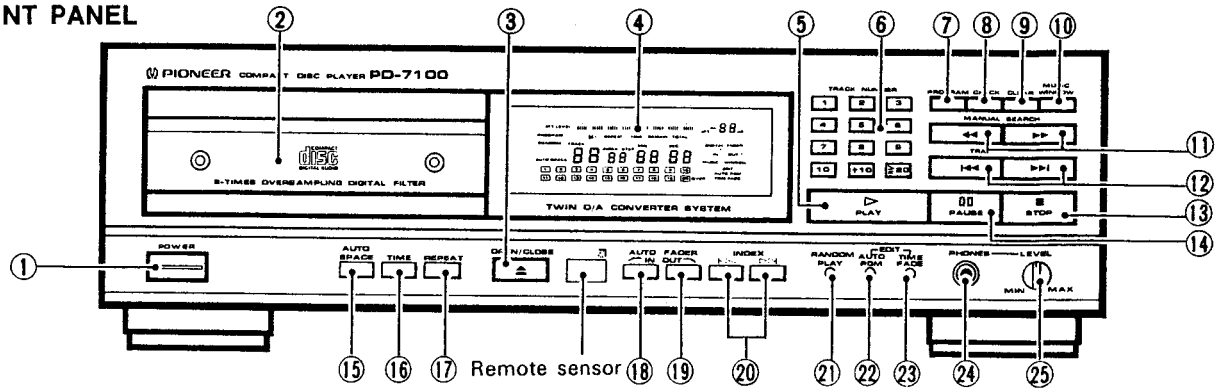
- reorient the receiving antenna
- relocate this equipment with respect to the receiver
- move this equipment away from the receiver
- plug this equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio-TV Interference Problems"
This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

The above instructions apply only to units which will be operated in the United States.

2–2. PANEL FACILITIES

FRONT PANEL



① POWER switch

Press to turn power to the unit ON and OFF.
If there is a disc in the unit when power is turned ON, playback will begin automatically. (Timer start function)

② Disc Tray

This is where the disc is set. When power is switched ON and the OPEN/CLOSE key is pressed, the tray is ejected forward. To insert the tray, press the OPEN/CLOSE key, or lightly push the tray in with your finger. With the disc tray open, pressing the PLAY key or TRACK NUMBER key will close the disc tray and start playback.

③ OPEN/CLOSE key (▲)

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

④ Indicators

See page 6.

⑤ PLAY key/Indicator (▷)

Press to begin playback, and to cancel the pause mode.

⑥ TRACK NUMBER keys (1 to 10, +10 and ≧20)

- These keys are used to specify the track numbers (tracks 1 to 99) for direct track selection or program entry.
- During auto program editing or time fade editing, the keys are used to specify the time period (in minutes).
- These keys are also used to set the fade-in and fade-out times (0 to 9 seconds).

⑦ PROGRAM MEMORY key

This is used to program tracks to play in a desired sequence.

- Press this key to set the unit to program mode. Then specify the desired tracks with the TRACK NUMBER keys. The tracks will be programmed as they are entered in this way.

⑧ PROGRAM CHECK key

Press this key to check the contents of a program that has been entered. Starting with step 1 of the program, the next program step will be shown each time the key is pressed.

⑨ PROGRAM CLEAR key

Press this key during program entry, music window entry, or playback to clear the last program step.
This will also cancel the time fade editing mode.

⑩ MUSIC WINDOW key

Use this key to specify the desired sections (music windows) of a track.

- Press this key at the starting point of the desired music window. Continue playback and press this key again at the ending point of the desired music window. This enters one music window. Up to 10 music windows can be programmed in this way.

⑪ MANUAL SEARCH keys

When the player is in play or pause modes, these keys are pressed to perform fast forward or fast reverse operations, to allow manual searching. These operations are only carried out during the time either key is pressed.

[▶▶] : Fast forward operation (If fast forward operation is performed to the end of the disc, "End" will be displayed and the player will enter pause mode.)

[◀◀] : Fast reverse operation (If fast reverse operation is performed to the beginning of the disc, the player will enter play mode.)

- For programmed playback, when the forward search reaches the next track, it will enter the pause mode. When it reaches the beginning of the track in reverse search, the player will enter the playback mode. During music window playback, right before the next or previous fade out starts, the unit will enter the pause mode (or the play mode).
- Manual search cannot be done during music window fade-in and fade-out.

⑫ TRACK SEARCH keys

During playback (or programmed play) or pause, these keys are used to search for the desired track. The search keys are pressed to advance or reverse the player to the next or previous track respectively.
When pressed during stop mode, the playing time of the displayed track will be displayed in the program order.

[▶▶|] : Pressing this key once will advance the player to the beginning of the next track. Holding down the key will advance the player to the beginning of the following tracks. [During programmed playback and music window playback, the player will advance to the beginning of the following programmed track(s) or window(s)].

[|◀◀] : Pressing this key once will reverse the player to the beginning of the currently-playing track. Holding down the key will reverse the player to the beginning of the previous track(s). During programmed playback, the player will reverse to the beginning of the previous programmed track(s) or window(s)].

⑬ STOP key (■)

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 PAUSE key/Indicator (▯▯)

Press to temporarily interrupt playback. When pressed again, the pause mode is cancelled and playback resumes.

⑮ AUTO SPACE key

During playback, there will be a pause of about three seconds before the next track is played.

⑯ TIME key

- This switches the indicator display mode. Each time the key is pressed, the display will show TIME, REMAIN, and TOTAL respectively. (For a description of each display mode, refer to the item concerning the indicator.)

⑰ REPEAT key

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

Single track repeat:

The currently-playing track will repeat. The key can be used during normal playback, program playback, random playback. During music window playback, one window will be repeated.

All tracks repeat:

All tracks on the disc will be repeated.

- If pressed during normal playback mode, all tracks on the disc will be repeatedly played back.
- If pressed during programmed playback, the programmed tracks will be repeatedly played back in the programmed order.
- In the case of random play mode, after all the tracks have been played, random play will start again.
- During programmed random playback, after the programmed tracks are played at random, programmed random playback will be repeated.
- During music window playback, the windows will be repeated in the programmed order.

⑱ AUTO FADER IN ⌐→ key

Press this key to start playback with fade-in sound. (Effective only during playback pause mode and fade-out.) Press this key when setting the fade-in operation time (0 to 9 sec.) (Effective only during stop mode.)

⑲ AUTO FADER OUT →¬ key

Press this key for fade-out sound. (After fade-out is completed, the unit will enter pause mode.) Press this key when setting the fade-out operation time (0 to 9 sec.) (Effective only during stop mode.)

⑳ INDEX SEARCH keys

Searches, during playback or pause, for the music section of a track or the track index. When pressed, the unit will return to the previous index or advance to the next index.

[▷▷|] : Advances to the next index number.
[|◁◁] : Returns to the index number of the currently-playing music section or track.

㉑ RANDOM PLAY key

Press to begin random playback.

㉒ AUTO PGM EDIT key

Press to program a tune which may be played back within a specified time.

㉓ TIME FADE EDIT key

Press this key when ending play at a desired time with fade out.

㉔ PHONES (headphones) jack

When you wish to use headphones, insert the plug for the headphones into the headphone jack.

㉕ PHONES LEVEL control knob

Use to adjust the level of sound when using headphones. Turning the knob to the right increases the sound level.

Indicators

ATT LEVEL : The volume level of fade-in, fade-out, and digital level control is displayed.
PROGRAM : Lights during the program mode.
RANDOM : Lights during random playback.
AUTO SPACE : Lights during auto space playback.
1▸ REPEAT : Lights during repeat playback of one track.
REPEAT : Lights during repeat playback of all tracks (or programs).

TRACK
1 — 20 , OVER
(Music calendar) : Display the current track number (during normal playback and programmed playback) or the track being programmed during programming operation. The lower figures light up in accordance with the number of tracks recorded on the disc, and the numbers of the tracks which have been played are deleted in order. (During entering a program, and programmed playback only the programmed tracks light.) For 21 or over, OVER will light.
INDEX : Displays the index * number of the music section of a track or the track division.
STEP : Displays the program steps.
TIME/REMAIN/TOTAL : Changes each time the TIME, key is pressed.

- TIME : Displays the track number of the track being played (TRACK) and the elapsed time (minutes and seconds).
- REMAIN : Displays the remaining time on the track being played.
  When the TIME key is pressed again, the remaining time on the disc will be displayed.
- TOTAL : Displays the total number of tracks on the disc (TRACK) and the overall playback time (minutes and seconds).
  During playback, the display goes on for about 5 seconds before changing to the TIME display.

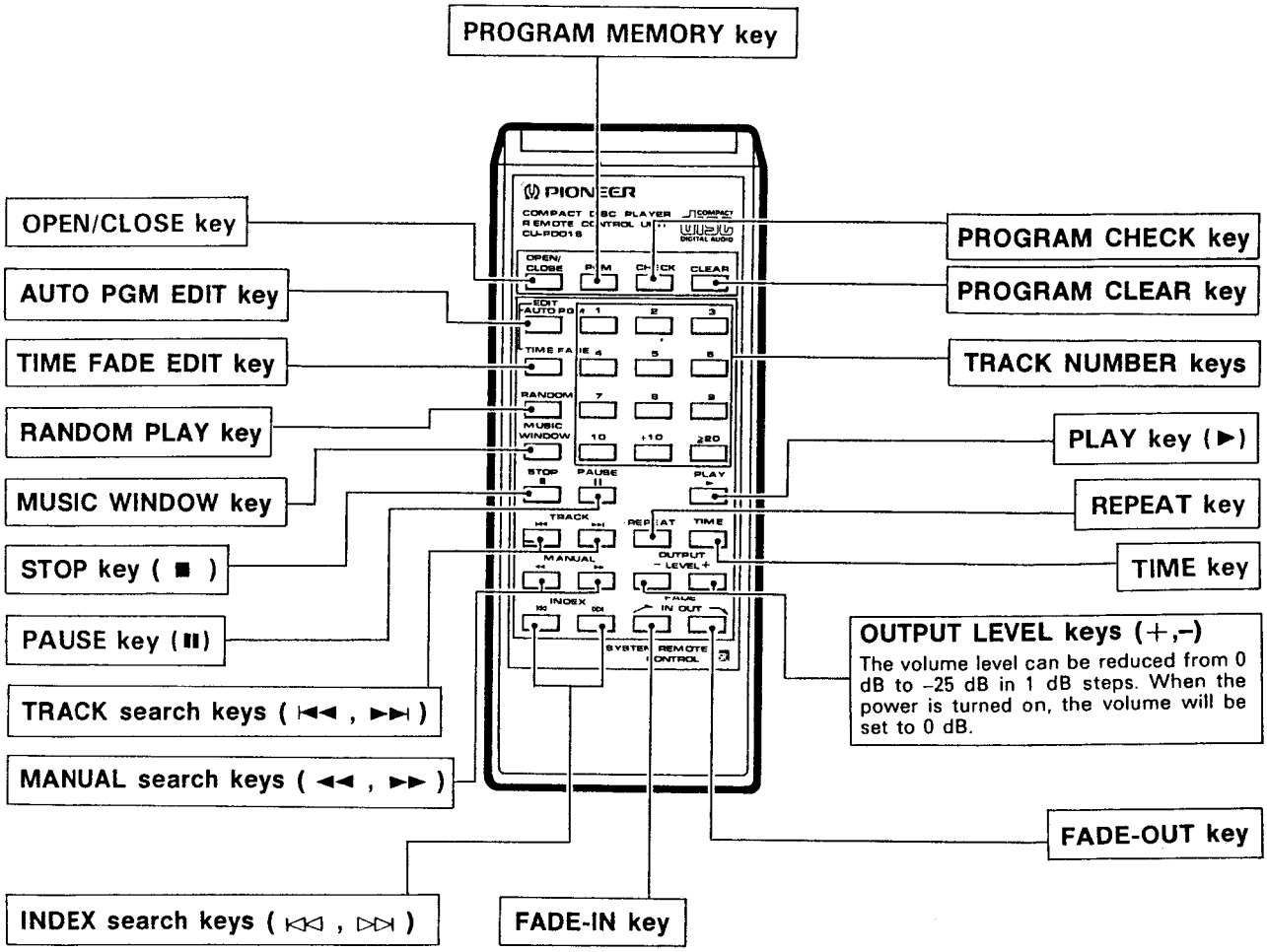
During programmed playback operation, displays the playing time, the remaining time of the track being played and the total program steps (TOTAL). During time fade editing mode playback, TIME-FADE-REMAIN will be displayed instead of remaining time on the disc.

MIN (minute) : Displays the minutes of the elapsed time, total playback time, and remaining time.
SEC (second) : Displays the seconds of the elapsed time, total playback time, and remaining time.
ATT : Displays the volume decrease (–dB) of fade-in, fade-out and digital level control.
⌐→ : Lights during fade-in operation and when the fade in time is being set.
→¬ : Lights during fade-out operation and when the fade out in time is being set.
MUSIC WINDOW : Lights when a music window has been programmed.
AUTO PGM : Displays when auto program editing is set or used.
TIME FADE : Displays when time fade editing is set or used.

* The INDEX is a signal which is recorded within a track to indicate division of the track into separate tunes and items of music.

REMOTE CONTROL UNIT

Refer to player front panel section regarding other key functions not specified here.



Digital Level Controller (Volume adjustment)

By pressing the LEVEL –/+ key, the volume level can be controlled from 0 dB to –25 dB in 1 dB steps via digital circuit processing.

- To increase the volume —— Press the LEVEL [+] key. (If the level is 0 dB, there will be no change.)
- To decrease the volume —— Press the LEVEL [–] key. (If the key is held down, the level will stop at –25 dB.) The level will be displayed on the ATT LEVEL indicator and ATT indicator.

NOTE:

The headphone level can also be adjusted at the same time. However, the volume of the digital output from the DIGITAL OUT terminals cannot be adjusted.

NOTE:

Conventional Pioneer remote control units (with the SR mark) and audio video programmable remote control units do not have the +10 and ≧20 keys. Therefore, direct track selection from track 11 on, and programs with more than 11 tracks cannot be entered with these remote control units. Operate the audio video programmable remote control unit by using the learning function.

REAR PANEL

SUBCODE OUT terminal (U.S. model only)

This terminal will be used to output subcodes (data recordable on compact discs together with audio signals) in future audio applications.

DIGITAL OUTPUT selector

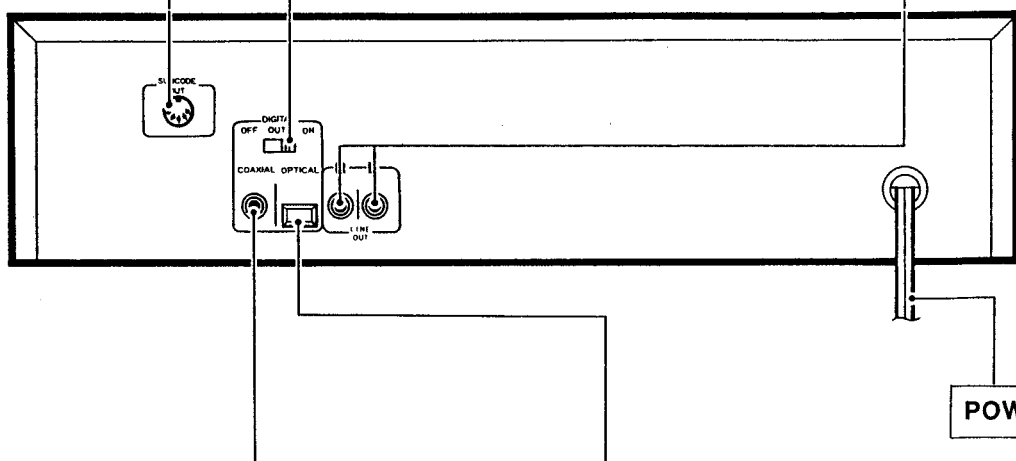
This selects the rear panel's output terminal that is to be used. Select the output terminal type that is to be used.

ON : When the audio and digital (coaxial or optical) output terminals are used simultaneously.

OFF : When the only audio output terminal is used. The operation of unused circuits is stopped to prevent them from affecting sound quality.

NOTE:

The digital level of fade-in and fade-out cannot be controlled through the digital output terminal.



COAXIAL DIGITAL OUTPUT terminal

This terminal allows output of disc audio data and subcode (signals which can be recorded together with the audio signal) as digital signals.

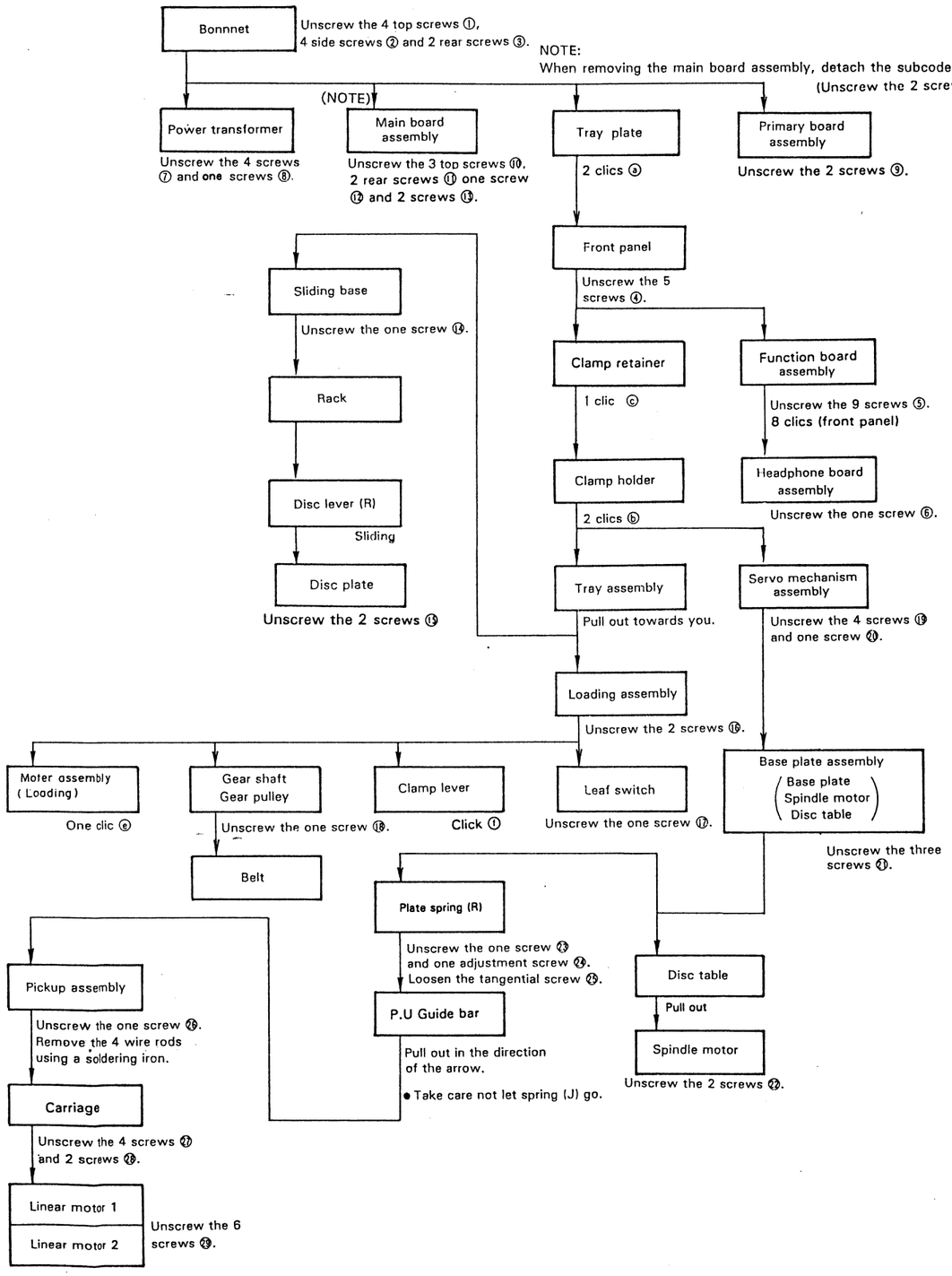
OPTICAL DIGITAL OUTPUT terminal

This terminal allows optical output of disc audio data and subcode (signal which can be recorded with the audio signal) as digital signals.

- The coaxial cable and optical fiber cable are sold separately.

3. DISASSEMBLY PROCEDURE

• Flow chart of disassembly



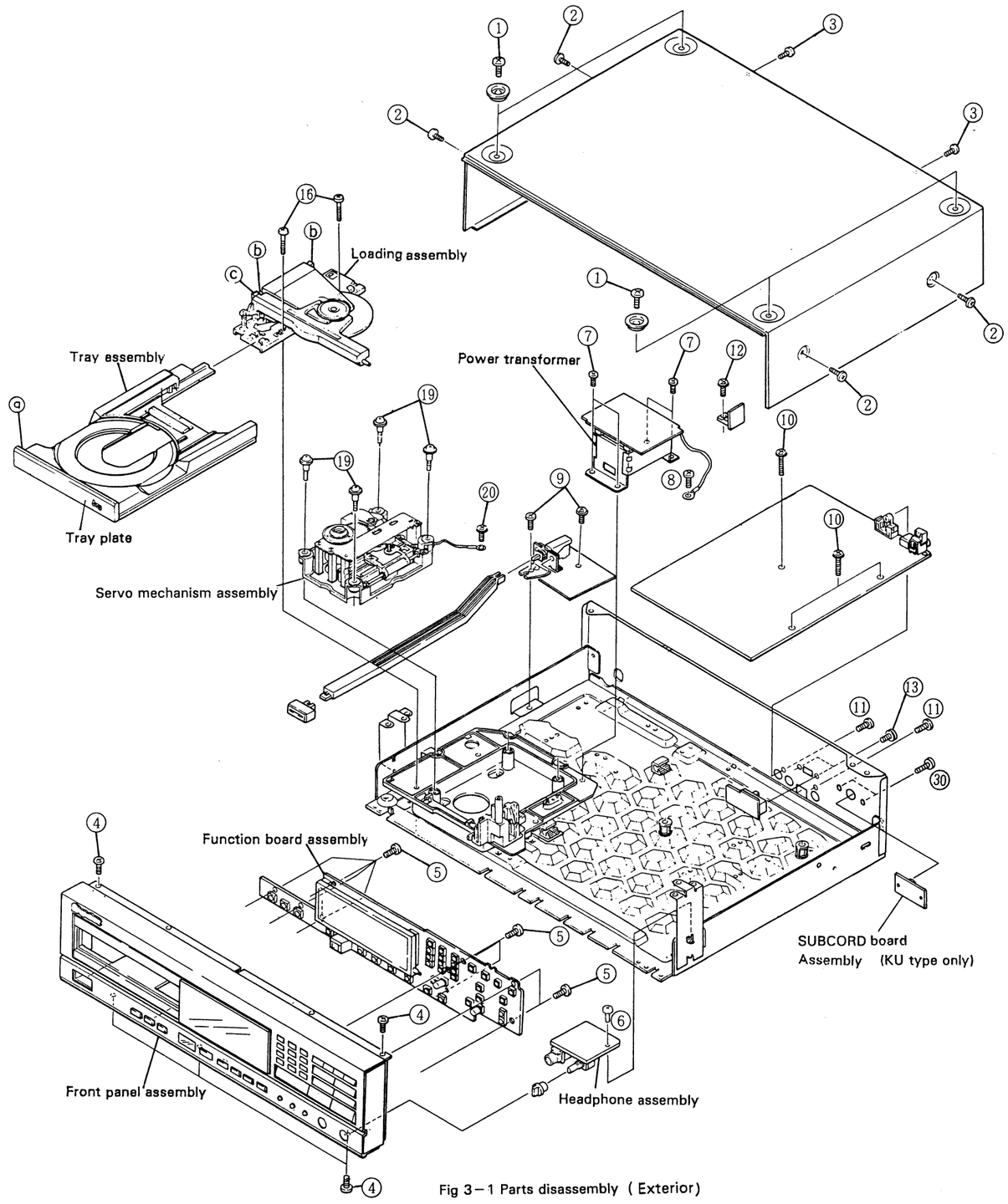
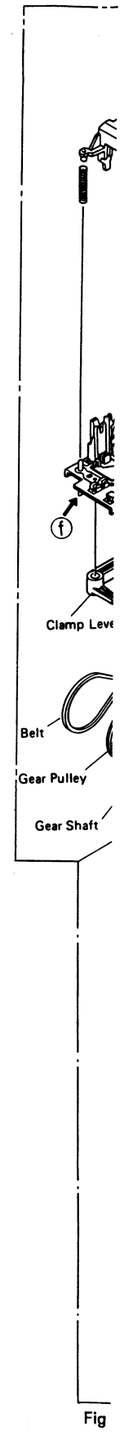
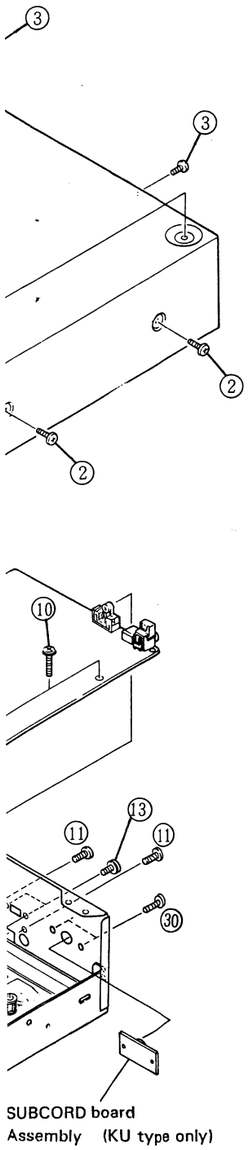


Fig 3−1 Parts disassembly (Exterior)



Fig



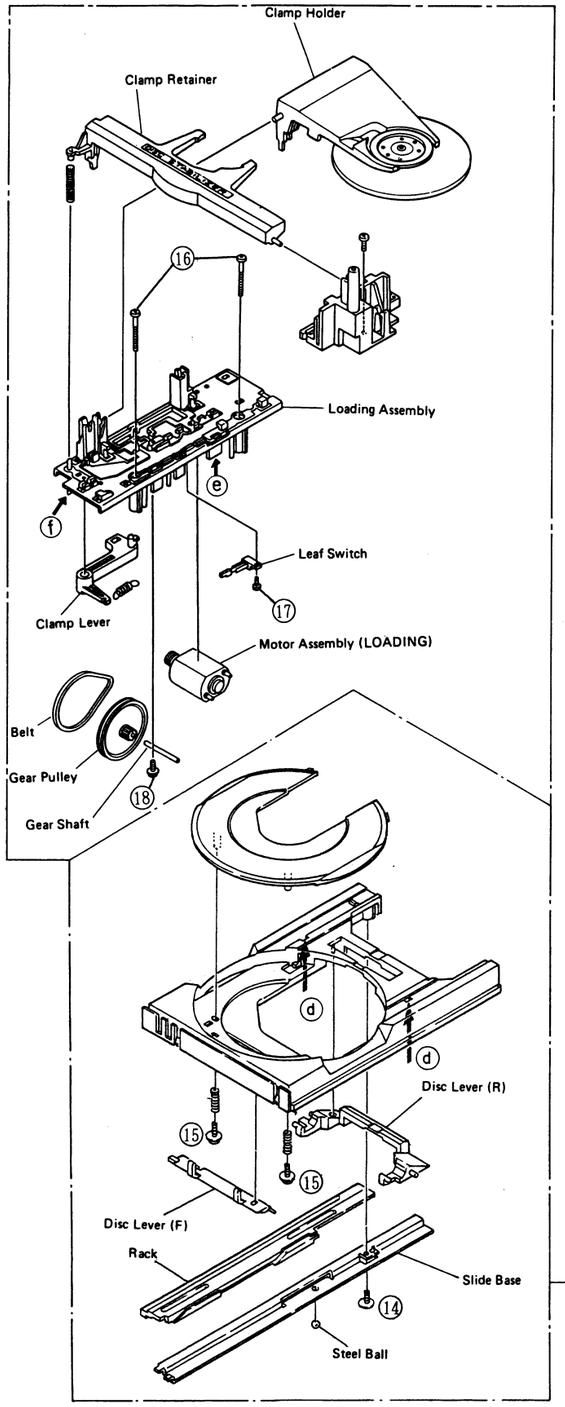
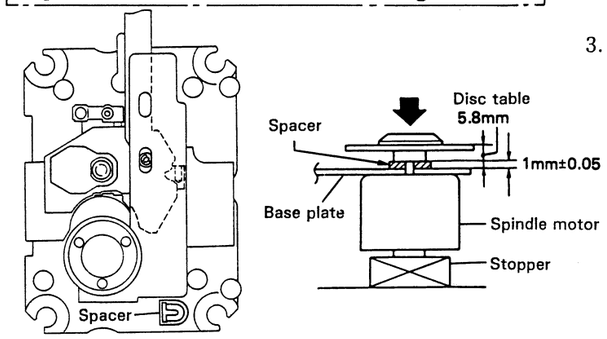


Fig 3−2 Parts disassembly
(Loading mechanism and Tray assembly section)

• Mounting of disc table

When pushing the disc table in, a stopper must be placed (with a pressure of approx. 9kg) on the bottom of the spindle motor. Insert the spacer (cut from the mechanism chassis) between the base plates and disk table as shown in the Figure below.



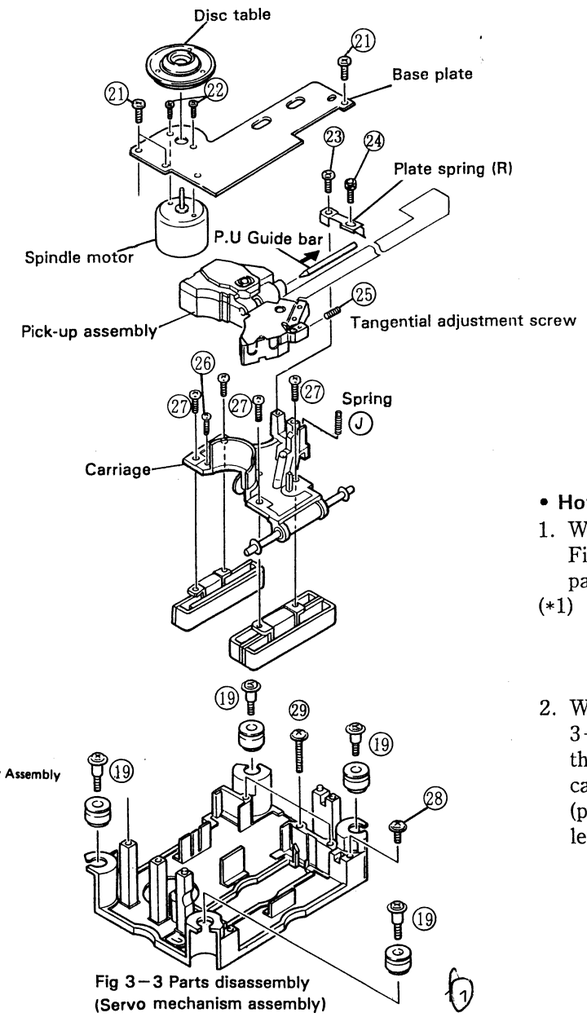


Fig 3−3 Parts disassembly
(Servo mechanism assembly)

Cautions On Installing The Pickup Assembly

1. Install the wire rod of the linear motor as shown in Fig. 1
2. When installing the pickup assembly, fix the tangential adjustment screw while taking care of the cavity in the adjustment shaft as shown in Fig. 2.
3. Insert the P.U guide bar while taking care of the spring.

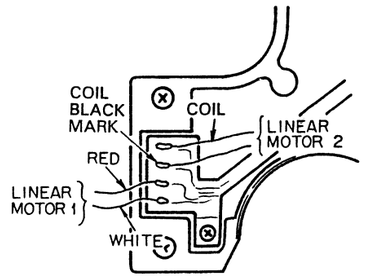


Figure 1

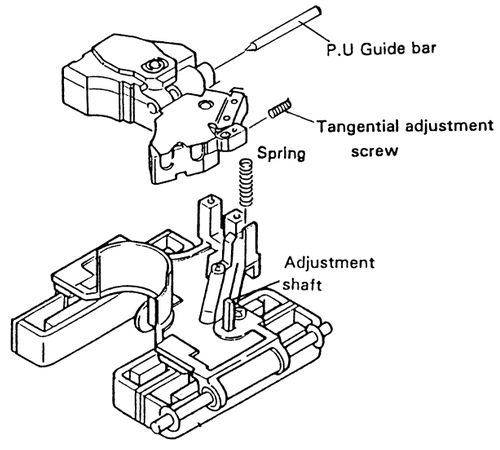


Figure 2

• How to remove disc tray

1. While pushing the rear edge of the rack Ⓐ in Figure 3−4 (*1) , pull out the disc tray until it pauses (as shown in the Figure 3−5).

(*1) When the rear edge of the rack Ⓐ is pushed, the clamp of the disc will be released, further push the disc tray until it comes out.

2. While pulling up the clamp holder Ⓑ in Figure 3−5 with the right hand, hold the disc tray Ⓒ with the left hand and pull it out towards you. Be careful that the ϕ4mm steel ball dose not fall down (pull out the disc while supporting the ball with the left index finger) .

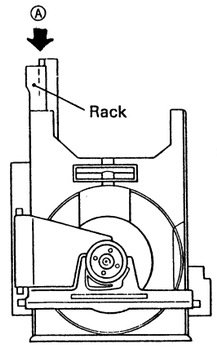


Figure 3−4

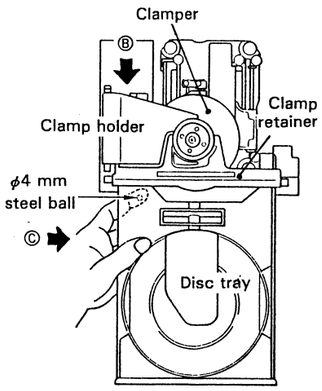
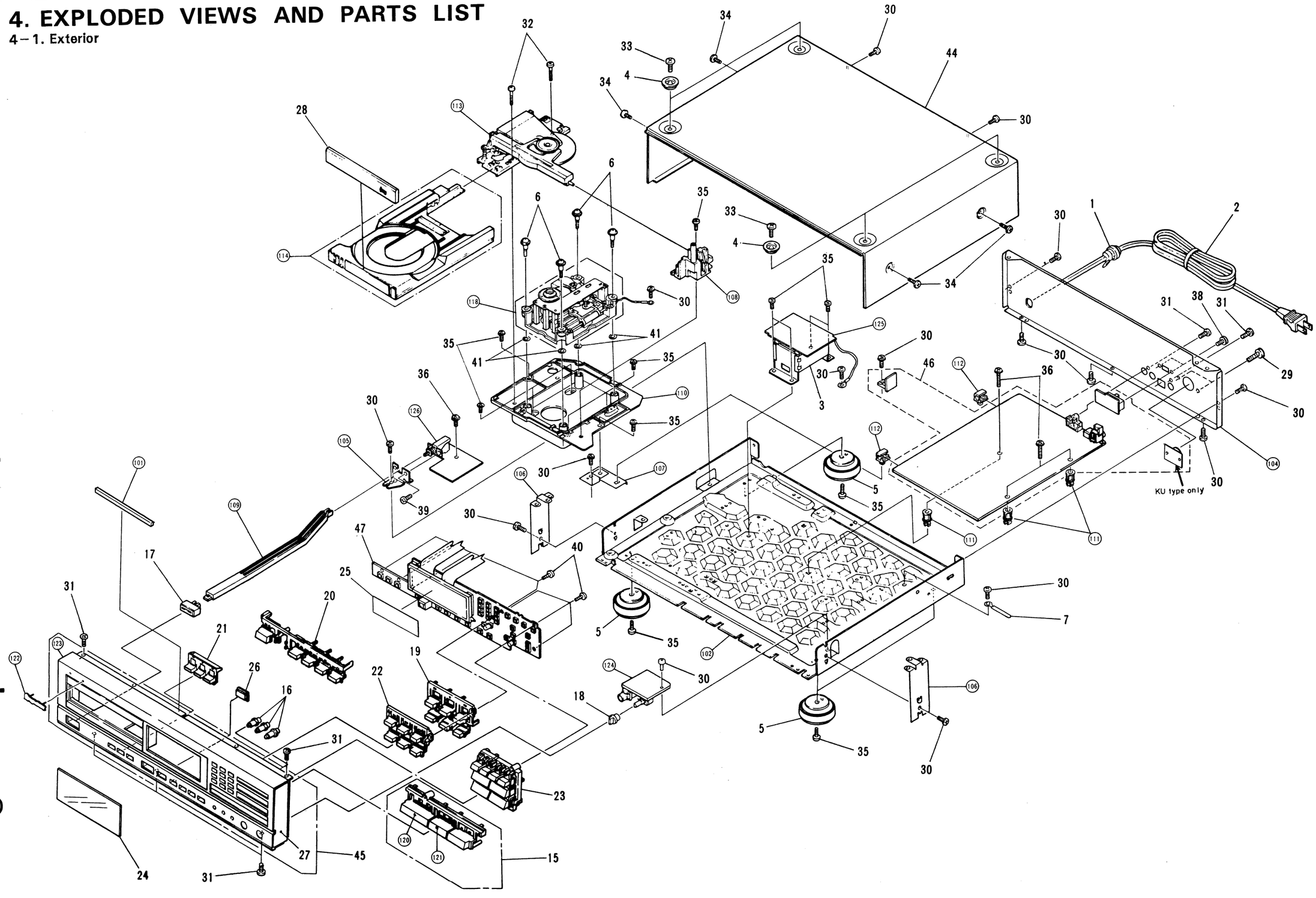


Figure 3−5

4. EXPLODED VIEWS AND PARTS LIST

4 – 1. Exterior



NOTES:
- *Parts without*
- *The ⚠ mark*
factor of the p
tion.
- *Parts marked*
than usual or

Mark	No.	Pa
⚠	1	CN
⚠	2	PC
⚠	3	PT
	4	AE
	5	AN
	6	PB
	7	RN
	8	···
	9	···
	10	···
	11	···
	12	···
	13	···
	14	···
	15	PA
	16	PA
	17	PA
	18	PA
	19	PA
	20	PA
	21	PA
	22	PA
	23	PA
	24	PA
	25	PA
	26	PN
	27	PN
	28	PN
	29	BE
	30	BE
	31	BE
	32	BF
	33	BE
	34	FE
	35	IB
	36	IB
	37	PE
	38	PN
	39	PN
	40	PF
	41	W
	42	
	43	
	44	PV
	45	PV

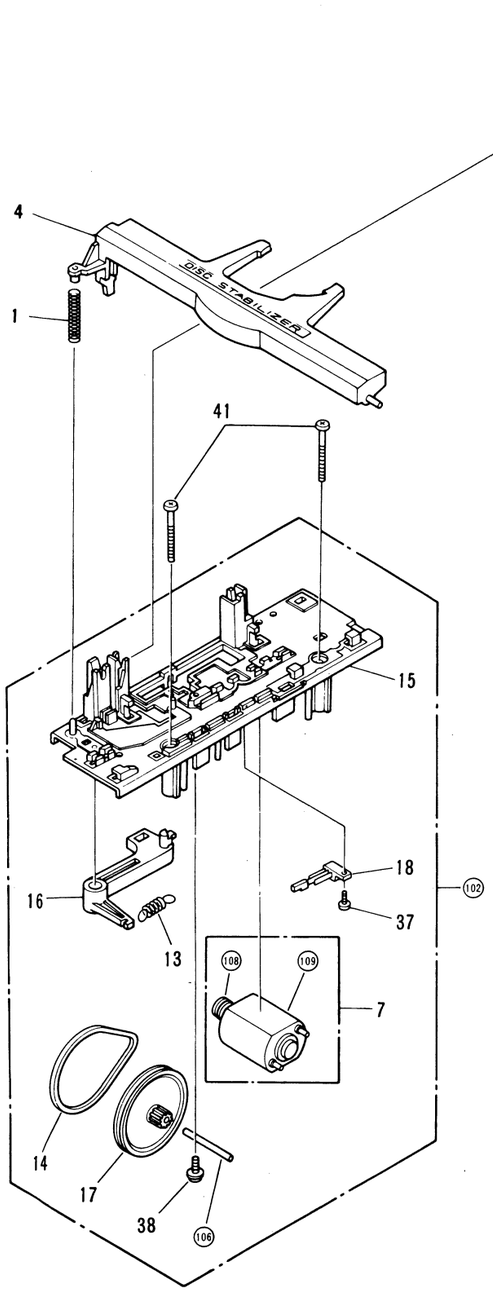
NOTES:

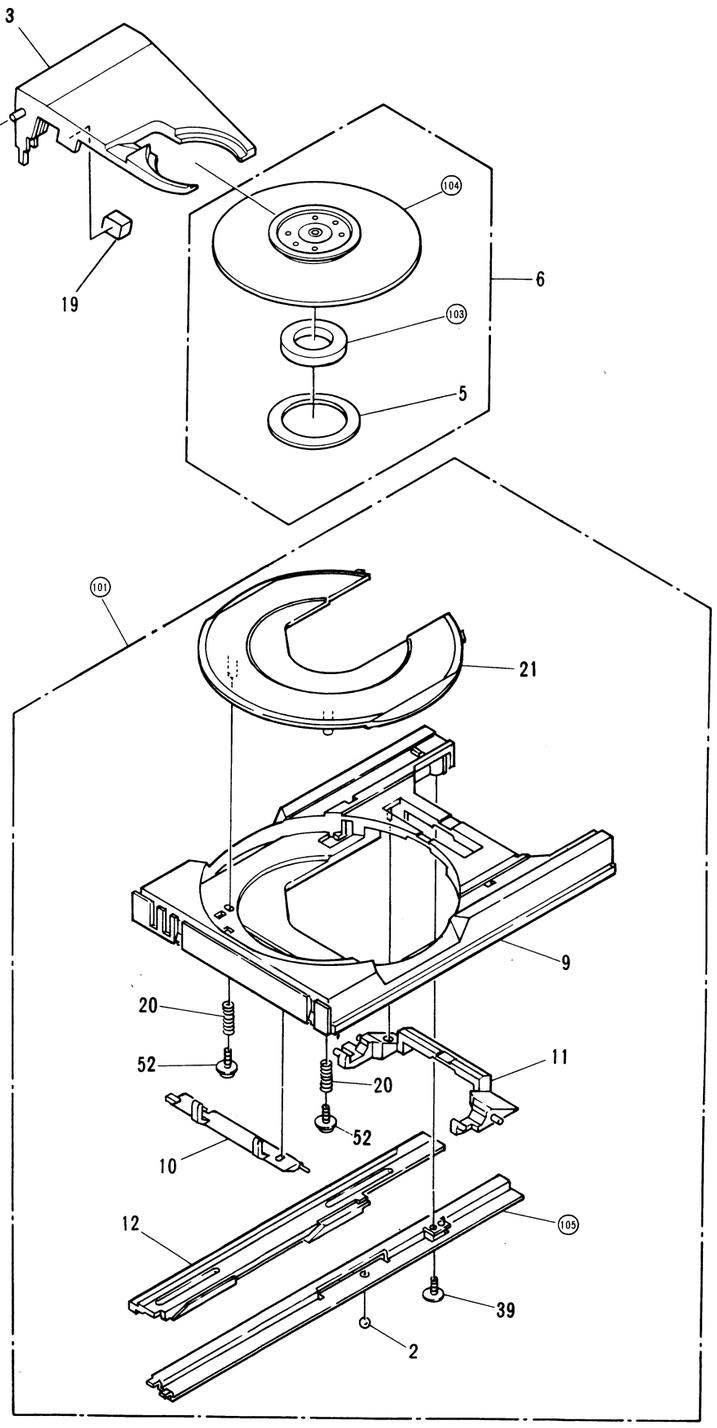
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time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

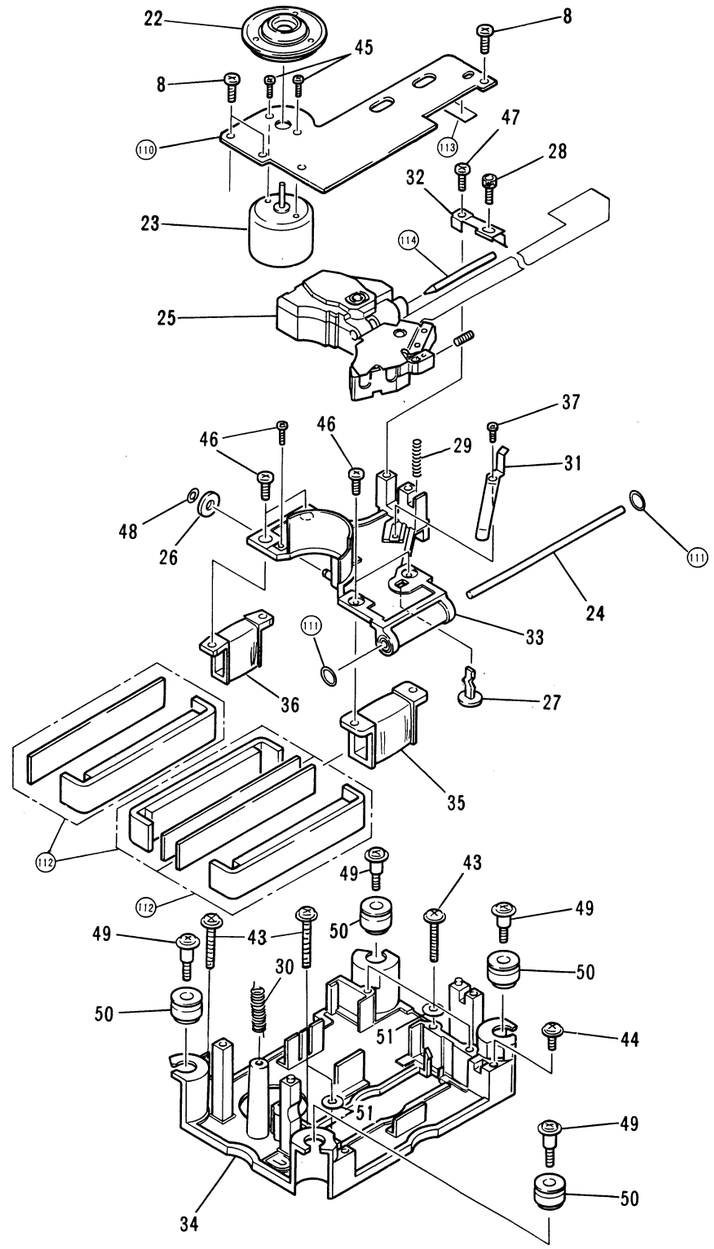
Mark	No.	Parts No.	Description
⚠	1	CM−22C	Strain relief
⚠	2	PDG1015	AC Power cord
⚠	3	PTT1075	Power transformer (AC120V,T1)
	4	ABE1009	Washer
	5	AMR1159	Leg assembly
	6	PBA1027	Screw
	7	RNH−184	Cord clamper
	8	.....	.....
	9	.....	.....
	10	.....	.....
	11	.....	.....
	12	.....	.....
	13	.....	.....
	14	.....	.....
	15	PAD1038	Function button assembly
	16	PAA1004	Button
	17	PAC1207	Button (POWER)
	18	PAC1208	Knob (HEADPHONE)
	19	PAC1253	Button C (SELECT)
	20	PAC1256	Button C (O/C)
	21	PAC1296	Button (TIME)
	22	PAC1298	Button E (SELECT)
	23	PAC1303	Button (TRACK)
	24	PAM1224	Acrylic window
	25	PAM1239	FL Filter
	26	PNW1075	Filter
	27	PNW1410	Function panel
	28	PNW1411	Plate
	29	BBZ26P060FCC	Screw
	30	BBZ30P060FCC	Screw
	31	BBZ30P080FCC	Screw
	32	BPZ30P250FMC	Screw
	33	BBZ40P060FZK	Screw
	34	FBT40P080FZK	Screw
	35	IBZ30P080FCC	Screw
	36	IBZ30P150FCU	Screw
	37	PEC−107	Binder
	38	PMA26P040FCU	Screw
	39	PMZ30P060FCC	Screw
	40	PPZ30P150FMC	Screw
	41	WC30FMC	Washer
	42		.....
	43		.....
	44	PYY1071	Bonnet case
	45	PYY1074	Front panel assembly
⚠ ⊙	46	PWZ1466	Main assembly
⊙	47	PWZ1467	Function board assembly
	101		Spacer
	102		Under base
	103		.....
	104		Rear base
	105		Switch angle
	106		Side angle
	107		Mechanism angle
	108		Slide guide
	109		SW joint
	110		Mechanism base
	111		P.C.B. speacer
	112		P plate holder
	113		Loading base assembly
	114		Tray assembly
	115		.....
	116		.....
	117		.....
	118		Servo mechanism assembly
	119		.....
	120		Play lens
	121		Pause lens
	122		Name plate
	123		Front panel
	124		Headphone assembly
	125		Transformer board assembly
	126		Primary board assembly

4−2. Mechanism assembly

Mark	No.	Parts No.	Description
	1	PBH1013	Spring
	2	PBP−001	Steel ball ϕ4
	3	PNW1084	Clamp holder
	4	PNW1085	Clamp retainer
	5	PNM1010	Disc cushion
	6	PYY1084	Clamper assembly
	7	PYY1025	Motor assembly (LOADING)
	8	PBA1031	Screw
	9	PNW1309	Tray
	10	PNW1330	Disc lever (F)
	11	PNW1331	Disc lever (R)
	12	PNW1332	Rack
	13	PBH1012	Clamp spring
	14	PEB1013	Belt (LOADING)
	15	PNW1069	Loading base
	16	PNW1083	Clamp lever
	17	PNW1171	Gear pully
	18	VSK−015	Leaf switch (CLAMP:S102)
	19	PEB1095	Stopper rubber
	20	PBH1045	Plate spring
	21	PNW1329	Disc plate
	22	PNW1064	Disc table
	23	PXM1001	Spindle motor
	24	PLA1061	Guide bar
	25	PWY1006	Pick up assembly
	26	PNW1408	Roller
	27	PNW1407	Adjustment shaht
	28	PBA1026	Adjustment screw
	29	PBH1029	Shaft spring
	30	PBH1068	Earth spring
	31	PBK1045	Plate spring (T)
	32	PBK1046	Plate spring (R)
	33	PNW1405	Carriage
	34	PNW1406	Mechanism chassis
	35	PXP1001	Drive unit
	36	PXP1002	Detector unit
	37	BPZ20P080FZK	Screw
	38	IPZ30P060FMC	Screw
	39	PPZ30P080FMC	Screw
	40	BBZ30P080FMC	Screw
	41	BPZ30P250FMC	Screw
	42		.....
	43	IBZ30P180FMC	Screw
	44	IPZ30P080FMC	Screw
	45	PMZ20P030FMC	Screw
	46	PMZ26P040FMC	Screw
	47	PPZ26P080FMC	Screw
	48	WT25D047D025	Washer
	49	PBA1027	Screw
	50	PEB1031	Froat rubber
	51	WA30K100M050	Washer
	52	PBA1025	Screw
	101		Tray assembly
	102		Loading assembly
	103		Magnet
	104		Clamper
	105		Slide base
	106		Gear shaft
	107		.....
	108		Motor pully
	109		Motor (CARRIAGE,LOADING)
	110		Base plate
	111		Rubber ring
	112		Yoke unit
	113		Absorber felt
	114		PU guide bar





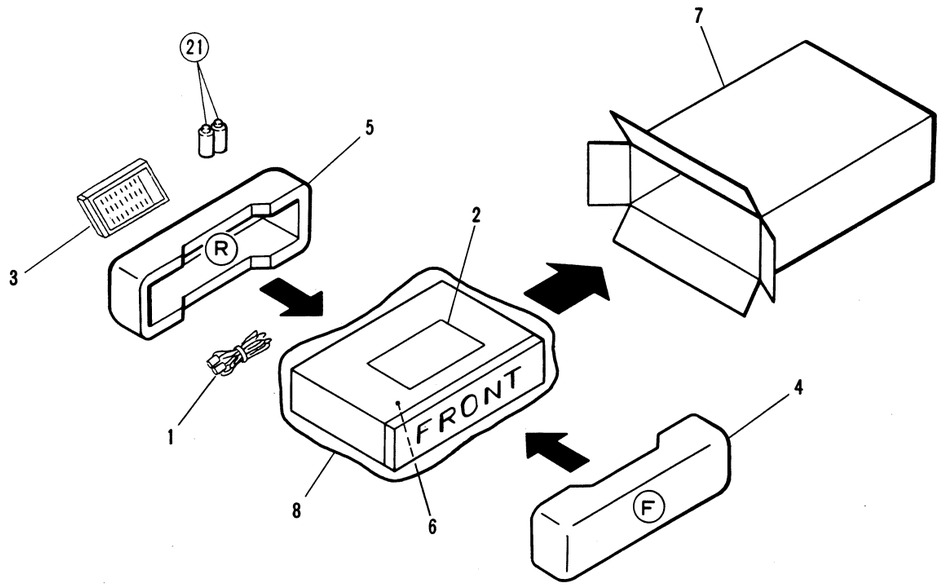


5. PACK

Mark	No.	Part
	1	PDE
	2	PRE
	3	PWV
	4	PHA
	5	PHA
	6	PHC
	7	PHC
	8	VHL
	21	

5. PACKING

Mark	No.	Parts No.	Description
A	1	PDE1002	Connection cord with pin plug
	2	PRE1065	Operating instruction
	3	PWW1025	Remote control unit
	4	PHA1068	Protector (F)
	5	PHA1069	Protector (R)
	6	PHC1030	Spacer (available in the tray)
	7	PHG1236	CD packing case
	8	VHL−037	Sheet
—	21		Battery



External Appearances of Transistor and ICs

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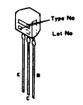
DTC124ES



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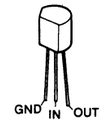

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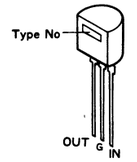

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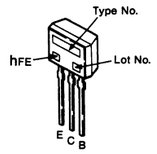

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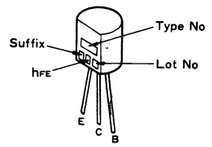

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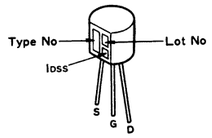

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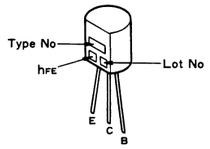

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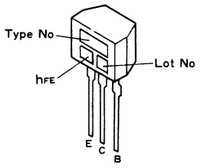
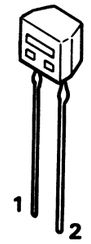


ICP−N10



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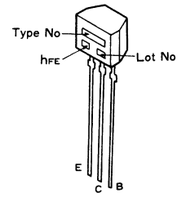

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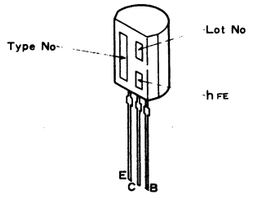

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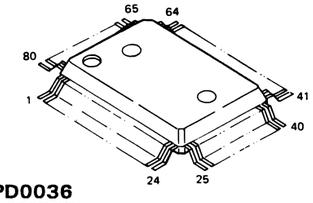

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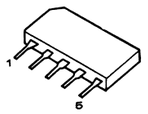

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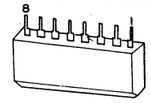

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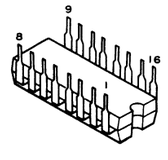
PCM56P−J
PD0026A



PD3124
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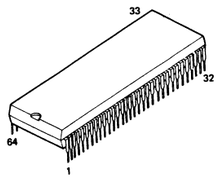

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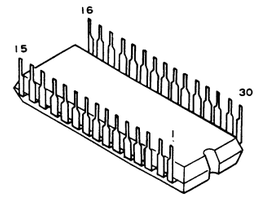
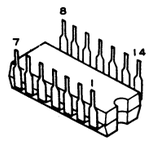
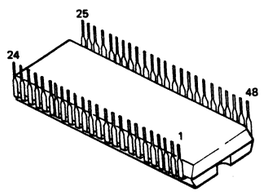


TC74HCU04P



CXA1082AS



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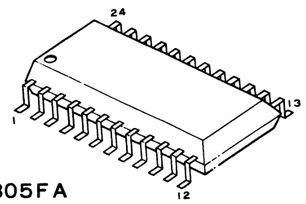

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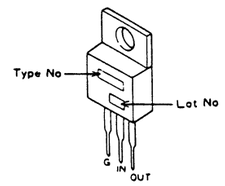

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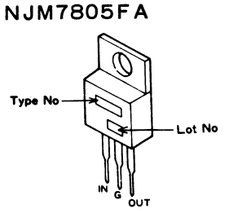
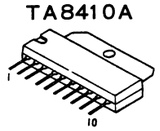


TA8410A



6. SCHEMATIC DIAGRAM

MAIN ASSEMBLY (1/3) (PWZ1466)

PXP1001 DRIVER
PXP1002 DETECTOR
PWY1006 PICK-UP ASSEMBLY
TRACKING COIL
FOCUS COIL
PXM1001 SPINDLE MOTOR
PYY1025 LOADING MOTOR
S102 VSK-015 CLAMP SW

IC1 CXA1081S
IC2 CXA1082AS
IC3 CXD1135QZ
IC4 PD3124
IC5 TA8410A
IC6 PD0026A
IC7 CXK5816M-12L
IC8 M51957AL
IC9 TC74HCU04P
IC12 NJM7905FA
IC13 NJM78L12A
IC14 NJM79L12A
IC15, IC16 PCM56P-J
IC17, IC18 NJM4580LD
IC20 NJM78L05A
IC21 NJM79L05A
IC24 PD0036
IC30, IC31 ICP-N10

CAUTION :
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N10, MFD. BY ROHM CO. LTD FOR IC30 AND IC31.

NOTE:

1. RESISTORS:
   Indicated in Ω, 1/6W, ±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
   ▭; DC voltage (V) at no input signal Value in ( ) is DC voltage at rated power.

4. OTHERS:
   Ⓐ ; 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.

5. SWITCHES:
   S301 : POWER SW ON - OFF
   S201∿S230, S233∿S236 : FUNCTION SW
   S601 : DIGITAL OUT ON/OFF SW ON - OFF
   The underlined indicates the switch position.

6. SIGNAL ROUTE:
   ——— Focus servo loop
   - - - - - - - Signal line
   ····· Tracking servo loop
   -·-·-·- Carriage servo loop
   ——— Loading motor loop
   - - - - - - - Spindle motor loop
   ► Measurement point

KU MODEL ONLY

MAIN ASSEMBLY (2/3)

MAIN ASSEMBLY (3/3)

HEADPHONE ASSEMBLY

TRANSFORMER BOARD ASSEMBLY

PRIMARY BOARD ASSEMBLY

FUNCTION BOARD ASSEMBLY (PWZ1467)

IC6 DIGITAL ATTENUATOR

IC24 DIGITAL FILTER

IC9 BUFFER

IC15 L ch D/A CONVERTER

IC16 R ch D/A CONVERTER

IC7 S-RAM

IC401 : HEADPHONE AMP

IC401 M5218L

IC201 PDG010A

DISPLAY μCOM

IC17 (2/2) : LOW PASS FILTER

IC18 (2/2) : LOW PASS FILTER

Q11, Q12 : DE-EMPHASIS

Q17, Q18 : LINE MUTING

Q15, Q16 : BUFFER

Q20, Q10 : LINE MUTE

IC13, IC14 : REGULATOR

IC20, IC21 : REGULATOR

IC12 : REGULATOR

IC30 : PROTECTOR

IC31 : PROTECTOR

IC701 NJM7805FA

VR2	RF OFFSET
VR3	FOCUS GAIN
VR4	TRACKING GAIN
VR5	TRACKING BALANCE
VR6	FOCUS OFFSET
VR7	TRACKING OFFSET
VR8	VCO ADJ.
VR9	MSB ADJ. L ch
VR10	MSB ADJ. R ch
VR401	HEADPHONE LEVEL

DTA124ES

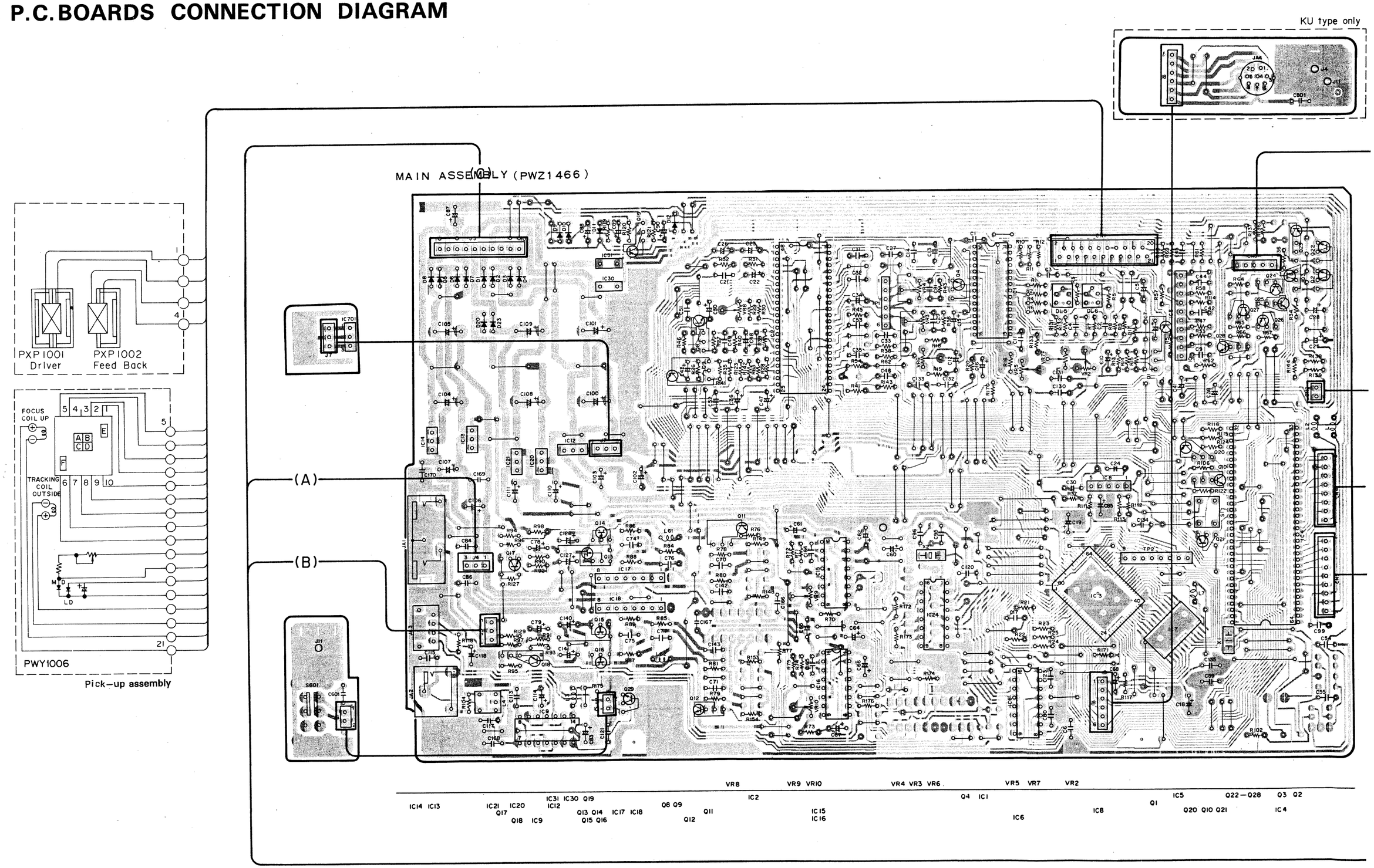
DTC124ES

Q1, Q3, Q23	2SA1399
Q2, Q22	2SC3581
Q4, Q29, Q24, Q25, Q10	DTC124ES
Q8, Q9, Q11, Q12 Q204 ∿ Q206	2SC1740S
Q13, Q15	2SK246
Q14, Q16	2SJ103
Q17 Q18	2SD1302
Q19	2SA1048
Q20, Q21, Q26 Q201, Q202	DTA124ES
Q27	2SA854S
Q28	2SC1741S

D1 ∿ D10, D20, D23 10E2
D11 HZS27NB2
D12 HZS5.1NB2
D201 SLH-56MC3H
D202 SLH-56YC3HYL

CAUTION :
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N10, MFD. BY ROHM CO. LTD FOR IC30 AND IC31.

7. P.C.BOARDS CONNECTION DIAGRAM



KU type only

FUNCTION BOARD ASSEMBLY (PWZ1467)

VSK-015
S102 CLAMP SW
/CLAMP
/OPEN
PYY1025
Loading Motor

PXM1001
Spindle Motor

(D)
(E)
(A)
(B)
(C)

AC 120V
60Hz
AC POWER CORD
PDG 1015

HEADPHONE ASSEMBLY

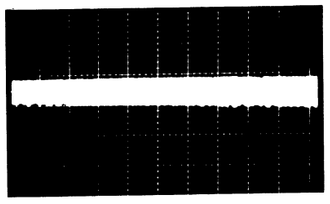
TRANSFORMER BOARD ASSEMBLY

PRIMARY BOARD ASSEMBLY

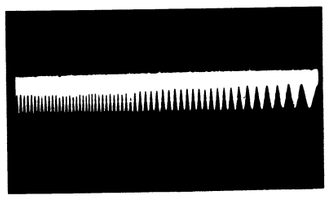
WAVE FORMS

NOTE: The encircled numbers denote measuring points in the circuit and pattern diagrams.

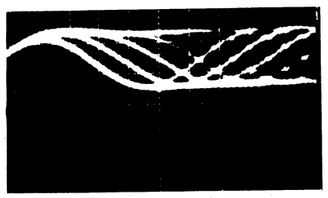
① CN1-5 Pin: PLAY MODE
100mV/Div 5mS /Div



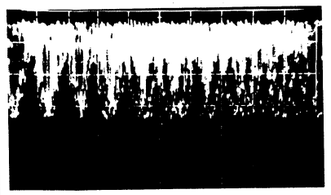
① CN1-5 Pin: SEARCH MODE
100mV/Div 5mS/Div



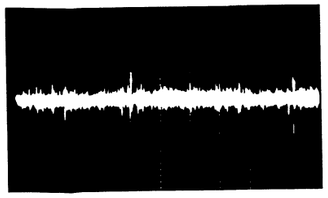
② TP1-1 Pin: PLAY MODE
1V/Div 200nS/Div



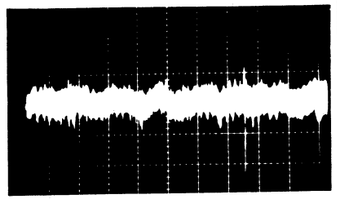
② TP1-1 Pin: SEARCH MODE
500mV/Div 5mS/Div



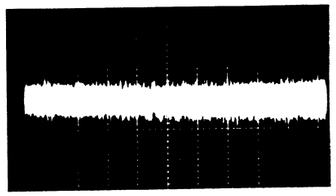
③ TP1-6 Pin: PLAY MODE
500mV/Div 10mS/Div



③ TP1-6 Pin: SEARCH MODE
500mV/Div 10mS/Div

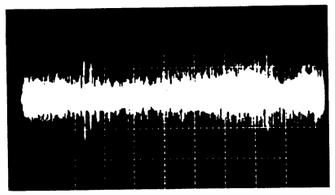


④ TP1-2 Pin: PLAY MODE
1V/Div 10mS/Div



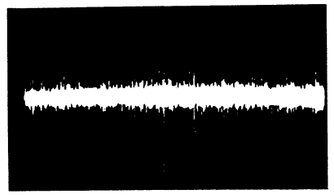
④ TP1-2 Pin: SEARCH MODE
1V/Div 10mS/Div

⑤ Q22 Emitter: PLAY MODE
2V/Div 10mS/Div

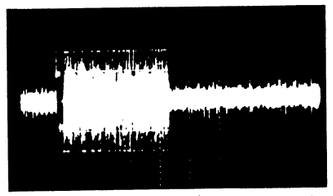


⑤ Q22 Emitter: SEARCH MODE
2V/Div 10mS/Div

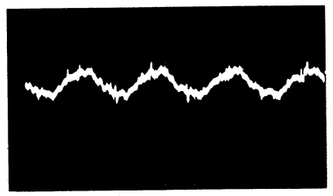
⑥ IC 5-9Pin: PLAY MODE
2V/Div 10mS/Div



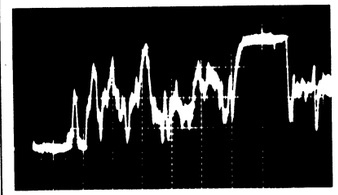
⑥ IC 5-9Pin: SEARCH MODE
2V/Div 10mS/Div



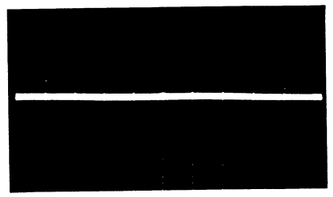
⑦ Q2E: PLAY MODE
2V/Div 50mS/Div



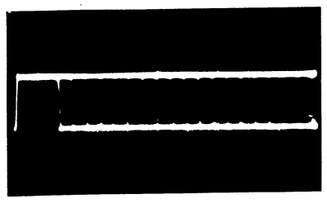
⑦ Q2E: SEARCH MODE
2V/Div 100mS/Div



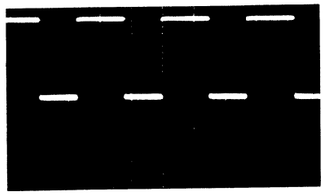
⑧ IC2, 34 Pin: PLAY MODE
2V/Div 10mS/Div



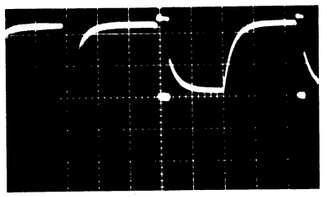
⑨ IC1 27 Pin: PLAY MODE
2V/Div 500nS/Div



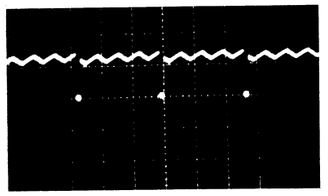
⑩ IC3-4: PLAY MODE
2V/Div 50μS/Div



⑩ IC3-4: SEARCH MODE
2V/Div 100mS/Div

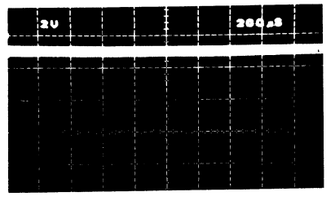


⑪ IC3-3: PLAY MODE
2V/Div 200μS/Div

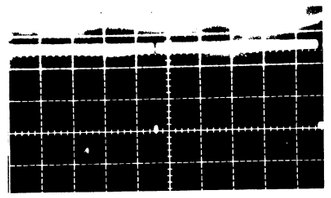


⑪ IC3-3: SEARCH MODE
2V/Div 10mS/Div

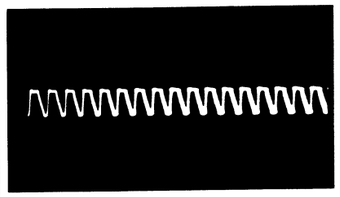
⑫ TP2-1: PLAY MODE
2V/Div 200μS/Div



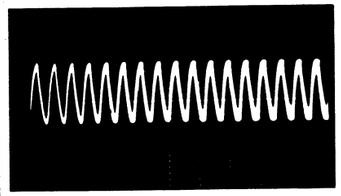
⑫ TP2-1: SEARCH MODE
2V/Div 20mS/Div



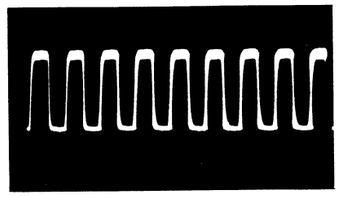
⑬ IC2-38: PLAY MODE
2V/Div 200μS/Div



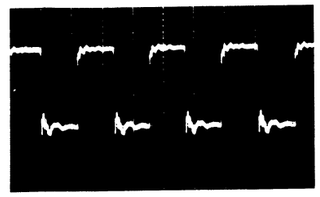
⑭ IC3-8: PLAY MODE
2V/Div 200μS/Div



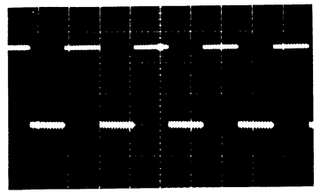
⑮ TP2-2: PLAY MODE
2V/Div 200μS/Div



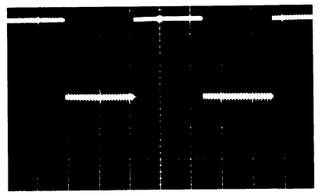
⑯ IC3-76: STOP MODE
2V/Div 200nS/Div



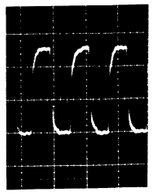
⑰ IC3-79: STOP MODE
2V/Div 5μS/Div



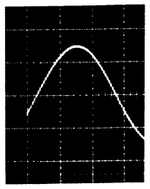
⑱ IC3-80: STOP MODE
2V/Div 5μS/Div



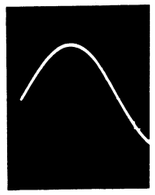
⑲ IC 24-15: STOP
2V/Div



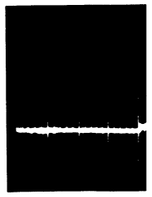
⑳ IC15-9: PLAY M
2V/Div



㉑ OUTPUT Lch:
2V/Div



㉒ IC 8-5: POWE
2V/Div



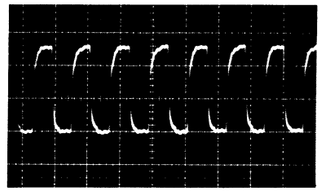
㉒ IC 8-5: POWE
2V/Div

/Div

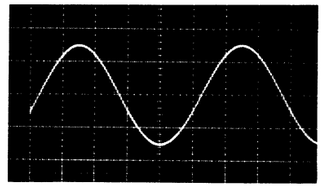
v

v

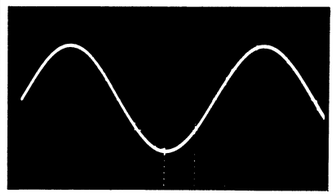
⑲ IC 24-15 : STOP MODE
2V/Div 100nS/Div



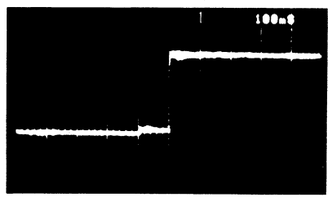
⑳ IC15-9: PLAY MODE
2V/Div 50μS/Div



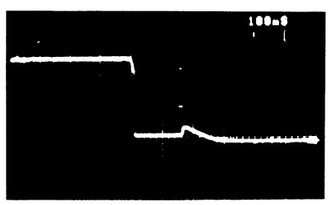
㉑ OUTPUT Lch: PLAY MODE
2V/Div 50μS/Div



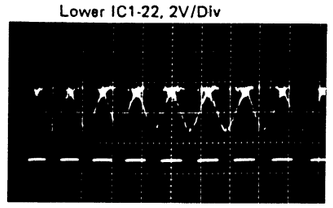
㉒ IC 8 -5: POWER ON
2V/Div 100mS/Div



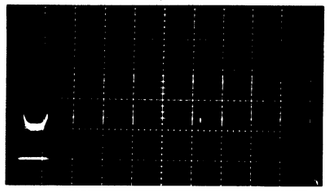
㉒ IC 8 -5: POWER-OFF
2V/Div 100mS/Div



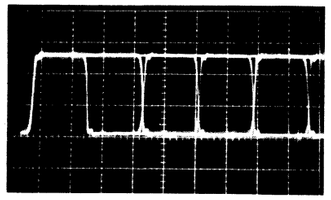
㉓ IC1-22: TR OPEN
1mS/Div
Upper TP1-1, 1V/Div
Lower IC1-22, 2V/Div



㉔ IC1-21: DFCT
1mS/Div
Upper TP1-1, 1V/Div
Lower IC1-21, 5V/Div



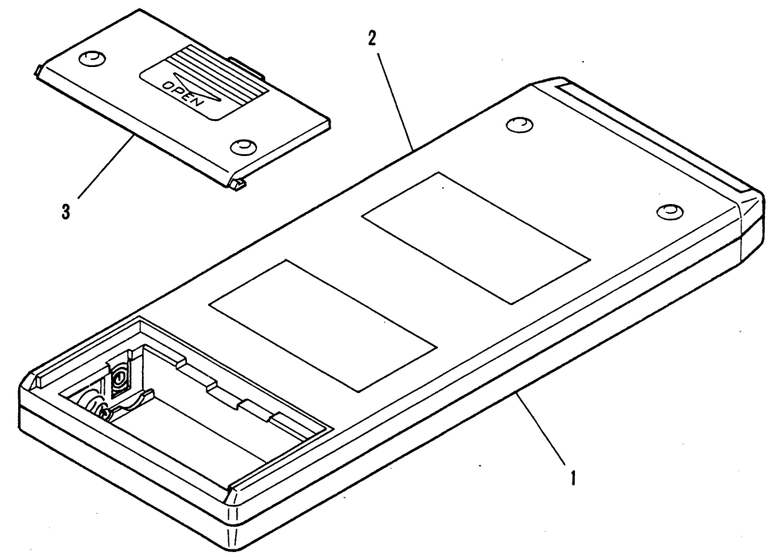
㉕ IC9-1: DOTX
2V/Div 50nS/Div



8. REMOTE CONTROL UNIT

Parts List of Remote control unit

Mark	No.	Parts No.	Description
	1	PNW1151	Case (T)
	2	PNW1152	Case (B)
	3	PNW1153	Battery cover



9. 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 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*

Miscellaneous parts

P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
⚠ ⊙	Main assembly	PWZ1466
⊙	Function board assembly	PWZ1467
⚠	Primary board assembly	
	Headphone assembly	
⚠	Transformer board assembly	

OTHERS

Mark	Symbol & Description	Part No.
⚠	Strain relief	CM−22C
⚠	AC Power cord	PDG1015
⚠	T1 Power transformer (AC120V)	PTT1075
	Spindle motor	PXM1001
	Loading motor	PYY1025
	Pick up assembly	PWY1006
	S102 Leaf switch (CLAMP)	VSK−015

Main assembly (PWZ1466)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	CXA1081S
	IC2	CXA1082AS
	IC3	CXD1135QZ
	IC7	CXK5816M−12L (LC3517AML)
⚠	IC30,IC31	ICP−N10
⚠	IC8	M51957AL
	IC17,IC18	NJM4580LD
	IC20	NJM78L05A
	IC13	NJM78L12A
⚠	IC701	NLM7805FA
	IC21	NJM79L05A
	IC14	NJM79L12A
⚠	IC12	NJM7905FA
	IC15,IC16	PCM56P−J
	IC6	PD0026A
	IC24	PD0036
	IC4	PD3124
⚠	IC5	TA8410A
	IC9	TC74HCU04P
	Q20,Q21,Q26	DTA124ES
	Q4,Q10,Q24,Q25,Q29	DTC124ES
	Q19	2SA1048
	Q1,Q3,Q23	2SA1399
	Q27	2SA854S
	Q8,Q9,Q11,Q12	2SC1740S
	Q28	2SC1741S
	Q2,Q22	2SC3581
	Q17,Q18	2SD1302
	Q14,Q16	2SJ103
	Q13,Q15	2SK246
⚠	D11	HZS27NB2
⚠	D12	HZS5.1NB2
⚠	D1−D10,D20,D23	10E2

SWITCHES

Mark	Symbol & Description	Part No.
	S1 Tact switch (TEST)	PSG−065
	S601 Slide switch (D−OUT ON/OFF)	PSH1007

COILS & TRANSFORMERS

Mark	Symbol & Description	Part No.
	L61,L62 Axial inductor (22μH)	LAU221K
	L1−L3,L7 Radial inductor (1μH)	LAR010K
	L4 Pulse transformer	PTL1003

CAPACITORS

Mark	Symbol & Description	Part No.
	C95	CCCCH060D50
	C121	CCCCH100D50
	C96	CCCCH150J50
	C2－C4,C53,C120	CCCCH300J50
	C117	CCDSL221J50
	C142,C143	CCCSL181J50
	C24	CEANP010M50
	C30	CEANP2R2M50
	C85	CEASR33M50
	C16,C22	CEASR47M50
	C89	CEAS100M50
	C10,C43,C118	CEAS101M10
	C18,C19,C102,C103,C110,C111	CEAS102M16
	C106,C107	CEAS102M35
	C87,C88	CEAS221M50
	C100,C101	CEAS222M16
	C108,C109	CEAS222M25
	C48	CEAS3R3M50
	C5	CEAS330M16
	C7,C12,C15,C23,C25, C26,C28,C36,C38,C41, C47,C50,C60,C64,C67, C68,C83,C114,C127,C128, C140,C141	CEAS330M16
	C34	CEAS4R7M50
	C90	CEAS470M50
	C61,C62,C65,C66	CENA101M25
	C78,C79	CENA470M50
	C33,C51	CFTXA102J50
	C17,C46,C113	CFTXA103J50
	C31,C32,C35,C45	CFTXA104J50
	C44,C76,C77	CFTXA153J50
	C70,C71	CFTXA182J50
	C74,C75	CFTXA222J50
	C29	CFTXA272J50
	C13,C14	CFTXA332J50
	C9,C11,C21	CFTXA333J50
	C42	CFTXA334J50
	C1,C27,C49	CFTXA472J50
	C81	CKCYB681J50
	C80,C123	CKCYB102K50
	C6,C54,C59,C99,C115, C130,C131－C135,C164－C170, C601,C801	CKCYF103Z50
	C52,C55	CKCYF473Z50
	C84,C86	CQSF102J50
	C104,C105 (2200μF/35V)	VCH1032

RESISTORS

Mark	Symbol & Description	Part No.
	VR2 Semi-fixed (10k)	VRTB6VS103
	VR9,VR10 Semi-fixed (100k)	VRTB6VS104
	VR3－VR7 Semi-fixed (22k)	VRTB6VS223
	VR8 Semi-fixed (1k)	VRTS6VS102
	R30	RN1/6PQ3601F
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	1P Pin jack (DIGITAL OUT)	PKB1004
	2P Pin jack (AUDIO OUT)	PKB1011
	X1 Ceramic oscillator (4.0MHZ)	FCR4.0MC
	JA4 Socket (SUBCODE)	PKP1002
	X2 Crystal resonator (16.9344MHz)	PSS1001
	DL5,DL6 Delay line (200nsec)	PTF1009
	JA3 Optical digital out terminal	TOTX172

Function board assembly (PWZ1467)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC201	PDG010A
	Q201,Q202	DTA124ES
	Q204－Q206	2SC1740S
	D201	SLH－56MC3H
	D202	SLH－56YC3HYL

SWITCHES

Mark	Symbol & Description	Part No.
	S201－S230,S233－S236 Tact switch (OPERATION)	PSG－065

CAPACITORS

Mark	Symbol & Description	Part No.
	C203	CEAS330M16
	C202	CKCYF473Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R217 Resistor array (47k×10)	RA10S473J
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	V201 Fluorescent indicator tube	PEL1020
	Remote control sensor unit	GP1U52X
	X201 Ceramic resonator (4.19MHz)	VSS1014

Primary board assembly

SWITCH

Mark	Symbol & Description	Part No.
⚠	S301 Push switch (POWER)	PSA－009

CAPACITOR

Mark	Symbol & Description	Part No.
⚠	C301 Power capacitor (0.01μF/AC400V)	RCG−009

Headphone assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
	IC401	M5218L

CAPACITORS

Mark	Symbol & Description	Part No.
	C401,C402	CEAS330M16
	C406,C407	CFTXA104J50
	C403−C405,C408−C411	CKCYF103Z50

COILS

Mark	Symbol & Description	Part No.
	L401−L403 Radial inductor (1μH)	LRA010K

RESISTORS

Mark	Symbol & Description	Part No.
	VR401 Variable resistor (PHONES LEVEL : 20k)	PCS1001
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA401 Head phone jack (PHONES)	RKN1001

Transformer board assembly

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C302−C314	CKCYF103Z50

10. ADJUSTMENTS

The adjustments for this unit are given below. Adjustments must be made in the order in which they are listed.

● ADJUSTMENTS

1. Tracking error 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 balance adjustment
7. Tangential adjustment
8. Radial adjustment
9. Focus gain adjustment
10. Tracking gain adjustment
11. VCO free run frequency adjustment
12. MSB adjustment

● REQUIRED EQUIPMENT

1. Dual trace oscilloscope
2. Optical power meter
3. Test disc (YEDS-7), 8cm disc
4. Loop gain adjustment filter
5. Signal generator
6. Frequency counter
7. Other regular measuring equipment

● ABOUT THE TEST MODE

All adjustments must be carried out with the unit in the test mode.

How to activate and release the test mode

① To activate the test mode, turn ON the power switch (S301) with the test mode switch (S1) in the ON position.

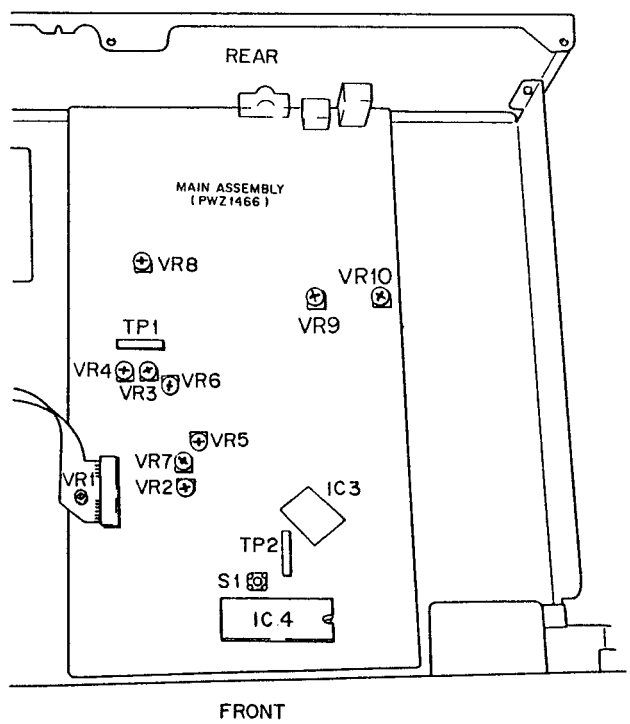
② The test mode is released by turning the power switch OFF.

The functions of the keys in the test mode are outlined in Table 10-1.

● ADJUSTMENT VRs AND THEIR NAMES

VR1: Laser power
VR2: RF offset (RF.OFS)
VR3: Focus gain (FO. GAIN)
VR4: Tracking gain (TR. GAIN)
VR5: Tracking balance (TR. BAL)
VR6: Focus offset (FO. OFS)
VR7: Tracking offset (TR. OFS)
VR8: VCO adjust (VCO.ADJ)
VR9 : MSB adjustment (RCH)
VR10 : MSB adjustment (LCH)

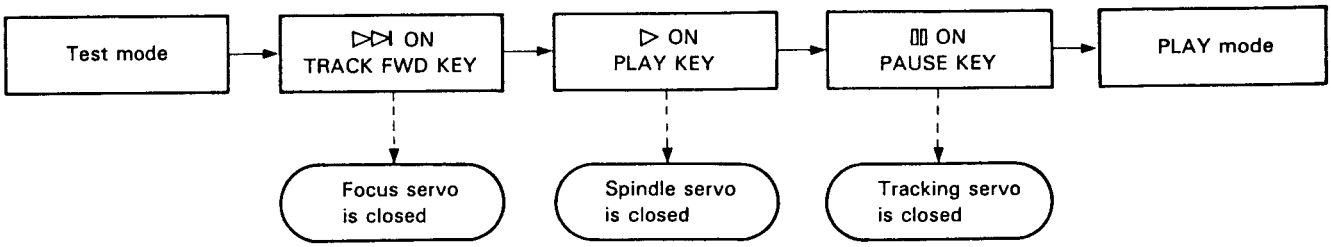
Adjustment Point



In the test mode, the servos must be closed and opened individually. Consequently, the servos must each be closed in the proper sequence (serial sequence) in order to put the machine into the play mode. Note also that the machine will not enter the play mode when the PAUSE (▯▯) key is pressed.

For example, in order to change from the stop to the play mode, the function keys must be pressed in the following order:

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

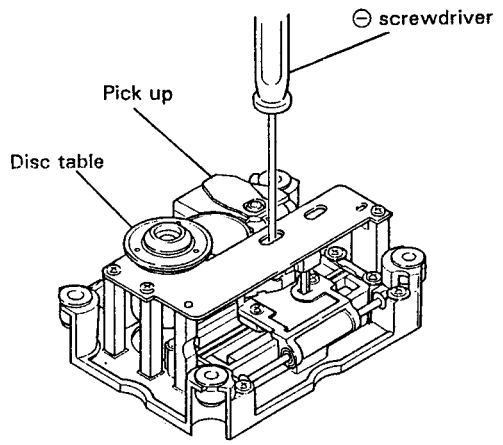
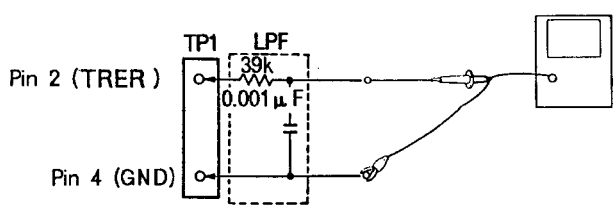


● KEY FUNCTIONS IN THE TEST MODE

Symbol	Key name	Function in test mode	Description
▷▷|	TRACK FWD	Focus servo close	Turns ON the laser diode, and raises and lowers the focusing actuator to close the focus servo.
▷	PLAY	Spindle servo close	Closes the servo in the CLV-A mode after kicking the spindle motor.
▯▯	PAUSE	Tracking servo close/open	Acts as a toggle: closes the tracking servo and activates 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 reverse (moves inward)	Moves carriage quickly (3cm/s) toward innermost track. Be careful not to move too far as there is no safety device to stop the carriage.
▷▷	MANUAL SEARCH FWD	Carriage forward (moves outward)	Moves carriage quickly (3cm/s) toward outermost track. Be careful not to move too far as there is no safety device to stop the carriage.
□	STOP	Stop	Stops all servos and returns system to its initial state.
⏏	OPEN/CLOSE	Disc tray open/close	Opens and closes the disc tray. However, pickup does not return to rest on OPEN, and it remains stationary on CLOSE.

Table 10-1.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
1	**Tracking error offset, focus offset and RF offset adjustments**					
			TP1 Pin 2 (TRER)	VR5 (TR. BAL) VR7 (TR. OFS)	Tracking error offset 45° 0V±50mV	● Put unit in the test mode (see page 36). ● Set VR5 TR.BAL (tracking balance) to the position about 45° to the left of center. ● Adjust VR7 TR.OFS (tracking offset) so that the TR.ERR (tracking error) voltage at TP1 pin 2 becomes 0V ± 50mV.
			TP1 Pin 6 (FOER)	VR6 (FO.OFS)	Focus offset 0V ± 50mV	● Adjust VR6 FO.OFS (focus offset) so that the FO .ER (focus error) voltage at TP1 pin 6 becomes 0V ± 50mV.
			TP1 Pin 1 (RF. OUTPUT)	VR2 (RF.OFS)	RF offset 100mV ± 50mV	● Adjust VR2 RF.OFS (RF offset) so that the RF output voltage at TP1 pin 1 becomes 100mV ± 50mV. Note: When adjusting the tracking error offset, always perform "5. Tracking Balance Adjustment."
2	**RF level adjustment**					
			TP1 Pin1 (RF output)	VR1 (laser power)	1.5V $^{+0.2V}_{-0V.}$	• Put the unit in the test mode (see page 36). • Play the test disc. Connect the oscilloscope to TP1 Pin1 (RF output) and measure P−P voltage of the RF wave−form. • Adjust to obtain a voltage of 1.5V $^{+0.2V}_{-0V.}$
3	**LD (laser diode) power check**					
				Check	Less than 0.13mW	● Put unit in the test mode (see page 36). ● Press the TRACK FWD (▷▷|) key to turn ON the laser diode. ● Place the sensor of the optical power meter directly above the objective lens and confirm that LD power is less than 0.13mm

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 100msec/ div	TP1 pin1 (RF output)		RF signal is output Forward (clockwise) rotation	● Set the test disc. ● Put unit in the test mode (see page 36). ● Press the MANUAL SEARCH FWD (▷▷) key to move the pickup 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 the TRACK FWD (▷▷|) key is pressed. ● Press the PLAY (▷) key and confirm that the disc rotates at constant speed (approx. 30 rpm near center of disc) in the forward (clockwise) direction; disc may not run away or rotate counterclockwise.
5	**Grating adjustment (1) (when an 8cm disc is used)**					
	 Fig. 10−1					● Put unit in the test mode (see page 36). ● Press the MANUAL SEARCH FWD (▷▷) key to move the pickup to the vicinity of what would be the center of the disc. Position the pickup so its grating adjusting screw is visible through the elongated hole on the spindle motor side of the servo mechanism base plate. ● As shown in Fig. 10−1 insert a (slotted) screwdriver from the top of the mechanism and check that the grating adjusting screw can be rotated. ● Mount the test disc.
	 Fig. 10−2					● Press the TRACK FWD (▷▷|) and the PLAY (▷) keys sequentially to close the focus and spindle servos (do not close the tracking servo). ● Insert a 4kHz-cutoff low pass filter between the oscilloscope and TP1 pins 2 (TRER) and 4 (GND) as shown in Fig. 10−2 and observe the waveform of TP1 pin 2 (tracking error) on the oscilloscope.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
	0.5V/div	5ms/div	TP1 Pin 2 (TRER)	Grating adjusting screw Grating adjusting screw	Null point Max. amplitude	● Turn the grating adjusting screw with the ⊖ screwdriver to find the null point (see Photo 10-1). • Next, slowly rotate the screw counter-crockwise and adjust to the point where the wave−form (tracking error signal) first achieves its maximum amplitude (see Photo 10−3) NOTE: Do not use too much force on the ⊖ screwdriver. The pickup could incline towards tragential direction, causing difficult adjustment. ● Lastly, remove the low pass filter and confirm that the tracking error signal p-p voltage does not greatly vary when the pickup is moved to the inner-most and outer-most tracks of the disc. If the levels diverge by ±10% or more, re-adjust the maximum error amplitude point by rotating the grating adjusting screw.

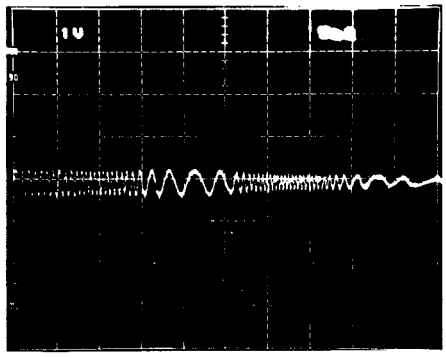


Photo 10-1 Null point

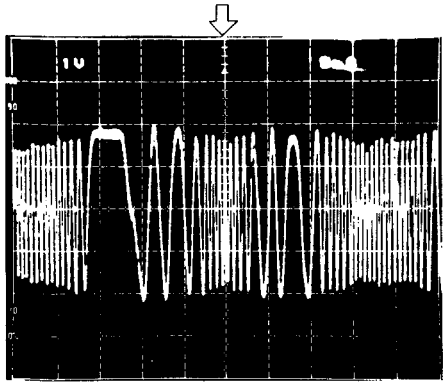


Photo 10-3 Maximum amplitude

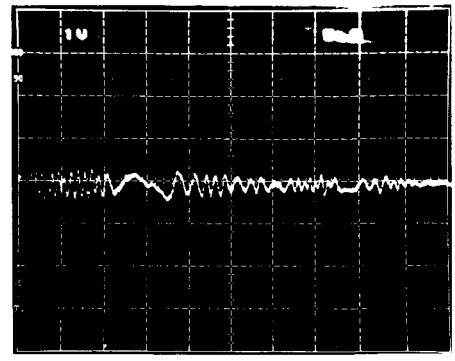


Photo 10-2 This is not the null-point waveform.

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
5	Grating Adjustment (2) (using discs with a recording time of 60 min. or more)					

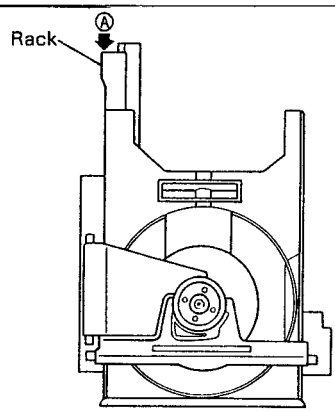


Fig. 10−3

Remove the disc tray before beginning this adjustment.

● Removal of the disc tray

1. Press the rear edge of the rack, marked Ⓐ in Fig.10−3 while pulling the disc tray out to the position where it catches, illustrated in Fig.10−4

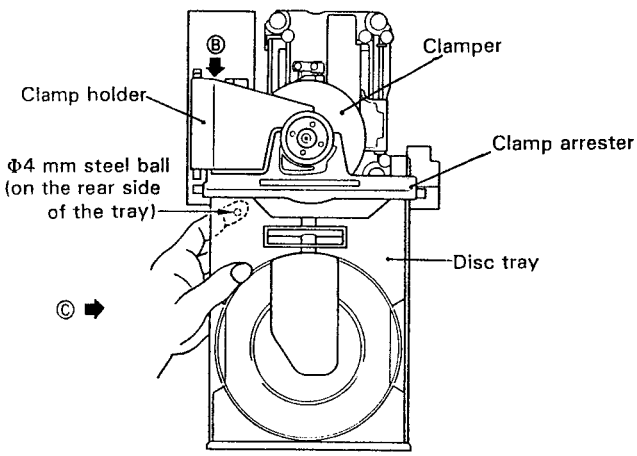


Fig. 10−4

2. While pulling the clamp holder Ⓑ (see Fig. 10−4) upward with the right hand, hold the tray as indicated by Ⓒ in the left hand and pull it outward. Take care not to allow the ϕ4 steel ball to fall (we recommend holding the ball in place with the left index finger while extracting the tray).

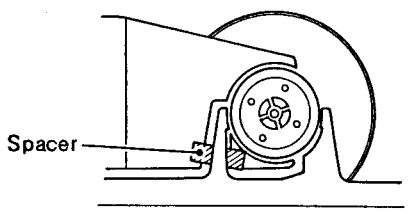


Fig. 10−5

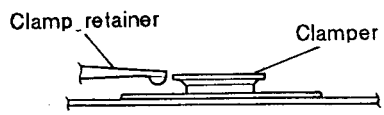


Fig. 10−6

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 with a disc having pits up to R115mm, not with the Test Disc (YEDS-7).
						● Put unit in the test mode (see page 36).
						● Load the test disc, shift the pickup to the outer periphery so that the pickup grating adjustment hole is visible from the pit surface of the disc or from the hole in the servo mechanism (see Fig. 10−8).
						● Press the TRACK FWD key (▷▷|) and PLAY key (▷) in sequence to turn on the focus servo and spindle servo (do not turn on the tracking servo).
						● Observe the TRER (tracking error) waveform at TP1 pin 2 on an oscilloscope, inserting a 4kHz low-pass filter (see Fig. 10−8).
	0.5V/div	5ms/div	TP1 Pin 2 (TRER)	Grating	Null point	● Insert a ⊖ screwdriver into the grating hole, turn and find the null point (see Photo 10-1).
				Grating	Maximum amplitude	• Next, slowly rotate the screw counter-crockwise and adjust to the point where the wave-form (tracking error signal) first achieves its maximum amplitude (see Photo 10−3)
						Note: Do not use too much force on the ⊖ screwdriver. The pickup could incline towards tragential direction, causing difficult adjustment.
						● Finally, make sure that there is no major fluctuation in the p-p voltage of the tracking error signal (do not insert the cutoff 4kHz low-pass filter) when the pickup is shifted to the inner periphery and when the pickup is shifted to the outer periphery. If there is a difference of more than ±10% again rotate the grating adjustment screw and adjust the tracking error signal to maximum.

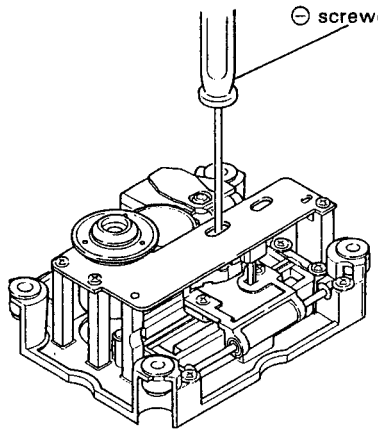


Fig. 10−7

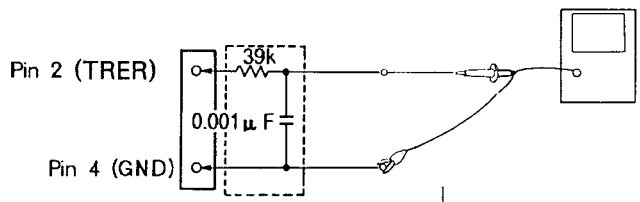
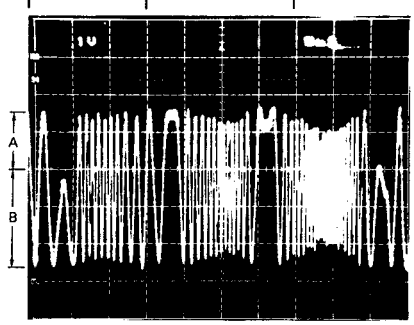


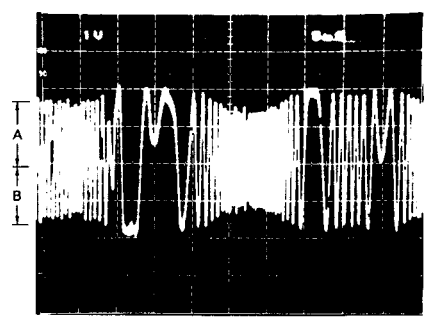
Fig.10−8

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	5ms/div	TP1 Pin 2 (TRER)	VR5 (TR.BAL)		● Load the test disc. ● Put unit in the test mode (see page 36). ● Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc. ● Press the TRACK FWD (▷▷|) and PLAY (▷) keys sequentially to cause the disc to rotate. ● Observe TP1 pin 2 TRER (tracking error) on the oscilloscope and adjust VR5 TR.BAL (tracking balance) to eliminate the DC elements from the tracking error signal.
7	**Tangential adjustment**					



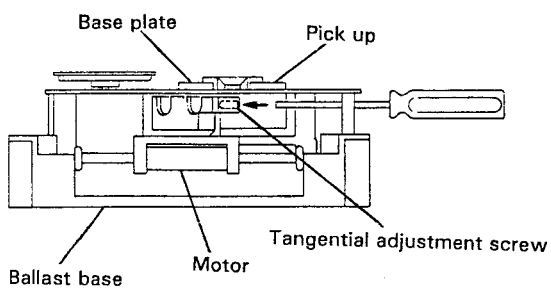
A≠B ➡

Photo 10-4 DC elements mixed in signal



A= B

Photo 10-5 DC elements eliminated



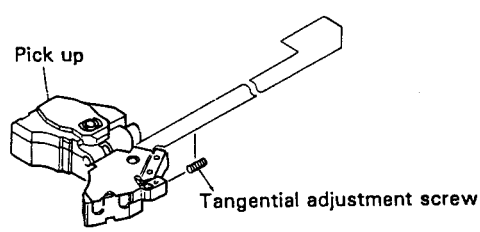
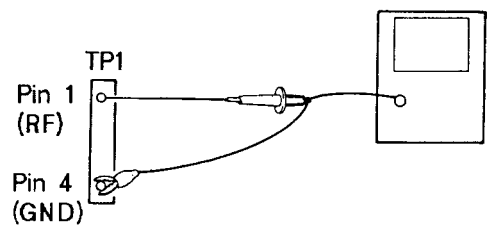


Fig. 10-9

● Put unit in the test mode (see page 36).
● Open the tray and load the test disc.
● Press the MANUAL SEARCH FWD (▷▷) key to position the pickup near the center of the disc.
● Insert a hex wrench into the tangential adjustment screw section from the rear of the mechanism.
● Close the tray.

Note: Do not use an L-shaped hex wrench. Use one such as shown to the left. Using an L-shaped hex wrench can cause the tray to come loose (see page 39 5. Grating Adjustment (1)).

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
		200ns	TP1 Pin 1 RF output	Tangential adjustment screw	Sharpest possible eye pattern	● Press the TRACK FWD (▷▷I), PLAY (▷), and PAUSE (▯▯) keys sequentially to close the all servos (pause indicator will illuminate). ● Observe TP1 pin 1 (RF output) on the oscilloscope and adjust the tangential adjustment screw to achieve the sharpest possible eye pattern. ● The point to which the adjusting screw should be set lies about halfway between the points at which the eye pattern becomes most blurred when the screw is rotated clockwise and counterclockwise. When the whole waveform becomes clear, concentrate on sharpening the fine lines forming the diamond at the center of the eye pattern (see Photo 10-8). Adjust until the fine lines on all four sides of the diamond are both sharply defined and dense, as shown in Photo 10-6.  Fig. 10−10 Note: Use a hex wrench to raise the pickup somewhat while making this adjustment.

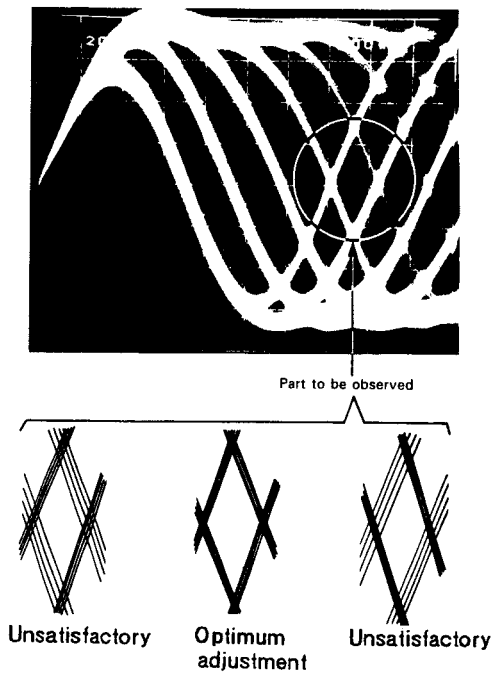


Photo 10-6

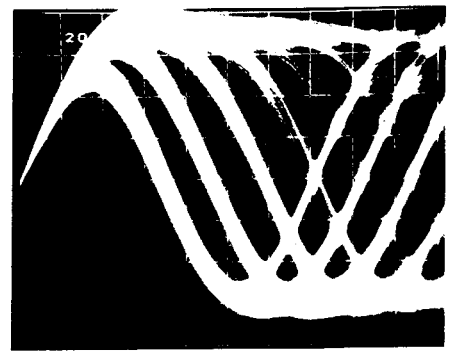


Photo 10-7

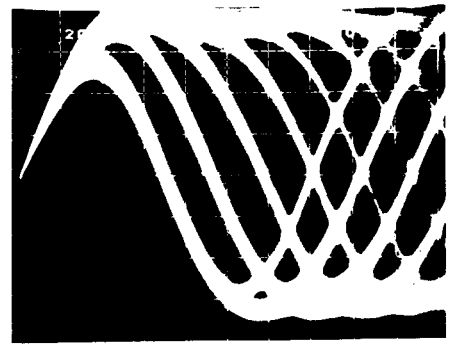


Photo 10-8

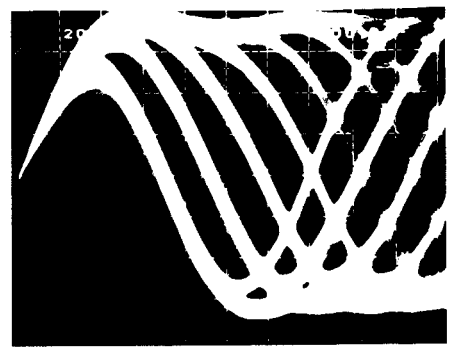


Photo 10-9

Step No.	Oscilloscope Range V	Oscilloscope Range H	Test Point	Adjustment Point	Verification Item/Adjustment Specification	Adjustment Operation Sequence
8	**RADIAL ADJUSTMENT**					
			TP 1 Pin1 (RF Output)	Radial Adjustment Screw	Optimal crosshatch pattern	• Load the test disc into the player. Actual adjustment should be made after replacing the disk tray. Note: Refer to 5. Grating adjustment (1) (P.41) for how to remove. • Set the CD player to Test Mode. (Refer to page 36.) • Use the MANUAL SEARCH FWD key [▶▶] to move the pick-up to the center of the disc. With the pick-up in this position the radial adjustment screw becomes accessible from above. (See Fig. 10-11) • Press the TRACK FWD key [▶▶|], the PLAY key [▶] and then the PAUSE key [▮▮] in that order to close all servos. (The PAUSE indicator will light up.) • Observe the waveform of RF output from the TP 1 Pin 1 RF in the oscilloscope. Adjust the radial adjustment screw until the ideal single crosshatch pattern is achieved. (Fig 10-11) • The proper adjustment point is that point where any further turning of the radial adjustment screw in either direction will degrade the crosshatch pattern. The aim is to achieve an overall good waveform pattern with crosshatch lines forming a single diamond shape (Photograph 10-8). At the proper adjustment point you should still be able to make out the relatively fine lines that form the diamond. • Be sure to perform the tangential and radial adjustments in turn more than twice.

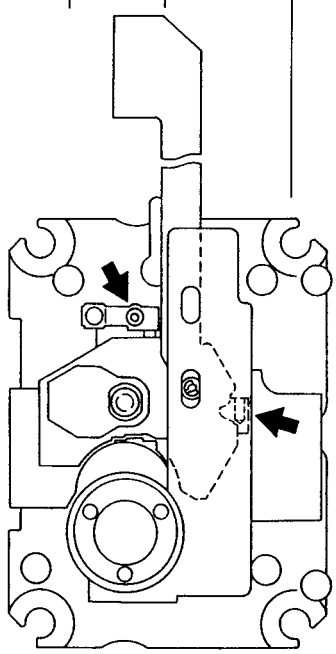


Fig. 10−11

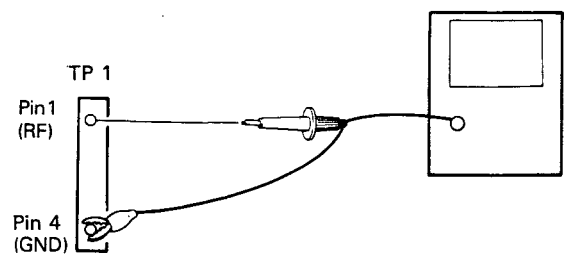


Fig. 10−12

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
						Re-mount the disc tray according to the following procedure when the grating adjustment is complete. 1. Remove the disc and the spacer. 2. While lifting the clamp holder [marked Ⓑ in Fig. 10-4] with the right hand, hold the tray in the left hand as indicated by Ⓒ and slide the slide base into the hard resin fittings on the loading base as shown in Fig. 10-13 to re-insert the disc tray. At this time, be sure to hold the steel ball in place with the index finger of the left hand. Also, be careful that the front panel is not damaged by the slide base and bearing of the steel ball's bearing (in the slide base) coming into contact with the panel. 3. Insert the slide base so that it fits into the two hard resin fittings at the rear of the loading base (see Fig 10-14). 4. Insert the tray all the way.

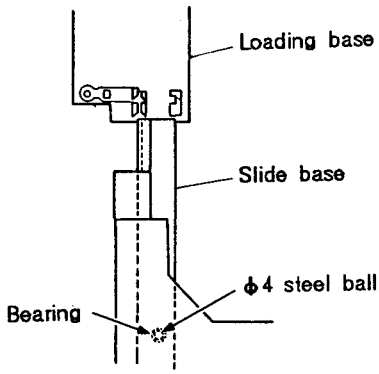


Fig. 10−13

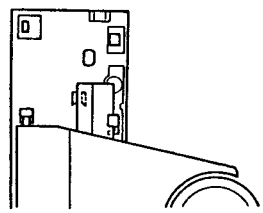


Fig. 10−14

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
9	**Focus gain adjustment**					
	20mV/div 5mV/div CH1(X), CH2(Y) (prove 10:1)		X-axis TP1 Pin 5 (FO. IN) Y-axis TP1 Pin 6 (FOER)	VR3 (FO.GAIN)	Phase difference of 90°	● With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 10-15 ● Put unit in the test mode (see page 36). ● Press the TRACK FWD (▷▷I), PLAY (▷), and PAUSE (▯▯) keys sequentially to activate the focus, spindle, and tracking servos. ● Turn ON the power to the oscillator and set it to output a 1.2kHz 1Vp-p signal. Note: Some oscillators discharge a DC voltage when turned on. It is therefore recommended that the oscillator be connected after it has been turned on. ● Adjust VR3 FO.GAIN (focus gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°).

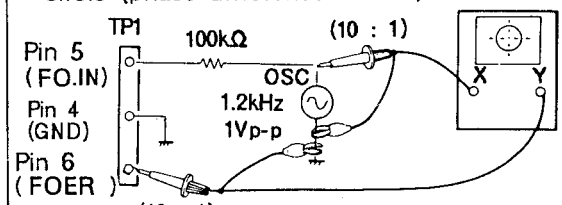
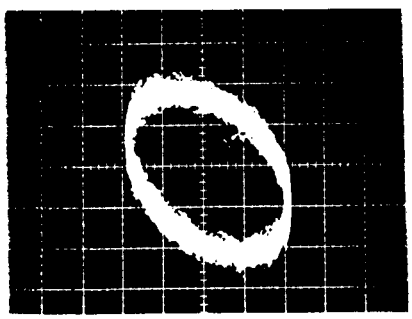
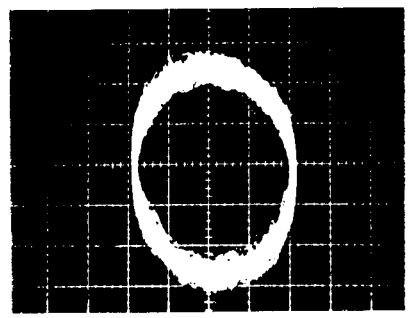


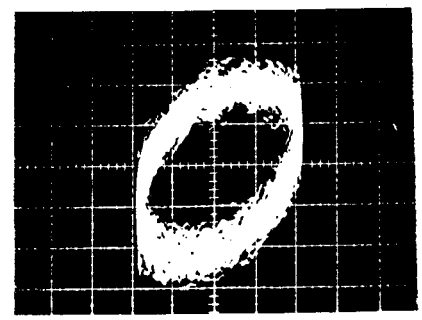
Fig. 10-15



Gain overcompensated
Photo 10-10



Gain optimal
Photo 10-11



Gain undercompensated
Photo 10-12

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
10	**Tracking gain adjustment**					
	50mV/div 5mV/div CH1(X), CH2(Y) (prove 10:1)		X-axis TP1 Pin 3 (TRIN) Y-axis TP1 Pin 2 (TRER)	VR4 (TR. GAIN)	Phase difference of 90°	● With the oscillator power turned OFF, connect the oscilloscope and oscillator as shown in Fig. 10-16 ● Put unit in the test mode (see page 36). ● Press the TRACK FWD (▷▷|), PLAY (▷), and PAUSE (▯▯) keys sequentially to activate the focus, spindle, and tracking servos. ● Turn ON the power to the oscillator and set it to output a 1.2kHz 2Vp-p signal. Note: Some oscillators discharge a DC voltage when turned on. It is therefore recommended that the oscillator be connected after it has been turned on. ● Adjust VR4 TR. GAIN (tracking gain) so that the Lissajous's figure becomes a horizontal circle (phase difference of 90°).

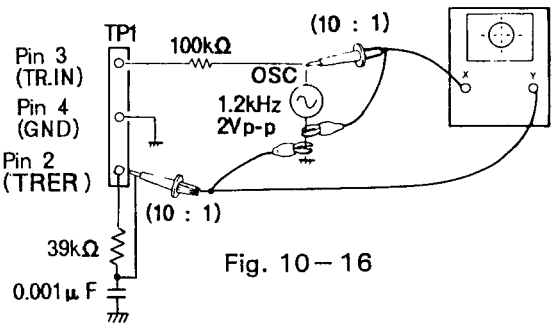
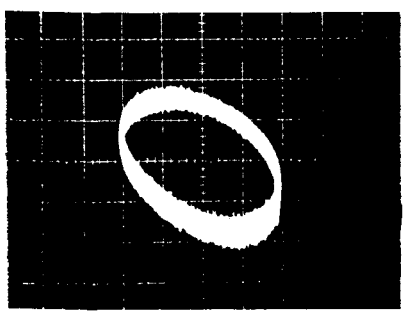
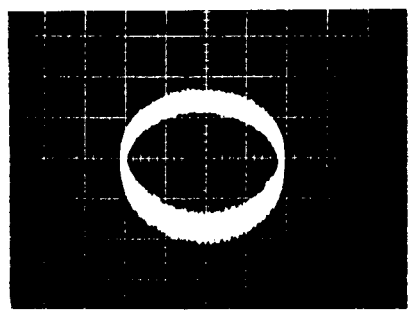


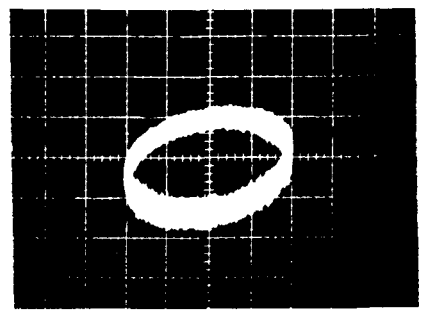
Fig. 10−16



Gain overcompensated
Photo 10-13



Gain optimal
Photo 10-14



Gain undercompensated
Photo 10-15

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
11	**VCO free-run adjustment**					
			TP2 Pin 2	VR8 (VCO.ADJ)	4.275 ±0.025MHz	● Put unit in the test mode (see page 36). ● Short the ASY and GND jumper with a screwdriver or similar tool (see Fig.10-17). ● Connect a frequency counter capable of measuring frequencies of 10MHz and above to TP2 pin 2. ● Adjust VR8 (VCO adjust) so that the frequency counter reading becomes 4.275 ± 0.025MHz.
12	**Method for confirming focus error**					
			TP1 Pin 6 (FOER)			● Put unit in the test mode (see page 36). ● Ground TP1 pin 5 FOIN (focus in) to GND. ● Observe the waveform output by TP1 pin 6 FOER (focus error) when the TRACK FWD (▷▷|) key is pressed.

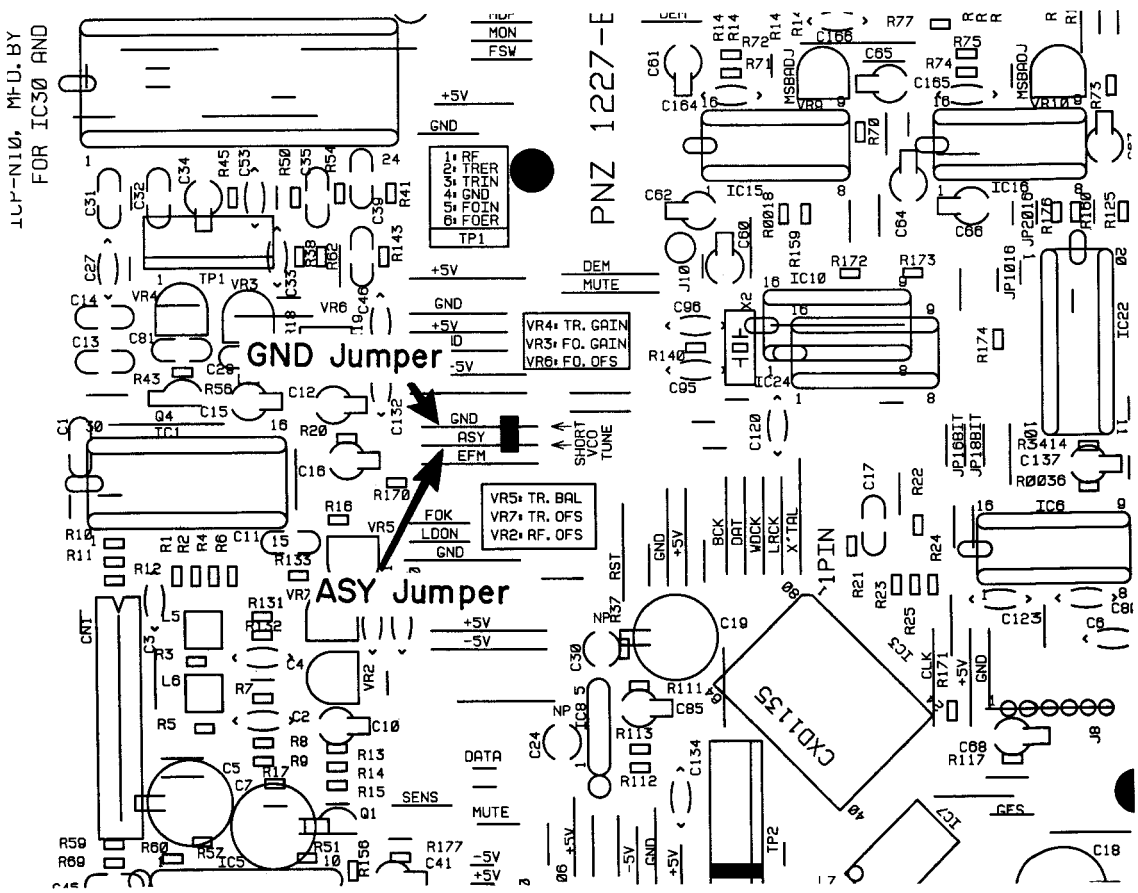
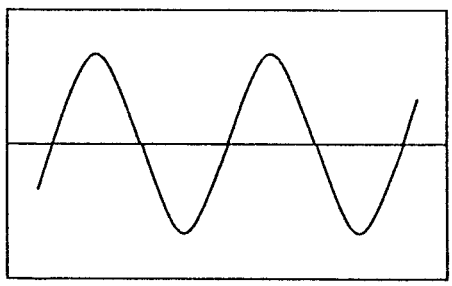


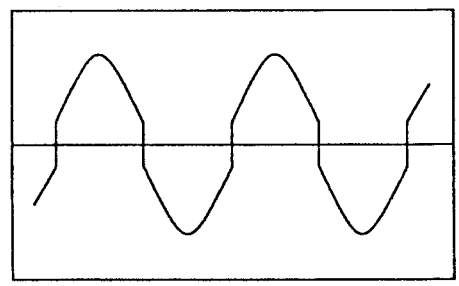
Fig. 10-17

Step No.	Oscilloscope Setting V	Oscilloscope Setting H	Test Points	Adjusting Points	Check items/ Adjustment specifications	Adjustment procedure
13	**MSB ADJUSTMENT (D/A CONVERTER ZERO CROSS DISTORTION ADJUSTMENT)**					
	5mV/div	0.2msec/ div	JA1 LINE OUTPUT terminal (LCH)			● Enter normal play mode. ● Play back the track 20 (−60 dB, 1kHz, Lch, Rch) of the test disc (YEDS-7). Connect the oscilloscope to the Lch of the LINE OUTPUT terminal (JA1), and observe the audio output waveform.
				VR9	Sine wave	● Adjust VR9 MSB (Lch) so that the sine wave is obtained on the oscilloscope.
			JA1 LINE OUTPUT terminal (RCH)	VR10	Sine wave	● Adjust VR10(Rch) in the same way.

● ZERO cross distortion waveform



OK



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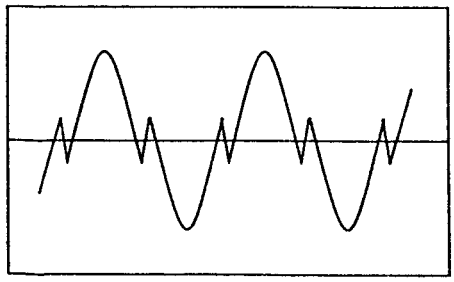

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10. RÉGLAGE

On trouvera ci-après les réglages requis pour cet appareil.
Ils doivent être exécutés dans l'ordre donné.

● AJUSTEMENTS

1. Ajustement de décalage d'erreur d'alignement et de décalage RF
2. Ajustement de niveau RF
3. Vérification d'alimentation de diode laser
4. Vérification de verrouillage de mise au point et de verrouillage d'axe
5. Ajustement de grille
6. Ajustement d'équilibre d'alignement
7. Ajustement tangentiel
8. Ajustment radial
9. Ajustement de gain de mise au point
10. Ajustement de gain d'alignement
11. Ajustement de fréquence libre VCO
12. Ajustement de MSB

● EQUIPEMENTD NÉCESSAIRES

1. Oscilloscope
2. Wattmètre optique
3. Disque d'essai (YEDS-7), Disqve 8cm
4. Filtre d'ajustement de gain de boucle
5. Générateur de signal
6. Fréquencemètre
7. Tournevis, pinces, fer à souder, etc.

● A PROPOS DU MODE D'ESSAI

Tous les réglages doivent être effectués, l'appareil se trouvant en mode d'essai.

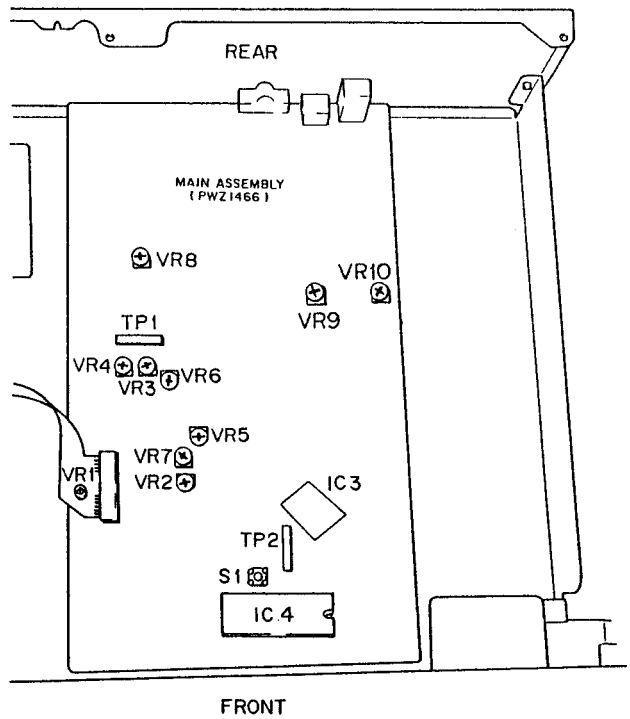
Mise en/hors service du mode d'essai

① Pour actualiser le mode d'essai, allumer (ON) l'interrupteur d'alimentation (S301) après avoir placé l'interrupteur du mode d'essai (S1) à la position ON.
② Le mode d'essai est annulé en ramenant l'interrupteur d'alimentation sur OFF.

Les fonctions des touches en mode d'essai sont décrites au Tableau 10-1.

● DISPOSITIFS D'AJUSTEMENT ET NOMENCLATURE

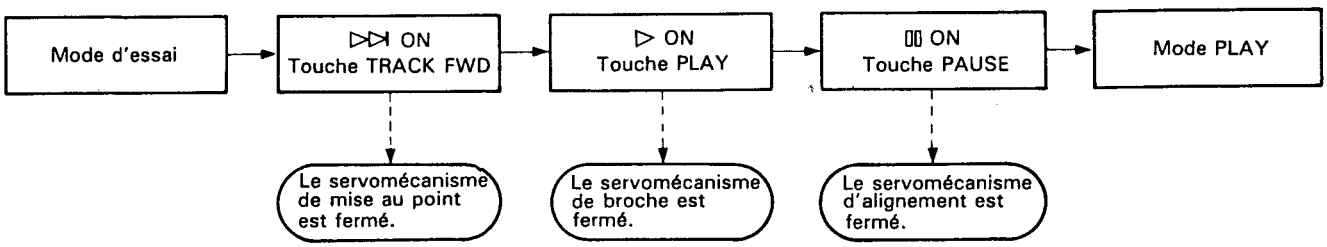
Alimentation laser
VR2: Décalage RF (RF.OFS)
VR3: Gain de mise au point (FO. GAIN)
VR4: Gain d'alignement (TR. GAIN)
VR5: Equilibrage d'alignement (TR. BAL)
VR6: Décalage de mise au point (FO. OFS)
VR7: Décalage d'alignement (TR. OFS)
VR8: Ajustement VCO (VCO.ADJ)
VR9 : Ajustement de MSB (canal droit)
VR10 : Ajustement de MSB (canal gauche)



En mode d'essai, les servos doivent être fermés et ouverts
individuellement. En conséquence, les servos doivent chacun être fermés dans la séquence correcte (séquence sérielle) afin de placer l'appareil en mode de lecture. Remarquer également que l'appareil ne se placera pas en mode de lecture par une poussée sur la touche PAUSE (⏸).

Par exemple, pour passer du mode d'arrêt au mode de lecture, les touches de fonction doivent être actionnée dans l'ordre suivant.

* En mode d'essai, les servos doivent être opérés en séquence sérielle.

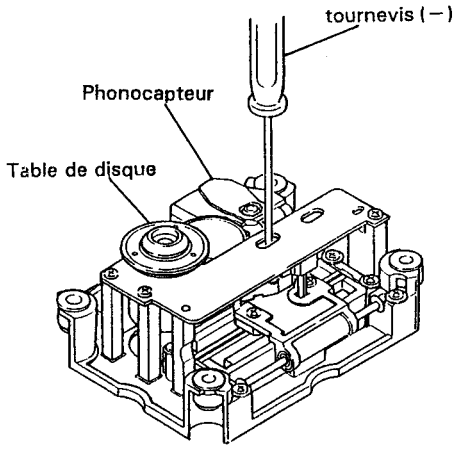
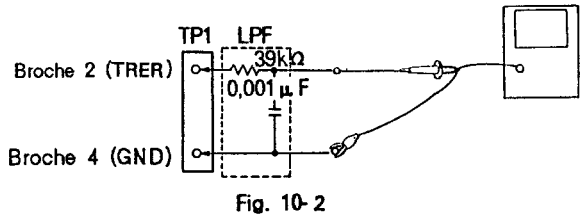


● FONCTIONS DES TOUCHES EN MODE D'ESSAI

Symbole	Nom de touche	Fonction en mode d'essai	Description
⏭	TRACK FWD	Servo de mise au point fermé	Allume la diode laser et élève ou abaisse l'actuateur de mise au point pour fermer le servo de mise au point.
▷	PLAY	Servo d'axe fermé	Ferme le servo en mode CLV-A après cognement du moteur d'axe.
⏸	PAUSE	Fermture/ouverture de servo d'alignement	Agit comme interrupteur articulé: ferme le servo d'alignement et active le mode de lecture quand poussé (pourvu que les servos de mise au point et d'alignement soient fermés), auquel moment le témoin PAUSE s'allume; ouvre le servo d'alignement à la poussée suivante.
⏮	MANUAL SEARCH REV	Inversion du chariot (déplacement vers l'intérieur)	Déplace rapidement (3 cm/sec) le chariot vers la plage la plus au centre. Prendre garde à ne pas déplacer trop loin car il n'existe pas de dispositif de sécurité pour arrêter le chariot.
⏭	MANUAL SEARCH FWD	Avance du chariot (déplacement vers l'extérieur)	Déplace rapidement (3 cm/sec) le chariot vers la plage la plus à l'extérieur. Prendre garde à ne pas déplacer trop loin car il n'existe pas de dispositif de sécurité pour arrêter le chariot.
□	STOP	STOP	Arrête tous les servos et ramène le système à l'état initial.
⏏	OPEN/CLOSE	Ouverture/fermeture du plateau de disque	Ouvre et ferme le plateau du disque. Cependant, le capteur ne revient pas à la position de repos à OPEN et il reste stationnaire à CLOSE.

Tableau 10-1

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
1.	**Ajustement de décalage d'erreur d'alignement et de décalage RF**					
			TP1 Broche 2 (TRER)	VR5 (TR. BAL) VR7 (TR. OFS)	Décalage d'erreur d'alignement 45° 0V±50mV	• Placer l'appareil en mode d'essai (voir page 52). • Régler VR5 TR.BAL (équilibrage d'alignement) à la position environ à 45° à la gauche du centre*. • Ajuster VR7 TR.OFS(décalage d'alignement) de sorte que la tension TRK.ERR (erreur d'alignement) à TP1 broche 2 devienne 0V ± 50mV.
			TP1 Broche 6 (FOER)	VR6 (FO. OFS)	Décalage de mise au point 0V ± 50mV	• Ajuster VR6 FCS.OFS (décalage de mise au point) de sorte que la tension FO .ER (erreur de mise au point) à TP1 broche 6 devienne 0V ± 50mV.
			TP1 Broche 1 (RF. OUTPUT)	VR2 (RF.OFS)	Décalage RF 100mV ± 50mV	• Ajuster VR2 RF.OFS (décalage RF) de sorte que la tension de sortie RF à TP1 broche 1 devienne 100mV ± 50mV.
						Remarque: Lors de l'ajustement du décalage d'erreur d'alignement, effectuer toujours "5": "Ajustement d'équilibrage d'alignement".
2	Ajustment de niveau RF					
			TP1 Broche 1 (Sortie RF)	VR1 (alimentation laser)	1,5V $^{+0.2V}_{-0V.}$	• Placer l'appareil en mode d'essai (voir page 52). • Reproduire le disque d'essai, raccorder l'oscilloscope à TP1 broche 1 (sortie RF), et mesurer la tension c−c de la l'ondo RF. • Vérifier que le voltage est de 1.5V $^{+0.2V}_{-0V}$
3	**Vérification d'alimentation LD (diode laser)**					
				Vérification	0,13mW Max	• Placer l'appareil en mode d'essai (voir page 52). • Appuyer sur la touche TRACK FWD (▷▷|)pour allumer la diode laser. • Placer le senseur du wattmètre optique directement au-dessus de l'objectif et verfier que l'alimentation LD est de 0,13mW max.

N° d'étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
4	**Vérification de verrouillage de mise au point et de verrouillage d'axe**					
	V 0,5V/div	H 100msec/div	TP1 Broche 1 (sortie RF)		Le signal RF est fourni Rotation avant (sens des aiguilles)	● Installer le disque d'essai. ● Placer l'appareil en mode d'essai (voir page 52). ● Appuyer sur la touche MANUAL SEARCH FWD (▷▷) pour amener le capteur au centre du disque. ● Observer la sortie de TP1 broche 1 (sortie RF) sur l'oscilloscope. Confirmer que le signal haute fréquence est fourni après que la touche TRACK FWD (▷▷|) est actionnée. ● Appuyer sur la touche PLAY (▷) et confirmer que le disque tourne à vitesse constante (env. 30 tr/mn près du centre du disque) dans le sens avant (sens des aiguilles). Il peut arriver que le disque ne tourne pas ou tourne dans le sens contraire des aiguilles.
5	**Ajustement de grille (1) (Lorsqu'un disqve 8cm est utilise)**					
	 Fig. 10−1					● Placer l'appareil en mode d'essai (voir page 52). ● Appuyer sur la touche MANUAL SEACH FWD(▷▷) pour amener le capteur près de l'endroit qui devrait être le centre du disque. Positionner le capteur de sorte de sa vile de réglage de grille soit visible par l'orifice allongé sur le côté du moteur d'axe de la plaque de base sur servo-mécanisme. ● Comme illustré sur la Fig. 10-1 introduire un tournevis (moins) par l'arrière du mécanisme de sorte que la vis de réglage de grille puisse être tournée. ● Installer le disque d'essai;
	 Fig. 10-2					● Appuyer sur les touches TRACK FWD (▷▷|) et PLAY (▷) en séquence pour fermer les servos de mise au point et d'axe (ne pas fermer le servo d'alignement). ● Installer un filtre passe-bas de coupure à 4 kHz entre l'oscilloscope et TP1 broche 2 (TRER) et 4 (GND) comme illustré sur la Fig. 10-2 et observer la forme d'onde de TP1 broche 3 (erreur d'alignement) sur l'oscilloscope.

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
	0,5V/div	5ms/div	TP1 Broche 2 (TRER)	Vis d'ajustement de grille Vis d'ajustement de grille	Point nul Amplitude maximale	• Tourner la vis d'ajustement de grille à l'aide du tournevis pour trouver le point nul (voir Photo 10-1). • Tourner ensuite lentement la vis dans le sens inverse des aiguilles d'une montre et ajuster au point où la forme d'onde (signal d'erreur d'alignement) arrive en premier à son amplitude maximale (voir Photo 10−3). Remarque: Eviter d'appliquer une pression au tournevis ⊖. Le capteur pourrait pencher vers la direction tangentielle, rendant l'ajustment plus difficile. • En dernier lieu, retirer le filtre passe-bas et confirmer que la tension p-p du signal d'erreur d'alignement ne varie par fortement quand le capteur est déplacé à la première et à la dernière plage du disque. Si les niveaux divergent de 10% ou davantage, ré-ajuster le point d'amplitude d'erreur maximale en agissant sur la vis d'ajustement.

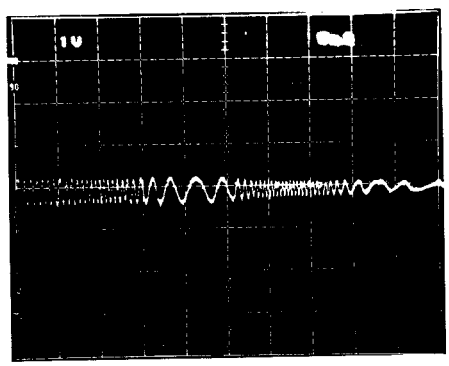


Photo 10-1 Point nul

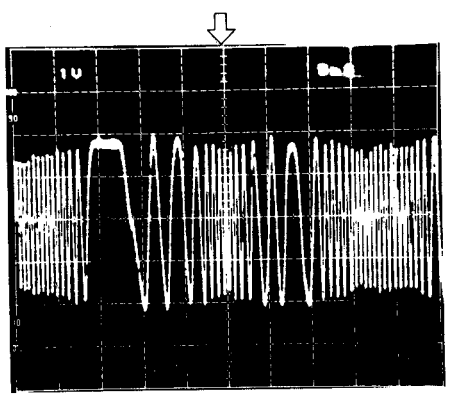


Photo 10-3 Amplitude maximale

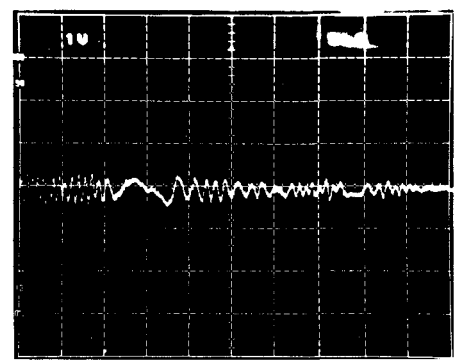


Photo 10-2 Ceci n'est pas la forme d'onde du point nul

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
5	**Ajustement de grille (2) (utiliser un disque d'une durée d'enregistrement de 60 min. ou davantage)**					

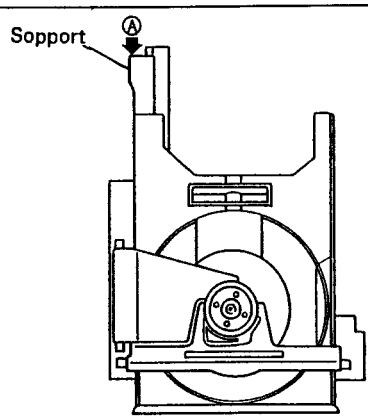


Fig. 10−3

Retirer le disque du plateau avant de commencer cet ajustement.

● Retrait du plateau du disque

1. Pousser sur le bord arrière à l'endroit marqué Ⓐ sur la Fig. 10-3, tout en retirant le plateau du disque vers la position où il tient, comme illustré sur la Fig. 10-4.

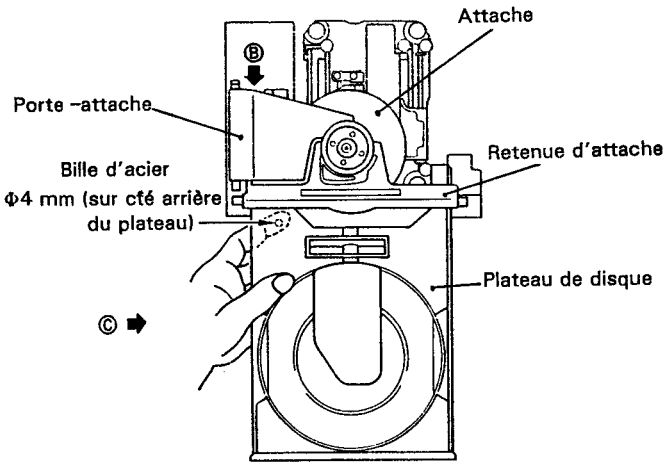


Fig. 10−4

2. Tout en tirant l'attache Ⓑ (voir Fig. 10-4) vers le haut de la main droite, tenir le plateau comme indiqué par Ⓒ de la main gauche et tirer vers l'extérieur. Prendre garde à ne pas laisser tomber les billes d'acier. Il est conseillé de maintenir la bille en place par l'index gauche tout en extrayant le plateau.

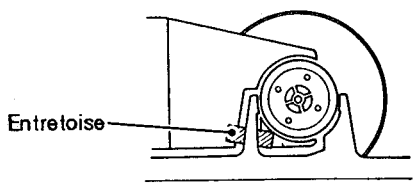


Fig. 10−5

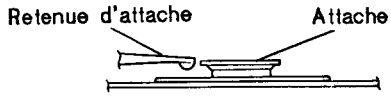


Fig. 10−6

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
						Remarque: Cet ajustement peut être effectué seulement avec un disque ayant des cavités jusqu'à R115mm et non pas avec le disque d'essai YEDS-7. ● Régler l'appareil en mode d'essai (voir page 52). ● Installer le disque d'essai, amener le capteur à la périphérie extérieure de sorte que l'orifice d'ajustement de grille soit visible de la surface du disque ou par l'orifice du servomécanisme (Voir Fig. 10-8). ● Appuyer sur la touche TRACK FWD (▷▷I) et PLAY (▷) en séquence pour allumer le servo de mise au point et le servo d'axe (ne pas tourner le servo d'alignement). ● Observer la forme d'onde TRER (erreur d'alignement) à TP1 broche 2 sur un oscilloscope, en insérant un filtre passebas de 4 kHz (voir Fig. 10-8).
	0,5V/div	5ms/div	TP1 Broche 2 (TRER)	Grille	Point nul	● Insérer un tournevis dans l'orifice de grille, le tourner et rechercher le point nul (voir Photo 10-1). • Tourner ensuite lentement la vis dans le sens inverse des aiguilles d'une montre et ajuster au point où la forme d'onde (signal d'erreur d'alignement) arrive en premier à son amplitude maximale (voir Photo 10-3). Remarque: Eviter d'appliquer une pression au tournevis ⊖ . Le capteur pourrait pencher vers la direction tangentielle, rendant l'ajustment plus difficile.
				Grille	Amplitude maximale	
						● Finalement, confirmer qu'il n'y a pas de fluctuation importante dans la tension c-c du signal d'erreur d'alignement (ne pas insérer le filtre passe-bas 4 kHz) quand le capteur est déplacé vers la périphérie intérieure et vers la périphérie extérieure. Si l'on constate une différence supérieure à 10% tourner à nouveau la grille et ajuster le signal d'erreur d'alignement au maximum.

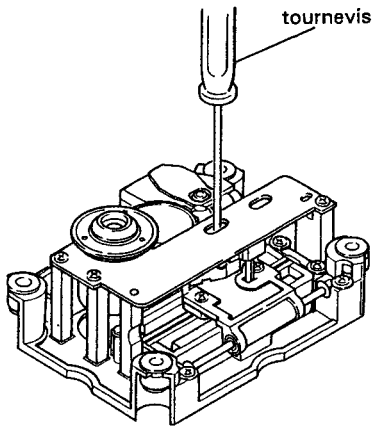


Fig. 10−7

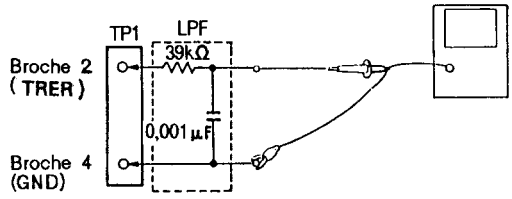


Fig. 10−8

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
6	**Ajustement d'équilibre d'alignement**					
	0,5V/div	5ms/div	TP1 Broche 2 (TRER)	VR5 (TR. BAL)		● Installer le disque d'essai. ● Régler l'appareil en mode d'essai (voir page 52). ● Appuyer sur la touche MANUAL SEARCH FWD (▷▷) pour amener le capteur près du centre du disque. ● Appuyer sur les touches TRACK FWD (▷▷|) et PLAY (▷) en séquence pour faire tourner le disque. ● Observer TP1 broche 2 TR. ER. (erreur d'alignement) sur l'oscilloscope et ajuster VR5 TR.BAL (équilibrage d'alignement) pour éliminer les éléments DC du signal d'erreur d'alignement.
7	**Ajustement tangentiel**					

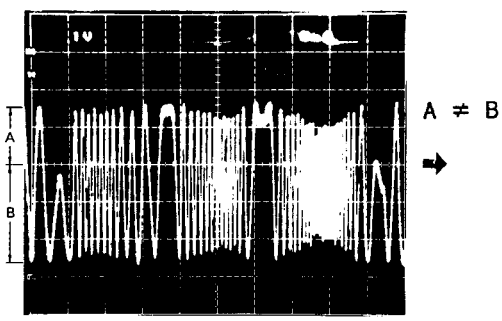


Photo 10-4 Eléments DC mêlés au signal

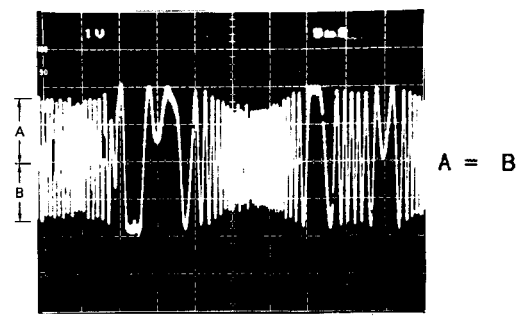


Photo 10-5 Eléments DC éliminés

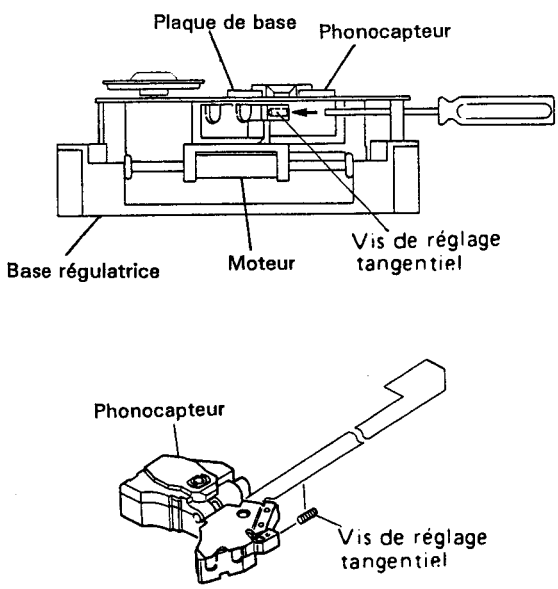
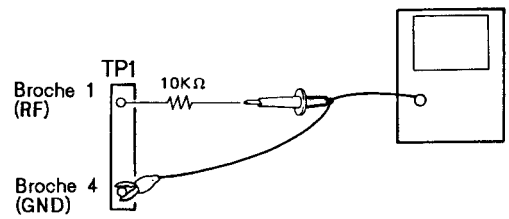
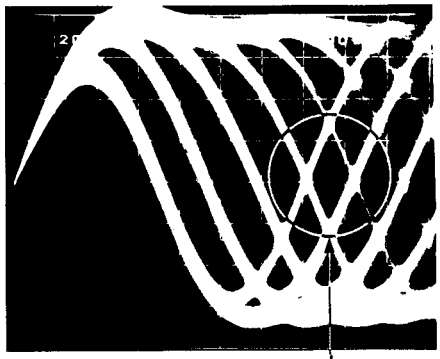


Fig. 10-9

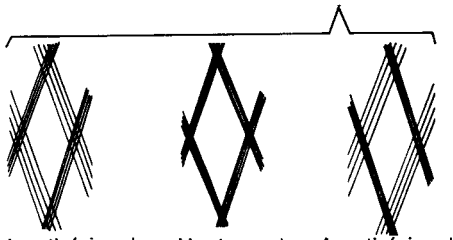
● Régler l'appareil au mode d'essai (voir page 52).
● Ouvrir le plateau et installer le disque d'essai.
● Appuyer sur la touche MANUAL SEARCH FWD (▷▷) pour amener le capteur vers le centre du disque.
● Insérer une clé hexagonale par l'orifice de la vis d'ajustement tangentiel par l'arrière du mécanisme.
● Refermer le plateau.

Remarque: Ne pas se servir d'une clé hexagonale en L, mais une comme illustré sur la gauche. L'emploi d'une clé hexagonale en L pourrait relâcher le plateau [voir page 55 5. Ajustement de grille (1).]

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
		200ns	TP1 Broche 1 Sortie RF	Vis d'ajustement tangentiel	Mire la plus nette possible	● Appuyer sur les touches TRACK FWD (▷▷I) et PLAY (▷) en séquence pour fermer les servos (le témoin PAUSE s'allume). ● Observer TP1 broche 1 (sortie RF) sur l'oscilloscope et agir sur la vis d'ajustement tangentiel pour obtenir la mire la plus nette possible. ● Le point où la vis d'ajustement doit être amenée se trouve environ à mi-course entre les points où la mire est la plus floue quand la vis est tournée à fond dans le sens des aiguilles et dans le sens contraire. Quand toute la forme d'onde devient claire, se concentrer sur la netteté des lignes fines, formant un losange au centre de la mire (voir Photo 10-8). Ajuster jusqu'à ce que les lignes fines sur les quatre côtés du losange soient bien définies et denses, comme illustré sur la Photo 10-6.  Fig. 10−10 Remarque: Se servir d'une clé hexagonale pour lever légèrement le capteur pendant cet ajustement.



Concentrer sur la netteté du losange



Insatisfaisant | Ajustement optimal | Insatisfaisant

Photo 10-6

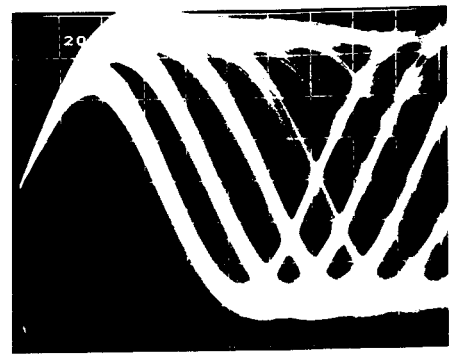


Photo 10-7

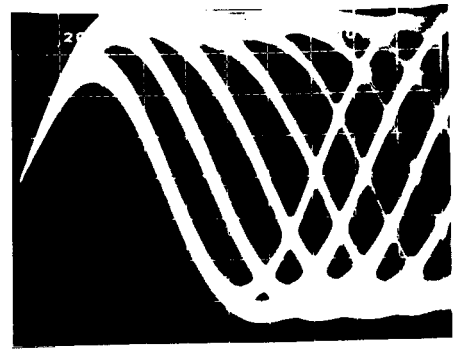


Photo 10-8

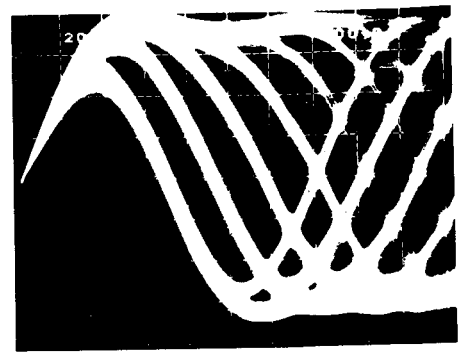


Photo 10-9

Numéro d'ordre	Gamme de l'oscilloscope V	Gamme de l'oscilloscope H	Point d'essai	Point de réglage	Point à vérifier /Caractéristique de réglage	Ordre des opérations de réglage
8	**RÉGLAGE RADIAL**					
						• Mettre en place le disque d'essai. **L'ajustmer réel doit être fait après avoir remplacé le plateau du disque.** Remarque: **Se reporter à "5. Ajustment de grille (1) (P.57) pour savoir comment déposer.** • Placer le lecteur en mode essai. (Se reporter page 52.) • Amener le capteur au centre du disque au moyen de la touche MANUAL SEARCH FWD [▶▶]. Le capteur étant dans cette position, la vis de réglage radial devient accessible au moyen d'un tournevis. (Se reporter à la fig. 10-11.) • Appuyer sur la touche TRACK FWD [▶▶|] puis sur la touche PLAY [▶] et enfin sur la touche PAUSE [▮▮] pour fermer toutes les boucles d'asservissement. (Le témoin PAUSE s'éclaire.)
			TP 1 Borne 1 (Sortie radiofréquence)	Vis de réglage radial	Meilleur motif de hachures en croix.	• Brancher l'oscilloscope sur la borne 1 de TP 1 (sortie radiofréquence). Agir sur la vis de réglage radial pour obtenir le meilleur motif de hachures en croix. (Se reporter à la fig. 10-11.) • Le point de réglage est obtenu lorsque le motif est le meilleur et que toute nouvelle action sur la vis ne peut que le dégrader. On doit chercher à obtenir un motif formant un losange aussi régulier que possible. (Se reporter à la photographie 10-8.) Lorsque le réglage est correct, on doit être en mesure de distinguer les lignes qui composent le losange. • Veiller à effectuer les réglages tangentiel et radial, l'un après l'autre, plus de deux fois.

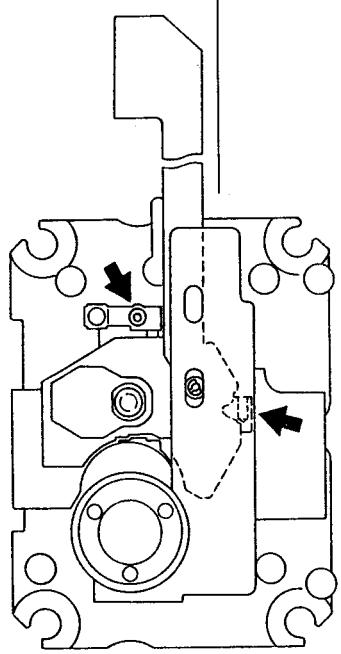


Fig. 10−11

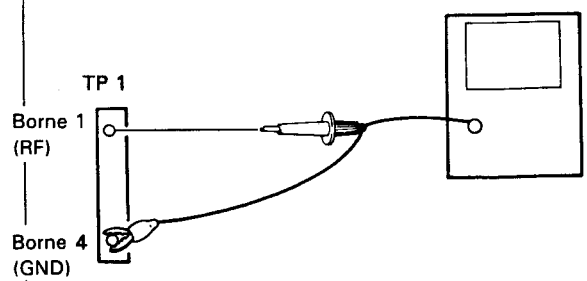


Fig. 10−12

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
						Remonter le plateau du disque selon la procédure ci-après après avoir terminé l'ajustement de grille. 1. Retirer le disque et l'entretoise. 2. Tout en levant l'attache (marquée par Ⓑ sur la Fig. 10-4) de la main droite, tenir le plateau de la main droite comme illustré par Ⓒ et déplacer la base coulissante dans les armatures en résine dure sur la base de chargement, comme indiqué sur la Fig. 10-13 pour ré-insérer le plateau du disque. A ce moment, prendre soin de tenir la bille d'acier en place par l'index de la main droite. Veiller également que le panneau avant ne soit pas endommagé par le roulement (dans la base coulissante), entrant en contact avec le panneau. 3. Insérer la base coulissante de sorte qu'elle s'engage dans les armatures en résine dure à l'arrière de la base de chargement (voir Fig.10-14). 4. Insérer à fond le plateau.

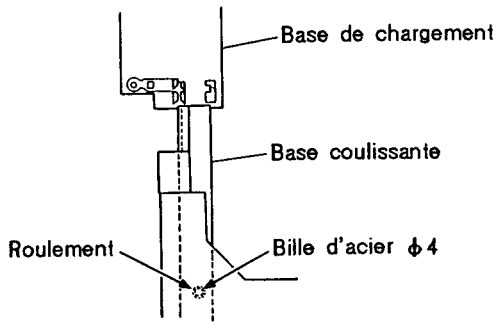


Fig. 10−13

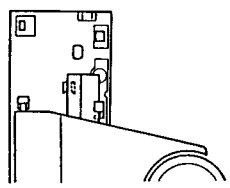
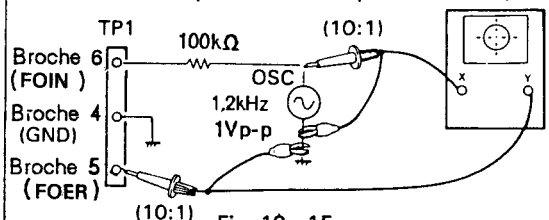
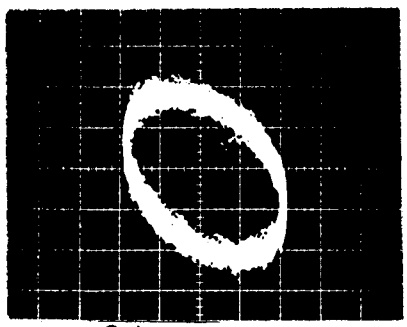
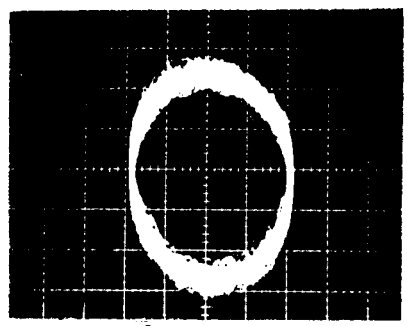


Fig. 10−14

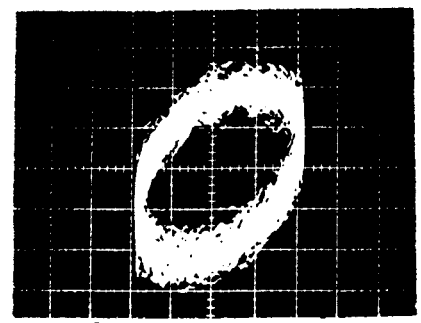
N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
9	**Ajustement de gain de mise au point**					
	20mV/div CH1(X), CH2(Y) (sonde 10:1)	5mV/div	Axe des X TP1 Broche 5 (FOIN) Axe des Y TP1 Broche 6 (FOER)	VR3 (FO. GAIN)	Différence de phase de 90°	● L'alimentation de l'oscillateur étant coupée (OFF), raccorder l'oscillateur comme illustré sur la Fig. 10-15 ● Régler l'appareil en mode d'essai (voir page 52). ● Appuyer sur les touches TRACK FWD (▷▷|), PLAY (▷) et PAUSE (▯▯) en séquence pour actualiser les servos de mise au point, axe et alignement. ● Mettre l'oscillateur sous tension (ON) et le régler pour fournir un signal de 1,2 kHz 1Vp-p. Remarque: Certains oscillateurs déchargent une tension DC lors de leur mise sous tension. Par conséquent, il est conseillé de connecter l'oscillateur après l'avoir mis sous tension. ● Ajuster VR3 FO. GAIN (gain de mise au point) de sorte que la figure de Lissajou devienne un cercle horizontal (différence de phase de 90°).  Fig. 10-15



Gain sur-compensé
Fig. 10-10



Gain optimal
Photo 10-11



Gain sous-compensé
Photo 10-12

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
10	Ajustement de gain d'alignement					
						● L'alimentation de l'oscillateur étant coupée (OFF), raccorder l'oscillateur comme illustré sur la Fig. 10-16 ● Régler l'appareil en mode d'essai (voir page 52). ● Appuyer sur les touches TRACK FWD (▷▷|), PLAY (▷) et PAUSE (▯▯) en séquence pour actualiser les servos de mise au point, axe et alignement. ● Mettre l'oscillateur sous tension (ON) et le régler pour fournir un signal de 1,2 kHz 2Vp-p. Remarque: Certains oscillateurs déchargent une tension DC lors de leur mise sous tension. Par conséquent, il est conseillé de connecter l'oscillateur après l'avoir mis sous tension.
	50mV/div 5mV/div CH1(X), CH2(Y) (Sonde 10 : 1)		Axe des X TP1 Broche 3 (TRIN) Axe DES Y TP1 Broche 2 (TRER)	VR3 (TR. GAIN)	Différence de phase de 90°	● Ajuster VR4 TR. GAIN (gain d'alignement) de sorte que la figure de Lissajou devienne un cercle horizontal (différence de phase de 90°).

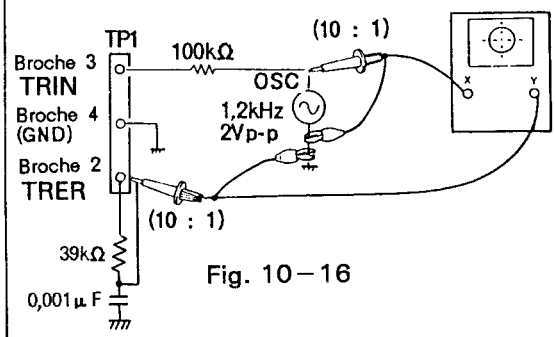
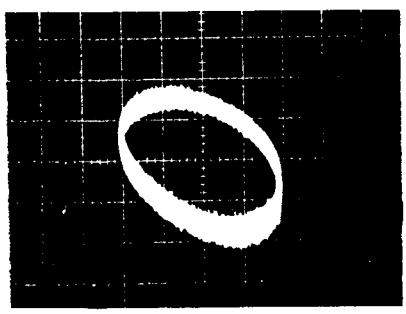
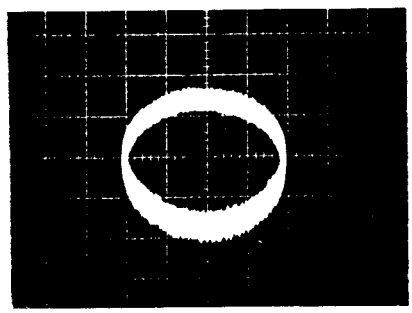


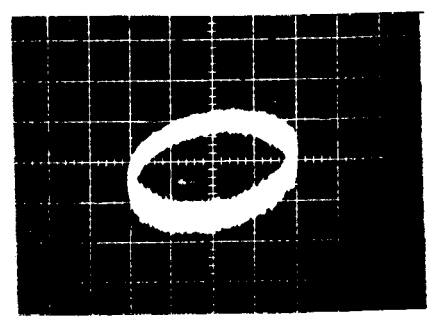
Fig. 10-16



Gain sur-compensé
Photo 10-13



Gain optimal
Photo 10-14



Gain sous-compensé
Photo 10-15

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de contrôle/ Spécifications de réglage	Procédure de réglage
11	**Ajustement de fréquence libre VCO**					
			TP2 Broche 2	VR8 (VCO.ADJ)	4.275 ±0,025MHz	● Régler l'appareil en mode d'essai (voir page 52). ● Court-circuiter l'ensemble et le cavalier de masse (GND) à l'aide d'un tournevis ou d'un outil analogue (voir Fig.10-17). ● Raccorder un fréquencemètre, capable de mesurer des fréquences de 10 MHz et au-delà, sur TP2 broche 2. ● Ajuster VR8 (ajustement VCO) de sorte que la lecture du fréquencemètre devienne 4.275± 0,025 MHz.
12	**Méthode de confirmation d'erreur de mise au point**					
			TP1 Broche 6 (FOER)			● Régler l'appareil en mode d'essai (voir page 52). Mettre TP1 broche 5 FOIN (gain de mise au point) à la masse (GND). ● Observer la sortie de forme d'onde à TP1 broche 6 FOER (erreur de mise au point) quand la TRACK FWD (▷▷|) est actionnée.

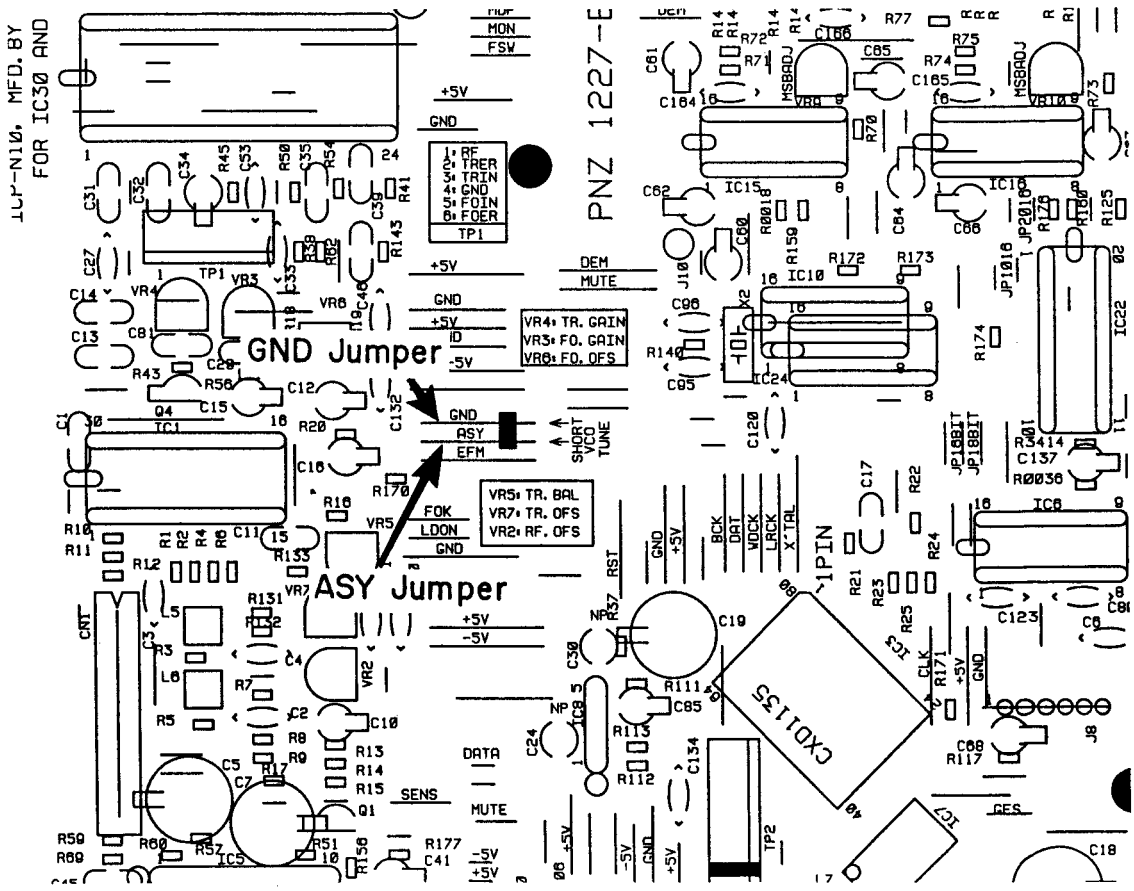
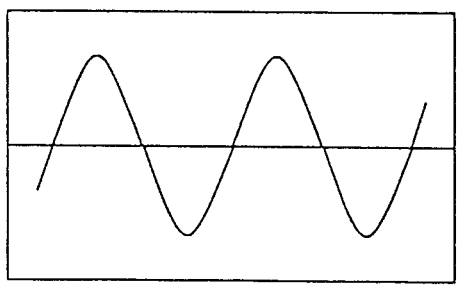


Fig. 10-17

N° de paso	Ajuste del oscilloscopio V	Ajuste del oscilloscopio H	Puntos deprueba	Putos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
13	RÉGLAGE MSB (AJUSTEMENT DE LA DISTORSION DE CROISSEMENT ZÉRO DU CONVERTISSEUR N/A)					
	5mV/div	0.2msec/ div	JA1 Borne LINE OUTPUT (canal gauche)			● Entrer en mode de lecture normale. ● Reproduire la piste 20 (− 60dB, 1kHz, canal gauche, canal droit du disque d'essai YEDS-7). Raccorderl' oscilloscope au canal gauche de la borne LINE OUTPUT (JA1) et observer la forme d'onde de la sortie audio.
				VR9	Onde sinusoidale	● Ajuster VR9 MSB (canal gauche) de sorte que l'onde sinusoidale apparaisse surr l'oscilloscope.
			JA1 Borne LINE OUTPUT (canal droit)	VR10	Onde sinusoidale	● Ajuster VR10 (canal droit) de la même manière.

● Forme d'onde de la distorsion de croisement zéro



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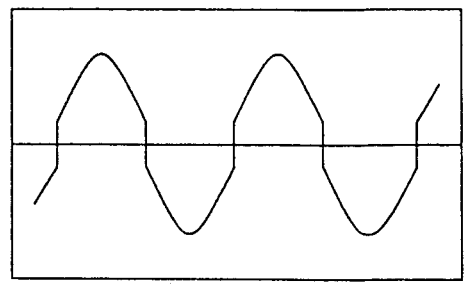

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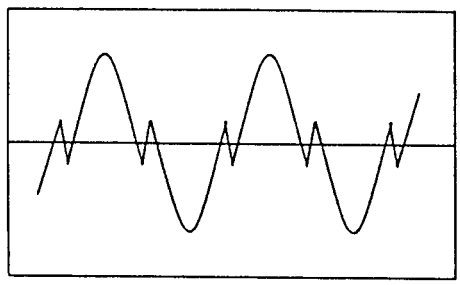

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10. AJUSTE

A continuación se ofrecen los ajustes para esta unidad. Estos ajustes deberán realizarse en el orden indicado.

● AJUSTES

1. Ajuste de la desviación del error de seguimiento, desviación de enfoque, y desviación de RF
2. Ajuste del nivel de RF
3. Comprobación de la energía del diodo lasér (LD)
4. Comprobación de la sincronización del foco y del eje
5. Ajuste de retícula
6. Ajuste del equilibrio de seguimiento
7. Ajuste tangencial
8. Ajuste radial
9. Ajuste de la ganancia de enfoque
10. Ajuste de la ganancia de seguimiento
11. Ajuste de la frecuencia de oscilación libre del oscilador controlado por tensión (VCO)
12. Ajuste de MSB

● EQUIPOS REQUERIDOS

1. Osciloscopio de doble traza
2. Medidor de energía óptica
3. Disco de prueba (YEDS-7), Disco de 8cm
4. Filtro de ajuste de ganancia de bucle
5. Generador de seùales
6. Frecuencímetro
7. Otros equipos de medición regulares

● Modo de prueba

Todos los ajustes deberán efectuarse con la unidad en el modo de prueba.

Activación y desactivación del modo de prueba

① Para activar el modo de prueba, ponga en ON el interruptor de alimentación (S301) con el interruptor de modo de prueba (S1) en ON.

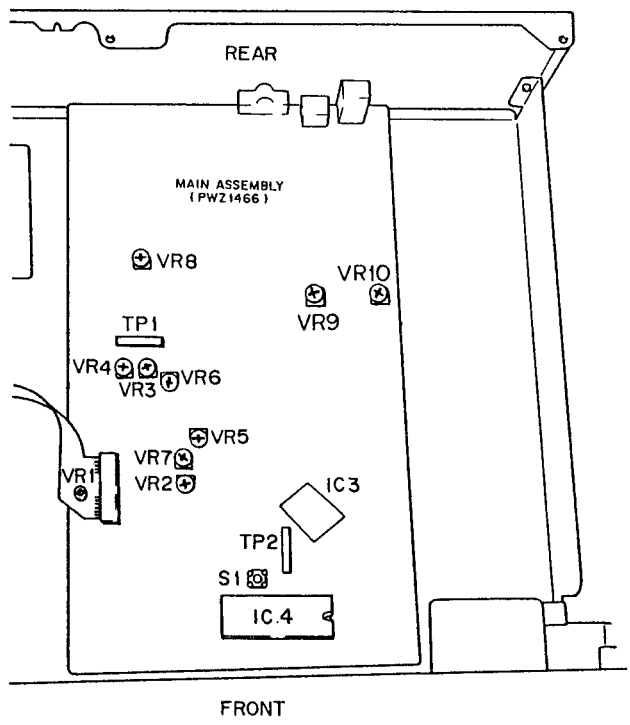
② El modo de prueba se desactivará poniendo el interruptor de alimentación en OFF.

Las funciones de las teclas en el modo de prueba se describen en la tabla 10-1.

● TORES VARIABLES (VR) DE AJUSTE Y SUS NOMBRES

Energía lasérica

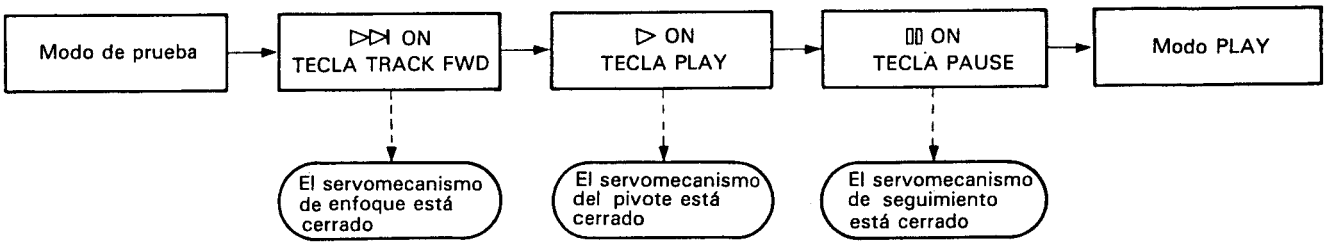
VR2: Desviación de RF (RF.OFS)
VR3: Ganancia de enfoque (FO. GAIN)
VR4: Ganancia de seguimiento (TR. GAIN)
VR5: Equilibrio de seguimiento (TR. BAL)
VR6: Desviación de enfoque (FO. OFS)
VR7: Desviación de seguimiento (TO. OFS)
VR8: Ajuste del VCO (VCO.ADJ)
VR9 : Ajuste de MSB (canal izquierdo)
VR10 : Ajuste de MSB (canal derecho)



En el modo de prueba, los servos deberán abrir y cerrarse individualmente. Por consiguiente, los servos deberán cerrarse en la secuencia apropiada (secuencia en serie) a fin de poner la máquina en el modo de reproducción. Tenga en cuenta además que la máquina no entrará en el modo de reproducción cuando haya presionado la tecla PAUSE (▯▯).

Por ejemplo, para cambiar del modo de parada al de reproducción, tendrá que presionar las teclas de función en el orden siguiente:

* En el modo de prueba, los servos deberán operarse en secuencia en serie.

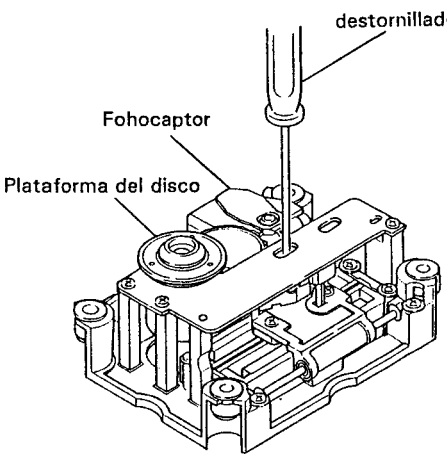
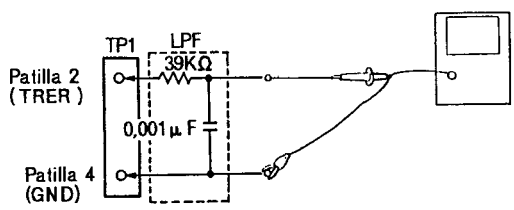


FUNCIONES DE LAS TECLAS EN EL MODE DE PRUEBA

Símbolo	Nombre de la tecla	Función en el modo de prueba	Descripción
▷▷|	TRACK FWD	Cierre del servo de enfoque	Activa el diodo lasér, y eleva y hace descender el actuador de enfoque para cerrar el servo de enfoque.
▷	PLAY	Cierre del servo del eje	Cierra el servo en el modo CLV-A después de impulsar el motor del eje.
▯▯	PAUSE	Cierre/apertura del servo de seguimiento	Actúa como conmutador: cierra el servo de seguimiento y activa el modo de reproducción cuando se presiona (suponiendo que los servos de enfoque y del eje estén cerrados), momento en el que se encenderá el indicador PAUSE; y abre el servo de seguimiento cuando vuelve a presionarse.
◁◁	MANUAL SEARCH REV	Retroceso del carro (se mueve hacia adentro)	Mueve el carro rápidamente (3 cm/s) hacia la pista más interior. Tenga cuidado para no moverlo demasiado ya que no hay dispositivo de seguridad para detener el carro.
▷▷	MANUAL SEARCH FWD	Avance del carro (mueve el carro hacia afuera)	Mueve el carro rápidamente (3 cm/s) hacia la pista más exterior. Tenga cuidado para no moverlo demasiado ya que no hay dispositivo de seguridad para detener el carro.
□	STOP	Parada	Para todos los servos y devuelve el sistema a su estado inicial.
⏏	OPEN/CLOSE	Apertura/cierre de la bandeja del disco	Abre y cierra la bandeja del disco. Sin embargo, el captor no regresa a su soporte en OPEN (apertura), y permanece estacionario en CLOSE (cierre).

Tabla 10-1.

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
1	**Ajuste de la desviación del error de seguimiento, desviación de enfoque, y desviación de RF**					
			TP1 Patilla 2 (TRER)	VR5 (TR. BAL)	Desviación del error de seguimiento 45é	● Ponga la unidad en el modo de prueba (consulte la página 68). ● Ponga VR5 TR.BAL (equilibrio de seguimiento) en una posición aproximadamente 45é a la izquierda del centro*.
				VR7 (TR. OFS)	0V±50mV	● Ajuste VR7 TRK.OFS (desviación de seguimiento) de forma que la TR.ERR (tensión de error) de seguimiento de la patilla 2 de TP1 sea de 0V±50mV.
			TP1 Patilla 6 (FOER)	VR6 (FO.OFS)	**Desviación de enfoque** 0V±50mV	● Ajuste VR6 FCS.OFS (desviación de enfoque) de forma que la tensión de FO.ERR (error de enfoque) en pa patilla 6 de TP1 sea de 100mV ± 50mV.
			TP1 Patilla 1 (RF OUTPUT)	VR2 (RF. OFS)	Desviación de RF 100mV±50mV	● Ajuste VR2 RF.OFS (desviación de RF) de forma que la tensión de salida de RF de la patilla 1 de TP1 sea de 100mV ± 50mV. **Nota: Cuando ajuste la desviación del error de seguimiento, realice siempre "5. Ajuste del equilibrio de seguimiento".**
2	Ajuste de nivel de RF					
			Patilla 1 de TP1 (salida de RF)	VR1 (potencia de láser)	1.5V $^{+0.2V}_{-0V.}$	• Establezca la unidad en el moda de prueba (Vea la página 68). • 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 forma de onda de RF. • Efectùe el ajuste necesario para obtener una tensión de 1.5V $^{+0.2V}_{-0V.}$.
3	**Comprobación de la energía del diodo lasér (LD)**					
				Comprobación	Menos 0,13mW	● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione la tecla TRACK FWD (▷▷I)para activar el diodo lásér. ● Coloque el sensor del medidor de energía óptica directamente sobre el objetivo y confirme si la energía del LD es de 0,13mW.

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
4	**Comprobación de la sincronización del foco y del eje**					
	0,5V/div	H 100msec/ div	Patilla 1 de TP1 (salida de RF)		La seùal de RF sale Giro en sentido de avance (hacia la derecha)	● Instale el disco de prueba. ● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione la tecla MANUAL SEARCH FWD (▷▷) para mover el captor hasta el centro del disco. ● Observe la salida de la patilla 1 de TP1 (salida de RF) en el osciloscopio. Compruebe si la seùal de RF sale después de presionar la tecla TRACK FWD (▷▷|). ● Presione la tecla PLAY (▷) y compruebe si el disco gira a velocidad constante (aprox. 30 rpm cerca del centro del disco) en sentido de avance (hacia la derecha); el disco puede no girar o hacerlo hacia la izquierda.
5	**Ajuste de retícula (1)** (caando se usa un disco de 8cm)					
	 Fig 10−1					● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione la tecla MANUAL SEARCH FWD (▷▷) para mover el captor hasta cerca de lo que sería el centro del disco. Coloque el captor de forma que su tornillo de ajuste de retícula se vea a través del orificio alargado situado al lado del motor del eje de la placa base del mecanismo deservos. ● Como se muestra en la Fig. 10-1 inserte un destornillador (ranurado) desde la parte posterior del mecanismo y compruebe si puede girar el tornillo de ajuste de retícula. ● Instale el disco de prueba;
	 Fig 10−2					● Presione secuencialmente las teclas TRACK FWD (▷▷|) y PLAY (▷) para cerrar los servos de enfoque y del eje (no cierre el servo de seguimiento). ● Inserte un filtro de paso bajo de 4kHz de corte entre el osciloscopio y la patilla 3 (TRER) y 5 (GND) de TP1, como se muestra en la Fig. 10-2, y observe la forma de onda de la patilla 3 de TP1 (error de seguimiento) en el osciloscopio.

N° de paso	Ajuste del osciloscopio		Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
	V	H				
	0,5V/div	5ms/div	TP1 Patilla 2 (TRER)	Tornillo de ajuste de retícula	Punto nulo	● Gire el tornillo de ajuste de retícula con el destornillador hasta encontrar el punto nulo (consulte la foto 10-1).
				Tornillo de ajuste de retícula	Amplitud máxima	● A continuación, gire lentamente el tornillo hacia la derecha y ajústelo hasta el punto en el que la forma de onda (seùal de error de seguimiento) llegue por primera vez a su máxima amplitud (consulte la foto 10-3).
						Nota: Evite aplicar excesiva presión al destornillador cuando ajuste el tornillo. De lo contrario, el captor se moverá hacia adentro haciendo más difícil el ajuste.
						● Por último, desconecte el filtro de paso bajo y confirme que la tensión de pico a pico de la seùal de error de seguimiento no varíe mucho cuando el captor se mueva de la pista más interior a la más exterior del disco. Si los niveles difieren en un 10% o más, reajuste el punto de error de amplitud máxima girando el tornillo de ajuste de retícula.

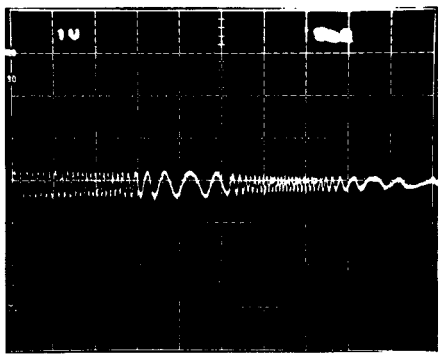


Foto 10-1

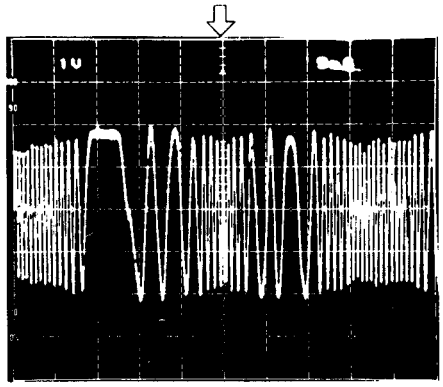


Foto 10-3

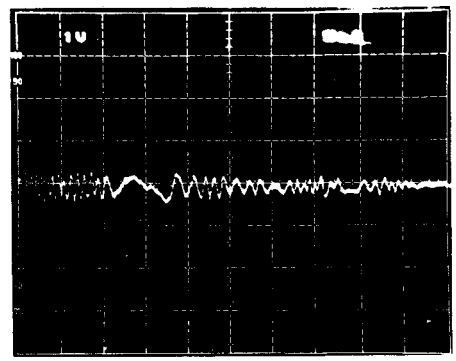
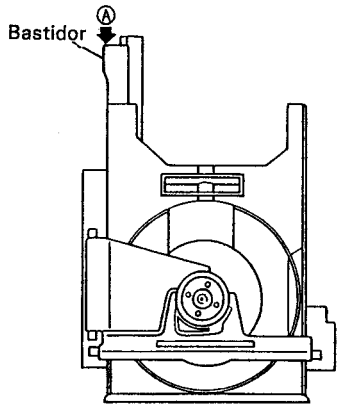
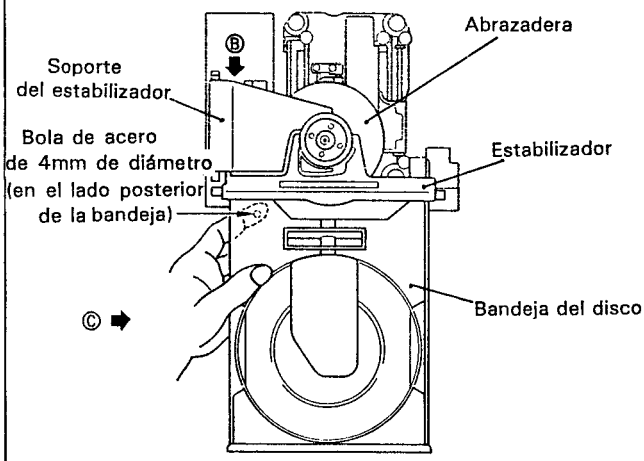
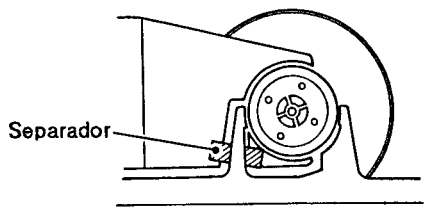
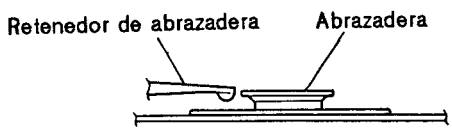


Foto 10-2

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
5	**Ajuste de retícula (2) (empleando discos con una duración de reproducción de 60 min o más)**					
	 Fig 10-3					Antes de iniciar este ajuste, extraiga la bandeja del disco. ● Extracción de la bandeja del disco 1. Presione el borde posterior del bastidor, marcado con Ⓐ en la Fig. 10-3, tirando de la bandeja del disco hasta la posición en la que agarre, mostrada en la Fig. 10-4.
	 Fig 10-4					2. Tirando del soporte de abrazadera Ⓑ (consulte la Fig.10-4) hacia arriba con la mano derecha, sujete la bandeja como se indica en Ⓒ con la mano izquierda y tire de ella hacia afuera. Tenga cuidado para que no caiga la bola de acero ϕ4 (recomendamos sujetar la bola en su lugar con el dedo índice de la mano izquierda al sacar la bandeja).
	 Fig 10-5					
	 Fig 10-6					

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
						Nota: Este ajuste podrá realizarse solamente con un disco que tenga hoyos de hasta R115mm, en este caso utilizaremos el disco de prueba (YEDS-7).
						● Ponga la unidad en el modo de prueba (consulte la página 68).
						● Instale el disco de prueba, desplace el captor hasta la pista exterior de forma que el orificio de ajuste de retícula del captor quede visible desde la superficie de hoyos del disco o a través del orificio del mecanismo de servos (consulte la Fig.10-8).
						● Presione secuencialmente las teclas TRACK FWD (▷▷|) y PLAY (▷) para cerrar los servos de enfoque y del eje (no cierre el servo de seguimiento).
						● Observe la forma de onda de TRER (error de seguimiento) de la patilla 2 de TP1 en el osciloscopio, insertando un filtro de paso bajo de 4 kHz (consulte la Fig. 10-8).
	0,5V/div	5ms/div	TP1 Patilla 2 TRER	Retícula	Punto nulo	● Inserte un destornillador en el orificio del tornillo de ajuste de retícula, gire y halle el punto nulo (consulte la foto 10-1).
				Retícula	Amplitud máxima	• Luego, naga girar lentamente el tornillo hacia la izquierda y ajustelo en el punto en el que la forma de onda (señal de error de sequimiento) obtiene suamplitud máxima (vea la fotografia 10−3).
						Nota: No emplee una fuerza excesiva en el destornillador (−) . El fonocaptor puede inclinarse en una dirección tangencial, dificultando el ajuste.
						● Por último, confirme que no haya gran fluctuación la tensión de pico a pico de la seùal de error de seguimiento (no inserte el filtro de paso bajo de 4 kHz de corte) cuando el captor se desplace de la pista más interior a la más exterior del disco. Si la diferencia es mayor del 10% o más, vuelva a girar el tornillo de ajuste de retícula y ajuste la señal de error al máximo.

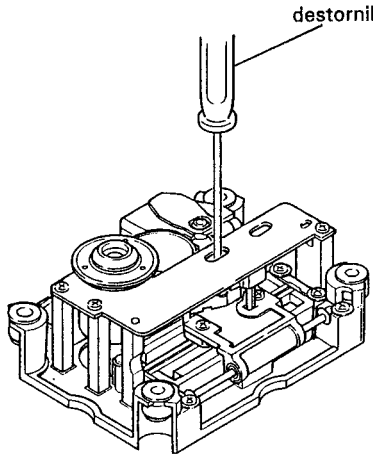


Fig 10−7

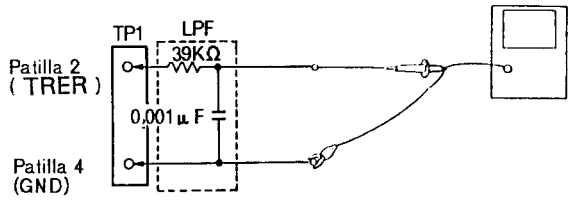


Fig 10−8

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
6	**Ajuste del equilibrio de seguimiento**					
	0,5V/div	5ms/div	TP1 Patilla 2 (TRER)	VR5 (TR.BAL)		● Instale el disco de prueba. ● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione la tecla MANUAL SEARCH FWD (▷▷) para colocar el captor cerca del centro del disco. ● Presione secuencialmente las teclas TRACK FWD (▷▷I)y PLAY (▷) para hacer que el disco gire. ● Observe la forma de onda (error de seguimiento) de la patilla 2 (TRER) de TP1 en el osciloscopio, y ajuste VR5 TR.BAL (equilibrio de seguimiento) para eliminar los elementos de CC de la seùal de error de seguimiento.
7	**Ajuste tangencial**					

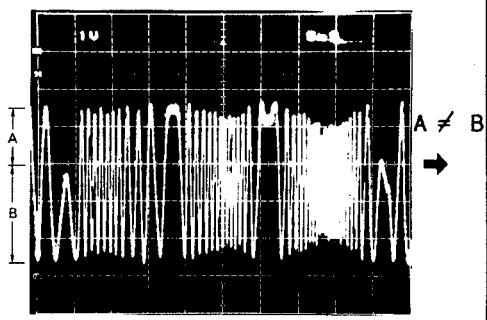


Foto 10-4. Elementos de CC mezclados con la

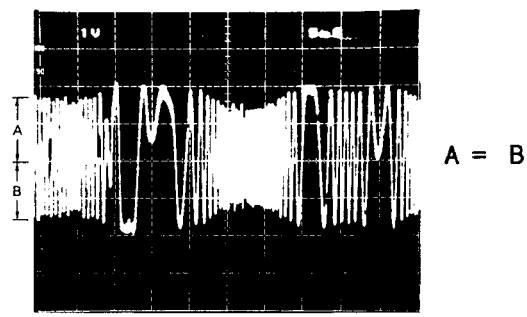


Foto 10-5. Elementos de CC eliminados

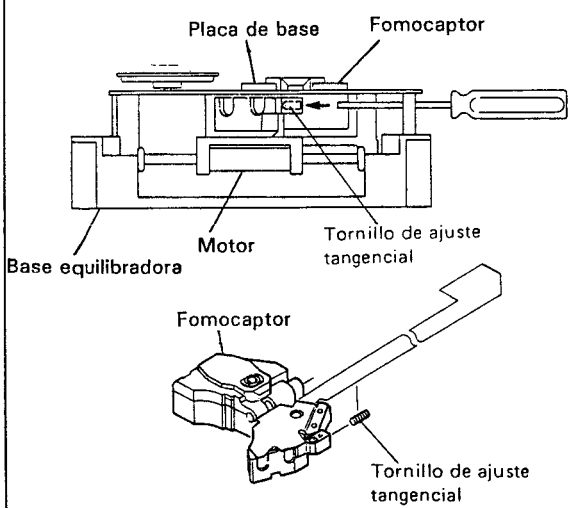
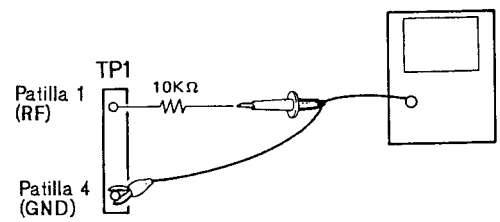
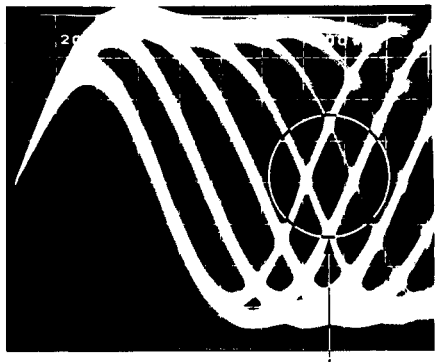


Fig. 10-9

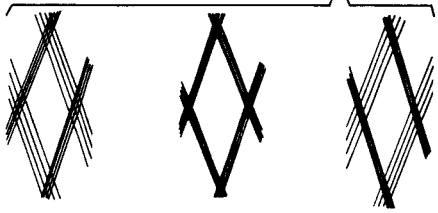
- Ponga la unidad en el modo de prueba (consulte la página 68).
- Presione la tecla MANUAL SEARCH FWD (▷▷) para colocar el captor cerca del centro del disco.
- Inserte una llave hexagonal en la sección del tornillo de ajuste tangencial desde la parte posterior del mecanismo.
- Cierre la bandeja.

Note: No emplee una llave hexagonal en forma de L. Emplee una como la mostrada a la izquierda. Si emplea una llave hexagonal en forma de L puede hacer que se afloje la bandeja [consulte la página 65 5."Ajuste de retícula (1)"].

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
		200ns	TP1 Patilla 1 Salida de RF	Tornillo de ajuste tangencial	Patrón ocular más nítido posible	● Presione secuencialmente las teclas TRACK FWD (▷▷I) y PLAY (▷) para cerrar los servos (el indicador de pausa se encenderá). ● Observe la forma de onda de la patilla 1 de TP1 (salida de RF) en el osciloscopio, y ajuste el tornillo de ajuste tangencial hasta lograr el patrón ocular más nítido posible. ● El punto en el que el tornillo de ajuste tendrá que quedar está aproximadamente en mitad de los puntos en los que el patrón ocular se vuelve más borroso al girar dicho tornillo hacia la derecha y la izquierda. Cuando toda la forma de onda sea clara, concentre o aguce las líneas finas que forman el diamante en el centro del patrón ocular (consulte la foto 10-8). Ajuste hasta que las líneas finas de los cuatro lados del diamante queden nítidamente definidas y densas, como se muestra en la foto 10-6.  Fig. 10−10 Nota: Emplee una llave hexagonal para levantar algo el captor cuando realice este ajuste.



Concentre o aguce este diamante.



Insatisfactorio Ajuste óptimo Insatisfactorio

Foto 10-6

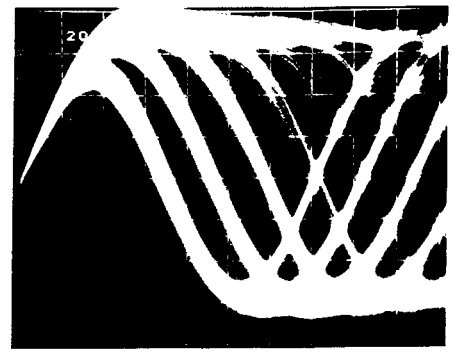


Foto 10-7

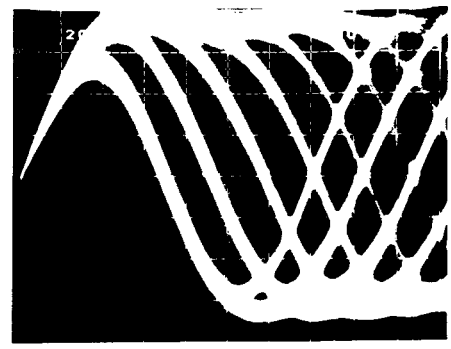


Foto 10-8

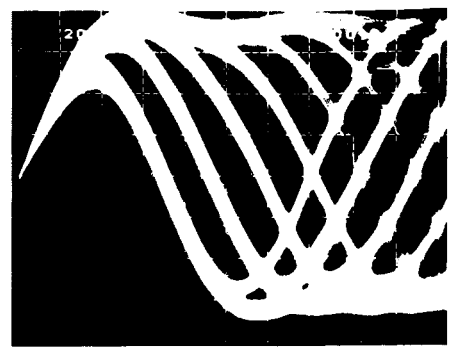


Foto 10-9

No. de paso	Margen del osciloscopio V	Margen del osciloscopio H	Punto de prueba	Punto de ajuste	Punto de verificación/especificación del ajuste	Secuencia de la operación de ajuste
8	**AJUSTE RADIAL**					
			TP 1 Aguja1 (Salida de RF)	Tornillo de ajuste radial	Imagen de cuadrícula óptima	• Introduzca el disco de pruebas en el tocadiscos. El ajuste actual debe efectuarse después de volver a colocar la bandeja del disco. Nota: Consulte el punto 5, Ajuste del chirrido (1) (P.73) para detalles sobre la extracción. • Establezca el tocadiscos CD en el modo de pruebas. (Refiérase a la página 68.) • Con la tecla MANUAL SEARCH FWD [▶▶] mueva el fonocaptor al centro del disco. Con el fonocaptor en esta posición se tiene acceso al tornillo de ajuste radial desde arriba. (Vea la Fig. 10-11). • Presione la tecla TRACK FWD [▶▶|], la tecla PLAY [▶] y la tecla PAUSE [▮▮ en este orden para cerrar todos los servodispositivos. (Se encenderá el indicador PAUSE.) • Observe la forma de onda de la salida de RF en la aguja ① TP 1 RF en el osciloscopio. Gire el tornillo de ajuste radial hasta que se logre la única imagen ideal de cuadrícula. (Fig. 10-11). • El punto de ajuste idóneo es aquel en el cual si se gira más el tornillo de ajuste radial en cualquier dirección, se degrada la imagen de cuadrícula. El objetivo es lograr una buena imagen de forma de onda con líneas cruzadas que formen una sóla figura en forma de diamante (Fotografía 10-8). En el punto de ajuste idóneo incluso podrá distinguir las líneas relativamente claras que forman el diamante. • Cerciórase de realizar los ajustes tangencial y radial alternativamente más de dos veces.

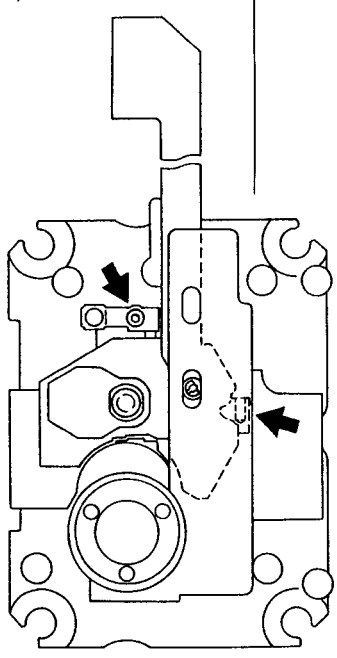


Fig. 10−11

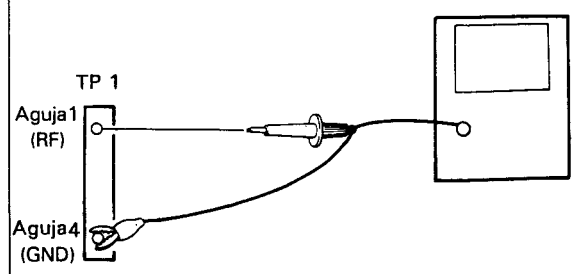


Fig. 10−12

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
						Una vez finalizado el ajuste de retícula, vuelva a montar la bandeja del disco de acuerdo con el procedimiento siguiente. 1. Extraiga el disco y el separador. 2. Levantando el sujetador de abrazadera (marcado con Ⓑ en la Fig. 10-4) con la mano izquierda, sujete la bandeja con la mano izquierda como se indica en Ⓒ y deslice la base deslizable en los acopladores de resina rígida de la base de carga como se muestra en la Fig.10-13para reinsertar la bandeja del disco. En este momento, asegúrese de sujetar la bola de acero en su lugar con el dedo índice de la mano izquierda. Además, tenga cuidado para no dañar el panel frontal con la base deslizable y el cojinete de boals de acero (de la base deslizable). 3. Inserte la base deslizable de forma que encaje en los dos acopladores de resina rígida de la parte posterior de la base de carga (consulte la Fig.10-14). 4. Inserte completamente la bandeja del disco.

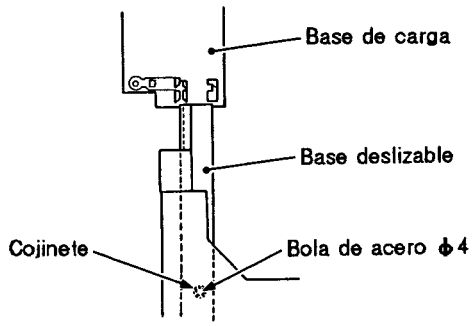


Fig. 10−13

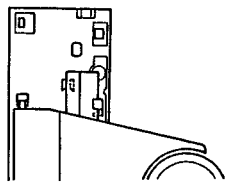


Fig. 10−14

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
9	**Ajuste de la ganancia de enfoque**					
	50mV/div 5mV/div CH1(X), CH2(Y) (Sonda 10:1)		Eje X TP1 Patilla 5 (FOIN) Eje Y TP1 Patilla 6 (FOER)	VR3 (FO.GAIN)	Diferencia de fase de 90é	● Con la limentación (del oscilador) desconectada, conecte el osciloscopio y el oscilador como se muestra en la Fig. 10-15 ● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione secuencialmente las teclas TRACK FWD (▷▷I), PLAY (▷), y PAUSE (▯▯) para activar los servos de enfoque, del eje, y de seguimiento. ● Conecte la alimentación del oscilador y ajuste su salida a una seùal de 1,2kHz, 1Vp-p. Nota: Algunos osciladores descargan una tensión CC cuando se conecta su alimentación. Por lo tanto, se recomienda conectar el oscilador después de haber conectado su alimentación. ● Ajuste VR3 FO. GAIN (ganancia de enfoque) de forma que la figura de Lissajous se convierta en un círculo horizontal (diferencia de fase de 90é).

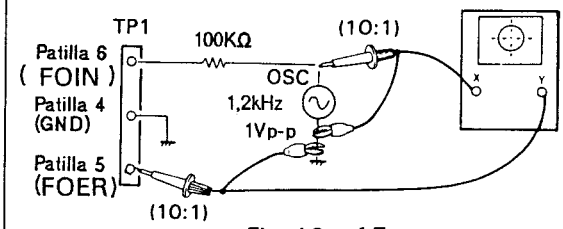
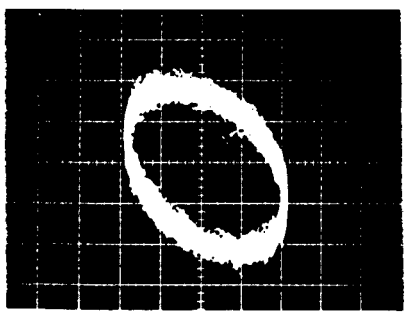
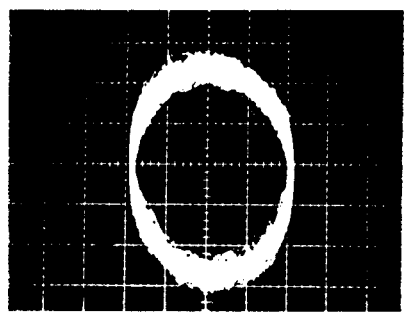


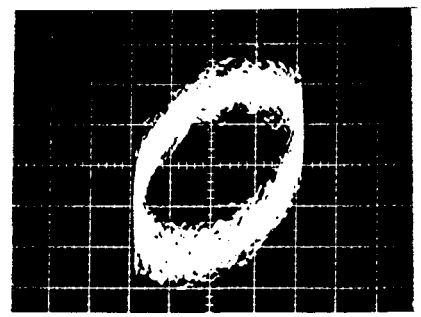
Fig. 10−15



Ganancia sobrecompensada
Foto 10-10.



Ganancia óptima
Foto 10-11.



Ganancia subcompensada
Foto 10-12.

N°. de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
10	**Ajuste de la ganancia de seguimiento**					
	50mV/div 5mV/div CH1(X), CH2(Y) (Sonda 10 : 1)		Eje X TP1 Patilla 3 (TRIN) Eje Y TP1 Patilla 2 (TRER)	VR4 (TR. GAIN)	Diferencia de fase de 90é	● Con la limentación (del oscilador) desconectada, conecte el osciloscopio y el oscilador como se muestra en la Fig. 10-16 ● Ponga la unidad en el modo de prueba (consulte la página 68). ● Presione secuencialmente las teclas TRACK FWD (▷▷|), PLAY (▷), y PAUSE (▯▯) para activar los servos de enfoque, del eje, y de seguimiento. ● Conecte la alimentación del oscilador y ajuste su salida a una seùal de 1,2kHz, 2Vp-p. Nota: Algunos osciladores descargan una tensión CC cuando se conecta su alimentación. Por lo tanto, se recomienda conectar el oscilador después de haber conectado su alimentación. ● Ajuste VR4 TR.GAIN(ganancia de seguimiento) de forma que la figura de Lissajous se convierta en un círculo horizontal (diferencia de fase de 90é).

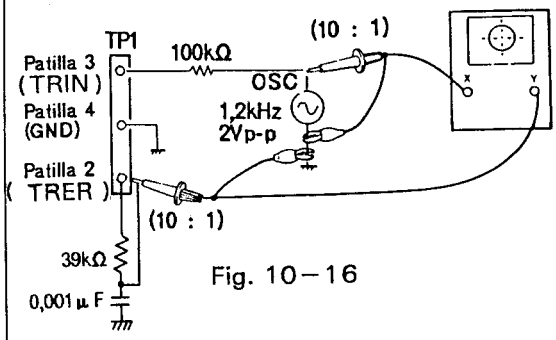
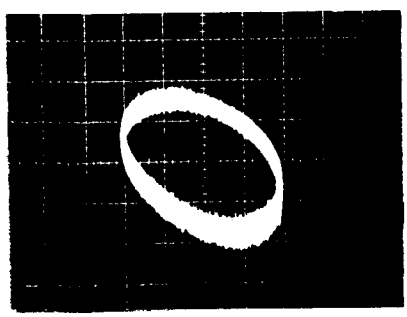
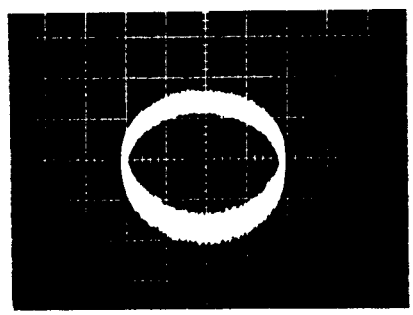


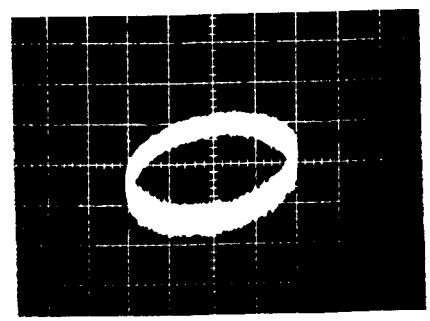
Fig. 10−16



Ganancia sobrecompensada
Foto 10-13.



Ganancia óptima
Foto 10-14.



Ganancia subcompensada
Foto 10-15.

N° de paso	Ajuste del osciloscopio V	Ajuste del osciloscopio H	Puntos de prueba	Puntos de ajuste	Itemes de comprobación/ Especificaciones de ajuste	Procedimiento de ajuste
11	**Ajuste de la frecuencia de oscilación libre del oscilador controlado por tensión (VCO)**					
			TP2 Patilla 2	VR8 (VCO.ADJ)	4.275 ±0,025MHz	● Ponga la unidad en el modo de prueba (consulte la página 68). ● Cortocircuite ASY y GND con un destornillador a algún objeto similar (consulte la Fig. 10-17). ● Conecte un frecuencímetro capaz de medir frecuencias de más 10MHz a la patilla 2 de TP2. ● Ajuste VR8 (ajuste del VCO) hasta que el frecuencímetro indique 4.275 ± 0,25MHz.
12	**Método de confirmación del error de enfoque**					
			TP1 Patilla 6 (FOER)			● Ponga la unidad en el modo de prueba (consulte la página 68). ● Conecte a masa la patilla 5 de TP1 (ganancia de enfoque). ● Observe la forma de onda de salida de la patilla 6 FOER de TP1 (error de enfoque) al presionar la tecla TRACK FWD (▷▷|).

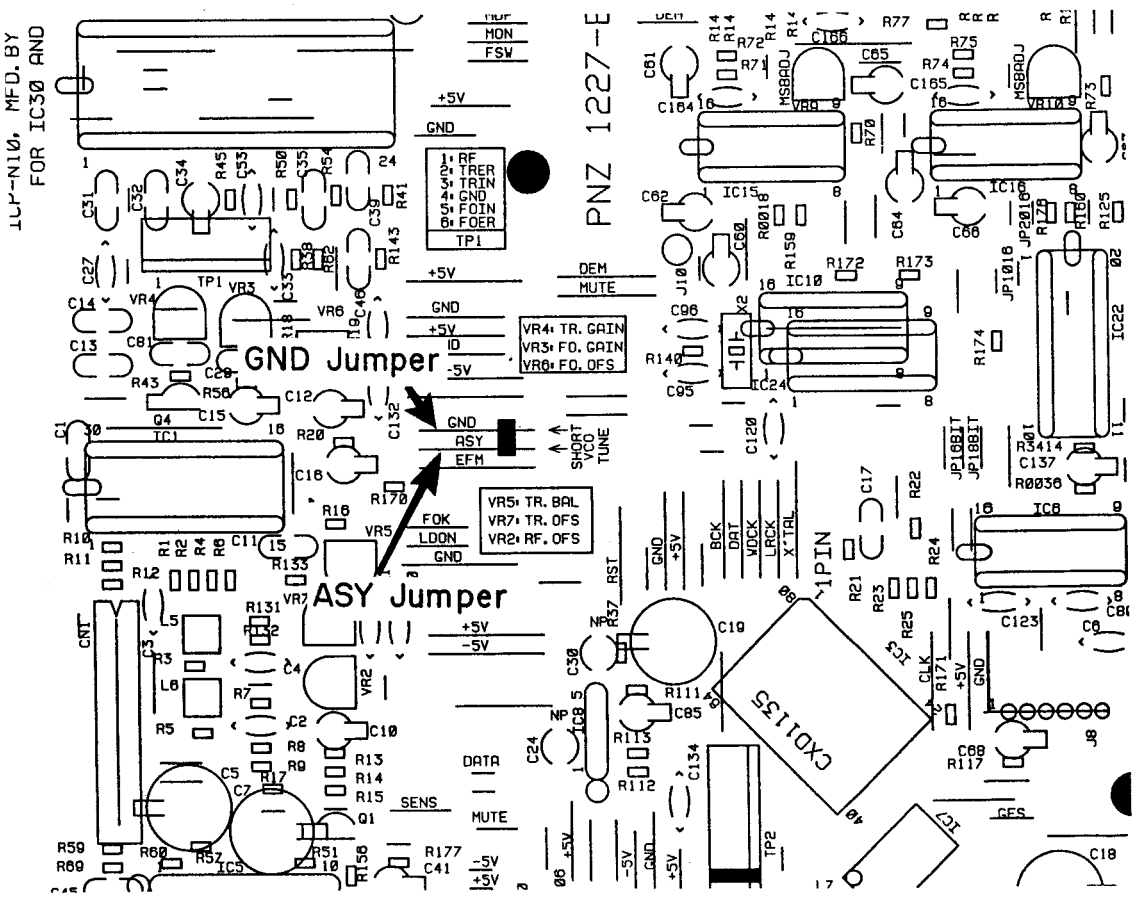
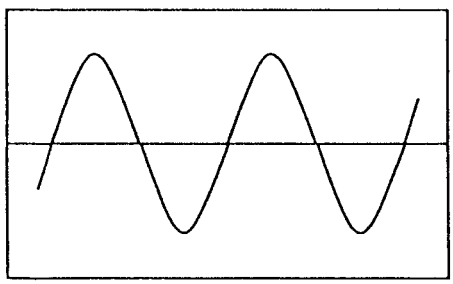


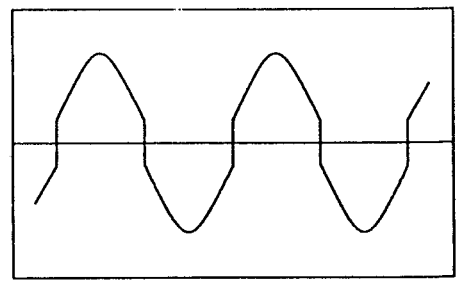
Fig. 10 – 17

N° d' étape	Réglage d'oscilloscope V	Réglage d'oscilloscope H	Points d'essai	Points de réglage	Postes de controloe/ Specifications de r églage	Procédure de réglage
12	**AJUSTE DE LA MSB (AJUSTE DE LA DISTÓRSION DEL PUNTO DE INTERSECCIÓN DEL EJE CON CERO DEL CONVERTIDOR D/A)**					
	5mV/div	0.2msec/ div	JA1 terminal LINE OUTPUT (canal derecho)			● Entre en el modo de reproducción normal. ● Reproduzca la canción 20 (−60 dB, 1kHz, canales izquierdo y derecho) del disco de prueba (YEDS-7). Conecte el osciloscopio a el canal derecho del terminal LINE OUTPUT (JA1), y observe la forma de onde de salida de audio.
				VR9	Onda senoidal	● Ajuste VR9 MSB (canal derecho) hasta obtener una forma de onda senoidal en el osciloscopio.
			JA1 terminal LINE OUTPUT (canal izquierdo)	VR10	Onda senoidal	● Ajuste VR10 (canal izquierdo) de la misma forma.

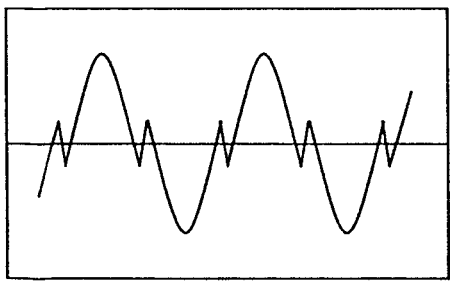
● **Forma de onda de la distorsion del punto de intersección del eje con cero**



OK



NG



NG

11. IC DESCRIPTIONS

11.1 PD0036

Terminal No.	Symbol	Terminal name	I/O	Terminal function
1	XIN	XIN	I	Crystal oscillation circuit input or external input
2	XOUT	XOUT	O	Crystal oscillation circuit output
3	MODE 1	MODE 1	I	16.9344 MHz in H mode, 8.4672 MHz in L mode
4	CKOUT	CLOCK OUT	O	Clock output by 16.9344 MHz when MODE 1 is H Clock output by when MODE 1 is L
5	LRCK	LR CLOCK	I	LR clock input
6	DATA	DATA	I	Serial data input (complement of 2, MSB fast)
7	BCLK	BIT CLOCK	I	Bit clock input for input data
8	Vss			GND terminal
9	MODE2	MODE2	I	Outputs 18bit data when MODE2 is H. Outputs 16bit data when MODE2 is L.
10	SHOUT	SHOUT	O	Sample hold pulse output
11	LDOUT	Lch DATA OUT	O	Lch data output (complement of 2, MSB fast)
12	RDOUT	Rch DATA OUT	O	Rch data output (complement of 2, MSB fast)
13	MODE3	MODE3	I	Outputs 16 or 18 bit data when MODE3 is H. Outputs 20 bit data when MODE3 is L.
14	WOUT	WORD CK OUT	O	Word clock outout
15	BOUT	BIT CK OUT	O	Bit clock output for LDOUT and RDOUT
16	V_{DD}			+5V, Power terminal

11.2 PD3124

PIN NO.	Symbol	Terminal name	I/O	Reset	Description
1	Vss	——	——	——	GND
2	XTAL	——	——	——	(OPEN)
3	EXTAL	——	——	——	Built-in clock circuit input
4	MP0	——	I	——	+5V
5	MP1	——	I	——	+5V
6	$\overline{RES}$	——	I	——	CPU reset input Reset | RUN
7	$\overline{STBY}$	——	I	——	CPU Stand by input Standby | RUN
8	$\overline{NMI}$	SCOR	I	——	Subcode sink input | Sink |
9	P20	FOK	I	——	Focus OK NG | OK
10	P21	$\overline{XLT}$	O	H	LSI control data execution pulse | Execution |
11	SCLK	CLK	O	H	Serial transmission clock
12	Rx	SUBQ	I	——	Subcode Q data input
13	Tx	DATA	O	H	Serial data output 0 1 2 3 4 5 6 7
14	P25	SENS	I	——	LSI operating status multimode input
15	P26	MUTE	O	H	Muting output (digital) OFF | ON
16	P27	GFS	I	——	Frame sink lock NG | LOCK
17	P50	$\overline{LDON}$	O	H	Laser diode ON/OFF ON | OFF
18	P51	$\overline{DEMP}$	O	H	De-emphasis ON/OFF ON | OFF
19	P52	$\overline{TEST}$	I	——	Test mode switching input TEST | NORMAL
20	P53	DIRC	O	H	Direction reverse output for track jump
21	P54	AMUTE	O	H	Muting output (analog) OFF | ON
22	P55	SYC1	I	——	Input terminal for deck synchronization (pull up when not used)
23	P56	SYC2	O	L	Output terminal for deck synchronization (open when not used)
24	P57	Non used	O	L	(Open)
25	P60	Non used	O	L	(Open)
26	P61	Non used	O	L	(Open)
27	P62	Non used	O	L	(Open)
28	P63	Non used	O	L	(Open)
29	P64	Non used	O	L	(Open)
30	P65	$\overline{OPEN}$	I	——	Open completed OPEN | NOT
31	P66	$\overline{CLMP}$	I	——	Clamp completed CLAMP | NOT
32	P67	Non used	O	L	(Open)

PIN NO.	Symbol	Terminal name	I/O	Reset	Description
33	Vcc	——	——	——	+5V
34	P47	$\overline{\text{ALAT}}$	O	H	Attenuation level latch pulse output ⌐Execution⌐
35	P46	ADAT	O	H	Attenuation level data 0 1 2 3 4 5 6 7
36	P45	ACLK	O	H	Attenuation level clock
37	P44	LIN	O	L	Disc tray loading _IN⌐
38	P43	LOUT	O	L	IN/OUT output BRAKE OUT
39	P42	$\overline{\text{BS2}\phi}$	I	——	Digital IC 20 bit/18 bit switching 20 18
40	P41	REMM	I	——	Remote control receive limitation control port P-263 P-293
41	P40	STS	I	——	Displayed data sending permission input Permit Forbid
42	Vss	——	——	——	GND
43	P17	Non used	O	L	(Open)
44	P16	Non used	O	L	(Open)
45	P15	Non used	O	L	(Open)
46	P14	$\overline{\text{DOFF}}$	O	L	Digital output status display LED ON OFF
47	P13	$\overline{\text{AOFF}}$	O	L	Analog output status display LED ON OFF
48	P12	SCK	O	H	Displayed data serial transmission clock
49	P11	SD	O	H	Displayed data serial output
50	P10	SRES	O	L	Key display microcomputer reset output RESET RUN
51	P37	$\overline{\text{RKS}}$	I	——	Remote control key strobe input ON OFF
52	P36	$\overline{\text{KS}}$	I	——	Main body key strobe input ON OFF
53	P35	KD5	I	——	Main body remote control key code input (MSB)
54	P34	KD4	I	——	Main body remote control key code input
55	P33	KD3	I	——	Main body remote control key code input
56	P32	KD2	I	——	Main body remote control key code input
57	P31	KD1	I	——	Main body remote control key code input
58	P30	KD0	I	——	Main body remote control key code input (LSB)
59	P74	HMEN	O	L	Digital filter IC mode clock
60	P73	HMDT	O	L	Digital filter IC mode data
61	P72	HMS3	O	L	Digital filter IC mode set control 3
62	P71	HMS2	O	L	Digital filter IC mode set control 2
63	P70	HMS1	O	L	Digital filter IC mode set control 1
64	E	——	O	——	(OPEN)

12. FOR KC, HEM, HB AND SD TYPES

12 – 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 PD-7100/KC, HEM, HB, SD and PD-7100-S/HEM types are the same as the PD-7100/KU type with the exception of the following sections.

Mark	Symbol & Description	Part No.						Remarks
		PD-7100/ KU type	PD-7100/ KC type	PD-7100/ HEM type	PD-7100 -S/HEM type	PD-7100/ HB type	PD-7100/ SD type	
⚠◉	Main assembly	PWZ1466	PWZ1492	PWZ1433	PWZ1433	PWZ1433	PWZ1487	
◉	Function board assembly *	PWZ1467	PWZ1493	PWZ1434	PWZ1434	PWZ1434	PWZ1488	
⚠	Primary board assembly *	Non supply	Non supply	Non supply	Non supply	Non supply	Non supply	
	Headphone assembly *	Non supply	Non supply	Non supply	Non supply	Non supply	Non supply	
⚠	Transformer board assembly *	Non supply	Non supply	Non supply	Non supply	Non supply	Non supply	
⚠	Strain relief	CM-22C	CM-22C	CM-22B	CM-22B	CM-22B	CM-22B	
⚠	AC Power cord	PDG1015	PDG1015	PDG1003	PDG1003	PDG1004	PDG1013	
⚠	T1 Power transformer (AC120V)	PTT1075	PTT1075	.....	.....	.....	.....	
⚠	T1 Power transformer (AC220V, 240V)	.....	.....	PTT1076	PTT1076	PTT1076	.....	
⚠	T1 Power transformer (AC110V, 120V-127V, 220V, 240V)	.....	.....	.....	.....	.....	PTT1077	
⚠	S2 Line voltage selector switch (AC110V, 120V-127V, 220V, 240V)	.....	.....	.....	.....	.....	PSB1002	
	FL filter	PAM1239	PAM1239	PAM1223	PAM1223	PAM1223	PAM1223	
	CD Packing case	PHG1236	PHG1245	PHG1245	PHG1246	PHG1245	PHG1245	
	Operating Instruction (German, Italian, Spanish, Dutch, Swedish, Portuguese)	.....	.....	PRF1014	PRF1014	.....	.....	
	Operating Instruction (Spanish)	.....	.....	.....	.....	.....	PRC1009	
	Button (POWER)	PAC1207	PAC1207	PAC1207	PAC1299	PAC1207	PAC1207	
	Knob (HEADPHONE)	PAC1208	PAC1208	PAC1208	PAC1271	PAC1208	PAC1208	
	Button C (SELECT)	PAC1253	PAC1253	PAC1253	PAC1286	PAC1253	PAC1253	
	Button C (OPEN/CLOSE)	PAC1256	PAC1256	PAC1256	PAC1288	PAC1256	PAC1256	
	Button (TIME)	PAC1296	PAC1296	PAC1296	PAC1300	PAC1296	PAC1296	
	Button E (SELECT)	PAC1298	PAC1298	PAC1298	PAC1301	PAC1298	PAC1298	
	Button (TRACK)	PAC1303	PAC1303	PAC1303	PAC1304	PAC1303	PAC1303	
	Function button assembly	PAD1038	PAD1038	PAD1038	PAD1039	PAD1038	PAD1038	
	Function panel	PNW1410	PNW1410	PNW1410	PNW1430	PNW1410	PNW1410	
	Plate	PNW1411	PNW1411	PNW1411	PNW1431	PNW1411	PNW1411	
	Collar	.....	.....	.....	PNW1435	.....	.....	
	Front panel assembly	PYY1074	PYY1074	PYY1074	PYY1075	PYY1074	PYY1074	
	Bonnet case	PYY1071	PYY1071	PYY1071	PYY1077	PYY1071	PYY1071	

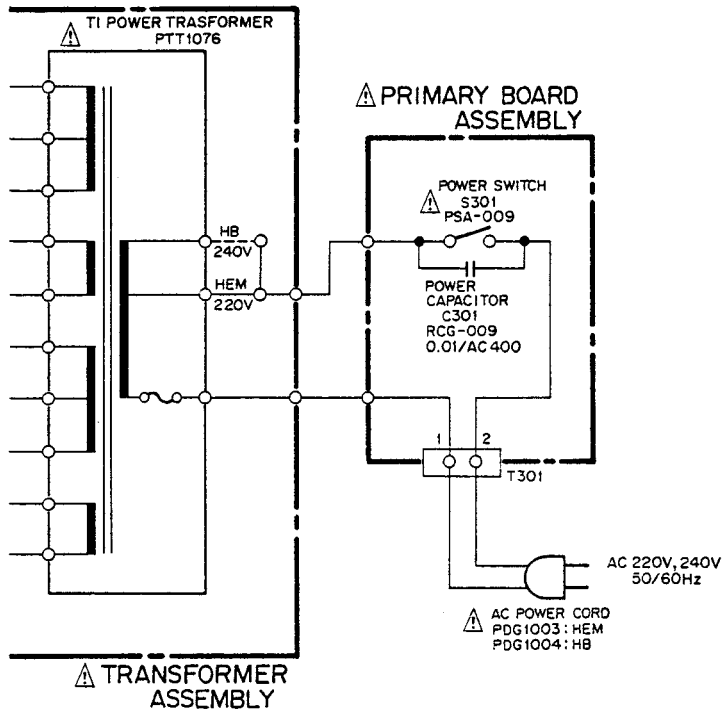
The assemblies marked with an asterisk "*" have identical components despite their different part Nos.

12−2. Main assembly

The Main assemblies (PWZ1492, PWZ1433, PWZ1487) are the same as the Main assembly (PWZ1466) with the exception of the following sections.

Mark	Symbol & Description	Part No.				Remarks
		PWZ1466 (PD-7100/KU)	PWZ1492 (PD-7100/KC)	PWZ1433 (PD-7100/ HEM,HB)	PWZ1487 (PD-7100/SD)	
	JA4 Socket (SUBCODE)	PKP1002 (PKP−038)	.....	.....	.....	
	C801	CKCYF103Z50	.....	.....	.....	

12−3. SCHEMATIC DIAGRAM FOR HEM AND HB TYPES

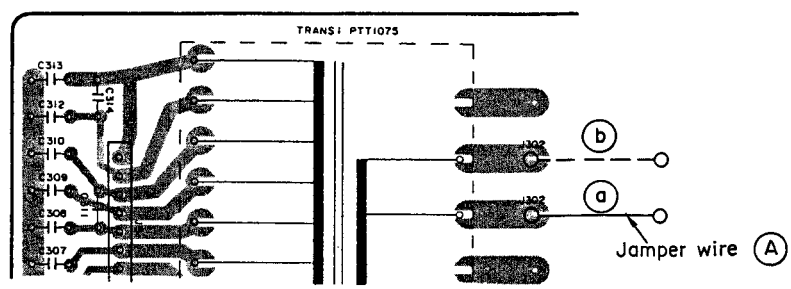


Line Voltage Selection

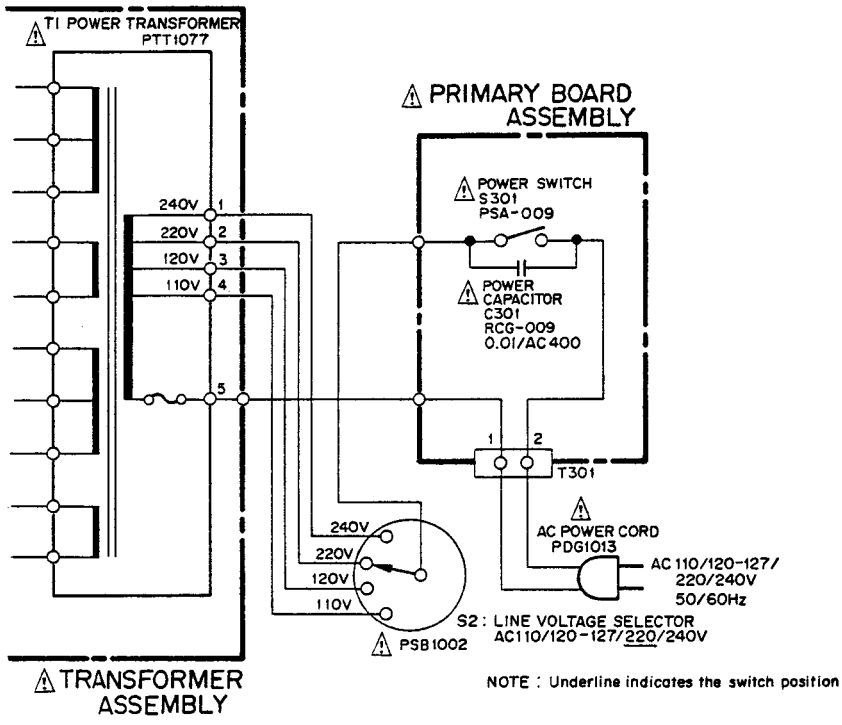
Line voltage can be changed with the following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Change the position of the jumper wire Ⓐ as follows.

Voltage	Jumper wire Ⓐ position
220 V	ⓐ
240 V	ⓑ



12–4. SCHEMATIC DIAGRAM FOR SD TYPES



NOTE : Underline indicates the switch position