Important Information for Eclipse 400 and Eclipse 800 Owners.

When using your Operating Instructions, you will find that some of the information does not apply to your Eclipse. In an effort to save you money, some of the features of the Eclipse 4 and Eclipse 8 have not been included in the Eclipse 400 and Eclipse 800. Please disregard the information in the areas describing the operation of these features.

Specifically,

1. The Eclipse 400 and the Eclipse 800 do not have a "Battery Charge Status Gauge" indicator in the lower right corner of the preview screen. However, the "LOW BATTERY" message will be displayed when the charge level of the battery drops to a point that will allow fewer than 15 minutes of operation.

2. The Eclipse 400 and the Eclipse 800 do not have a PC Card slot. Upgrades and enhancements to your unit will be performed at the Burdick, Inc. facility in Milton, Wisconsin.

3. There are no input/output connectors on the back of the Eclipse 400 and Eclipse 800.

4. Your Eclipse 400 or Eclipse 800 was programmed with a specific language. You must return the unit to Burdick, Inc. to have a different language programmed into it.

5. You may set up one user configuration and that configuration will remain in effect until you change it. You will not be able to have two user configurations stored simultaneously.

6. You may store only one ECG recording for later use.

Except for the above items, all information in the Operating Instructions relating to the Eclipse 4 also pertains to the Eclipse 400 and all information relating to the Eclipse 8 also pertains to the Eclipse 800.

If you would like to add any of the Eclipse 4 or Eclipse 8 features to your cardiograph, your unit may be enhanced. Please contact Burdick, Inc. at 1-800-777-1777 or your local Burdick Distributor for more information.

Please see the reverse side of this sheet for Warranty information.

Burdick, Inc.   15 Plumb Street   Milton, WI   53563   U.S.A.   (608) 868-6000

Limited Warranty and Service

YOUR BURDICK, INC. LIMITED 3 YEAR WARRANTY:

Burdick, Inc. warrants to the original purchaser, for a period of three (3) years from the purchase date, that all equipment components (consisting of the main electronic assembly, and not including accessories) which fail to operate as provided in the equipment specifications, will be repaired or replaced, at Burdick, Inc.'s option, without charge to the customer. However, the customer assumes all responsibility for shipping charges.

Equipment returned to the Burdick Repair Center, Milton, WI during the first year after purchase will be serviced at no charge to include parts, labor and return transportation. However, the customer assumes all responsibility for incoming shipping charges. Any equipment* component which fails to operate in normal use during the subsequent two (2) years will be repaired or replaced, at Burdick, Inc.'s option, without charge. The customer assumes all responsibility for shipping and labor repair charges.

All accessories and main battery supplied with the new equipment (with the exception of non-replaceable-lead patient cables) are warranted for one (1) year from the purchase date and will be repaired or replaced at Burdick, Inc.'s option, without charge to the customer, with the exception of shipping charges. Non-replaceable-lead patient cables are warranted for a period of ninety (90) days from the date of original purchase. Accessories and parts sold separately are warranted for a period of ninety (90) days from the date of original purchase.

This Warranty gives you specific legal rights which may vary from state to state. This Warranty does not apply to equipment damaged by shipping, accident, misuse, theft, neglect, fire or other Acts of God, deterioration caused by use of chemicals not encountered during normal operation, equipment failures due to the use of paper or other supplies not conforming to Burdick-approved specifications and standards, power surges or unauthorized modifications. This Warranty also will not apply if the serial number has been altered or defaced, or if the equipment has been modified or serviced by anyone other than an authorized agent of Burdick, Inc. No representative or employee of Burdick, Inc. is authorized to assume any further liability or grant any further warranty beyond the Warranty set forth herein.

Authorized Burdick dealers are approved to maintain the Burdick, Inc. equipment they sell. They are equipped to provide on site field service whenever it is practical. If trouble occurs, contact the Burdick dealer from whom the products were originally purchased to arrange for service. The engineering and service specialists of Burdick, Inc. stand ready to assist customers and dealers, and repair information can be supplied by telephone or mail.

In order for this Warranty to apply, THE PURCHASER MUST COMPLETE THE WARRANTY CARD and mail it directly to Burdick, Inc. Postage has been prepaid for your convenience. Failure to complete your Warranty Card could result in delays in repair and/or service, or a denial of the Warranty.

Important Note: Current FDA Regulations require that some medical devices and their locations be registered. Your completed Warranty Card automatically registers your product.

In the event a Warranty Card is/was not returned, the following information must be supplied to Burdick, Inc. before warranty support can be provided:

1. Customer name, address and telephone/fax numbers;
2. Equipment model, serial number and date of installation;
3. Installation date of new part, new accessory or new unit;
4. Name of dealer from whom equipment was purchased;
5. Complete description of unit's condition (please state if symptoms are constant or intermittent);
6. Complete list of all steps taken in attempts to remedy the problem.

SERVICE:

Burdick, Inc. products are sold and serviced through a nationwide network of medical equipment distributors who have been carefully selected for their proven ability to serve the medical profession. All of these Authorized Service Agents participate in an ongoing certification program and must demonstrate a high caliber of technical expertise. Service, parts and accessories for Burdick, Inc. equipment are available from your authorized dealer. For more information or special assistance, contact Burdick, Inc. at **(800)-333-7770** or **(608)-868-4678**.

RETURNING EQUIPMENT FOR SERVICE:

If equipment is being returned for repair, prior authorization must first be obtained by phone or mail. Always include a detailed list of symptoms, and if applicable, a sample trace recording. Please include your name and phone number. This will assure you are provided with the fastest and most efficient service possible. If circuit boards are shipped to a service center, always ensure they are adequately protected and enclosed in an antistatic bag.

If a unit must be returned to the Burdick, Inc. factory for repair, the unit and accessories should be carefully packed in a strong carton, preferably the one specifically designed for that unit. Shipping containers are available from your Burdick dealer, however, the customer is responsible for and assumes all risks associated with shipment of the unit. Ensure that the package is clearly marked for protection against rough handling.

Example: "DELICATE ELECTRONIC EQUIPMENT - HANDLE WITH CARE".

---

*Equipment is considered to be the main electronic assembly, and by definition does not include any accessories.

Operating Instructions
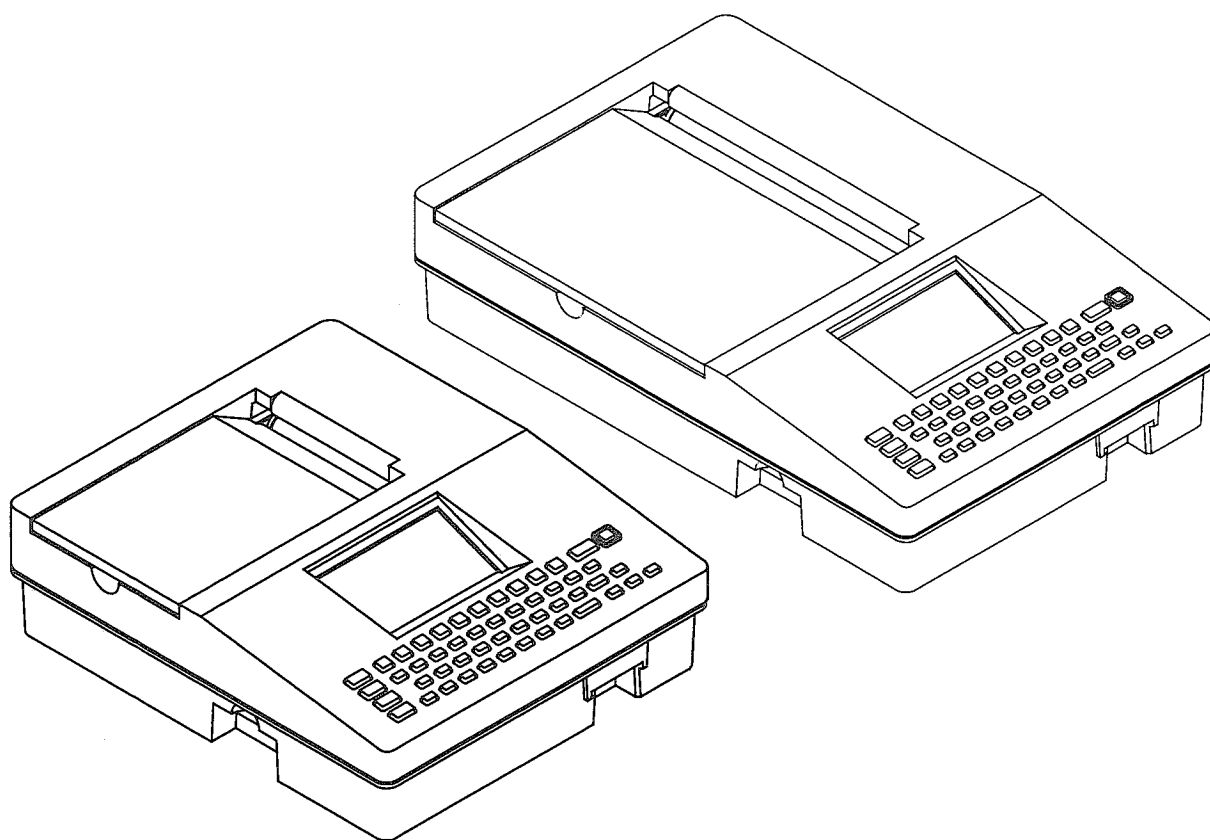
Eclipse Electrocardiograph

Operating Instructions Part No. 086425
Revision: 1295B

OPERATOR COMMENTS

We are constantly striving to make our products and our documentation easier to use. You can help by sharing your comments with us. If you have any suggestions, or if you would like to notify us regarding an inaccuracy, please photocopy, fill out and mail the Operator's Comments form located at the back of this manual. Your input will be sincerely appreciated.

DISCLAIMER

BURDICK, INC. MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE CONTENTS OR USE OF THIS MANUAL AND SPECIFICALLY DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Acquiring ECG Reports

1. Prepare patient according to guidelines in Chapter 5, "Patient Preparation."

2. Plug Eclipse into a properly grounded, AC power outlet.
   See "Connecting Power" on pg. 2-3

3. From Standby mode, press ⏻ (on/stby) to power up to the PREVIEW screen.

For a Stat ECG...

4. Press ⚡ ECG to acquire an Auto ECG report.
   See "Acquiring an Auto ECG" on pg. 6-10.

For an ECG with demographics...

4. Press (N I) to go to the EDIT ID menu.

5. If a System Note box appears with the message "NEW Patient?" press (Y).

6. Type the patient's ID and press (←enter).

7. Type the patient's last name and press (←enter).

8. Type the patient's first name and press (←enter).

9. Type the patient's date of birth and press (←enter).

10. Select the appropriate gender in the *Sex field by pressing either (F) or (M).

11. Fill in remaining fields as thoroughly as possible. Skip fields if necessary. Exit menu or acquire a report at any time.
    See "Entering Patient Demographics" on pg. 6-4

12. Press ⚡ ECG to acquire an Auto ECG report.
    See "Acquiring an Auto ECG" on pg. 6-10.

Table of Contents

List of Quick Reference Guides

Warnings, Cautions & Notices

Warnings

WARNING: Never remove the battery pack and attempt to recharge it using an external battery charger. Fire or explosion may result.

WARNING: Explosion hazard. Do NOT use in the presence of flammable anesthetics.

WARNING: Electrical shock hazard. Do NOT contact unit or patient during defibrillation. Otherwise, serious injury or death could result.

WARNING: NEVER position defibrillator paddles very close to or over ECG sensors. Remove all chest sensors (V-Leads/C-Leads) from a patient before defibrillation to allow proper paddle placement. Severe burns may result from improper placement of defibrillator paddles. Before using any defibrillator, consult the operating instructions for that equipment.

WARNING: Electrical shock hazard. Operate the unit from its battery supply if the integrity of the protective earth conductor is in doubt. Otherwise, serious injury or death could result.

WARNING: Hazardous voltage. To reduce the risk of electrical shock, do not attempt to remove the cover under any circumstances. Refer servicing to a qualified technician.

Cautions

CAUTION: Federal law restricts this device to sale by or on the order of a physician.

CAUTION: The unit must be operated only at the line voltage and frequency specified on the rating plate.

CAUTION: Although the Eclipse is designed to meet IEC 601-1-2 EMC immunity requirements, the presence of strong EMI fields generated by electronic, surgical or diathermy instruments in close proximity to the unit may cause trace noise or input overload conditions.

CAUTION: Fire hazard. Replace Eclipse 4 battery pack <u>only</u> with Burdick part number 862988. Replace Eclipse 8 battery pack <u>only</u> with Burdick part number 863045.

Notices

NOTICE: Do not place used battery pack in your regular trash. The incineration, landfilling, or mixing of NiCd batteries with municipal waste is PROHIBITED BY LAW in most areas. Return this battery pack to a government-approved battery recycler. Contact your local waste management officials for more information.

NOTICE: Computer assisted interpretation is a valuable tool when used properly. However, no automated interpretation is completely reliable and interpretations should be reviewed by a qualified physician before treatment, or non-treatment, of any patient.

NOTICE: Because the Burdick Eclipse offers different lead configurations, always ensure that the appropriate lead placement is employed for the lead configuration selected.

NOTICE: Interpretive Eclipse units do not analyze pediatric data. Interpretation is not available for patients who are 16 years old or younger. When the patient's age is 16 or less, the message, "PEDIATRIC INTERPRETATION NOT AVAILABLE," is printed on Auto ECG reports.

NOTICE: Waveforms displayed on the Eclipse screen are not intended to be used for diagnostic purposes. Use displayed waveforms to assess signal quality only.

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Definitions of Symbols Used

Safety Symbols

⚠ Attention. Consult accompanying documents.

⚡ Danger! High voltage.

⚡ Hazardous voltage.

♥ Defibrillation-Protected Type CF Equipment.
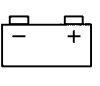
⏚ Equipotentiality (used to label the grounding lug).

CE Complies with the requirements of the EMC directive.

Labelling Symbols

∼   Alternating Current (AC)

      Automatic Operation

      Custom Lead Triplet

      Frequency Response

      Heart Rate

      Input/Output Connection

      LCD Screen Contrast

      Manual Operation

      On/Standby

      Stop Function

IOIO   Serial port

      Battery Compartment

      Battery Charge Status

Chapter 1 | *General Information*

Congratulations on your purchase of a top quality Burdick ECG machine.

By listening to our customers, we have designed the Eclipse to suit your specific needs, incorporating features that people like yourself have requested.

Your business is important to us. If you would like more information or if you have any questions, please contact your Burdick dealer or call Burdick Inc., Customer Service Department at (800) 777-1777 or (608) 868-6000.

> *CAUTION: Federal law restricts this device to sale by or on the order of a physician.*

Inspection Upon Delivery

Your new Burdick Eclipse was carefully inspected before shipment. Please inspect your unit upon delivery for any damage which may have occurred in transit. If you notice any damage, please contact your shipping agent.

Check the enclosed accessories against the included list of standard accessories. If items are missing, contact your Burdick dealer or call Burdick Inc., Customer Service Department at (800) 777-1777 or (608) 868-6000.

> **NOTE:** Your Burdick Eclipse Electrocardiograph is intended for use with approved ECG supplies; its reliability and performance are directly affected by the supplies you use.

General Description

Figure 1-1
Burdick Eclipse 4 and
Eclipse 8
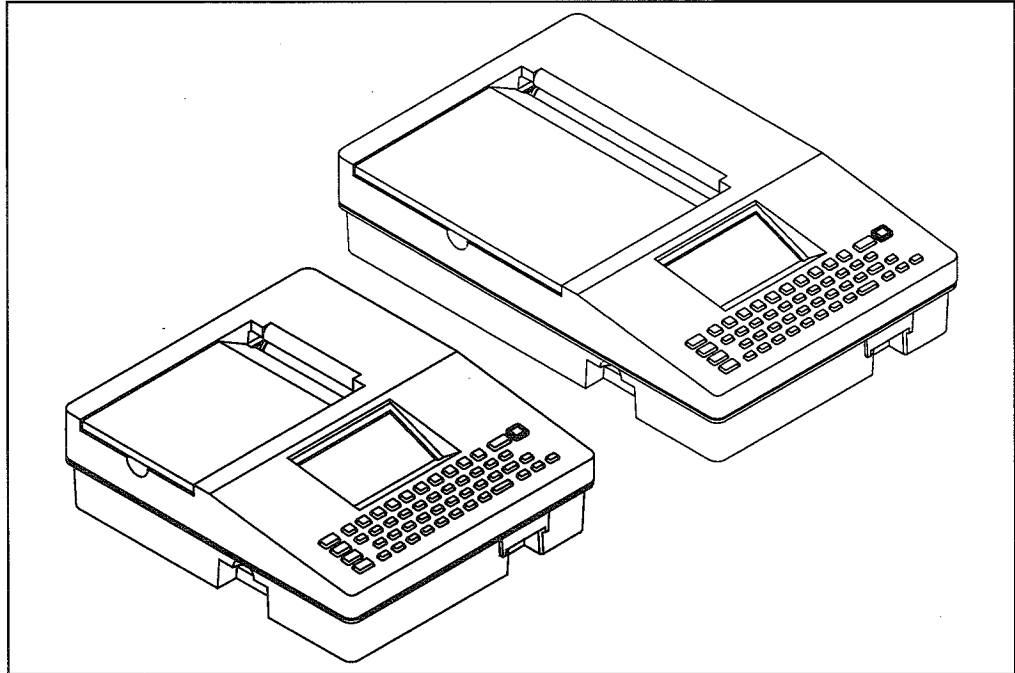
- Portable; may be operated from battery or AC line power.
- Features a 50-key keyboard and high resolution LCD display.
- Prints using a thermal printer and thermosensitive, Z-fold paper.
- Operates in manual and automatic modes.
- Records in either standard or Cabrera lead formats.
- Stores and, with interpretive models, analyzes waveforms acquired in automatic mode.
- Prints at least 200 pages at 25 mm/s recording speed when the internal battery is fully charged.
- Continuously recharges the battery whenever the unit is connected to AC line power.
- Enhanceable. Software enhancements are quickly and easily introduced with an available PC card.
- Allows you to preview waveforms before you print, saving time and supplies.
- Features selectable patient demographic fields that you may use to suit your needs.

Burdick's Analysis Program

About the program

The Eclipse is available with Burdick's interpretive analysis program. This program is widely respected as one of the most accurate available today. It was developed by Prof. Peter MacFarlane of the Glasgow Royal Infirmary who has been involved in computerized ECG interpretation since its inception in the 1960s.

The ECG Interpretation Criteria Physician's Guide accompanies units with interpretive capabilities. This guide outlines the criteria used by Burdick's analysis program.

Features of Burdick's analysis program

- DEVELOPED IN A HOSPITAL ENVIRONMENT
  The interpretive program was developed in the University Department of Medical Cardiology in the Glasgow Royal Infirmary. Unlike many products which are developed with the aid of outside consultants, this program was developed in the environment for which it is intended.

- USES AGE, SEX AND RACE DATA EXTENSIVELY
  More than 500 measurements, plus the patient's age, sex, clinical classification and medications are factored into each analysis. Several criteria for abnormalities are age, race and sex dependent. Race, for example is key in identifying hypertrophy and T-wave abnormalities.

- PRODUCES CLEAR REASON STATEMENTS
  Reasons appending abnormalities are given in conversational language. For example, wording like, "High voltages in limb leads," is used rather than, "R in I > 1.4 mV."

- USES CLINICAL HISTORY
  The program is the first to use clinical class as an integral part of analysis just as a physician would consider clinical class in his or her evaluation.

- UNDER CONTINUOUS DEVELOPMENT & ENHANCEMENT
  The program has been clinically tested against more than 80,000 ECGs and is continuously under development.

- ACCURATELY DETECTS NORMAL ECGs
  Normal ECGs are easily identified and sorted so the physician may quickly verify results.

Safety Features

⚡   *WARNING: Electrical shock hazard. Do NOT contact unit or patient during defibrillation. Otherwise, serious injury or death could result.*

⚠   *WARNING: NEVER position defibrillator paddles very close to or over ECG sensors. Remove all chest sensors (V-Leads/ C-Leads) from a patient before defibrillation to allow proper paddle placement. Severe burns may result from improper placement of defibrillator paddles. Before using any defibrillator, consult the operating instructions for that equipment.*

Complies with IEC 601-1 and 601-2-25 safety standards.

Includes a 3-conductor, hospital-grade power cable. Includes an electrically isolated, DB-15 style patient cable. This conforms to IEC safety, pinout and mechanical requirements.

CE   This symbol on the rear panel indicates this equipment meets the requirements of the EMC directive.

⊣♥⊢   This symbol next to the patient cable connector indicates this equipment is classified as defibrillation-protected, Type CF equipment. The patient cable and input circuits are designed to prevent damage to the recorder if the unit is connected to a patient during defibrillation.

Using Multiple Electrical Apparatus

Use caution when monitoring patients who must be protected from very small electrical currents. Susceptible patients include patients with cardiac catheters or pacemakers. Consult a qualified technician before using multiple electrical apparatus in this patient environment.

The Eclipse patient leads are electrically isolated from ground and the device meets the most stringent IEC and ANSI/AAMI medical standards for leakage currents.

However, a potential hazard may occur if the enclosure leakage currents from multiple pieces of equipment combine and are inadvertently routed directly to a patient's heart via a catheter or pacemaker lead. Only equipment which is certified to IEC and ANSI/AAMI medical standards should be used in this environment. Use of certified equipment does not, however, completely eliminate this possible hazard.

Another potential hazard may occur if two devices near a patient are powered from different circuits. If the grounds of the two circuits are at different potentials, which can occur under certain fault conditions, then a ground loop can exist between the enclosures of the two devices. If devices must be powered from separate circuits in the vicinity of a susceptible patient, then the grounding lugs on the devices should be electrically connected via an equipotential cable. Please also consult Chapter 2, "Equipment Setup."

Chapter 2 Equipment Setup

This chapter covers:

- Loading recording paper.
- Turning the unit on and off.
- Connecting AC line power to the unit.
- Calibrating the Battery Status gauge.
- Connecting external equipment.
- Connecting the patient cable to the unit.
- Enhancing software.

Quick Reference-Loading Recording Paper

1. Remove paper from package.

2. Open the paper compartment door by lifting and sliding it out to the left.

3. Lift the top sheet of the new stack of paper and pull it to the right.

4. Place the paper into the compartment.

5. Slide the compartment cover back into place until you notice a definite click as it snaps into the feed rollers.
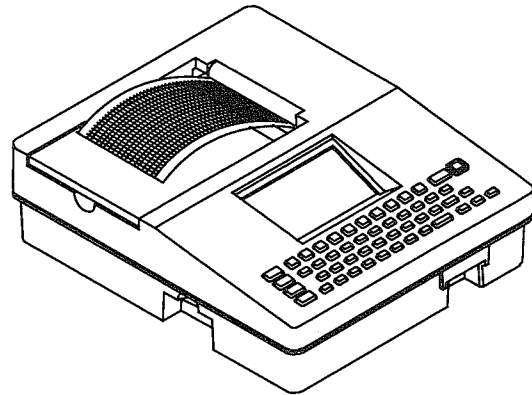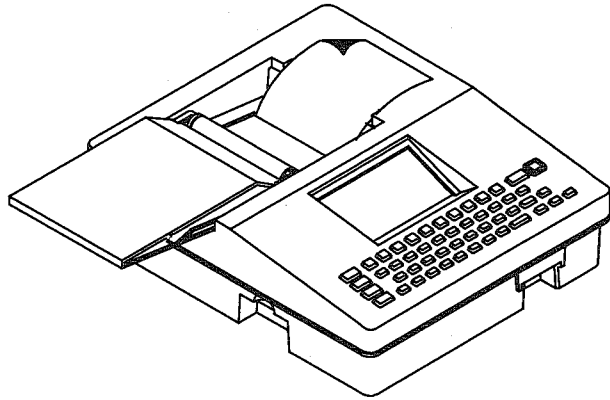
NOTE: Damage caused by using unapproved recording paper may void your warranty.

Use only Burdick, thermally responsive ECG paper. The following Burdick ECG papers are recommended:

1. Assurance 50. Permanent trace, Z-fold. Thermal image integrity guaranteed for 50 years.
2. Standard trace, Z-fold. Thermal image integrity guaranteed for 5 years when stored in accordance with manufacturer's specifications.

The printer is pre-adjusted at the factory. Do not try to make adjustments.

Connecting Power

⚠️ *WARNING:* *Electrical shock hazard. Operate the unit from its battery supply if the integrity of the protective earth conductor is in doubt. Otherwise, serious injury or death could result.*

⚠️ *CAUTION:* *The unit must be operated only at the line voltage and frequency specified on the rating plate.*

Maximum patient and operator safety is ensured only when the Eclipse is properly grounded. To do this, connect the power cable to the AC Power connector (see Figure 2-2 on pg. 2-5) and connect the other end to a properly grounded, AC line outlet.

There is no switch to disconnect AC line power. To do this you must unplug the unit. The battery is automatically charged whenever the unit is connected to AC line power.

> NOTE: The battery that is shipped with your new Eclipse is not charged. To charge the battery and prepare the Eclipse for normal use, follow the procedure below to calibrate the Battery Status gauge.

Calibrating the Battery Status Gauge

Whenever a new battery is placed in the Eclipse or whenever the battery is removed and re-installed, the Battery Status gauge in the PREVIEW screen should be calibrated.

The following procedure is used to calibrate the Battery Status gauge. In addition, Burdick recommends that you follow this procedure every 60 days to maintain maximum battery capacity. This is especially important if the unit is infrequently operated with battery power.

1. Unplug the Eclipse from AC line power.
2. Fully discharge the battery by operating the unplugged unit until the unit powers down from lack of power.
3. Ensure that the battery is discharged by pressing the On/Standby key. If the unit does not turn on or if it powers down within a few seconds, the battery is discharged.
4. Reconnect AC power to fully recharge the battery in about 5 hours.

> NOTE: You may operate the Eclipse from AC line power while the battery is charging. However, this will increase charging time.

Turning the Unit On and Off

Press the On/Standby key to turn the Eclipse on. The unit performs self-tests and displays the following (see Figure 2-1):

● Current date and time

● A message prompting you to check date and time accuracy

● Any error detected during the self-tests

Figure 2-1
The Power Up Screen

Eclipse

Burdick, Inc.

DATE AND TIME ARE:

01.05.97 14:56

CHECK FOR VALIDITY

PERFORMING RELIABILITY CHECKS
Please wait...
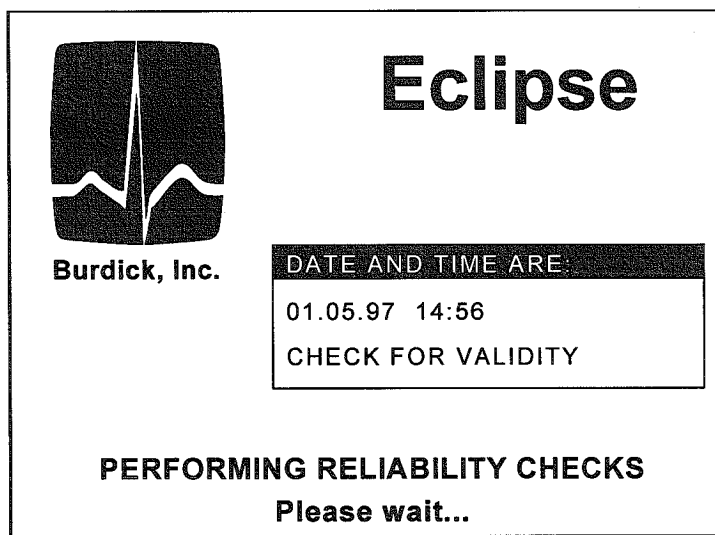
After completing self-tests, the unit displays the PREVIEW screen.

Press the On/Standby key to return the Eclipse to Standby mode at any time during operation.

The unit is not operational in Standby mode but it charges the internal battery whenever it is plugged in. A symbol displayed on the screen tracks battery charging status. There is no switch to disconnect power.

POWER INDICATOR

This green light on the back of the unit (see Figure 2-2) is on whenever the unit is receiving AC line power.

Equipment Connections

Connecting power cord and peripheral equipment

⚠ **CAUTION:** *The unit must be operated only at the line voltage and frequency specified on the rating plate.*

Connect AC line power and external equipment via the connectors on the back panel (see Figure 2-2).

For patient safety, all equipment in patient environment should be IEC 601-1 approved. All connected equipment should be IEC 950 approved or equivalent. Consult a qualified technician to verify equipment compatibility.

Figure 2-2
Eclipse Back Panel
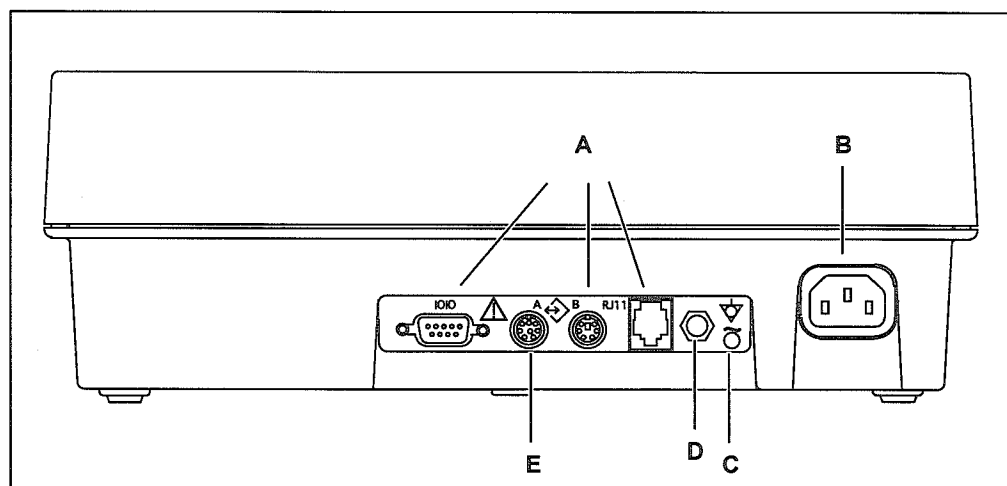
(A) EXPANSION

These connectors are reserved for future expansion.

(B) AC POWER

Use the Burdick power cord to connect the unit to AC line power here.

(C) POWER INDICATOR

Verify that the unit is receiving AC line power when this green light is on.

(D) EQUIPOTENTIAL GROUNDING

Connect peripheral equipment directly to the Eclipse protective earth ground via this jack. This is necessary only if peripheral equipment requires equipotential grounding.

(E) MONITOR

Connect a monitor via this 8-Pin DIN jack.

An external monitor displays the same 3 channels of waveforms which are displayed on the Eclipse PREVIEW screen. Frank and Nehb are not supported.

Connecting the Patient Cable and enhancing software

Enhance software and connect the Patient Cable via connectors on the side and front of the unit (see Figure 2-3).

Figure 2-3
Patient Cable Connector and
PC Card Slot

Software Enhancement
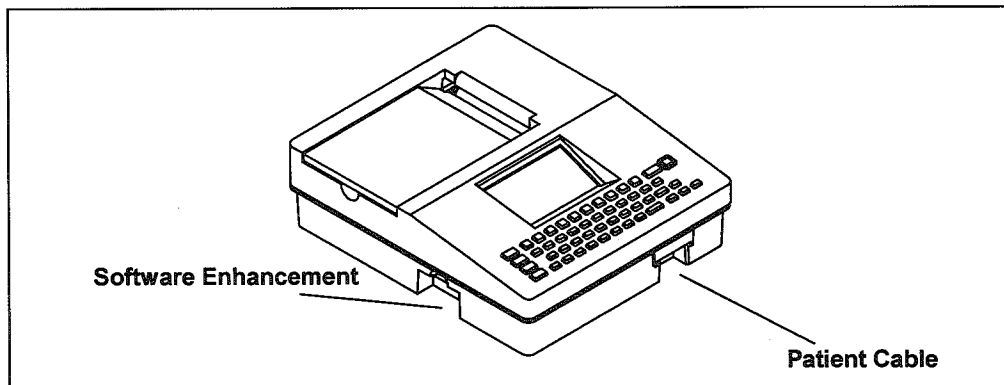
Patient Cable

PATIENT CABLE

Connect the Patient Cable here. Make sure the connector on the cable is arrow-side-up then firmly push the connector until the arrow point is aligned with the edge of the Eclipse.

SOFTWARE ENHANCEMENT

Insert the available PC card into this slot. Use only Burdick approved cards in your Eclipse. Unapproved cards do not work.

Chapter 3 | *Keyboard and Displays*

This chapter provides a brief overview on how to operate the Eclipse electrocardiograph. This chapter describes:

- The keyboard.
- Common uses for specialized keys.
- The PREVIEW screen.
- Common menu features and options.

Understanding the Keyboard

Figure 3-1
The Keyboard and Key Types
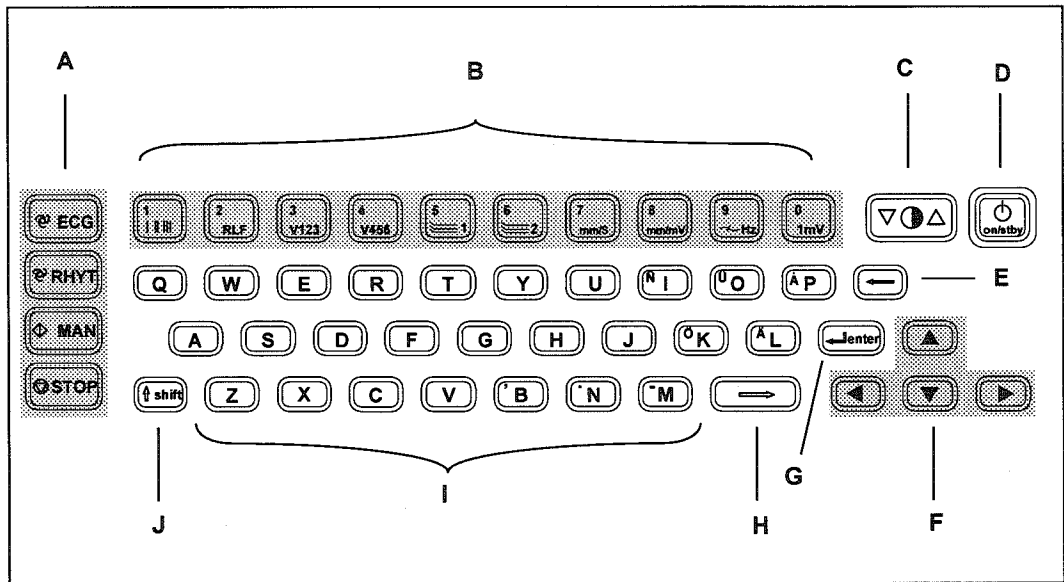
(A) FUNCTION

Provide 1-key printing operations and PREVIEW screen access.

ECG The "ECG" key acquires and prints a 12-lead Auto ECG. This is a series of reports using pre-programmed lead sequences and settings.

> **NOTE:** On the Eclipse 8 you can select a 6-channel customized lead group. When this is selected, only the first three channels are displayed. However, the "MAN" and "RHYT" keys acquire printouts of all six leads.

RHYT The "RHYT" key acquires an Auto Rhythm report. This rhythm strip is a pre-selected number of pages and uses the leads currently selected in the PREVIEW screen.

MAN The "MAN" key acquires a Manual Rhythm report. This is a continuous rhythm strip of the leads currently selected in the PREVIEW screen.

STOP The "STOP" key halts any of the above functions. Also returns the display to the MAIN MENU without saving changes from most other menus.

(B) NUMERIC/ MACHINE CONTROL

When entering data, these keys are used to enter numbers.

These keys may also be used as hot keys and for specific operations. Many of these operations change settings also defined in the USER SETUP menu. When these keys are used, the settings are in effect for the current ECG only.

The "1" and "2" keys select pre-programmed lead triplets for the display. Manual Rhythm and Auto Rhythm reports print the currently displayed lead triplets. When used with Shift key in the PREVIEW screen, they select either User 1 or User 2. This would otherwise have to be done in the SYSTEM SETUP menu.
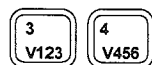
The "3" and "4" keys select pre-programmed lead triplets for the display. Manual Rhythm and Auto Rhythm reports print the currently displayed lead triplets.
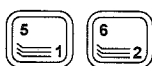
The "5" and "6" keys select user-defined lead triplets for the display. Manual Rhythm and Auto Rhythm reports print the currently displayed lead triplets.

The "7" key toggles the Paper Speed between 10, 25 and 50 mm/sec.

The "8" key toggles the ECG Gain between 5, 10 and 20 mm/mV.

The "9" key toggles the ECG Filter Frequency between 40 and 150 Hz.

The "0" key produces a 1 mV Calibration Pulse on the display and printouts.

(C) CONTRAST

Adjusts the display brightness.

(D) ON/STANDBY

Turns the unit on and returns the unit to standby mode.

May also be used if the Eclipse "freezes." If the unit is unresponsive to key strokes and the LCD display is not changing, press and hold the On/Standby key for at least 5 seconds then release. The unit shuts off . To continue with normal operation, press the On/Standby key again and the unit will turn on.

(E) BACKSPACE

Deletes a character behind the cursor.

(F) ARROW

Used to move around in Eclipse displays.

The Up and Down arrows allow movement within menus, fields and lists.

The Left and Right arrows allow movement to and from menus and lists.

(G) ENTER

Accepts current selection.
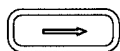
(H)   SPACE

Inserts a space.

(I)   ALPHABETIC

THROUGH

Provide letters when entering data. With the Shift key held down, they provide the following punctuation and characters: [,], [.], [-], Ñ, Ü, Ö, Å and Ä. At other times may be used as hot keys (see "HOT KEYs" on pg. 3-9).

(J)   SHIFT

Provides access to special characters on some alphabetic keys. Provides additional machine control capabilities for the "1" and"2"keys.

Understanding the Displays

To familiarize yourself with the Eclipse displays, follow along with the examples below as you operate the unit.

The PREVIEW Screen

After the Eclipse has been turned on and performs self-tests, the PREVIEW screen is displayed (see Figure 3-2). Its features are described below.

Figure 3-2
The Preview Screen
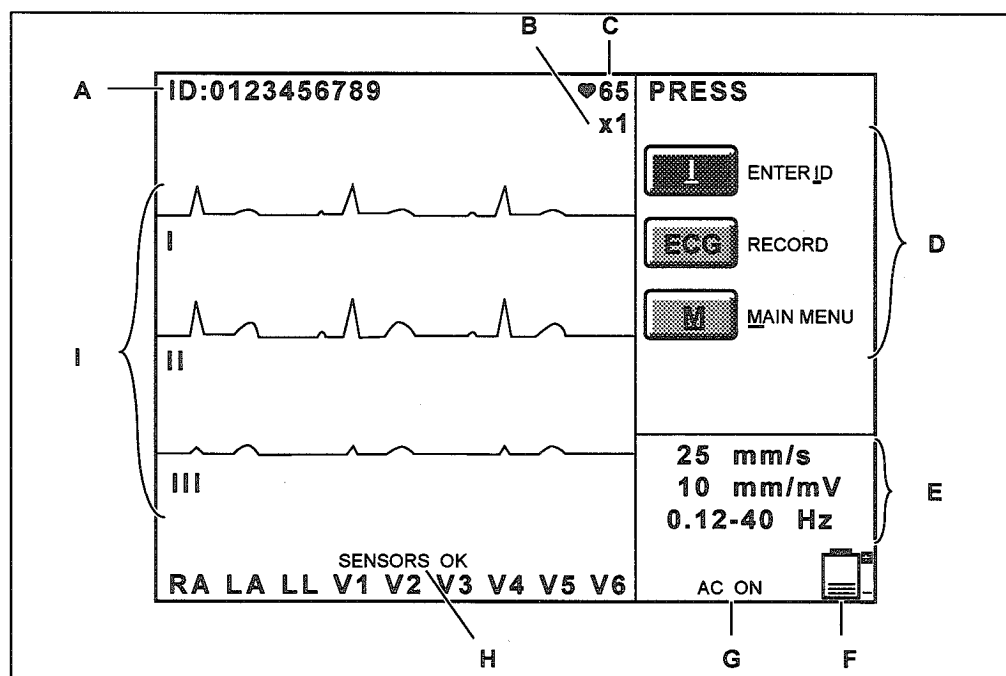
(A) **PATIENT ID**

Identifies the current patient.

(B) **RELATIVE GAIN**

Tracks the amplitudes of the displayed waveforms. This corresponds to the Recorder Gain setting as follows:

Recorder Gain	Relative Gain
5 mm/mV	X1/2
10 mm/mV	X1
20 mm/mV	X2

(C) **HEART RATE**

Displays the patient's heart rate.

(D) **FUNCTIONS LIST**

Displays available functions and menus.

(E)   RECORDER SPEED, GAIN AND FREQUENCY RESPONSE

Displays settings for current ECG reports.

(F)   BATTERY STATUS GAUGE

Tracks battery charge level.

When all 8 bars are lit, the battery is fully charged. When battery power is being used, the minus sign (-) is highlighted indicating that charge is being drained. When the unit is connected to AC line power, the plus sign (+) is highlighted indicating the battery is charging.

The message "LOW BATTERY" flashes when fewer than 15 minutes of operating time remain.

If the charge level drops too low, the unit displays the message, "POWERING DOWN." Then, after 5 seconds, the unit shuts off. Connect the unit to AC line power at this point to operate the unit and recharge the battery.

(G)   POWER STATUS

Indicates the power source, AC line power or battery.

(H)   SENSOR STATUS

Indicates signal quality.

If all sensors produce good signals, the display reads:

> SENSORS OK

If one or more sensors produce a poor signal, the labels for the affected sensors are highlighted and the problem is indicated by one of the following messages:

> FAIL
> DRIFT
> NOISE

> **NOTE:**   To ensure accurate sensor status indication, the RL electrode must be connected.

> **NOTE:**   Refer to Chapter 9, "Troubleshooting" for information on correcting signal problems.

(I)   ECG WAVEFORMS

NOTICE: Waveforms displayed on the Eclipse screen are not intended to be used for diagnostic purposes. Use displayed waveforms to assess signal quality only.

Displays waveforms for the selected lead group. Until leads are properly connected to a patient, only "flatlines" are displayed.

> **NOTE:**   On the Eclipse 8 you can select a 6-channel customized lead group. When this is selected, only the first three channels are displayed. However, the "MAN" and "RHYT" keys acquire printouts of all six leads.

A sample menu—the EDIT ID menu

Most of the Eclipse displays are menus. For example, the EDIT ID menu is used to enter patient demographics.

The "EDIT ID" choice is highlighted in the PREVIEW screen Functions list. You may use the Up and Down Arrow keys to highlight other choices and move around in the Functions List.

To go to the EDIT ID menu, highlight "EDIT ID" and press the Enter key. The new menu will be displayed (see Figure 3-2). Following is a description of basic menu features.

Figure 3-3
A Sample Menu-The
EDIT ID Menu

(A) RETURN TO PREVIOUS SCREEN

The arrow in the upper left corner reminds you that you may return to the previous screen by pressing the Left Arrow key.

(B) PREVIOUS SCREEN

The top of the last screen that was displayed shows above all menus.

(C) SCROLLING BOX

Located in the Scroll bar, this shows you when the menu continues beyond the current view. The box is at the top when the top field shows. It moves down as you scroll through the menu until the last field shows.

(D) SCROLL BAR

Located on the right side of the menu.

(E) ACTIVE FIELD

When a field is highlighted you may edit the contents of that field.

Using Menus

The Up and Down Arrow keys are used to scroll within menus.

Menus are composed of fields. There are three kinds of fields:

1. Alphanumeric
2. Numeric
3. List

ALPHANUMERIC FIELDS

When active, alphanumeric fields may be filled by typing alphabetic or numeric keys. You may also type spaces, punctuation, and non-English characters.

For example, to type the character "Ñ" in the **Last Name** field:

4. Scroll to the **Last Name** field.

5. Hold down Shift key.

6. Simultaneously press the "I" key.

Press the Enter key after filling fields to accept data and move to the next field.

NUMERIC FIELDS

When active, numeric fields may be filled by typing numeric keys only. The Eclipse will produce a "beep" sound if you try to type letters or other inappropriate data into a numeric field.

Press the Enter key after filling fields to accept data and move to the next field.

LIST FIELDS

When active, list fields display a box with a list of choices. These are described in the next section.

DEFAULTS

Every field has a default setting.

For example, if you skip the ***Age Format** field it will be filled in with "YEARS." Unless you make another choice, the Eclipse always uses defaults. Most often, fields are left blank.

Lists and System Notes

LISTS

Lists give you all the choices for a particular field. For example, scroll to Medication 1. A list appears (see Figure 3-4). The field may be filled with any choice from this list. After you make a selection, the next field becomes active.

Figure 3-4
A Sample List - The
Medication List

```
ID:0123456789                    ♥65 | PRESS
◄                      EDIT ID
  (*Items may affect computer analysis)  ▲
 *V3 Placement  :  STANDARD
  Patient ID    :
  Last Name     : ▶        MEDICATION
  First Name    : blank                    ▲
 *D.O.B.        : NO MEDICATION
 *Age           : UNKNOWN
 *Age Format    : DIGITALIS
 *Sex           : DIURETIC                 ▼
 *Medication 1  :
 *Class  1      :
  Comments      : ┌─────────────────────┐
                                          ▼
```

HOT KEYS

All list items have hot keys to select them.

For example, the letter "D" is underlined in the choice, "DIGITALIS." This is a hot key; it is temporarily specialized to select this choice. Some items in the PREVIEW screen have hot keys, as well.

[D] Press the "D" key to select "DIGITALIS".

[▶] Another way to select items is from within the list. You may gain access to the list by pressing the Right Arrow key.

[▲] [▼] Scroll within the list using the Up and Down Arrow keys.

[◄┘enter] When your choice is highlighted, choose it by pressing the Enter key.

[◄] To exit the list without selecting anything, press the Left Arrow key.

SYSTEM NOTES

System notes give you additional information as needed. For example, a system note appears if you enter data that exceeds an allowed range.

To see a system note, scroll to the **Systolic BP** field. This is a numeric field that only accepts data between 0 and 250. Try typing a larger number such as 500. A system note box appears (see Figure 1).

```
Not in range:  0  -  250.

            OK
```
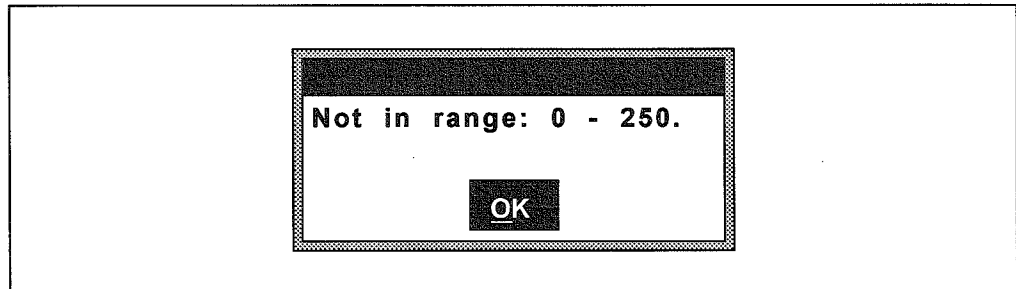
Figure 1 - A System Note Box

Press the hot key, "O," to acknowledge the note and continue.

Press the Backspace key to erase the out-of-range value.

You have just practiced the basics of using the Eclipse. More information accompanies sections for specific functions such as acquiring an Auto ECG.

Press the Left Arrow key to return to the PREVIEW screen and continue working.

Chapter 4 *Program Setup*

This chapter covers the SYSTEM SETUP and USER SETUP menus.

Use the SYSTEM SETUP menu to:

- Select User 1 or User 2.

- Format Eclipse general settings.

- Set the internal calendar & clock.

There are 6 USER SETUP menus. Use these to:

- Customize 2 sets of configurations referred to as User 1 and User 2

- Determine the default power-up values for Recorder Speed, Gain and Frequency Response.

- Format printouts.

- Format Auto ECG and Auto Rhythm reports.

- Determine information fields to appear in the EDIT ID menu and on printouts.

- Customize lead groups.

Quick Reference-Basic Menu Structure

MAIN MENU		
EDIT ID	DIRECTORY	PRINT SETUP REPORT

DIRECTORY

VIEW BY NAME
VIEW BY ID
PRINT DIRECTORY
ADD NEW PATIENT
DELETE ALL RECORDS

EDIT ID

*V3 Placement
Patient ID
Last Name
First Name
*D.O.B.
*Age
*Age Format
*Sex
*Race
*Medication 1
*Medication 2
* Class 1
* Class 2
Height
Weight
Systolic BP
Diastolic BP
Department
Room
Technician
Physician
User Field
Comments

Eclipse prints a list of all USER SETUP menus and SYSTEM SETUP menu settings. Please refer to the sample printout in Chapter 8.

Note: Fields marked with an asterisk (*) affect ECG analysis.

[Basic Menu Structure continued]

MAIN MENU

USER SETUP   SYSTEM SETUP

   POWER UP DEFAULTS
   AUTO ECG SETUP
   CUSTOM LEAD 1
   CUSTOM LEAD 2
   MISCELLANEOUS
   PATIENT FIELDS ENABLE

SYSTEM SETUP
User 1-2 Select
Line Filter
Date Format
Date
Time
Language
Height Units
Weight Units
Inst. Name
Institution Number

POWER UP DEFAULTS
Speed
Gain
Artifact Filter

AUTO ECG SETUP
12 Lead Format
Rhythm Lead Ch. 1
Rhythm Lead Ch. 2   Eclipse 8 only
Rhythm Lead Ch. 3
Rhythm Page
Analysis - Original
Analysis - Copies
Number of Copies
Median Complex Page
Save Mode

MISCELLANEOUS
Baseline Filter
Pacer Enhancement
Rhythm Mode Pages
Bradycardia Limit
Tachycardia Limit

CUSTOM LEAD 1
Custom Lead 1
   Channel 1
   Channel 2
   Channel 3
   Channel 4
   Channel 5   Eclipse 8 only
   Channel 6

CUSTOM LEAD 2
Custom Lead 2
   Channel 1
   Channel 2
   Channel 3
   Channel 4
   Channel 5   Eclipse 8 only
   Channel 6

PATIENT FIELDS ENABLE
*V3 Placement
Last Name
First Name
*D.O.B.
*Age
*Age Format
*Sex
*Race
*Medication 1
*Medication 2
*Class 1
*Class 2
Height
Weight
Systolic BP
Diastolic BP
Department
Room
Technician
Physician
User Field
User Field Label
Comments

Quick Reference-Configuring System Setup

SYSTEM SETUP	
User 1-2 Select	───
Line Filter	───
Date Format	───
Date	
Time	
Language	───
Height Units	───
Weight Units	───
Inst. Name	
Institution Number	

<u>1</u>
<u>2</u>

<u>5</u>0 Hz
<u>6</u>0 Hz
O<u>F</u>F

<u>M</u>M/DD/YY
<u>D</u>D.MM.YY
<u>Y</u>Y.MM.DD

<u>D</u>EUTSCH
E<u>S</u>PAÑOL
<u>F</u>RANCAIS
U.K. <u>E</u>NGLISH
U.<u>S</u>. ENGLISH

<u>C</u>M.
<u>I</u>N.

<u>K</u>G.
<u>L</u>B.

> For any field that does not have a list, you may type in the appropriate information from the keyboard.

Quick Reference-Power-Up Defaults

POWER-UP DEFAULTS
Speed
Gain
Artifact Filter

10 mm/s
25 mm/s
50 mm/s

5 mm/mV
10 mm/mV
20 mm/mV

40 Hz
150 Hz

Quick Reference-Auto ECG Setup (Eclipse 4)

AUTO ECG SETUP	
12 Lead Format	→ STANDARD, 3 CHANNEL STANDARD, 6 CH MOUNTED CABRERA, 3 CHANNEL CABRERA, 6 CH MOUNTED
Rhythm Page	→ CUSTOM LEAD 1 AT 25 mm/s CUSTOM LEAD 1 AT 50 mm/s OFF
Analysis - Original	
Analysis - Copies	→ ON WITH REASONS ON W/O REASONS OFF
Number of Copies	
Median Complex Page	→ ON OFF
Save Mode	→ AUTO MANUAL

For any field that does not have a list, you may type in the appropriate information from the keyboard.

Quick Reference-Auto ECG Setup (Eclipse 8)

```
┌─────────────────────────┐
│     AUTO ECG SETUP      │
├─────────────────────────┤
│ 12 Lead Format          │
│                         │
│ Rhythm Lead Ch. 1       │
│                         │
│ Rhythm Lead Ch. 2       │
│                         │
│ Rhythm Lead Ch. 3       │
│                         │
│ Rhythm Page             │
│                         │
│ Analysis - Original     │
│                         │
│ Analysis - Copies       │
│                         │
│ Number of Copies        │
│                         │
│ Median Complex Page     │
│                         │
│ Save Mode               │
└─────────────────────────┘
```

12 Lead Format →

| STANDARD, 4 CHANNEL |
| STANDARD, 3 CHANNEL |
| STANDARD, 3 CH. + 3 |
| STANDARD, 6 CH. 5S/LD |
| STANDARD, 6 CH. 10S/LD |
| CABRERA, 4 CHANNEL |
| CABRERA, 3 CHANNEL |
| CABRERA, 3 CH. + 3 |
| CABRERA, 6 CH. 5S/LD |
| CABRERA, 6 CH. 10S/LD |

Rhythm Lead Ch. 1, 2, 3 →

| LEAD I |
| LEAD II |
| LEAD III |
| aVR |
| aVL |
| aVF |
| V1 |
| V2 |
| V3 |
| V4 |
| V5 |
| V6 |

Rhythm Page →

| CUSTOM LEAD 1 AT 25 mm/s |
| CUSTOM LEAD 1 AT 50 mm/s |
| OFF |

Analysis - Original / Analysis - Copies →

| ON WITH REASONS |
| ON W/O REASONS |
| OFF |

Median Complex Page →

| ON |
| OFF |

Save Mode →

| AUTO |
| MANUAL |

> For any field that does not have a list, you may type in the appropriate information from the keyboard.

Quick Reference-Customizing Lead Groups (Eclipse 4)

IF STANDARD
LEAD I
LEAD II
LEAD III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

IF CABRERA
LEAD I
LEAD II
LEAD III
-aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

IF FRANK
X
Y
Z

IF NEHB
D
A
J

CUSTOM LEAD 1
Custom Lead 1
Channel 1
Channel 2
Channel 3

STANDARD, 3 CHANNEL
CABRERA, 3 CHANNEL
FRANK, 3 CHANNEL
NEHB, 3 CHANNEL

Custom Lead 2 is configured in the same way that Custom Lead 1 is configured.

Lead Group configuration determines the available channel options.

Quick Reference-Customizing Lead Groups (Eclipse 8)

CUSTOM LEAD 1
Custom Lead 1
Channel 1
Channel 2
Channel 3
Channel 4
Channel 5
Channel 6

STANDARD, 3 CHANNEL
STANDARD, 6 CHANNEL
STANDARD, 12 CHANNEL
CABRERA, 3 CHANNEL
CABERA, 6 CHANNEL
CABRERA, 12 CHANNEL
FRANK, 3 CHANNEL
NEHB, 3 CHANNEL

IF STANDARD

LEAD I
LEAD II
LEAD III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

IF CABRERA

LEAD I
LEAD II
LEAD III
-aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

IF FRANK

X
Y
Z

IF NEHB

D
A
J

> Custom Lead 2 is configured in the same way that
> Custom Lead 1 is configured.
>
> Lead Group configuration determines the available
> channel options.

Quick Reference-Configuring the MISCELLANEOUS menu
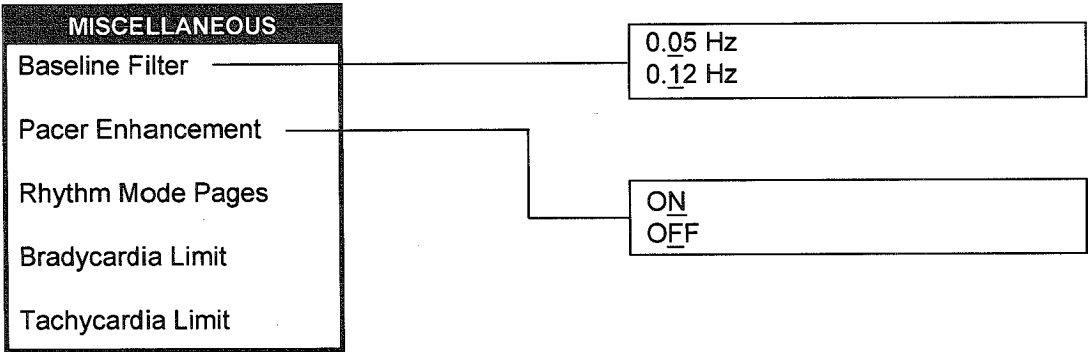
MISCELLANEOUS
Baseline Filter
Pacer Enhancement
Rhythm Mode Pages
Bradycardia Limit
Tachycardia Limit

0.05 Hz
0.12 Hz

ON
OFF

For any field that does not have a list, you may type in the appropriate information from the keyboard.

Quick Reference-Selecting Patient Fields

Fields marked with an asterisk (*) may affect Eclipse analysis.

Type in the User Field label from the keyboard.

PATIENT FIELDS ENABLE

*V3 Placement

Last Name

First Name

*D.O.B.

*Age

*Age Format

*Sex

*Race

*Medication 1

*Medication 2

* Class 1

* Class 2

Height

Weight

Systolic BP

Diastolic BP

Department

Room

Technician

Physician

User Field

User Field Label

Comments

ON CLEAR
ON HOLD
OFF

ON
OFF

ON CLEAR
ON HOLD
OFF

ON
OFF

Configuring SYSTEM SETUP Menu

Go to SYSTEM SETUP menu

Press the On/Standby key to power up to the PREVIEW screen.

Press the "M" key to go to the MAIN MENU.

Select <u>S</u>YSTEM SETUP by pressing the "S" key. The SYSTEM SETUP menu will appear (see Figure 4-1).

Figure 4-1
The SYSTEM SETUP Menu

```
ID:0123456789              ♥65  PRESS
                  MAIN MENU
◄             SYSTEM SETUP
User 1-2 Select: 1                       ▲
Line Filter: 50 Hz            ► USER
Date Format: DD.MM.YY          1
Date: 12.11.1995               2
Time: 13:45
Language: U.K. ENGLISH
Height Units: CM.
Weight Units: KG.
Inst. Name:
                                         ▼
```

Configure SYSTEM SETUP menu

Following is a description of the SYSTEM SETUP menu fields.

As you scroll through this menu, some fields have lists. Select the appropriate item from a list by pressing the hot key indicated by the underlined letter. In this chapter, the available choices are listed next to the field name.

When you scroll to other fields in this menu, the cursor blinks. In these fields, type the appropriate information from the keyboard. In this chapter, the type of information and the number of characters allowed are listed in brackets next to the field name.

USER 1-2 SELECT

<u>1</u>

<u>2</u>

For each "User," there is a customized group of formats. For more information on User 1 and User 2, see "Configuring the USER SETUP Menus" on pg. 4-16.

> **NOTE:** The unit turns off and on again whenever you change the User selection and leave the SYSTEM SETUP menu by pressing the Left Arrow key.

LINE FILTER

<u>5</u>0 Hz

<u>6</u>0 Hz

O<u>F</u>F

Filters electrical interference from AC line voltage.

DATE FORMAT

<u>M</u>M/DD/YY

<u>D</u>D.MM.YY

<u>Y</u>Y.MM.DD

DATE

[Up to 20 alphanumeric characters]

Use spaces, hyphens or periods to separate the day, month and year. Some acceptable ways to type the date are:

1. 10 10 1997

2. 10–10–1997

3. 10.10.1997

> **NOTE:** Remember that the period character (.) is typed by holding down the Shift key and pressing the "N" key. The hyphen character (-) is typed by holding down the Shift key and pressing the "M" key.

TIME

[Alphanumeric field displayed in 24-hour format]

Use a space to separate the hour from the minutes.

LANGUAGE

DEUTSCH
ESPAÑOL
FRANCAIS
U.K. ENGLISH
U.S. ENGLISH

Selects language for printed and displayed text. You should not have to adjust this field.

> **NOTE:**   The unit turns off and on again whenever you change the Language selection and leave the SYSTEM SETUP menu by pressing the Left Arrow key.

HEIGHT UNITS

CM.
IN.

Selects units for expressing patient height.

> **NOTE:**   The unit turns off and on again whenever you change the Units selection and leave the SYSTEM SETUP menu by pressing the Left Arrow key.

WEIGHT UNITS

KG.
LB.

Selects units for expressing patient weight.

> **NOTE:**   The unit turns off and on again whenever you change the Units selection and leave the SYSTEM SETUP menu by pressing the Left Arrow key.

INST. NAME

[Up to 30 alphanumeric characters]

Refers to the institution.

INSTITUTION NUMBER

[Up to 4 numeric characters]

Refers to the institution.

Return to PREVIEW screen

Press the Left Arrow key to return to MAIN MENU.

Press the Left Arrow key again to return to the PREVIEW screen.

Verify calendar & clock settings

To verify the date and time, press the On/Standby key to put the unit in Standby mode. Then press the On/Standby key again to turn the unit on.

Check the date and time on the POWER-UP screen.

Configuring the USER SETUP Menus

There are six USER SETUP menus. These menus are used to format two *sets* of configurations; one for each of two "Users." The **User 1-2 Select** option is located in the SYSTEM SETUP menu. However, you can select the desired User from the PREVIEW screen by holding down the shift key and pressing either the "1" or the "2" key.

Following is a description of the USER SETUP menus:

> POWER-UP DEFAULTS
> AUTO ECG SETUP
> CUSTOM LEAD 1
> CUSTOM LEAD 2
> MISCELLANEOUS
> PATIENT FIELDS ENABLE

As you scroll through these menus, some fields have lists. Select the appropriate item from a list by pressing the hot key indicated by the underlined letter. In this chapter, the available choices are listed under the field name.

When you scroll to other fields in these menus, the cursor blinks. In these fields, type the appropriate information from the keyboard. In this chapter, the type of information and the number of characters allowed are listed in brackets under the field name.

Activate the desired User and go to a USER SETUP menu

Press this key to power up to the PREVIEW screen.

Select the set of formats you want to edit by:

1. Holding down the Shift key.

2. Simultaneously pressing either the "1" key or "2" key for User 1 or User 2 respectively.

   NOTE: The unit turns off and on again whenever you change the User selection.

In the PREVIEW screen, press "M" to go to the MAIN MENU.

In the MAIN MENU, select the desired USER SETUP menu such as POWER-UP DEFAULTS. The new menu will appear (see Figure 4-2).

```
ID:0123456789              ♥65  PRESS
              MAIN MENU
◄          POWER-UP DEFAULTS
Speed: 25 mm/s
Gain:  10  mm/mV              ►     SPEED
Artifact Filter:  40  Hz
                             10 mm/s
                             25 mm/s
                             50 mm/s
```

Configuring the POWER-UP DEFAULTS menu

The fields in this menu affect paper speed and waveform printing. The settings in this menu are in effect whenever the Eclipse is powered on with the On/Standby key. Settings in this menu are different from the temporary changes made by pressing machine control keys (see "Understanding the Keyboard" on pg. 3-2). When the "7," "8" and "9" keys are used to change the settings for Speed, Gain and Filter , the changes are not saved when the unit powers down.

To save changes in the POWER-UP DEFAULTS menu, press the Left Arrow key. The changes go into effect the next time the Eclipse is powered on.

SPEED

> 10 mm/s
> 25 mm/s
> 50 mm/s

Refers to chart paper speed.

GAIN

> 5 mm/mV
> 10 mm/mV
> 20 mm/mV

Determines the amplitude of printed and displayed waveforms.

ARTIFACT FILTER

> 40 Hz
> 150 Hz

Sets the upper frequency response.

Selecting 40 Hz will reduce muscle tremor and patient movement artifacts.

Configuring the AUTO ECG SETUP menu

NOTE: The fields ANALYSIS-ORIGINAL and ANALYSIS
COPIES are available only on units with interpretive
capabilities. The MEDIAN COMPLEX PAGE is available only
on units with interpretive or measurement capabilities.

12 LEAD FORMAT   (ECLIPSE 4)

STANDARD, 3 CHANNEL
STANDARD, 6 CH MOUNTED
CABRERA, 3 CHANNEL
CABRERA, 6 CH MOUNTED

Sets printout format. For sample printouts, see Chapter 8.

12 LEAD FORMAT   (ECLIPSE 8)

STANDARD, 4 CHANNEL
STANDARD, 3 CHANNEL
STANDARD, 3 CH. + 3
STANDARD, 6 CH. 5S/LD
STANDARD, 6 CH. 10S/LD
CABRERA, 4 CHANNEL
CABRERA, 3 CHANNEL
CABRERA, 3 CH. + 3
CABRERA, 6 CH. 5S/LD
CABRERA, 6 CH. 10S/LD

Sets printout format. For sample printouts, see Chapter 8.

NOTE: If you select a 4-channel or a 3-channel plus 3 rhythm
format, select a lead or leads for the rhythm printout.

RHYTHM LEADS CH. 1   (ECLIPSE 8)

LEAD I
LEAD II
LEAD III
aVR   (-aVR for Cabrera)
aVL
aVF
V1
V2
V3
V4
V5
V6

Selects leads used if a rhythm printout is selected for **12 Lead Format** above.

RHYTHM LEADS CH. 2   (ECLIPSE 8)

Same as Channel 1

RHYTHM LEADS CH. 3   (ECLIPSE 8)

Same as Channel 1

RHYTHM PAGE

CUSTOM LEAD 1 AT 2̲5 mm/s
CUSTOM LEAD 1 AT 5̲0 mm/s
OF̲F

Enables a separate 10-second rhythm report as part of an Auto ECG report. This is not available if Custom Lead 1 is set to Frank or Nehb.

ANALYSIS-ORIGINAL

ON̲ WITH REASONS
ON W̲/O REASONS
OF̲F

Determines whether analysis statements appear on Auto ECG reports. If analysis statements are printed, this field also determines whether the supporting reason statements are printed.

ANALYSIS-COPIES

ON̲ WITH REASONS
ON W̲/O REASONS
OF̲F

Determines whether analysis statements appear on copies of Auto ECG reports. If analysis statements are printed, this field also determines whether the supporting reason statements are printed.

NUMBER OF COPIES

[Numeric. Range = 0-5]

Sets the number of ECG report copies that are printed.

MEDIAN COMPLEX PAGE

ON̲
OF̲F

Enables Median Complex printout as part of an Auto ECG report.

SAVE MODE

A̲UTO
M̲ANUAL

Determines how Auto ECG reports are saved.

If manual save is selected, the PREVIEW screen is displayed at the end of an Auto ECG sequence. You may save the report at this time.

After saving an Auto ECG, either manually or automatically, the DIRECTORY menu is displayed.

Configuring CUSTOM LEAD 1 & CUSTOM LEAD 2 menus

These two menus each format a group of leads. These groups can later be selected by pressing the "5" or "6" machine control keys (see "Understanding the Keyboard" on pg. 3-2).

NOTICE: Because the Burdick Eclipse offers different lead configurations, always ensure that the appropriate lead placement is employed for the lead configuration selected.

CUSTOM LEAD 1   (ECLIPSE 4)

> STANDARD, 3 CHANNEL
> CABRERA, 3 CHANNEL
> FRANK, 3 CHANNEL
> NEHB, 3 CHANNEL

Format Custom Lead 1 to suit your needs. This group is available via the "5" key.

If you have selected standard or Cabrera, select leads for CHANNEL 1, CHANNEL 2 and CHANNEL 3. Lead availability is affected by the selected lead format.

This lead group is also used for the rhythm page of an Auto ECG report. Only standard or Cabrera configurations are acceptable for this purpose. Do not select Frank or Nehb if you want a rhythm page as part of an Auto ECG.

CUSTOM LEAD 1   (ECLIPSE 8)

> STANDARD, 3 CHANNEL
> STANDARD, 6 CHANNEL
> STANDARD, 12 CHANNEL
> CABRERA, 3 CHANNEL
> CABRERA, 6 CHANNEL
> CABRERA, 12 CHANNEL
> FRANK, 3 CHANNEL
> NEHB, 3 CHANNEL

Format Custom Lead 1 to suit your needs. This group is available via the "5" key.

If you have selected standard or Cabrera, select leads for CHANNEL 1 through CHANNEL 6. Lead availability is affected by the selected lead configuration.

This lead group is also used for the rhythm page of an Auto ECG report. Only Standard or Cabrera configurations are acceptable for this purpose. Do not select Frank or Nehb if you want a rhythm page as part of an Auto ECG.

CHANNEL 1

Standard or Cabrera

LEAD I
LEAD II
LEAD III
aVR (-aVR for Cabrera)
aVL
aVF
V1
V2
V3
V4
V5
V6

Frank

X
Y
Z

Nehb

D
A
I

CHANNEL 2

Same as Channel 1

CHANNEL 3

Same as Channel 1

CHANNEL 4   (ECLIPSE 8)

Same as Channel 1

CHANNEL 5   (ECLIPSE 8)

Same as Channel 1

CHANNEL 6   (ECLIPSE 8)

Same as Channel 1

NOTICE: Because the Burdick Eclipse offers different lead configurations, always ensure that the appropriate lead placement is employed for the lead configuration selected.

CUSTOM LEAD 2   (ECLIPSE 4)

    STANDARD, 3 CHANNEL
    CABRERA, 3 CHANNEL
    FRANK, 3 CHANNEL
    NEHB, 3 CHANNEL

Format Custom Lead 2 to suit your needs. This group will be available via the "6" key.

If you have selected standard or Cabrera, select leads for CHANNEL 1, CHANNEL 2 and CHANNEL 3. Lead availability is affected by the selected lead configuration.

CUSTOM LEAD 2   (ECLIPSE 8)

    STANDARD, 3 CHANNEL
    STANDARD, 6 CHANNEL
    STANDARD, 12 CHANNEL
    CABRERA, 3 CHANNEL
    CABRERA, 6 CHANNEL
    CABRERA, 12 CHANNEL
    FRANK, 3 CHANNEL
    NEHB, 3 CHANNEL

Format Custom Lead 2 to suit your needs. This group will be available via the "6" key.

If you have selected standard or Cabrera, select leads for the fields CHANNEL 1 through CHANNEL 6. Lead availability is affected by the selected lead configuration.

CHANNEL 1

Same as Custom Lead Group 1

CHANNEL 2

Same as Custom Lead Group 1

CHANNEL 3

Same as Custom Lead Group 1

CHANNEL 4   (ECLIPSE 8)

Same as Custom Lead Group 1

CHANNEL 5   (ECLIPSE 8)

Same as Custom Lead Group 1

CHANNEL 6   (ECLIPSE 8)

Same as Custom Lead Group 1

Configuring the MISCELLANEOUS menu

> NOTE: The fields BRADYCARDIA LIMIT and TACHYCARDIA LIMIT are available only on units with interpretive or measurement capabilities.

BASELINE FILTER

.05 Hz
.12 Hz

Sets the low frequency response.

Selecting .12 Hz will reduce baseline wander artifacts.

PACER ENHANCEMENT

ON
OFF

Enables pacemaker enhancement. This feature makes pacemaker signals show up as prominent spikes on the display and on printouts.

RHYTHM MODE PAGES

[Numeric. Range = 1-10]

Sets the number of pages printed during an Auto Rhythm.

BRADYCARDIA LIMIT

[Numeric. Range = 41-69]

Reports for patients with heart rates below this limit are labelled "BRADYCARDIA."

TACHYCARDIA LIMIT

[Numeric. Range = 81-129]

Reports for patients with heart rates above this limit are labelled "TACHYCARDIA."

Enabling patient demographic fields

The last USER SETUP menu determines which patient demographic fields are used. An asterisk (*) indicates that information in these fields directly affects Eclipse analysis.

Select "ON," "ON, CLEAR," or "ON, HOLD" to make them appear in the EDIT ID menu. These fields also appear on printouts.

Select "ON, HOLD" if you want every patient file to have the same information in this field. Until the information is typed over, the EDIT ID menu will keep the information in these fields even if the Eclipse is turned off. For example, you may want every patient record to be labelled with the same Department name.

"ON" and "ON, CLEAR" act the same. Fields that are enabled with "ON" or "ON, CLEAR" are cleared for every new patient or when the unit returns to Standby mode.

*V3 PLACEMENT

> ON, CLEAR
> ON, HOLD
> OFF

Used for pediatric recording only.

LAST NAME

> ON
> OFF

FIRST NAME

> ON
> OFF

*D.O.B.

> ON
> OFF

*AGE

> ON
> OFF

*AGE FORMAT

> ON
> OFF

*SEX

> ON
> OFF

*RACE

> ON
> OFF

*MEDICATION 1

> ON
> OFF

*MEDICATION 2

> ON
> OFF

* CLASS 1

> ON
> OFF

* CLASS 2

> ON
> OFF

HEIGHT

> ON
> OFF

WEIGHT

> ON
> OFF

SYSTOLIC BP

> ON
> OFF

DIASTOLIC BP

> ON
> OFF

DEPARTMENT

> ON, CLEAR
> ON, HOLD
> OFF

ROOM

> ON, CLEAR
> ON, HOLD
> OFF

TECHNICIAN

> ON, CLEAR
> ON, HOLD
> OFF

PHYSICIAN

> ON, CLEAR
> ON, HOLD
> OFF

USER FIELD

> ON, CLEAR
> ON, HOLD
> OFF

USER FIELD LABEL

> [Up to 15 alphanumeric characters]

Renames the above field. The new name is displayed in the EDIT ID menu and printed on patient demographics reports. The User Field may be used for anything. For example, you may want to use the field for the referring physician's name.

COMMENTS

> ON
> OFF

Press the Left arrow key to return to the MAIN MENU.

Press the Left arrow key again to return to the PREVIEW screen.

Acquiring a Printout of Eclipse Settings

You may print a list of all current Eclipse settings. This includes settings in the SYSTEM SETUP menu and the six USER SETUP menus for the currently selected User. Please see "Print Setup Report" on pg. 8-2 for an example which was printed using settings configured at the factory.

Press the On/Standby key to power up to the PREVIEW screen.

Press the "M" key to go to the MAIN MENU.

Press the "P" key to print the list.

Press the Left arrow key to return to the MAIN MENU.

Press the Left arrow key again to return to the PREVIEW screen.

Chapter 5 | *Patient Preparation*

This chapter covers patient preparation, and lead arrangement.

The following lead arrangements are covered:

- Standard and Cabrera
- Exercise Stress
- Pediatric
- Frank
- Nehb

Resting ECG Lead Placement & Coding Chart

LEAD CODING AND MEASUREMENTS

AHA

STANDARD LIMB LEADS

LEAD	SENSORS CONNECTED / MEASURED
LEAD I	LA-RA
LEAD II	LL-RA
LEAD III	LL-LA

AUGMENTED LIMB LEADS

LEAD	SENSORS CONNECTED / MEASURED
aVR	RA and (LA-LL)
aVL	LA and (RA-LL)
aVF	LL and (RA-LA)

CHEST LEADS

LEAD	SENSORS CONNECTED / MEASURED
V_1	V_1 and (LA-RA-LL)
V_2	V_2 and (LA-RA-LL)
V_3	V_3 and (LA-RA-LL)
V_4	V_4 and (LA-RA-LL)
V_5	V_5 and (LA-RA-LL)
V_6	V_6 and (LA-RA-LL)

AHA COLOR CODE

LEAD	LOCATION	BAND	LABEL
RL	RIGHT LEG	GREEN	
LL	LEFT LEG	RED	
RA	RIGHT ARM	WHITE	
LA	LEFT ARM	BLACK	
V_1	CHEST	BROWN	RED
V_2	CHEST	BROWN	YELLOW
V_3	CHEST	BROWN	GREEN
V_4	CHEST	BROWN	BLUE
V_5	CHEST	BROWN	ORANGE
V_6	CHEST	BROWN	VIOLET

IEC COLOR CODE

LEAD	LOCATION	BAND	LABEL
N	RIGHT LEG	BLACK	
F	LEFT LEG	GREEN	
R	RIGHT ARM	RED	
L	LEFT ARM	YELLOW	
C_1	CHEST	WHITE	RED
C_2	CHEST	WHITE	YELLOW
C_3	CHEST	WHITE	GREEN
C_4	CHEST	WHITE	BROWN
C_5	CHEST	WHITE	BLACK
C_6	CHEST	WHITE	VIOLET

IEC

STANDARD LIMB LEADS

LEAD	SENSORS CONNECTED / MEASURED
LEAD I	L-R
LEAD II	F-R
LEAD III	F-L

AUGMENTED LIMB LEADS

LEAD	SENSORS CONNECTED / MEASURED
aVR	R and (L-F)
aVL	L and (R-F)
aVF	F and (R-L)

CHEST LEADS

LEAD	SENSORS CONNECTED / MEASURED
C_1	C_1 and (L-R-F)
C_2	C_2 and (L-R-F)
C_3	C_3 and (L-R-F)
C_4	C_4 and (L-R-F)
C_5	C_5 and (L-R-F)
C_6	C_6 and (L-R-F)

PLACEMENT OF THE CHEST SENSORS

AHA

V_1 Fourth intercostal space at right margin of sternum

V_2 Fourth intercostal space at left margin of sternum

V_4 Fifth intercostal space at junction of left midclavicular line

V_3 Midway between position V_2 and position V_4

V_5 At horizontal level of position V_4 at left anterior axillary line

V_6 At horizontal level of position V_4 at left midaxillary line

IEC

C_1 Fourth intercostal space at right margin of sternum

C_2 Fourth intercostal space at left margin of sternum

C_4 Fifth intercostal space at junction of left midclavicular line

C_3 Midway between position C_2 and position C_4

C_5 At horizontal level of position C_4 at left anterior axillary line

C_6 At horizontal level of position C_4 at left midaxillary line

PLACEMENT OF THE LIMB SENSORS

Preparing Patients for ECGs

You will obtain high quality ECGs when your patient is relaxed. Assure your patient that there is no danger or pain involved, and that his or her cooperation will assist in producing a valuable diagnostic record.

Make the patient comfortable on a cot or padded table which is large enough to support arms and legs. The patient's arms should rest at his or her sides and the legs should lie flat, not touching one another. Use a pillow to support the patient's head. Also, try to avoid factors like cold drafts which could cause discomfort. Leaving the chest and sensor sites exposed, cover your patient with a blanket to prevent shivering.

Choosing the environment

WARNING: Explosion hazard. Do NOT use in the presence of flammable anesthetics.

CAUTION: Although the Eclipse is designed to meet IEC 601-1-2 EMC immunity requirements, the presence of strong EMI fields generated by electronic, surgical or diathermy instruments close to the unit, may cause trace noise or input overload conditions.

The Eclipse is a high fidelity instrument which responds to the minute voltages of the heart. Since it is such a sensitive instrument, take care to avoid interference which can be produced by muscle tremor and AC signals. To minimize interference, locate the electrocardiograph and patient away from power cords and other electrical devices.

Preparing the skin

You are more likely to get a stable baseline and clean trace if you prepare your patient's skin properly at sensor sites.

For the best contact:

1.   Clean the skin with alcohol or acetone.
2.   Abrade the skin slightly with a dry, heavy gauze or similar alternative to bring fluids to the surface. These fluids work along with the electrolyte to improve conductivity.

Applying ECG Sensors

Apply sensors before entering patient information into the Eclipse. This allows time for the sensors to adhere and improves conductivity.

After applying sensors, connect the patient cable to them. Make sure the lead cables follow the contours of the patient's body and lie flat. If any lead wire is too long, as with a short patient or child, take up the length by making a small "stress loop" (see Figure 5-1).

Refer to the "Resting ECG Lead Placement & Coding Chart" on pg. 5-2 for details on lead groups and sensor locations.

When applying sensors to sites with a lot of hair, the following techniques may improve contact:

1. Use the thumb and forefinger to spread the hair before applying the sensor to the skin.

2. Use a water-dampened towelette to moisten the area prior to applying the sensor.

3. If these techniques are unsuccessful, shaving may be necessary.

Figure 5-1
Lead Cable Arrangement
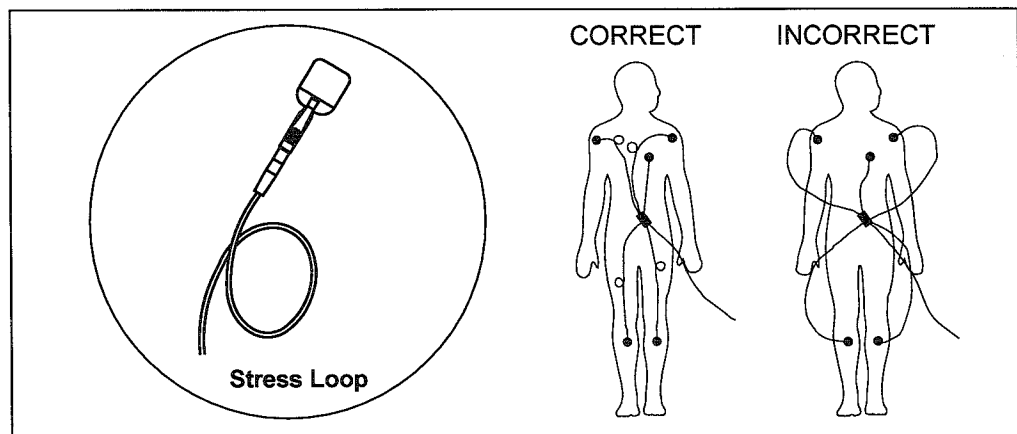
Using Disposable ECG Sensors

Disposable sensors from Burdick save time and are an affordable alternative to bulbs, plates, straps, creams, and gels. Disposable sensors utilize a highly conductive, natural adhesive for good results.

Disposable sensors should be stored according to the guidelines on the packaging and should not be used after the expiration date. Never mix sensor types or brands. Incompatibilities can cause baseline drift and can increase trace recovery time after defibrillation.

Applying limb sensors

1. Expose the arms and legs.
2. Place sensors firmly on the limb sites. Choose fleshy areas, not ankles or wrists (see Figure 5-2).
3. Clip leads to the sensors. Leads on arm sensors should point downward toward feet. Leads on legs should point upward toward chest.

Figure 5-2
Disposable Limb Sensor on Arm
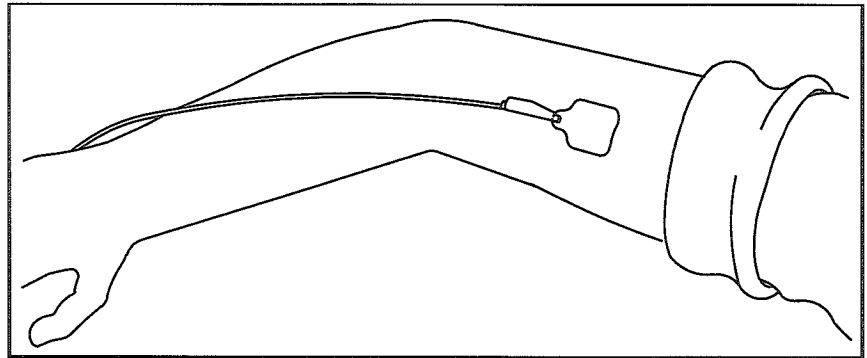
Applying chest sensors

1. Expose the chest.
2. Locate the 6 C-lead (V-lead) positions on the patient's chest.
3. Apply the sensors.
4. Ensure that the leads conform to body contours and that no strain is placed on the sensors.

Using Reusable ECG Sensors

Never mix sensor types or brands. Dissimilar metals or other incompatibilities may cause considerable baseline drift and may increase trace recovery time after defibrillation. Do not use corroded sensors, they may give poor results.

Electrolyte

NOTE: Watches and jewelry which could come in contact with electrolyte should be removed to avoid damage.

Burdick recommends Liqui-cor® and Lectro-pads® for use with reusable sensors. Both provide excellent conductivity between the skin and sensor; both are hypoallergenic, nonabrasive, and water soluble for easy cleanup.

Reusable sensors (Welsh bulbs, limb plates) should be kept clean. They should be washed after each use and scoured frequently with a light-duty kitchen cleanser. Never use a metallic pad to clean the sensors. Accumulation of electrolyte may cause drifting and degrade ECG quality.

Applying limb plates

1. Expose the arms and legs.

2. Connect sensor straps to the "ears" of the sensors.
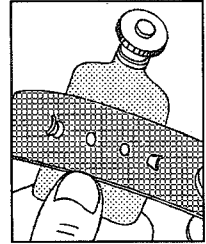
3. If using Lectro-pads®, the pad extends slightly beyond the edge of the sensor.
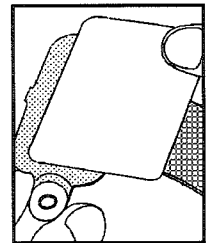
4. Firmly stroke the skin in the application area with this overlapping edge. This squeezes some electrolyte from the edge of the pad and helps clean the skin.
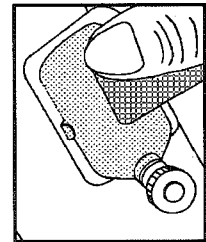
5. If you use Liqui-cor®, squeeze out a small amount as illustrated. Spread it evenly over the sensor surface. Always apply the same amount of electrolyte to each sensor.
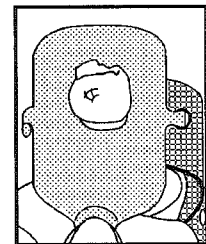
6. Place sensors firmly on the limb sites. Position them so that the sensor will not press against the body or table when the patient is relaxed. On arms, the screws should point downward toward the feet. On legs, the screws should point upward, toward chest.

7. Without stretching the strap, wrap it around the limb until a hole lines up with a sensor "ear." Then stretch the strap and fasten it with the next hole.

8. Connect the limb leads to the four sensors.

Applying Welsh bulb chest sensors

1. Connect the 6 Welsh bulb sensors to the C-leads (V-leads) on the patient cable.

2. Locate the 6 C-lead (V-lead) positions on the patient's chest (see "Resting ECG Lead Placement & Coding Chart" on pg. 5-2).

3. Squeeze out a drop of Liqui-cor® electrolyte at each sensor site. Use a tongue depressor to spread the electrolyte taking care that it does not touch the electrolyte from another site.

4. Apply the sensors by squeezing the rubber bulb and allowing suction to hold the sensor in place. Only a small dimple should remain on the bulb when it is released.

5. Ensure that the leads conform to the body contours and that no strain is placed on the sensors.

Resting ECG Lead Placement

Refer to "Resting ECG Lead Placement & Coding Chart" on pg. 5-2 to place all limb and chest sensors.

Lead Placement for Exercise Stress Testing

Use a similar technique when preparing for an Exercise Stress test as you use when taking a resting ECG. The following exceptions apply:

1. Place limb leads where movement is not a factor (see Figure 5-3).

2. Take special care with skin preparation.

   ✔ Cleanse sensor sites with alcohol or acetone swab.

   ✔ Use a Burdick Skin Rasp. Applying moderate pressure, stroke the skin 2 or 3 times at each site with the rough side of the rasp.

3. Secure dangling wires with tape to the patient's abdomen.

Figure 5-3
Exercise Stress Lead Placement
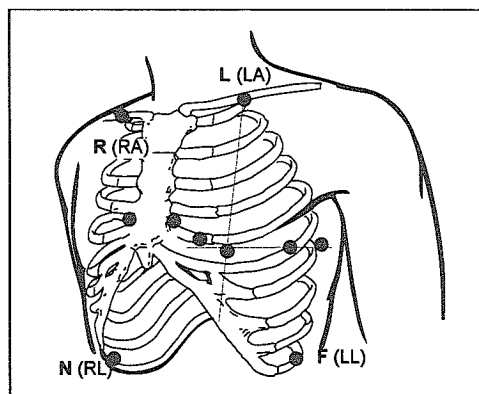
Pediatric Lead Placement

NOTICE: Interpretive Eclipse units do not analyze pediatric data. Interpretation is not available for patients who are 16 years old or younger. When the patient's age is 16 or less, the message, "PEDIATRIC INTERPRETATION NOT AVAILABLE," is printed on Auto ECG reports.

When acquiring a pediatric ECG, you may use an alternative C_3 (V_3) placement. Place the sensor in the C_4R (V_4R) position. This is across the sternum from C_4 (V_4). See Figure 5-4 for location. Improper placement will result in inaccurate waveform labelling.

You must select the corrected C_3 (V_3) placement in the ENTER ID menu (see "Entering Patient Demographics" on pg. 6-4). If you place C_3 (V_3) in the C_4R (V_4R) position, select "V4R" in the ***V3 Placement** field located in the ENTER ID menu for proper printout labelling.

Figure 5-4
Pediatric Chest Lead
Placement
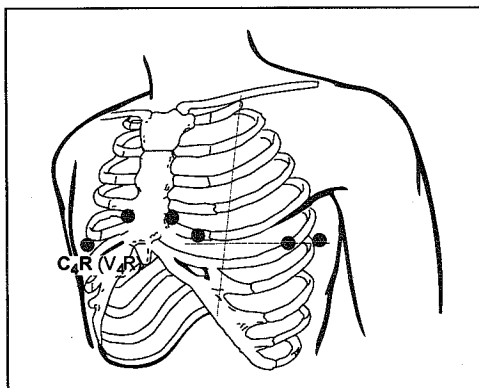
Frank: Corrected Orthogonal Leads

Attach all the limb sensors, R, L, F, and N (RA, LA, LL and RL). Please see "Resting ECG Lead Placement & Coding Chart" on pg. 5-2 for diagram.

Attach the chest sensors according to the following table. I, E, C, M and A should all be in the same horizontal plane level with the fifth intercostal space (see Figure 5-5).

C_1 (V_1)	Chest - right midaxillary line	I
C_2 (V_2)	Chest - midsternum	E
C_3 (V_3)	Chest - midclavicular line	C
C_4 (V_4)	Chest - left midaxillary line	A
C_5 (V_5)	Back - spine, opposite E	M
C_6 (V_6)	Throat or back of neck	H

Figure 5-5
Frank Lead Placement

Lead	Measurement
X	Dexter-Sinister
Y	Cranial-Caudal
Z	Ventral-Dorsal
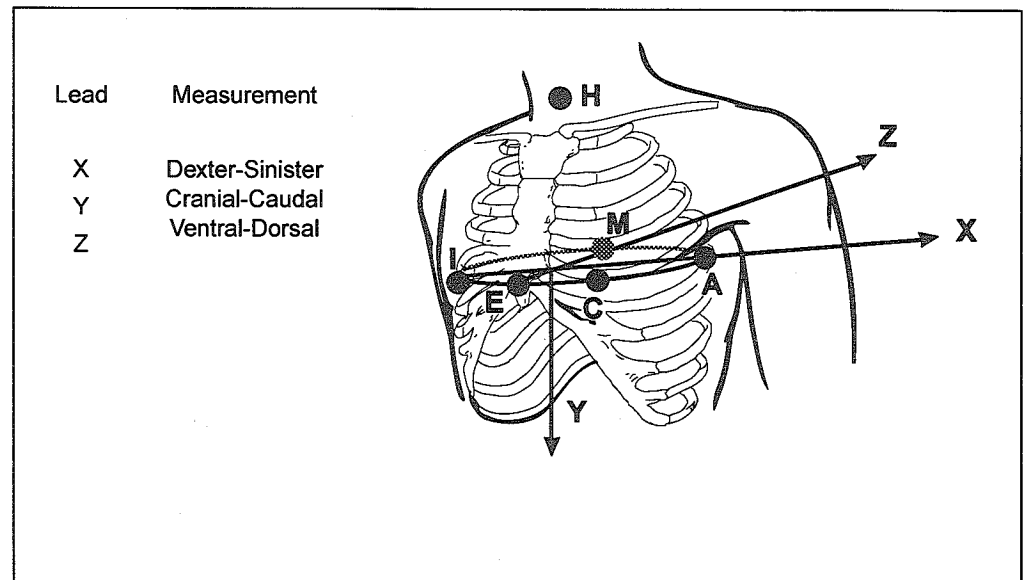
Nehb: Bipolar Leads

Attach all the limb sensors, R, L, N, and F (RA, LA, LL and RL). Please see "Resting ECG Lead Placement & Coding Chart" on pg. 5-2 for diagram.

Attach the chest sensors according to the following table (see Figure 5-6).

C_1 (V_1)	Chest - second rib at right sternal border	N_{st}
C_2 (V_2)	Back - left posterior axillary line on level with the bottom tip of the scapula.	N_{ax}
C_3 (V_3)	Chest - opposite the scapular apex at the same level as V_2 above.	N_{ap}

Figure 5-6
Nehb Lead Placement

Lead	Measurement
D	N_{ax} - N_{st}
A	N_{ap} - N_{st}
J	N_{ap} - N_{ax}
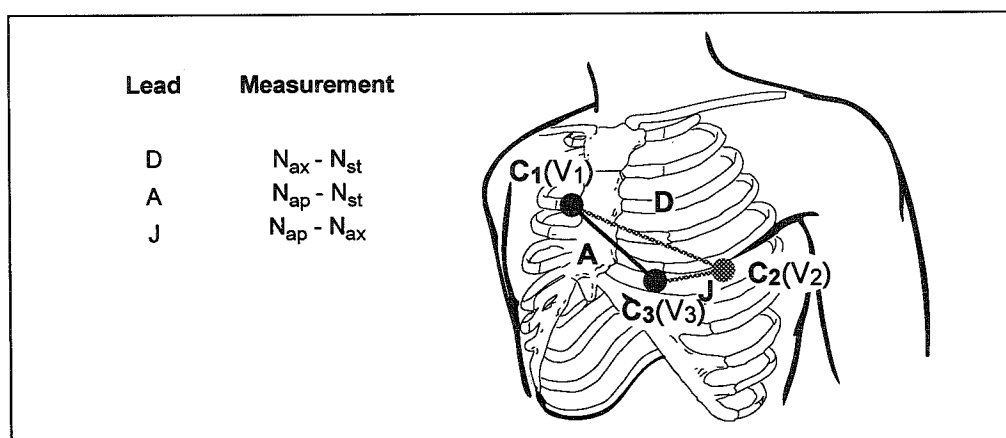
Connecting the Patient Cable to the Eclipse

Plug the patient cable into the connector on the front of the unit. This is located under the keyboard (see "Connecting the Patient Cable and enhancing software" on pg. 2-6).

Chapter 6 *Acquiring ECG Reports*

This chapter covers:

● Entering patient information in the EDIT ID menu.

● Acquiring Stat ECG reports.

● Acquiring Auto ECG reports.

● Acquiring Auto and Manual Rhythm reports.

If you are not familiar with using the Eclipse , you may wish to read Chapter 3, "Keyboard and Displays," before proceeding.

If you have not yet configured User Setup, you will obtain reports in default formats. Please see Chapter 4, "Program Setup," for more information.

Quick Reference-Acquiring ECG Reports

1. Prepare patient according to guidelines in Chapter 5, "Patient Preparation."

2. From Standby mode, press [⏻ on/stby] to power up to the PREVIEW screen.

For a Stat ECG...

3. Press [℮ ECG] to acquire an Auto ECG report.

    See "Acquiring an Auto ECG" on pg. 6-10.

For an ECG with demographics...

3. Press [ℕ I] to go to the EDIT ID menu.

4. If a System Note box appears with the message "**NEW Patient?**" press [Y].

5. Type the patient's ID and press [⏎enter].

6. Type the patient's last name and press [⏎enter].

7. Type the patient's first name and press [⏎enter].

8. Type the patient's date of birth and press [⏎enter].

9. Select the appropriate gender in the **Sex* field by pressing either [F] or [M].

10. Fill in remaining fields as thoroughly as possible. Skip fields if necessary. Exit menu or acquire a report at any time.
    See "Entering Patient Demographics" on pg. 6-4

11. Press [℮ ECG] to acquire an Auto ECG report.

    See "Acquiring an Auto ECG" on pg. 6-10.

Quick Reference-Entering Patient Information

EDIT ID
*V3 Placement
Patient ID
Last Name
First Name
*D.O.B.
*Age
*Age Format
*Sex
*Race
*Medication 1
*Medication 2
*Class 1
*Class 2
Height
Weight
Systolic BP
Diastolic BP
Department
Room
Technician
Physician
User Field
Comments

STANDARD
V4R

YEARS
MONTHS
DAYS

blank
MALE
FEMALE

blank
BLACK
CAUCASIAN
ORIENTAL
OTHER RACE
UNKNOWN

blank
NO MEDICATION
UNKNOWN
DIGITALIS
DIURETIC
BETA BLOCKER
QUINIDINE
PROCAINAMIDE
AMIODARONE
DISOPYRAMIDE
LIDOCAINE
OTHER ANTIARRHYTHMIC
PSYCHOTROPIC
STEROID
OTHER MEDICATION

blank
NORMAL
UNKNOWN
MYOCARDIAL INFARCTION
MYOCARDIAL ISCHEMIA
HYPERTENSION
CONGENITAL HEART DISEASE
RHEUMATIC HEART DISEASE
PERICARDITIS
RESPIRATORY DISEASE
IMPLANTED PACER
ENDOCRINE DISEASE
PULMONARY EMBOLISM
POST CARDIAC SURGERY
CARDIOMYOPTHY
OTHER

For any field that does not have a list, you may type in the appropriate information from the keyboard.

Acquiring a Stat ECG

Press the "ECG" function key to the left of the keyboard to acquire an Auto ECG report. This key is active in the PREVIEW screen and most menus including the EDIT ID menu.

If there is no Patient ID when you press this key, the Eclipse prints a Stat ID in the **Patient ID** field. This consists of "#STAT#" followed by the date and time (24-hour format).

Entering Patient Demographics

Some patient information directly affects ECG analysis. Your patient's physician uses this information when interpreting ECG reports. Likewise, interpretive Eclipse units provide more accurate and complete analysis statements when you enter patient information thoroughly.

Fields which directly affect Eclipse analysis, such as the *D.O.B. (date of birth) field, are marked with an asterisk (*).

From the PREVIEW screen, press the "I" key to go to the EDIT ID menu. You may also go to the EDIT ID menu from the MAIN MENU. If you want to create a file for this patient in the Directory, select ADD NEW PATIENT in the DIRECTORY menu (see "Using the DIRECTORY Menu" on pg. 7-4).

You may exit the EDIT ID menu at any time by pressing the Left arrow key. Information entered here will be used to label all ECG reports until you begin a new patient file or return the unit to Standby mode.

NEW PATIENT?

If demographics have been entered already, a message appears which reads, "NEW Patient?" (see Figure 6-1). Selecting YES begins a new file. Selecting NO uses the current patient information.

Figure 6-1
The EDIT ID Menu


```
ID:0123456789                    ♥65 PRESS
◄                 ENTER ID
  (*Items may affect computer analysis)  ▲
*V3 Placement  :  STANDARD
Patient ID     :  123456789
Last Name      :
First Name     :
*D.O.B.        :
*Age           :
*Age Format    :  YE/       NEW Patient?
*Sex           :
*Medication 1  :                NO
*Class  1   :
Comments    :                  YES
```

The EDIT ID fields are described below.

As you scroll through this menu, some fields have lists. Select the appropriate item from a list by pressing the hot key indicated by the underlined letter. In this chapter, the available choices are listed next to the field name.

When you scroll to other fields in this menu, the cursor blinks. In these fields, type the appropriate information from the keyboard. In this chapter, the type of information and the number of characters allowed are listed in brackets next to the field name.

> NOTE: Some of the fields described here may not appear because they have been disabled in the PATIENT FIELDS ENABLE menu (see "Enabling patient demographic fields" on pg. 4-24).

*V3 PLACEMENT

> <u>S</u>TANDARD
> V<u>4</u>R

Use only for pediatric reports. For more information on pediatric lead placement, see "Pediatric Lead Placement" on pg. 5-8.

NOTICE: Interpretive Eclipse units do not analyze pediatric data. Interpretation is not available for patients who are 16 years old or younger. When the patient's age is 16 or less, the message, "PEDIATRIC INTERPRETATION NOT AVAILABLE," is printed on Auto ECG reports.

PATIENT ID

> [Up to 20 alphanumeric characters]

LAST NAME

> [Up to 20 alphanumeric characters]

FIRST NAME

> [Up to 20 alphanumeric characters]

*D.O.B
(DATE OF BIRTH)

[Up to 20 alphanumeric characters]

Use spaces, hyphens or periods to separate the day, month and year. Some acceptable ways to type the date are:

1. 10 10 1950

2. 10–10–1950

3. 10.10.1950

> **NOTE:**   Remember that the period character (.) is typed by holding down the Shift key and pressing the "N" key. The hyphen character (-) is typed by holding down the Shift key and pressing the "M" key.

*D.O.B. is used to automatically fill in ***Age** and ***Age Format**. For accuracy and convenience, you may wish to use this field rather than fill in ***Age** manually.

*AGE

[Up to 3 numeric characters. Range = 0-364]

Not editable if ***D.O.B.** was entered.

*AGE FORMAT

<u>Y</u>EARS
<u>M</u>ONTHS
<u>D</u>AYS.

Not editable if ***D.O.B.** was entered.

*SEX

blan<u>k</u>
<u>M</u>ALE
<u>F</u>EMALE

*RACE

blan<u>k</u>
<u>B</u>LACK
<u>C</u>AUCASIAN
<u>O</u>RIENTAL
<u>OT</u>HER RACE
<u>U</u>NKNOWN

*MEDICATION 1

blan<u>k</u>
<u>N</u>O MEDICATION
<u>U</u>NKNOWN
<u>D</u>IGITALIS

DIURETIC
BETA BLOCKER
QUINIDINE
PROCAINAMIDE
AMIODARONE
DISOPYRAMIDE
LIDOCAINE
OTHER ANTIARRHYTHMIC
PSYCHOTROPIC
STEROID
OTHER MEDICATION

Select a medication type if you know the category of medication your patient is taking. For Eclipse analysis, it is better to select NO MEDICATION or UNKNOWN than to leave this field blank.

*MEDICATION 2

See *MEDICATION 1, above

*CLASS 1

blank
NORMAL
UNKNOWN
MYOCARDIAL INFARCTION
MYOCARDIAL ISCHEMIA
HYPERTENSION
CONGENITAL HEART DISEASE
RHEUMATIC HEART DISEASE
PERICARDITIS
RESPIRATORY DISEASE
IMPLANTED PACER
ENDOCRINE DISEASE
PULMONARY EMBOLISM
POST CARDIAC SURGERY
CARDIOMYOPTHY
OTHER

Refers to the patient's cardiac diagnosis. Select the appropriate diagnosis from the list if you know your patient's condition. For Eclipse analysis, it is better to select NORMAL or UNKNOWN than to leave this field blank.

*CLASS 2

See *CLASS 1, above

HEIGHT

[Up to 3 numeric characters. Range = 0-96 in. or 0-244 cm.]

Measured in either inches or centimeters as determined in the SYSTEM SETUP menu.

WEIGHT

[Up to 3 numeric characters. Range = 0- 500 lb. or 0-227 kg.]

Measured in either pounds or kilograms as determined in the SYSTEM SETUP menu.

SYSTOLIC BP   (BLOOD PRESSURE)

[Up to 3 numeric characters. Range = 0-250]

DIASTOLIC BP   (BLOOD PRESSURE)

[Up to 3 numeric characters. Range = 0- 250]

DEPARTMENT

[Up to 15 alphanumeric characters]

ROOM

[Up to 7 alphanumeric characters]

Identifies your location within the facility.

TECHNICIAN

[Up to 20 alphanumeric characters]

Identifies the person acquiring the ECG.

PHYSICIAN

[Up to 20 alphanumeric characters]

Identifies the patient's physician

USER FIELD

[Up to 15 alphanumeric characters]

Use this field to suit your needs. A possible use might be to identify the referring physician. You may label this field in the USER SETUP menu (see "Configuring the USER SETUP Menus" on pg. 4-16).

COMMENTS

[Up to 120 alphanumeric characters]

Use this field to input additional patient information as needed.

Printing Reports

[⊘STOP]

Use the "STOP" key to halt any printout. The Eclipse advances the chart paper to the next page and returns to the PREVIEW screen.

If the unit runs out of paper or if the paper jams, you are given the option to reload the paper and continue printing (see Figure 6-2). Alternatively, you may stop the function and return to the PREVIEW screen. For paper loading instructions see "Loading Recording Paper" on pg. 2-2.

Figure 6-2
System Note Regarding a
Printing Problem

Paper OUT:
Reload and continue ?
OK   Cancel
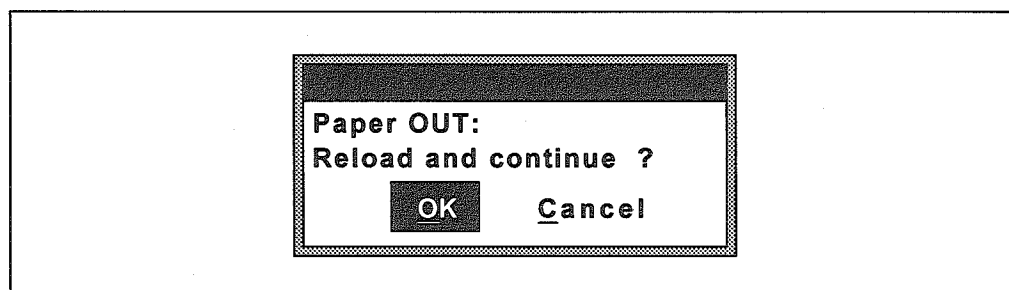
Acquiring an Auto ECG

Press the "ECG" function key to begin an Auto ECG. This key is active in most menus but you may verify waveforms before printing when you use the PREVIEW screen. Please refer to the sample printout in Chapter 8.

- Before printing, you may adjust Recorder Speed, Gain or Frequency Response using the machine control keys "7" through "9." These settings will stay in effect until you change them or return the unit to Standby mode.

- The Eclipse checks lead status and data quality. An error message notifies you of a problem. You may override an error message and continue recording by pressing the ECG key again.

- If no Patient ID information was entered, an ID is entered automatically. This ID will consist of "STAT" followed by the date and time.

- Press the "STOP" function key at any time to halt the Auto ECG. This is the only function key which is available during printing.

- During an Auto ECG, the Eclipse prints some or all of the following reports:

   1. Formatted, 12-lead Report (always printed)
   2. Rhythm Report
   3. Median Report
   4. Analysis and Demographics Report

   NOTE: The Demographics report is always printed. Analysis, however, is available only on interpretive units. On interpretive units, analysis may be disabled in the USER SETUP menu.

   The Auto ECG sequence is determined in the AUTO ECG SETUP menu (see "Configuring the USER SETUP Menus" on pg. 4-16).

- The Eclipse returns to either the PREVIEW screen or the DIRECTORY menu after an Auto ECG. This is determined in the USER SETUP menu (see SAVE MODE in "Configuring the USER SETUP Menus" on pg. 4-16).

- Saving an Auto ECG creates a file in the Directory. From the DIRECTORY menu, you may access this file in the future. You may wish to access the file to:

   1. Reprint the ECG report.
   2. Reprint the ECG report at a different Chart Speed, Frequency Response, or Gain setting.
   3. Use the patient demographics to acquire new ECG reports.

Acquiring an Auto Rhythm

An Auto Rhythm is a rhythm strip that prints for a set number of pages. The number of pages is determined in the MISCELLANEOUS menu.

Press the "RHYT" function key to begin an Auto Rhythm. This key is active in most menus but you may verify waveforms before printing when you use the PREVIEW screen. Please refer to the sample printout in Chapter 8.

● The Eclipse prints the report using the channels displayed in the PREVIEW screen. Before printing, select the desired leads using the machine control keys "1" through "6."

● The Eclipse prints the report using the Recorder Speed, Gain and Frequency Response settings displayed in the PREVIEW screen. You may toggle these settings using the machine control keys "7" through "9" before printing only.

● Press the "STOP" function key to halt an Auto Rhythm. You may also interrupt printing and begin another report with any of the other function keys to the left of the keyboard.

● No saving is possible with Auto Rhythm data.

Acquiring a Manual ECG

Press the "MAN" function key to print a continuous rhythm strip. This key will print a Manual ECG from most menus but you may verify waveforms before printing when you use the PREVIEW screen. Please refer to the sample printout in Chapter 8.

● The Eclipse prints the report using the channels displayed in the PREVIEW screen. You may choose different leads using the machine control keys "1" through "6" before or during printing.

● While printing, you may place a 1 mV simulated calibration pulse on the printout and display by pressing the "0" key.

● The Eclipse prints the report using the Recorder Speed, Gain and Frequency Response settings displayed in the PREVIEW screen. You may toggle these settings using the machine control keys "7" through "9" before or during printing.

● Press the "STOP" key to halt printing. You may also interrupt printing and begin another report with any of the other function keys to the left of the keyboard. The Manual ECG does not stop automatically.

● No saving is possible with Manual ECG data.

Chapter **7** | *Directory of Existing Files*

This chapter covers the DIRECTORY menu. From this menu you may:

● Locate and retrieve patient files.

● Edit patient demographics in an existing file.

● Reprint reports.

If you are not familiar with using the Eclipse, you may wish to read Chapter 3, "Keyboard and Displays," before proceeding.

If you have not yet configured User Setup, you will obtain reports in default formats. Please see Chapter 4, "Program Setup," for more information.

Quick Reference-The DIRECTORY Menu and Single ECG Functions List

DIRECTORY

VIEW BY NAME ———————— Directory contents are listed by name

VIEW BY ID ———————— Directory contents are listed by ID

PRINT DIRECTORY

ADD NEW PATIENT

DELETE ALL RECORDS

Selecting a file from the View by Name or View by ID list accesses the **Single ECG Functions** list.

ACQUIRE ECG

PRINT ECG

EDIT DEMOGRAPHICS

CHANGE SPEED, GAIN, FILTER ———— Accesses the next 3 fields

   Speed ——————— 10 mm/s
   Gain ——————— 25 mm/s
   Artifact Filter ——— 50 mm/s

PRINT MEDIAN COMPLEX ————— 5 mm/mV
                10 mm/mV
PRINT MEASUREMENT MATRIX ———— 20 mm/mV

DELETE RECORD ——————

40 Hz
150 Hz

Delete Record - - Are You Sure?

OK   Cancel

Several of the items shown here initiate operations like printing. Please refer to the more detailed information later in this chapter.

How to Print a Copy of an Auto ECG Report

1. In the DIRECTORY menu, scroll to the VIEW BY NAME or VIEW BY ID field.
2. Locate the desired patient file, highlight it, and press the Enter key. The Single ECG Functions list is displayed.
3. Press the "P" key to reprint a copy of the report.

How to Edit Patient Demographics

1. In the DIRECTORY menu, scroll to and select the VIEW BY NAME or VIEW BY ID field.
2. Locate the desired patient file, highlight it and press the Enter key. The Single ECG Functions list is displayed.
3. Press the "E" key to access the EDIT ID menu.
4. Edit patient demographics as desired. These changes are saved when you press the Left Arrow key to exit this menu.

How to Delete a Patient File

1. In the DIRECTORY menu, scroll to the VIEW BY NAME or VIEW BY ID field.
2. Locate the desired patient file, highlight it and press the Enter key. The Single ECG Functions list is displayed.
3. Press the "D" key to permanently delete the file.
4. Press the "O" key to confirm deletion.

Using the DIRECTORY Menu

About the Directory

The Eclipse 4 stores 40 records. Records are created by:

● Saving an Auto ECG report.

● Selecting the **Add New Patient** field in the DIRECTORY menu.

There are two kinds of records stored in the Directory:

1. Records containing Auto ECG reports.
2. Records without Auto ECG reports; "Demographics only"

Demographics only records are created when **ADD NEW PATIENT** is selected in the DIRECTORY menu but no ECG is taken for that patient (see "ADD NEW PATIENT" on pg. 7-5).

If the Directory is full, creating a new record will result in the deletion of the oldest record that contains an Auto ECG report. If the Directory is full of demographics only records, **Directory Full** is displayed in the PREVIEW screen. Auto ECG reports taken under this condition are not saved.

Go to the DIRECTORY menu

Press the On/Standby key to power up to the PREVIEW screen.

Press the "M" key to go to the MAIN MENU.

Press the "D" key to go to the DIRECTORY menu (see Figure 7-1).

Figure 7-1
The DIRECTORY Menu

```
┌─────────────────────────────────────────────┐
│ ID:0123456789              ♥65 │ PRESS       │
├────┬─────────────────────────┴───────────────┤
│    │         MAIN MENU                        │
├────┴──────────────────────────────────────────┤
│◄             DIRECTORY                         │
├───────────────────────────────────────────────┤
│  VIEW BY NAME                                  │
│  ▓VIEW BY ID▓                                  │
│  PRINT DIRECTORY                               │
│  ADD NEW PATIENT                               │
│  DELETE ALL RECORDS                            │
│                                                │
│                                                │
│                                                │
│                                                │
└───────────────────────────────────────────────┘
```

The DIRECTORY menu items

Following is a description of the DIRECTORY menu.

The fields in this menu all have hot keys to select them. These fields initiate operations which are described next to the field name below.

VIEW BY NAME

Accesses a complete list of the Directory contents. Records are listed in the format:

> LAST NAME, FIRST NAME (may be shortened to fit)
> Acquisition date
> Acquisition time
> Record status

Select a file by highlighting it and pressing the ENTER key. The Single ECG Functions List is displayed.

VIEW BY ID

Accesses a complete list of the Directory contents. Records are listed in the format:

> Patient ID
> Acquisition date
> Acquisition time
> Record status

Select a file by highlighting it and pressing the ENTER key. The Single ECG Functions List is displayed.

PRINT DIRECTORY

Prints a complete list of the Directory contents (see sample printout in Chapter 8).

ADD NEW PATIENT

Creates a new patient file and displays the EDIT ID menu (see "Entering Patient Demographics" on pg. 6-4). This allows you to input demographics into the Directory in advance of taking an ECG. This reduces the time required to acquire the report.

Enter patient ID and other demographics as needed. Changes are saved when you press the Left Arrow key to exit the EDIT ID menu.

DELETE ALL RECORDS

Deletes entire Directory contents. A System Note box appears.

Proceed with caution; answering Ok to the next two questions will permanently erase every record in the Directory. To cancel the request, select Cancel.

The Single ECG Functions List

About the Single ECG Functions list

This is a list of operations which may be carried out with an existing file. The list appears when you select a file from either the VIEW BY NAME or VIEW BY ID list.

Single ECG Functions list items

> NOTE: PRINT MEDIAN COMPLEX and PRINT MEASUREMENT MATRIX are available only on units with interpretation or measurement capabilities.

ACQUIRE ECG

Records an Auto ECG using the patient information in the selected file.

PRINT ECG

Reprints the ECG report from the selected record. This is not an option for records with demographics only.

EDIT DEMOGRAPHICS

Opens the EDIT ID menu (see "Entering Patient Demographics" on pg. 6-4).

Allows you to update or change patient demographics.

CHANGE SPEED, GAIN, FILTER

Accesses the next 3 fields.

Use the next three fields to adjust printout appearance for an Auto ECG or for reprinting an existing record. Normally these would be adjusted from the PREVIEW screen but that screen is not available for the Single ECG Functions.

SPEED

> 10 mm/s
> 25 mm/s
> 50 mm/s

GAIN

> 5 mm/mV
> 10 mm/mV
> 20 mm/mV

ARTIFACT FILTER

40 Hz
150 Hz

PRINT MEDIAN COMPLEX

Prints a copy of the median complexes for the selected record.

Chart speed is fixed at 50 mm/s.

PRINT MEASUREMENT MATRIX

Prints a copy of the matrix for the selected record.

DELETE ECG

Permanently removes the selected record. A message box will appear.

Proceed with caution; choosing Ok will permanently erase the record. To cancel the request, select Cancel.

Chapter 8 | *Sample Printouts*

Print Directory Report

```
            --- Patient Directory ---        12.11.1995 12.39
        Name                      ID           Date/Time  Status

MIKKELSON, SCOTT      1230000001                             DEMOGR
                                                            EDITED
                      #STAT#951112123100   12.11.95 12:31   ECG
                                                            PRINTED
NICHOLS, JENNIFER     1245678912           12.11.95 11:22   ECG
                                                            PRINTED
```

Print Setup Report

The Print Setup Report is a list of all current settings (see "Acquiring a Printout of Eclipse Settings" on pg. 4-26).

The example printouts below list the settings as they are set at the factory. The top example is from an Eclipse that is configured to be used in Europe. Below that is the SYSTEM SETUP for an Eclipse configured for the United States.

Eclipse 4

```
                        SETUP   REPORT                    11.12.1995   9:20


  ┌─USER  SETUP────────────────────────┐   ┌─SYSTEM  SETUP──────────────┐
  │ POWER UP DEFAULTS                   │   │ User 1-2 Select: 1         │
  │   Speed: 25 mm/s                    │   │ Line Filter: 50 Hz         │
  │   Gain: 10 mm/mV                    │   │ Date: 11.12.1995           │
  │   Artifact Filter: 40 Hz           │   │ Date Format: DD.MM.YY      │
  │ AUTO ECG SETUP                      │   │ Time: 9:20                 │
  │   12 Lead Format: STANDARD, 3 CHANNEL│  │ Language: U.K. ENGLISH     │
  │   Rhythm Page: OFF                  │   │ Height Units: CM.          │
  │   Analysis Original: ON WITH REASONS│   │ Weight Units: KG.          │
  │   Analysis Copies: OFF              │   │ Inst. Name:                │
  │   Number of Copies: 0               │   │ Institution Number: 0      │
  │   Median Complex Page: OFF          │   └────────────────────────────┘
  │   Save Mode: AUTO                   │
  │ Custom Lead 1: STANDARD, 3CHANNEL   │
  │   Channel 1: LEAD II                │
  │   Channel 2: aVF                    │
  │   Channel 3: V5                     │
  │ Custom Lead 2: STANDARD, 3 CHANNEL  │
  │   Channel 1: LEAD II                │
  │   Channel 2: aVF                    │
  │   Channel 3: V5                     │
  │ MISCELLANEOUS                       │
  │   Baseline Filter: 0.12 Hz          │
  │   Pacer Enhancement: ON             │
  │   Rhythm Mode Pages: 1              │
  │   Bradycardia Limit: 60             │
  │   Tachycardia Limit: 100            │
  │ PATIENT FIELDS ENABLE               │
  │  (*Items may affect computer analysis)│
  │ *V3 Placement: ON, CLEAR   *Class 2: OFF│
  │ Last Name   : ON     Height (in): OFF│
  │ First Name  : ON     Weight (lbs): OFF│
  │ *D.O.B.     : ON     Systolic BP  : OFF│
  │ *Age        : ON     Diastolic BP : OFF│
  │ *Age Format : ON     Department   : OFF│
  │ *Sex        : ON     Room: OFF     │
  │ *Race       : OFF    Technician   : OFF│
  │ *Medication 1 : ON   Physician    : OFF│
  │ *Medication 2 : OFF  User Field   : OFF│
  │ *Class 1: ON         User Field Label: User Field:│
  │                      Comments: ON  │
  └────────────────────────────────────┘
```

```
  ┌─SYSTEM  SETUP──────────┐
  │ User 1-2 Select: 1     │
  │ Line Filter: 60 Hz     │
  │ Date: 11/12/1995       │
  │ Date Format: MM/DD/YY  │
  │ Time: 9:20             │
  │ Language: U.S. ENGLISH │
  │ Height Units: IN.      │
  │ Weight Units: LB.      │
  │ Inst. Name:            │
  │ Institution Number: 0  │
  │                        │
  └────────────────────────┘
```

Eclipse 8

```
                    SETUP   REPORT              21.12.1995   11:55
```

```
┌USER  SETUP━━━━━━━━━━━━━━━━━━━━━━━━━━━━┐   ┌SYSTEM  SETUP━━━━━━━━━━━━━━┐
│POWER UP DEFAULTS                        │   │User 1-2 Select: 1          │
│  Speed: 25 mm/s                         │   │Line Filter: 50 Hz          │
│  Gain: 10 mm/mV                         │   │Date Format: DD.MM.YY       │
│  Artifact Filter: 40 Hz                 │   │Date: 21.12.1995            │
│AUTO ECG SETUP                           │   │Time: 11:55                 │
│  12 Lead Format: STANDARD, 4 CHANNEL    │   │Language: U.K. ENGLISH      │
│  Rhythm Lead Ch.1: LEAD II              │   │Height Units: CM.           │
│  Rhythm Lead Ch.2: aVF                  │   │Weight Units: KG.           │
│  Rhythm Lead Ch.3: V5                   │   │Inst. Name:                 │
│  Rhythm Page: OFF                       │   │Institution Number: 0       │
│  Analysis-Original: ON WITH REASONS     │   └━━━━━━━━━━━━━━━━━━━━━━━━━━━━┘
│  Analysis-Copies: OFF                   │
│  Number Of Copies: 0                    │
│  Median Complex Page: OFF               │
│  Save Mode: AUTO SAVE                   │
│Custom Lead 1: STANDARD, 3 CHANNEL       │
│  Channel 1: LEAD II                     │
│  Channel 2: aVF                         │
│  Channel 3: V5                          │
│  Channel 4: LEAD I                      │
│  Channel 5: LEAD I                      │
│  Channel 6: LEAD I                      │
│Custom Lead 2: STANDARD, 3 CHANNEL       │
│  Channel 1: LEAD II                     │
│  Channel 2: aVF                         │
│  Channel 3: V5                          │
│  Channel 4: LEAD I                      │
│  Channel 5: LEAD I                      │
│  Channel 6: LEAD I                      │
│MISCELLANEOUS                            │
│  Baseline Filter: 0.12 Hz               │
│  Pacer Enhancement: OFF                 │
│  Rhythm Mode Pages: 1                   │
│  Bradycardia Limit: 60                  │
│  Tachycardia Limit: 100                 │
│PATIENT FIELDS ENABLE                    │
│(*Items may affect computer analysis)    │
│*V3 Placement: ON, CLEAR  *Class 2: OFF  │
│Last Name  : ON      Height (in): OFF    │
│First Name : ON      Weight (lbs): OFF   │
│*D.O.B.    : ON      Systolic BP  : OFF  │
│*Age       : ON      Diastolic BP : OFF  │
│*Age Format : ON     Department   : OFF  │
│*Sex       : ON      Room: OFF           │
│*Race      : OFF     Technician   : OFF  │
│*Medication 1 : ON   Physician  : OFF    │
│*Medication 2 : OFF  User Field  : OFF   │
│*Class 1: ON         User Field Label: User Field: │
│                     Comments: ON        │
└━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━┘
```

```
┌SYSTEM   SETUP━━━━━━━━━━━━━━┐
│User 1-2 Select: 1           │
│Line Filter: 60 Hz           │
│Date: 11/12/1995             │
│Date Format: MM/DD/YY        │
│Time: 9:20                   │
│Language: U.S. ENGLISH       │
│Height Units: IN.            │
│Weight Units: LB.            │
│Inst. Name:                  │
│Institution Number: 0        │
└━━━━━━━━━━━━━━━━━━━━━━━━━━━━━┘
```

Standard 12-Lead, 3-Channel Auto ECG   (Eclipse 4)

JONES, KATHY
ID: A1234567890

11/07/95 15:22

D.O.B: 02/13/1945	50 YEARS
FEMALE	OTHER RACE
65 in	123 lbs	B/P: 130/88
Meds: NO MEDICATION	
Class: NORMAL	
Loc: ECG,112	
Dr: BROWN,MD	
Tech: JOHNSON	
Er: WALKIN	

Vent. Rate:	60 bpm
P Duration:	86 ms
QRS Duration:	84 ms
PR Interval:	168 ms
QT Interval:	378 ms
QTc Interval:	378 ms
P-R-T Axis: 47° 50°	48°

Comment: COMPLAINS OF HEADACHES

SINUS RHYTHM
WITHIN NORMAL LIMITS

Summary: NORMAL

* Unconfirmed Analysis *

C-00-502

BURDICK P/N 007971   REV 1.52/1.38/14.2/1.13(0914)

Standard 12-Lead, 3-Channel Auto ECG (Eclipse 8)

JONES, THOMAS
ID: 1234567890

21.12.95 10:46

D.O.B.: 13.02.1944	51 YEARS		Vent. Rate:	80	bpm	SINUS RHYTHM
MALE			P Duration:	94	ms	WITHIN NORMAL LIMITS
Meds:	NO MEDICATION		QRS Duration:	86	ms	
Class:	OTHER		PR Interval:	140	ms	Summary: NORMAL
			QT Interval:	350	ms	
			QTc Interval:	385	ms	
			P-R-T AXIS: 28°	60°	38°	

JONES, THOMAS
ID: 1234567890

21.12.95 10:46

Unconfirmed Analysis

Auto 3-Channel Rhythm & Manual ECG   (Eclipse 8)

JONES, THOMAS   ♥82   21.12.1995 10:47
ID: 1234567890

10 mm/mV

25 mm/s
50 0.12-40 Hz

BURDICK REV P/N 007582 4.2/ C-00-507 PATENT NO. 4,207,580
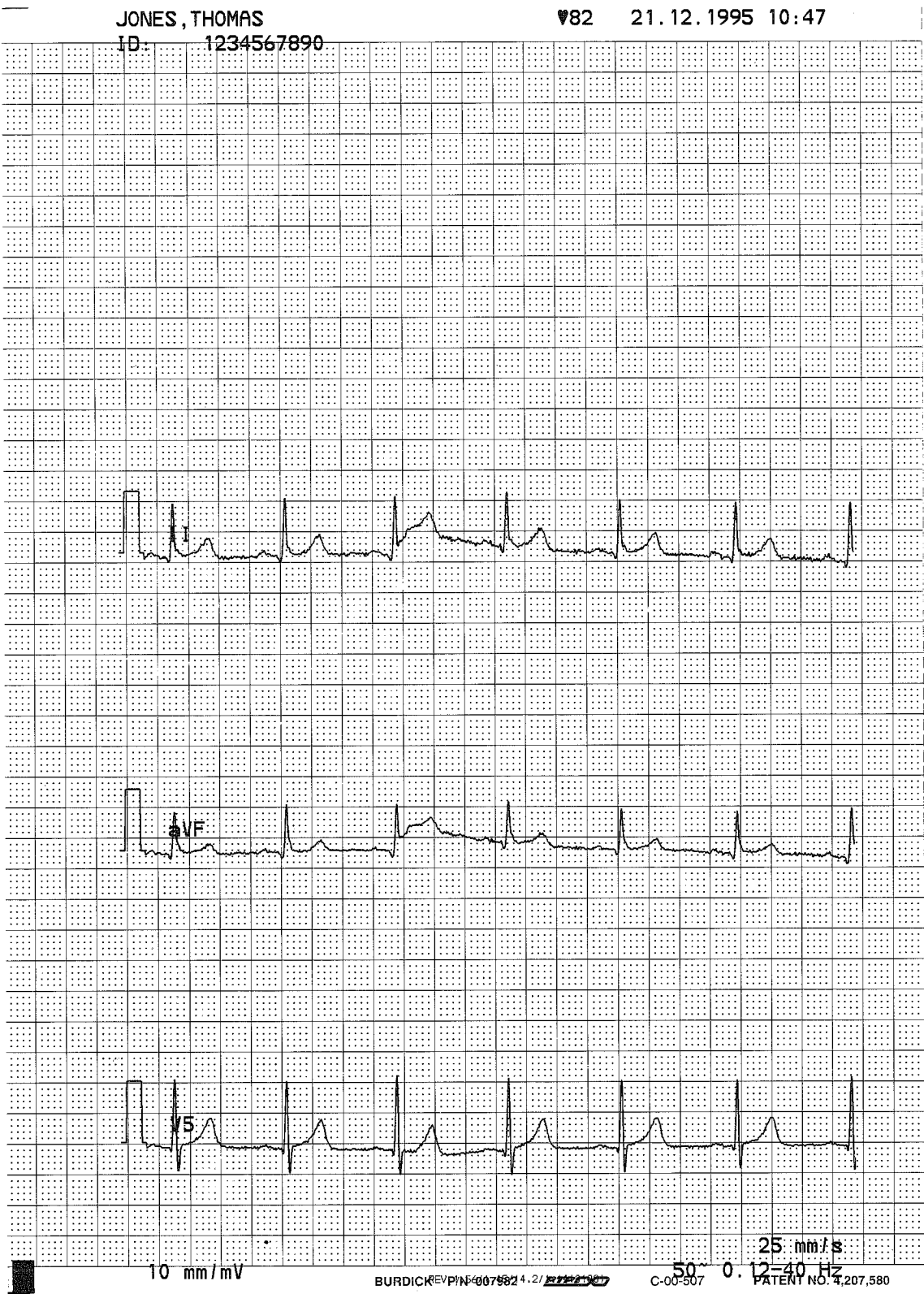
Standard 12-Lead, 6-Channel Auto ECG   (Eclipse 4)

Standard 12-Lead, 6-Channel Auto ECG   (Eclipse 8)

21.12.95 10:47

JONES, THOMAS
ID: 1234567890

SINUS RHYTHM
WITHIN NORMAL LIMITS

Summary: NORMAL

* Unconfirmed Analysis *

Vent. Rate:	80	bpm
P Duration:	96	ms
QRS Duration:	86	ms
PR Interval:	140	ms
QT Interval:	338	ms
QTc Interval:	373	ms
P-R-T AXIS: 33°	62°	37°

JONES, THOMAS
ID: 1234567890
D.O.B.: 13.02.1944   51 YEARS
MALE
Meds: NO MEDICATION
Class: OTHER

21.12.95 10:47
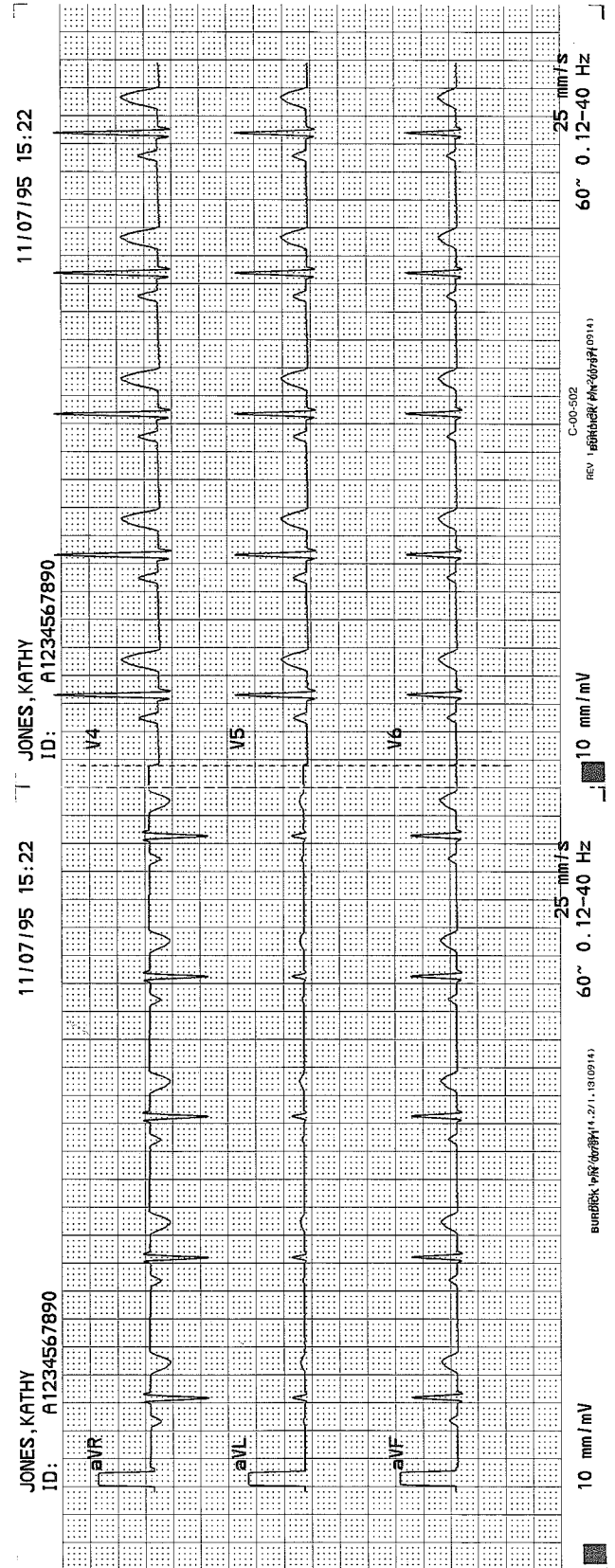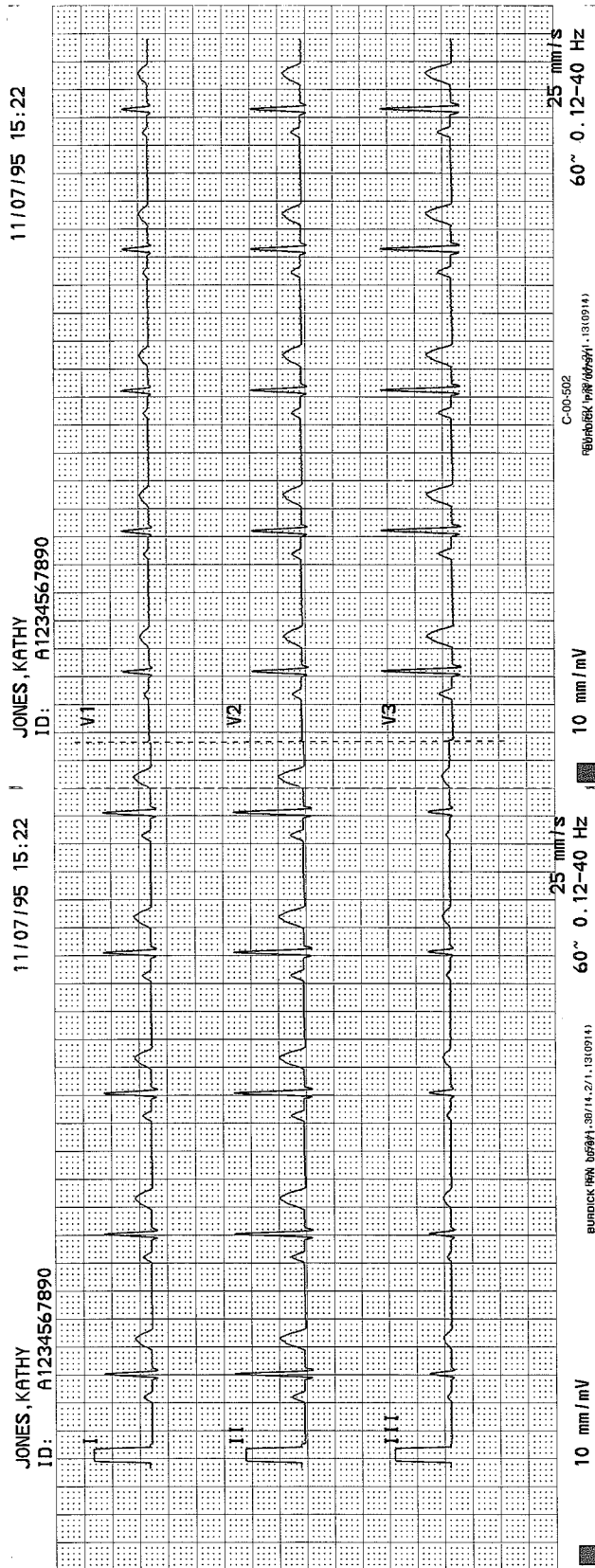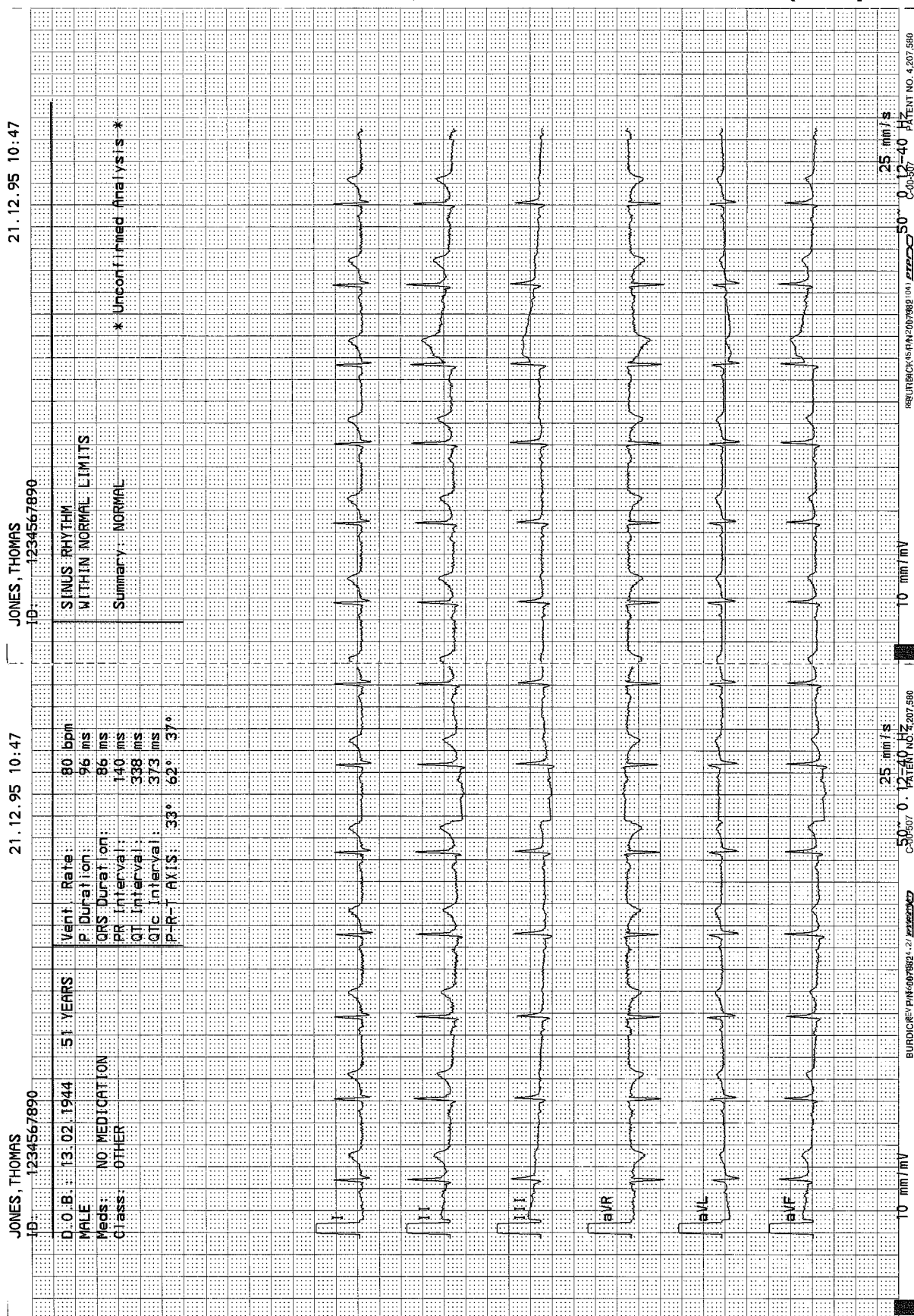
[Standard 12-Lead, 6-Channel Auto ECG (continued)]

Chapter 9 | *Troubleshooting*
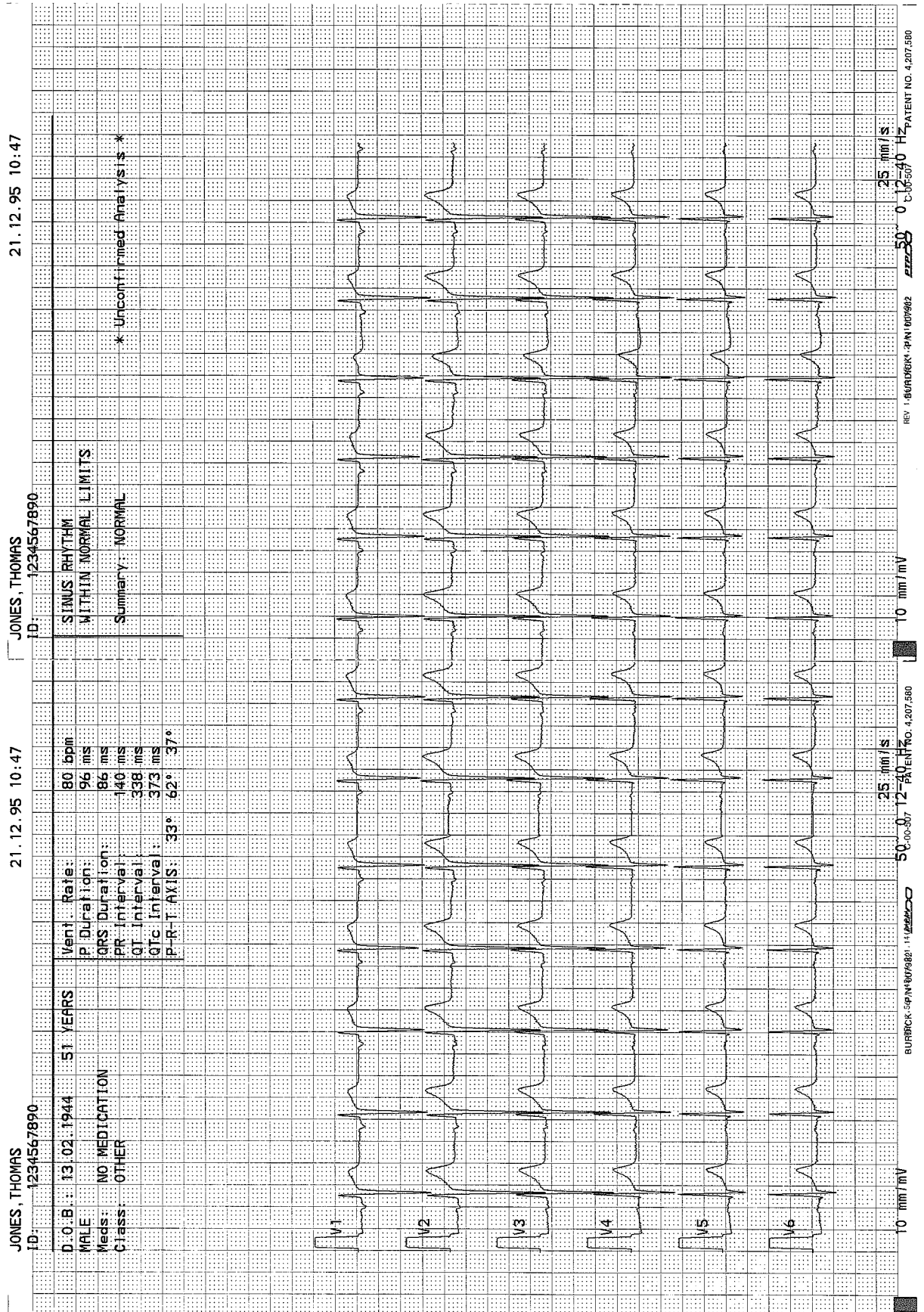
Troubleshooting Basic Unit Problems

PROBLEM	PROBABLE CAUSE/SOLUTION
Unit will not turn on. Battery charge status is not displayed.	- Unit not connected to AC line voltage. - Faulty power cord. - AC outlet not functional.
Battery charging not indicated when the unit is connected to an AC line outlet.	- Battery pack has been removed or is connected improperly.
After the battery has been fully charged, the battery gauge indicates low battery within 30 minutes of operation.	- Battery pack may be worn out.
Unit has "frozen." The unit does not respond to key strokes and the display does not change.	- Press and hold the On/Standby key for at least 5 seconds then release. The unit shuts off. To continue with normal operation, press On/Standby again to restart the Eclipse.

Troubleshooting Trace Problems

PROBLEM	PROBABLE CAUSE/SOLUTION
Waveforms are flat for all leads	- Patient cable not properly connected to unit.
Waveform is flat for one or more leads. All others are OK.	- Lead wire(s) disconnected from patient. - Damaged lead wire(s).
Baseline is drifting in waveform for one or more leads.	- Poor patient preparation. - Use of dissimilar sensors or sensors not recommended for use with Eclipse . - Sensors need to sit longer on skin. - Poor sensor contact with skin.
Trace is "noisy." The waveform is not a single, clean line.	- AC interference from lighting, cables, or equipment near patient. - Improper line filter setting in SYSTEM SETUP menu.
Occasional noise or artifact in the waveform for one or more leads.	- Patient movement. - Muscle tremor noise. - Improperly applied sensors. - Electrical interference. - Sensors need to sit longer on skin. - Poor sensor contact with skin.
"OVERLOAD" message will not clear.	- The sensor is not applied correctly. - The lead cable has a broken wire. This cable should be replaced.

Recognizing and Reducing ECG Artifacts

"OVERLOAD" message

Defibrillating the patient will interfere with the Eclipse sensors. This may result in loss of the trace or erratic trace deflections. An "OVERLOAD" message alerts you that waveforms may not be accurate. To speed recovery time after defibrillation press the "B" key to activate the Defibrillation Recovery filter (see "The Defibrillation Recovery filter" on pg. 9-4).

A broken wire in a patient lead or a poorly applied sensor may also cause an "OVERLOAD" message. This condition must be corrected before the overload condition clears.

Rapid, large and erratic deflections

A broken wire in the patient lead or a poorly applied sensor may cause rapid, large and erratic trace deflections.

Irregular frequency or amplitude

Patient movement and muscle tremor may result in abnormal traces. To minimize this artifact, toggle the artifact filter to 40 Hz with the "9" machine control key.

In addition, try to gain the patient's cooperation in staying very relaxed and still. Sometimes, somatic tremor is unavoidable but its effects may be minimized by having the patient place his/her hands under the buttocks.

Figure 9-1
Somatic Tremor and Patient
Movement Artifact
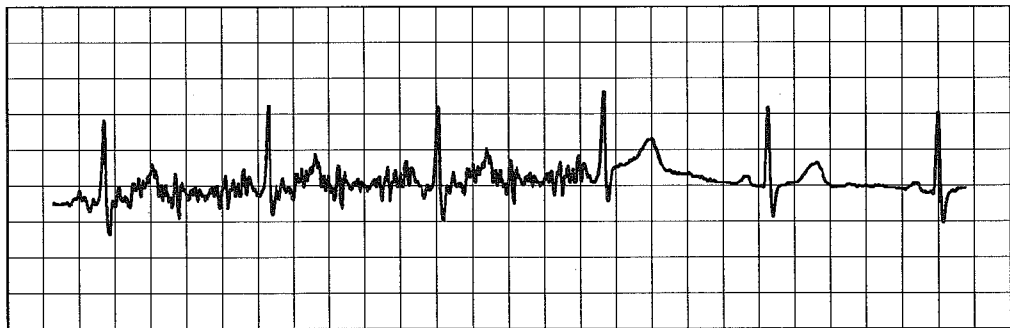
Baseline wander

Poorly affixed sensors may cause the baseline to wander. Normally, the baseline will stabilize within a few seconds. If the baseline shifts up and down, it may be due to the patient's breathing or to loose or corroded sensors.

Wide baseline

Electrical interference may produce a wide baseline. Its amplitude depends on the strength of the current source and the lead being recorded. In any one lead, the amplitude of the interfering signal is uniform.

Figure 9-3
Electrical Interference
Artifact
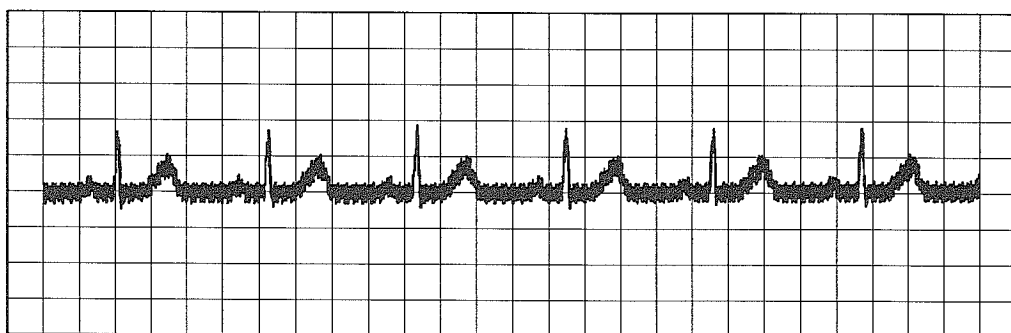
To reduce electrical interference:

✔ Keep the power cord away from the patient and patient cable.

✔ Connect the unit to a properly grounded wall outlet.

✔ Arrange the patient cable leads together, closely following the body contour.

✔ Check the line filter setting in the SYSTEM SETUP menu. For more information, see "Configuring SYSTEM SETUP Menu" on pg. 4-12.

✔ Ensure that Diathermy or X-ray equipment in adjacent rooms is not operating. Other electrical equipment including electric beds and lighting fixtures may also generate interference (even when not in use).

✔ Try moving the patient to another place in the room. Sometimes, electrical wiring in walls and ceilings causes interference.

✔ Operate the Eclipse from battery power.

The Defibrillation Recovery filter

> **NOTE:** The Defibrillation Recovery filter should be used only for enhanced recovery time after defibrillation to confirm the presence of cardiac activity. While this filter is enabled, waveforms printed are not of diagnostic quality. Care must be taken by the operator to not misinterpret the patient's condition during an "OVERLOAD" condition.

The Eclipse provides a Defibrillation Recovery filter for faster recovery time from an "OVERLOAD" condition caused by defibrillation (see ""OVERLOAD" message" on pg. 9-2).

This filter is enabled by pressing the "B" key. Do this only after defibrillation and only if the trace does not recover. When the filter is enabled, the Sensor Status message in the PREVIEW screen displays "FAIL" and "OVERLOAD" is printed on the report. After approximately 30 seconds, the filter clears and the Eclipse returns to normal operation.

Chapter 10 Maintenance and Service

This chapter covers:

- Installing or replacing the battery.

- Eclipse Maintenance.

- Eclipse service which may be performed by a qualified biomedical technician.

Quick Reference-Replacing the Battery

CAUTION: *Fire hazard. Replace Eclipse 4 battery pack with only Burdick part number 862988. Replace Eclipse 8 battery pack with only Burdick part number 863045.*

⚠ **NOTICE:** Do not place used battery pack in your regular trash. The incineration, landfilling, or mixing of NiCd batteries with municipal waste is PROHIBITED BY LAW in most areas. Return this battery pack to a government-approved battery recycler. Contact your local waste management officials for more information.

Removal

1. Turn unit over to expose battery cover.
2. Depress battery cover latch and slide cover out.
3. Lift battery pack and disconnect battery by grasping the connector and sliding it straight out.
   DO NOT PULL ON WIRES!

Installation

1. Slide battery connector on to PC board. (Battery connector is polarized and made to fit only one way; Do not force connector into slot.)
2. Place battery pack into battery compartment:
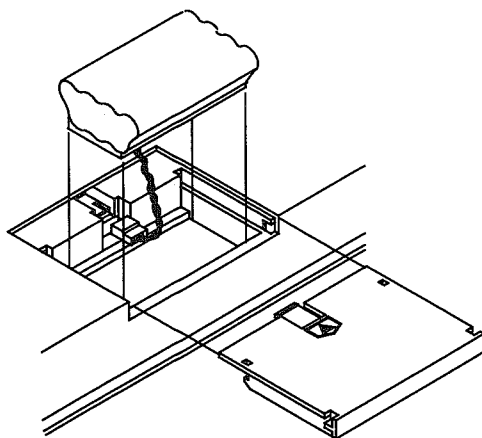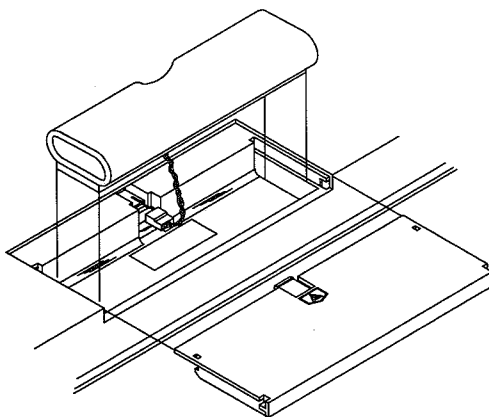
Eclipse 4   **Eclipse 8**

3. Arrange battery connector wires so that they will not interfere with battery cover.
4. Position battery cover over battery compartment and slide forward until it snaps into place.
5. Fully discharge and recharge the battery to calibrate the Battery Status gauge (see "Calibrating the Battery Status Gauge" on pg. 2-3). Calibrate the gauge whenever you remove the battery even if you re-install the same battery.

Inspecting for Damage

⚠ *WARNING: Hazardous voltage. To reduce the risk of electrical shock, do not attempt to remove the cover under any circumstances. Refer servicing to a qualified technician.*

Before using the Eclipse, always check the power cord, power plug, power connector, and power input jack for signs of damage.

Immediate service is required if:

- ✔ The equipment falls from the cart or is subjected to some other extreme mechanical stress.

- ✔ Liquid is spilled on the equipment.

- ✔ The equipment is not functioning properly.

- ✔ Parts of the enclosure are cracked, removed or lost.

- ✔ Any connector or cord shows signs of deterioration such as cracking.

Cleaning and Disinfecting the Eclipse

The housing

NEVER use ether, benzene or similar solvents.

CLEANING

Gently rub the housing with a clean, damp cloth. If necessary, a mild household detergent may be used.

DISINFECTION

Spray the housing with INCIDIN or similar product.

The patient cable and reusable sensors

NEVER immerse cables in fluid, or use hot sterilization. Do not use ether. Do not use bleach, acetone or similar harsh chemicals or solvents.

CLEANING AND DISINFECTION

Rub with a clean cloth moistened with a formaldehyde solution such as CIDEX, SONACIDE, LYSOFORM 5% or INCIDIN 1.5%.

Testing Equipment

The Eclipse performs a self-test every time it is powered up. It is not necessary for you to perform any other tests on the unit.

Testing the Patient cable

● Disconnect the Patient cable

● Check for a short, broken wire, or poor contact by measuring the resistance of each lead in the cable. Each lead is equipped with a protective resistor of 10,000 ohm.

Testing the battery

The Eclipse monitors battery status. It is not necessary for you to perform any tests on the battery. However, if the battery does not retain a charge for more than 30 minutes of operation, you may need to replace the battery pack.

WARNING: Never remove the battery pack and attempt to recharge it using an external battery charger. Fire or explosion may result.

● Replace Eclipse 4 battery with only Burdick battery pack, part number 862988. Replace Eclipse 8 battery with only Burdick battery pack, part number 863045.

● During operation, the Battery Status gauge in the PREVIEW screen tracks battery charge status.

● The message, "LOW BATTERY" flashes when fewer than 15 minutes of operating time remain.

● If the charge level drops too low, the unit displays the message, "POWERING DOWN." Then, after 5 seconds, the unit shuts off. Connect the unit to AC line voltage at this point to operate the unit and recharge the battery.

Voltages and fuses

The Eclipse is internally configured to use either 115VAC or 230VAC. The AC line power fuse is mounted internally and should be replaced only by an authorized service representative.

Restricted environment

The Eclipse must be stored in an environment with a temperature of -20° C to 55° C and relative humidity of 25% to 95% non-condensing.

Service Information

The information contained in this section is provided expressly for hospitals, clinics and other institutions that have their own, in-house technical support. If you wish to go beyond this level of maintenance, a comprehensive Service Manual is available from Burdick. Please read "Notice to Responsible Service Personnel" below and pay careful attention to all cautions and warnings.

Available Documentation

The following documentation is available for this product:

● Operating Instructions (supplied with product)

● List of Accessories and Supplies (supplied with product)

● Service Manual (available upon request)

Notice to Responsible Service Personnel

The contents of this document are not binding. If you find a significant difference between this service information and your unit, please consult Burdick. We reserve the right to improve or modify products without amending this document or advising the user.

We recommend consulting authorized Burdick personnel for all service and repairs, and using genuine Burdick parts, exclusively. Burdick will not otherwise assume responsibility for material quality, workmanship or any consequences thereof.

This product has been carefully designed and manufactured to provide a high degree of safety and dependability. However, we can not guarantee against the failure or deterioration of components due to aging and normal use.

Performance Disclosures

⚠️

WARNING: Explosion hazard. Do NOT use in the presence of flammable anesthetics

CAUTION: Although the Eclipse is designed to meet IEC 601-1-2 EMC immunity requirements, the presence of strong EMI fields generated by electronic, surgical or diathermy instruments in close proximity to the unit may cause trace noise or input overload conditions.

NOTICE: Computer assisted interpretation is a valuable tool when used properly. However, no automated interpretation is completely reliable and interpretations should be reviewed by a qualified physician before treatment, or non-treatment, of any patient.

NOTICE: Because the Burdick Eclipse offers several different lead configurations, always ensure that the appropriate lead placement is employed for the lead configuration selected.

CE This symbol which appears on the rear panel of some units, indicates this equipment meets the requirements of the EMC directive.

Battery Pack

Under normal conditions, a fully charged battery pack provides adequate power to print a minimum of 200 pages of data at paper speed of 25 mm/sec; or a minimum of 20 minutes of continuous acquisition and printing.

A fully discharged battery pack will completely recharge in approximately 5 hours.

Frequency Response

The Eclipse uses digital electronic circuitry to reproduce the ECG trace. Because of sampling characteristics and the asynchronism between sample rate and signal rate, a modulating effect from one cycle to the next may be produced, particularly in high heart rate (i.e. pediatric) recordings. This phenomenon is inherent to digital systems and should not be interpreted as a physiological condition.

The frequency response is tested using the following methods:

Method	Nominal input amplitude (mV p-p)	Input frequency and waveform	Output response (mm) relative to 10Hz output
A	1.0	0.67 to 40 Hz, sinusoidal	±10%
D	1.5	< 1 Hz 20 ms, triangular	+0%, - 10%

Assessing overall system error

- At all available sensitivity settings, apply a 5 Hz signal to the appropriate patient sensor connection to obtain a full scale deflection of 50 mm.

- Measure the input signal and compute the gain as output/input. Repeat this procedure for output deflections of 40, 30, 20, 10, and 5 mm.

- The computed gain in each instance must be within ±5 percent or ±40 μV of the nominal value, whichever is greater.

Technical Data (Eclipse 4)

Dimensions:	299mm x 349mm x 105mm (11.75" x 13.75" x 4.14")
Weight (unit only):	4.32 kg (9.5 lbs)
Power Requirements:	
mains power requirement	115/230 VAC, 0.48/0.24 A, 50/60 Hz
battery operation	16.8 VDC NiCd battery pack
Fuses:	
F1 and F2 mains	for 115 V, 0.63 A 250 V type T for 230 V, 0.315 A 250 V type T
Environmental:	
operating temperature	10° C to 40° C
storage temperature	-20° C to 55° C
relative humidity	25% to 95% non-condensing
atmospheric pressure	7×10^4 to 10.6×10^4 Pa
Acquisition:	
lead selection	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6 Supports Frank X,Y,Z and Nehb D,A,J
interpretation (if equipped)	diagnosis, measurements, reasons statements
modes	auto, rhythm, manual
frequency response	meets or exceeds ANSI/AAMI EC11-1991 standard
input impedance	meets or exceeds ANSI/AAMI EC11-1991 standard
electrode offset tolerance	±300 mV
a/d conversion	5µV LSB
Storage Resolution:	500 samples/sec, 5µV resolution
Artifact Filter Response:	40 Hz, -3dB
Display:	320 x 240 pixel Liquid Crystal Display (LCD)
Printout:	
paper type	thermal sensitive
chart speeds	10, 25, 50 mm/sec
gain	5, 10, 20 mm/mV
printout formats	3 channels; additional rhythm formats
printout device	104mm thermal dot array
paper dimension	106mm x 140mm Z-fold

Input/Output:

standard RS-232 (9 pin "D")

analog output (8 pin DIN)

expansion connector (6 pin DIN)

telephone line interface (RJ11C)

PCMCIA slot (type 3)

Conforms to Standards:

IEC 601-1/CSA C22.2 no. 601-1-M90

IEC 601-2-25/CSA C22.2 no. 601-2-25

IEC 601-1-2/CSA C22.2 no. 601-1-2

Safety:

leakage current	patient <10μA, chassis <300μA
defibrillator protection	to 5000V, 400J

Technical Data (Eclipse 8)

Dimensions:	299mm x 462mm x 105mm (11.75" x 18.16" x 4.14")
Weight (unit only):	6.45 kg (14.2 lbs)
Power Requirements:	
mains power requirement	115/230 VAC, 0.80/0.40 A, 50/60 Hz
battery operation	16.8 VDC NiCd battery pack
Fuses:	
F1 and F2 mains	for 115 V, 1.0 A 250 V type T for 230 V, 0.500 A 250 V type T
Environmental:	
operating temperature	10° C to 40° C
storage temperature	-20° C to 55° C
relative humidity	25% to 95% non-condensing
atmospheric pressure	7 x 10^4 to 10.6 x 10^4 Pa

Acquisition:

lead selection	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6 Supports Frank X,Y,Z and Nehb D,A,J
interpretation (if equipped)	diagnosis, measurements, reasons statements
modes	auto, rhythm, manual
frequency response	meets or exceeds ANSI/AAMI EC11-1991 standard
input impedance	meets or exceeds ANSI/AAMI EC11-1991 standard
electrode offset tolerance	±300 mV
a/d conversion	5µV LSB

Storage Resolution:

500 samples/sec, 5µV resolution

Artifact Filter Response:

40 Hz, -3dB

Display:

320 x 240 pixel Liquid Crystal Display (LCD)

Printout:

paper type	thermal sensitive
chart speeds	10, 25, 50 mm/sec
gain	5, 10, 20 mm/mV
printout formats	3, 4 or 6 channels; additional rhythm formats
printout device	104mm thermal dot array
paper dimension	8.5" x 5.5" Z-fold 210mm x 150mm (A4) Z-fold

Input/Output:

standard RS-232 (9 pin "D")

analog output (8 pin DIN)

expansion connector (6 pin DIN)

telephone line interface (RJ11C)

PCMCIA slot (type 3)

Conforms to Standards:

IEC 601-1/CSA C22.2 no. 601-1-M90

IEC 601-2-25/CSA C22.2 no. 601-2-25

IEC 601-1-2/CSA C22.2 no. 601-1-2

Safety:

leakage current	patient <10µA, chassis <300µA
defibrillator protection	to 5000V, 400J

Equipment Type:

class I (per IEC 601-1)

Chapter 11 | *Measurement Matrix*

Eclipse models with interpretation or measurement capabilities can be programmed to print the Measurement Matrix after the analysis report.

The Measurement Matrix consists of 12 columns which contain measurements for the twelve standard leads. These columns are labelled I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6.

The following table explains the numerical values in the Measurement Matrix.

MEASUREMENT	DESCRIPTION
PON	Time in milliseconds from the beginning of recording to the beginning of the first P wave.
PDUR	P wave duration in milliseconds.
QRSON	Time in milliseconds from the beginning of recording to the beginning of the QRS complex.
QRSDUR	QRS duration in milliseconds.
QDUR	Q wave duration in milliseconds.
RDUR	R wave duration in milliseconds.
SDUR	S wave duration in milliseconds.
R'DUR	R' wave duration in milliseconds.
S'DUR	S' wave duration in milliseconds.
P+DUR	P+ wave duration in milliseconds.
QRSDEF	Intrinsicoid deflection time.
P+AMP	P+ wave amplitude in microvolts.
P-AMP	P- wave amplitude in microvolts.
QRSP2P	Peak to peak amplitude of the QRS complex.
QAMP	Q wave amplitude in microvolts.
R'AMP	R wave amplitude in microvolts.
S'AMP	S wave amplitude in microvolts.
RPAMP	R' wave amplitude in microvolts.
SPAMP	S' wave amplitude in microvolts.

MEASUREMENT	DESCRIPTION
STAMP	ST wave amplitude in microvolts.
2/8STT	Amplitude in microvolts at a point which is 2/8 of the ST-T interval.
3/8STT	Amplitude in microvolts at a point which is 3/8 of the ST-T interval.
T+AMP	T+ wave amplitude in microvolts.
T-AMP	T- wave amplitude in microvolts.
QRSAR	Total area of the QRS complex in microvolts/millisecond.
TMORPH	T wave morphology.
RWNCH	R wave notch count.
DWCON	Probability (in %) of the presence of a delta wave.
STSLOP	ST slope in degrees.
TON	Time in milliseconds from the beginning of the recording to the beginning of the T wave.

Operator's Comments

Date: _____

Submitted by: _____

Facility: _____

Physician's Name: _____

Address: _____

City: _____

State: _____   Zip: _____

Phone: (   ) _____

COMMENTS OR SUGGESTIONS:

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Limited Warranty and Service

BURDICK, INC. MAKES NO WARRANTY OTHER THAN THE ONE SET FORTH HEREIN. WHICH LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

YOUR BURDICK, INC. LIMITED 3 YEAR WARRANTY:

Burdick, Inc. warrants to the original purchaser, for a period of three (3) years from the purchase date, that all equipment components (consisting of the main electronic assembly, and not including accessories) which fail to operate as provided in the equipment specifications, will be repaired or replaced, at Burdick, Inc.'s option, without charge to the customer. However, the customer assumes all responsibility for shipping charges.

Equipment returned to the Burdick Repair Center, Milton, WI during the first year after purchase will be serviced at no charge to include parts, labor and return transportation. However, the customer assumes all responsibility for incoming shipping charges. Any equipment* component which fails to operate in normal use during the subsequent two (2) years will be repaired or replaced, at Burdick, Inc.'s option, without charge. The customer assumes all responsibility for shipping and labor repair charges.

All accessories and main battery supplied with the new equipment are warranted for one (1) year from the purchase date and will be repaired or replaced at Burdick, Inc.'s option, without charge to the customer, with the exception of shipping charges. Accessories and parts sold separately are warranted for a period of ninety (90) days from the date of original purchase.

This Warranty gives you specific legal rights which may vary from state to state. This Warranty does not apply to equipment damaged by shipping, accident, misuse, theft, neglect, fire or other Acts of God, deterioration caused by use of chemicals not encountered during normal operation, equipment failures due to the use of paper or other supplies not conforming to Burdick-approved specifications and standards, power surges or unauthorized modifications. This Warranty also will not apply if the serial number has been altered or defaced, or if the equipment has been modified or serviced by anyone other than an authorized agent of Burdick, Inc. No representative or employee of Burdick, Inc. is authorized to assume any further liability or grant any further warranty beyond the Warranty set forth herein.

Authorized Burdick dealers are approved to maintain the Burdick, Inc. equipment they sell. They are equipped to provide on site field service whenever it is practical. If trouble occurs, contact the Burdick dealer from whom the products were originally purchased to arrange for service. The engineering and service specialists of Burdick, Inc. stand ready to assist customers and dealers, and repair information can be supplied by telephone or mail.

In order for this Warranty to apply, THE PURCHASER MUST COMPLETE THE WARRANTY CARD and mail it directly to Burdick, Inc. Postage has been prepaid for your convenience. Failure to complete your Warranty Card could result in delays in repair and/or service, or a denial of the Warranty.

Important Note: Current FDA Regulations require that some medical devices and their locations be registered. Your completed Warranty Card automatically registers your product.

In the event a Warranty Card is/was not returned, the following information must be supplied to Burdick, Inc. before warranty support can be provided:

1. Customer name, address and telephone/fax numbers;
2. Equipment model, serial number and date of installation;
3. Installation date of new part, new accessory or new unit;
4. Name of dealer from whom equipment was purchased;
5. Complete description of unit's condition (please state if symptoms are constant or intermittent);
6. Complete list of all steps taken in attempts to remedy the problem.

SERVICE:

Burdick, Inc. products are sold and serviced through a nationwide network of medical equipment distributors who have been carefully selected for their proven ability to serve the medical profession. All of these Authorized Service Agents participate in an ongoing certification program and must demonstrate a high caliber of technical expertise. Service, parts and accessories for Burdick, Inc. equipment are available from your authorized dealer. For more information or special assistance, contact Burdick, Inc. at **(800)-333-7770** or **(608)-868-4678**.

RETURNING EQUIPMENT FOR SERVICE:

If equipment is being returned for repair, prior authorization must first be obtained by phone or mail. Always include a detailed list of symptoms, and if applicable, a sample trace recording. Please include your name and phone number. This will assure you are provided with the fastest and most efficient service possible. If circuit boards are shipped to a service center, always ensure they are adequately protected and enclosed in an antistatic bag.

If a unit must be returned to the Burdick, Inc. factory for repair, the unit and accessories should be carefully packed in a strong carton, preferably the one specifically designed for that unit. Shipping containers are available from your Burdick dealer, however, the customer is responsible for and assumes all risks associated with shipment of the unit. Ensure that the package is clearly marked for protection against rough handling.

Example: "DELICATE ELECTRONIC EQUIPMENT - HANDLE WITH CARE".

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*Equipment is considered to be the main electronic assembly, and by definition does not include any accessories.

Service: (800) 333-7770 • **Orders: (800) 777-1777**