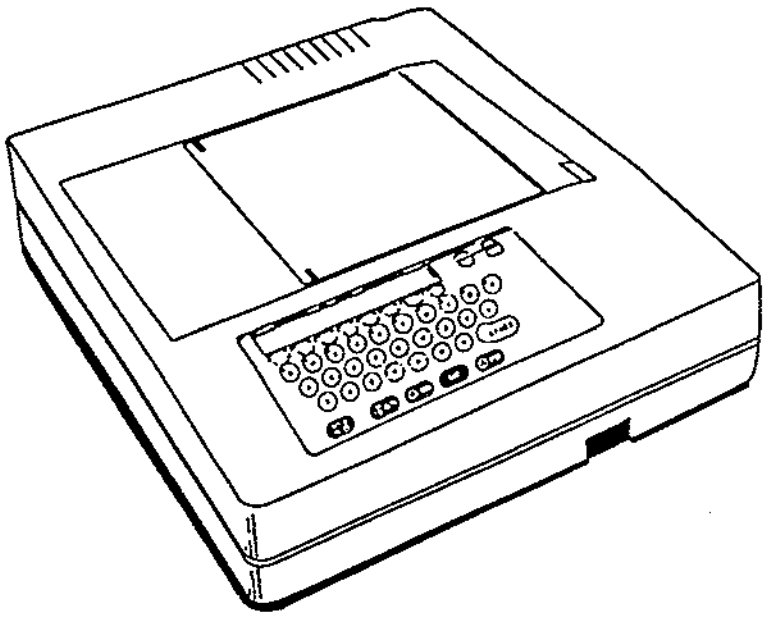
Operating Instructions



E350i Interpretive Electrocardiograph

Operating Instructions (US) - Part No.**086215**

Issued: 4-93
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Burdick, Inc.

BURDICK E350i Operating Instructions Manual **CONTENTS:**

* See pages 16 and 17 for page location references of specific menus.

SECTION 1 GENERAL DESCRIPTION

BURDICK E350i ELECTROCARDIOGRAPH

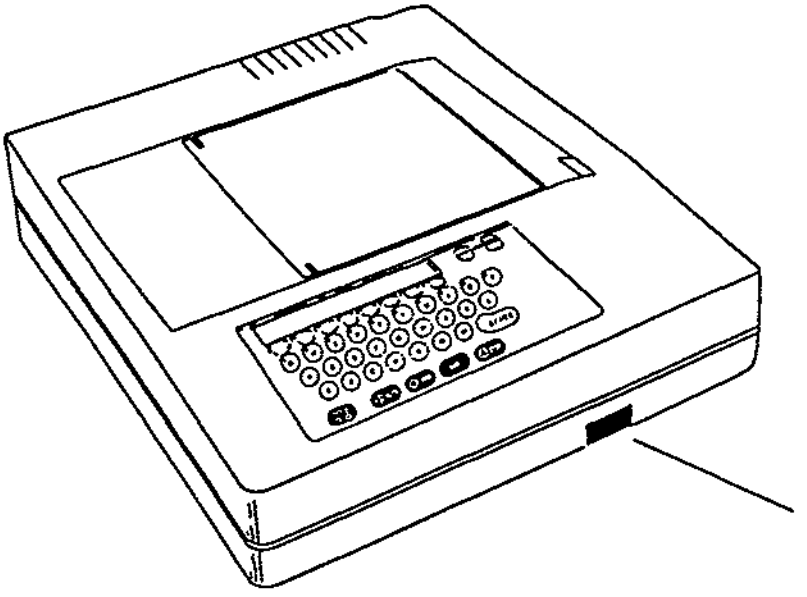


Fig. 1.1 The Burdick E350i Electrocardiograph

1.0 FOREWORD

Your BURDICK E350i Electrocardiograph is designed and manufactured to provide consistently accurate diagnostic records with maximum definition and fidelity. It is intended for use with quality ECG supplies, such as those offered by Burdick for the BURDICK E350i. The use of inferior quality supplies may adversely affect the reliability of your electrocardiograph and the electrocardiograms produced by it. The use of supplies not to Burdick specifications may also give poor results.

1.1 INSPECTION

Your new BURDICK E350i Electrocardiograph has been thoroughly tested and inspected prior to shipment from the factory. Please inspect your unit upon delivery for any damage that may have occurred in transit. If any damage is evident, contact the shipping agent and make a concealed damage report promptly.

Be sure to check the accessories furnished against the list of standard accessories for your unit. Any shortage of parts should be reported to your Burdick dealer.

1.2 GENERAL DESCRIPTION

The BURDICK E350i is a multi-channel interpretive electrocardiograph that employs a thermal-array print head to produce high-definition ECG records in a choice of 3,4 or 6-channel formats. In addition to its resting ECG capabilities it can be used in a stress system environment in conjunction with the ERGOMED® 840/840L Ergometer or with the BURDICK T500 or T600 Treadmills.

The following features are included: (Fax transmission capability is an optional feature)

* Computerized diagnostic interpretation and reason statements
* Choice of full automatic or manual operation
* Choice of 3, 4 or 6 channel printout format in Auto mode
* Simple LCD display for operator prompts
* Fixed key operation of functions
* Dependable soft key menu selection
* Pre-set parameters stored in on-board memory
* Standard patient demographic input
* Analog outputs for 3-channel scope
* Three paper speeds in Manual mode - 5, 25 and 50mm/sec.
* Two paper speeds in Auto mode - 25 and 50mm/sec.
* Overload condition indicator

The Burdick Analysis Program:

The analysis program used for generating the suggested diagnoses was developed by the Glasgow Royal Infirmary under the direction of Prof. Peter W. MacFarlane. This automatic analysis is based upon a clinically developed and tested program. The analysis criteria have been tested on populations comprising hospital patients and volunteers. The program simultaneously analyzes 10 seconds of ECG data for each of 12 leads which is used to derive the interpretive findings. The diagnostic interpretations are supported by:

* Reason statements explaining why a particular interpretation has been suggested.
* Heart Rate, PR Interval, P Duration, QRS Duration, P, QRS and T Axis Measurement, QT and QT Corrected.

IMPORTANT

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.

Operating Modes

The unit has two modes of operation: automatic and manual. In the AUTO mode it can acquire recordings of a conventional 12-lead ECG in 3, 4 or 6 - channel format from all leads. When in this mode the instrument will automatically sequence through the leads in the previously selected format, and stop when complete.

In MAN (Manual) mode any desired lead format, including Pediatric, Frank and Nehb lead configurations, may be determined manually by the operator. For manual operation the operator selects the desired lead group and observes these leads continuously on the printout until a new lead group is selected or the acquisition is halted by pressing STOP.

Patient Data: Personalized patient data can be entered for each recording, including:

Patient name and Patient ID number (up to 12 digits).

Patient age, sex, height and weight.

Two medications and two clinical classifications selected from pre-programmed lists.

Will also accept additional specific physician's comment.

Performance and Fitness for Use

Burdick instruments and equipment are designed and manufactured using only proven quality components and technology and are exhaustively tested to ensure safe and dependable performance under normal operating conditions. However, after prolonged usage, normal wear and tear can result in performance deterioration and component failure.

We strongly recommend using only Burdick authorized service representatives for all service and repairs and the use of only genuine Burdick replacement parts. Economical service contracts are available to help you maintain your equipment in optimum operating condition.

For facilities with their own Biomedical Service Staffs, Burdick also offers training classes that enable your people to become experts at effectively maintaining Burdick instruments.

The contents of this document are not binding. If any differences of significance to service work are encountered between the product and the information contained in this document, contact Burdick, Inc. for confirmation.

We reserve the right to modify the specifications and/or performance of this product without amending this document or advising the user.

1.3 ACCESSORIES

Please refer to the Supplement 086215-2 for a listing of both standard accessories and available optional accessories and consumable supplies

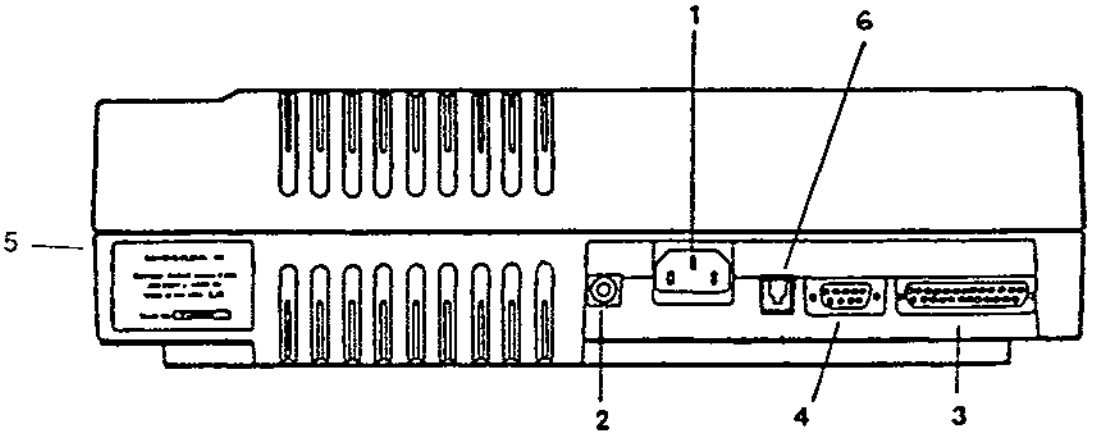
Check that all the standard accessories have been included. If any items are missing, contact your Burdick representative. For **additional or replacement accessories** contact your dealer.

NOTE: Your BURDICK E350i Electrocardiograph is designed and manufactured to produce accurate diagnostic records of the highest quality and definition. It is intended for use with quality ECG supplies; its reliability and performance are directly affected by the supplies you use.

Use only Burdick thermally responsive chemical ECG paper or an approved equivalent.

SECTION 2 CONNECTIONS AND CONTROLS

2.0 POWER CONNECTION



Key:

1	Power Cable (Mains) Connector
2	Potential Equalization Connector
3	Monitor Connector - M300d or M300
4	Treadmill and Ergometer Connector ("Modem")
5	Mains Power Switch (on side of housing)
6	FAX connector (if installed - optional)

Fig. 2.1, Back Panel of BURDICK E350i

2.1 CONNECTION FUNCTIONS (refer Fig. 2.1 above)

Patient Cable Connector (see Fig. 1.1)

The patient cable plugs in to a connector on the front of the unit as shown in Fig. 1.1.

Power Cable Connector (Fig. 2.1; key 1)

Your BURDICK E350i Electrocardiograph is supplied with a 3-conductor power cable. Connect the cable to the power jack on the back panel of the unit and to a properly maintained and grounded electrical mains outlet.

CAUTION: The unit must only be operated at the voltage and frequency specified.

Potential Equalization Connector (Fig. 2.1; key 2)

Provision is made for a potential equalization cable for those situations where regulations require its use.

Monitor Connector (Fig. 2.1; key 3)

For connection to analog/digital monitor.

Treadmill/Ergometer Bike Connector (Fig. 2.1; key 4)

For connection to ERGOMETER 840/840L or T500/T600 Treadmill.

Mains Power Switch (Fig. 2.1; key 5)

Used for operating on mains power to switch the unit on (I), or off (O).

FAX Connector (Fig. 2.1; key 6)

Used only when this optional feature is installed.

2.2 GROUNDING

Maximum patient and operator safety is ensured when the BURDICK E350i is properly grounded as described above under Section 2.1. A Potential Equalization Connector is also provided.

2.3 ECG PAPER

The chemistry and thermal characteristics of Burdick ECG paper matches the specification tolerances of the unit's Thermal Array Print Head. These characteristics ensure the optimum trace quality. The use of non-approved supplies may also invalidate your warranty. The following Burdick ECG paper is recommended:

007868 [US only] Recording Paper for Thermal Array Printer, Z-Fold, , 8-1/2 x 11in., Red Grid, 200 Sheets per package

NOTE: The Thermal Array Print Head employed in the BURDICK E350i is pre-adjusted at the factory for optimum trace performance. No provision is made for operator adjustment.

2.4 OVERLOAD CONDITION INDICATION

The BURDICK E350i prints the message "OVERLOAD" on the electrocardiogram to alert the operator to an overload condition. This overload condition can be caused by electrode polarization from a defibrillator pulse. When such a condition occurs, the waveform on the electrocardiogram will not provide a true indication of patient cardiac activity.

The BURDICK E350i provides a block filter (BLOK) key in the manual mode. When enabled this allows a faster recovery time from overloads caused by defibrillation. The (BLOK) key should only be pressed AFTER patient defibrillation and the ensuing overload condition occurs. A message **"Block Filter Active"** will appear on the printout to alert the operator that the block filter has been enabled. The block filter may be disabled at any time by again pressing the (BLOK) key, or it will be disabled automatically after a period of 30 seconds.

IMPORTANT: The block filter should only be used for enhanced recovery time during defibrillation to confirm presence of cardiac activity; it **should not** be considered a diagnostic quality waveform. Care must be taken by the operator not to misinterpret the patient's condition during an overload condition when the block filter is enabled..

2.5 CONTROLS - LOCATION & FUNCTION

DISPLAY/FRONT PANEL

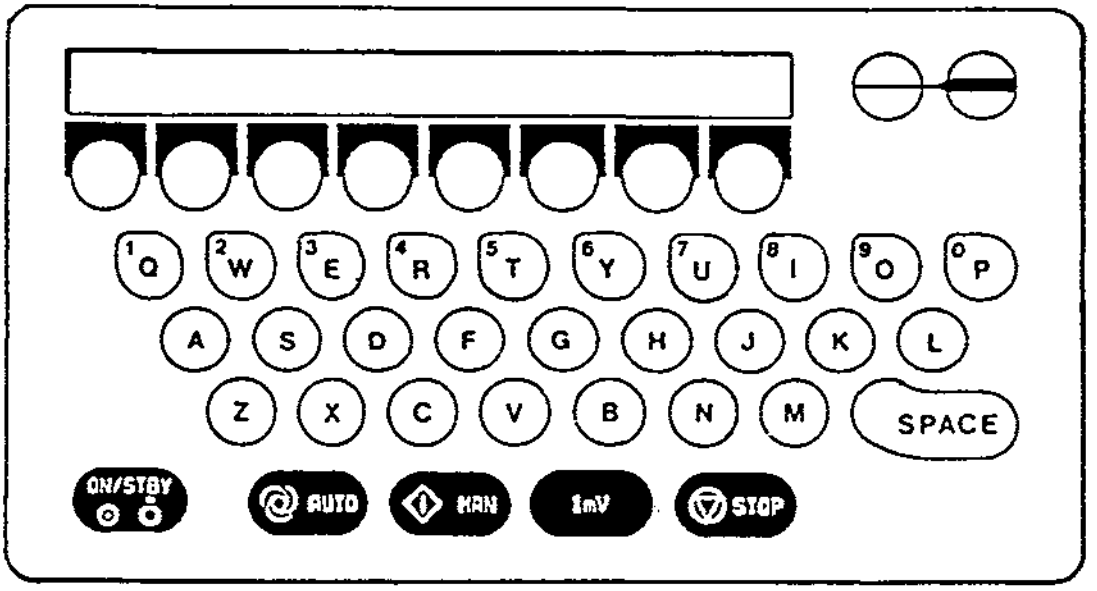


Fig. 2.2 LCD Display and Front Panel

The display is a 2-line x 40 character liquid crystal display (LCD). Eight (8) soft keys are located adjacent to the bottom edge of the display. The specific function of these keys is designated by whatever menu is currently being displayed. There is also a full alphanumeric keyboard; the numerals 1 thru 9 and 0 sharing the top row of keys on the conventional international typewriter style key board. Five separate, discrete membrane switches are provided for the ON/STANDBY; AUTO; MAN; 1mV and STOP functions. See below for function of these keys.

Two keys located to the right of the display permit adjustment of the LCD contrast when the MAIN menu is displayed. A master switch on the side panel of the unit is normally left in the ON (I) position except for maintenance purposes. The ON/STANDBY switch on the front panel toggles the Electrocardiograph on or off. All other keys on the front panel, both discrete and soft, are only active as dictated by the currently displayed menu which lists the requisite functions of the active keys.

> **NOTE: There is no shift key on the E350i keypad. Alpha or numeric functions are enabled solely by the software as required by each menu.**

NOTE: Use a firm and consistent touch when pressing the control keys. **Never use a pen or pencil to activate the key pads, otherwise the panel overlay may be irreparably damaged**. A short "beep" indicates your input is accepted and the display will change accordingly. A long beep indicates an invalid input, usually when the wrong key is pressed.

INDIVIDUAL CONTROL FUNCTIONS:

This section describes the purpose and function of the dedicated keys on the control panel.

ON/STBY (Standby)	Pressing this button will apply power to the instrument. Pressing it again will turn it off. The use of solid state circuitry throughout virtually eliminates warm-up time.
AUTO	Selects Automatic ECG Mode of operation.
MAN	Selects Manual Mode of operation.
1mV	Calibration test signal. Prints standard 1mV input pulse. (10mm deflection at x10 gain) - in Manual Mode only.
STOP	Permits operator to halt acquisition of ECG or printout at any point in manual or automatic mode.

2.6 BACK-UP BATTERY

The BURDICK E350i is equipped with a long-life 3-volt Lithium battery for memory back-up. When this battery is discharged, it should be replaced only by a qualified technician or service representative. Please refer to the Service Manual and observe the necessary precautions stated in that publication.

SECTION 3 OPERATION

3.0 OPERATING MODES

The BURDICK E350i provides for two modes of operation; Automatic and Manual. Instructions for preparation and operation in both modes are given.

Notice to Service Personnel

Restricted access service menus are programmed in English only.

3.1 SUGGESTIONS FOR FIRST TIME OPERATION

Before using your new BURDICK E350i on a patient, it is advisable to first operate the unit and familiarize yourself with the controls and sequence of operation. This will also afford an opportunity to check the unit for proper operation. During this dry run, the patient cable will not be connected, so you will not get any valid ECG recording, only a random trace. The lead code markings and any arbitrary patient demographics entered by the operator will be recorded on the paper. The presence and proper appearance of these markings generally indicates correct functioning of the instrument and valid ECG traces will be recorded when the patient cable and appropriate electrodes are subsequently connected to a patient.

Pay particular attention to the pre-set parameters and how to set them properly (see 3.14 The Setup Menus). Then you are ready to try a dry run. Go through the procedure in both AUTO and MANUAL modes.

3.2 PAPER LOADING

Loading your BURDICK E350i is a simple operation. Check that the ECG paper is the correct type for use in your unit to ensure optimum trace quality. Use only Burdick thermally responsive paper 007868, or an approved equivalent.

NOTE: The use of incorrect type of paper may cause damage and may also invalidate your warranty.

1 Remove Z-fold paper from package and open the paper compartment door on the top of the housing.

2 Place the new stack of paper into the compartment as shown in Fig.3.1; make sure the larger one of the two queueing holes is to the top of the unit.

3 Lift the top sheet and feed it into the slot in front of the roller.

4 Close the compartment cover.

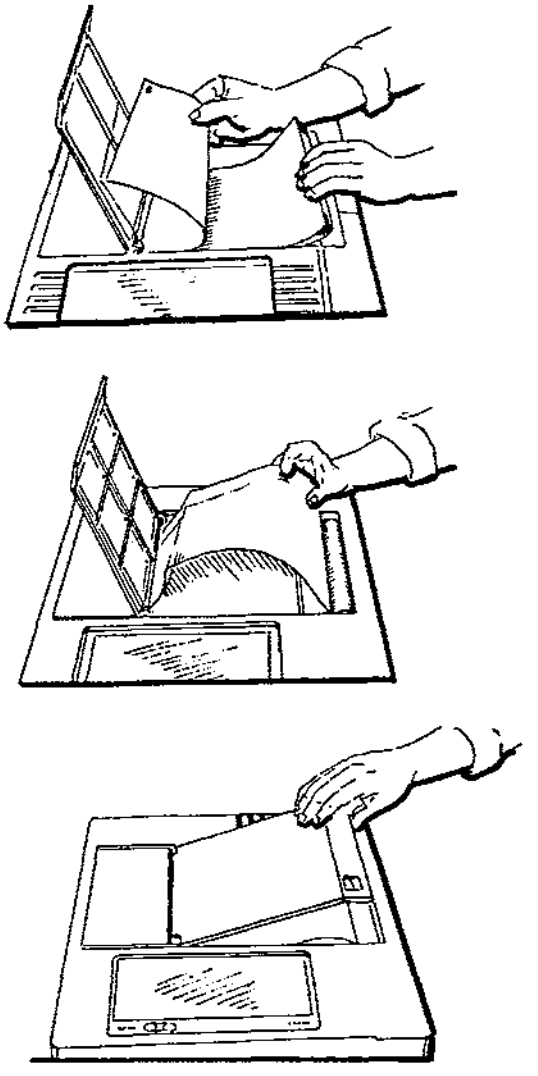


Fig.3.1 Paper Loading Procedure

To advance the paper to the start of the next sheet, ready for use, proceed as follows:

1) Make sure the unit is plugged in and that the main power switch on the back of the unit is ON. Press the ON/STANDBY key on the front panel to turn the unit on. The MAIN menu (1) will be displayed.

2) Press the PAPER ADV soft key on MAIN menu; the paper will advance to the start of the next sheet and stop.

NOTE: In the event of a paper jam, the display will automatically change to the PAPER LOAD Menu #14 (see also Section 3.14, page 37).

3.3 THE PATIENT ENVIRONMENT

With the Burdick E350i's extreme sensitivity, the minute voltages of the heart can be recorded, providing accurate information on which to base the diagnosis.

NOTE: Since the electrocardiograph picks up the minute voltages readily, the same unit will also tend to register any artifacts that may be present, such as muscle tremors and AC interference. These artifacts, if present, can usually be eliminated or minimized by carefully reading and following the instructions given in this manual.

3.4 EQUIPMENT LOCATION

Locate the Electrocardiograph and the patient as far removed as possible from extraneous equipment cords, building electrical wiring, and any other likely source of electrical interference.

3.5 PATIENT PREPARATION

A high quality ECG is more readily obtained from a patient who is relaxed both mentally and physically, particularly when the electrocardiograph is being used in a non-stress or rest environment. Assure your patient that there is no danger or pain involved in the procedure. Explain that his/her full cooperation will assist in the production of a valuable diagnostic record.

Make your patient comfortable on a cot, small bed, or a well-padded table large enough to support both arms and legs and allow for complete relaxation. Support the patient's head with a pillow. Avoid discomfort by protecting the patient from cold, drafts and any other disturbing factors.

3.6 PATIENT CABLE AND LEAD ARRANGEMENT.

For information on the more commonly used patient cable and lead arrangements, please refer to the Appendix, Section 6, at the back of this manual.

3.6.1 For Optimum Quality

To ensure both OPTIMUM RECORDING QUALITY and MINIMUM RECORDING TIME, connect patient to the Burdick E350i electrocardiograph **PRIOR** to energizing the unit.

3.7 DISPOSABLE ELECTRODES [Sensors]

The disposable electrodes included in the accessory package that came with your BURDICK E350i Electrocardiograph are designed to be used with this instrument. Never mix electrodes with those of another manufacturer or mix reusable and disposable electrodes. This can result in considerable baseline drifting or blocking and can impair the built-in defibrillator protection.

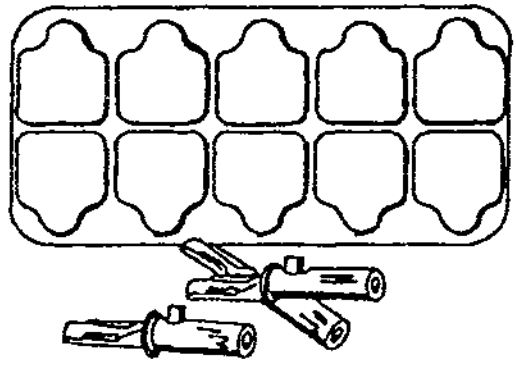


Fig. 3.2, Disposable Electrodes

Disposable electrodes are time-saving problem solvers and are specifically recommended for use with the BURDICK E350i. They are an affordable, efficient alternative to bulbs, plates, straps, creams and gels. These electrodes utilize a highly conductive adhesive and offer a cost-effective medium for quick, stable and dependably consistent ECG signals.

3.8 APPLICATION OF DISPOSABLE ELECTRODES

1. Remove individual electrodes from the package liner card and position on patient.

2. First apply the limb position electrodes, preferably locating them on the inside and generally hairless areas of the arms and legs.

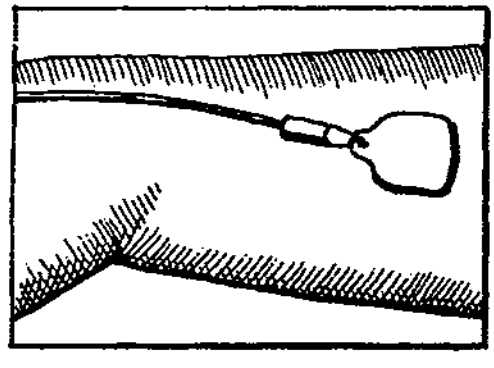


Fig. 3.3. Disposable Electrode Applied to Limb

NOTE: For very hairy patients, any one of the following techniques may be employed to ensure good contact and adhesion of the electrodes.

a) Spread the hair between thumb and forefinger; apply the electrode to the exposed skin.

b) Use a water dampened towelette to moisten the skin area to enhance the adhesive tack prior to applying the electrode.

c) If methods a) and b) do not work, shaving may be necessary. In any case, the electrode may be reapplied to the shaved area without significant loss of tack.

3. Next apply the electrodes to the chest area (positions V1 through V6). See Section 6.1 for diagram showing the correct electrode placement.

4. Attach alligator adapter clips to the apex of each electrode.

5. At this time perform any other preparatory tasks to allow the patient a short time to relax and also to give the recorder-electrode system time to stabilize.

6. When the ECG record is completed, simply remove and discard the electrodes. There is no clean up.

IMPORTANT

Never mix sensors with those of another manufacturer or mix reusable and disposable sensors. This can result in baseline drifting or blocking.

3.9 NORMAL OPERATION

The following sequence of steps is required **prior** to normal operation:

a) Connect AC power cord to the Burdick E350i.

b) Plug AC cord into suitable grounded mains outlet.

CAUTION: The unit must only be operated from a supply at the voltage and frequency specified.

c) Set main power switch on right side of the unit to ON (I) position.

d) Press ON-STBY key on main control panel to ON position.

e) The unit will now display MAIN menu and is ready for operation.

3.10 QUICK OUTLINE - AUTOMATIC MODE [see also Appendix 6.3]

Step-by Step ECG Acquisition in Auto Mode:

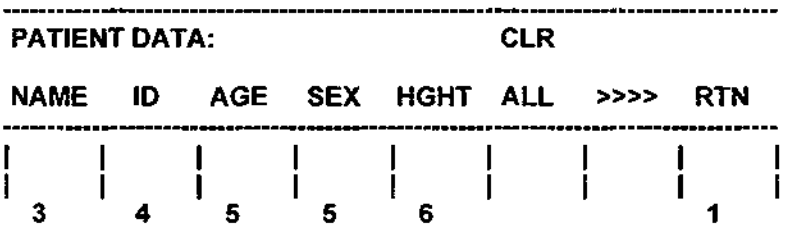
Important: To ensure both OPTIMUM RECORDING QUALITY and MINIMUM RECORDING TIME, connect patient to the BURDICK E350i electrocardiograph **PRIOR** to energizing the unit.

a) Turn on Mains Power Switch located at right side of unit (press I)

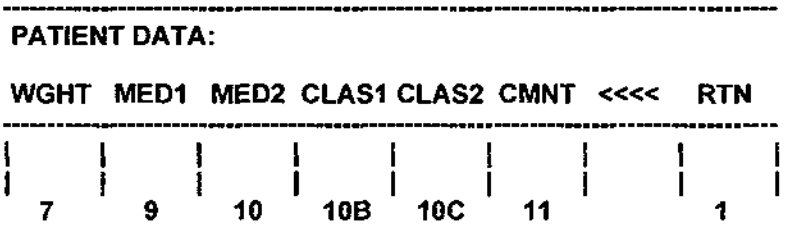
b) Press ON/STBY key on keypad to bring up LCD Main menu display

c) Press key PAT (Patient) on Main menu. Patient Data menu will be displayed.

PATIENT DATA MENU (Two Screens)



(Second Screen)



d) Press NAME; then enter patient's name from keypad - limit 30 characters, Alpha only.

NOTE: Use the soft keys to position the cursor under any desired character you want to change. Press the desired letter; it will replace the previous character.

To insert (INS) text or characters into existing text, move the cursor to the character which you want to move to the right. Then press INS key and enter the character(s) to be inserted.

To delete text or characters from existing text, move the cursor to the first character to be deleted. Press DEL once to erase that character. To delete additional characters to the right of the cursor, press DEL repeatedly until all the desired characters have been erased.

e) Press ID#; enter patient ID# using the numeric keys (limit 12 digits,numeric only). You may use the insert and/or delete keys as required.

f) Press AGE/SEX; enter patient's age (numeric keys). Use insert and delete keys as needed.

g) Press appropriate soft key M (male) or F (female) to enter sex of patient.

h) Press HGHT (height) to input patient's height, using numeric keys and insert and delete as required.

i) Press WGHT (weight) to input patient's weight, again using numeric and insert and delete keys as necessary.

j) Press MED 1 (Medication 1). User must enter desired medication by using the MEDLST (Medication List - pg 26) key to select from the list of 14 medication classifications offered in the unit's memory. Press MED 2 (Medication 2) and select from same options as MED1.

k) Press CLAS 1 to select Clinical Classification from programmed list in similar manner. Repeat for CLAS 2.

l) Press CMNT (Physician Comment). Using Alpha keys, operator may input up to 3 lines x 34 characters of free text. Use insert and delete keys as needed; the CLR (Clear) key will clear all text from the displayed line of copy.

m) Press RTN (return) key to get back to Patient Data menu. The user may review or edit any of the Patient Data fields by pressing the appropriate soft key. Enter the edit data, then press RTN again to return to the Patient Data menu. The CLR ALL (Clear All) key will erase ALL current patient demographics.

n) Press AUTO key; a review menu "Patient Data OK?" will be displayed.
Pressing YES will initiate the ECG acquisition; NO returns user to the Patient Data menu.

3.11 THE E350i MENU SYSTEM (see also Appendix - Section 6.3)

The following three sections describe the structure of the display menu system used in operating the Burdick E350i. This is presented as follows:

Section 3.11.1	The Primary Menu Structure (Table 1)
Section 3.11.2	The Auto Format Options (Table 2)
Section 3.11.3	The Miscellaneous Setup Options (Table 3)

Default Values:

By definition the default values and settings stated in this manual for each menu display (where applicable) are the factory pre-set values programmed into the unit. These are the values that will appear when the unit is first powered up and will be utilized in subsequently acquired ECGs unless modified by the user.

These should not be confused with any other arbitrary values pre-selected by the user (also sometimes referred to as default values) and stored in the unit's memory for any specific ECG or group of ECGs. These may or may not agree with the factory pre-set default values.

System Configuration Listing (see Appendix 6.2 for sample):

A listing of all Current and Default settings in the System Configuration may be obtained in tabulated printout form, when in the **MAIN** menu, by pressing the hard key **"S"**.

Those parameters listed only under the Default column do not allow a current setting and must be changed via the Setup menu if so required.

3.11.1 The Primary Menu Structure - *with page location references* [see also Appendix 6.3]

> **Turn On - MAIN MENU (1)** *see pages 19 and 33*

Current Use Only
Unstored Parameters

AUTO FRMT (1B) *pg 35*
MAN FRMT (1C) *pg 35*
STRS FRMT (1D) *pg 35*

GROUP 1
Patient Data Input

Current Use Only

PAT (2) *see page 21*

NAME (3)	*pg 21*	WGHT (7)	*pg 25*
ID# (4)	*pg 23*	MEDS (9-10)	*pg 27*
AGE/SEX (5)	*pg 23*	CLAS (10B)	*pg 31*
HGHT (6)	*pg 25*	CMNT (11)	*pg 31*

GROUP 2
Set Up Parameters:

User-Selected Default
Stored Parameters

SETUP (1A) *see page 33*

AMP (12)	*pg 37*
WRT (13)	*pg 37*
AUTO FRMT (15)	*pg 39* - See Table 2 for Options
MAN FRMT (25)	*pg 73*
STRS FRMT (1D)	*pg 35*
PAPR (14)	*pg 37*
MISC (16)	*pg 41* - See Table 3 for Options

GROUP 3
The Stress Environment:

Current Use Only

STRESS (23) *see page 51*

STRS FRMT (33) *pg 61*

PAT (2)	*pg 21*
AMP (12)	*pg 37*
WRT (13)	*pg 37*
AUTO FRMT (33A)	*pg 63*
MAN FRMT (33B)	*pg 63*
BASELINE FILTER	
BACKGROUND RHYM (Ergo & Tmill)	

GROUP 4
Recording and Printout:

Current Use Only

MANUAL MODE (24) *page 73* MAN LEADS FORMAT (25) *pg 73-75*
AUTO MODE (26) *page 65*

AUTO IN PROGRESS (27)	*pg 67*
ECG COMPLETE (28)	*pg 67*
PAT (2)	*pg 21*
AMP (12)	*pg 37*
WRT (13)	*pg 37*
AUTO FRMT (33A)	*pg 63*
FAX OPTIONS [if installed - optional]	*pg 69-71*
COPY OPTIONS	*pg 67*

Table 1

3.11.2 The AUTO FORMAT Options - *with page location references*

> From SETUP Menu (1A) *see page 33*

AUTO FRMT (15) > 12 LEAD (15)
see pages 39-41

>	3 CH (15)	*pg 39*
>	3 + RHYTHM (15)	*pg 39*
>	RHYM (15B)	*pg 41*
>	4 CH (15A)	*pg 39*
>	1PG 6CH (15)	*pg 39*
>	2PG 6 CH (15)	*pg 39*
>	INTP FRMT (35) *	*pg 69*

*** Note: Includes Interpretation and Reason Options**

Table 2

3.11.3.The Miscellaneous (MISC) Setup Options

> From SETUP Menu (1A) *see page 33*

MISC (16) *pg 41*

>	DATE (17) / CONFIG DATE (18)	*pg 43*
>	TIME (19) / CONFIG TIME (20)	*pg 45*
>	UNITS (US - Metric Options) (21)	*pg 45*
>	FAX SET (37 and 37A) **	*pg 71*
>	STRESS SYSTEM & MNTR SELECT (22)	*pg 49*
>	AUX OUT (34)	*pg 47*
>	LEAD CONFIG (16A)	*pg 41*

**** FAX option if installed**

Table 3

3.12 OPERATION BY MENU

When the unit is turned on the MAIN menu is displayed. All the system parameters (writer speed, time, format, .etc.) are saved in battery-backed RAM and restored on power-up. Date and time are set to the current date/time by means of a battery powered clock.

HARD KEY FUNCTIONS:

ON/STBY (Standby) Pressing this button will apply power to the instrument. Pressing it again will turn it off.

AUTO key allows the operator to commence automatic acquisition of ECG data at any time once the parameters are satisfactorily set. Goes directly into PATIENT DATA OK? menu.

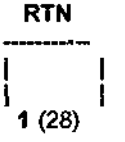
MANual key initiates manually controlled acquisition of ECG data. Goes into PATIENT DATA OK? menu.

1mV Calibration test signal. Prints standard 1mV input pulse.(10mm deflection at x1 gain) - in Manual Mode only.

STOP Permits operator to halt acquisition of ECG or printout at any point in manual or automatic mode.

SOFT KEY functions are defined by the currently displayed menu as shown in the following sequence of menus and operating parameter options. A number printed below a soft key in this manual, designates the menu accessed by pressing that particular key. If a second number is shown in parentheses, this means the input is also retained in memory at the indicated menu for reference purposes.

Example:



3.13 PATIENT DATA INPUT (Demographics):

The following menus are used for entering the individual patient demographics.

1 MAIN MENU

On power up this menu will be displayed.

PAT = PATIENT DATA menu (patient demographics).

THE FOLLOWING KEYS ARE NOT USED FOR PATIENT DATA - FOR REFERENCE ONLY:

SETUP = Menu (1A) is only used during setup (see Section 3.14, page 33)

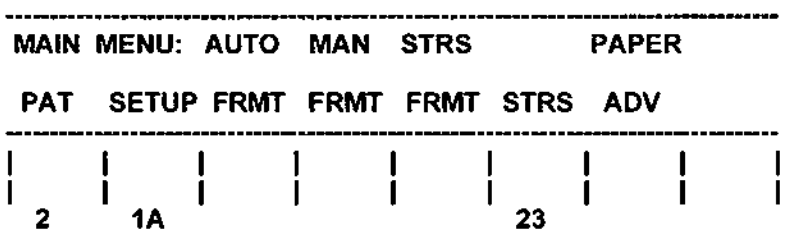
AUTO FRMT; MAN FRMT; STRS FRMT; = Format menus (see pages 34, 35, 39, 61, 73.)

STRS = Begin stress testing under control from the Monitor-Controller. If the M300d Monitor is selected at Menu 22, but no monitor is actually connected, the unit will display the message screen shown opposite. (see also page 50)

PAPER ADV = Advance paper to start of the next sheet.

#1

MAIN MENU



Menu normally used for current selections only, formats are NOT stored in memory

2 PATIENT DATA menu (two screens)

Screen 1:

NAME = NAME menu (patient name) (3).

ID = ID# menu (patient id) (4).

AGE/SEX = AGE/SEX menu (enter patient age and sex) (5).

HGHT = HEIGHT menu (patient height) (6).

CLR ALL = Clear all patient data

>>>> = Switches to Screen 2.

RTN = return to MAIN menu (1); *or (33) if in stress environment.*

Screen 2:

WGHT = WEIGHT menu (patient weight) (7).

MED1 / MED2 = MEDICATIONS menus (9 and 10); offers two patient medications from programmed list.

CLAS1 / CLAS2 = CLINICAL CLASSIFICATIONS menus (10B and 10C); offers two patient classifications from programmed list.

CMNT = Access Comment menu (allows for any additional Physician's comment) (11)

<<<< = Switches back to Screen 1; NAME, ID, AGE, SEX, HGHT choices and CLR ALL (Clear all patient data).

3 NAME menu

Letters **A ~ Z** and **Space** = Replace letter at the blinking cursor position (initially the leftmost letter) with pressed letter. As each letter is entered the cursor automatically moves to the right one position. This allows entry and / or editing of the patient's name up to a maximum of 30 characters.

'<' = Move the edit/entry (blinking) cursor left one letter position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one letter position. Beeps if too far to right.

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD right one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

, = First and Last name separator.

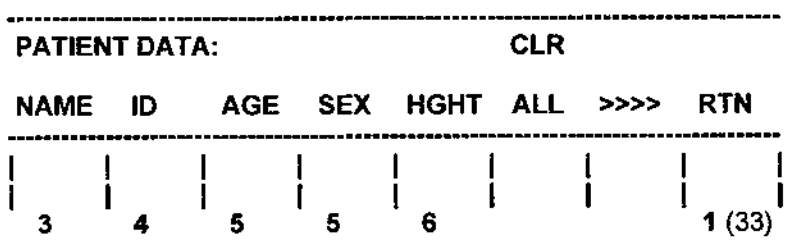
ID# = ID# menu (patient identification menu) (4).

RTN = returns to PATIENT DATA menu (2).

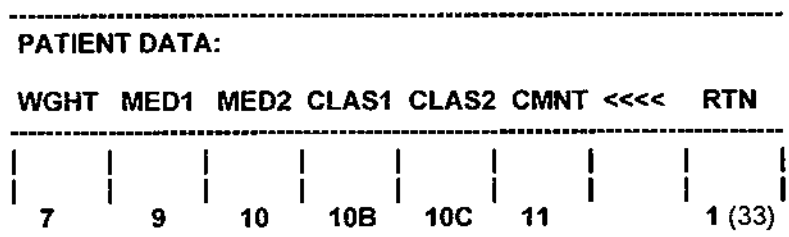
DEFAULT: Name = Blank

#2

PATIENT DATA MENU (First of Two Screens)

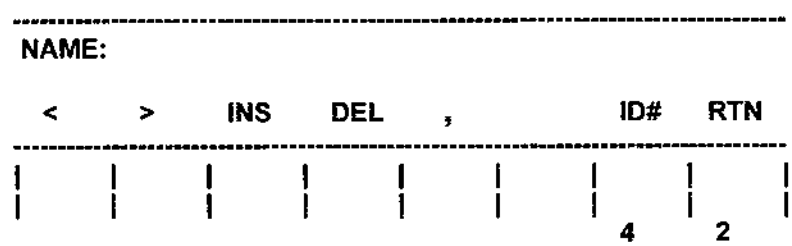


(Second Screen)



#3

NAME MENU



4 ID# menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of the patient ID number (limited to 12 characters - numeric only).

'<' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right on digit position. Beeps if too far to right.

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD right one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

AGE/SEX = AGE and SEX menu (enter patient age and sex) (5).

RTN = returns to PATIENT DATA menu (2).

DEFAULT: ID# = BLANK

5 AGE/SEX menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of the patient AGE - numeric only.

'<' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one digit position. Beeps if too far to right.

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD right one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

M = Select patient SEX as male.

F = Select patient SEX as female.

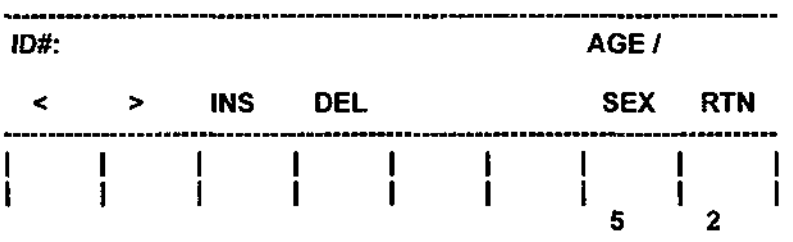
HGHT = HEIGHT menu (patient height) (6).

RTN = returns to PATIENT DATA menu (2).

DEFAULT: AGE = BLANK; SEX = BLANK

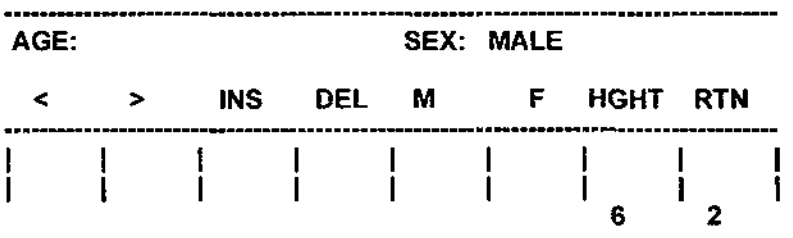
#4

ID# MENU



#5

AGE/SEX MENU



6 HEIGHT menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of the patient HEIGHT.

'<' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one digit position. Beeps if too far to right.

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD right one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

WGHT = WEIGHT menu (patient weight) (7).

RTN = returns to PATIENT DATA menu (2).

DEFAULT: HEIGHT = BLANK

7 WEIGHT menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of the patient WEIGHT.

'<' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one digit position. Beeps if too far to right.

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD right one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

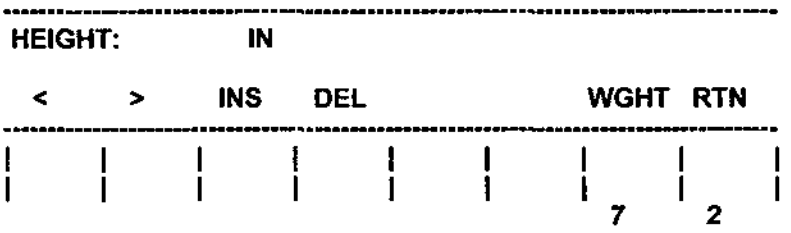
MED1 = Goes to first medication menu MED1 (9)

RTN = returns to PATIENT DATA menu (2).

DEFAULT: WEIGHT = BLANK

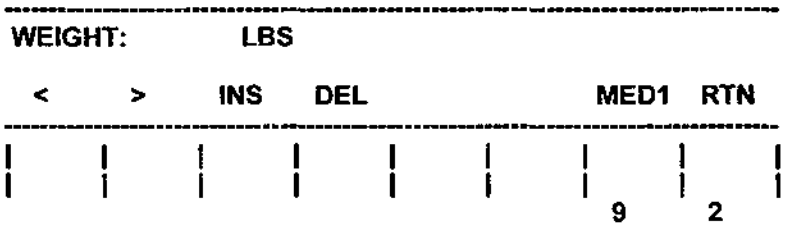
#6

HEIGHT MENU



#7

WEIGHT MENU



MEDICATION ENTRY MENUS:

9 MED 1 menu (first medication entry)

The menu will come up with MED1 selected. The medications are entered via the MEDLST menu 10A

MEDLST = Selects pre-programmed medication list (10A).

CLR = clears medication display field.

MED 2 = Selects second medication entry menu (10).

RTN = returns to PATIENT DATA menu (2).

DEFAULT: blank.

10 MED 2 menu (second medication entry)

This menu will come up with MED2 selected. Entry procedure same as for Menu 9 above

CLAS1 = Access to Clinical Classification (patient cardiac diagnosis) menus 10B,

RTN = returns to PATIENT DATA menu (2).

All other functions as for Menu 9, MED 1 above

10A MED LIST menu (Three screens)

These menus permit the selection of **two** medications from a pre-programmed list of common medications. Make selection for MED LIST 1 from the following three screens:

FOR MED LIST 1:

10A (1st Screen)

NONE = No medication

DIGI = Digitalis

DIUR = Diuretic

BETA = Beta blocker

QUIN = Quinidine/Norpace

PROC = Procainamide/Lidocaine/Tocainide

>>>> = Advance to second screen of medications.

RTN = returns to menu (9).

DEFAULT: blank.

#9

MED MENUS - First Medication Entry (1)

MED1:

				MEDLST	CLR	MED2	RTN
				10A		10	2

#10

MED MENUS - Medication Entry (2)

MED2:

				MEDLST	CLR	CLAS1	RTN
				10A		10B	2

#10A

MED LIST MENU (1)

MED 1:

NONE	DIGI	DIUR	BETA	QUIN	PROC	>>>>	RTN
							9

10A (2nd screen) make selection

AMIO = Amiodarone

DISO = Disopyramide

LIDO = Lidocaine

OANT = Other antiarrhythmic

PSTR = Psychotropic

STER = Steroids

>>>> = Advance to third screen of medications.

RTN = returns to menu (9).

DEFAULT: blank.

10A (3rd Screen)

UNKN = Medication unknown

OTH = Other medication

>>>> = Selects first screen of medications.

RTN = returns to menu (9).

DEFAULT: blank.

FOR MED LIST 2:

NOTE: Now, if required, make a second selection for MED LIST 2 from the same three screens by repeating the above sequence.

DEFAULT: blank.

#10A (second screen)

MED LIST MENU (2)

MED 1:

AMIO DISO LIDO OANT PSTR STER >>>> RTN

9

#10A (third screen)

MED LIST MENU (3)

MED 1:

UNKN OTH >>>> RTN

9

NOTE: Repeat 10A all three screens for MED2

10B CLIN CLAS1 (Clinical classifications - 1st selection)

This group of menus allows the user to select an appropriate clinical classification for the patient from a programmed list in memory in the same way the medication entry is selected. A total of 15 clinical conditions is presented on three screens. These are:

Clinical Classifications:

1st Screen	**UNKN**	=	Unknown
	NORM	=	Normal
	MI	=	Myocardial infarction
	ISCH	=	Ischemia
	HYPE	=	Hypertension
2nd Screen	**CONG**	=	Congenital heart disease
	RHEU	=	Rheumatic heart disease
	PERI	=	Pericarditis
	RESP	=	Respiratory disease
	ENDO	=	Endocrine disease
	PACE	=	Pacemaker
3rd Screen	**PULE**	=	Pulmonary embolism
	P/OP	=	Post-operative changes
	MYOP	=	Cardiomyopathy
	OTHE	=	Other

10C CLIN CLAS2 (Clinical classifications - 2nd selection)

A second group of menus allows the user to enter a second selection chosen from an identical listing of classifications.

11 CMNT (physician's comment entry menu)

Letters **A ~ Z** and **Space** = Replace letter at the blinking cursor position (initially the leftmost letter) with pressed letter. As each letter is entered the cursor automatically moves to the right one position. This allows entry/editing of the patient's medication.

'<' = Move the edit/entry (blinking) cursor left one letter position.
Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one letter position.
Beeps if too far to right.

UP = Move up to previous line.

DOWN = Move down to next line.

CLR = Clears current line of comment and any following lines

INS = Creates a space at the cursor by shifting the data from the cursor to the end of the LCD left one position.

DEL = Deletes the character which is currently blinking, that is the character the cursor has selected.

RTN = returns to PATIENT DATA menu (2).

NOTE: Up to three lines of comment may be entered.

DEFAULT: blank.

#10B or 10C

CLINICAL CLASSIFICATION 1 or 2 (First Screen)

```
CLIN CLASS1 :

UNKN  NORM   MI    ISCH   HYPE   >>>>  CLAS2  RTN
-------------------------------------------------------------------
|     |     |     |     |     |     |  *  |     |
|     |     |     |     |     |     |     |     |
                                                 2
```

* **Note:** replaced by CMNT menu (11) access when in CLIN CLASS2

#10B or 10C

CLINICAL CLASSIFICATION 1 or 2 (Second Screen)

```
CLIN CLASS1 :

CONG  RHEU  PERI   RESP  ENDO  PACE   >>>>   RTN
-------------------------------------------------------------------
|     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |
                                                 2
```

#10B or 10C

CLINICAL CLASSIFICATION 1 or 2 (Third Screen)

```
CLIN CLASS1 :

PULE  P / OP  MYOP  OTHE   <<<<   CLR  CLAS2  RTN
-------------------------------------------------------------------
|     |     |     |     |     |     |  *  |     |
|     |     |     |     |     |     |     |     |
                                                 2
```

* **Note:** replaced by CMNT menu (11) access when in CLIN CLASS2

#11

CMNT MENU - Physician's Comment Entry

```
CMNT:
  <      >     UP   DOWN  CLR   INS    DEL   RTN
-------------------------------------------------------------------
|     |     |     |     |     |     |     |     |
|     |     |     |     |     |     |     |     |
                                                 2
```

3.14 SET-UP MENUS (Operating Parameters)

This section details the on-screen menu options provided for set-up parameters.

Menu #1 MAIN MENU

On power up this menu will be displayed. **PAT** accesses patient data menus as described in preceding section. Press **SETUP** key to access menu (1A) for selections to be stored in memory as default settings.

AUTO FRMT = goes to menu (1B) for current selections (not stored) of AUTO mode format options.

MAN FRMT = goes to menu (1C) for current selections (not stored) of MAN mode format options.

STRS FRMT = goes to menu (1D) for current selections (not stored) of STRESS format options.

STRS = goes to stress menus (23, 23C and 23D) for STRESS testing options.

PAPER ADV = press to advance recording paper to next sheet ready for printout.

Menu #1A SETUP menu

From this menu you may select any of the following Setup menus:

AMP = this key selects Amplifier Gain menu (12).

WRT = selects WRT - Writer Parameter entry - (13).

AUTO FRMT = selects Auto Mode Format menu (15).

MAN FRMT = selects Manual Mode Format menu (25).

STRS FRMT = selects Stress Mode Format menu (1D).

PAPR = selects Paper menu (14).

MISC = selects Miscellaneous Parameters menu (16).

#1

MAIN MENU

MAIN MENU:		AUTO	MAN	STRS		PAPER
PAT	SETUP	FRMT	FRMT	FRMT	STRS	ADV
2	1A	1B	1C	1D	23 (23C)	

for current selections only, formats are NOT stored in memory

#1A

SET UP MENU

SET UP:		AUTO	MAN	STRS			
AMP	WRT	FRMT	FRMT	FRMT	PAPR	MISC	RTN
12	13	15	25	1D	14	16	1

These are stored functions retained in memory

1B AUTO FORMAT menu

This menu allows the user to make or edit selections for the following parameters for the current ECG only when in AUTO mode.
Such selections do not modify the default values stored in memory.

S = select desired recording speed; options 25 or 50mm/sec.

L = select gain setting for limb (extremity) leads; options 5, 10 or 20mm/mV.

C = select gain value for chest leads; options 5 or 10mm/mV.

ARTF = choose ON or OFF setting for artifact filter.

FRMT = goes to AUTO FRMT menu (15) for format options.

RTN = returns to MAIN menu (1).

1C MANUAL FORMAT menu

This menu allows the user to make or edit selections for the following parameters for the current ECG only when in MANUAL mode.
Such selections do not modify the default values stored in memory.

S = select desired recording speed; options 5, 25 or 50mm/sec.

L = select gain setting for limb (extremity) electrodes; options 5, 10 or 20mm/mV.

C = select gain value for chest electrodes; options 5 or 10mm/mV.

ARTF = choose ON or OFF setting for artifact filter.

FRMT = goes to MAN FRMT menu (25) for format options.

RTN = returns to MAIN menu (1).

1D STRESS FORMAT menu

This menu allows the user to make or edit selections for the following parameters for the current ECG only when in STRESS mode.
Such selections do not modify the default values stored in memory.

AUTO FRMT = goes to AUTO FRMT menu (33A) for format options for AUTO acquisition in the stress mode.

MAN FRMT = goes to MAN FRMT menu (33B) for format options for MANual acquisition in the stress mode.

RTN = returns to MAIN menu (1) or SET-UP (1A).

#1B

AUTO MODE MENU

```
-------------------------------------------------------------------------------
AUTO MODE              ARTF

 S=25  L=10    C=10    ON          FRMT          RTN
-------------------------------------------------------------------------------
|      |       |       |         |      |      |      |      |
|      |       |       |         |      |      |      |      |
                                    15            1
```

These are current functions only - not stored

#1C

MANUAL MODE MENU

```
-------------------------------------------------------------------------------
MANUAL MODE        ARTF        LEADS:  CUST

S=25    L=10    C=10    ON    FRMT                RTN
-------------------------------------------------------------------------------
|       |       |       |     |      |      |      |      |
|       |       |       |     |      |      |      |      |
                            25                    1
```

current functions only - not stored

#1D

STRESS MODE MENU

```
-------------------------------------------------------------------------------
STRESS MODE :      AUTO   MAN

                   FRMT   FRMT                    RTN
-------------------------------------------------------------------------------
|      |       |       |      |      |      |      |      |
|      |       |       |      |      |      |      |      |
                   33A    33B                    1 (1A)
```

current functions only - not stored

12 AMP GAIN menu

Limb Lead Gain: Controls the amplitude of the ECG recording from the Limb Leads only.

5 A 1mV patient input will be displayed as a 5mm. deflection on the recording.

10 A 1mV patient input will be displayed as a 10mm. deflection on the recording.

20 A 1mV patient input will be displayed as a 20mm. deflection on the recording.

Chest Lead Gain: Controls the amplitude of the ECG recording from the Chest Leads only.

5 A 1mV patient input will be displayed as 5mm. deflection on the recording.

10 A 1mV patient input will be displayed as a 10mm. deflection on the recording.

RTN = returns to SET-UP menu (1A); the selected parameters are also retained in the ECG COMPLETE menu (28).

Also retained in Stress menu(33) and in Manual mode menu (24).

DEFAULT (gain setting): 10mm/mV

13 WRITER menu

The speed function **SP** controls the rate at which the paper passes across the print head.

AUTO (automatic)

Available speeds (**SP**) are 25 or 50 mm. per second. Toggles between 25/50

MAN (manual) mode

Available speeds (**SP**) are 5, 25 or 50 mm. per second. Toggles between 5/25/50

PACER = selects pacemaker mark enhancement on or off; toggles between ON/OFF.

LINE FILTER = toggle key for line frequency reject (AC line filter) between 50Hz and 60 Hz or off.

ARTIFACT FILTER = writer low-pass filter ON/OFF (muscle tremor filter).

The BURDICK E350i offers the option of generating ECG recordings through either a filtered or unfiltered frequency response. The filtered mode provides a 30Hz, 3dB response.

RTN = press ONCE returns user to SETUP menu (1A); *may also return to (28) ECG COMPLETE, or to (33) STRESS FORMAT menu depending on how menu was accessed.*

Press RTN key TWICE to MAIN menu (1).

14 PAPER menu

LOAD = advance paper to start of next sheet.

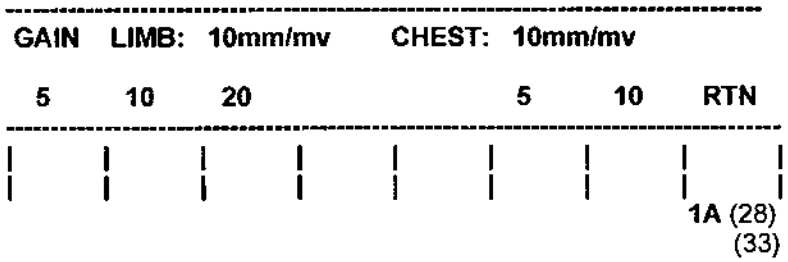
FRWD = move paper forward while button held.

RVRS = move paper backwards while button held.

RTN = returns user to SETUP menu (1A).

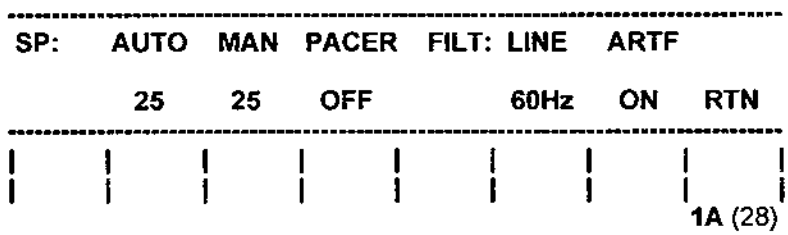
#12

AMP GAIN MENU (Amplitude gain)



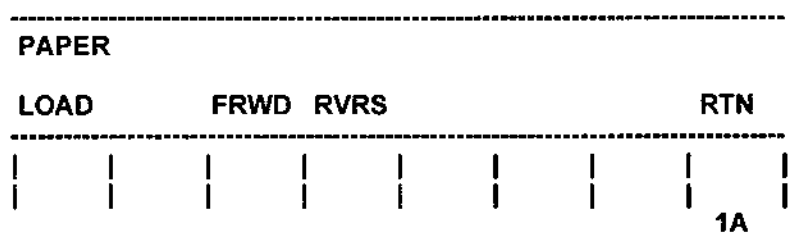
#13

WRT MENU - Writer Parameter Entry



#14

PAPER MENU



15 AUTO FORMAT menu

Allows user to select desired print format option when operating in the AUTO mode only.

3CH = output format becomes the standard 3-Channel lead groups, 2.5 seconds of each lead printed in the following format:

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

3CH + RHY = standard 3-Channel lead groups plus second page of channels defined by user as rhythm strip printout .

RHYM = RHYTHM menu (output format for rhythm prints of 3 + RHYM auto format). See also menu (15B).

4CH = 4TH CHANNEL menu; output format becomes the standard 3CH lead groups, 2.5 seconds of each lead, plus a 4th channel 10 sec. rhythm trace. See also menu (15A).

1PG 6CH = output format becomes 6 channels, of 5 seconds each, leads printed in the following sequence:

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

2PG 6CH = 2 PAGE menu (format for 2 page 6-channel printouts).

Page 1	Page 2
I	V1
II	V2
III	V3
aVR	V4
aVL	V5
aVF	V6

INTP FRMT = menu for set-up of interpretation printing (35)
or
SPEED = select 25 or 50 if in stress or non-interpretive mode } **SEE ALSO "IMPORTANT" ON OPPOSITE PAGE**

RTN = returns to SETUP menu (1A); *will return to MAIN menu (1) if FORMAT was accessed from MAIN menu*

Note: The selected parameters are also retained in menu (28) and in Stress menu (33).

DEFAULT: The default format selection is 4CH (Ld II) if no selection is made.

15A 4TH CHANNEL menu

I = 4th channel selection.
II = 4th channel selection.
III = 4th channel selection.
aVR = 4th channel selection.
aVL = 4th channel selection.
aVF = 4th channel selection.

CHEST = switch to chest leads on menu.

V1 = 4th channel selection.
V2 = 4th channel selection.
V3 = 4th channel selection.
V4 = 4th channel selection.
V5 = 4th channel selection.
V6 = 4th channel selection.

LIMB = switch to limb and augmented leads on menu.

RTN = returns to FRMT menu (15); *menu (33A) if in stress.*

#15

AUTO FORMAT MENU

12 LEAD :	4CH	II	1PG	2PG	INTP	
3CH	3+RHY	RHYM	4CH	6CH	6CH	FRMT	RTN
						35	
		15B	15A				1A (28) (1)

This screen appears only when interpretation has been installed.

IMPORTANT ❑

12 LEAD :	4CH	II	1PG	2PG	SPEED	
3CH	3+RHY	RHYM	4CH	6CH	6CH	25	RTN
		*	15A				1A (28) (33)

This screen when in Stress mode.

*** Disabled when in stress**

IMPORTANT: ❑

If interpretation is required, the desired interpretation format must first be established prior to acquisition of the ECG [see Menu 35 in Section 3.18.1 of this manual].

#15A

4TH CHANNEL MENU (Lead Selection) - 2 Screens

4TH CHANNEL : [I]							
I	II	III	aVR	aVL	aVF	CHEST	RTN
							15 (33A)

Factory default setting shown here

4TH CHANNEL : [II]							
V1	V2	V3	V4	V5	V6	LIMB	RTN
							15 (33A)

15B RHYTHM menu

This menu defines the rhythm leads printed in the 3 + RHYM auto format. Press key below trace # (1 thru 6), to select desired lead I, II, III etc., thru V6; then OFF appears. Proceed to next trace # and again make selection.

CAUTION: Pressing OFF for any trace # deletes any selections already made to the right of current position.

Miscellaneous Parameter Set-Up Menus:

Once the format has been established to the user's satisfaction, the desired lead configuration and remaining parameters are set up by using the menus accessed through the following menu.

16 MISC (Miscellaneous) menu

This menu provides access to the following menus that permit entry of date, time, units, monitor and/or stress system selections and auxiliary outputs and lead configurations..

DATE = Date entry menu (17)

TIME = Time entry menu (19)

UNIT = Units selection, US or Metric (21)

FAX SET = Setting of Fax Option - see menu (37) .....**[OPTIONAL FEATURE]**

MNTR = selects appropriate stress environment; choice of Treadmill, Ergometer bike or monitor, menu (22)

AUX OUT = selection menu for auxiliary outputs (34)

LEAD CONF = access to lead configuration menu (16A)

RTN = Press to return to SETUP menu (1A)

16A LEAD CONFIG menu

This menu allows the operator to select the preferred lead configuration and recording acquisition sequence.

STD = selects Standard 12-lead configuration.

CABR = selects Cabrera lead configuration; standard 12-lead with positive aVR

PED = selects Pediatric lead configuration; this option is valid only when selected as a modifier to the STD and CABR configurations; standard 12-lead with V4R (reversed to right side) .

DEFAULT = standard 12-lead (STD) configuration is the default condition if no selection is made.

#15B

RHYTHM MENU

TRACE: 1	2	3	4	5	6		
II	aVF	V5	OFF	OFF	OFF	RTN	
							15

factory default setting shown

#16

MISCELLANEOUS MENU

MISC MENU			FAX		AUX	LEAD	
DATE	TIME	UNIT	SET	MNTR	OUT	CONF	RTN
17	19	21	37	22	34	16A	1A

LEAD CONFIG #16A

LEAD CONFIG: STD

STD	CABR	PED					RTN
							16

factory default setting shown

17 DATE menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of date.

'**<**' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'**>**' = Move the edit/entry (blinking) cursor right one digit position. Beeps if too far to right.

CNFG = accesses CONFIGURATION menu (18) - date format choices).

TIME = TIME menu (19).

RTN = returns to MISC menu (16).

ERROR: if an invalid date is entered, and TIME or RTN is pressed, the BURDICK E350i will beep, reset the date to the last valid date entered, and remain in the DATE menu.

18 DATE CONFIGURATION menu

MDY = month/day/year [MM/DD/YY]

DMY = day/month/year [DD/MM/YY]

YMD = year/month/day [YY/MM/DD]

[/] = slash delimiter [MM/DD/YY]

[-] = dash delimiter [MM-DD-YY]

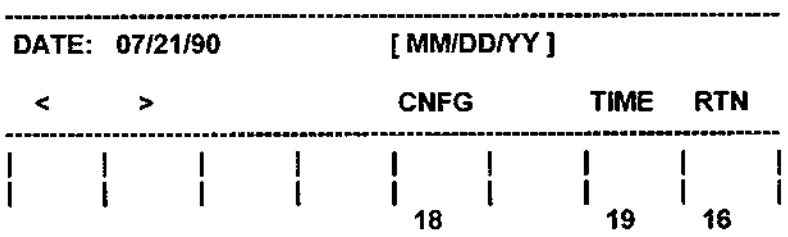
[.] = period delimiter [MM.DD.YY]

[ ] = blank delimiter [MM DD YY]

RTN = returns to DATE menu (17).

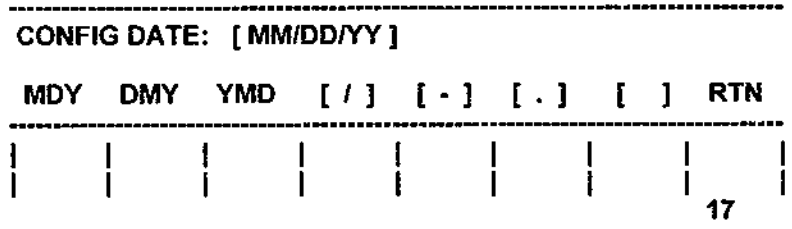
#17

DATE MENU



#18

DATE CONFIGURATION MENU



19 TIME menu

Digits **0 ~ 9** = Replace digit at the blinking cursor position (initially the leftmost digit) with pressed digit. As each digit is entered the cursor automatically moves to the right one position. This allows entry/editing of time.

'<' = Move the edit/entry (blinking) cursor left one digit position. Beeps if too far to left.

'>' = Move the edit/entry (blinking) cursor right one digit position. Beeps if too far to right.

AM = morning (12HR time format).

PM = evening (12HR time format).

CNFG = CONFIGURATION menu (time format choices). See menu (20) below.

UNITS = UNITS menu. See menu (21) below.

RTN = returns to MISC menu (16).

ERROR: If an illegal time is entered and UNITS or RTN is pressed the BURDICK E350i will beep, reset the time to the last valid time entered, and remain in the TIME menu.

20 TIME CONFIGURATION menu

12HR = 12 hour time format [12HR:MM]

24HR = 24 hour time format [24HR:MM]

[:] = colon delimiter [12HR:MM]

[.] = period delimiter [12HR.MM]

RTN = returns to TIME menu (19).

21 UNITS menu

IN/LBS = English (US) units (inches, pounds).

CM/KG= metric units (centimeters, kilograms).

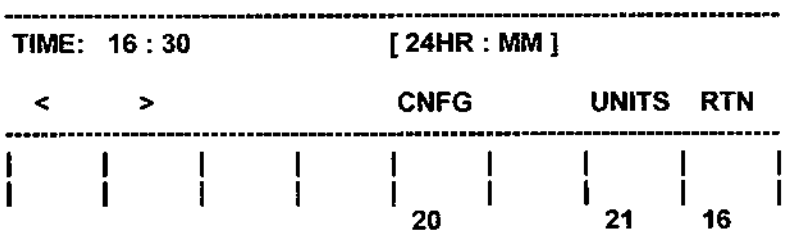
MNTR = selects Stress Monitor / System menu (22)

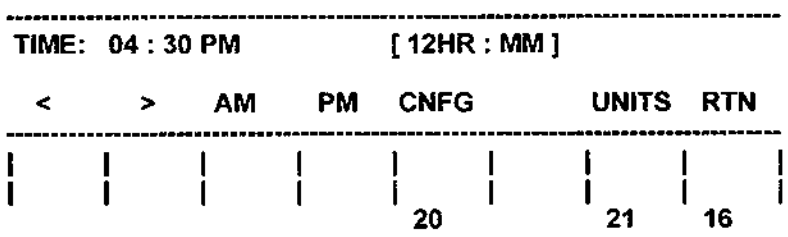
RTN = returns to MISC menu (16).

DEFAULT: units = IN/LBS

#19

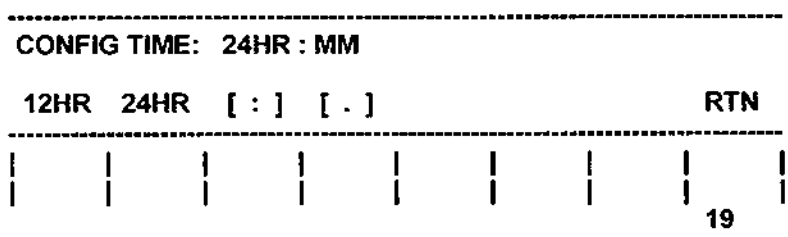
TIME MENU (Two Screens)





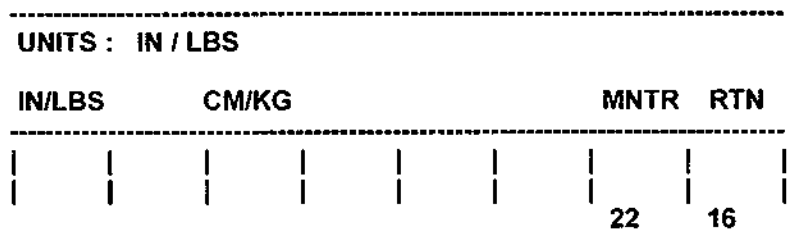
#20

TIME CONFIGURATION MENU



#21

UNITS MENU (US - Metric Options)



22 MNTR (Select monitor type) menu

This menu permits selection of the monitor type being used in the stress system. User should select M300d as stress monitor with E350i Electrocardiograph.

M300 = selects Burdick M300 Monitor.

M300D = selects Burdick M300d Monitor.

ERGO = selects Ergometer 840 / 840L Bike in stress; see menu (30).

TMILL = selects Burdick T500/T600 Treadmill in stress, menu (30).

RTN = returns to MISC menu (16).

DEFAULT: Selection is M300d

34 AUXILIARY OUTPUT menu

Allows operator to select any combination of leads for a conventional three channel data display as an auxiliary output whenever the unit is connected to a remote analog monitor

The soft key below each channel toggles through all 12 leads.

CAUTION:

This feature is disabled when the Frank lead configuration has been selected. If the user tries to select auxiliary output, the unit will "beep" to indicate an invalid selection.

#22

MONITOR / STRESS SYSTEM SELECT MENU

STRESS MONITOR TYPE : M300D

M300	M300D	ERGO	TMILL	RTN
		30	30	16

factory default setting shown

#34

AUX OUT MENU

CH1	CH2	CH3		
II	AVF	V5		RTN
				16

factory default setting shown

3.15 THE STRESS SYSTEM ENVIRONMENT

22 MNTR (Select monitor/system type) menu

This menu permits selection of the monitor type being used in the stress system.

M300 = selects Burdick M300 Monitor.

M300D = selects Burdick M300d Monitor.

ERGO = selects Ergometer 840 / 840L Bike in stress, and display goes to Stress Parameter Set Up menu (30).

TMILL = selects Burdick T500/T600 Treadmill in stress, and display goes to Stress Parameter Set Up menu (30).

RTN = returns to MISC menu (16).

30 STRESS PARAMETERS SET UP menu

Accessed from Menu 22 by selecting ERGO or TMILL.
This menu provides for entry of recording interval and selection of rhythm strip.

INTERVAL = use INC or DEC keys to increase or decrease numerical value (in 1/2 minute increments displayed as .0 or .5) for recording interval during test.

FRMT MAN = selects MANual style interval printouts.

FRMT AUTO = selects AUTO style 12-lead interval printouts.

RHYM = toggles between ON and OFF.

> **Note:** When ON is selected a background rhythm printout is produced at a paper speed of 5mm/sec.

RTN = Returns display to Monitor and Stress System select menu (22)

#22

MONITOR / STRESS SYSTEM SELECT MENU

STRESS MONITOR TYPE : M300D

M300	M300D	ERGO	TMILL	RTN
		30	30	16

factory default setting shown

#30

STRESS PARAMETERS SET UP MENU

INTERVAL : 00.0 FRMT: MANUAL RHYM

DEC	INC	MAN	AUTO	OFF	RTN
					22

FOR USE WITH M300d MONITOR ONLY:

23 STRESS MODE menu:

When STRS is pressed on the MAIN menu, menu 23 will appear. This allows the operator to adjust the writer parameters, if so desired, before starting the test.

At this point a Rhythm Strip can be run by pressing **PRNT**. Use the STOP key to terminate the strip.

FRMT = Access to Format menu (33)

When **ENTER STRESS** is pressed, the writer parameters are frozen and control is turned over to the M300d (see menu 23A).

WARNING:

> *If **STRS** is pressed on the MAIN menu (1), and the M300d Monitor has been selected at Menu 22, the system will try to begin stress testing under control from the Monitor-Controller. However, if no monitor is actually connected, the unit will display the message screen shown opposite.*

23A ENTER STRESS menu - with Burdick M300d only

This menu is displayed during all phases of the stress test, including the Final Report. The EXIT STRESS key is only available during the Resting ECG acquisition and Final Report.

When in this menu, the Burdick E350i will enter a slave mode where all commands for operation will be received from the external monitor/controller. The operator will be allowed to exit the STRESS mode during acquisition of the resting ECG and during FINAL REPORT. Only the LOAD PAPER key and the BLOK key are functional during the exercise test. All operation of the system will be handled by the monitor/controller during this time. The EXIT STRESS key will become functional again only when the recovery phase of the stress test is completed.

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

LOAD PAPER = Access to Load Paper menu (23B)

EXIT STRESS = Exit from Stress Mode, return to Main menu (1)

23B LOAD PAPER

This menu allows for reloading paper <u>without</u> exiting the Stress Mode in the event the supply of recording paper is exhausted while still conducting a stress test.

RTN = Return to Stress Mode, menu (23A); *(23C - H) when in later phases.*

STRESS MODE MENU (with M300d only) #23 from (1)

```
-------------------------------------------------------------------------
STRESS MENU                          ENTER

                        FRMT  PRNT  STRESS        RTN
-------------------------------------------------------------------------
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
                          33              23A             1
```

*** *Waiting for communications* *** *Wait* *

*** *Press RTN to exit* *** *RTN*

} See Warning note

#23A

IN STRESS MENU

```
-------------------------------------------------------------------------
STRESS MODE                          LOAD          EXIT

**TEST IN PROGRESS**          BLOK  PAPER         STRESS
-------------------------------------------------------------------------
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
                                  23B             1
```

NOTE: Displays either TEST IN PROGRESS or EXIT STRESS but never both at same time.

#23B

LOAD PAPER MENU

```
-------------------------------------------------------------------------
PAPER

LOAD          FWRD  RVRS                    RTN
-------------------------------------------------------------------------
|       |       |       |       |       |       |       |       |       |
|       |       |       |       |       |       |       |       |       |
                                          23A
                                        (23C-H)
```

With M300 Monitor only: **M300**

23C STRESS menu:

When in STRESS mode, the Burdick M300 displays 3 channels of ECG data along with lead annotation if one of the pre-designated lead groups has been so selected. Control of the printout function is from the monitor front panel while in stress.

FRMT = Access to Format menu (33).

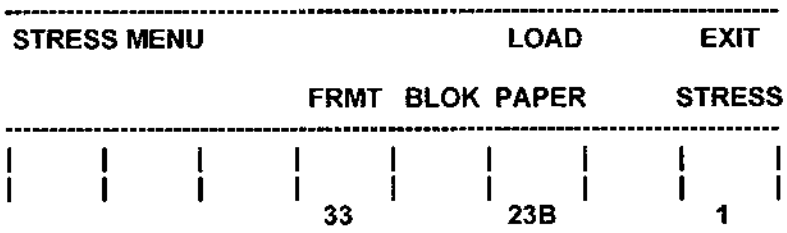
BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

LOAD PAPER = Load paper menu (23B).

When **EXIT STRESS** is pressed, total writer control returns to the E350i and the MAIN menu (1) reappears on display.

#23C (with M300 only)

STRESS MODE MENU (with M300 Monitor only)



3.16 OPERATION WITH BIKE AND TREADMILL

23D STRESS MODE

FRMT = Access to Format menu (33) during stress test.

ADV = Proceed to next stage Standing ECG, menu (23E).

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

B/P = Blood pressure entry menu (31).

LOAD PAPER = Load paper menu (23B).

EXIT STRS = Exits stress mode, and returns to Main menu (1), resets stage timer clock to zero.

PRINTOUT OPTIONS **PRINT**

RHYTHM STRIP PRINTOUT

If you want to make a Rhythm Strip printout during the Pre-test phase prior to starting a stress test, press the hard key MAN on the key pad. Press the hard key STOP to stop the printout.

12-LEAD PRINTOUT

To initiate a standard 12-Lead Printout, press AUTO on the keypad. A printout in the Stress Auto Format previously established will be generated. The display remains in the same menu. Press the hard key STOP to stop the printout prematurely or allow the printout to complete automatically.

INTERVAL OR STAGE CHANGE PRINTING

Interval printing or stage change printing (on command from the Ergomed bike or the treadmill) will not begin until the operator has entered the Exercise Phase and the exercise stage timer has started. If the user wants either a 12-lead auto print or a manual print before entering the Exercise phase, the AUTO or MANual hard keys must be used as described above.

In the case of the **Ergomed Bike System**, the operator may initiate the Exercise phase by first entering the Warm-Up phase on the E350i and then employing the Auto Start feature on the bike. The bike will then automatically advance the phase on the E350i to Exercise and start the stage timer. If the user has already proceeded to the Exercise phase on the E350i without using the Auto Start on the bike, the Ergomed bike will start the timer without further advancing the stage, and will remain in the Exercise phase.

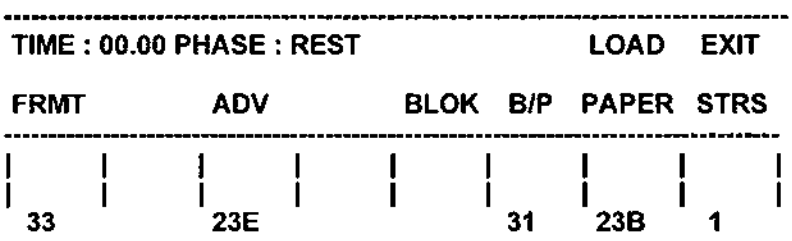
The **TA520 Treadmill Controller** does not have a similar auto start feature. In this case all stage changes must be controlled from the E350i. Once the START key is pressed on the TA520 Controller, it will send user-programmed print commands until switched off. This allows for automatic printouts for each phase of the stress test - Standing, Warm-up, Exercise and Recovery.

CAUTION:

If the above printout capabilities are utilized, the operator must take care to initiate the printout sufficiently in advance of any pre-programmed stage change (at least 15 sec. for a rhythm strip and at least 15 sec. for a 12-lead printout, depending on format). Otherwise the printout will be overridden by print commands from the bike or treadmill control protocol or by manually set printout intervals established by Menu #30.

#23D

STRESS MODE BIKE & TREADMILL MENU



Enter from STRS on MAIN MENU when ERGO (Bike) or TMILL (Treadmill) is selected from Menu 22

23E BIKE & TREADMILL (Standing ECG; Rest Phase)

Used in Rest Phase while acquiring base-line Standing ECG.

FRMT = Access to Format menu (33) during stress test.

ADV = Proceed to next Phase, Warm-up (23F).

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

B/P = Blood pressure entry menu (31).

LOAD PAPER = Load paper menu (23B).

EXIT STRS = Exits stress mode, and returns to Main menu (1), resets stage timer clock to zero.

NOTE: *Please refer to Menu 23D and related text for information on Printout options* **PRINT**

23F BIKE & TREADMILL (Warm-up Phase)

Used in Warm-up Phase prior to commencing exercise.

FRMT = Access to Format menu (33) during stress test.

ADV = Proceed to next Phase, Exercise (23G).

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

B/P = Blood pressure entry menu (31).

LOAD PAPER = Load paper menu (23B).

START = This key starts the stage timer clock.

EXIT STRS = Exits stress mode, and returns to Main menu (1), resets stage timer clock to zero.

NOTE: *Please refer to Menu 23D and related text for information on Printout options* **PRINT**

#23E STANDING

STRESS MODE BIKE & TREADMILL MENU (cont)

TIME : 00.00 PHASE : STANDING					LOAD	EXIT
FRMT		ADV	BLOK	B/P	PAPER	STRS
33		23F	*	31	23B	1

#23F WARM-UP

STRESS MODE BIKE & TREADMILL MENU (cont)

TIME : 00.00 PHASE : WARM UP					LOAD	EXIT
FRMT	START	ADV	BLOK	B/P	PAPER	STRS
33		23G	*	31	23B	1

Clock starts on pressing START key. **TIME**

23G BIKE & TREADMILL (Exercise Phase)

Used in Exercise Phase.

FRMT = Access to Format menu (33) during stress test.

START = This key starts the stage timer clock.

ADV = Proceed to Recovery Phase, (23H). **PRINT**

This action also initiates a maximum exercise level printout.

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

B/P = Blood pressure entry menu (31).

LOAD PAPER = Load paper menu (23B).

EXIT STRS = Exits stress mode, and returns to Main menu (1), resets stage timer clock to zero.

NOTE: *Please refer to Menu 23D and related text for information on Printout options* **PRINT**

23H BIKE & TREADMILL (Recovery Phase)

Used in Recovery Phase after completion of exercise. Clock re-starts at zero automatically on entering the Recovery Phase.

FRMT = Access to Format menu (33) during stress test.

STOP (soft key) = Stops any further printouts from the electrocardiograph. Bike printouts will continue until the **>0<** (orange key) on the Bike control panel is pressed twice.

NOTE: Pressing **>0<** once only advances the system into the Recovery phase, pressing **>0<** a second time terminates the test.

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing the key a second time, or will turn off automatically after 30 seconds.

B/P = Blood pressure entry menu (31).

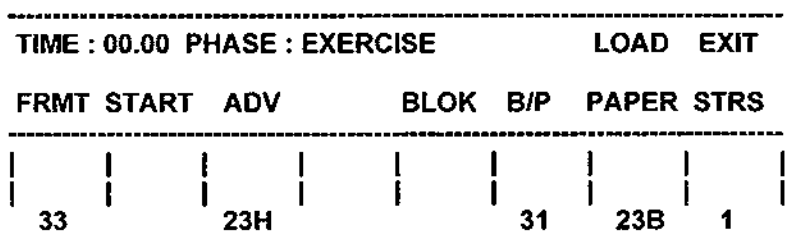
LOAD PAPER = Load paper menu (23B).

EXIT STRS = Exits stress mode, and returns to Main menu (1), resets stage timer clock to zero.

NOTE: *Please refer to Menu 23D and related text for information on Printout options* **PRINT**

#23G EXERCISE

STRESS MODE BIKE & TREADMILL MENU (cont)



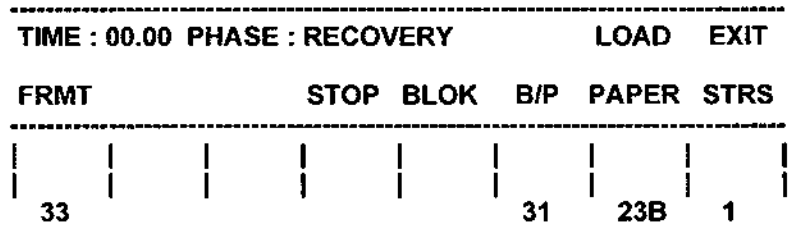
Clock starts by pressing START key or on command from Bike.

Press ADV for a maximum exercise level printout; system will simultaneously advance to Recovery phase.

PRINT

#23H RECOVERY

STRESS MODE BIKE & TREADMILL MENU (cont)



Entering recovery phase re-starts clock.

TIME

31 BLOOD PRESSURE INPUT menu

Menu provides for entry of patient's systolic and diastolic blood pressure levels.

SYST = Enter systolic blood pressure.

DIAST = Enter diastolic blood pressure.

DEL/INS = Edit keys for numerical value input.

RTN = Returns to same stress mode set up menu (23D-H) from which the BP menu was accessed.

3.17 FORMAT MENUS (in Stress)

33 FORMAT menu (in Stress)

Note: two screens dependent on stress/monitor selection.

This menu allows operator to change parameters in Ergo, Tmill and M300 systems during the stress test. These parameters can't be viewed or changed in the M300d stress system.

PAT = Patient data entry menu (2).

AMP = Amplifier gain menu (12).

WRT = Writer menu (13).

AUTO FRMT = Auto format menu (33A).

MAN FRMT = Manual format menu (33B).

BLF = Base line filter; this is a 0.12Hz high pass filter that helps to stabilize the baseline of the ECG trace when patient motion or similar somatic tremors are causing a problem. Key toggles between ON and OFF. The default condition is ON.

RHYM = Select ON or OFF. When ON generates a continuous background rhythm recording at a paper speed of 5mm/sec.during Exercise and Recovery phases. This is interrupted whenever an automatic 12-lead or manual recording occurs, and resumes on completion of that recording.

RTN = Return to stress mode menus (23 and 23C-H).

#31

BLOOD PRESSURE INPUT MENU

BLOOD PRESSURE : 140/105

SYST	DIAST	DEL	INS	RTN
				23D-H

#33

FORMAT DURING STRESS TEST MENU

This screen if Treadmill or Bike (Ergo) selected

PAT	AMP	WRT	AUTO FRMT	MAN FRMT	BLF ON	RHYM OFF	RTN
2	12	13	33A	33B			23 & 23C-H

This screen if M300 or M300d monitor selected

PAT	AMP	WRT	AUTO FRMT	MAN FRMT	BLF ON	RTN
2	12	13	33A	33B		23 & 23C-H

The BURDICK E350i affords the operator an opportunity to review or modify the selected print format and lead configurations.

33A STRESS MENU - AUTO FORMAT

Repeats selections made at Menu 15 allowing operator review and modification.

3CH = output format becomes the standard 3-Channel lead groups, 2.5 seconds of each lead printed in the following format:

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

3CH + RHY = standard 3-Channel lead groups plus simultaneous rhythm strip printout .
THIS OPTION NOT AVAILABLE IN STRESS - ERROR BEEP RESPONSE

RHYM = RHYTHM menu (output format for rhythm prints).
THIS OPTION NOT AVAILABLE IN STRESS - ERROR BEEP RESPONSE

4CH = 4TH CHANNEL menu; output format becomes the standard 3CH lead groups, 2.5 seconds of each lead printed in the following format, plus a 4th channel 10 sec. rhythm trace. See also menu 15A

1PG 6CH = output format becomes 6 channels, of 5 seconds each, leads printed in the following sequence:

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

2PG 6CH = 2PAGE menu (format for 2 page 6-channel printouts).

Page 1	Page 2
I	V1
II	V2
III	V3
aVR	V4
aVL	V5
aVF	V6

SPEED = select 25 or 50 if in stress or non-interpretive mode

RTN = returns to menu (33) or (1D).

33B STRESS MENU - MANUAL LEADS FORMAT

Repeats Menu 25 for operator review.

LIMB = leads [I II III].

AUG = leads [aVR aVL aVF].

V123 = leads [V1 V2 V3].

V456 = leads [V4 V5 V6].

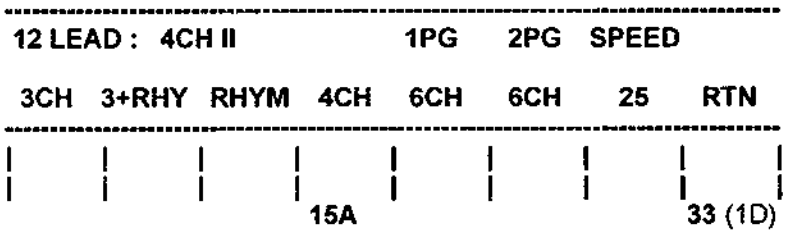
6CH EXTR = 6 Channel extremities (limb) leads.

6CH CHST = 6 Channel chest leads.

OTHER = selects OTHER manual lead formats menu (25A)

RTN = after selection confirmed returns to menu (1D).

REVIEW MENU (Auto Format): **Repeats Menu 15** **#33A**

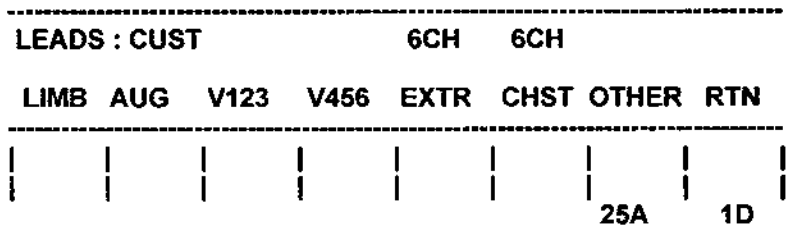


This screen when in Stress mode or non-interpretive mode

NOTE : The two keys identified as **3+RHY** and **RHYM** on this display are *non-active* keys. These options are not allowed in the Stress Mode. If either key is pressed while in this mode a beep will signify an error, requiring the operator to make an alternative selection.

STRESS - MANUAL FORMAT: **#33B**

MANUAL LEADS FORMAT MENU (Repeat of Menu 25)



26 AUTO MODE menu

This menu also appears after pressing MANual hard key and before printout of ECG trace (not when in Stress, however).

AUTO = being pressed in the MAIN or PATIENT DATA sub menus will cause the E350i to go into the AUTO (12 lead) ECG acquisition mode. It also brings up this PATIENT DATA OK? confirming menu (26).

NOTE: Confirming menu 26 may be by-passed by pressing AUTO key twice to commence printing immediately if necessary.

YES = the E350i proceeds with ECG data collection. The 12 lead format previously selected will determine the speed and format of the printout (3CH, 4CH, 6CH, 2PAGE etc.). The current patient demographics are printed on reports.

CLR ALL = deletes all current patient demographics.

NO = transfers to the PATIENT DATA menu (2). New or revised patient information can now be entered if necessary.

RTN = returns to MAIN menu (1).

26A ECG DATA ACQUIRING menu

When the YES key [Menu 26] is pressed, the message "Waiting for Good Data" will be displayed until the data being received is acceptable for a normal ECG acquisition. Refer to Menu 26A.

The unit waits until it has at least 10 seconds of data without lead failures or unacceptably high noise levels before acquiring and recording the ECG. The operator can, if necessary, override this condition by pressing the key marked **OVRD** [acquire override]. Press QUIT to return to the MAIN menu.

Lead status messages are: fail, noisy and drift.

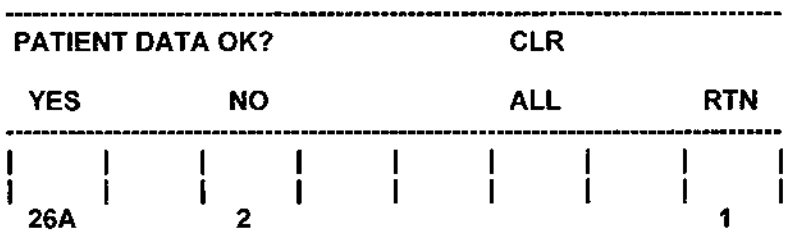
26B ECG DATA ANALYSIS menu

The unit acquires the ECG and displays the message, "Waiting for Analysis to Complete". Refer to Menu (26)B.

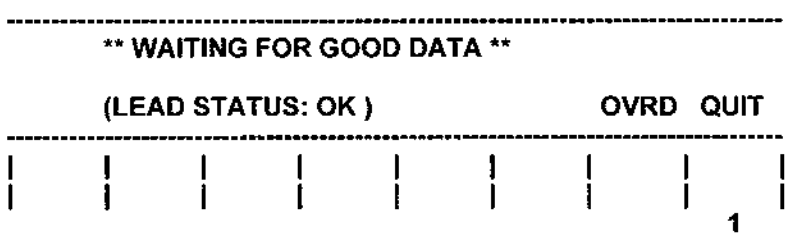
Press QUIT to return to MAIN menu (1).

#26

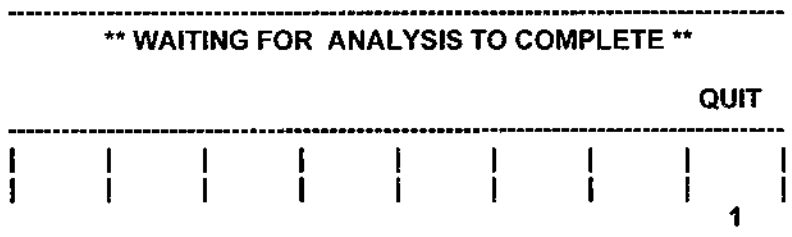
AUTO MODE MENU (Automatic Operation)



ECG DATA ACQUIRING MENU #26A



ECG DATA ANALYSIS MENU 26B



27 AUTO IN PROGRESS menu

L = toggles the LIMB lead gain to 5, 10 or 20 mm/mV.

C = toggles the CHEST lead gain to 5 or 10 mm/mV.

ARTF = toggles the artifact filter ON/OFF.

LOOSE LEAD = will be displayed if one occurrs.

Use of the hard key **STOP** terminates the AUTO mode and returns the operator to MAIN menu (1). If the lead gain or filter enable key is toggled, the E350i will stop printing, paper will advance to the next queue hole and will start to print again with the updated printout parameters.

When the **AUTO** sequence is complete, menu (28), **ECG COMPLETE**, is displayed.

28 ECG COMPLETE menu

This menu permits changes to the patient demographics and printout parameters.

PAT = returns to patient data menu (2).

AMP = displays amplifier gain menu (12).

WRT = displays writer menu (13).

AUTO FRMT = displays format menu (15).

FAX = Fax mode menu (36).

COPY = plots another copy of the acquired ECG. The command COPY can be repeated if multiple copies are required.

12CH COPY = provides a 10 second printout copy of all 12 leads. Only available as a copy after the initial auto printout.

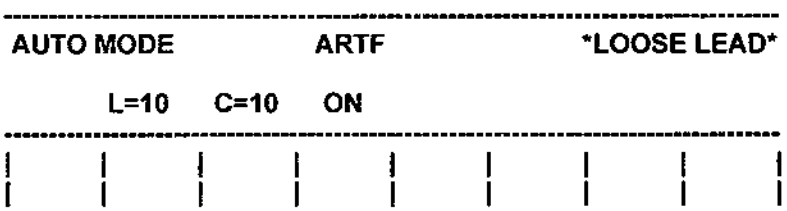
Use of hard key **STOP** terminates the AUTO acquisition mode and returns the operator to MAIN menu (1).

RTN = returns to MAIN menu (1).

WARNING: If unit is powered down (switched off), the current ECG data will be lost if not already plotted.

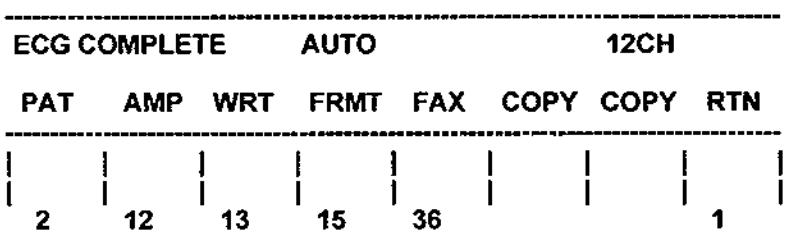
#27

AUTO IN PROGRESS MENU



#28

ECG COMPLETE MENU



NOTE: If only the 12LD option has been selected for interpretation format [see Menu 35 in the following Section 3.18.1], should the operator now attempt to change the interpretation format at this stage by pressing the AUTO FRMT key in Menu 28 shown above, an error condition beep will sound. If interpretation is required, the desired interpretation format must be established prior to acquisition of the ECG.

3.18.1 The INTERPRETATION menu

35 INTERPRETIVE FORMAT Menu **INT**

Used to establish the desired interpretation format from the options below:

12LD = selects ON/OFF for 12 lead ECG printout.

INTP = selects ON/OFF for ECG interpretation.

MEAS = selects ON/OFF for ECG global measurement.

REAS = selects ON/OFF for ECG reason statements.

MEDN = selects ON/OFF for ECG median report.

RTN = returns user to Auto Format Menu (15).

Default: The default setting is 12LD (ON); INTP (ON); MEAS (ON); REAS (OFF); MEDN (OFF).

NOTE: If Interpretation (INTP) is ON, Measurement (MEAS) can't be turned OFF. Reasons pertaining to S-T segments or changes can't be turned OFF even if REAS is OFF.

3.18.2 The FAX TRANSMISSION menus (Optional) Access from ECG Complete menu (28)

NOTE: The following Fax transmission menus are optional features, not available on all E350i models.

36 FAX MODE Menu **FAX**

Keys **No.1, No,2** and **No.3** call up telephone numbers as set thru the Fax Setup menu (37), accessed from the MISC set up menu (16). These can be changed temporarily though the numerical keypad entry.

DEL = delete the last digit entered.

, = allows the user to enter modem command (PAUSE), in order to access outside line.

SEND = start Fax transmission and proceed to Menu (36A).

BAUD = allows user to select Baud rate; toggles between 2400, 4800, 7200 and 9600.

RTN = returns user to Menu (28).

36A FAX TRANSMISSION STATUS menu **FAX**

STATUS = shows status of Fax transmission:

Dialing . . .

Waiting for Connection . . .

Sending Page X . . .
XX% to go

Page X Done . . . * Wait *
0% to go

Page X Done . . .
0% to go

No Carrier = no communication established - Retry.

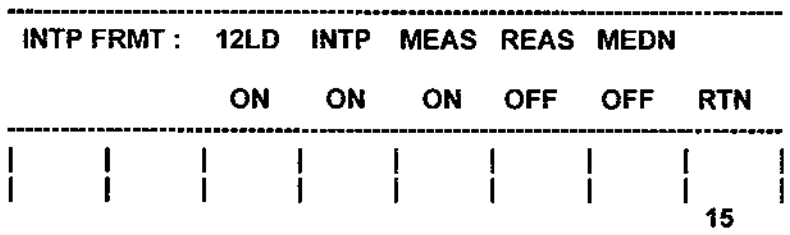
STOP = press to stop transmission at once; message "User Aborted" appears prior to automatic return to Fax Menu (36).

Note: Menu display returns to (36) Fax Menu automatically 2 seconds after completion or failed transmission.

RTN = returns user to Menu (36).

#35 **INT**

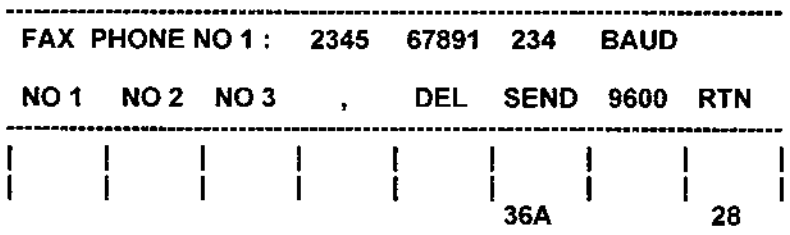
INTERPRETIVE FORMAT MENU



Access from ECG Complete menu #28... Press FAX key

#36 **FAX**

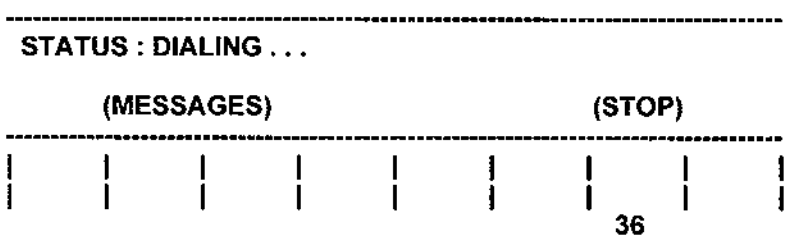
FAX MENU



WARNING: If unit is powered down (switched off) prior to FAX transmission, the current acquired ECG data will be lost and cannot be retrieved for FAX transmission purposes.

#36A **FAX**

FAX TRANSMISSION STATUS MENU



37 FAX SETUP Menu

Accessed from MAIN menu, through the Setup menu 1A, and MISC (16) by pressing FAX SET key.

DIAL TONE = This key toggles between TONE and PULSE; the default is TONE dialing.

MODEM INT = If pressed this key will give an error beep; external modem option is non-functional at this time.

GRID = This key toggles between YES and NO;

YES indicates ECG with full grid printed on the fax paper.

NO indicates ECG printed with Timing mark only.

Default setting is YES.

SET FAX # = This key enters Menu (37A) to allow user to pre-program up to three Fax numbers.

37 A SET FAX NUMBER Menu

No.1, 2, 3 = press key to enter number for selections 1, 2 and 3 using numerical keypad.

, = allows the user to enter modem command (PAUSE) so that outside lines can be accessed.

DEL = delete key is used to edit numbers; deletes last digit entered.

BAUD = allows user to select desired Baud rate; toggles between 2400, 4800 , 7200 and 9600.

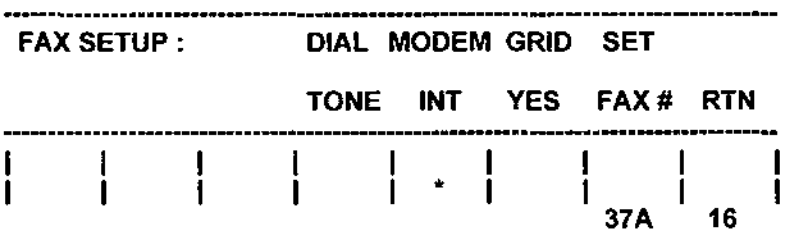
RTN = returns user to Menu (37).

NOTE: * * Toggles between 9600, 7200, 4800 and 2400 Baud rates. Default setting is 9600. The selected rate is the maximum used. If the line is noisy, the rate will be stepped down.

+ The number displayed reflects the current active phone number entry.

#37

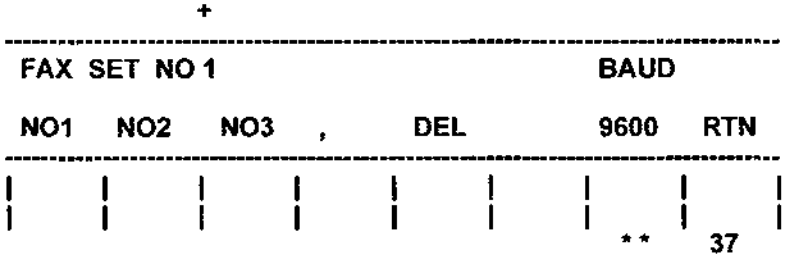
FAX SETUP MENU



* = NON-FUNCTIONAL KEY

#37 A

SET FAX NUMBER MENU



* * = Toggles 9600/7200/4800/2400

3.19 OPERATION IN MANUAL MODE

24 MANUAL MODE operation menu: MAN

Pressing the **MAN**ual key (on the main keypad) will cause the E350i to go into the PATIENT DATA OK? menu. Press YES to initiate MANUAL ECG acquisition and display this menu.

NOTE: Confirming menu may be by-passed by pressing MAN key twice to commence printing immediately if necessary.

S = toggles the speed to 5, 25 or 50mm/s.

L = toggles the LIMB lead gain to 5, 10 or 20mm/mv.

C = toggles the CHEST lead gain to 5 or 10mm/mv.

ARTF = toggles the writer filter (low-pass artifact filter) between ON/OFF.

BLOK = selects blocking filter for enhanced recovery time during defibrillation. May be disabled by pressing key a second time, or will turn off automatically after 30 seconds.

FRMT = access to Manual leads format menu (25).

Top line also displays current lead format as selected by means of Menu 25.

***LOOSE V1** = indicates one or more loose leads or poor connections which should be rectified, in turn as designated, before proceeding with acquisition of ECG.

25 MANUAL LEADS FORMAT menu

LIMB = leads [I II III].

AUG = leads [aVR aVL aVF].

V123 = leads [V1 V2 V3].

V456 = leads [V4 V5 V6].

6CH EXTR = 6 Channel extremities leads.

6CH CHST = 6 Channel chest leads.

OTHR = selects OTHR (Other) manual lead formats - menu (25A).

RTN = *Variable: pressing RTN always returns to the menu from which you accessed this menu in the first instance. This can be menus (1, 1A, 1D and 24); if accessed from within the stress system it will return to menu (33).*

25A OTHER MANUAL LEAD FORMATS menu

NEHB = selects Nehb bi-polar leads; 3 chest leads placed two anteriorly and one posteriorly; 3- lead printout labelled D. A. J.

CUST = allows user to select custom rhythm leads thru TRACE Menu (25B).

FRANK CALC = selects calculated Frank corrected orthogonal leads configuration, printing cVx, cVy and cVz calculated from standard 12-lead acquired data.

FRANK ACQR = selects Frank corrected orthogonal leads aVx, aVy and aVz configuration by direct acquisition; requires specific Frank lead placement, cannot utilize standard 12-lead configuration.

RTN = returns to Manual Leads Format menu (25).

#24

MANUAL MODE MENU

```
MANUAL MODE        ARTF        LEADS : CUST

S=25   L=10   C=10   ON    FRMT  BLOK  "LOOSE  V1
```

				25				

Right hand field displays designator of loose lead.

#25

MANUAL LEADS FORMAT MENU

```
LEADS : CUST                  6CH   6CH

 LIMB   AUG   V123   V456   EXTR   CHST   OTHR   RTN
```

						25A	1	*

* = see **RTN** text on facing page.

#25A

OTHER MANUAL LEAD FORMATS

```
LEADS :      (LEAD SELECTED)        FRANK

NEHB          CUST                  CALC  ACQR  RTN
```

		25B					25	

*** NOTE: The NEHB and FRANK options are not allowed in the stress mode. The following restrictions should be recognized:**

1) If the user enters Menu 25A (Other Manual Lead Formats) when in the stress mode, and then tries to select NEHB or FRANK, a long beep warns the user that the configuration will be disallowed. However, the user may still access Menu 25B to select custom rhythm leads.

2) If the user presses the AUTO hard key when NOT in the stress mode, after NEHB or FRANK lead configurations have been selected, the printout will always be in STANDARD 12-Lead or CABRERA format.

3) The FRANK configuration can not be displayed via the auxiliary outputs

25B CUSTOM MANUAL MODE RHYTHM menu

Press key below trace # (1 thru 6), to select the desired lead I, II, III etc., thru V6; then OFF appears. Proceed to next trace # and again make selection.

CAUTION: Pressing OFF for any trace # deletes any selections already made to the right of current position.

This menu performs the same way as Menu15B in function, but parameters are stored separately.

These are the manual format leads; Menu 15B sets the rhythm page leads for the 3+RHYM auto format

HARD KEY FUNCTIONS:

STOP = The manual mode will continue printing until the STOP button is pressed.

It may also be used to terminate an AUTO mode printout prematurely.

1mV = Generates a 1mV calibration pulse on the plotter. The gain setting for the leads will determine the height of the cal pulse on paper. If the frontal and chest leads have different gains a split-height cal pulse will be drawn. The first half of the cal pulse is the limb gain, the second half is the chest gain.

#25B

CUSTOM MANUAL RHYTHM MENU

TRACE : 1	2	3	4	5	6	
II	aVF	V5	OFF	OFF	OFF	RTN

25

Note: Same as Menu15B in function, but parameters stored separately.

These are the manual format leads; Menu 15B sets the rhythm page leads for the 3+RHYM auto format

3.20 ARTIFACTS - CAUSE AND RECOGNITION

Improper technique is a common cause of poor ECG records, resulting in artifacts and defects that interfere with the interpretation. The more common artifacts are usually caused by patient movement, muscle tremor, improperly affixed electrodes (sensors), or electrical interference (AC).

Overload Condition

The BURDICK E350i prints the message "OVERLOAD" on the electrocardiogram trace to alert the operator to an overload condition. This overload condition can be caused by electrode polarization from a defibrillator pulse. When such a condition occurs, the waveform on the electrocardiogram will not provide a true indication of patient cardiac activity. Care must be taken by the operator not to misinterpret the patient's condition during such an overload condition.

3.20.1 Patient Movement

Patient movement can cause abnormal trace deflections ranging from irregular vibration in frequency and amplitude due to muscular contraction or tremor, to major shifts in the baseline caused by body or electrode movement. The figure below is typical of this type of artifact.

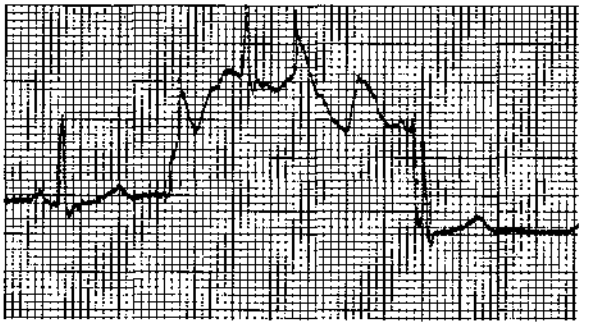


Fig. 3.6, Artifact - Somatic Tremor and Patient Movement

To minimize this type of artifact it is necessary to gain the patient's full cooperation. This may require no more than a simple explanation of why it is necessary to relax; or it may require a larger or more comfortable bed. In some cases somatic tremor may be unavoidable, but its effects may be minimized by having the patient place his/her hands under the buttocks.

3.20.2 Improperly Applied Electrodes

An example of baseline shift caused by loose electrodes is shown below. If the baseline does not come to rest near the center of the paper within half a minute of first attempting to record that particular lead, check the electrode to ensure that it is properly applied. A baseline jump occurring when the lead is switched during an R or T wave is unavoidable. The trace will return to normal in a few seconds. If baseline drift occurs - shifting up and down - it is due to either patient respiration or corroded electrodes.

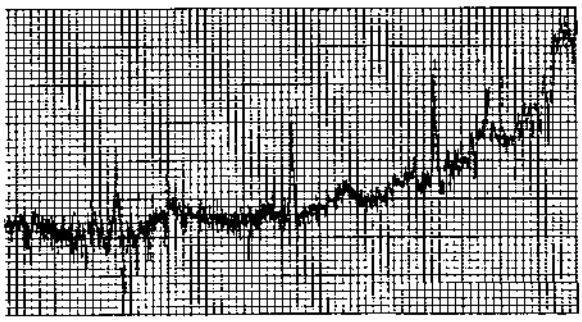


Fig.3.7, Artifact - Loose Electrodes

3.20.3 Electrical Interference (AC)

Electrical interference can obliterate much of an ECG recording by producing a wide baseline. Its amplitude depends on the strength of the AC source and the lead being recorded. In any one lead the amplitude is usually steady. The frequency of the interference signal corresponds to the supply line frequency - usually 60HZ. The result of typical AC interference on the ECG is shown below.

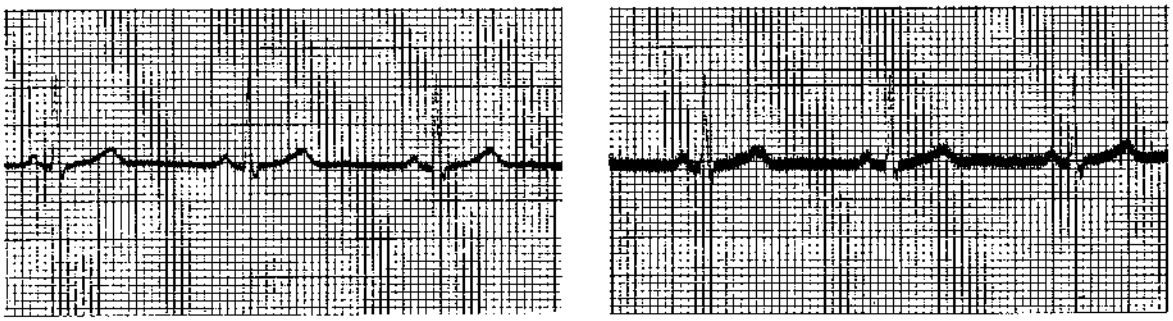


Fig.3.8, Artifact - Alternating Current

3.20.4 To eliminate or minimize AC effects:

1. Locate the instrument so that the line cord is well away from the patient and the patient cable. Do not pass the line cord under or near the patient or table.

2. Be sure the unit is properly grounded by means of the wall outlet to which it is connected.

3. The patient cable leads should be arranged as close together as possible and following the body contour. Avoid looping excess lead wires, rather twist them together to take up any excess length.

4. Diathermy or X-ray equipment in adjacent offices should NOT be in operation. Other electrical equipment, including electrically actuated beds, or lighting fixtures may also generate interference even though not in use. If this proves to be a problem, disconnect such equipment.

5. Electrical wiring in walls and ceilings is also a possible source of AC interference. Frequently, simply moving the patient table to a different location in the room will alleviate the problem. Occasionally, in severe cases, it may be necessary to use a grounded screen located between the AC source and the patient.

6. Check the pre-set parameters on the LCD display of your unit. The ON artifact filter setting (see WRT menu #13) or the 50Hz or 60Hz line filter setting may effectively limit the AC interference. In extreme cases where the problem cannot readily be solved by the user, contact your Burdick representative. He or she has equipment which will aid in pinpointing the source of interference and can offer guidance to eliminate or reduce the problem.

3.20.5 Loose or Broken Leads

A broken wire in the patient lead may cause rapid and erratic trace deflections. Similar large amplitude excursions can be caused by a poor connection at the electrodes.

3.21 OPERATION WITH FILTER [Frequency Response Filter]

Selection of an unfiltered or a filtered frequency response for the writer output is determined by the pre-set parameters employed. These can be verified anytime by calling up the LCD display (WRT menu #13). There may be a nominal loss of amplitude in the QRS complex with the artifact filter in use.

A reference calibration mark should be included in every ECG recording, filtered or unfiltered. In the AUTO mode, the unit automatically records a calibration mark at the start of each lead trace.

NOTE: The **AC input or line frequency filter** is completely independent of the **writer frequency response** (low-pass artifact filter) **filter**.

A choice of 50Hz , 60Hz and OFF is provided to correspond to the frequency of normal electrical power supplies. When the appropriate setting is selected, the filter may significantly reduce interference arising from the power supply mains or associated equipment.

3.22 PACEMAKER MARK ENHANCEMENT

The pacemaker enhancement feature may be enabled or disabled at will by the operator. The pacemaker enhancement mark is a vertical line 11mm in amplitude.

SECTION 4 MAINTENANCE

4.0 PREVENTIVE MAINTENANCE

The BURDICK E350i Electrocardiograph is designed and manufactured to require very little preventive maintenance. It should be cleaned frequently with a soft damp cloth; if necessary, a mild detergent solution may be used. Do not use commercial cleaners or abrasives which could cause damage. Fuse replacement should be carried out only by a qualified service technician.

The purpose of preventive maintenance is to eliminate future problems and keep the equipment in a condition providing completely safe, satisfactory recordings. Preventive maintenance should be carried out at least once a year as described in the Technical Description.

Before using the BURDICK E350i, always ensure that the line power cord, power plug, power connector and power input socket show no signs of damage.

Immediate *maintenance has to be carried out if:*

* The equipment was subject to extreme mechanical stress, e.g; after a heavy fall.

* The equipment was subject to spillage of liquids.

* The function of the equipment seems to be disturbed.

* Parts of the unit enclosure are cracked, removed or lost.

* Any connector or cord shows signs of deterioration.

4.1 CLEANING AND DISINFECTING

Cables and Electrodes (Reusable type)

For disinfection, the electrode cables and the electrodes should be rubbed with a swab or cloth moistened with a formaldehyde solution or other approved disinfectant type cleanser.

Under no circumstances may the electrode cables be immersed in any cleaning fluid, nor may they be subjected to hot sterilization with water, steam or air, or to ether sterilization.

Cleaning and Disinfecting the Unit

The housing of your BURDICK E350i may be cleaned and disinfected in the following manner:

Cleaning: Rub the housing with a cleaning cloth moistened with water to which a mild household detergent can be added if necessary. Never use ether, benzene or similar solvents.

Disinfection: Thoroughly spray the housing with an approved disinfectant.

SECTION 6 APPENDIX:

6.0 GENERAL

The following pages contain the most commonly used Patient Cable and Lead Arrangements, Typical System Configuration Listing and Sample ECG Recordings.

6.1 PATIENT CABLE AND LEAD ARRANGEMENT.

LEAD CODING AND MEASUREMENTS:

STANDARD LIMB LEADS

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

AUGMENTED LIMB LEADS

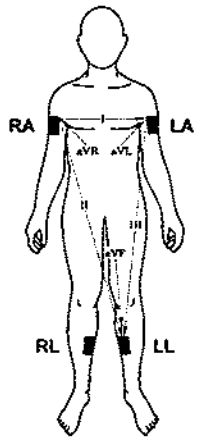
LEAD	SENSORS CONNECTED / MEASURED
aVR	RA and (LA-LL)
aVL	LA and (RA-LL)
aVF	LL and (RA-LA)

CHEST LEADS

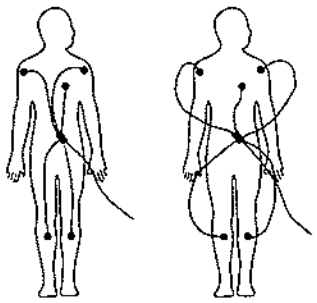
LEAD	SENSORS CONNECTED / MEASURED
V_1	V_1 and (LA-RA-LL)
V_2	V_2 and (LA-RA-LL)
V_3	V_3 and (LA-RA-LL)
V_4	V_4 and (LA-RA-LL)
V_5	V_5 and (LA-RA-LL)
V_6	V_6 and (LA-RA-LL)

AHA COLOR CODE

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



CORRECT INCORRECT

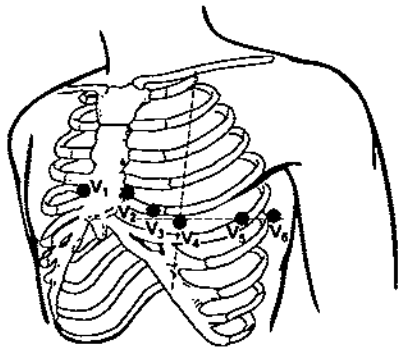


Connecting the cable

Avoid large loops. Make sure the lead cables follow patient contour and lay flat against the patient's body. If any lead wire is too long (particularly with short patients, children, and infants), roll the cable into a 4-inch coil and hold it together with a rubber band or tape.

Don't forget to make sure that the proper lead wire is connected to the proper sensor. Most lead wires are color-coded and have abbreviations stamped on them. To connect the wrong lead wire, you almost have to be trying; still, it is a frequent oversight among electrocardiographers. Make sure all connections are *right* and *tight*.

PLACEMENT OF THE CHEST SENSORS:



V_1 Fourth intercostal space at right margin of sternum

V_2 Fourth intercostal space at left margin of sternum

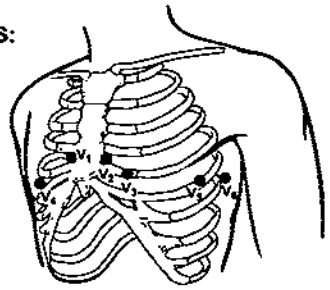
V_4 Fifth intercostal space at junction of left midclavicular line

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

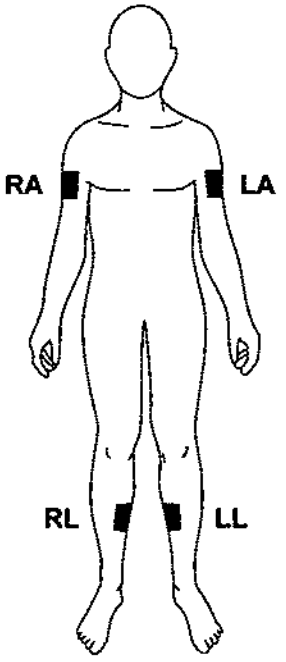
V_6 At horizontal level of position V_4 at left midaxillary line

PEDIATRIC CHEST LEADS:



NOTE: V_6 lead is transposed to the V_4R position.

PLACEMENT OF THE LIMB SENSORS:



6.2 SYSTEM CONFIGURATION LISTING (Typical)

Burdick, Inc. E350i Copyright 1992 Rev. 1.26 11 Feb 93

Date: 11/02/93 Time:11:13

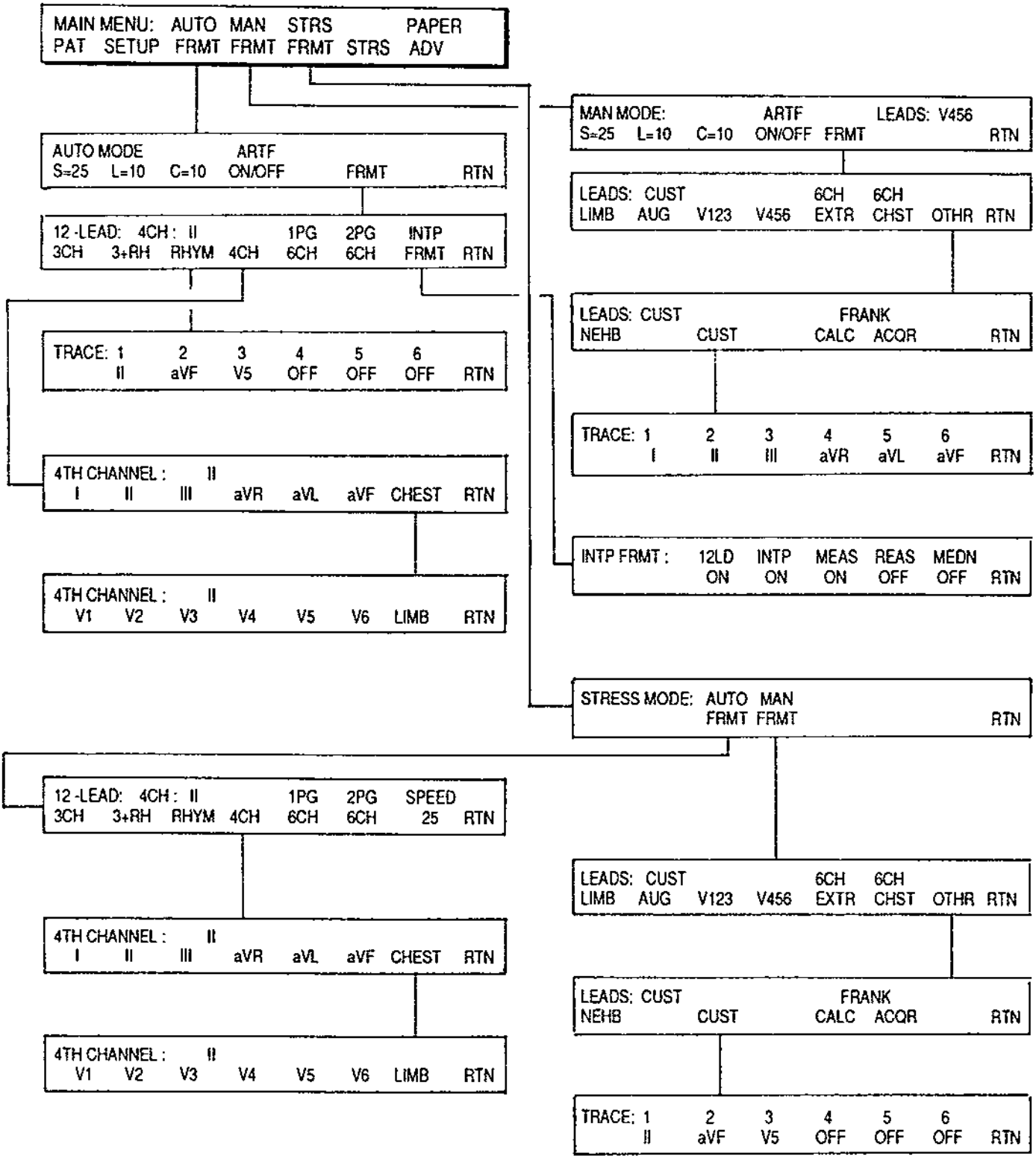
SYSTEM CONFIGURATION LISTING

	CURRENT SETTING	DEFAULT SETTING
Limb Gain:	10 mm/mV	10 mm/mV
Chest Gain:	10 mm/mV	10 mm/mV
Auto Speed:	25 mm/sec	25 mm/sec
Manual Speed:	25 mm/sec	25 mm/sec
Line Filter:	60HZ	60HZ
Artifact Filter:	ON	ON
Auto Format(Rest):	4CH	4CH
Auto 4th Channel(Rest):	II	II
Auto Rhythm Trace(Rest):	II aVF V5 Off Off Off	II aVF V5 Off Off Off
Manual Format(Rest):	II aVF V5 Off Off Off	II aVF V5 Off Off Off
Auto format(Stress):	4CH	4CH
Auto 4th Channel(Stress):	II	II
Manual Format(Stress):	II aVF V5 Off Off Off	II aVF V5 Off Off Off
Stress Rhythm:	OFF	OFF
Pacemaker Enhancement:	OFF	OFF
Lead Configuration:	Standard	Standard
Engineering Unit:		IN/LBS
Monitor Type:		M3000
Format of Date:		MM/DD/YY
Format of Date Delimiter:		/
Format of Time:		24HR;MM
Format of Time Delimiter:		
Mode of Stress Interval Printing:		MANUAL
Time Between Interval Printing:		0 seconds
Auxiliary Output Channels:		II aVF V5
Interpretive Format:		
1) 12 Lead Print:	ON	ON
2) Interpretation:	ON	ON
3) Reasons:	OFF	OFF
4) Measurement:	ON	ON
5) Median Report:	OFF	OFF

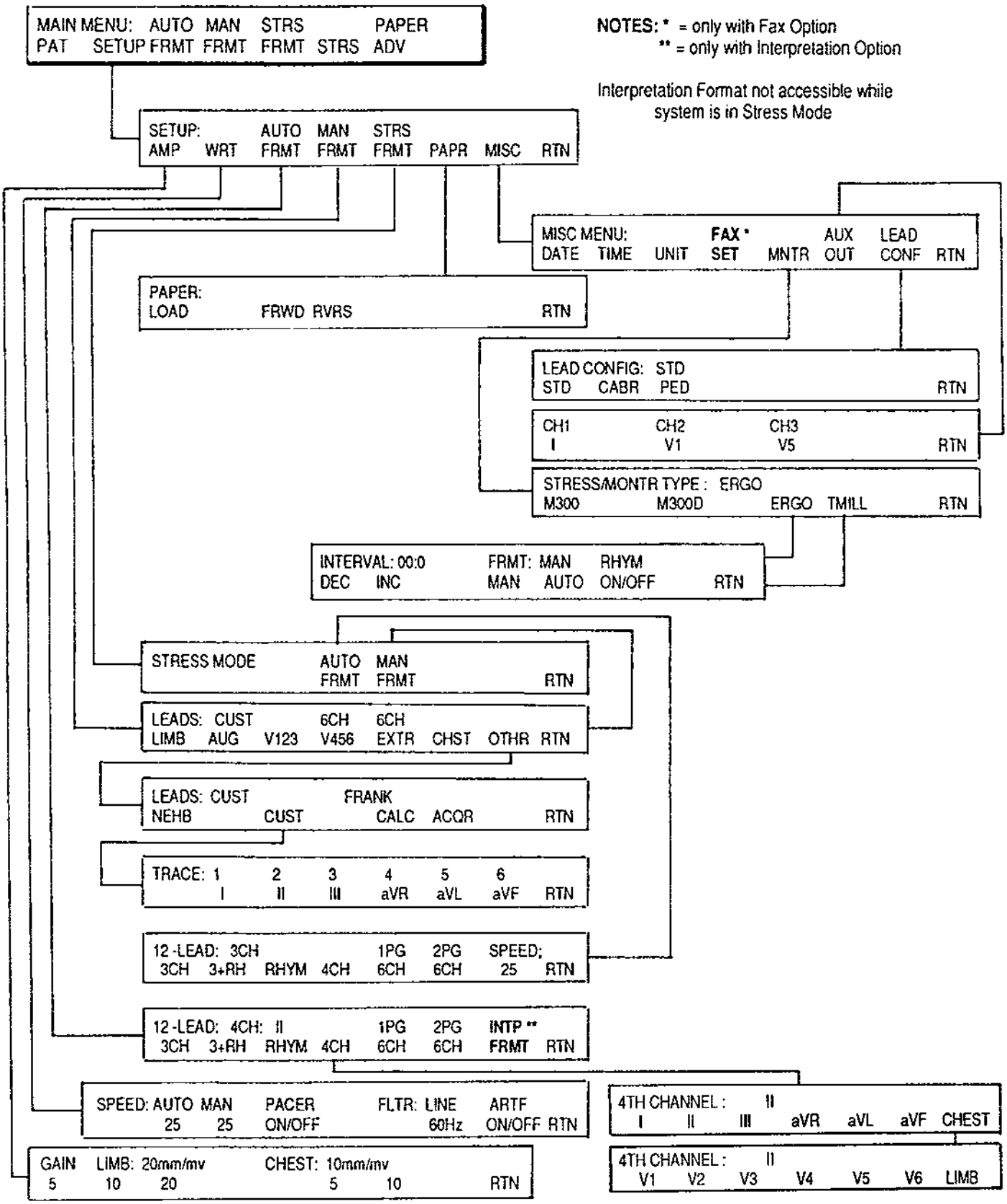
Fax Configuration		
a) Dial Type:	TONE	
b) Modem:	NT	
c) Grid:	YES	
d) Phone No. 1		9600 baud
e) Phone No. 2		9600 baud
f) Phone No. 3		9600 baud

6.3 QUICK-REFERENCE FLOW CHARTS FOR NORMAL OPERATION

6.3.1 Normal Operation In the Auto and Manual Modes

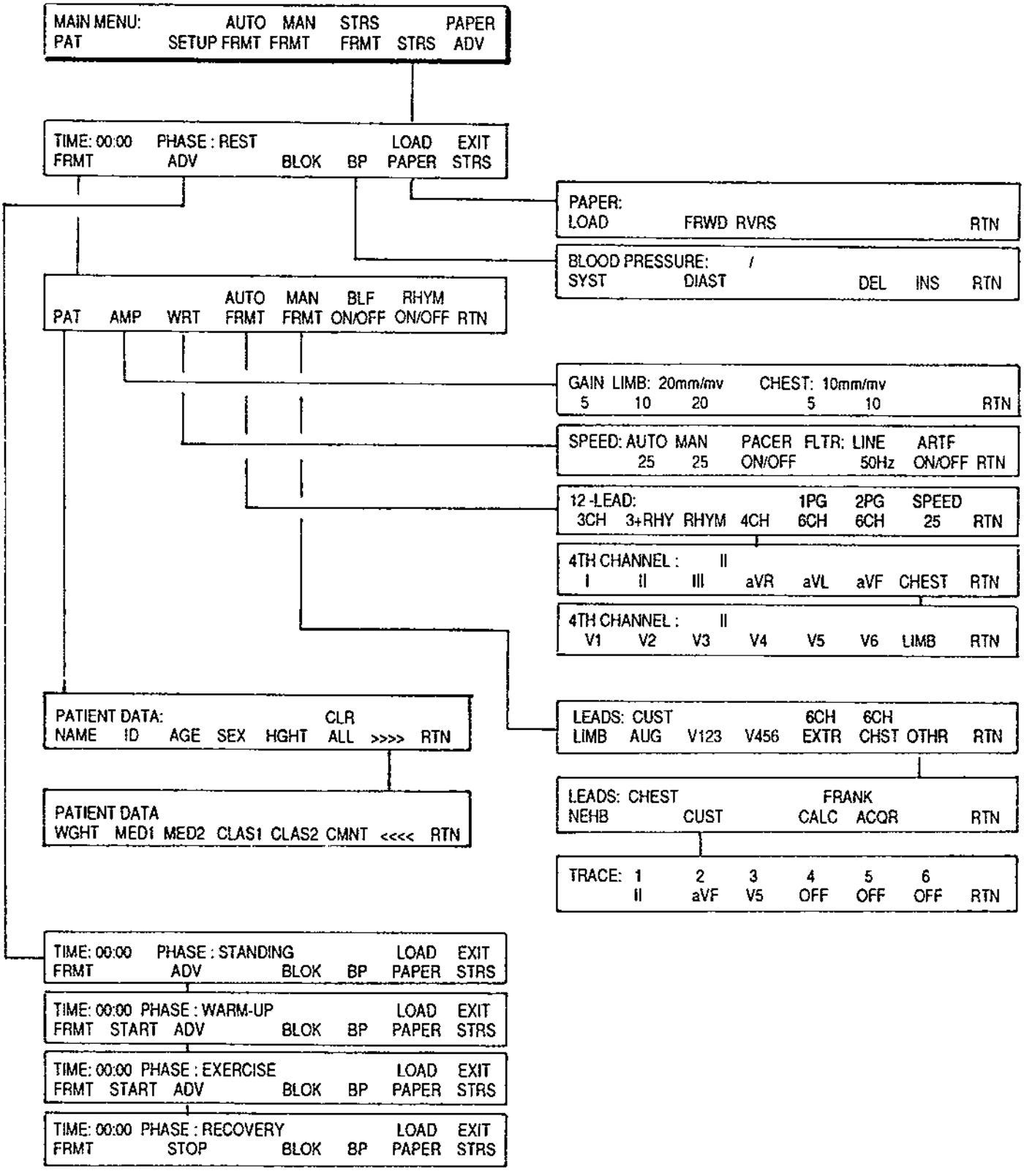


6.3.2 The Set-Up Menus



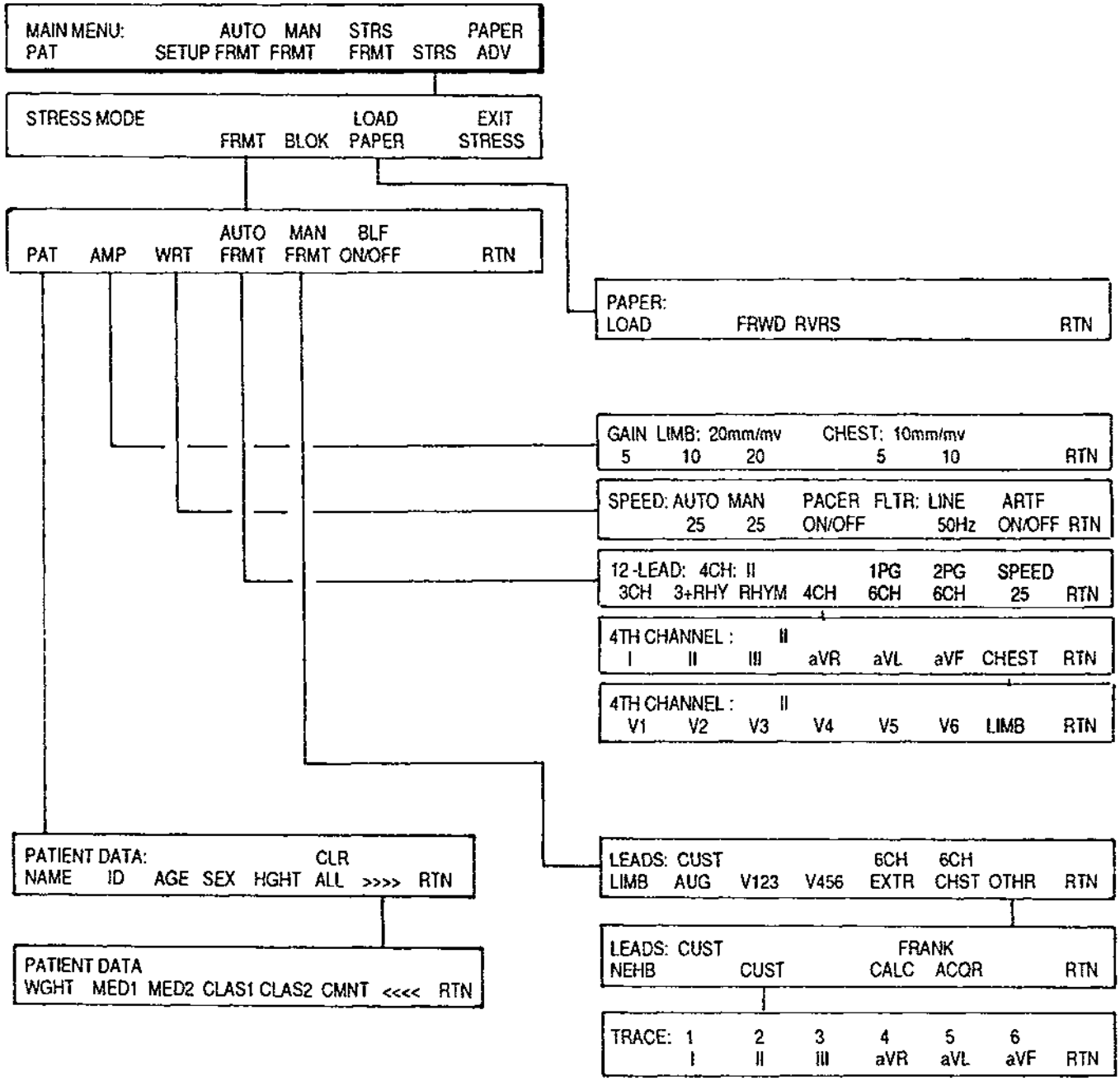
6.3.3 Operating In the Stress Mode

"A" with Treadmill or Ergomed Bike



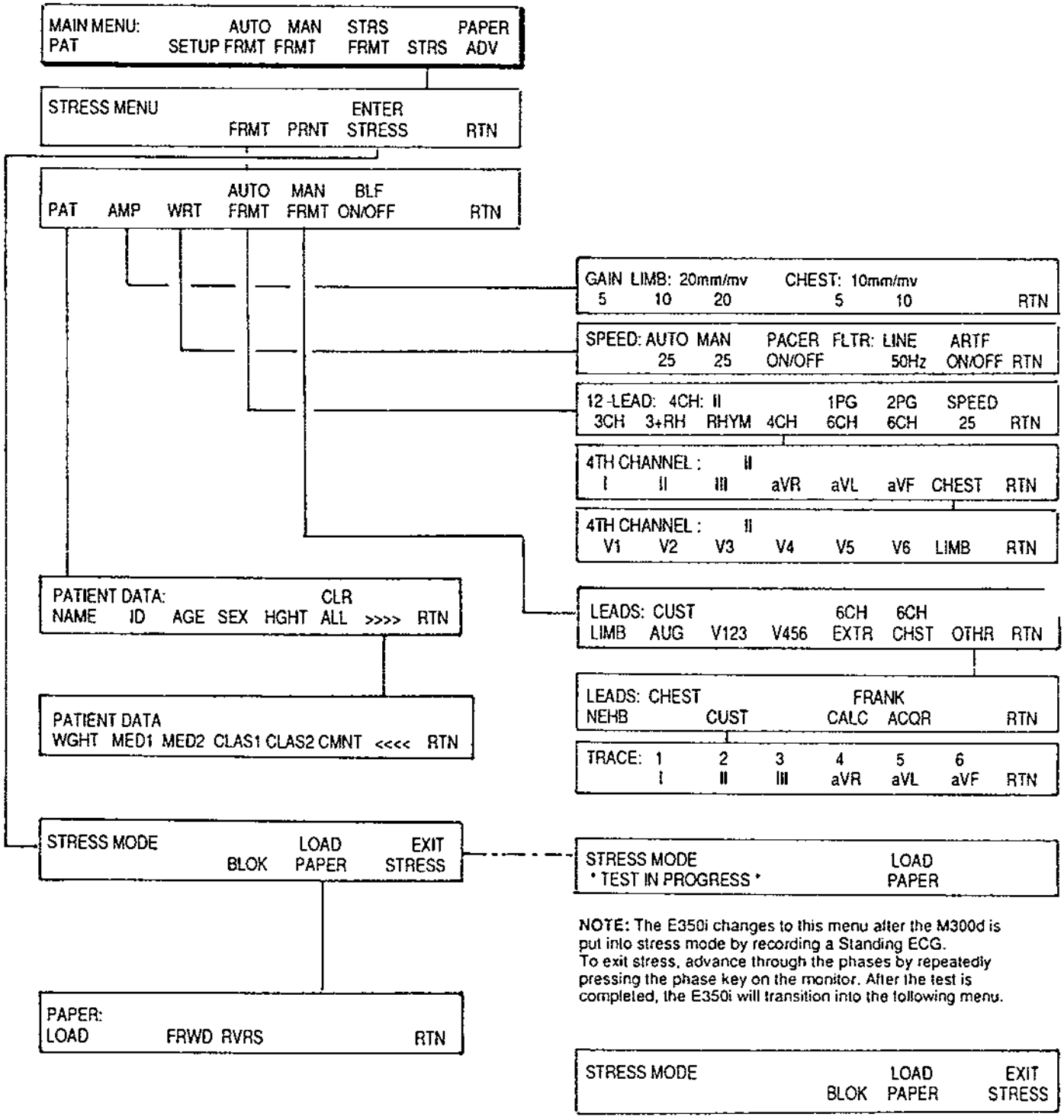
6.3.3 Operating in the Stress Mode

"B" with M300 Monitor



6.3.3 Operating in the Stress Mode

"C" with M300d Monitor



NOTE: The E350i changes to this menu after the M300d is put into stress mode by recording a Standing ECG. To exit stress, advance through the phases by repeatedly pressing the phase key on the monitor. After the test is completed, the E350i will transition into the following menu.

6.4 ADDENDUM: **If FAX option is installed**

FCC CONNECTION INFORMATION - This equipment complies with Part 68 of the FCC Rules. On the rear of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most cases, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's, contact the telephone company to determine the maximum REN for your calling area.

If your BURDICK E350i causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, you will be notified as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

If you experience trouble with your BURDICK E350i, please contact Burdick, Inc., 15 Plumb Street, Milton, Wisconsin 53563, U.S.A,, phone: (800) 333-7770 for repair / warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is solved.

This equipment may not be used on coin service provided by the telephone company. Connection to Party Line Service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

This device is equipped with a USOC RJ11C connector.

EQUIPMENT ATTACHMENT LIMITATIONS -

NOTICE: The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, the user should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not always prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repair or alteration made by the user to this equipment, or equipment malfunction, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician.

The **LOAD NUMBER** ( ) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop, which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the limitation that the total of all Load Numbers does not exceed 100.

SERVICE STATION: If you have any questions or trouble, contact Burdick, Inc., 15 Plumb Street, Milton, Wisconsin 53563, U.S.A,, phone: (608) 868-4678.

6.5 Sample ECG Recordings (Typical)

Resting ECG

A Auto mode - 3 ch format

B Auto mode - 4 ch format

C Auto mode - 6 ch format

D Median report

Stress Mode (with M300d Monitor)

E Warm up phase

F Exercise phase

G Maximum exercise level

H Recovery phase

FAX option

J Grid

K No grid

Name: DOE, JANE
ID : 112233445566
Date: 11/09/93 Time: 11:53
Age : 40 Sex : FEMALE
Hgt : 65 IN Wgt : 100 LBS
Medl: MEDICATION UNKNOWN
Med2:
Cc11: ISCHEMIA
Cc12:
Cmnt:

| Vent rate: 69 |
| --Durations-- |
| P : 102 |
| QRS: 90 |
| --Intervals-- |
| PR : 158 |
| QT : 408 |
| QTc: 424 |
| --Axes-- |
| P : 52 |
| QRS: 10 |
| T : 35 |

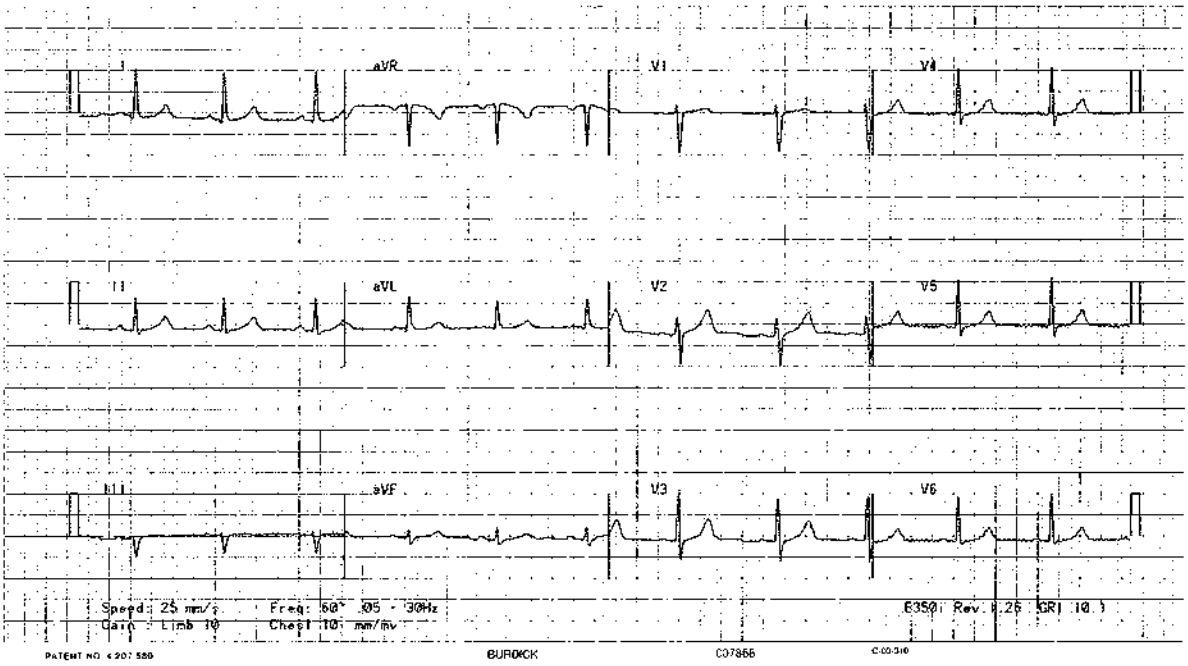
SINUS RHYTHM
WITHIN NORMAL LIMITS

SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **

A

RESTING ECG

AUTO MODE, 3-CH FORMAT



Name: DOE, JANE
ID : 112233445566
Date: 11/09/93 Time: 11:53
Age : 40 Sex : FEMALE
Hgt : 65 IN Wgt : 100 LBS
Medl: MEDICATION UNKNOWN
Med2:
Cc11: ISCHEMIA
Cc12:
Cmnt:

| Vent rate: 69 |
| --Durations-- |
| P : 102 |
| QRS: 90 |
| --Intervals-- |
| PR : 158 |
| QT : 408 |
| QTc: 424 |
| --Axes-- |
| P : 52 |
| QRS: 10 |
| T : 35 |

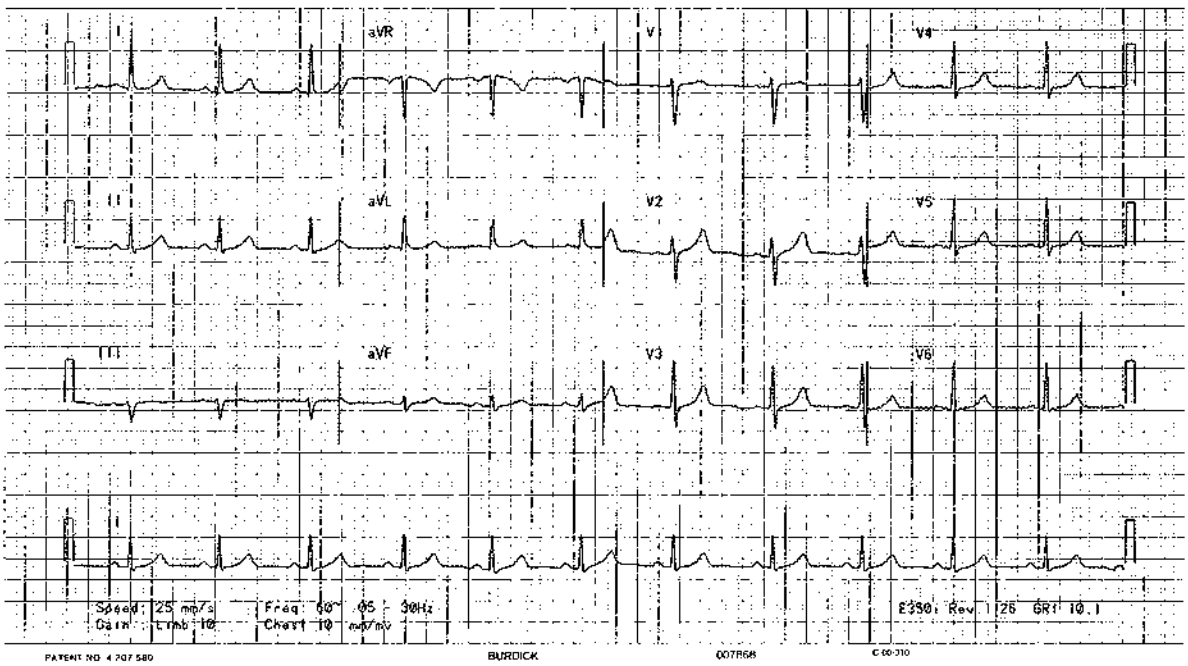
SINUS RHYTHM
WITHIN NORMAL LIMITS

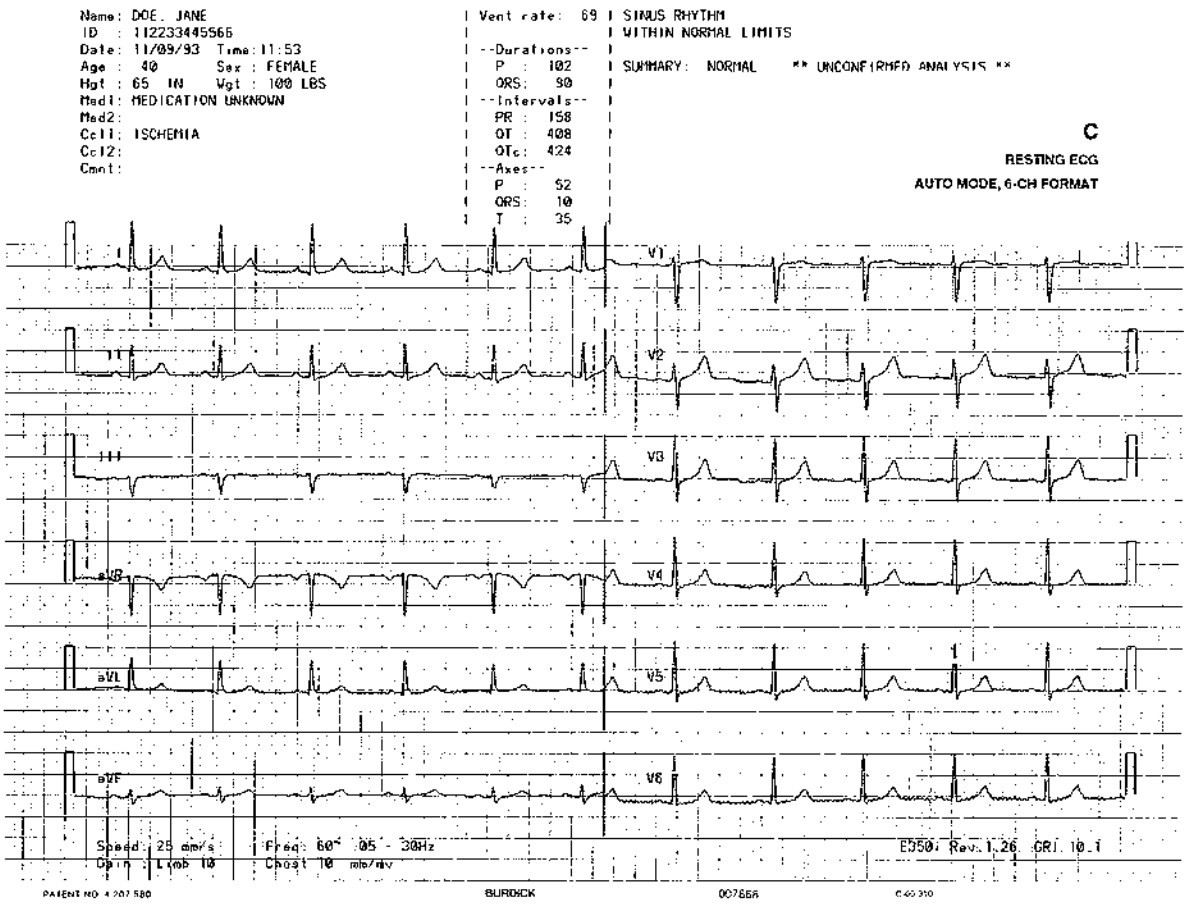
SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **

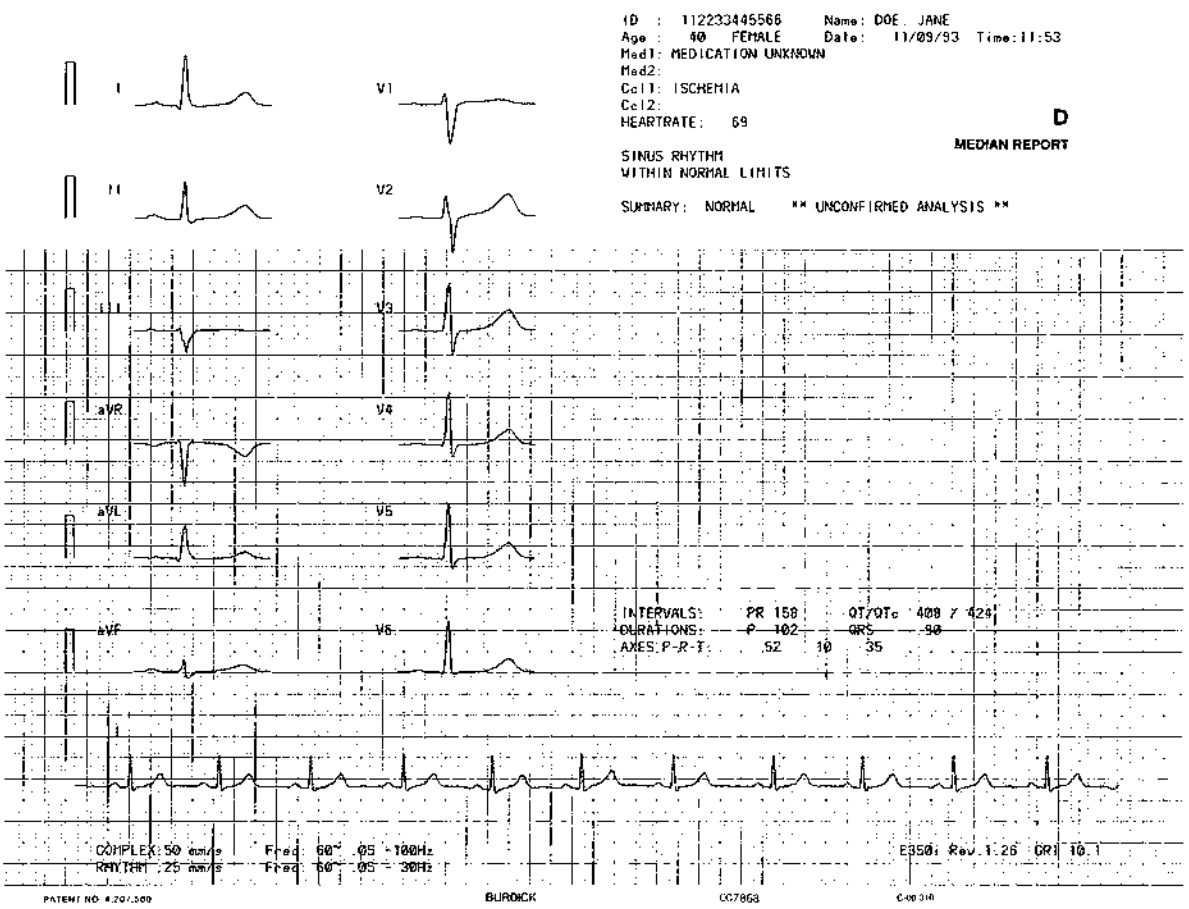
B

RESTING ECG

AUTO MODE, 4-CH FORMAT




Name: DOE, JANE
ID : 112233445566
Date: 11/09/93 Time:11:53
Age : 40 Sex : FEMALE
Hgt : 65 IN Wgt : 100 LBS
Med1: MEDICATION UNKNOWN
Med2:
Cc11: ISCHEMIA
Cc12:
Cmnt:
Vent rate: 69
--Durations--
P : 102
QRS: 90
--Intervals--
PR : 158
QT : 408
QTc: 424
--Axes--
P : 52
QRS: 10
T : 35
SINUS RHYTHM
WITHIN NORMAL LIMITS
SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **
C
RESTING ECG
AUTO MODE, 6-CH FORMAT
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
Speed: 25 mm/s Freq: 60~ .05 - 30Hz
Gain : Limb 10 Chest 10 mV/mV
E350; Rev.1.26 GRI 10.1
BURDICK


ID : 112233445566 Name: DOE, JANE
Age : 40 FEMALE Date: 11/09/93 Time:11:53
Med1: MEDICATION UNKNOWN
Med2:
Cc11: ISCHEMIA
Cc12:
HEARTRATE: 69
SINUS RHYTHM
WITHIN NORMAL LIMITS
SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **
D
MEDIAN REPORT
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
INTERVALS: PR 158 QT/QTc 408 / 424
DURATIONS: P 102 QRS 90
AXES P-R-T 52 10 35
COMPLEX: 50 mm/s Freq: 60~ .05 -100Hz
RHYTHM : 25 mm/s Freq: 60~ .05 - 30Hz
E350; Rev.1.26 GRI 10.1
BURDICK

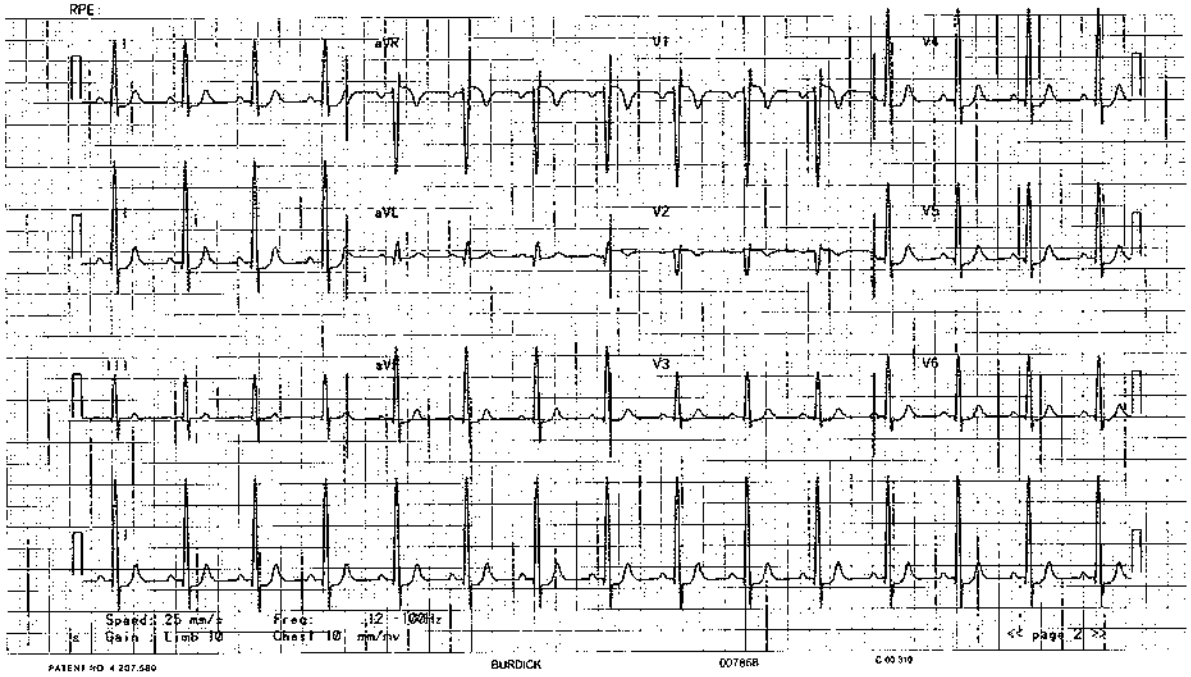
Name: DOE, JANE
ID : 112233445566
17:29 09 11 93
Prot: BRUCE
Phase: WARMUP
ETT: 0:00
Rate: 90
BP:
Stage: 0
Speed: 1.7
%Elev: 0.0
RPP:
METS:
RPE:

S-T Measurements at 78ms post-J

	Lev	Slo		Lev	Slo		Lev	Slo		Lev	Slo
I	-0.5	0.0	aVR	0.4	-0.2	V1	0.6	-0.2	V4	-0.6	0.0
II	-0.6	0.0	aVL	-0.2	0.0	V2	0.1	-0.1	V5	-0.5	0.0
III	-0.2	-0.1	aVF	-0.4	0.0	V3	-0.4	0.0	V6	-0.5	0.0

E

STRESS MODE; WARM-UP PHASE



PATENT NO 4,207,580 BURDICK 007868 C-00 310

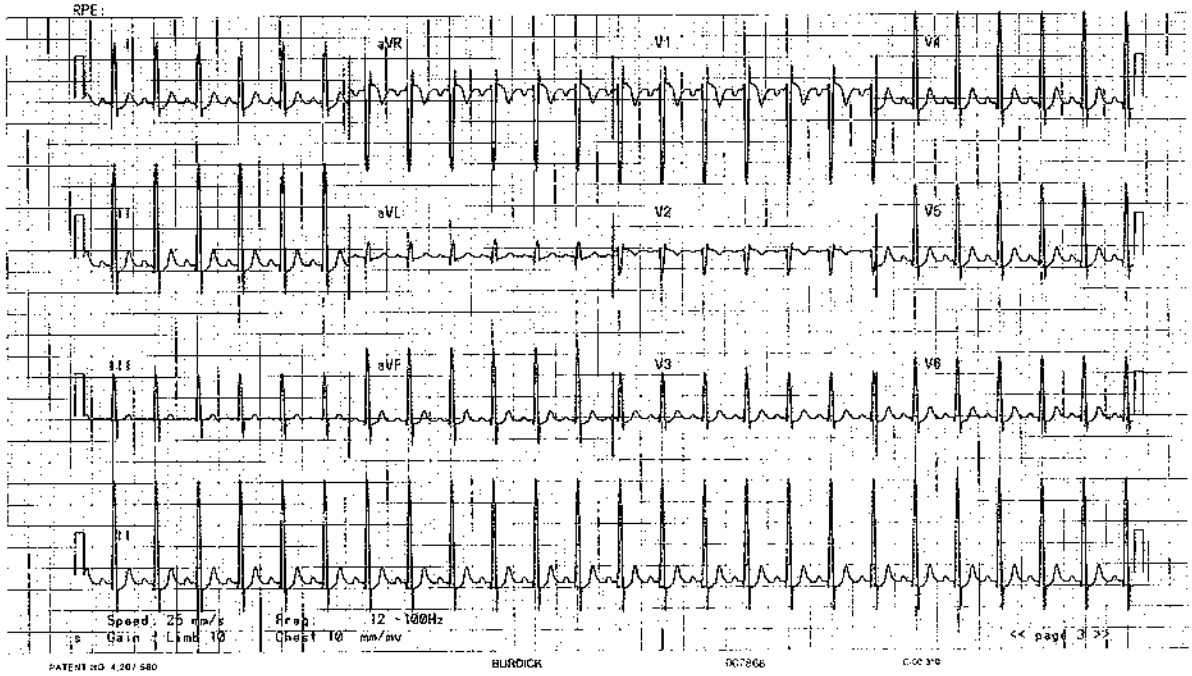
Name: DOE, JANE
ID : 112233445566
17:29 09 11 93
Prot: BRUCE
Phase: EXERCISE
ETT: 0:27
Rate: 150
BP:
Stage: 1
Speed: 1.7
%Elev: 10.0
RPP:
METS: 0.0
RPE:

S-T Measurements at 78ms post-J

	Lev	Slo		Lev	Slo		Lev	Slo		Lev	Slo
I	0.5	0.6	aVR	-0.6	-0.9	V1	-0.5	-1.0	V4	0.5	0.8
II	0.5	0.8	aVL	0.4	0.2	V2	-0.6	-0.4	V5	0.5	0.8
III	0.6	0.1	aVF	0.5	0.5	V3	0.5	0.5	V6	0.5	0.6

F

STRESS MODE; EXERCISE PHASE



PATENT NO 4,207,580 BURDICK 007868 C-00 310

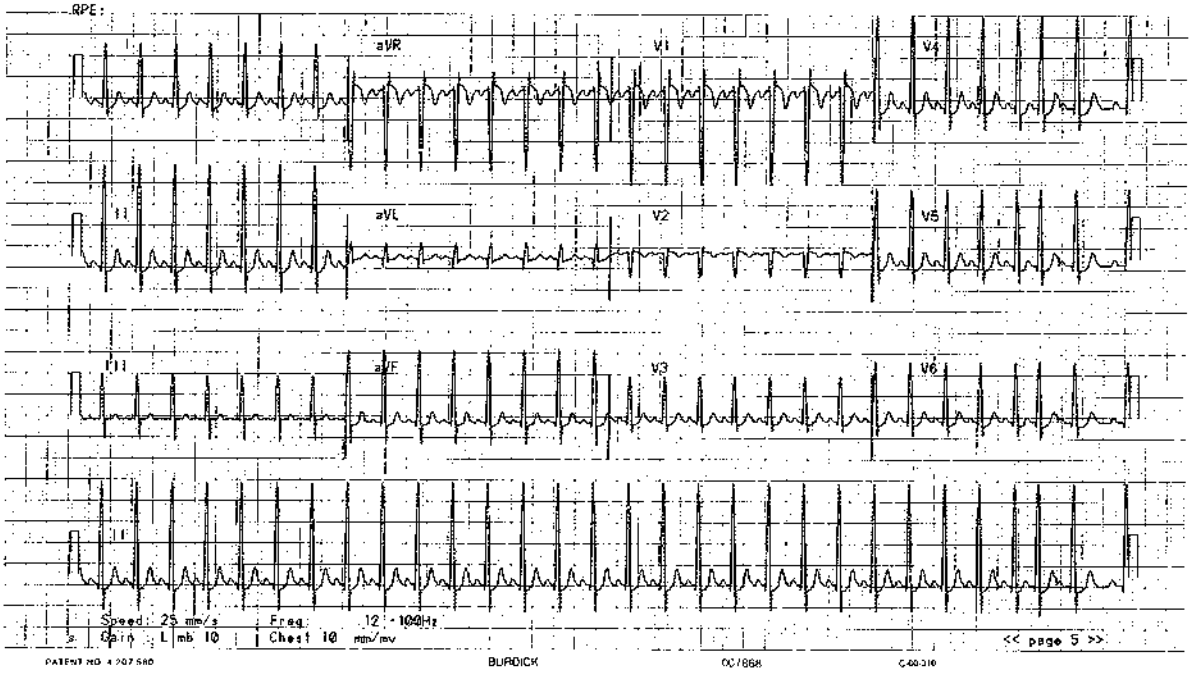
Name: DOE, JANE
ID : 112233445566
17:30 09 11 93
Prot: BRUCE
Phase: MAX EXERCISE
ETT: 1:24
Rate: 180
BP:
Stage: 4
Speed: 4.2
%Elev: 16.0
RPP:
METS: 1.4
RPE:

S-T Measurements at 78ms post-J

	Lev	Slo		Lev	Slo		Lev	Slo		Lev	Slo
I	2.5	0.9	aVR	-2.7	-1.2	V1	-2.6	-1.4	V4	2.5	1.2
II	2.5	1.1	aVL	0.7	0.3	V2	-1.0	-0.4	V5	2.6	1.0
III	1.1	0.1	aVF	2.4	0.6	V3	1.9	0.6	V6	2.4	0.8

G

STRESS MODE; MAXIMUM EXERCISE LEVEL



PATENT NO. 4 207 580 BURDICK 007868 C-00-310

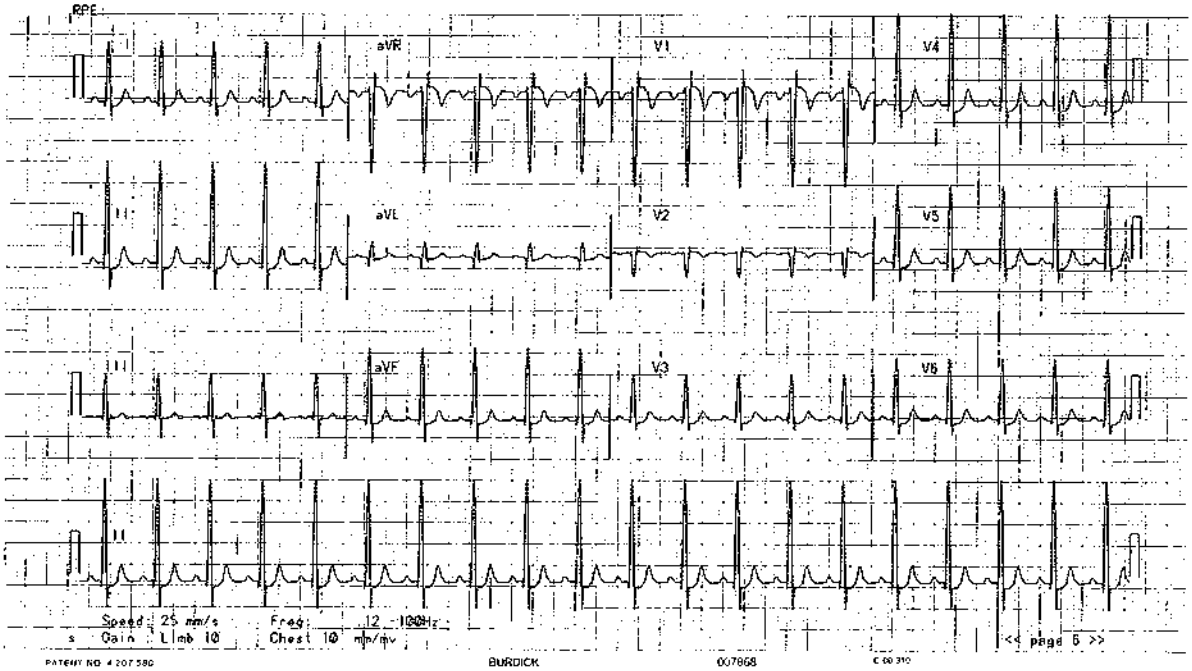
Name: DOE, JANE
ID : 112233445566
17:31 09 11 93
Prot: BRUCE
Phase: RECOVERY
ETT: 1:02
Rate: 120
BP:
Stage: 99
Speed: 1.7
%Elev: 0.0
RPP:
METS:
RPE:

S-T Measurements at 78ms post-J

	Lev	Slo		Lev	Slo		Lev	Slo		Lev	Slo
I	1.3	0.4	aVR	-1.8	-0.6	V1	-2.0	-0.8	V4	1.8	0.6
II	1.8	0.6	aVL	0.0	0.1	V2	-0.3	-0.2	V5	1.6	0.5
III	0.4	0.1	aVF	1.0	0.3	V3	0.6	0.3	V6	1.0	0.4

H

STRESS MODE; RECOVERY PHASE



PATENT NO. 4 207 580 BURDICK 007868 C-00-310

Name: DOE, JANE
ID : 112233445566
Date: 11/09/93 Time:11:46
Age : 40 Sex : FEMALE
Hgt : 65 IN Wgt : 100 LBS
Med1: MEDICATION UNKNOWN
Med2:
Ccl1: ISCHEMIA
Ccl2:
Cmnt:

Vent rate: 69

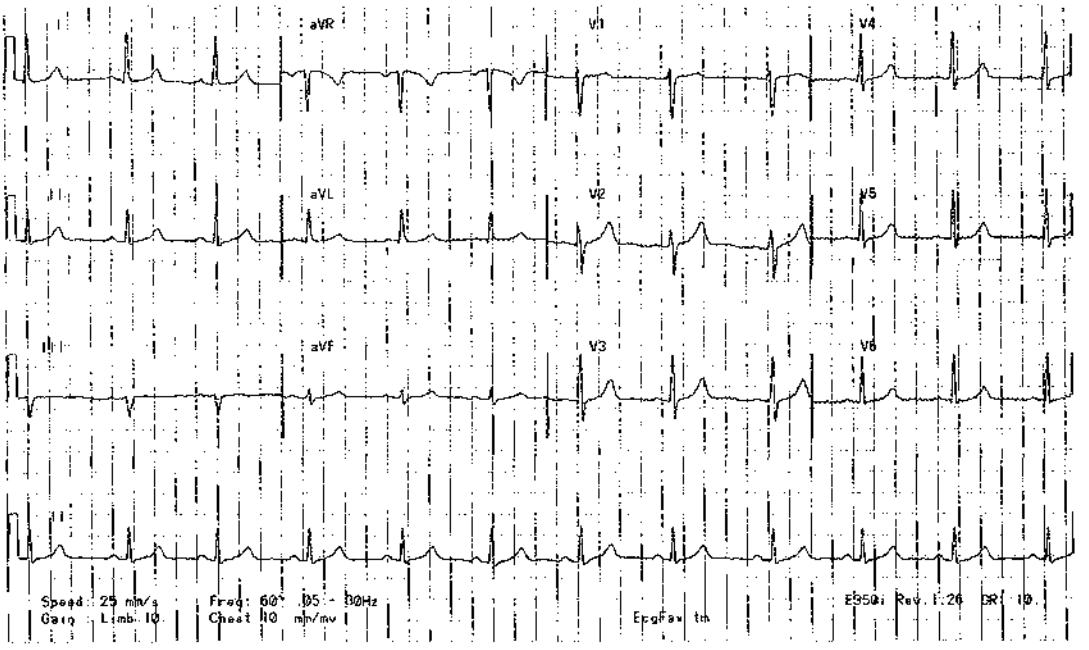
--Durations--
P : 106
QRS: 90
--Intervals--
PR : 156
QT : 412
QTc: 428
--Axes--
P : 50
QRS: 11
T : 36

SINUS RHYTHM
WITHIN NORMAL LIMITS

SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **

J

FAX OPTION; WITH GRID



Name: DOE, JANE
ID : 112233445566
Date: 11/09/93 Time:11:53
Age : 40 Sex : FEMALE
Hgt : 65 IN Wgt : 100 LBS
Med1: MEDICATION UNKNOWN
Med2:
Ccl1: ISCHEMIA
Ccl2:
Cmnt:

Vent rate: 69

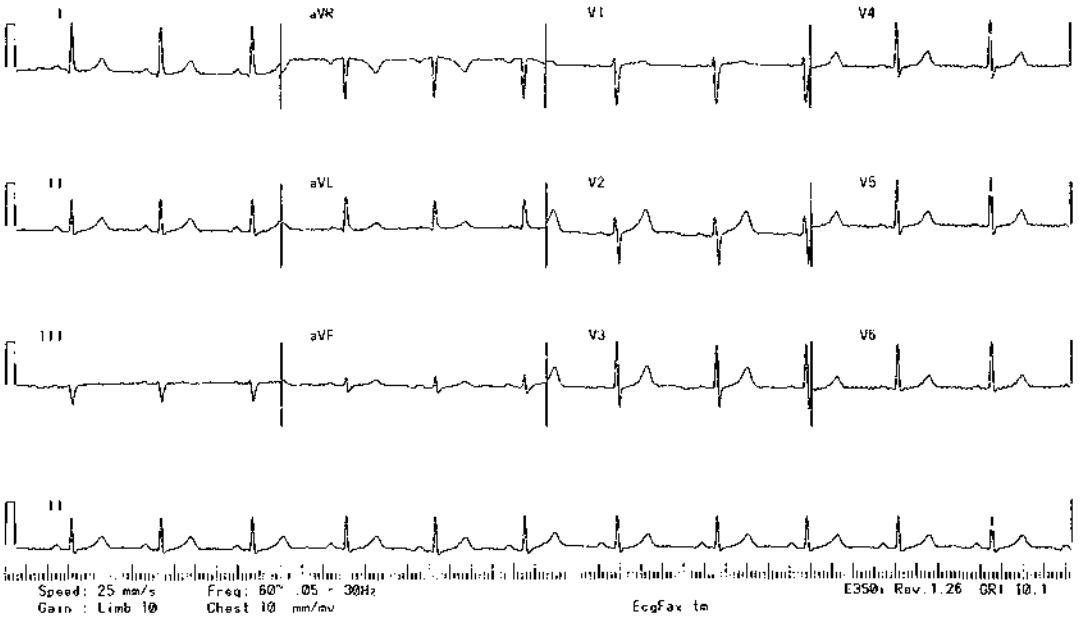
--Durations--
P : 102
QRS: 90
--Intervals--
PR : 158
QT : 408
QTc: 424
--Axes--
P : 52
QRS: 10
T : 35

SINUS RHYTHM
WITHIN NORMAL LIMITS

SUMMARY: NORMAL ** UNCONFIRMED ANALYSIS **

K

FAX OPTION; NO GRID



SECTION 7 Technical Data (Specifications)

Burdick E350i Interpretive Electrocardiograph (US Program)

Model No.	**101180** E350i without Internal FAX Modem **101187** E350i with Internal FAX Modem
Conforms to Standards:	CSA C22.2, No:125
Dimensions:	4.5" x 15.25" x 18" (114mm x 387mm x 457mm)
Weight:	19 lb. [8.6 kg]
Power Requirements:	115V (104-127V), 50/60Hz, 0.8A

Environmental Parameters:

Operating temperature	10deg.C to 40deg.C
Storage temperature	-34deg.C to 70deg.C
Relative humidity (Operating)	30 - 75% (non-condensing)
Relative humidity (Storage)	25 - 95% (non-condensing)
Atmospheric pressure (Operating)	645 mm Hg. to 795 mm Hg.
Atmospheric pressure (Operating)	375 mm Hg. to 795 mm Hg.

Acquisition parameters:

Standard Leads:	I, II, III, aVR, aVL, aVF,V1, V2, V3, V4, V5, V6.
Standard Leads: (three channel)	I aVR V1 V4 II aVL V2 V5 III aVF V3 V6
Cabrera Leads:	aVL II V1 V4 I aVF V2 V5 -aVR III V3 V6
Frequency response	Meets or exceeds IEC draft standards and AAMI standards for Diagnostic Electrocardiographic Devices (unfiltered); .05 - 30Hz, -3dB (filtered)
Input impedance	greater than 50Mohm
Electrode offset tolerance	± 300mV
A/D conversion	5μV/LSB
Sampling rate	500 per second

Printout:

Paper type	thermal
Chart speeds	5, 25 or 50mm/sec. ± 2%
Printout format	3, 4 or 6 channel auto or manual
Printout device	216mm, thermal dot array
Paper dimension	8.5 x 11in. Z-fold
Lead marking	lead identification imprinted on each lead trace above waveform

Safety:

Leakage currents	Patient, less than 10 microamps Chassis, below 100 microamps

Floating ECG input with defibrillator protection to 5,000V, 400 joules.

Subject to change without notice