INTRODUCTION

This service manual provides a variety of service information. It contains the mechanical structure of the CD-ROM Drive together with mechanical adjustments and the electronic circuits in schematic

form. This CD-ROM Drive was manufactured and assembled under our strict quality control standards and meets or exceeds industry specifications and standards.

GENERAL FEATURE

- · Enhanced IDE interface
- · Internal 5.25 inch, halfheight CD-ROM Drive
- Fast 75ms Average Access Time
- Max 4,800KB/sec Sustained Transfer rate
- Photo-CD Multisession Disc Spec compliant
- · Multimedia MPC-3 Spec compliant
- Power Tray Loading/Ejection Mechanism
- 3 Way Eject support (Software, O/C Button, Emergency Eject)
- · Closed Enclosure
- · Built-in ATAPI Interface Controller

- · Software Volume Control
- Easy CD-Audio Play Front panel controls
- 8 Times Digital Filter for CD Audio
- Front panel Volume Control for Headphone Output
- Built-in MODE-1 ECC/EDC
- MTBF 125,000h POH (at 10% Utilization)
- PIO Mode 4 & Multi DMA Mode 2 support
- · Horizontal or Vertical Mounting
- · Digital audio output connector
- · Digital audio through ATAPI Interface
- Spin-down Mode for energy saving

SPECIFICATIONS

1. SUPPORTED SYSTEM

• IBM Compatible 486SX or Above (With PIO mode 4 recommended)

2. SUPPORTED OS

- · MS-DOS Version 3.1 or Higher
- OS/2 Warp (Ver 3.0)
- Windows 95

- · Solaris Ver 2.4 or Higher
- · Linux slackware Ver 2.3
- · Windows NT 4.0 or later

3. GENERAL PERFORMANCE

Data Transfer Rate	Sustained Data Transfer Rate
	14 Times Speed (Inner side): 2,100 kbytes/sec
•Data Buffer Canacity	32 Times Speed(max., Outer side): 4,800 kbytes/sec128 kbytes
•Access Time	Random Access Time : 75 ms
4. POWER REQUIREMENTS	
•Voltage	+5V DC ±5%
	+12V DC ±5%
•Ripple	+5V : Less than 90mVp-p
•Current	+12V : Less than 90mVp-p +5V : 1.2A (Maximum)
Odifort	+12V: 0.7A (Maximum)
	,
5. AUDIO PERFORMANCE	
•Frequency Response	20Hz~20KHz(±3dB)
•S/N Ratio (IHF-A+20 KHz LPF)	85 dB (Typical at 1 KHz 0dB)
	80 dB (Limit at 1 KHz 0dB)
•T.H.D. (IHF-A+20 KHz LPF)	
Channel Congretion (ILIE A . 00 KI In I DE)	0.15% (Limit at 1 KHz 0dB)
•Channel Separation (IHF-A+20 KHZ LPF)	75 dB(Typical) 70 dB(Limit)
•Output Voltage (1kHz 0dB) 47KO Load	0.6Vrms ± 10%
•Headphone Level (1kHz 0dB) 33Ω Load	

LOCATION OF CUSTOMER CONTROLS

FRONT

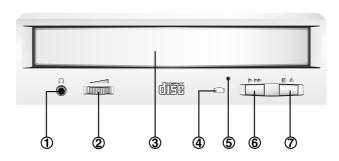


Figure 1. Front View

FRONT VIEW

(1) Headphone Jack

3.5mm jack for monitoring the audio signal from audio CDs

(2) Headphone Volume Control

Adjusts the headphone sound level.

(3) Disc Drawer

Accepts a CD-ROM disc on its tray.

(4) Busy Indicator

The Busy Indicator lights during initialization and dataread operations.

(5) Emergency Eject Hole

Insert a paper clip here to eject the drawer manually or when there is no power.

(6) Play/Skip Button

When an Audio CD is in the Disc Drawer, pressing this button will start playing audio CDs from the first track. If an audio CD is playing, pressing this button will skip to the next track.

(7) Open/Close/Stop Button

This button is pressed to open or close the CD tray. The button works only when power is applied to the drive.

If an audio CD is playing, pressing this button will stop it, and pressing it again will open the tray.

REAR

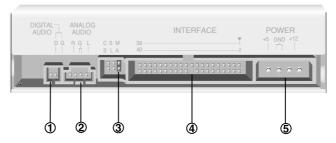


Figure 2. Back View

BACK VIEW

(1) Digital Audio Output Connector

This is a digital audio output connector or Video CD output connector.

You can connect this to the digital audio system or Video CD Board.

(2) Analog Audio Output Connector

The Audio Output Connector connects to a sound

The supplied audio cable is a SoundBlaster® type cable. If you have a different sound card, you will need to contact the sound card manufacturer to obtain the proper cable for that card.

(3) Master / Slave / CSEL Jumper

These three jumpers are used to set the CD-ROM Drive to either a Master, Slave, or CSEL drive.

(4) Interface Connector

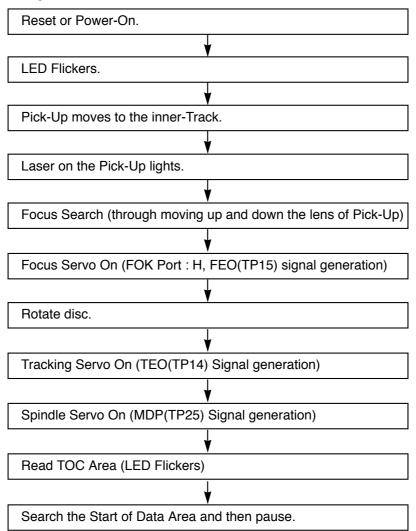
This 40-pin connector is used to transfer and control signals between the CD-ROM Drive and your PC. Connect the 40-pin IDE cable in your PC to this connector.

(5) Power-in Connector

Attach a power cable from the computer to this connector.

TROUBLESHOOTING GUIDE

1. Initial Lead-in Operation

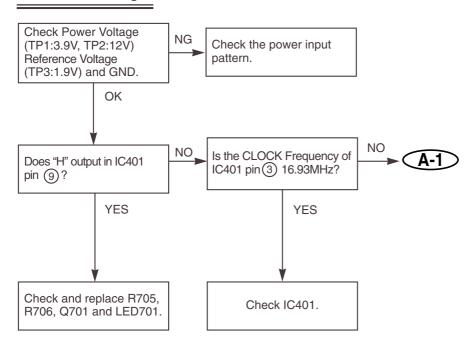


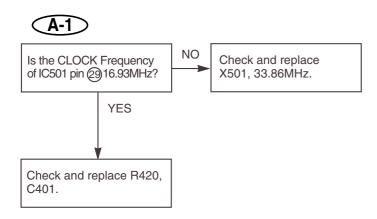
2. Trouble List (Circuit)

- A. LED doesn't light.
- B. Pick-Up doesn't move to the inner-track.
- C. The Laser of Pick-Up doesn't light.
- D. Pick-Up lens doesn't move up and down.
- E. Disc doesn't rotate.
- F. TOC isn't read. (The LED turns on, but doesn't flicker.)
- G. During Audio CD Play, LED flickers, but Speaker is silent.

3. Troubleshooting Guide

A. LED doesn't light.





B. Pick-Up doesn't move to the inner track.

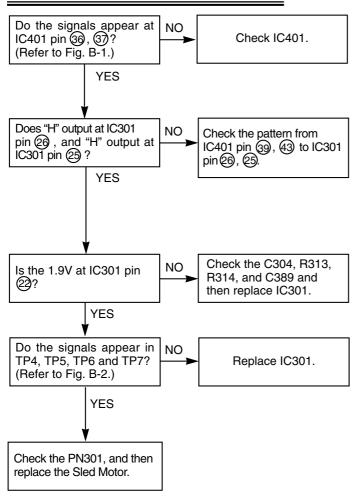


Fig. B-1. DA0 and DA1 Signals

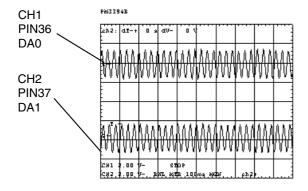
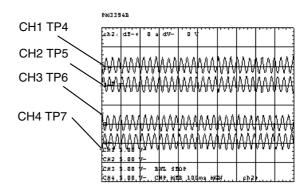
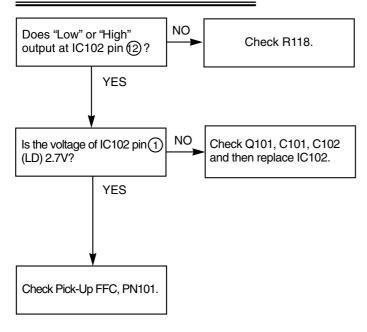


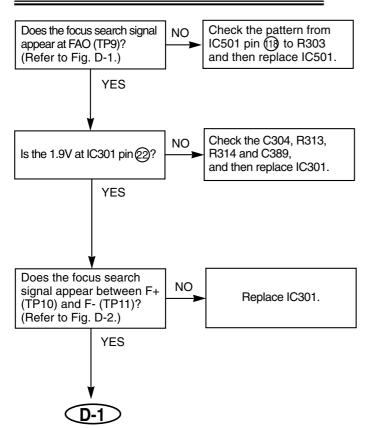
Fig. B-2. TP4, TP5, TP6 and TP7 Signals

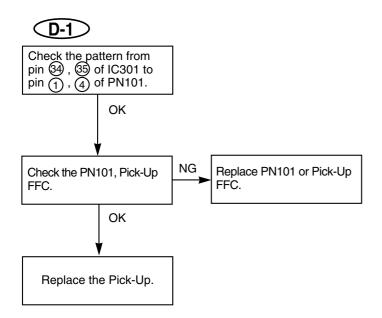


C. The Laser of Pick-Up doesn't light.



D. The Pick-UP lens doesn't move up and down.





CH1
TP9
(FAO)

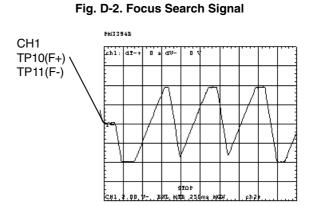
PM3394E

Ah1: dI-+ 0 a dV- 0 V

FAO

CH1.1.00.V- NVI.NIB.505044 PAP

Fig. D-1. FAO Signal



E. Disc doesn't rotate.

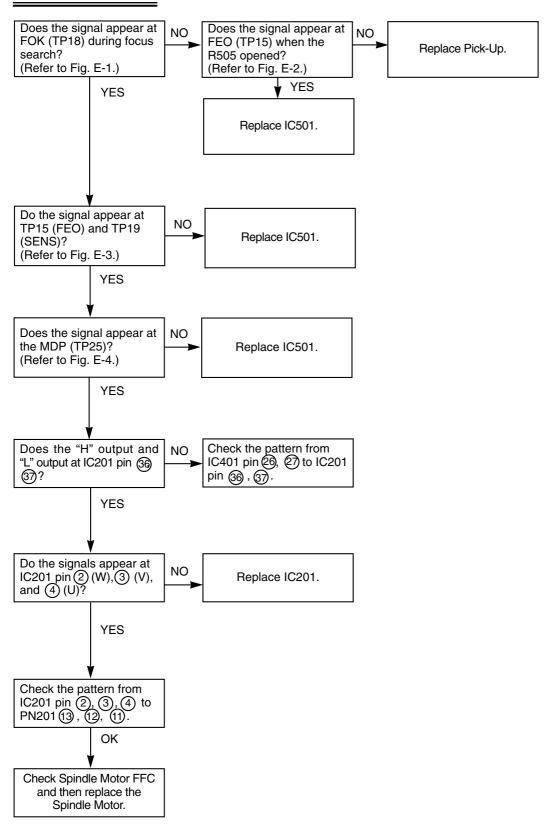


Fig. E-1. FOK, F+ Signal

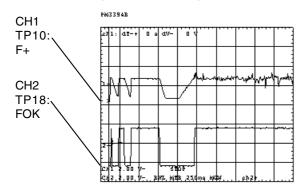


Fig. E-2. S-Curve (R505:Open)

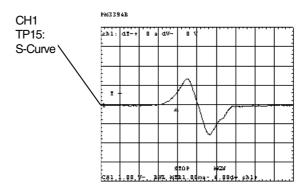


Fig. E-3. FEO, SENS Signal

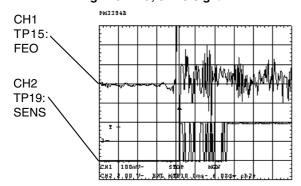
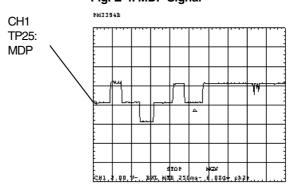
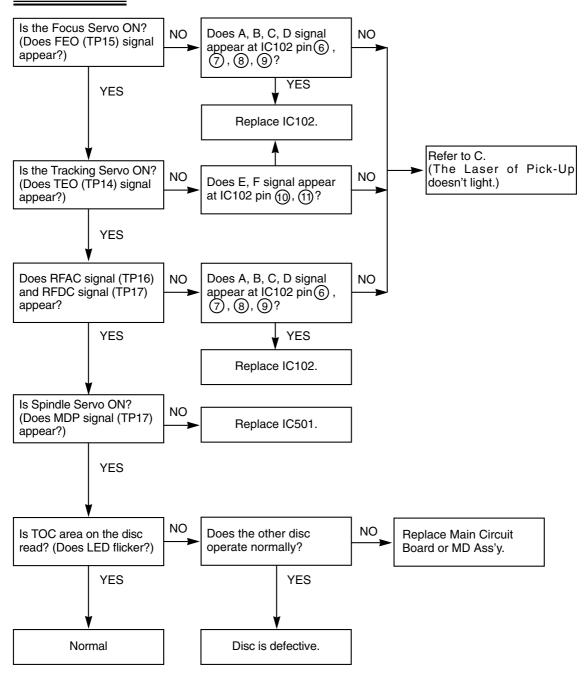


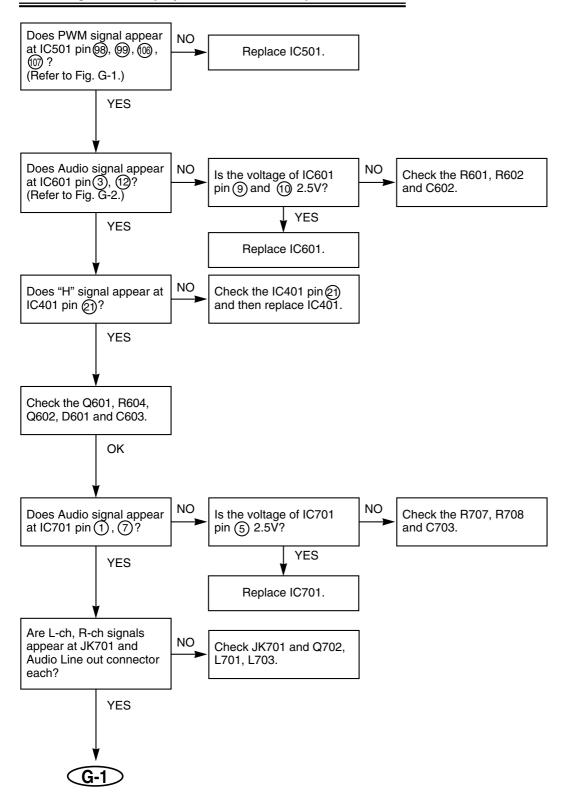
Fig. E-4. MDP Signal

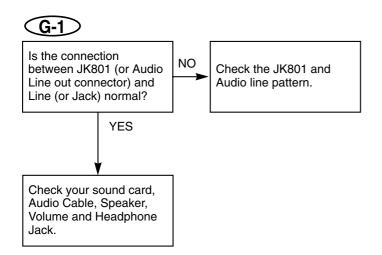


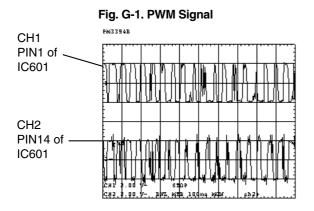
F. TOC isn't read.

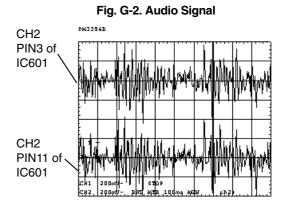


G. During Audio CD play, LED flickers, but Speaker is silent.







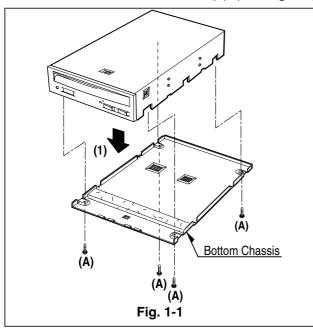


DISASSEMBLY

1. CABINET and CIRCUIT BOARD DISASSEMBLY

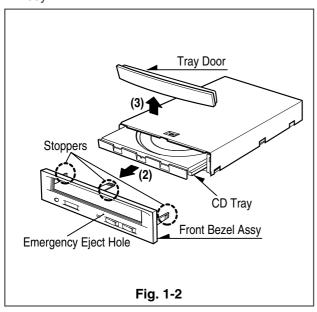
1-1. Bottom Chassis

A. Release 4 screws (A) and remove the Bottom Chassis in the direction of arrow (1). (See Fig. 1-1)



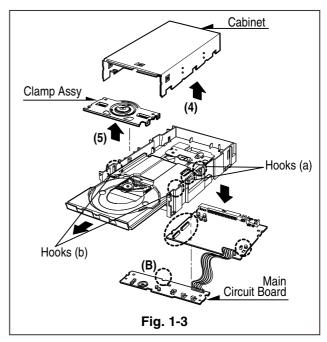
1-2. Front Bezel Assy

- A. Insert and Press a rod in the Emergency Eject Hole and then the CD Tray will open in the direction of arrow (2).
- B. Remove the Tray Door in the direction of arrow (3) by pushing it outward.
- C. Release 3 stoppers and remove the Front Bezel Assy.



1-3. Cabinet and Main Circuit Board

- A. Remove the Cabinet in the direction of arrow (4). (See Fig. 1-3)
- B. Release 2 hooks (a) and remove the Clamp Assy in the direction of arrow (5).
- C. Release 2 hooks (b) and remove the CD Tray.
- D. Remove the Soldering of the LD- and LD+ (B) for the Loading Motor, and then remove the Main Circuit Board.
- E. At this time, be careful not to damage the 3 connectors of the Main Circuit Board.



2. MECHANISM ASSY

- A. Separate the Pick-Up Unit from the Mechanism Assy.
- B. Release 1 screws (C) and then remove the Pick-Up (_____).

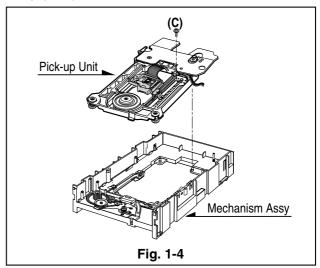
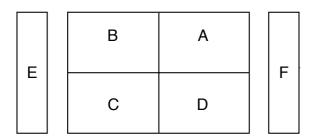
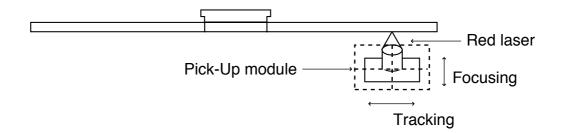


PHOTO DIODE STRUCTURE OF THE PICK-UP



- (1) Focus Error Signal -> (A+C)-(B+D)
 (Control the Pick-up's up and down to focus on the Disc)
- (2) Tracking Error Signal-> (E-F)
 (Control the Pick-up's left and right shift to find the track on the Disc)
- (3) RF Signal -> (A+B+C+D)
 (RF Signal is converted to Data Signal in One Chip IC (IC501))



Three signals (Focus Error Signal, Tracking Error Signal and RF Signal) above are I-V converted and amplified at the IC102, and then are transmitted to One Chip IC (IC501) to generate the Servo Control Signal and Data Signal.

BLOCK DIAGRAM

