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**MODEL 4501  
STEREO  
CASSETTE TAPE PLAYER  
mobile**

**Manufactured and Distributed by  
Hy-Gain de Puerto Rico, Inc.  
P.O. Box 68 State Hwy. 31, KM. 4.0  
Naguabo, Puerto Rico 00718**



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## Table of Contents

	<b>page</b>
CHAPTER 1—GENERAL INFORMATION	
Introduction .....	1
Warranty Service Department .....	1
How to Ship Returns .....	1
Purchase of Parts .....	2
Specifications .....	2
CHAPTER 2—THEORY OF OPERATION	
General .....	3
CHAPTER 3—ALIGNMENT PROCEDURES	
General .....	5
Mechanical Alignment Procedure .....	5
Head Azimuth Alignment .....	5
Head Selector Switch Alignment .....	5
Plunger Alignment .....	6
Tape Head Cleaning .....	7
Aligning Pack Guide Position .....	7
CHAPTER 4—DISASSEMBLY-REASSEMBLY INSTRUCTIONS	
Replacement of Motor .....	9
Disassembly and Reassembly of Eject Mechanism .....	9
Disassembly and Reassembly of the Pack Guide .....	10
Disassembly and Reassembly of the Power Board Assembly .....	10
CHAPTER 5—TROUBLESHOOTING	
Reference .....	13
Electronic Section .....	13
Mechanical Section .....	15
CHAPTER 6—CHARTS AND DRAWINGS	
P.C. Board Drawings .....	19
Exploded View, Main Unit .....	23
Exploded View, Mechanical Section .....	24
Parts Lists .....	25
Main Unit, Electrical Section .....	25
Main Unit, Mechanical Section .....	26
Mechanical Unit .....	27
Schematic Diagrams .....	31

## List of Illustrations

<b>Figure</b>		<b>page</b>
3-1	Head Azimuth Alignment .....	5
3-2	Head Selector Switch Alignment .....	6
3-3	Plunger Alignment .....	6
3-4	Tape Head Cleaning .....	7
3-5	Aligning Pack Guide Position .....	7
4-1	Replacement of Motor .....	9
4-2	Disassembly of Eject Mechanism .....	9
4-3	Disassembly of the Pack Guide .....	10
4-4	Disassembly of the Power Board Assembly .....	11
6-1	P.C. Board Drawing .....	19
6-2	Exploded View, Main Unit .....	23
6-3	Exploded View, Mechanical Section .....	24
6-4	Schematic Diagram .....	31

## CHAPTER 1—GENERAL INFORMATION

### Introduction

This service manual contains all the information needed to service and repair the Hy-Gain Model 4501 Stereo Cassette Tape Player. It includes an explanation of the theory of operation and alignment procedures. Revision, addendum, and errata sheets will be published as needed. Insert them as required in the manual.

The player is a compact in/under dash mounted mobile unit, completely solid state, and highly reliable with low power consumption. Use the unit with 12 VDC (nominal), negative ground *ONLY!*

### Warranty Service Department

For help with technical problems, for parts information, and information on local and factory repair facilities, contact the National Service Manager. When you write, include all pertinent information that may be helpful in solving the problem.

Address your letter to:

Hy-Gain Warranty Service Department  
4900 Superior Street  
Lincoln, Nebraska 68504  
ATTN: National Service Manager

The Warranty Service Department can repair any unit. Before you ship a unit, contact the National Service Manager. Often a problem is field solvable with a little extra help. This can save lost time and shipping costs. Limit factory returns to difficult problems.

### How to Ship Returns

To return a unit, get a return authorization first. This is important. You will only delay the handling of the unit if you ship without it. If you must ship immediately, telephone or telex the National Service Manager for expeditious service.

When you request return authorization, notification of completion of repairs may also be requested. The notification will include a copy of the bill. Paying the bill before the unit is returned can save the cost of a COD fee.

For warranty repair, prepare a letter in duplicate containing the following information (for out-of-warranty repair delete items 2 and 3):

1. your name and address
2. purchaser's name and address
3. proof of purchase
4. serial number
5. a complete description of the problem
6. the return authorization

Check the unit to see that all parts and screws are in place, and attach an envelope containing a copy of the letter directly to it so the information is not overlooked. Wrap the unit and envelope in heavy paper or put them in a plastic bag. If the original carton is not available, place the unit in a strong carton at least six inches larger in all three dimensions than the unit. Fill the carton equally around the unit with resilient packing material (shredded paper, excelsior, bubble pack, etc.). Seal it with gummed paper tape, tie it with a strong cord, and ship it by prepaid express, United Parcel Service, or insured parcel post to the address given previously. Mail the original of the letter in a second envelope to that same address.

It is important that the shipment be well-packed and fully insured. Damage claims must be settled between you and the carrier and this can delay repair and return of the unit.

All shipments must be PREPAID. We *do not* accept collect shipments. After the unit has been repaired, it will be returned COD unless the bill has been prepaid. Unclaimed or refused COD shipments will not be reshipped until payment is received in full. These items become the property of Hy-Gain 60 days after refusal and will be sold for payment of charges due.

**Units with unauthorized field modifications cannot be accepted for repair.**

**Purchase of Parts**

Parts can be purchased from any Hy-Gain Service Center or from the factory Warranty Service Department. When ordering, supply the following information:

1. unit model number
2. unit serial number
3. part description
4. part number

**Specifications**

Reproduction .....	4 track, 2 program 2 channel stereo cassette tape player with auto-reverse mechanism
Tape speed .....	Standard 1¾ inches/second
Wow and flutter .....	Less than 0.35% wrms
Fast forward and rewind time .....	Less than 90 seconds using C-60 cassettes
Output .....	3.5 watts rms per channel at 10% distortion 5.5 watts rms per channel maximum volume
Signal to noise ratio .....	More than 40 dB
Left-right cross talk .....	More than 30 dB
Adjacent cross talk .....	More than 40 dB
Reproduction frequency range .....	50 to 10,000Hz
Load impedance .....	4 ohms per channel
Power supply voltage .....	12VDC negative ground
Current consumption .....	Less than 2 amps, less than 4.5 amps at plunger operation
Semiconductors .....	4 ICs, 4 transistors, 3 diodes
Weight .....	3 lbs., 3 oz.
Dimensions (HWD) .....	5⅞" x 5½" x 1⅞"

## CHAPTER 2—THEORY OF OPERATION

Refer to the schematic diagram.

Power is applied to both the electronics section and the electromechanical section of the tape player when a cassette cartridge is inserted into the cartridge receiver.

The audio signal is picked off at channel 1 and 2 tape heads. The signal from channel 1 goes through switch S1-1 to pin 2 of IC101 where it is amplified. It leaves IC101 at pin 3 and goes to pin 6 of IC102 where it is again amplified. The signal then goes out pin 10 to the left channel speaker. The signal from channel 2 goes through S1-2 to pin 2 of IC102, is amplified and goes out pin 3 to pin 6 of IC202. It is again amplified and goes out pin 10 to the right channel speaker.

When the end of the tape is reached, or switch 2 (program selector) is depressed, S1-1, S1-2, S1-3, and S1-4 are shifted to their other positions. In this state the signal path of channel 4 is the same as channel 1 to the left speaker, and channel 3 is the same as channel 2 to the right speaker. Tape drive reversal is accomplished by the shifting of pulleys in the drive mechanism.

If tape projection into the drive mechanism occurs, lack of tape tension on the drive hubs is automatically detected by the detector at S1-4 and the drive mechanism is reversed. When the tape is running smoothly, the detector provides a positive pulse train to the base of Q1, which controls the ramp input at the base of Q2. This ramp voltage will not get high enough to turn off Q2, if the tape drive is running smoothly. At the end of the tape, or whenever the drive mechanism is stalled, this ramp voltage will continue to build up because there is no signal from the detector. The built-up ramp voltage will turn off Q2 allowing Q3 and Q4 to turn on. The plunger will operate and automatically reverse play.

## CHAPTER 3—ALIGNMENT PROCEDURES

### General

These procedures must be followed to align the Hy-Gain 4501 cassette tape player. Alignment should not be undertaken unless the technician has adequate equipment and tools, and a full understanding of the tape player.

The preamp-amplifier does not require alignment. See troubleshooting charts.

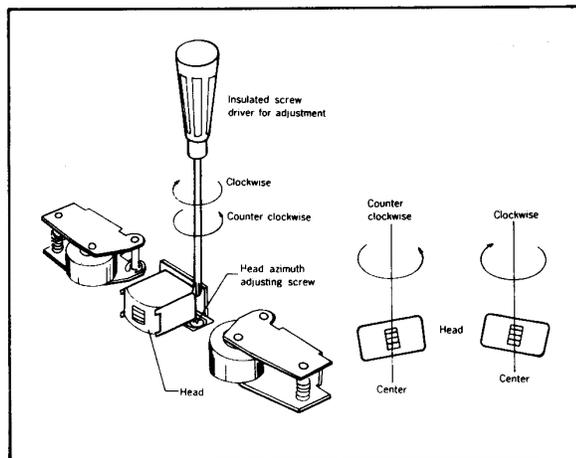
### Mechanical Alignment Procedure

#### **Head Azimuth Alignment**

Refer to Figure 3-1.

**NOTE:** A non-ferrous, narrow shank phillips head screwdriver must be used for tape head alignment.

If problems in quality of sound or cross talk occur, the head azimuth should be checked for alignment.



**Figure 3-1**

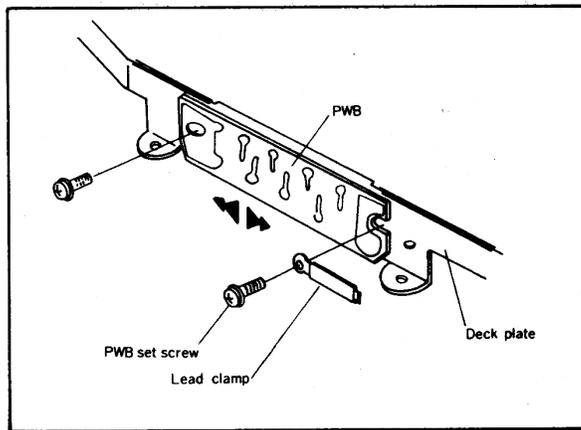
1. Insert a 333Hz test tape in the tape player. Set the volume control to maximum and balance the outputs so that approximately the same volume is heard in both speakers.
2. Insert a 6.3kHz test tape and adjust the tape head by turning the head azimuth adjusting screw so that the output level is close to maximum and the same in both forward and reverse directions.

#### **Head Selector Switch Alignment**

Refer to Figure 3-2.

If problems of cross talk (no sound on one channel) or indicator lamps light simultaneously, check the switch alignment.

1. Loosen the screws of the P.C. board on which switch S-1 is mounted.
2. Shift the P.C. board to the left or right.
3. After completing the adjustment, tighten the screws and fix them in place with a small amount of lacquer.



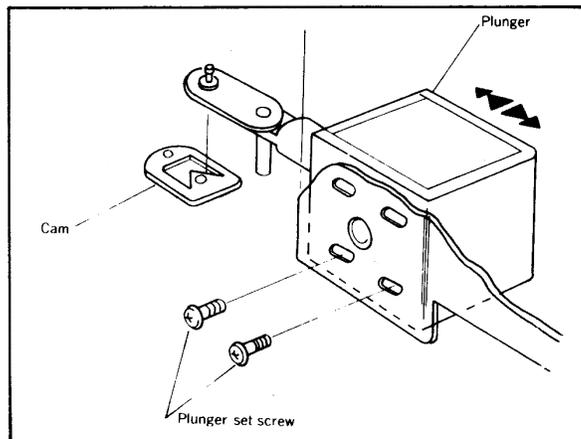
**Figure 3-2**

### ***Plunger Alignment***

Refer to Figure 3-3.

The indication is that no channel switching occurs.

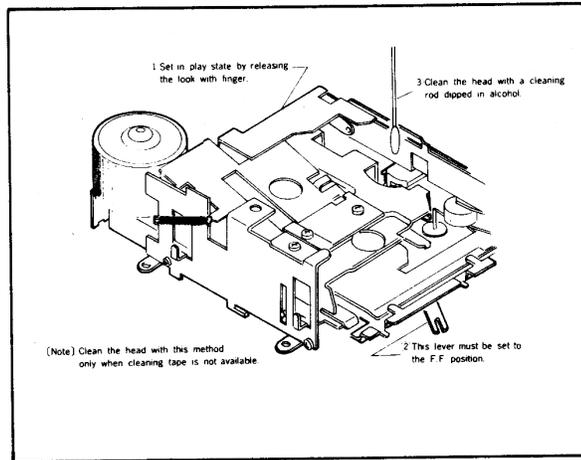
1. Loosen the two plunger mounting screws.
2. Adjust the plunger (either forward or backward).
3. Tighten screws and fix in place with a small amount of lacquer



**Figure 3-3**

### **Tape Head Cleaning**

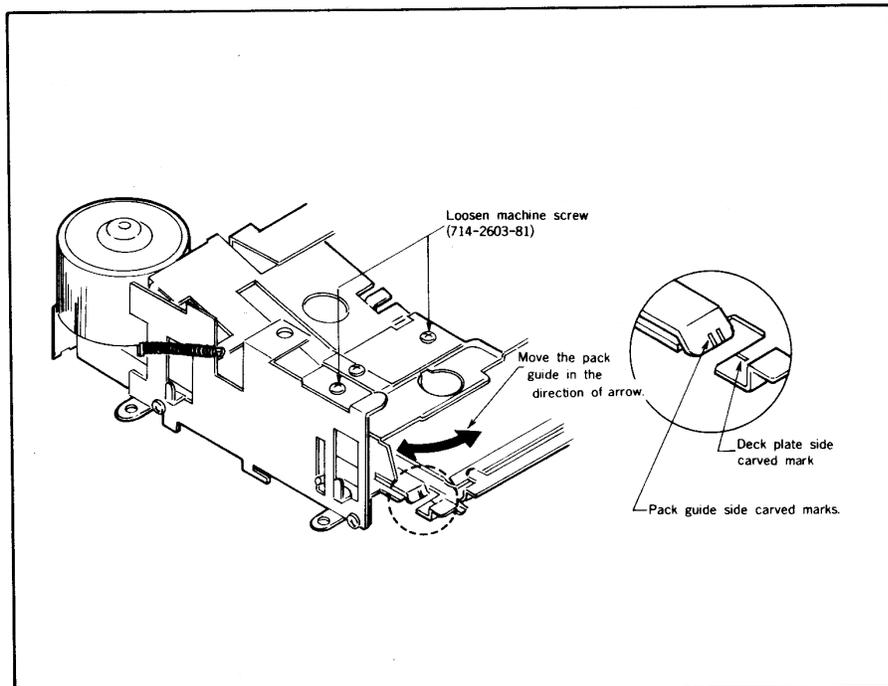
Refer to Figure 3-4.



**Figure 3-4**

### **Aligning Pack Guide Position**

Refer to Figure 3-5.



**Figure 3-5**

## CHAPTER 4—DISASSEMBLY-REASSEMBLY INSTRUCTIONS

### Replacement of Motor

Refer to figure 4-1.

1. Disconnect the motor power cord using a soldering iron.
2. Remove the two motor mounting screws.
3. Replace the motor assembly.

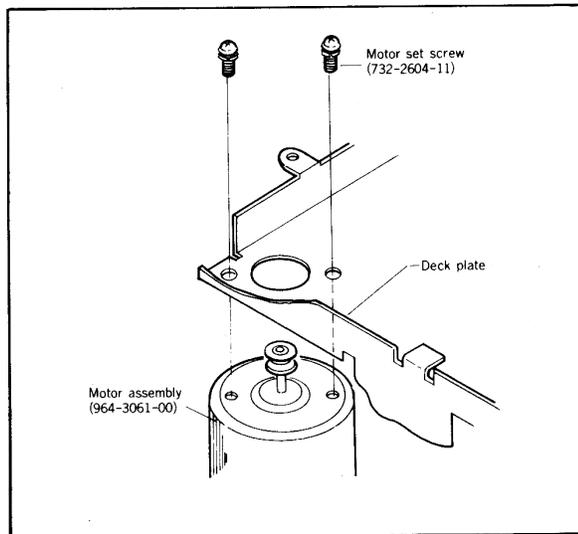


Figure 4-1

### Disassembly and Reassembly of Eject Mechanism

Refer to figure 4-2.

1. Push the slide plate to the rear and set the mechanism to the PLAY position.

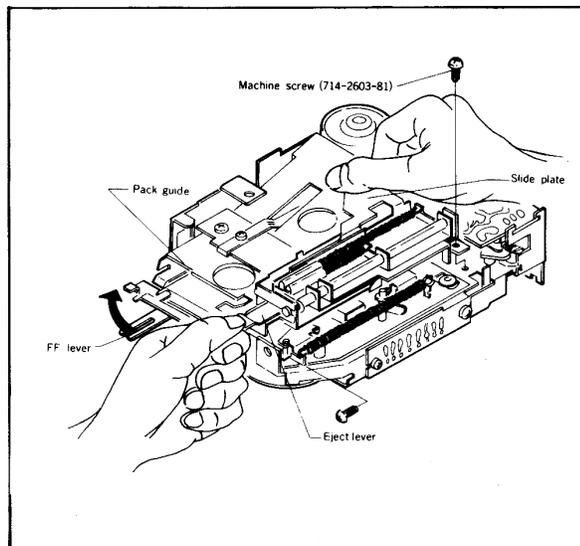


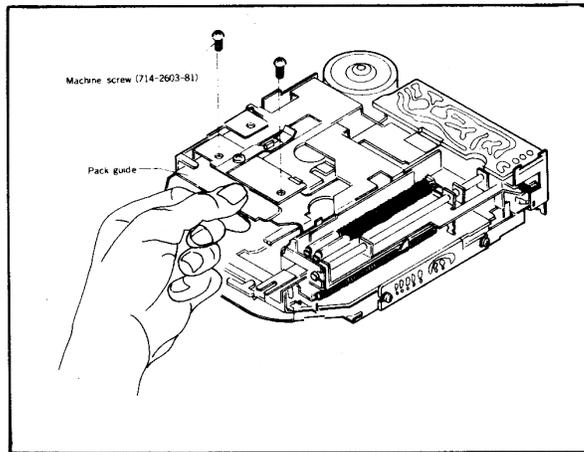
Figure 4-2

2. Set the FF lever to the FF (or REW) position.
3. Remove the two machine screws.
4. Lift the entire eject mechanism up while pushing the slide plate to the rear and remove it as an assembly.
5. To reassemble the eject mechanism, set the mechanism to the position in steps 1 and 2.
6. With the slide plate pushed to the rear, mount the eject mechanism as an assembly.
7. Replace the two machine screws.

**Disassembly and Reassembly of the Pack Guide**

Refer to figure 4-3.

1. Set the mechanism to the EJECT position.
2. Remove the two machine screws.
3. Pull the pack guide assembly out horizontally, being careful not to come in contact with the head or capstan.
4. To reassemble the pack guide, perform the preceding steps in reverse order.

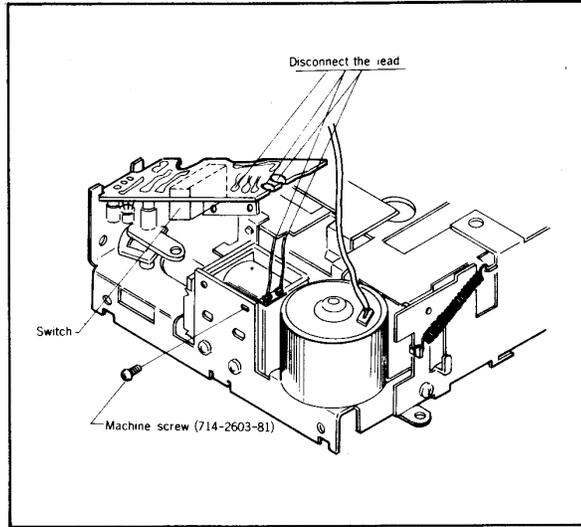


**Figure 4-3**

**Disassembly and Reassembly of the Power Board Assembly**

Refer to figure 4-4.

1. Desolder the motor lead wire and plunger lead wire from the power board.
2. Remove the power board mounting screw.
3. Carefully lift up the motor side of the power board assembly and remove.
4. To reassemble, perform the preceding steps in reverse order.



**Figure 4-4**

## CHAPTER 5—TROUBLESHOOTING

Refer to the following troubleshooting charts for typical problems that may occur in the cassette tape player, Model 4501.

### Electronic Section

Symptom	Place and cause of fault	Corrective action
No sound	Power supply shorts	Turn on power Check parts C303, C304, C305 for shorts.
No 14V at CP1	Fuse blown Power cord connection faulty Choke open Switch open Tape mechanism faulty	Replace fuse Repair or replace connector Replace L1 Replace Switch 1 See mechanical troubleshooting charts
No 8.2V at CP2	R303 open R302 shorted C301, or C302 shorted	Replace R303 Replace R302 Replace C301, or C302
No 7V at CP3	R301 open C301 shorted	Replace R301 Replace C301
No sound at output	Insert an audio signal of 40mv p/p with a DC decoupling capacitor of 10uF at pin 6 of IC102 (IC202). If the inserted signal causes a sound at the output: Check VR2 for short or open leads Preamp section faulty Speaker connection Speaker lead contact faulty Speaker voice coil open	Replace VR2  See Preamp troubleshooting section  Repair Replace speaker
Wrong voltages at IC pins	IC faulty Surrounding parts faulty	Replace IC Replace necessary parts
Preamp section. Disconnect the head lead from the pattern	Insert an audio signal of 20 mv p/p with a DC decoupling capacitor of 10uf at pin 2 of IC101 (IC201). If the inserted signal causes a sound at the output: Head is open	Replace tape head
Wrong voltages at IC pins	IC faulty Surrounding parts faulty	Replace IC Replace necessary parts

**Electronic Section (cont'd)**

Symptom	Place and cause of fault	Corrective action
No sound at output after preamp section check	Insert an audio signal of 40mv p/p with a DC decoupling capacitor of 10uF at pin 6 of IC102 (IC202). If the inserted signal causes a sound at the output: VR1 soldering is faulty or its leads are open  Recheck the output circuit section and VR2	Repair or replace VR1
Sound level is low	CP2 voltage low. R303 resistance high R302 resistance low Leak due to change in C302	Replace R303 Replace R302 Replace C302
	CP3 voltage low. R301 resistance high Leak due to change in C301	Replace R301 Replace C301
Is the channel with low sound interchanged?	Interchange the Left channel and Right channel at the input of the output circuit.	
No change	R105, R205 resistance high	Replace R105, R205
Sound changes	Check preamp section Adjust VR1  C104, C204 capacity down due to deterioration	VR1 soldering joints no good resolder Replace C104, C2104
Sound distorted	C110, C210, C111, C211, C113, C213 deteriorated, reverse polarity  IC faulty or deteriorated	Replace as necessary  Replace
Oscillates	Leads improperly arranged  Oscillation preventing capacitor faulty C112, C212, C113, C213, C114, C214, C103, C203, open or capacity down	Check head lead Check ground leads Check grounding screws for tightness  Replace as necessary
Bad cross talk	Grounding screw loose Grounding leads open	Tighten Resolder

**Electronic Section (cont'd)**

Symptom	Place and cause of fault	Corrective action
Loud noise	Coupling capacitor faulty C102, C202, C106, C206, C108, C208 capacity down  Motor circuit Motor faulty C305 capacity down	Replace as necessary  Replace motor Replace C305
	SERVICE NOTE: Power IC and heat sink are mounted with a clamp. Since it is difficult to use this clamp once it has been removed, remount the IC and heat sink using a taptight screw instead of the clamp.	

**Mechanical Section**

Symptom	Place and cause of fault	Corrective action
No Sound	1. Head azimuth adjustment faulty 2. Head dirty 3. Head scratched	1. Adjust (refer to fig. 3-1) 2. Clean head (refer to fig. 3-4 when cleaning tape not used). 3. Replace head (refer to fig. 4-2, dismantling eject mechanism).
Tape not wound	1. Power switch faulty 2. Motor faulty 3. Belt broken	1. Replace power switch 2. Replace motor 3. Replace belt
Auto reverse occurs due to tape projection	1. Reel base faulty 2. Idler pressure faulty 3. Cassette tape faulty	1. Measure the reel base winding torque and replace when 45g-cm or less. 2. Confirm the idler switching mechanism. Correct when the idler plate catches. Clean when there is oil on the rubber surface. Correct when the spring is disconnected. 3. If the winding is tight, turn with a lead pencil until the turning is smooth.
Speed abnormally slow	Belt off drive mechanism	Hook at normal position.

**Mechanical Section (cont'd)**

<b>Symptom</b>	<b>Place and cause of fault</b>	<b>Corrective action</b>
Speed faulty	Motor faulty	Replace motor
Wow occurs	<ol style="list-style-type: none"> <li>1. Capstan dirty</li> <li>2. Pinch roller faulty</li> <li>3. Reel base faulty (when torque variation is large)</li> <li>4. Belt dirty, twisted</li> <li>5. Motor faulty</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean</li> <li>2. Clean or replace</li> <li>3. Replace</li> <li>4. Clean, correct twisting, replace</li> <li>5. Replace motor assemble</li> </ol>
Abnormal reverse during playback	<ol style="list-style-type: none"> <li>1. Detector faulty</li> <li>2. Detector drum faulty</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Replace</li> </ol>
FF REW faulty	<ol style="list-style-type: none"> <li>1. U-type spring permanent strain</li> <li>2. Spring permanent strain</li> <li>3. FF idler dirty</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace</li> <li>2. Replace</li> <li>3. Clean</li> </ol>
Program not switching	<ol style="list-style-type: none"> <li>1. Plunger faulty</li> <li>2. Switching mechanism faulty</li> <li>3. Plunger position adjustment faulty</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace plunger</li> <li>2. Check related parts: Spring, Cam plate assembly, Cam assembly, Change plate, Plate spring</li> <li>3. Adjust (refer to fig. 3-3)</li> </ol>
Pack not perfectly dropped	Pack guide position	Adjust (refer to fig. 3-5)
Running indicator lamps simultaneously lighted (cross talk generated)	<ol style="list-style-type: none"> <li>1. Switch position off</li> <li>2. Switch faulty</li> <li>3. Change plate faulty</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust (refer to fig. 3-2)</li> <li>2. Replace</li> <li>3. Replace</li> </ol>

**CHAPTER 6—CHARTS AND DRAWINGS**

**P.C. Board Drawings**





Part List 

# EXPLODED VIEW

## Main Unit (Electrical and Mechanical)

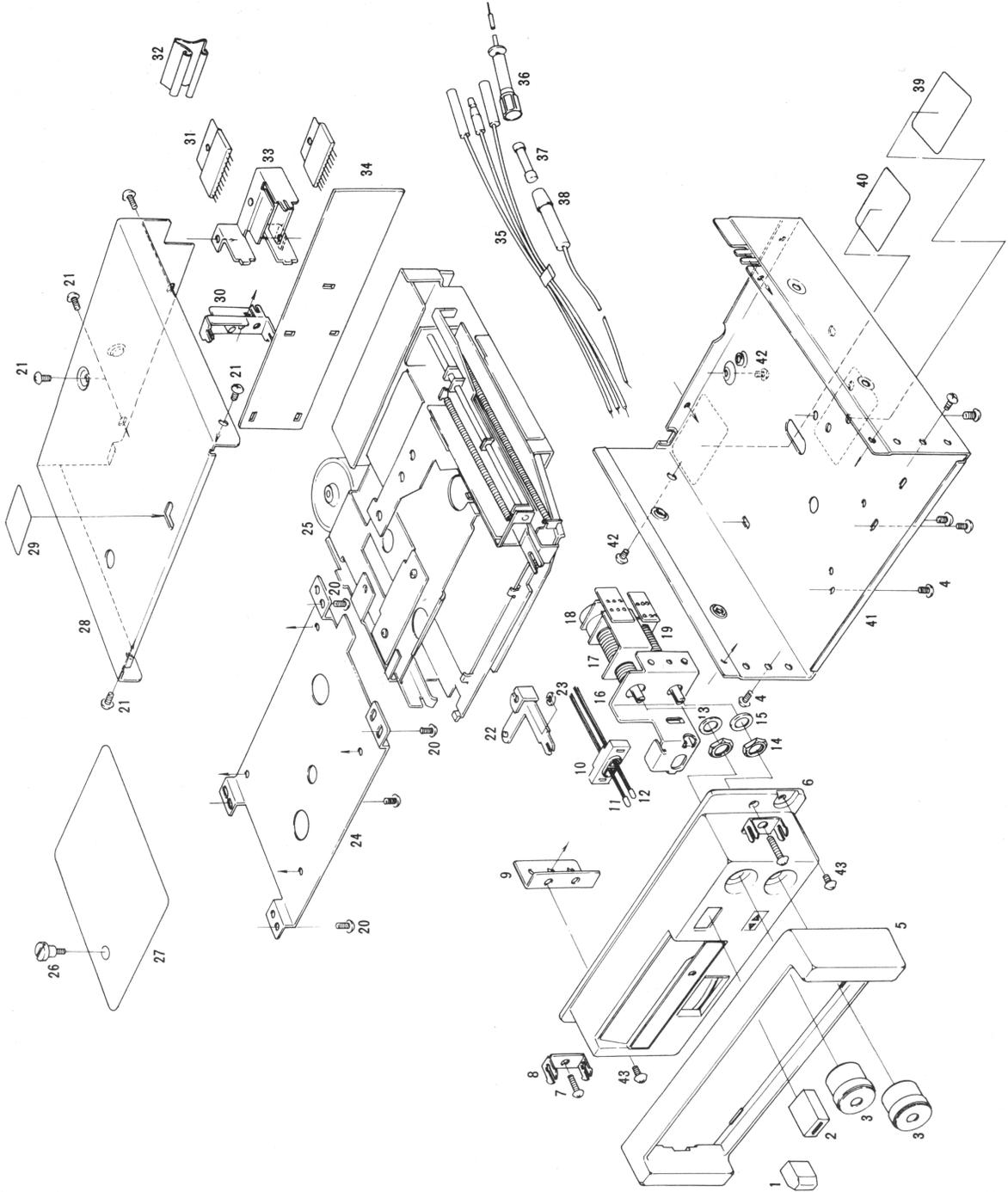
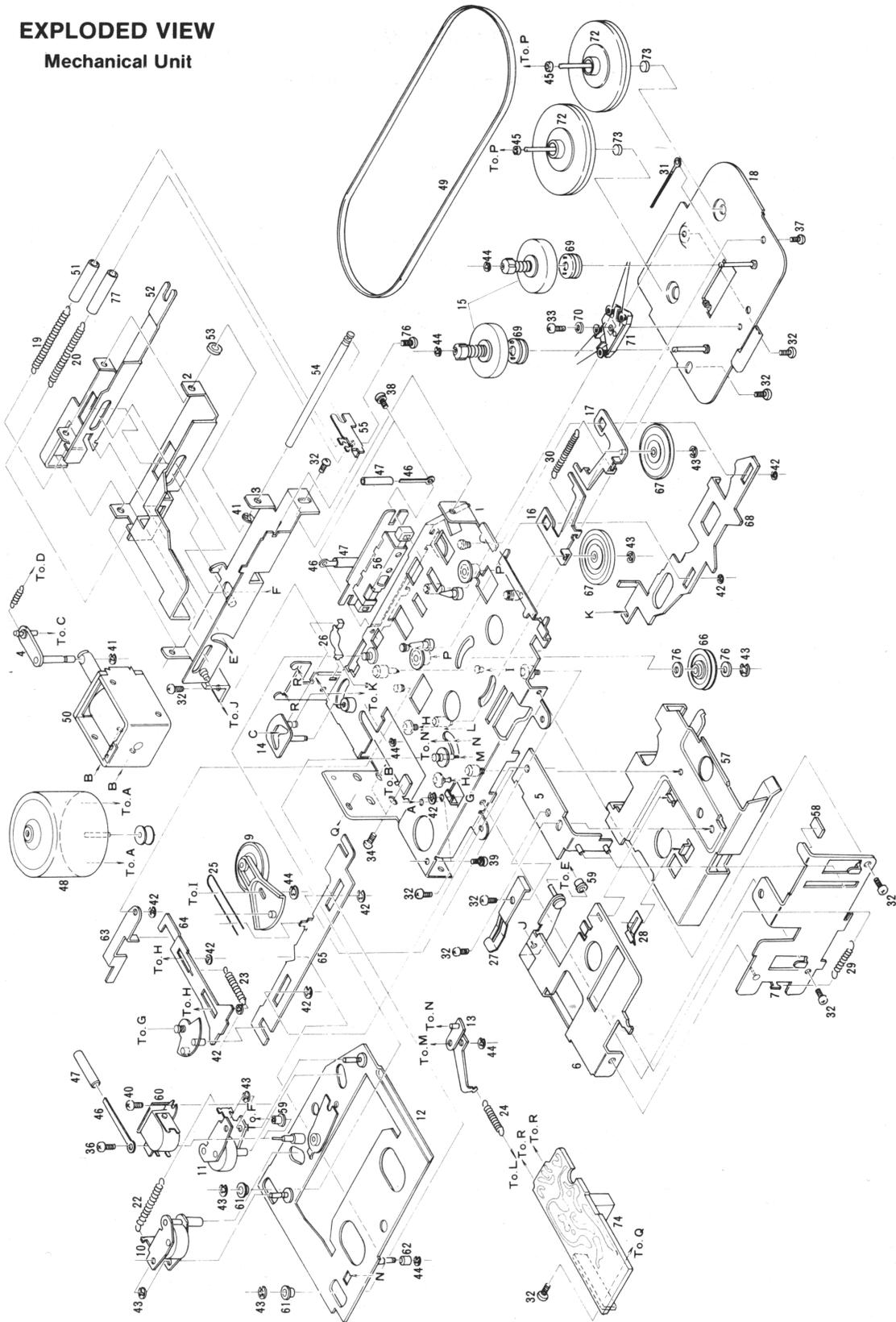


Figure 6-2

**EXPLODED VIEW**  
**Mechanical Unit**



**Figure 6-3**

## Main Unit, Electrical Section

Reference Designator	Description	Part No.
C1	2.2uf, 50V, electrolytic .....	180-2254-62
C2	33uF, 16V electrolytic .....	180-2264-62
C3	0.039uf, 50V, polyester .....	141-3932-14
C102	4.7uf, 16V, electrolytic .....	180-4754-32
C103	33pF, 50V, ceramic disc .....	153-3302-13
C104	47uf, 10V, electrolytic .....	180-4764-22
C105	0.01 uF, 50V, polyester .....	141-1032-12
C106	2.2uf, 50V, electrolytic .....	180-2254-62
C107	0.039uf, 50V, polyester .....	141-3932-14
C108	1uf, 50V, electrolytic .....	180-1054-62
C109	0.0015uf, 50V, polyester .....	141-1522-12
C110	47uf, 10V, electrolytic .....	180-4764-22
C111	100uf, 10V, electrolytic .....	180-1074-22
C112	33pF, 50V, ceramic disc .....	153-3302-13
C113	56pF, 50V, ceramic disc .....	153-5602-13
C114	0.1uf, 12V, special ceramic .....	043-0039-00
C115	47uf, 10V, electrolytic .....	180-4764-22
C116	330uf, 10V, electrolytic .....	180-3374-22
C202	4.7uf, 16V, electrolytic .....	180-4754-32
C203	33pF, 50V, ceramic disc .....	153-3302-13
C204	47uf, 10V, electrolytic .....	180-4764-22
C205	0.01 uf, 50V, polyester .....	141-1032-12
C206	2.2uf, 50V, electrolytic .....	180-2254-62
C207	0.039uf, 50V, polyester .....	141-3932-14
C208	1uf, 50V, electrolytic .....	180-1054-62
C209	0.0015uF, 50V, polyester .....	141-1522-12
C210	47uf, 10V, electrolytic .....	180-4764-22
C211	100uf, 10V, electrolytic .....	180-1074-22
C212	33pF, 50V, ceramic disc .....	153-3302-13
C213	56pF, 50V, ceramic disc .....	153-5602-13
C214	0.1uf, 12V, special ceramic .....	043-0039-00
C215	47uf, 10V, electrolytic .....	180-4764-22
C216	330uf, 10V, electrolytic .....	180-3374-22
C301	33uf, 10V, electrolytic .....	180-3364-22
C302	220uf, 16V, electrolytic .....	180-2274-32
C303	0.1uf, 50V, polyester .....	141-1043-15
C304	470uf, 16V, electrolytic .....	180-4774-32
C305	330uf, 16V, electrolytic .....	180-3374-32
D1	1S1588, silicon .....	001-0112-00
D2	1S1588, silicon .....	001-112-00
D3	1N4004, germanium .....	001-0153-00
IC101	TA-7120P .....	051-0020-00-04
IC102	TA-7205P .....	051-0055-00-04
IC201	TA-7120P .....	051-0020-00-04
IC202	TA-7205P .....	051-0055-00-04
Q1	2SC372 .....	102-0372-15
Q2	2SA495Y .....	100-0495-25
Q3	2SA562Y .....	100-0562-25
Q4	2SD235LBY .....	103-0235-85
R1	18k, 5%, 1/4w, carbon film .....	111-1831-32
R2	33k, 5%, 1/4w carbon film .....	111-3331-32
R3	56k, 5%, 1/4w carbon film .....	111-5631-32
R4	47k, 5%, 1/4w carbon film .....	111-4731-32
R5	3.9k, 5%, 1/4w carbon film .....	111-3921-32
R6	1.2k, 5%, 1/4w carbon film .....	111-1221-32
R7	1k, 5%, 1/4w, carbon film .....	111-1011-32
R8	33, 5%, 1w, carbon film .....	115-3311-51

Reference Designator	Description	Part No.
R101	68k, 5%, 1/4w carbon film	111-6831-32
R102	15k, 5%, 1/4w carbon film	111-1531-32
R103	220k, 5%, 1/4w carbon film	111-2241-32
R104	5.6k, 5%, 1/4w carbon film	111-5621-32
R105	120, 5%, 1/4w carbon film	111-1211-32
R106	27k, 5%, 1/4w carbon film	111-2731-32
R201	68k, 5%, 1/4w carbon film	111-6831-32
R202	15k, 5%, 1/4w carbon film	111-1531-32
R203	220k, 5%, 1/4w carbon film	111-2241-32
R204	5.6k, 5%, 1/4w carbon film	111-5621-32
R205	120, 5%, 1/4w carbon film	111-1211-32
R206	27k, 5%, 1/4w carbon film	111-2731-32
R301	4.7k, 5%, 1/4w carbon film	111-4721-32
R302	2.2k, 5%, 1/4w carbon film	111-2221-32
R303	1.2k, 5%, 1/4w carbon film	111-1221-32
R304	150, 5%, 1w, carbon film	115-1511-51
R305	2.2, 5%, 1w, carbon film	115-2291-52
Rx101	3.3k, 5%, 1/4w carbon film	111-3321-32
Rx102	10k, 5%, 1/4w carbon film	111-1031-32
Rx201	3.3k, 5%, 1/4w carbon film	111-3321-32
Rx202	10k, 5%, 1/4w carbon film	111-1031-32
VR1	20k, variable resistor	012-0012A
VR2	50-50-100k ganged variable resistor	012-0013A
	tape player head	011-0241-00

### Main Unit, Mechanical Section

Reference Designator	Description	Part No.
1	knob	380-3605-00
2	knob	380-3604-00
3	knob	380-3603-01
4	machine screw (M3x4)	714-3004-89
5	escutcheon	370-3022-00
6	escutcheon assembly	940-0066A
7	machine screw	714-4014-11
8	pressed part	330-4868-03
9	pressed part	330-5977-00
10	rubber part	345-2741-00
11	pilot lamp	017-0314-04
12	pilot lamp	017-0314-10
13	special washer	745-0485-00
14	special washer	722-0282-00
15	special washer	745-0561-00
16	pressed part	330-5978-01
17	paper part	347-0616-01
18	see VR2, main unit, electrical section	
19	see VR1, main unit, electrical section	
20	sems screw (M3x6)	732-3006-11
21	tap tight (M3x5)	731-3005-89
22	pressed part	330-5979-00
23	special washer	746-0668-00
24	pressed part	330-5973-01
25	tape mechanism	930-0443-00
26	special screw	716-0308-00

Reference Designator	Description	Part No.
27	guide label .....	285-0674-00
28	upper case .....	310-0876-01
29	paper part .....	347-0517-00
30	filter assembly .....	944-0471-00
31	see IC's, main unit electrical section	
32	clamp .....	321-0792-00
33	heat sink .....	313-0961-00
34	pwb .....	09904635-01
35	speaker lead .....	851-2057-05
36	A-lead .....	850-1844-01
37	fuse (5A) .....	120-0050-00
38	A-lead .....	850-1822-00
39	set plate .....	286-3678-00
40	guide label .....	285-0656-00
41	lower case .....	311-0901-01
42	machine screw (M3x5) .....	714-3005-89
43	tap tight (M3x6) .....	731-3006-89

### Mechanical Unit

Reference Designator	Description	Part No.
1	deck plate assembly .....	960-3027-00
2	slide plate assembly .....	960-3031-00
3	frame assembly .....	960-3030-00
4	camplate assembly .....	960-3037-00
5	guide plate assembly .....	960-3029-00
6	guide arm assembly .....	960-3043-00
7	side panel assembly .....	960-3042-00
8	off plate C assembly .....	960-3045-00
9	FF idler assembly .....	960-3046-00
10	roller B assembly .....	960-3035-00
11	roller A assembly .....	960-3034-00
12	head plate assembly .....	960-3032-00
13	arm assembly .....	960-3044-00
14	cam assembly .....	960-3038-00
15	reel base assembly .....	960-3036-00
16	idler plate B assembly .....	960-3041-00
17	idler plate A assembly .....	960-3040-00
18	bottom plate assembly .....	960-3039-00
19	spring .....	750-1794-00
20	spring .....	750-1793-00
21	spring .....	750-1819-00
22	spring .....	750-1795-00
23	spring .....	750-1799-00
24	spring .....	750-1797-00
25	spring .....	750-1810-00
26	plate spring .....	630-0931-00
27	plate spring B .....	630-1001-00
28	plate spring A .....	630-1000-00
29	spring .....	750-1798-00
30	spring .....	750-1796-00
31	spring .....	750-1811-00
32	machine screw (M2.6x3) .....	714-2603-81
33	machine screw (M2.6x5) .....	714-2605-81
34	machine screw (M3x4) .....	714-3004-81
35	machine screw (M2.6x4) .....	714-2604-81

**Reference  
Designator**

**Description**

**Part No.**

36	machine screw (M2x4)	714-2004-81
37	machine screw (M2.6 x 5)	714-2605-81
38	sems screw (M2.6x5)	732-2605-11
39	sems screw (M2.6x4)	732-2604-11
40	special screw	716-0286-00
41	E-ring	743-3000-10
42	E-ring	743-2500-10
43	E-ring	743-2000-10
44	E-ring	743-1500-10
45	special washer	746-0624-00
46	pressed part	820-4020-02
47	vinyl tube	820-4020-02
48	motor assembly	960-3061-00
49	belt	602-0041-00
50	plunger	015-0216-00
51	vinyl tube	820-4020-04
52	eject lever	345-2651-00
53	rubber part	345-2651-00
54	eject shaft	632-0716-00
55	hook plate	630-1019-00
56	switch assembly	013-0018A
57	pack guide	606-0062-00
58	spacer	340-0398-00
59	guide roller	631-0234-00
60	see head, main unit, electrical section	
61	roller	610-0067-00
62	FF roller	631-0231-00
63	off plate B	630-1021-00
64	off plate A	630-1020-00
65	FF plate	630-1018-00
66	tension roller	631-0227-00
67	idler	631-0232-00
68	change plate	630-1017-00
69	detector drum	631-0224-00
70	special washer	746-0670-00
71	detector	631-0236-00
72	flywheel	611-0046-00
73	thrust plate	631-0222-00
74	pwb screw	990-0244-00
75	special screw	716-0302-00
76	special washer	746-0625-00
77	vinyl tube	820-3030-04

**Schematic Diagram**

**HY-GAIN DE PUERTO RICO, INC.**

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