IVIS System
Owner's Manual

digital™
Educational Services

177 w x 229 H.

7" w x 9" H.

EK-0IVIS-OW-001

OCTOBER, 1984

IVIS SYSTEM

OWNER'S MANUAL

DIGITAL EQUIPMENT CORPORATION   MAYNARD, MASSACHUSETTS

CONTENTS

INTRODUCTION

CHAPTER 4   (continued)

CHAPTER 4   (continued)

CHAPTER 5   CONNECTING COMPONENTS

CHAPTER 6   CORRECTING SIMPLE PROBLEMS

(Chapter 6   (continued)

CHAPTER 7   REPAIRS

INDEX

FIGURES

FIGURES   (Continued)

TABLES

The FCC Would Like Us to Tell You . . .

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

WARNING

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, you should try to correct the interference by one or more of the following measures:

o   Reorient the receiving antenna

o   Relocate the computer with respect to the receiver

o   Move the computer away from the receiver

o   Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, you should consult the dealer or an experienced radio/television technician for additional suggestions. You 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, DC 20402, Stock No. 004-000-00345-4.

This manual shows you how to operate and maintain your IVIS
system. IVIS is an Interactive Video Information System that
displays computer-generated graphics and moving or freeze-frame
pictures on a color monitor screen, with high fidelity sound.

The manual has six chapters that cover the following topics.

Chapter 1, "Getting Started", shows you how to run an IVIS
demonstration or training program.

Chapter 2, "System Overview", briefly describes the system
components. It also lists other available equipment and related
documentation.

Chapter 3, "Setting Up The System", tells you what environment is
best for your IVIS system.

Chapter 4, "System Controls and Indicators", describes the
controls on each system component introduced in Chapter 2.

Chapter 5, "Connecting Components", describes the different types
of components you can use with your IVIS system and how to
connect them.

Chapter 6, "Correcting Simple Problems", tells you how you may
correct simple problems without calling for service. It also
describes the built-in self-tests and their error messages.

Chapter 7, "Repairs", tells you how to call for service and how
to ship your IVIS system. It describes the different types of
service agreements available from Digital.
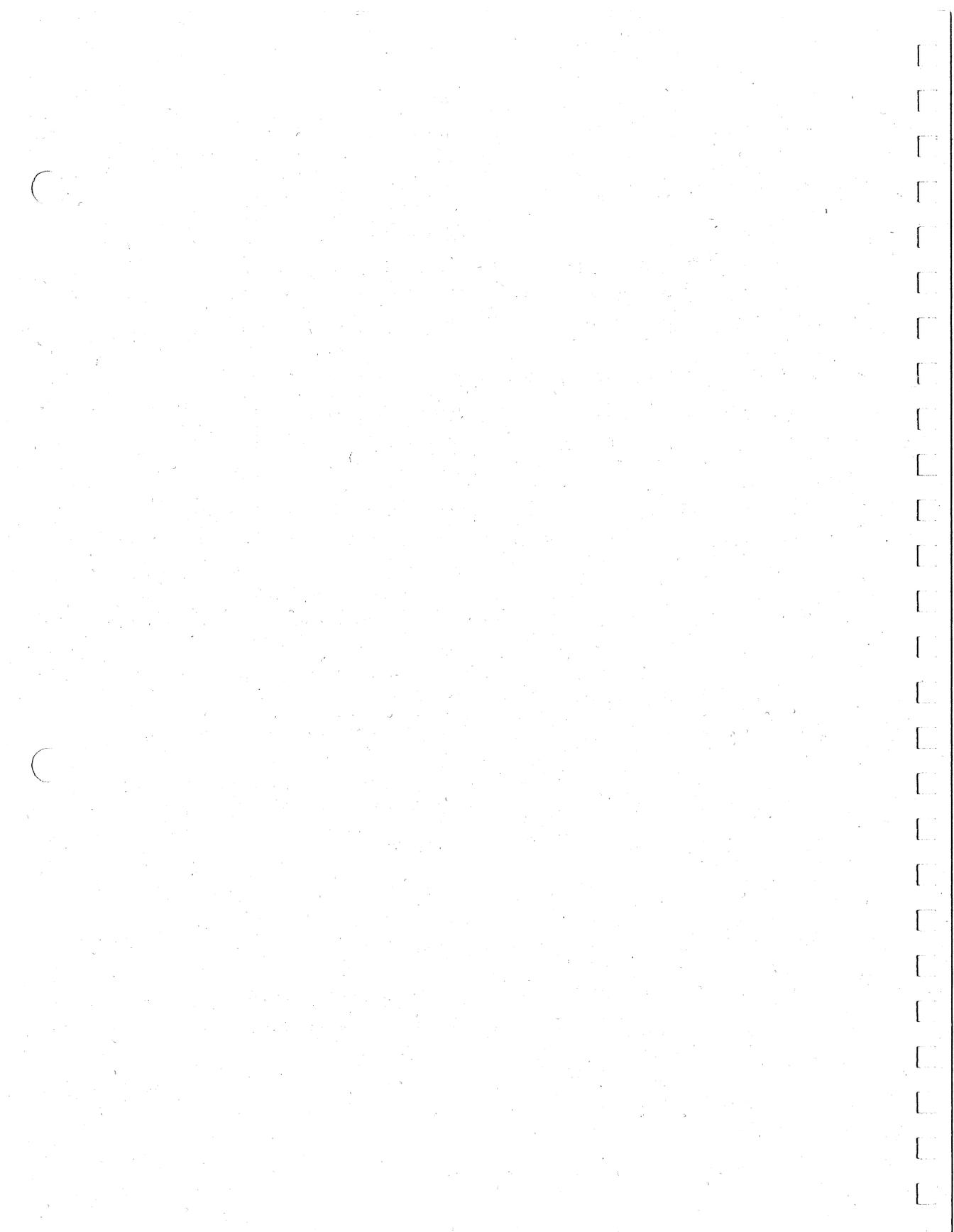
IVIS IS EASY TO USE

You can run an IVIS demonstration program
or a training course program.
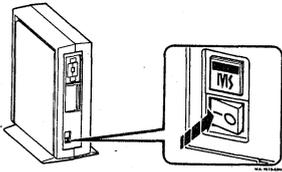
Press the system unit power switch to 1 (on).
Wait for the Main Menu to appear on the
monitor screen.

```
┌─────────── MAIN MENU - P/OS V ───────────┐
│                                          │
│  Copyright © 1984 Digital Equipment Corporation
│  For information on using the Professional, press HELP.
│
│              Disk/diskette services
│              File services
│              Print services
│              Additional applications
│              View Message/Status
│
│
│
│
│  Make a choice and press Do:
│
│  There are 0 new messages on the Message/Status Display.
│                                    MA-0315-84
└──────────────────────────────────────────┘
```
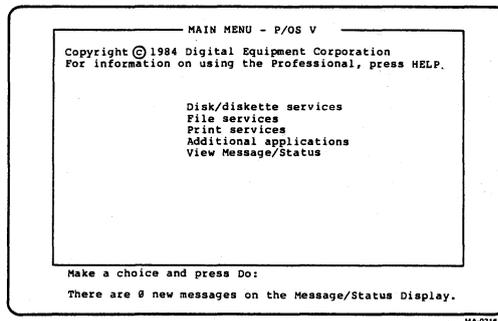
Use the arrow keys to move the -> to "Additional Applications".
Then press DO. From the next menu, move the -> to
"IVIS User and Utilities" or other
program group. Then press DO.

From the next menu, choose "IVIS System Verification"
or the program you want.
Then press DO.

Load the disc on the player.

Follow the instructions on the screen.
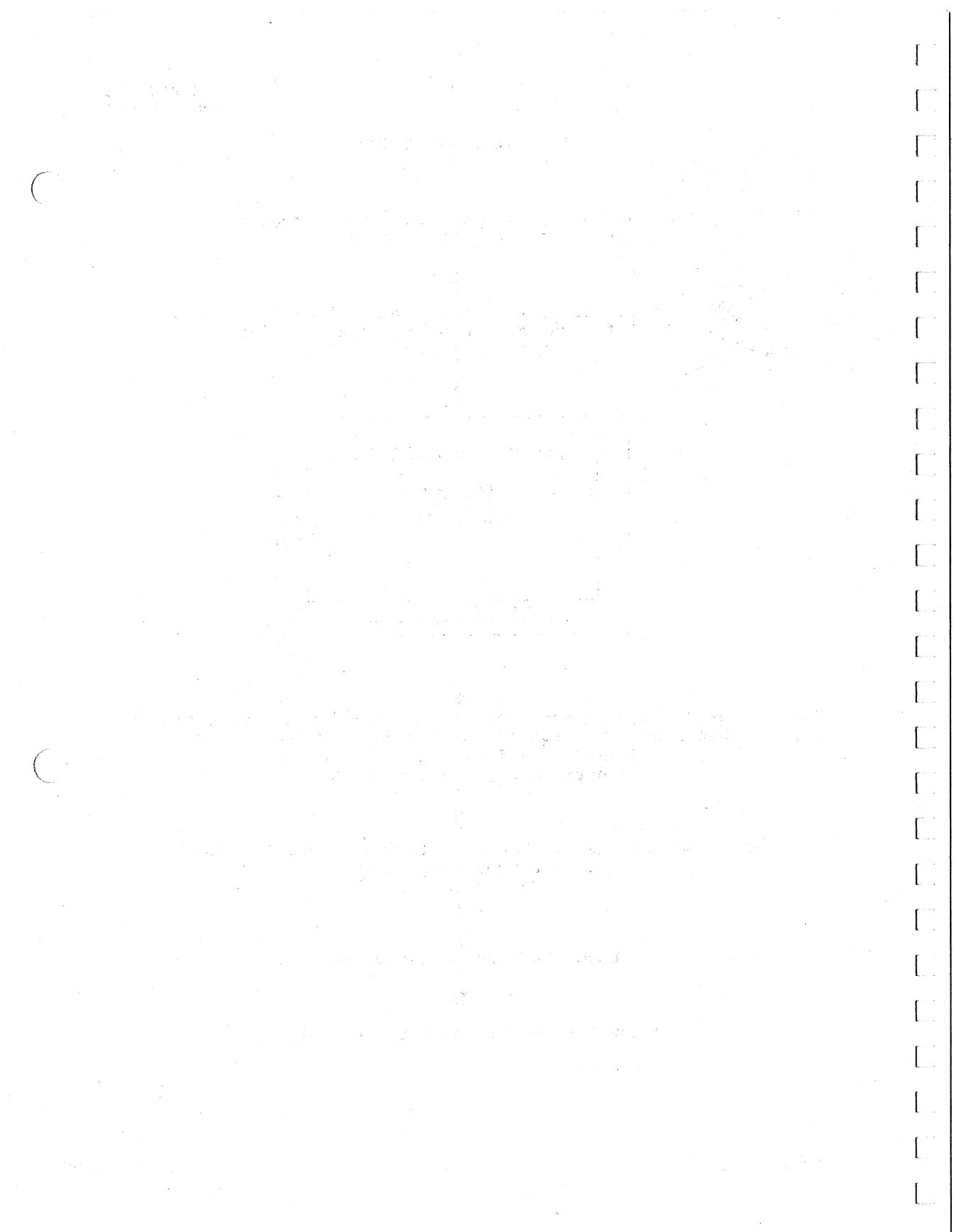
This chapter describes the IVIS system and additional equipment
you can connect to the system.

The IVIS system has six major hardware components.

    o Professional 350 System Unit
    o Color video monitor
    o Keyboard
    o IVIS backpack
    o Video disc player
    o Remote power switch.

Chapter 4 describes the controls for the basic IVIS system
components.
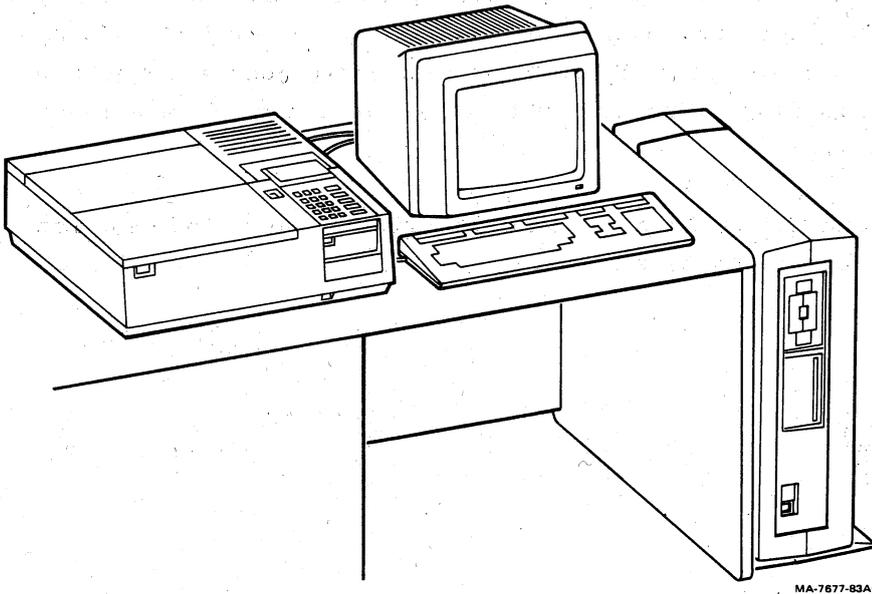
MA-7677-83AG

Figure 2-1   System Hardware Components

PROFESSIONAL 350 SYSTEM UNIT

The system unit uses the Digital F11 microprocessor, part of Digital's PDP-11 family of minicomputers. The basic system unit for IVIS contains a dual diskette drive, a hard disk drive, and 512 Kbytes or more of memory.

The Professional 300 Series Owner's Manual provides more information about the system unit and the keyboard.

COLOR VIDEO MONITOR

The VR241 color monitor (or VRTS1 touch screen color monitor) displays text, video disc pictures, and color graphics information. The monitor has a high resolution (0.31 mm/pixel), 240 mm X 150 mm viewing area (13" diagonal), and accepts RS-170 compatible RGB (red, green, blue) input. A raster scan design complements the extended bit map module, which adds two bit map planes to the basic system's graphics. Each plane supports 960 by 240 pixels (a pixel is a dot). This module provides a color map that lets IVIS display up to eight colors at a time from a range of 256 colors.

The VR241 and VRTS1 Owner's Manuals provide more information about these color monitors.

IVIS BACKPACK

Some IVIS system components are installed in the system unit. The other components are mounted in a separate enclosure called a backpack. The system unit is installed in a floor stand, and the IVIS backpack is fastened to the stand door.

VIDEO DISC PLAYER

The laser-optical disc player provides sound and video signals from a disc that looks similar to a phonograph record. Up to 30 minutes of moving pictures and stereo sound are recorded on a disc. Also, the computer can access each of the possible 54,000 frames (pictures) on the disc. This feature lets you display any one picture on the screen continuously in freeze-frame. IVIS can display these pictures and computer-generated graphics separately or together on the monitor screen under computer control.

REMOTE POWER SWITCH

All IVIS system power cords plug into the remote power switch. You control power to all components with one switch. When you turn the system unit power switch on or off, the remote power switch automatically turns the entire system on or off.

ADDITIONAL EQUIPMENT

Your IVIS system can use most of the options and peripherals available for the Professional 350 system. Chapter 5 provides information about connecting peripherals to your IVIS system.

SOFTWARE MEDIA AND DOCUMENTATION

Your IVIS comes with the following software media and documentation.

PRO/IVIS DRIVER, INSTL VERFY, & DIAG diskette.
    (Includes PRO/IVIS Device Driver, IVIS System
    Verification, and IVIS Maintenance Services Update.)

PRO/IVIS System Verification Video Disc.

PRO/PRODUCER diskette.

PRO/PRODUCER Installation Manual   AA-AH62A-TH

PRO/IVIS Device Driver and Subroutine Library
    Reference Manual   AA-BB29A-TH

IVIS System Installation Instructions   EK-0IVIS-IN

IVIS System Owner's Manual   EK-0IVIS-OW

Although each system component comes with an installation manual,
your IVIS system has its own installation manual. The IVIS
Installation Instruction manual includes all of the information
in those individual manuals.

RELATED DOCUMENTATION

You can order copies of the following documents from Digital.

IVIS DOCUMENTS

IVIS Illustrated Parts Breakdown	EK-0IVIS-IP
VAX Producer Documentation Kit	QL040-GZ

OTHER DOCUMENTS

User's Guide for Diskette System	AA-U708B-TH
For Beginners: Hard Disk System	AA-N604B-TH
For Beginners: Diskette System	AA-U707B-TH
Reference Card: Hard Disk System	AV-P389C-TH
Reference Card: Diskette System	AV-U709B-TH
PRO/BASIC Language Manual	AA-N601B-TH
PRO/BASIC Reference Card	AV-U706A-TH
PRO/Communications Manual	AA-N602B-TH
Professional Host Communications Installation Procedures	AA-P412C-TK
Terminal Subsystem Manual	AA-N623B-TK
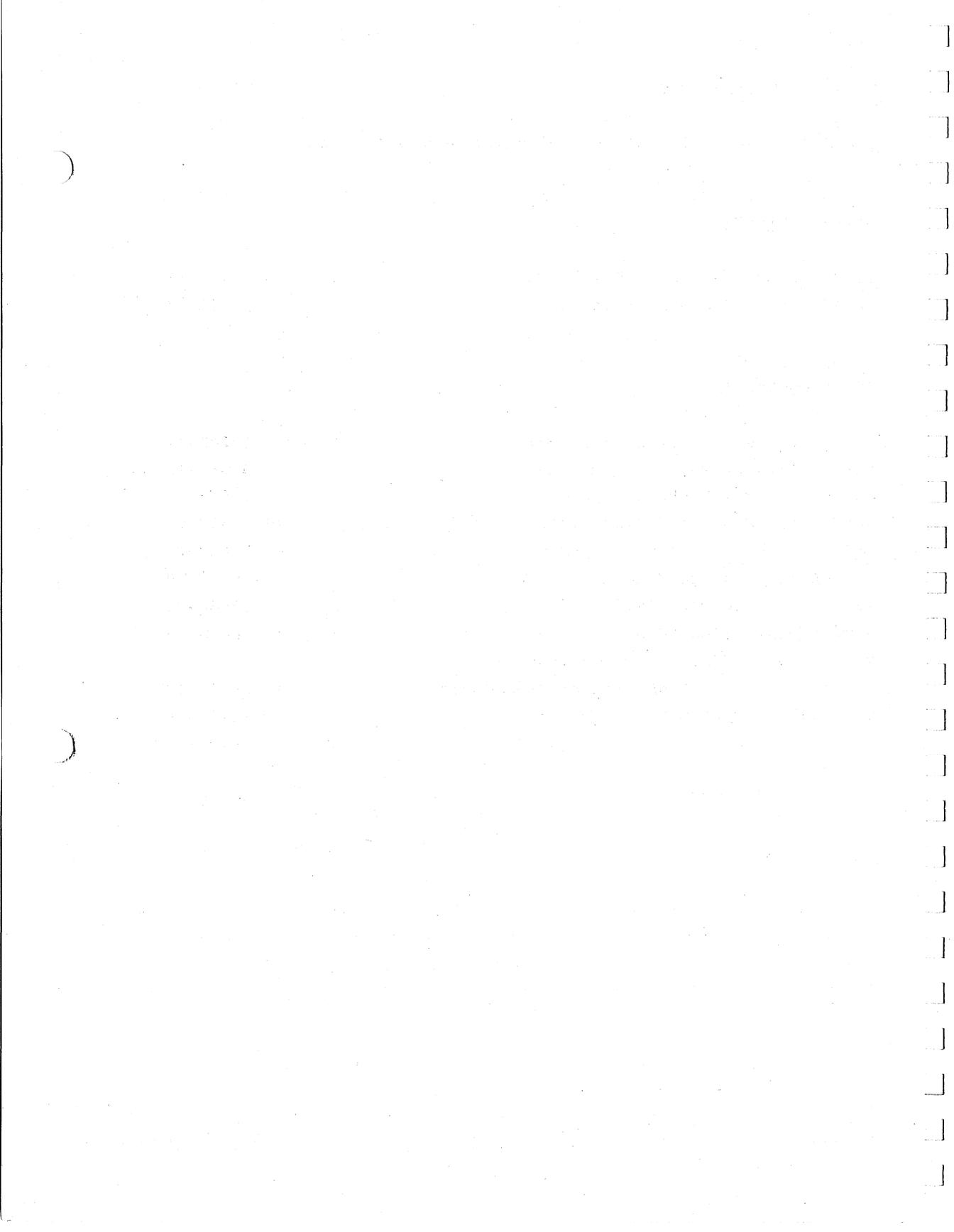
SETTING UP THE SYSTEM

This chapter tells you what environment is best for your IVIS
system.

SPACE

Figure 3-1 shows the dimensions of the system components.
When you set up your IVIS system, follow these points.

    o   Leave about six inches on all sides of each component,
         for airflow.

    o   Keep the vents on all components clear.

    o   Place all cables away from traffic areas.

LIGHTING

The nonglare screens of IVIS video monitors reduce the amount of
light reflected back to the operator. Place the system unit and
video monitor out of any direct sunlight to minimize heat and
glare.

CONDENSATION

A video disc player is subject to special problems when it is
brought into a warm room from the cold. Condensation on lens
surfaces may cause unreliable operation. To prevent this, let the
player warm up for an hour to room temperature before using.

FLOOR STAND
WITH IVIS BACKPACK

21 3/4 in.
55.0 cm.

26 in.
65 cm.

12 in.
30.4 cm.

MA-7677-83AL

REMOTE POWER SWITCH

3 in.
7.59 cm.

6 3/8 in.
16.31 cm.

6 3/8 in.
16.31 cm.

MA-7676-83Y

KEYBOARD

2 in.
5.0 cm.

6 3/4 in.
17.1 cm.

21 in.
53.3 cm.
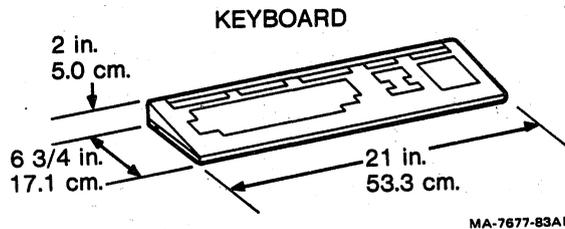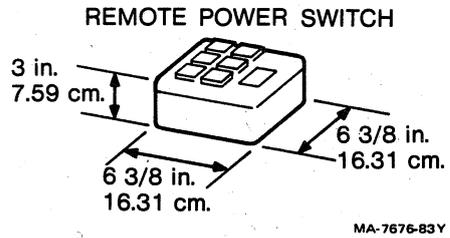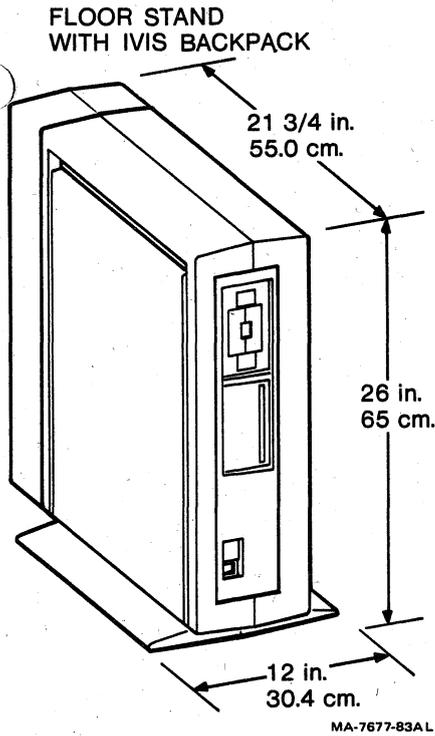
MA-7677-83AM

Figure 3-1   System Component Dimensions

VR241
COLOR MONITOR

12 3/4 in.
32.4 cm.

17 in.
42.1 cm.

15 in.
38.0 cm.

MA-7677-83AJ

DISC PLAYER

6 1/4 in.
16.0 cm.

16 3/8 in.
41.5 cm.

21 3/8 in.
54.2 cm.
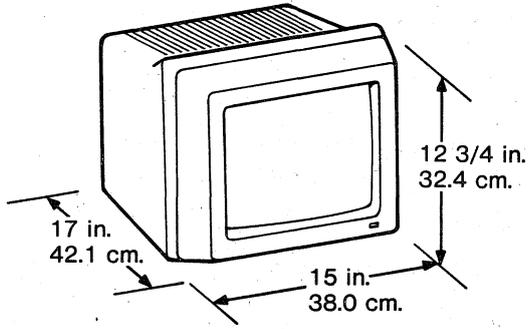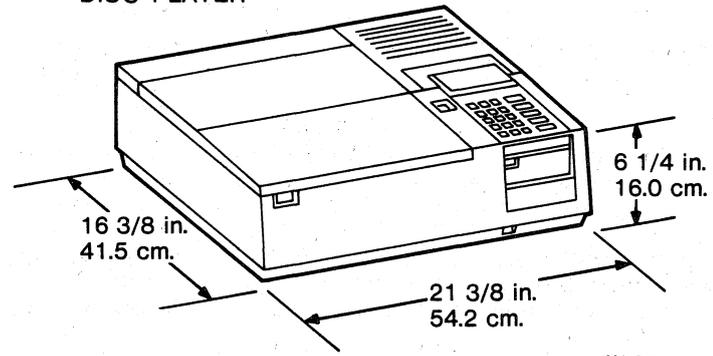
MA-7677-83AH

POWER

Your IVIS system can use the power from receptacles in commercial buildings and residences.

Requirements

Input voltage	90 to 128 Vac (120V) 174 to 256 Vac (240V)
Line frequency	47 to 63 Hz
Power dissipation	535 watts (basic system)

Note that each system component has its own minimum operating voltage specification.

Professional 350 system unit	90 vac (120V) 174 Vac (240V)
VR241 or VRTS1 color monitor	90 Vac (120V) 185 Vac (240V)
IVIS backpack	90 Vac (120V) 190 Vac (240V)
VDP40 video disc player	107 Vac (120V) (240V)

WARNING
You need a 240V-to-120V step-down transformer to operate the video disc player at 240 volts.

Try to use a separate power source for your IVIS system. If other devices must use the same branch circuit, avoid those that can cause the voltage to fluctuate, (for example, copiers or typewriters).

Your system requires only one receptacle, to plug in the remote power switch. The other IVIS power cords plug into the remote power switch. When you turn power on and off at the system unit, the remote power switch turns the rest of the system on or off for you.

TEMPERATURE

Your IVIS system can operate within the following temperature and
humidity ranges.

Temperature   10 to 40°C (50 to 104°F)

Humidity   20% to 80% relative humidity, with a
                               maximum wet bulb of 25° C and a
                               minimum dew point of 2° C.

Keep your IVIS system away from direct sunlight, heat registers,
and air conditioning vents.

MEDIA AND SUPPLIES STORAGE

You need storage space for supplies and diskettes. Keep your
diskettes in dust-proof containers, away from magnetic fields
that might damage the information stored on them. For security,
store backup media away from your work area.

VIDEO DISC STORAGE AND CARE

Store video discs away from heat, in their jackets, and straight
up on edge, to prevent warping. You can clean disc surfaces
occasionally by wiping them with a cloth moistened with warm
water.

CABLES

Your IVIS system comes with the cables required to connect the
basic system components. If you want to connect other components
to the system, you need more cables. See the end of Chapter 5 for
a list of cables used with the IVIS system.
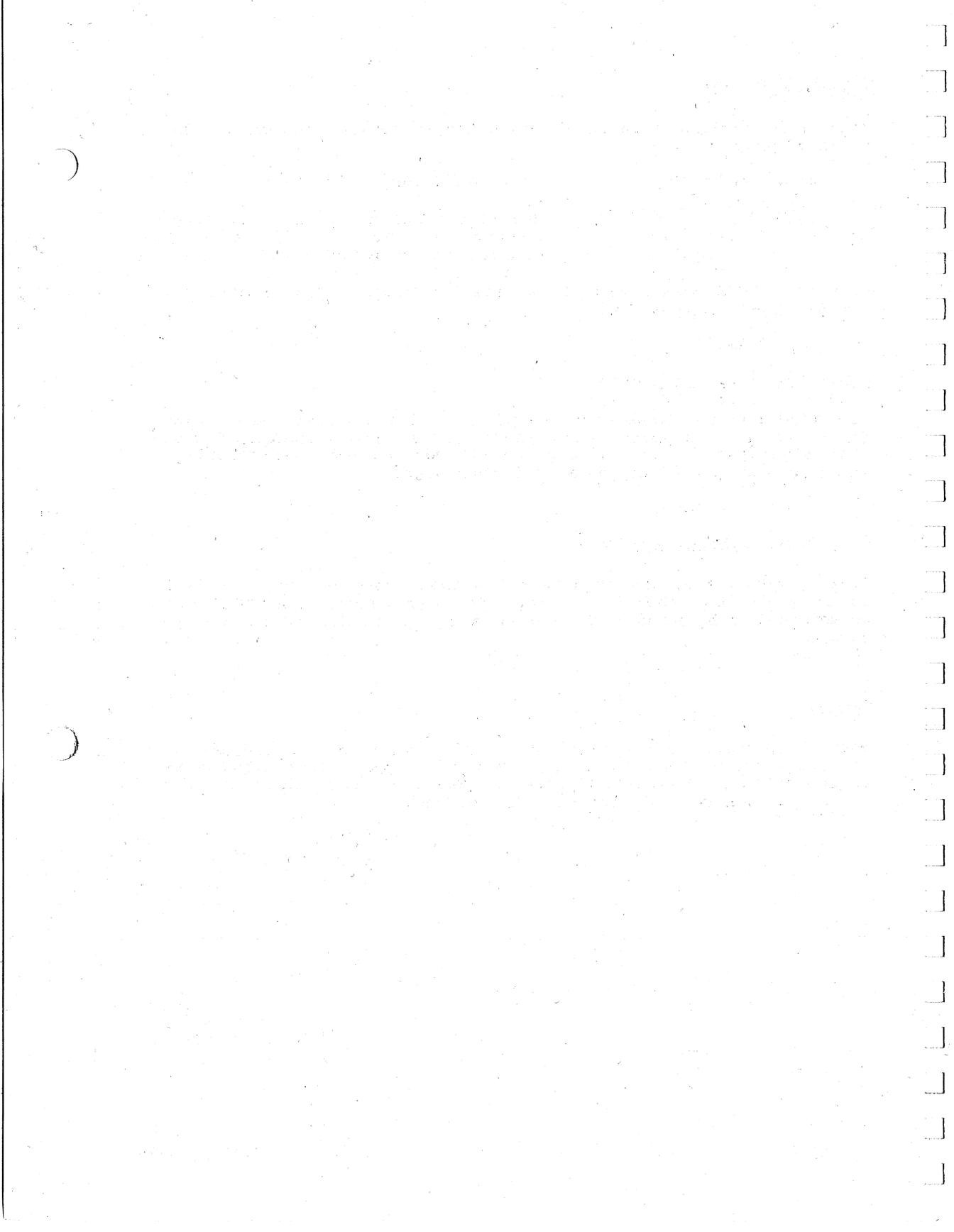
SYSTEM CONTROLS AND INDICATORS

Each IVIS system component has controls and indicators that you will use when operating the system. This chapter describes those controls and indicators in the following order.

- o System unit
- o Video monitor
- o Keyboard
- o IVIS backpack
- o Video disc player
- o Remote power switch

SYSTEM UNIT CONTROLS

The system unit has three controls.

- o Power switch
- o Voltage selection switch
- o Circuit breaker

System Unit Power Switch

This switch is on the front of the system unit (Figure 4-1). The power switch controls power for the complete system when the system unit is plugged into the "control" receptacle on the remote power switch. To turn the system on, press on the side of the switch marked 1. To turn the system off, press on the side of the switch marked 0.
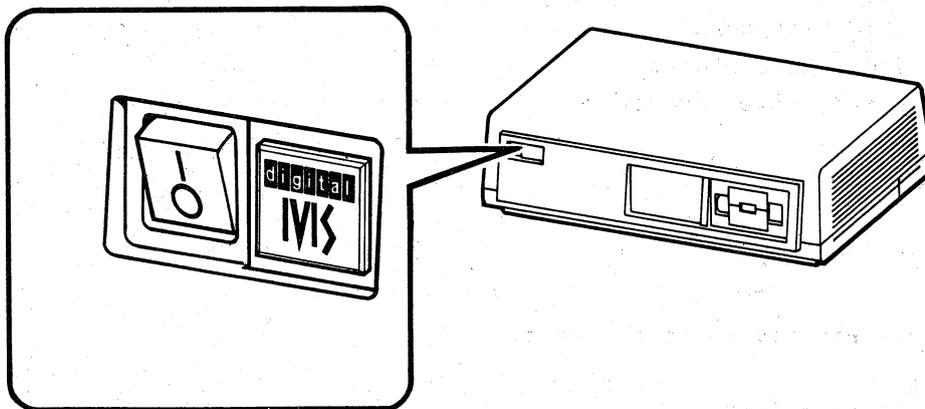
MA-7677-83AP

Figure 4-1   System Unit Power Switch

System Unit Voltage Selection Switch

This switch is on the back of the system unit (Figure 4-2). When the system is installed, this switch is set to match the system unit voltage needs to the voltage available from the wall outlet.

When the number 115 or 120 shows, the system unit is set for 90 to 128 volts ac. This is the voltage used throughout most of the United States and Canada.

When the number 230 or 240 shows, the system unit is set for 174 to 256 volts ac. This is the voltage used in most of Europe and areas outside the United States and Canada.

MA-0261-84
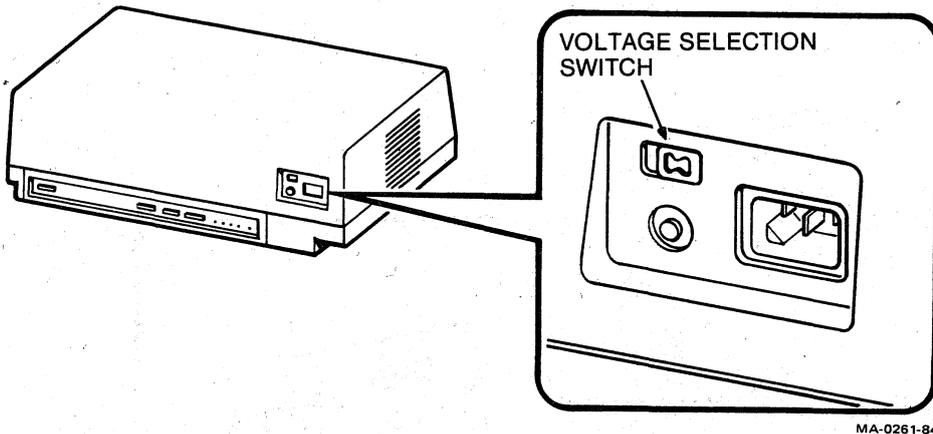
Figure 4-2   System Unit Voltage Selection Switch

System Unit Circuit Breaker

The circuit breaker is on the back of the system unit (Figure 4-3). The system unit circuit breaker automatically interrupts power to the unit when a fault could cause damage. If your system has a remote power switch, it will interrupt power to the rest of the system also.

If an electrical fault or short circuit occurs, the circuit breaker trips. To reset the circuit breaker, first turn the system unit power switch off. Then push the circuit breaker button in and turn the system unit power switch back on.

CAUTION

If the circuit breaker trips after being reset, unplug the system unit from the wall outlet and contact a service technician. Do not try to operate the system.

CIRCUIT BREAKER

MA-0262-84
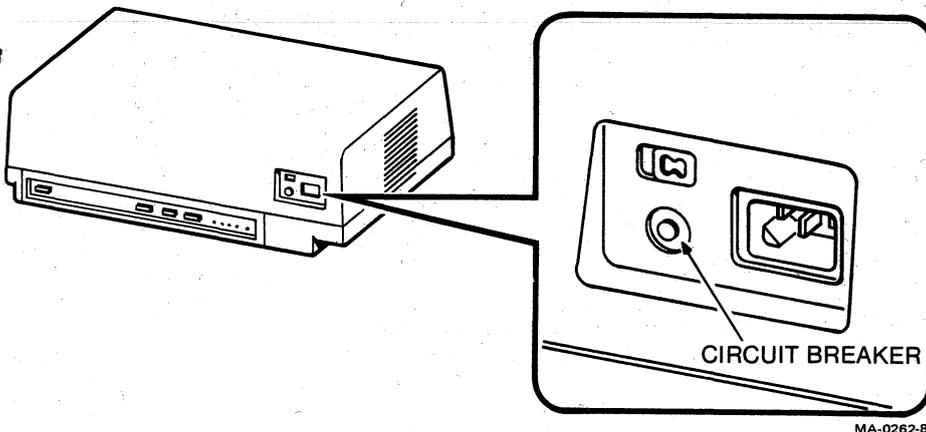
Figure 4-3   System Unit Circuit Breaker

SYSTEM UNIT INDICATORS

The system unit has indicators on both the front and back.

Diskette Drive Active Indicators

These indicators are on the front of the system unit, next to
the diskette drive doors (Figure 4-4). These indicators turn
on to show that a drive is reading or writing data.

> **CAUTION**
> Do not open a diskette drive door when a
> diskette drive active indicator is on.
> You may lose some or all of your data,
> especially if the drive is writing on
> that diskette.

ACTIVE LIGHTS
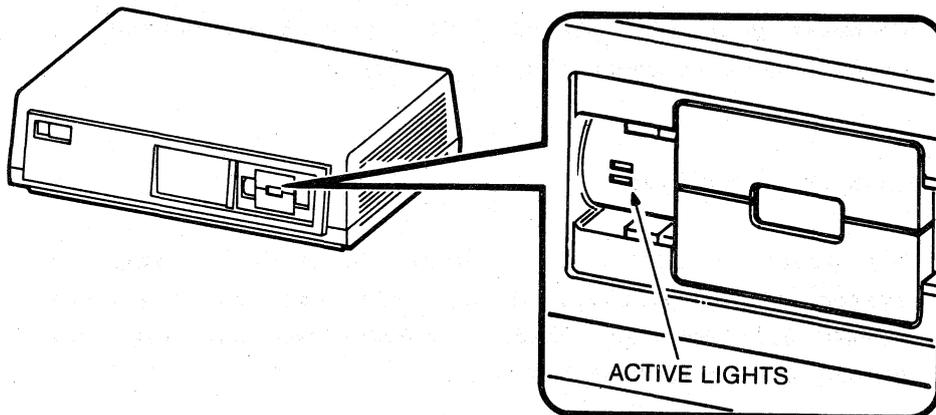
MA-7677-83AN

Figure 4-4   Diskette Drive Active Indicators

Self-Test Status Indicators

These indicators are on the back of the system unit
(Figure 4-5). There are four red indicators and one
green indicator.

Red Indicators (1, 2, 3, and 4)

The system unit automatically runs an internal self-test
program whenever you turn on power to the system. (See
Chapter 6.) When the test starts, the program turns on
all four red indicators. If the system unit is operating
correctly, the program turns the indicators off when the
test is complete.

If the system test finds a problem, one or more of the
indicators stay on. Chapter 6 describes the steps you
should follow if that happens.

Whenever your IVIS system does not come on correctly,
check to see if these indicators are on.

The Green Indicator (DC)

The green indicator is on when the power inside the
system unit is correct. If this indicator is not on, the
system will not run. Chapter 6 describes the steps you
should follow if that happens.
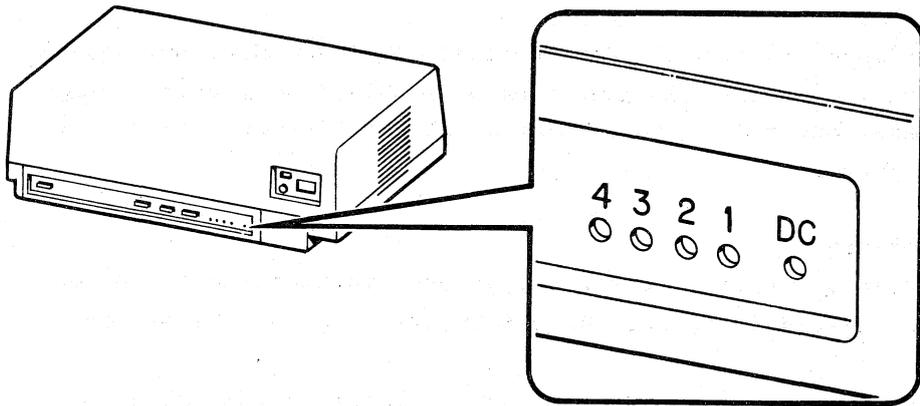
MA-0263-84

Figure 4-5   System Unit Status Indicators

COLOR VIDEO MONITOR CONTROLS, SWITCHES, and INDICATORS

The color video monitor has two controls on right side of the
monitor and an indicator on the front (Figure 4-6).

o   Contrast
o   Brightness
o   Power OK Indicator
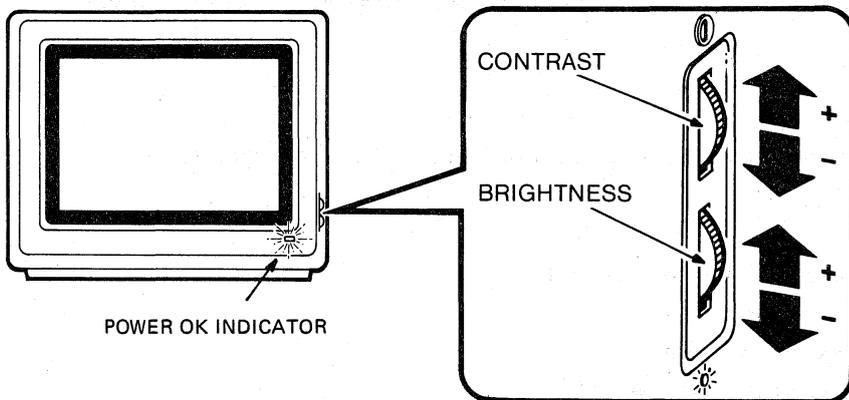
MA-7666-83A

Figure 4-6   Color Monitor, Front View

Contrast

The upper control is for contrast. Turning the knob upward
increases the difference between black and white image
areas on the screen (makes blacks darker and whites
brighter).

Brightness

The lower control is for brightness. Turning the brightness
knob upward increases the brightness level on the screen.

Use these steps to get the best possible image on the screen.

1. Turn the brightness and contrast controls down.
2. Turn the brightness control up until you just see white
   lines appear on the screen.
3. Turn the contrast control up until the image on the
   screen is satisfactory.

POWER OK Indicator

The color monitor has a green Power OK indicator on the front at
the lower right corner (Figure 4-6). This indicator is on
whenever the monitor's power circuits are operating correctly.

SWITCHES

The color monitor has three switches and a fuse on the back
(Figure 4-7).

o   Voltage selection switch
o   Power switch
o   Impedance switch
o   Synchronization switch

VOLTAGE
SELECTOR SWITCH

SYNCHRONIZATION
SWITCH

POWER
SWITCH

IMPEDANCE
SWITCH

FUSE

RED

GREEN

AC
POWER

BLUE
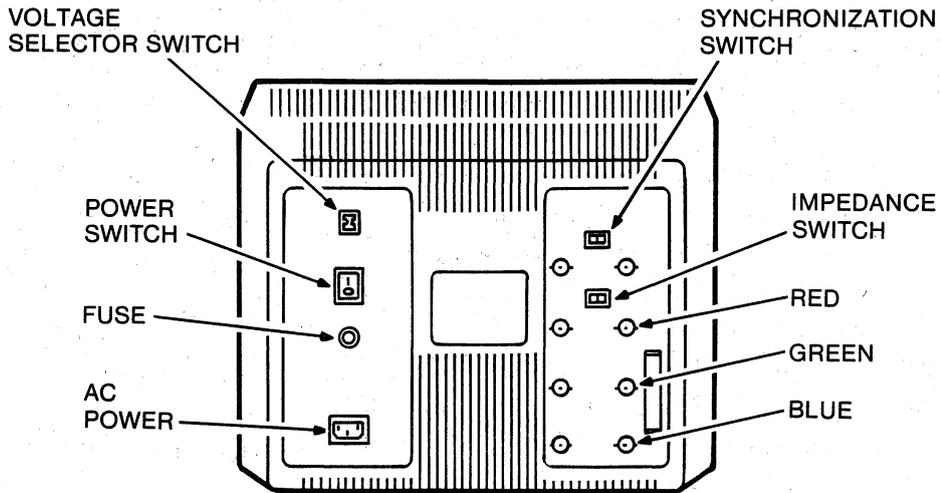
MA-0265-84

Figure 4-7   Color Monitor, Rear View

Voltage Selection Switch

The color monitor has the same type of voltage selection
switch as the system unit. Set the color monitor's
switch to the same voltage as the system unit's switch.

Power Switch

This switch is also the same type of power switch as on
the system unit.

Impedance Switch

This switch lets you use more than one monitor on your
system. Chapter 5 has information about connecting more
than one monitor.

Set the impedance switch to 75 (75 ohms):
   o when the monitor is the only one connected, or
   o when the monitor is connected as the last one in a
      series of monitors.

Set the impedance switch to HIGH:
   o when the monitor is connected as any one except the
      last one in a series of monitors.

Synchronization Switch

The synchronization switch determines which signal
source will lock the picture on the screen. When the
video includes the synchronization signal (as the IVIS
system does), set the switch to INT. When the
synchronization signal from a different source is fed
into the SYNC connector, set the switch to EXT.

FUSE

The fuse protects the power circuits in the color monitor. If the
POWER OK indicator does not come on, check to see if the fuse has
blown. You can remove the fuse carrier with a small coin or
similar item.

                              NOTE
                A label near the fuse tells you what
                value fuse to use. Different values
                are required for 120 volt and 240
                volt operation.

IVIS BACKPACK CONTROLS, SWITCHES, AND INDICATORS

The IVIS backpack has the following controls, switches, and
indicators.

- o   Voltage selection switch
- o   Circuit breaker
- o   Headphone volume control
- o   Power OK indicator
- o   Audio Source 2 Left Channel control
- o   Audio Source 2 Right Channel control
- o   Source 1 Video level control
- o   Source 2 Video level control
- o   Hue control
- o   Saturation control

Voltage Selection Switch
This switch is on the bottom of the backpack (Figure 4-8). The
IVIS switch is the same type of voltage switch as on the system
unit. Set the IVIS switch to the same voltage as the system
unit's switch.

Circuit Breaker
This circuit breaker is on the bottom of the backpack (Figure
4-8). The IVIS circuit breaker is the same type as on the system
unit.

Headphone Volume Control
The headphone volume control and jack are in the volume control
(BC17X) cable (Figure 4-9). The cable plugs into the backpack
connector labeled VOLUME. Turn the recessed knob towards + to
increase volume, towards - to reduce volume. The one knob adjusts
both left and right channels.

CIRCUIT BREAKER

VOLTAGE SELECTION SWITCH

AC POWER
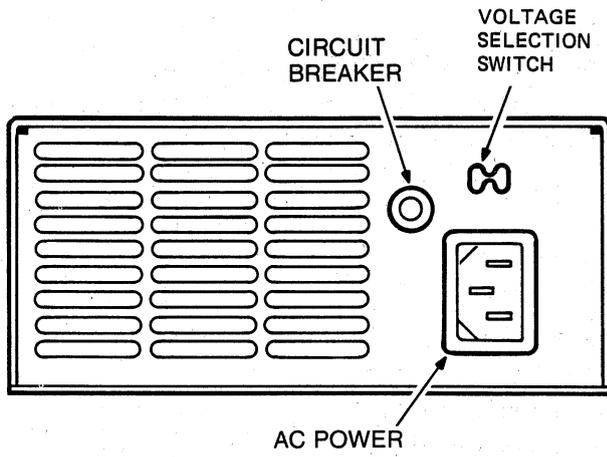
MA-0266-84

Figure 4-8   IVIS Backpack Bottom Panel

VOLUME CONTROL CABLE

VOLUME CONTROL
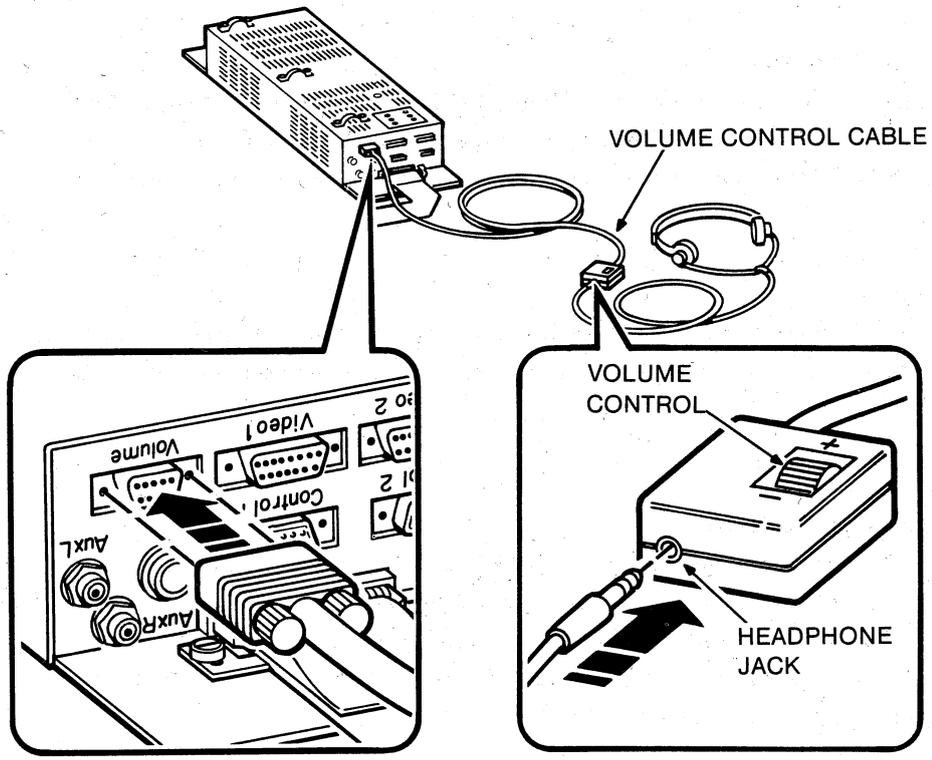
HEADPHONE JACK

MA-7674-83B

Figure 4-9   Headphone Volume Control

Power OK Indicator

The Power OK indicator is on the front of the backpack (Figure 4-10). You can see the indicator through the vents in the backpack's plastic cover. If this indicator is off, the backpack circuits will not operate and the picture signals from the disc player(s) will be lost.
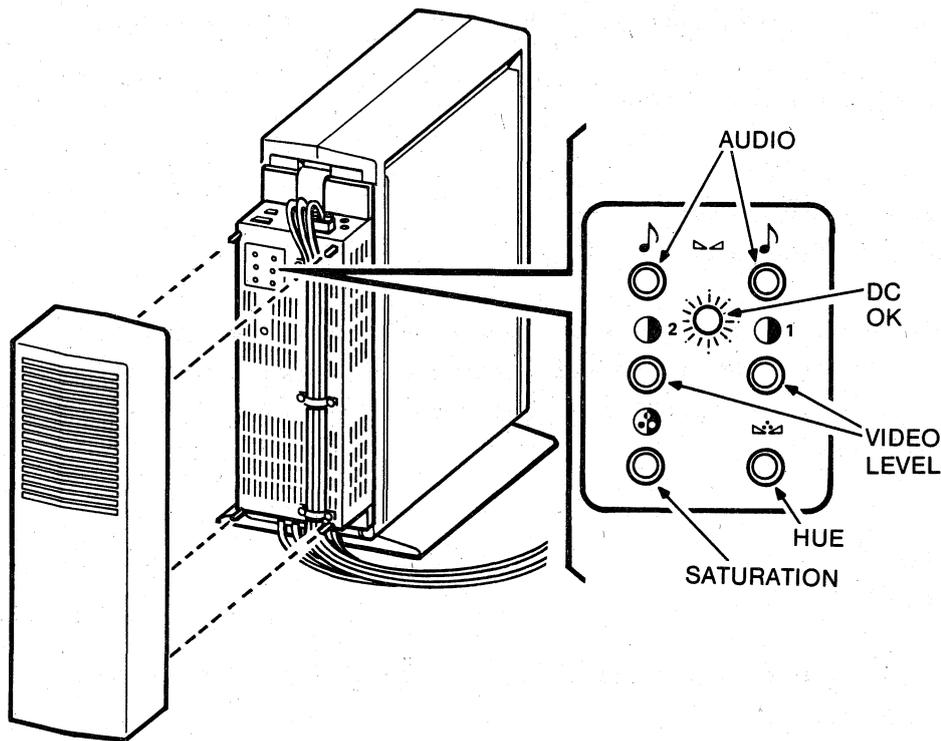
Figure 4-10 IVIS Backpack Controls

HOW TO ADJUST IVIS BACKPACK CONTROLS

When you make a change to the system, such as adding a second video disc player, you may affect system balance. You can use the IVIS backpack controls to balance video disc player sound and picture levels or to adjust picture colors. (You cannot change graphics colors using the IVIS backpack controls.) These controls, on the front of the IVIS backpack, are accessible when you remove the cover (Figure 4-10). When the system components are balanced correctly, the picture and sound levels remain constant as the program switches between various signal sources.

The IVIS backpack has six controls.

Audio Source 2 Left Channel
Audio Source 2 Right Channel

These controls adjust the volume level of audio source 2 right and left channels to match the audio source 1 channels. You set the audio channel 1 volume with the volume control on the BC17X cable.

Video Source 1 Level
Video Source 2 Level

These controls adjust video (picture) signal gain for the two disc player inputs.

Saturation
This control adjusts color intensity levels.

Hue
This control changes colors.

Use the following procedure to set up these adjustments.

Video Adjustment

This procedure tells you how to adjust picture signals that come from the video disc player(s). The program shipped with early IVIS systems lets you adjust the signal from the player on channel 1 only.

<center>NOTE</center>

These adjustments affect only picture signals coming from the video disc player(s).

1. Adjust the monitor brightness and contrast controls as follows:

    o Display the Main Menu on the screen.
    o Turn both controls all the way down.
    o Turn up brightness until you can just see all text on the screen. Turn the contrast up until the image quality is normal.

2. Select the IVIS System Verification program from the IVIS User and Utilities menu.

3. Load the video test disc that came with your system (1983 NCC IVIS Demo).

4. Run the "Backpack Adjustments" program. Follow the instructions on the screen. They lead you through the following kinds of adjustments.

o Set the Video Level 1 control so the small
   flashing rectangle is the same brightness level as
   the surrounding area.

o Adjust the Saturation (color intensity) control.

o Adjust the Hue control so that colors are natural,
   especially flesh tones.

Audio Adjustment

This procedure tells you how to adjust the audio signals from
the player connected to channel 2. Use this procedure only
when your system has two video disc players and programming
that plays both.

1. Listen to a balanced Channel 1 stereo audio signal in
   the headphones.

2. Set the channel 1 volume control (on the BC17X cable,
   where the headphone plugs in) at a normal listening
   level.

3. Switch on a channel 2 audio signal.

4. Without changing the channel 1 setting, adjust the
   Audio Source 2 controls so the Channel 2 signals are
   balanced and at the same listening level as the
   Channel 1 signals.

VIDEO DISC PLAYER CONTROLS, SWITCHES, AND INDICATORS

Your IVIS system comes with a VDP40 video disc player (Sony model
LDP-1000A, Figure 4-11). You can use other players with IVIS, but
Digital recommends the VDP40 for the basic IVIS system.

NOTE
When you connect two disc players to an
IVIS system, they should be identical
models.
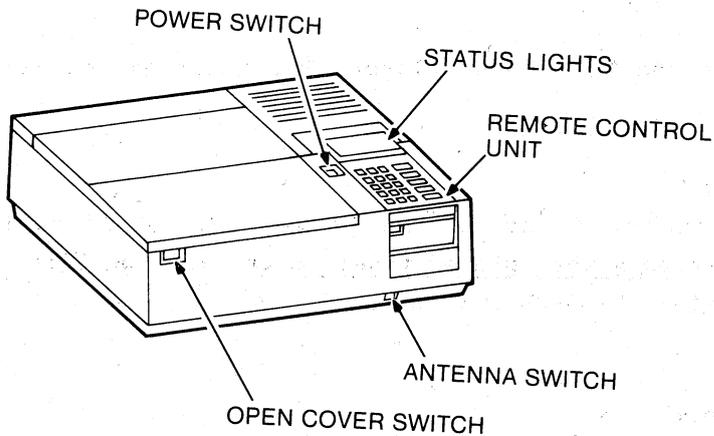
MA-7677-83AQ

Figure 4-11   Disc Player Top/Front View

The disc player has the following switches, controls, and indicators.

- o   Power switch
- o   Open cover switch
- o   Remote control unit
- o   Status indicators
- o   Antenna switch
- o   EXT CPU switch
- o   SC/SYNC switch
- o   Index controls V and H
- o   Focus and Tracking controls

POWER Switch

This switch is on the top of the player. The power switch is an on/off pushbutton.

OPEN Cover Switch

This switch is on the front of the player. The OPEN switch releases the cover only when player power is on. You can lift the cover after pressing the OPEN switch.

Remote Control Unit

This unit slides into the front of the player. You can use the remote control unit to control player operation directly or to enter a program into the player's microprocessor memory. You can only use this unit for off-line testing, since it operates only when external computer control is disabled. (See the "EXT CPU Switch" section that follows). To separate the unit from the player, push in on the release button under the unit and slide the unit forward.

Status Indicators

The status indicators are on the top of the player. The indicators tell you what the player is doing (for example, playing forward, or stopped).

ANTENNA Switch

This switch is on the front of the player. The ANTENNA switch controls the signal going from the player to a TV set. This switch does not affect IVIS system operation.
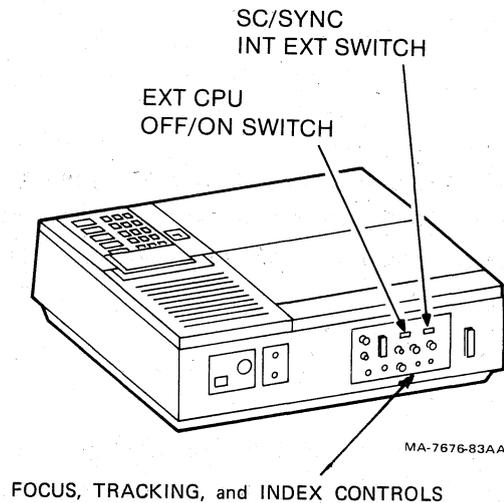
SC/SYNC
INT EXT SWITCH

EXT CPU
OFF/ON SWITCH

MA-7676-83AA

FOCUS, TRACKING, and INDEX CONTROLS

Figure 4-12   Disc Player Rear View

EXT CPU Switch

This switch is on the back of the player (Figure 4-12). When the switch is on, the IVIS system can control disc player operation. When you turn this switch off, you disable computer control and give the remote control unit control of the player. For IVIS system operation, the EXT CPU switch must be on.

SC/SYNC Switch

This switch is on the back of the player (Figure 4-12). The SC/SYNC switch selects which synchronization signal to use. The EXT position allows an external signal source (such as IVIS) to synchronize the picture. The INT position provides a synchronized picture when you use the player with a a TV set. For IVIS system operation, this switch must be set to EXT.

INDEX Controls V and H

These controls are on the back of the player (Figure 4-12). They change the position where the frame numbers appear on the screen. V moves the numbers up and down; H moves the numbers left and right.

FOCUS and TRACKING Controls

These controls are on the back of the player (Figure 4-12). They compensate for noise or other substandard characteristics of the signal coming from a particular video disc. Adjust FOCUS first, then TRACKING, to produce the best possible picture. After playing that disc, return the controls to their center positions.

IMPORTANT VIDEO DISC PLAYER INFORMATION

You should also know about the objective lens and shipping screw on the VDP40.

Objective Lens

Laser-optical video disc players "see" the disc information through an objective lens. The VDP40 (Sony LDP-1000A) lens is below the playing surface (Figure 4-13). When you load a disc on the VDP40, the down side is played. On some players the lens is above the playing surface and the up side is played.

Some discs are recorded on one side only and may have a label that says "this side up" or "this side down". You should load those discs so the recorded side of the disc faces the lens on your player, regardless of the label. You can tell when a disc surface has information recorded on it; when you hold the disc so light is reflected from the surface, you will see a brilliant, multicolor prism effect. Note that the lens has a cover for shipping.
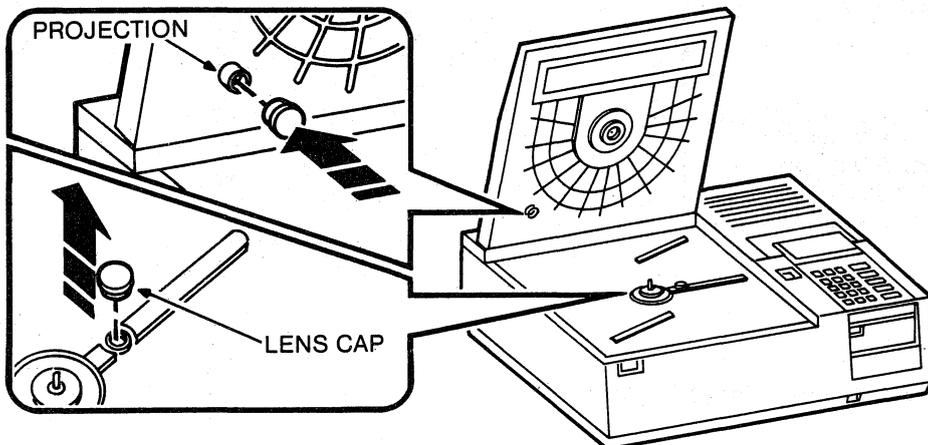
MA-7677-83Z

Figure 4-13 VDP40 (Sony LDP-1000A) Objective Lens

Shipping Screw

The disc player carriage mechanism is fastened for shipping by a
screw through the bottom cover (Figure 4-14). You must loosen
that screw completely before using the player. Turn the screw
five or six turns. You cannot remove the screw. If you reship the
player, tighten the screw (Chapter 7).

THUMBWHEEL

SHIPPING
SCREW

THE SCREW CAN BE TIGHTENED
ONLY WHEN THESE ARROW
POINTS ARE ALIGNED (BY
TURNING THE THUMBWHEEL).

MA-7677-83AR
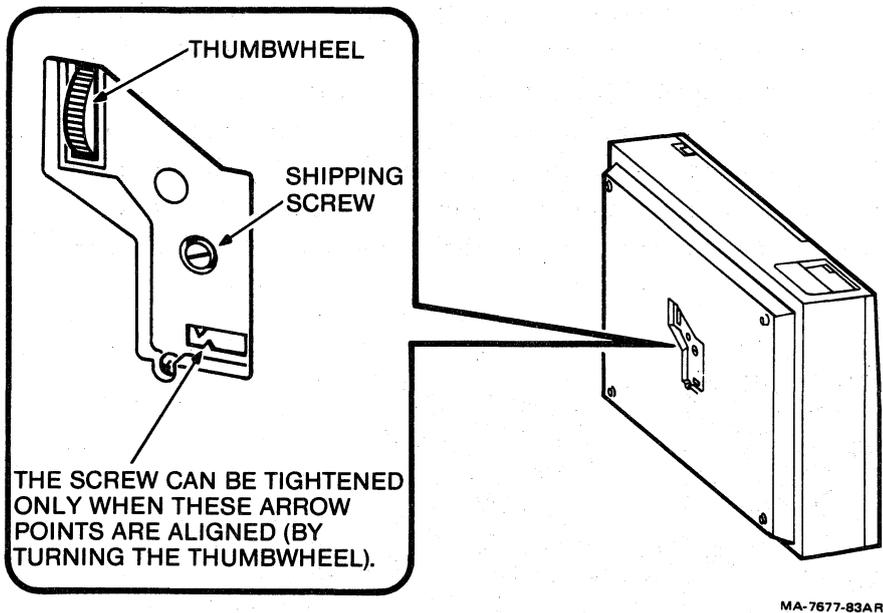
Figure 4-14 Disc Player Shipping Screw

REMOTE POWER SWITCH

This switch (Figure 4-15) lets the system unit power switch
control power to all system components. The system unit power
cord plugs into the white "control" receptacle on the remote
power switch. When you turn the system unit power switch on or
off, the remote power switch turns power on or off to the
complete system.

The remote power switch has an on/off switch with a circuit
breaker. When you turn the switch off, you turn off all power to
the system. If a fault is present, the circuit breaker turns off
all power automatically.

Figure 4-15 Remote Power Switch
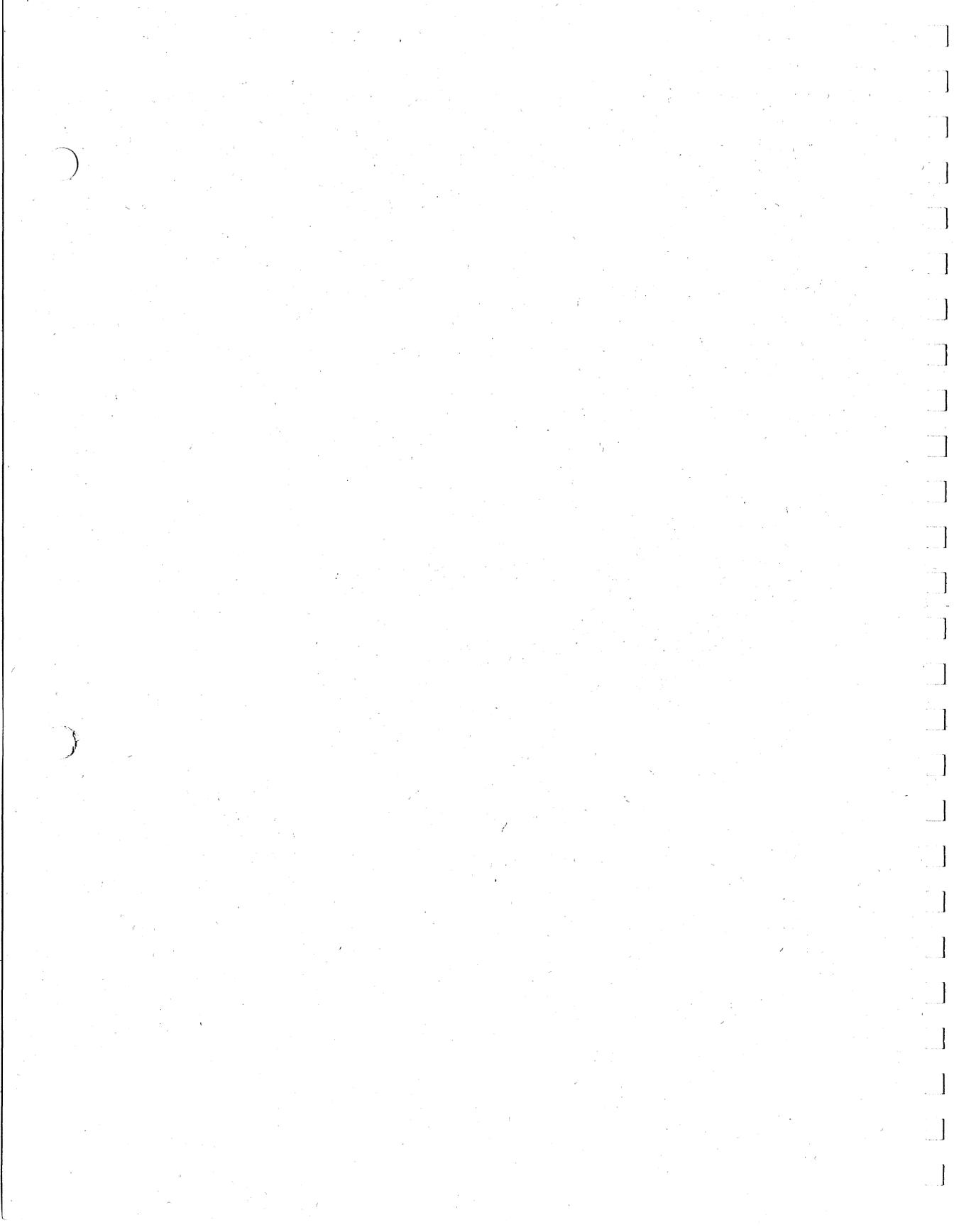
CONNECTING COMPONENTS

INTRODUCTION

You can use a variety of components with your IVIS system,
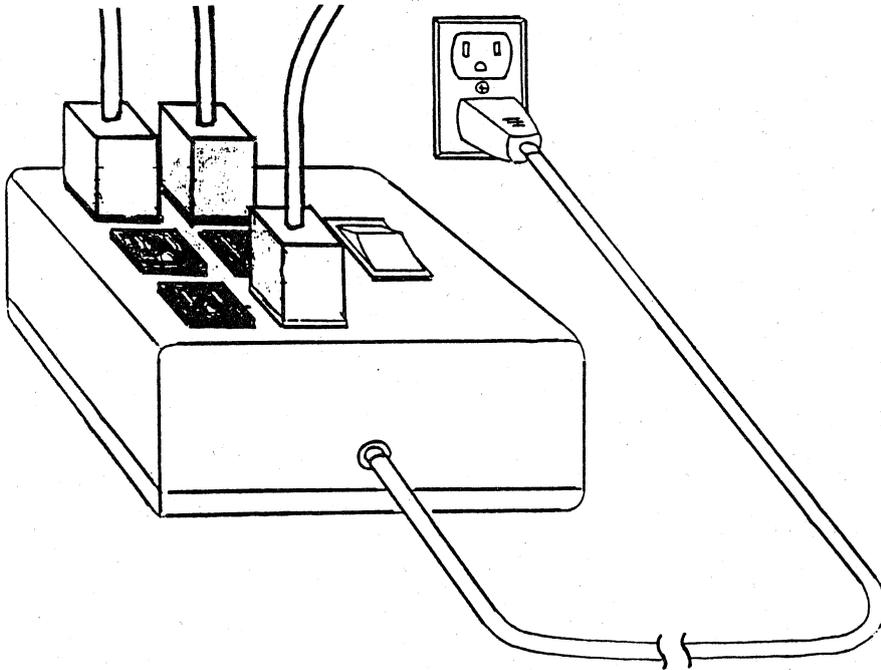including video and audio disc and tape players, video monitors,
amplifiers, headphones, and speakers. You can purchase components
from Digital or from other manufacturers. This chapter's purpose
is not to tell you how to install the IVIS system; the chapter
does, however, provide the following information about the various
types of components you can use and how to connect them.

    o   Before installation -- What components are suitable for
         use in the system.

    o   During installation -- How to install optional components
         not included in the basic installation instructions.

    o   After installation -- How to connect and operate the
         system with optional components.

The IVIS System Installation Instruction manual (EK-0IVIS-IN) provides detailed instructions for interconnecting basic system components. This chapter reviews those basic instructions and tells you how to connect other components to the system. Figure 5-1 shows the connectors on the IVIS backpack and identifies the cables that attach to them.
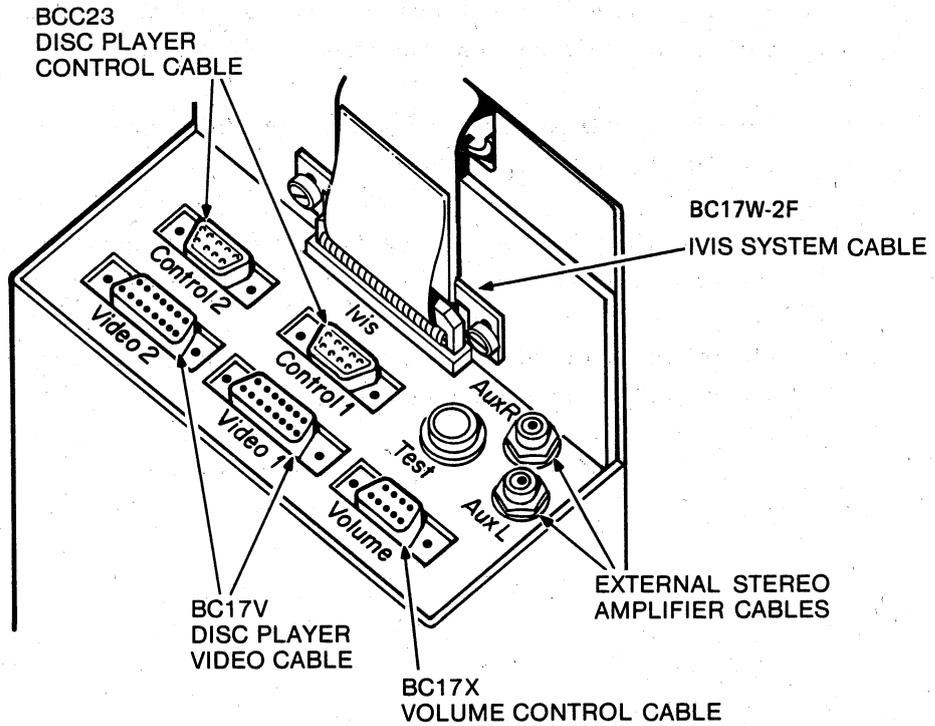
Figure 5-1   IVIS Backpack Connectors

The following sections show you how to connect various components
to the system.

See Figure   To Connect
     5-2   Sony LDP-1000(A) video disc player
     5-3   Pioneer/Discovision video disc player
     5-4   An external video input
     5-5   A component to be computer-controlled
     5-6   A color video monitor
     5-7   More than one color video monitor
     5-8   An auxiliary audio amplifier

                         NOTE

        The basic IVIS system shipped from the
        factory, has been tested to meet its
        design   specifications.   This   chapter
        provides   information   about   connecting
        additional equipment to your IVIS system.
        Your system may not operate correctly
        unless you use equipment and software
        that meets IVIS specifications.

HOW TO CONNECT

A SONY LPD-1000A VIDEO DISC PLAYER

The Sony model LDP-1000A (Digital VDP40) video disc player connects directly to the IVIS system. The EXT CPU switch must be set to ON when the IVIS system is to control the player. If you need more information, see the "Video Sources" section in this chapter.

Figure 5-2   Connecting a Sony LDP-1000A Video Disc Player

The Pioneer/Discovision model PR7820-2 or -3 video disc players require a serial interface adapter (SIA or UEI) for computer-controlled operation. If you need more information, see the "Video Sources" section in this chapter.
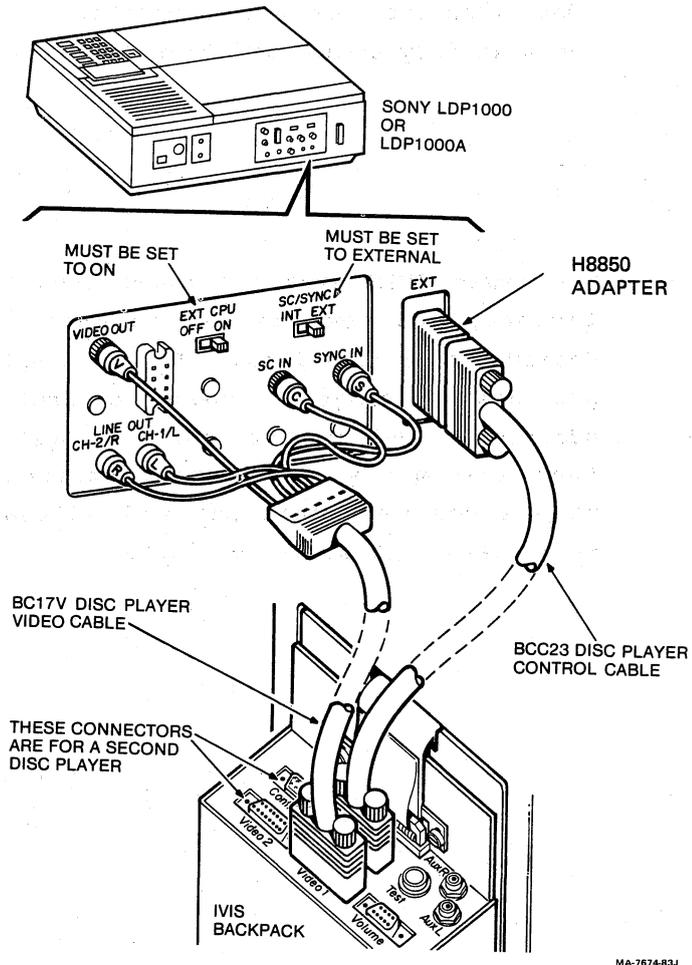

Figure 5-3 Connecting a Pioneer/Discovision Video Disc Player

HOW TO CONNECT
AN EXTERNAL VIDEO INPUT

A qualified technician can assemble a cable that connects to to
the VIDEO 1 or VIDEO 2 backpack connector, using the following
table. The backpack connector is a 15-pin D-subminiature socket.
If you need more information, see the "Video Sources" section in
this chapter.

IVIS SIGNAL AT 54-15993 ANALOG MODULE VIDEO 1 (J4)	IVIS SIGNAL AT 54-15993 ANALOG MODULE VIDEO 2 (J6)	PIN
GROUND	GROUND	1
GROUND	GROUND	2
GROUND	GROUND	3
NO CONNECTION	NO CONNECTION	4
NO CONNECTION	NO CONNECTION	5
NO CONNECTION	NO CONNECTION	6
AUDIO SOURCE 1 RIGHT	AUDIO SOURCE 2 RIGHT	7
AUDIO SOURCE 1 LEFT	AUDIO SOURCE 2 LEFT	8
NTSC COMPOSITE VIDEO	NTSC COMPOSITE VIDEO	9
EXTERNAL SYNC 1	EXTERNAL SYNC 2	10
EXTERNAL SUBCARRIER 1	EXTERNAL SUBCARRIER 2	11
NO CONNECTION	NO CONNECTION	12
ERR 5 H *	ERR 3 H *	13
GROUND	GROUND	14
GROUND	GROUND	15

* These signals are used to indicate an error if the cable
is not connected.

Figure 5-4   Connecting an External Video Input

A qualified technician can assemble a cable that connects to the
CONTROL 1 or CONTROL 2 backpack connector, using the following
table. The signals are RS232 compatible and the connector is a
9-pin D-subminiature socket. If you need more information, see
the "Video Sources" section in this chapter.

IVIS SIGNAL AT 54-15995 LOGIC MODULE CONTROL 1 (J2)	IVIS SIGNAL AT 54-15995 LOGIC MODULE CONTROL 2 (J1)	PIN
NO CONNECTION	NO CONNECTION	1
TxD0	TxD1	2
RxD0	RxD1	3
DTR0	DTR1	4
DTR0	DTR1	5
CTS	CTS	6
GROUND	GROUND	7
GROUND	GROUND	8
ERR 4H *	ERR 2H *	9

* These signals are used to indicate an error if the cable
is not connected.

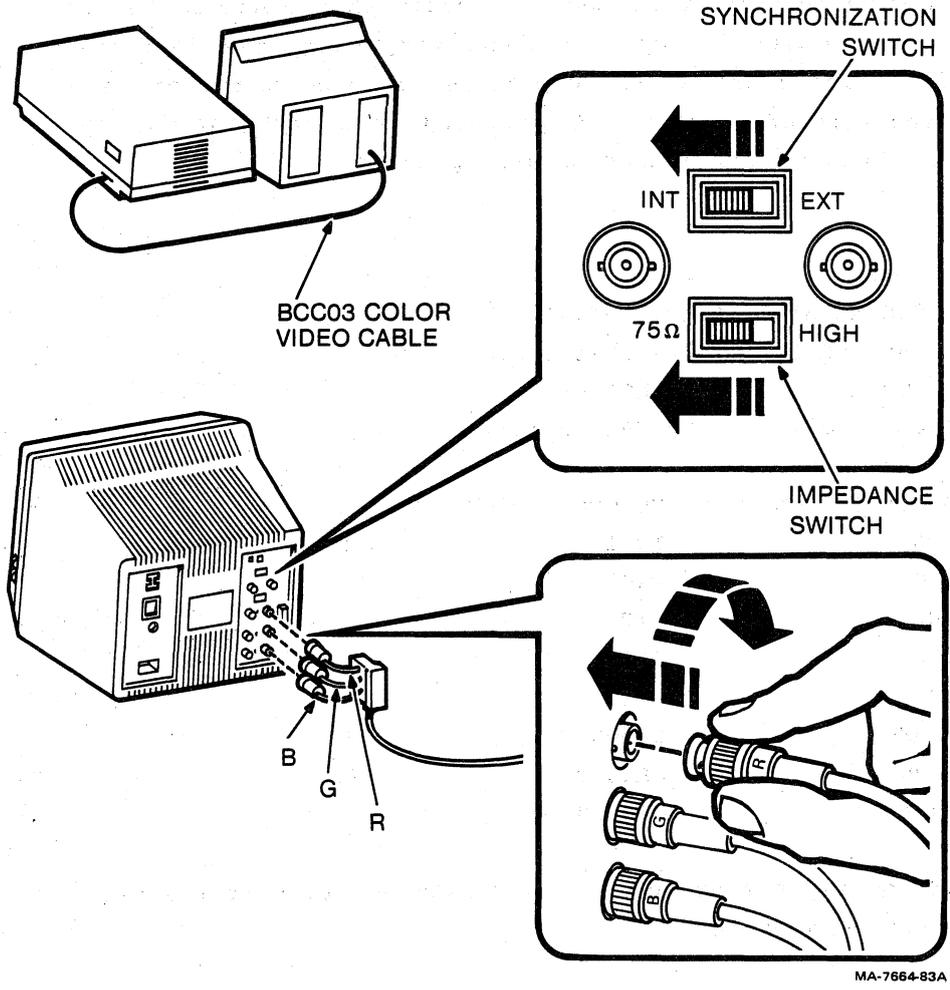Figure 5-5   Connecting a Computer-Controlled Component
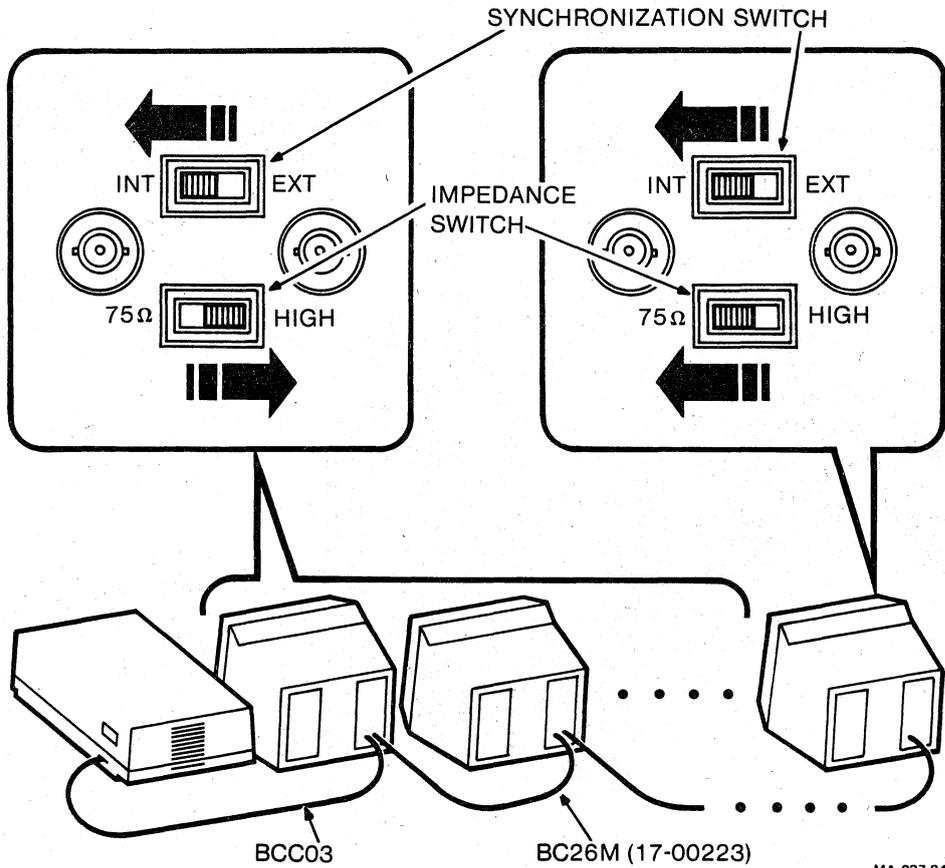
Figure 5-6   Connecting One Color Video Monitor

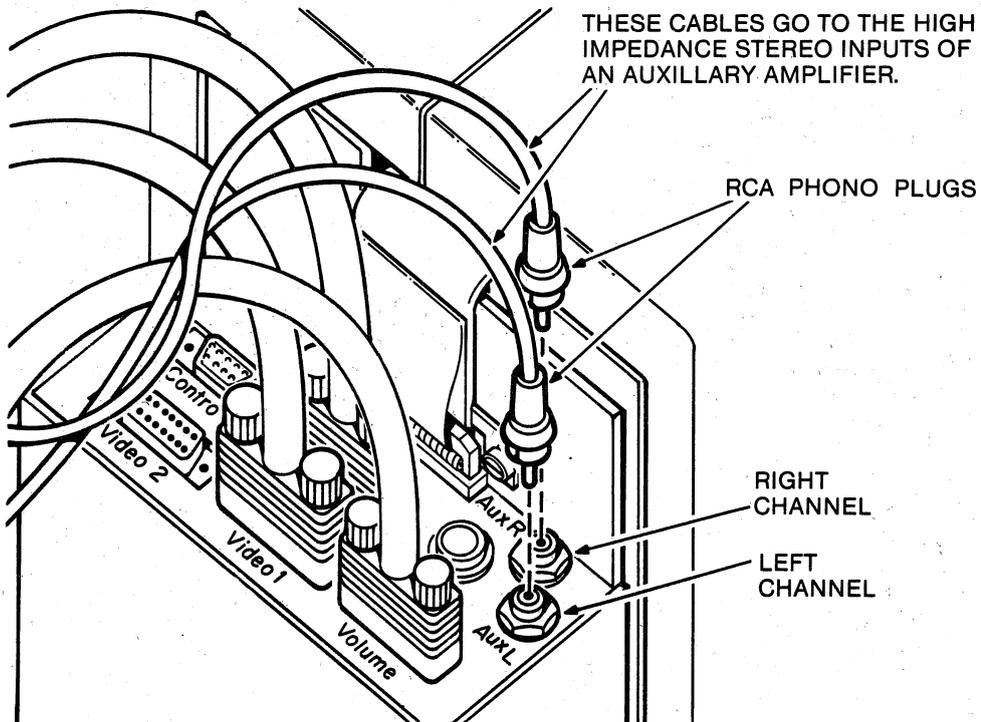If you need more information, see the "Video Monitors" section in this chapter.

Figure 5-7   Connecting More Than One Color Video Monitor

If you need more information, see the "Video Monitors" section in this chapter.

THESE CABLES GO TO THE HIGH
IMPEDANCE STEREO INPUTS OF
AN AUXILLARY AMPLIFIER.

RCA PHONO PLUGS

RIGHT
CHANNEL

LEFT
CHANNEL

MA-7674-83L

Figure 5-8   Connecting an Auxiliary Audio Amplifier

If you need more information, see the "Audio Output Devices"
section in this chapter.

VIDEO SOURCES

Video input devices used with the IVIS system must provide an NTSC
composite video signal of 0.5 V to 1.2 V peak-to-peak (including
sync) into 75 ohms. The quality of the sync pulses on this video
signal is critical. If sync does not conform to RS170, the IVIS
system may not operate correctly.

Video 1 and Video 2

The IVIS system includes a BC17V disc video cable that can connect
an audio/video input component. You can connect two such
components to an IVIS system. This cable (Figure 5-9) plugs into
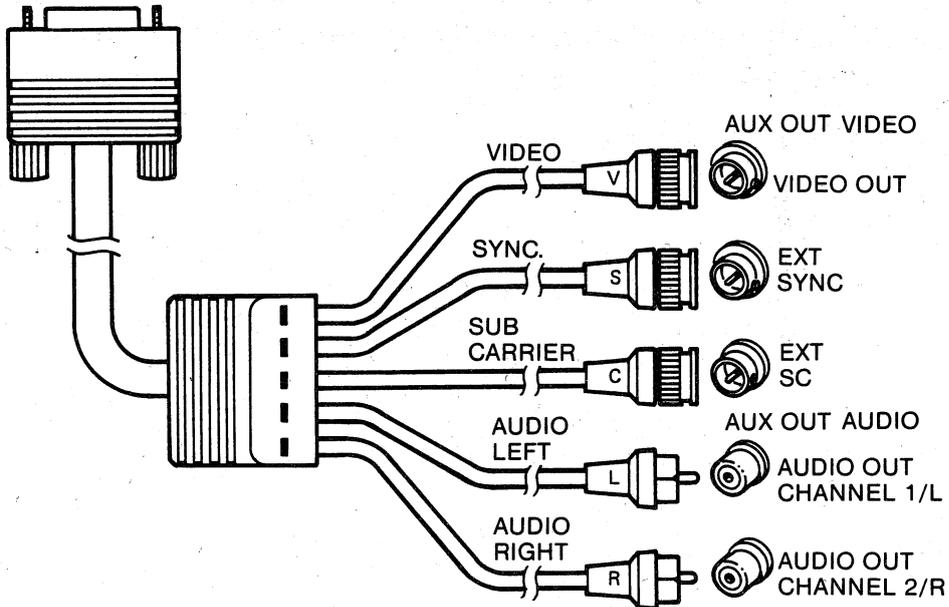the VIDEO 1 or VIDEO 2 connector on the backpack (Figure 5-1).

Figure 5-9   BC17V Disc Player Video Cable

Use the video and audio adjustment procedures in Chapter 4 to
balance the levels of the two audio and/or video sources.

SYNC AND SUBCARRIER SIGNALS

A video disc player or other audio/video component may or may not have input connectors to accept the RS170-compatible external sync and subcarrier signals from the IVIS system.

o **With Connectors** - Look for SYNC and SC connectors and an INT/EXT switch similar to those shown Figures 5-2 and 5-3. The IVIS system can control synchronization of an image coming from a disc player.

o Without Connectors - The synchronizing signals are supplied by the component. The IVIS software must enable GENLOK mode. Occasional tearing of the image from a player will occur when synchronization is lost. Tearing is most noticeable when a disc is scanned, searched, or brought up to speed.

Control 1 and Control 2

The IVIS system includes a BCC23-10 control cable (Figure 5-10)
that connects from the backpack Control 1 or Control 2 connector
to a player or other component with remote computer control
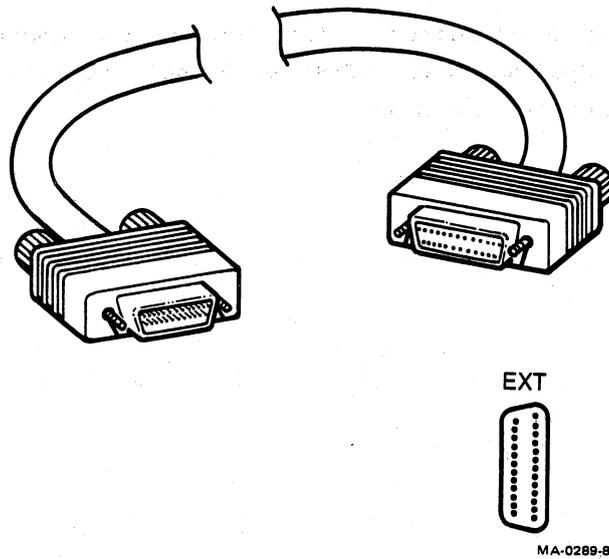capability. See Figures 5-2 and 5-3.

EXT

MA-0289-84

Figure 5-10   BCC23 Disc Player Control Cable

The BCC23 cable is a general-purpose cable that requires a
cable adapter in certain applications. See Figure 5-11.

EXTERNAL CONNECTOR

A video disc player or other audio/video component may or may
not have an RS232C serial interface connector to accept
control signals from the IVIS system.

o With a connector - Look for an "EXT CONTROL" connector
  similar to those in Figures 5-2 and 5-3. (The component may
  or may not have a "CPU CONTROL" switch.) The EXT CONTROL
  connector will let the IVIS system control component
  functions.

o Without a connector - You can use the component with the
  IVIS system, but IVIS will not control any of the
  component's functions.

H8850 DISC CONTROL CABLE ADAPTER

This adapter connects between the BCC23 control cable and the Sony model LDP-1000A video disc player.
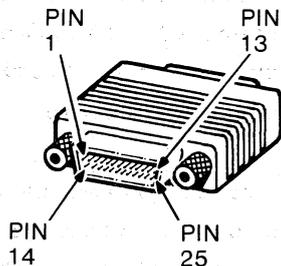
(CONNECTORS ARE IDENTICAL
25-PIN MALE D-SUBMINIATURE)

MA-0290-84

Figure 5-11   H8850 Adapter

```
                Wiring Table for H8850 Adapter
                  IVIS SIGNAL AT        FROM PIN      TO PIN
                  THE BCC23 CABLE*        P1            P2

                                          1             1
            TxD0 or TxD1                  2 ——————————— 2
            RxD0 or RxD1                  3 ——————————— 3
            DTR0 or DTR1                  4 ┐         ┌ 4
                                          5 ┘         └ 5
            CTS0 or CTS1                  6 ——————————— 6
            DSR0 or DSR1                 20 ——————————— 20
            GROUND                        7 ——————————— 7
```

* The BCC23 cable can plug into the Control 1 or Control 2 connector. The IVIS signals with a 0 suffix are from the Control 1 connector; signals with a 1 suffix are from the Control 2 connector. This adapter is reversible (it plugs in either way).

The video disc player produces sound and picture signals as it reads the spiral track on the disc. Each disc revolution produces one picture on the screen and 1/60th of a second of sound. The player produces normal sound and a moving pictures by following the track without interruption. In freeze-frame mode the player locks onto one section of the track, playing that section repeatedly, but with the sound blanked.

When you use discs with freeze-frame segments on the IVIS system, a separate audio source can provide the accompanying sound. For example, disc player 1 (connected to the Video 1 and Control 1 connectors on the backpack) could have freeze-frame segments. The accompanying sound could come from any audio component connected to the Video 2 connector (See the Video 1 and Video 2 section in this chapter).
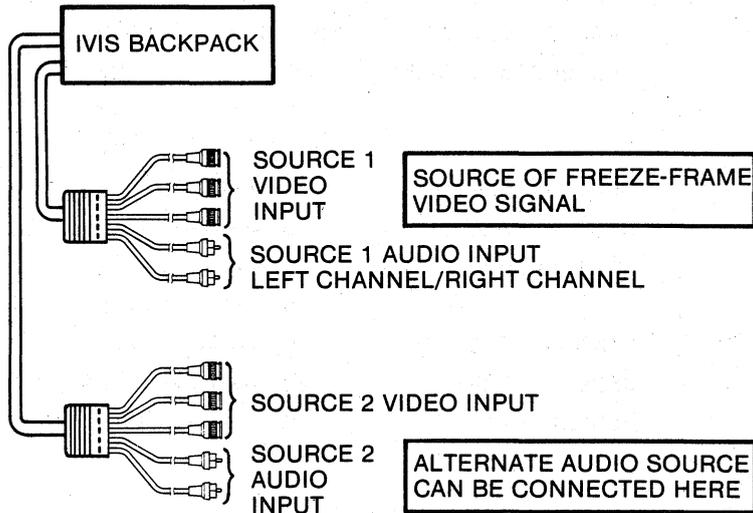
MA-0559-84A

Figure 5-12 IVIS Freeze-Frame Connection

VIDEO MONITORS

The IVIS system can supply video output for any high resolution
RGB monitor. Some monitors, however, require logic changes for use
with the IVIS system. These changes may involve aspect ratio and
synchronization signals.

The "Cables and Accessories" section later in this chaprer
identifies the Digital cables you can use for various monitor
applications.

AUDIO SOURCES

You can program the IVIS system to output sound from the following
sources.

    o   Source 1 audio, left and right channels (stereo)

    o   Source 2 audio, left and right channels (stereo)

Each stereo channel can operate separately for monaural sound.
Source 1 and/or Source 2 may be the audio output from a video disc
player or any other audio output device. The BC17V video cable has
two connectors for use with a stereo audio source (Figure 5-13).
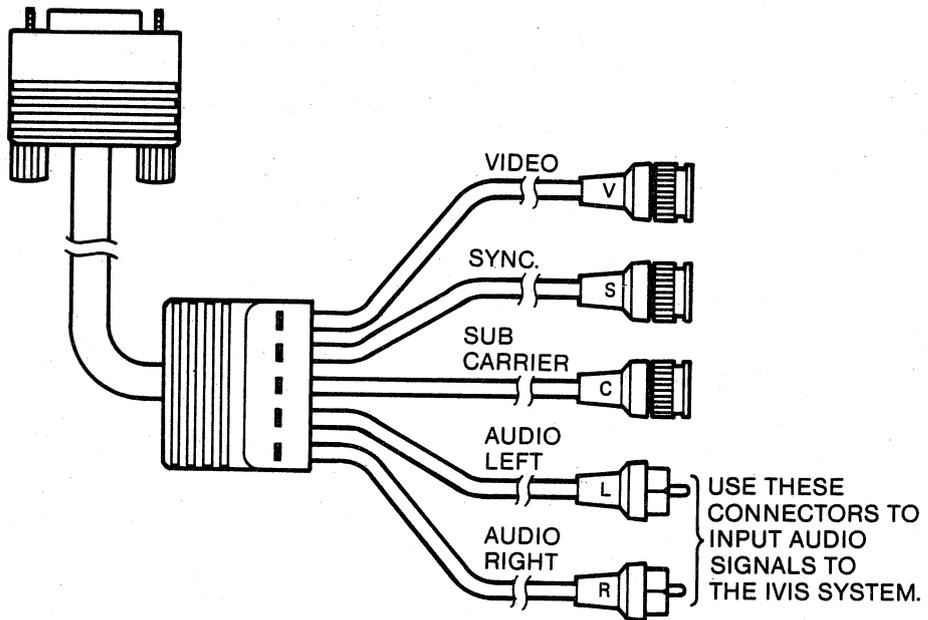
Figure 5-13   BC17V Audio Input Connectors

Use the audio adjustment procedure in Chapter 4 to balance the
listening levels of the these sources.

Audio Output Devices

The IVIS system provides two kinds of audio output.

    o For headphones (volume controlled by IVIS)

    o For an external amplifier with its own volume
       control and speakers

To Use Master Audio Output

    1. Plug headphones (32 ohms) into the miniature
       two-circuit phone jack on the BC17X volume control
       cable. The IVIS audio system can supply one watt of
       audio power per channel.

    2. Use the one volume control knob to set the desired
       listening level for both stereo channels.

To Use Auxiliary Audio Output

    1. Connect the audio inputs of an external amplifier
       to the AUX L (left) and AUX R (right) connectors on
       the backpack. The connectors are standard RCA phono
       plugs and jacks.

    2. Use the volume controls on the amplifier to set the
       desired listening level for each stereo channel.

Cables and Accessories

You may need the following parts if you add components to your IVIS system.

Part Number	Description
BC26M-xx (17-00223-00)	Color interface cable (for connecting two color monitors in series)
BCC03-xx (17-00284-00)	Color video cable (PC350 to monitor)
BC17V-xx (17-00407-02)	Disc player video cable
BCC23-xx (17-00301-03)	Disc player control cable
BC17X-10 (17-00406-00)	Volume control cable
H8850	Disc player control cable adapter
30-20939-02	Stereo headphones

CORRECTING SIMPLE PROBLEMS

INTERNAL SELF-TESTS

Your IVIS system contains a complete set of self-test programs that check all major system functions. The self-test program identifies any problem found. The internal self-test program runs automatically every time you turn the system unit power switch on.

The PC300 Series Owner's Manual and other manuals that come with your system explain the tests, define the fault messages, and tell you how to correct some problems yourself. This chapter gives you that kind of information for the IVIS system components.

TEST MESSAGES

The power-up self-test displays test results on the screen in graphic form. If the IVIS components are not working correctly, the following graphic message may appear.
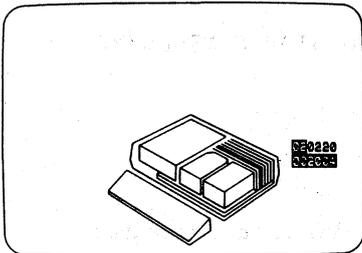
If the module highlighted is in slot 6 and the numbers are

        06 0205
        003006

the power-up self-test found an IVIS problem. The problem is limited to IVIS, and does not affect the complete system. Your system may operate normally except for IVIS. Press RESUME.

BACKUP TEST MESSAGES

In addition to graphic messages, the power-up self-test also turns on one or more of the four red status indicators when it finds an error. These indicators are on the back of the system unit (Figure 4-5). Table 6-1 lists the status indicator codes and their meanings.

NOTE
Make sure the green DC indicator on the back of the system unit is on. If the fan is running and the green indicator is on, continue. If the green indicator is off, see the maintenance chapter of the PC300 Series Owner's Manual.

Table 6-1   Status Indicator Error Codes

INDICATORS

4	3	2	1	MEANING
O	*	O	O	The module in slot 4 of the system unit has failed.
O	*	O	*	The module in slot 5 of the system unit has failed.
O	*	*	O	The module in slot 6 of the system unit has failed.

O means the indicator is off.
* means the indicator is on.

NOTE

Table 6-1 only includes error codes for
slots 4, 5, and 6, which contain the
three IVIS modules. See Table 6-3 for
instructions.

SYSTEM TEST REPORTS

If the system test detects an error, the test displays a summary report on the screen. Table 6-2 shows the IVIS component fault messages and the appropriate corrective action. Press the HELP key for more information. See also Table 6-3.

Table 6-2   System Test Errors

Failed Unit	Message	Corrective Action
IVIS	20 Pin cable error	The test found a problem with the 011002 video module, the 003006 IVIS system module, or the 20-conductor cable that connects to them. Contact a technician for service.
	Flat cable error	The test found an error in the IVIS system cable, the 003006 IVIS system module, or the IVIS backpack. Contact a technician for service.
	Error on channels 1 and 2.	The test did not find a player connected to channel 1 or 2. Make sure that cables are inserted securely. If the error continues, contact a technician for service.

Table 6-2   System Test Errors   (cont)

Failed Unit	Message	Corrective Action
IVIS	Unknown player on channel 1.	Make sure that a player control cable is connected to the backpack control 1 or control 2 connector.
	Unknown player on channel 2.	
		If the error continues, contact a technician for service.

CORRECTING SIMPLE PROBLEMS

This section tells you how to correct simple problems without calling for service.

NOTE

First, turn the system power off, then on again. Then check for normal operation.

Then, work through the following checklist. If you still have a problem, go to Table 6-3. The table lists IVIS system errors and corrective actions.

WARNING

Do not operate your system unit with its cover removed.

OPERATING CHECKLIST

1. Make sure the fan on the left side of the system unit is running.

2. Make sure the green DC indicator on the back of the system unit is on, but no red indicators are on.

3. You should hear a click when you press a key on the keyboard.

4. Make sure the green Power OK indicator on the front of the color monitor is on.

5. The monitor screen should light up when you turn up the brightness control.

6. The Main Menu should appear.

7. Make sure the Power OK indicator on the front of the IVIS backpack is on.

8. You should be able to select the IVIS System Verification program and start it running with the 1983 NCC IVIS Demo disc on the player.

GUIDELINES

o   At any error message, press the HELP key on the keyboard.

o   Run the Maintenance Services program. (See page 7-25 of the
    IVIS System Installation Manual or the maintenance chapter in
    the Professional 300 Series Owner's Manual.)

o   Before you check to see that modules and cable connectors are
    tight, refer to the IVIS Instruction Manual for helpful
    information and illustrations that show how components are
    installed and connected.

o   If you need help, call Digital.

        U.S.A.   1-(800)-554-3333
        Canada   (800)-267-5251
        United Kingdom   (734)868711

Table 6-3   Correcting Simple Problems

Symptom or Error Code	Corrective Action
Highlighted module on screen	Reseat all modules and cables in the system unit.
0203, 0204, or 0205 code The numbers are displayed in this format. 06 0205 003006	Reseat all cable connections. Make sure that IVIS backpack has its ac power cord connected. (The Power OK indicator should be on).
No ac power to components (System unit, color monitor, and IVIS backpack have Power OK indicators.)	Make sure that remote power switch is connected to a live receptacle. Make sure that the remote power switch circuit breaker is set to 1 (on). Reseat power cords to system unit, backpack, and disc player, or plug them into a wall receptacle.
System power is controlled by some other device than the system unit.	Make sure power cord from the system unit goes to the white receptacle on the remote power switch.

Table 6-3   Correcting Simple Problems (cont)

Symptom or Error Code	Corrective Action
Torn image on the monitor screen	Reseat the G connector to the color monitor. Make sure the color monitor SYNC switch is set to INT.
No red color	Set up system for correct monitor type. See IVIS Installation Instruction manual, SET-UP, page 7-16.
Image areas that should be white are purple.	Make sure the color monitor impedance switch is set to 75 Ω.
Image areas that should be white are blue or yellow.	Reseat R and B connectors to the color monitor.
Noise in the TV picture from a particular disc	First, adjust Sony LDP-1000A disc player **FOCUS** control. Then adjust **TRACKING** control for best picture. Return controls to center (detented) position after playing that disc.
No signal from disc player	Make sure disc is in player with the shiny side down. Make sure the disc player video cable is tight.

Table 6-3   Correcting Simple Problems (cont)

Symptom or Error Code   Corrective Action

Intermittent or erratic video,   Make sure there is no heavy
or loss of synchronization   object on the disc player top
                                   cover.

                                   Have the   ac power voltage
                                   checked.   The   disc   player
                                   requires 107 volts minimum.

                                   Use eyeglass lens cleaning
                                   tissue   to   clean   the   disc
                                   player objective lens.

                                   Wipe the disc with a soft
                                   cloth moistened with warm
                                   water.

The first section of this chapter describes the steps you should take before you call one of the telephone numbers listed below. The second section describes the repair and support services available from Digital.

HOW TO GET SERVICE

Digital has a central service point in your area to help you get your system running with a minimum of trouble.

Before you call

- o   Step through Chapter 6 of this book. Quite often you can solve a problem yourself.

- o   Write down the serial number of your IVIS system. The serial number is on the back of the system unit, next to the power cord.

- o   Summarize the problem. Make a note of what you were doing when the system failed. Also note if any indicators are turned on or off, or if you heard any new sounds just before or after the system failed.

When you call

- o   Stay near the system.

- o   Have all your materials available. The service person may ask you to try to recreate the problem. To do this, use the same diskettes that you were using when the problem occurred.

Call Digital at one of the following telephone numbers:

        U.S.A.   1-(800)-554-3333

        Canada   (800)267-5251

        United Kingdom   (734)868711

REPACKING FOR SHIPMENT

To avoid damage in shipment, Digital recommends that you pack
your system components in their original cartons when possible.

If you need to disassemble parts of the system, refer to the IVIS
Installation Instruction Manual. It provides drawings that show
how to access various subassemblies and information about how to
take them apart.

System Unit

If you have to return the system unit to Digital for service,
follow these steps.

    1. Remove the hard disk drive, if your system has one, for
        shipping separately. Replace the system unit top cover.

    2. You must repack the diskette drive with the shipping card
        that was in the diskette drive when you received the
        system.

        a. Open the diskette drive doors.

        b. Turn system power on for 5 seconds, then turn power
           off.

c. Insert the shipping card into one of the diskette drives. Do not force the card in. If the card does not go in all the way, repeat steps 2a and 2b.

d. Close the diskette drive doors.

3. Disconnect the system unit, and repack it.

Video Disc Player

1. Open the cover. (Power must be on.)

2. Remove the lens cover from the projection inside the player cover and place it over the objective lens (Figure 7-1).

3. Place the cushion over the drive spindle.

4. Close the player cover.

5. Turn power off and disconnect the power cord.

6. Disconnect the cables from the back of the player.

7. Find the location indicator and the adjustor (Figure 7-1).

8. Turn the adjustor until the location indicator arrow tips are aligned.

9. Tighten the shipping screw (Figure 7-1).

10. Follow the packing instructions printed on the flap of the shipping carton.

PROJECTION

LENS CAP

MA-7677-83Z

MA-7677-83Y

ADJUSTOR

SHIPPING SCREW

LOCATION INDICATOR

MA-7677-83AV
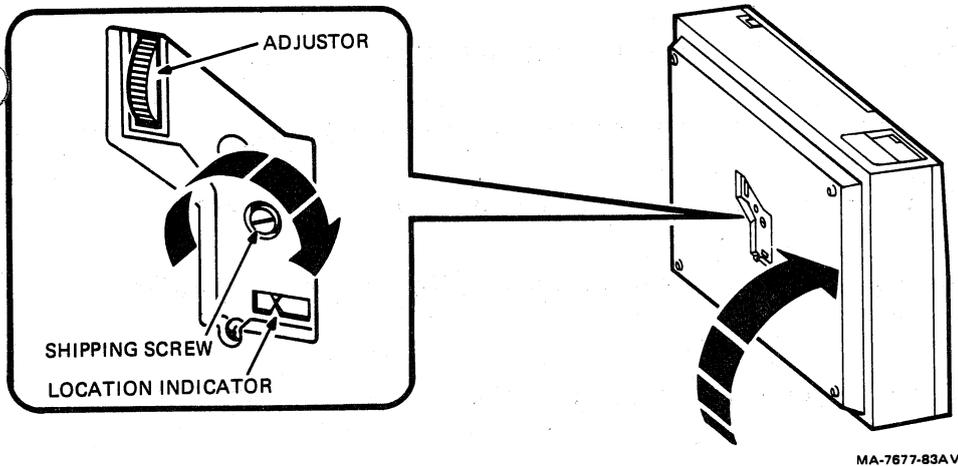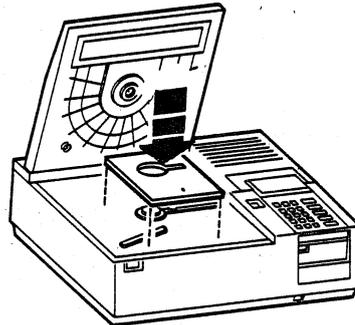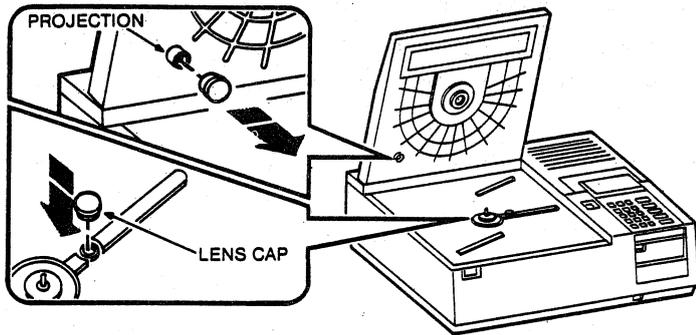
Figure 7-1 Preparing the Disc Player for Shipment

DIGITAL REPAIR SERVICE

Digital Field Service offers a range of flexible service plans. Choose the one that is right for you.

ON SITE SERVICE offers the convenience of service at your site and insurance against unplanned repair bills. For a small monthly fee you receive personal service from our Service Specialists. Within a few hours of your call, the specialist is dispatched to your site with all the equipment and parts needed to give you fast and dependable maintenance.

BASIC SERVICE offers full coverage from 8 a.m. to 5 p.m., Monday through Friday. Options are available to extend your coverage to 12-, 16-, or 24-hour days, and Saturdays, Sundays, and holidays.

DECservice offers a premium on-site service that guarantees extra-fast response and nonstop remedial maintenance. We don't leave until the problem is solved, which makes this service contract ideal for those who need uninterrupted operations.

Under Basic Service and DECservice all parts, materials, and labor are covered in full.

CARRY-IN SERVICE offers fast, personalized response and the ability to plan your maintenance costs for a smaller monthly fee than On-Site Service. When you bring your unit in to one of 160 Digital Servicenters worldwide, factory-trained personnel repair your unit within two days (usually 24 hours). This service is available on selected terminals and systems. Contact your local Digital Field Service Office to see if this service is available for your unit. Digital Servicenters are open during normal business hours, Monday through Friday. Call one of the following numbers for the location of the office nearest you.

DECmailer offers expert repair at a per use charge. This service is for users who have the technical resources to troubleshoot, identify, and isolate the module causing the problem. You mail the faulty module to our Customer Returns Center, where the module is repaired and mailed back to you within five days.

PER CALL SERVICE offers a maintenance program on a noncontractual, time-and-materials-cost basis. This service is available with either On-Site or Carry-In service. It is appropriate for customers who have the expertise to perform first-line maintenance, but may occasionally need in-depth support from Field Service.

Per Call Service is also offered as a supplementary program for Basic Service customers who need maintenance beyond their contracted coverage hours. There is no materials charge in this case.

On-Site Per Call Service is provided on a best effort basis, with a normal response time of two to three days. It is available 24 hours a day, seven days a week.

Carry-In Per Call Service is available during normal business hours, with a two to three day turnaround.

For more information on these Digital service plans, prices, and special rates for volume customers, call one of the following numbers for the location of the Digital Field Service office nearest you.

DIGITAL INTERNATIONAL FIELD SEVICE INFORMATION NUMBERS

U.S.A.	1-(800)-554-3333
Canada	(800)267-5251
United Kingdom	(734)868711

V