PageWriter Trim

INSTRUCTIONS FOR USE

PHILIPS

Notice

About This Edition

Copyright

Warranty

WARNING

As with electronic equipment, **Radio Frequency** (RF) interference between the cardiograph and any existing RF transmitting or receiving equipment at the installation site, including electrosurgical equipment, should be evaluated carefully and any limitations noted before the equipment is placed in service.

Radio frequency generation from electrosurgical equipment and close proximity transmitters may seriously degrade performance.

WARNING

Like all electronic devices, this cardiograph is susceptible to electrostatic discharge (ESD). Electrostatic discharge typically occurs when electrostatic energy is transferred to the patient, the electrodes, or the cardiograph. ESD may result in ECG artifact that may appear as narrow spikes on the cardiograph display or on the printed report. When ESD occurs, the cardiograph ECG interpretation may be inconsistent with the physician interpretation.

Philips Medical Systems assumes no liability for failures resulting from RF interference between Philips Medical Systems medical electronics and any radio frequency generating equipment at levels exceeding those established by applicable standards.

CAUTION

The use of parts or accessories other than those approved by Philips Medical Systems may compromise product performance.

United States federal law restricts this device to use by or on the order of a physician.

THIS PRODUCT IS NOT INTENDED FOR HOME USE.

Medical Device Directive

The PageWriter Trim Cardiograph complies with the requirements of the Medical Device Directive 93/42/EEC and carries the $\mathsf{C}\mathsf{E}_{0123}$ mark accordingly.

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Safety Summary

Safety Symbols Marked on the Cardiograph

Symbol	Name	Description
	Attention	See *PageWriter Trim Instructions for Use* for information.
	Type CF	ECG physio isolation is type CF, defibrillator proof. Electrical leakage current is suitable for all patient applications including direct cardiac application.
	Alternating current	Indicates that the cardiograph is receiving alternating currents.
	On/Standby	Pressing the button with this symbol on it turns on the cardiograph or puts the cardiograph into Standby (power saving mode).
	Electrostatic Discharge	Do not touch exposed pins. Touching exposed pins can cause electrostatic discharge that can damage the cardiograph.
	Equipotential grounding post	Equipotential grounding post used for establishing common ground between instruments.
	Fuse	Cardiograph contains a 1.5 amp (250V) time-delay fuse.
	Input	The connector near this symbol receives an incoming signal.
SN	Serial Number	The number next to this symbol is the serial number of the cardiograph.
REF	Product model number	The number next to this symbol is the product model number of the cardiograph
IPX0	Entry of liquids	The cardiograph is not protected against splashing water.
IPX4	Entry of liquids	The PIM (Patient Interface Module) is protected against splashing water. Water splashed against the PIM from any direction shall have no harmful effect.

	AC power indicator light	When lit, indicates that AC power is on. The battery is charging when inserted into the cardiograph.

Safety Symbols Marked on the Cardiograph Packaging

Symbol	Description
	Keep dry.
	Ambient temperature range of 0 °C (32°·F) to 50 °C (122° F) (non-condensing) for transport and storage.
	Atmospheric pressure range of 466 hPa to 1014 hPa for transport and storage.
	Relative humidity range of 25% to 80% (non-condensing) for transport and storage.
	Move and store packaging this end up.
	Fragile.
	Sealed lead acid battery. Do not dispose of in trash. Follow local regulations for disposing of as small chemical waste.
	Recycle the packaging materials after use.

Conventions Used in the Instructions for Use

WARNING	**Warning statements describe conditions or actions that may result in personal injury or loss of life.**

CAUTION	Caution statements describe conditions or actions that may result in damage to equipment or software.

NOTE   Notes contain additional important information about a topic.

TIP   A Tip contains suggested information on using a particular feature.

Menu item **Button name**	Menu items and button names appear in a bold no-serif font. *Example:* Highlight the **Config** button.

Important Patient and Safety Information

The PageWriter Trim cardiograph isolates all connections to the patient from electrical ground and all other conductive circuits in the cardiograph. This reduces the possibility of hazardous currents passing from the cardiograph through the patient's heart to ground, and from other equipment connected to the patient passing through the leads into the cardiograph to ground.

WARNING	**Failure to follow these warnings could affect both patient and operator safety.**

- When operating the cardiograph on AC power, ensure that the cardiograph and all other electrical equipment connected to or near the patient are effectively grounded.

- Use only grounded power cords (three-wire power cords with grounded plugs) and grounded electrical outlets. **Never** adapt a grounded plug to fit an ungrounded outlet by removing the ground prong. Use the equipotential post when redundant earth ground is necessary according to IEC 60601-1-1.

- If a safe ground connection is not ensured, operate the cardiograph on battery power only.

- The use of equipment that applies high frequency voltages to the patient (including electrosurgical equipment and some respiration transducers) is not supported and may produce undesired results. Disconnect the patient data cable from the cardiograph, or detach the leads from the patient prior to performing any procedure that uses high frequency surgical equipment.

- Do not perform ST analysis on the R/T ECG screen display or on Rhythm reports when the 0.5 Hz Baseline Wander filter is applied.

- If abnormal ECG data appears on the printed report, and the abnormal data does not have a physiological origin, perform the printer diagnostic test to assess printer performance (see page 7-13).

- When printing a Rhythm report, there may be a slight delay before the Rhythm report begins to print on the cardiograph. Rhythm printing is not completed in real-time.

- Pace pulse tick marks will not print on an Auto report that uses simultaneous acquisition.

WARNING **Do not touch accessible connector pins and the patient simultaneously.**

Electrical shock hazard. Keep cardiograph, Patient Interface Module (PIM) and all cardiograph accessories away from liquids. Do not immerse cardiograph, PIM, or other accessories in any liquids.

- Periodically inspect the patient data cable, lead wires, and AC power cord for any worn or cracked insulation to ensure that no inner conductive material is exposed. Discard worn accessories and replace them only with Philips Medical Systems accessories (see page 7-20).

- Keep the patient data cable away from power cords and any other electrical equipment. Failure to do so can result in AC power line frequency interference on the ECG trace.

- The Philips Medical Systems patient data cable (supplied with cardiograph) is an integral part of the cardiograph safety features. Use of any other patient data cable may compromise defibrillation protection, degrade cardiograph performance, and may result in distorted ECG data.

- Only qualified personnel may service the cardiograph or may open the cardiograph housing to access internal cardiograph components. Do not open any covers on the cardiograph. There are no internal cardiograph components that are serviced by the operator.

- Do not use this cardiograph near flammable anesthetics. It is not intended for use in explosive environments or in operating rooms.

- Do not touch the patient, the patient data cable, any unused patient leads, or the cardiograph during defibrillation. Death or injury may occur from the electrical shock delivered by the defibrillator.

- The PageWriter Trim I is not recommended for diagnostic cardiograph use during defibrillation. It does not provide less than 10 seconds of real-time data.

- Always use electrode gel with reusable electrodes during defibrillation as ECG recovery will be greater than 10 seconds. Philips Medical Systems recommends the use of disposable electrodes at all times.

- Ensure that the electrodes or lead wires do not come in contact with any other conductive materials (including earth-grounded materials) especially when connecting or disconnecting electrodes to or from a patient.

- Connecting multiple medical electrical equipment to the same patient may pose a safety hazard due to the summation of leakage currents. Any combination of instruments should be evaluated by local safety personnel before being put into service.

- Portable medical equipment such as X-rays and MRI may produce electromagnetic interference that produces noise in the ECG signal. Move the cardiograph away from these potential sources of electromagnetic interference.

- Do not pull on the paper while an ECG report is being printed. This can cause distortion of the waveform and can lead to potential misdiagnosis.

- Only use the Philips Medical Systems AC power cord supplied with the cardiograph. Periodically inspect the AC power cord and AC power connector (rear of cardiograph, see figure 1-2 on page 1-8) to ensure that both are in a safe and operable condition. If the AC power cord or AC power connector is not in a safe or operable condition, operate the cardiograph on battery power and contact Philips Medical Systems for service.

- The cardiograph has been safety tested with the recommended accessories, peripherals, and leads, and no hazard was found when the cardiograph is operated with cardiac pacemakers or other stimulators.

- Do not connect any equipment or accessories to the cardiograph that are not manufactured or approved by Philips Medical Systems or that are not IEC 60601-1 approved. The operation or use of non-approved equipment or accessories with the cardiograph is not tested or supported, and cardiograph operation and safety are not guaranteed.

- The list of cables and other accessories with which Philips claims compliance with the emissions and immunity requirements of IEC standard 60601-1-2 are listed in "Supplies and Ordering Information" on page 7-20.

WARNING **When using additional peripheral equipment powered from an electrical source other than the cardiograph, the combination is considered to be a medical system. It is the responsibility of the operator to comply with IEC 60601-1-1 and test the medical system according to the requirements. For additional information contact Philips Medical Systems.**

WARNING **Do not use non-medical peripherals within 1.83 meters or 6 feet of a patient unless the non-medical peripherals receive power from the cardiograph or from an isolation transformer that meets medical safety standards.**

- Only install Philips Medical Systems software on the cardiograph. The installation or use of software not approved by Philips Medical Systems is strictly prohibited and cardiograph safety and performance are not guaranteed.

- Only use Philips Medical Systems replacement parts and supplies with the cardiograph. The use of non-approved replacement parts and supplies with the cardiograph is strictly prohibited. Cardiograph safety and performance are not guaranteed when non-approved replacement parts and supplies are used with the cardiograph.

- Manual measurements of ECG intervals and magnitudes should be performed on printed ECG reports only. Do not make manual measurements of ECG intervals and magnitudes on the R/T ECG display since these ECG representations are scaled.

- Only use patient electrodes that are approved by Philips Medical Systems. The use of non-approved patient electrodes may degrade cardiograph performance.

- The Philips Medical Systems warranty is applicable only if you use Philips Medical Systems approved accessories and replacement parts. See "Supplies and Ordering Information" on page 7-20 for more information.

- Before using the Patient Cable Arm with the cardiograph cart, properly install the counter balance on the cardiograph base.

- Only use the shielded LAN cable provided with the PageWriter Trim cardiograph, Philips Part Number 989803138021. Do not use any other LAN cables with the PageWriter Trim cardiograph. Use of unapproved LAN cables may result in radiated emissions that exceed the limit specified by CISPR11 Class B.

- The combined maximum weight that can be placed on the cardiograph cart shelf and the top surface of the cart cannot exceed 20 kg (44 lbs). Do not place more than the specified weight on the cardiograph top surface and shelf.

- Do not connect any device to the RS-232 port on the rear of the cardiograph when the patient data cable is connected to a patient.

- There are no cardiograph parts that can be sterilized.

- The cardiograph is not intended for direct, or invasive cardiac monitoring purposes.

- Excessive, repetitive use of the cardiograph keyboard and the cardiograph Trim Knob may result in a risk of developing carpal tunnel syndrome.

- Ensure that the patient data cable is tucked away from the cardiograph cart wheels when transporting the cardiograph. Ensure that the patient data cable does not present a hazard when pushing the cardiograph cart.

The PageWriter Trim Cardiograph

Intended Use

The intended use of the cardiograph is to acquire multi-channel ECG signals from adult and pediatric patients from body surface ECG electrodes and to record, display, analyze, and store these ECG signals for review by the user. The cardiograph is to be used in healthcare facilities by trained healthcare professionals. Analysis of the ECG signals is accomplished with algorithms that provide measurements, data presentations, graphical presentations, and interpretations for review by the user.

The interpreted ECG with measurements and interpretive statements is offered to the clinician on an advisory basis only. It is to be used in conjunction with the clinician's knowledge of the patient, the results of the physical examination, the ECG tracings, and other clinical findings.

A qualified physician is asked to overread and validate (or change) the computer-generated ECG interpretation.

Indications for Use

The cardiograph is to be used where the clinician decides to evaluate the electrocardiogram of adult and pediatric patients as part of decisions regarding possible diagnosis, potential treatment, effectiveness of treatment, or to rule out causes for symptoms.

The Philips 12-Lead Algorithm

The PageWriter Trim Cardiograph software uses the Philips 12-Lead Algorithm. The algorithm in the software analyzes the morphology and rhythm on each of the 12 leads and summarizes the results. The set of summarized measurements is then analyzed by the clinically-proven ECG Analysis Program.

12-lead Reports may include or exclude ECG measurements, reasons, or analysis statements.

Intended Use

The intended use of the Philips 12-Lead Algorithm is to analyze multi-channel ECG signals from adult and pediatric patients with algorithms that provide measurements, data presentations, graphical presentations, and interpretations for review by the user.

The interpreted ECG with measurements and interpretive statements is offered to the clinician on an advisory basis only. It is to be used in conjunction with the clinician's knowledge of the patient, the results of the physical examination, the ECG tracings, and other clinical findings. A qualified physician is asked to overread and validate (or change) the computer-generated ECG interpretation.

Indications for Use

The Philips 12-Lead Algorithm is to be used where the clinician decides to evaluate the electrocardiogram of adult and pediatric patients as part of decisions regarding possible diagnosis, potential treatment, effectiveness of treatment, or to rule out causes for symptoms.

Getting Started

Welcome to the PageWriter Trim Cardiograph! With its intuitive operation, clearly labeled PIM and lead wires, and convenient cart, it is the ideal cardiograph for processing large volumes of ECGs quickly and easily.

The PageWriter Trim supports multiple ECG acquisition modes, display settings, and report formats. Signal quality indicators provide instant feedback to the user to help ensure a quality ECG each and every time.

This *PageWriter Trim Cardiograph Instructions for Use* provides comprehensive information on the cardiograph and all of its components. It is intended to be used with the other materials included in the PageWriter Trim Cardiograph Learning Kit.

NOTE   Read and complete the materials included in the PageWriter Trim Cardiograph Learning Kit before using the cardiograph. Read all Patient Safety information and pay close attention to all warnings and cautions. For more information, see "Important Patient and Safety Information" on page -iii.

PageWriter Trim Cardiograph Learning Kit

Philips Medical Systems provides detailed instructional and reference materials in the PageWriter Trim Learning Kit

The PageWriter Trim Learning Kit contains the *Getting Started Guide*, a Quick Help Card, and the User Documentation and Interactive Training CDs.

Figure 1-1   The PageWriter Trim Cardiograph Learning Kit
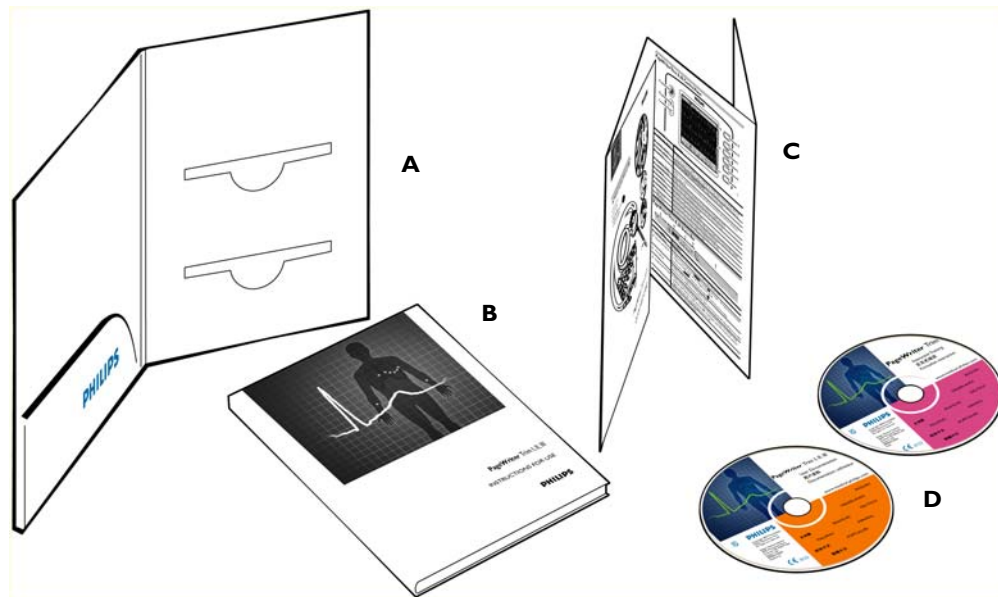
About the PageWriter Trim Learning Kit

- *Getting Started Guide* (**A**)

  This guide includes important information that must be read before operating the cardiograph. It includes an overview of cardiograph features and functions, assembly and setup instructions, how to configure the cardiograph, and how to order supplies.

- *Quick Help Card* (**B**) This card provides quick reference information about basic cardiograph features, lead placement, and signal quality indicators. It is also provided as a PDF file on the PageWriter Trim User Documentation CD.

- *PageWriter Trim Cardiograph Interactive Training Program* CD (**C**)

  The interactive training CD contains a computer-based training program about the proper recording of ECGs and how to operate the cardiograph.

  Use this program to train the entire ECG staff in the proper operation of the cardiograph.

To run the interactive training program:

▶ Insert the CD into a PC CD-ROM drive. The CD only works on PCs with a Windows operating system.
  The interactive training program starts automatically.

■ *PageWriter Trim User Documentation CD* **(D)**

The User Documentation CD contains the following files:

– *Philips 12-Lead Algorithm Physician's Guide*

This PDF file describes the Philips 12-Lead Algorithm, and lists all of the interpretive statements included in the 0A criteria.

– *PageWriter Trim Instructions for Use*

This PDF file includes complete information on all aspects of using and maintaining the cardiograph.

– *PageWriter Trim Quick Help Card*

A PDF version of the *Quick Help Card* provided in the Learning Kit.

– *PageWriter Trim Cardiograph XML Schema (English only)*

The schema for the XML ECG data exported from the PageWriter Trim cardiograph.

To view user documentation:

▶ Insert the CD into a PC CD-ROM drive. The CD only works on PCs with a Windows operating system.

The user documentation CD main menu opens automatically. Click on a blue button or the file name to open the file.

NOTE Adobe Acrobat Reader does not need to be installed on the PC to view the PDF files on the CD. If PDF files from the CD are saved to a PC hard drive, Acrobat Reader will need to be installed on the PC in order to view the files. For a free install go to: www.adobe.com.

1 If the menu does not automatically appear, open the CD in Windows Explorer.

2 Double-click the file **menu.pdf** on the CD. The PDF menu appears. Any of the files on the CD may be printed or saved to a PC hard drive.

Attaching the Cardiograph to the Cart

The PageWriter Trim cardiograph is available with an optional cart that includes a storage shelf and a holder for the PIM (Patient Interface Module).

CAUTION Follow the procedure below to ensure that the cardiograph is securely fastened to the cart before use.

To attach the cardiograph to the cart:

1 Align the front feet of the cardiograph with the front locking holes on the cart. Align the rear feet of the cardiograph with the rear screw holes on the cart. Lower the cardiograph onto the cart.
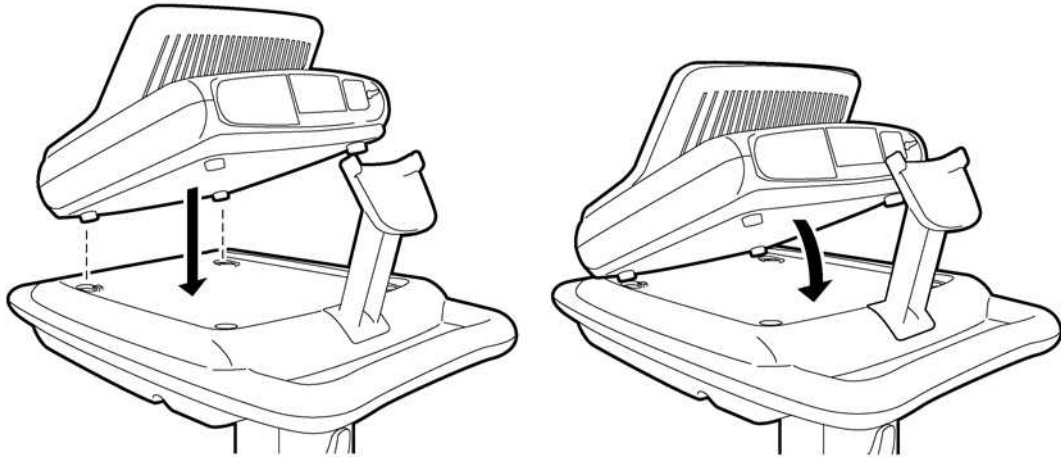
2 Slide the cardiograph back to lock the front and rear feet into place. Insert the screws through the bottom of the cart and through the screw holes. Tighten the screws with a Phillips head screwdriver.
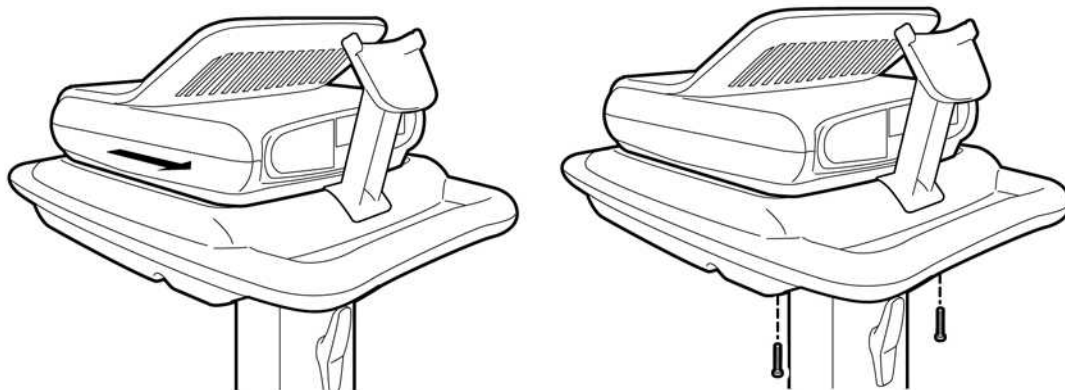
PageWriter Trim I Cardiograph Parts

The following sections show front, side, and rear views of the PageWriter Trim I cardiograph.

Figure 1-1   PageWriter Trim I Cardiograph and Cart (Front View)
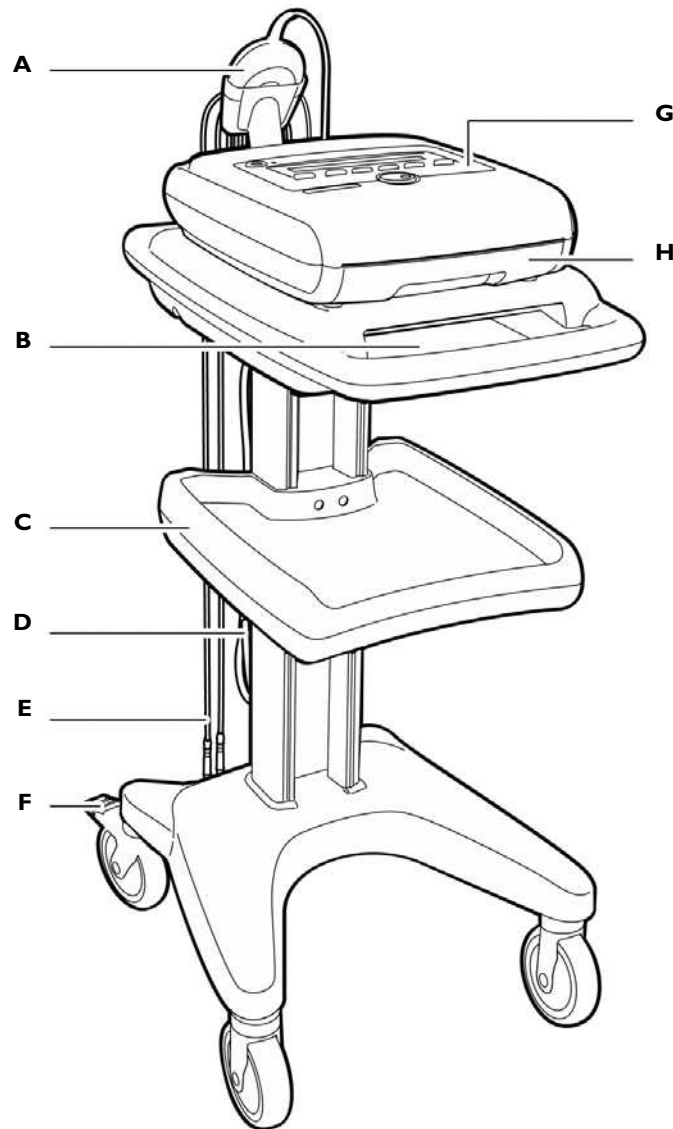
A	Patient Interface Module (PIM)	**E**	PIM Leads
B	Printer paper/report storage slot	**F**	Wheel Brake
C	Storage Shelf	**G**	Control Panel
D	AC Power Cord	**H**	Printer Paper Drawer

CAUTION   Always lock the wheel brake (**F**) when the cart is not in use. Press down on the wheel brake to set or to release the wheel brake.

Figure 1-2   PageWriter Trim I Cardiograph (Rear View)
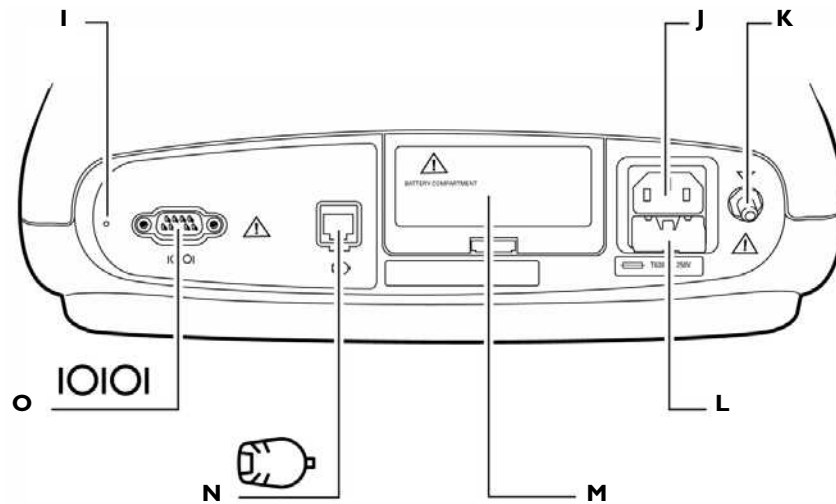
I	Reset Button	**M**	Battery Door
J	AC Power Cord Connector	**N**	PIM Connector
K	Equipotential Post	**O**	Serial Connector (not supported)
L	Fuse Door		

WARNING   **Do not connect a LAN cable connector to the PIM connector.**
Do not plug a telephone connector into the PIM connector.

PageWriter Trim II and III Cardiograph Parts

The following sections show front, side, and rear views of the PageWriter Trim II and III cardiographs.

Figure 1-1   PageWriter Trim II and III Cardiograph and Cart (Front View)
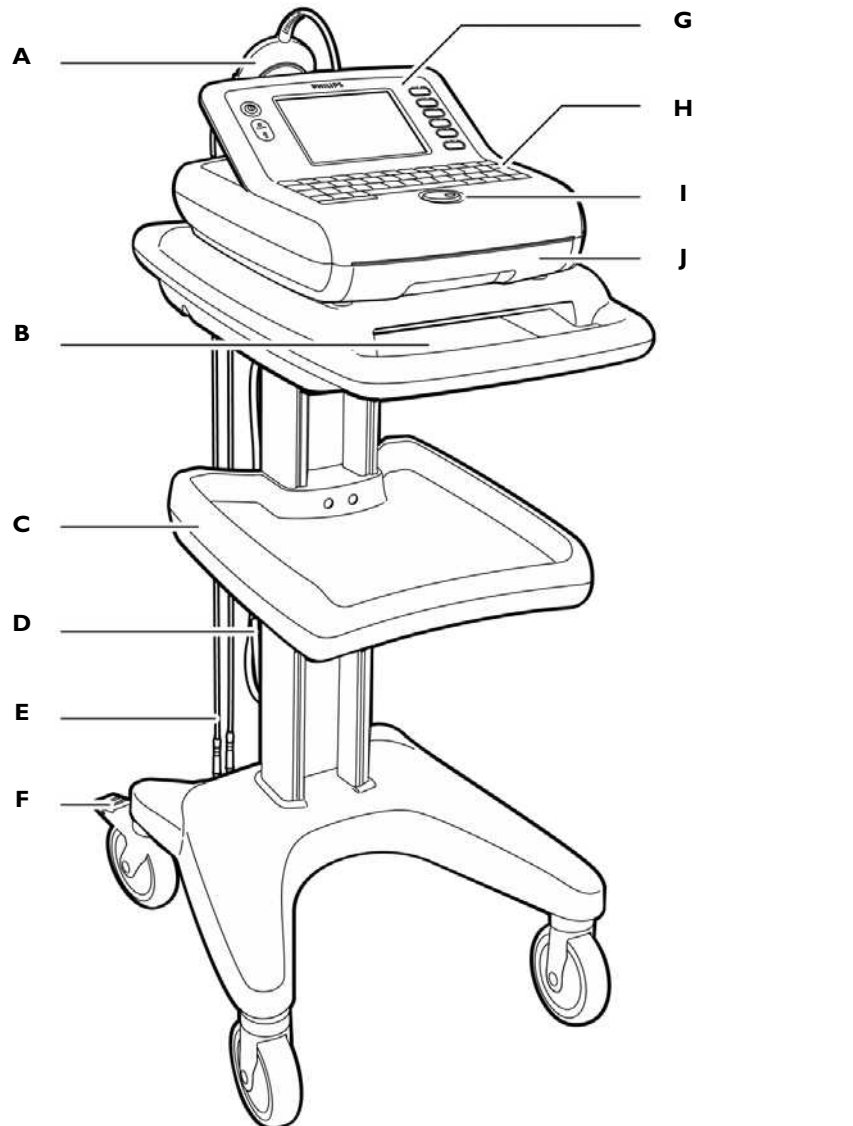
A	Patient Interface Module (PIM)	**F**	Wheel Brake
B	Printer paper/report storage slot	**G**	Control Panel
C	Storage Shelf	**H**	Keyboard
D	AC Power Cord	**I**	Trim Knob
E	PIM Leads	**J**	Printer Paper Drawer

CAUTION   Always lock the wheel brake (**F**) when the cart is not in use. Press down on the wheel brake to set or to release the wheel brake.

Figure 1-2   **PageWriter Trim II and III Cardiograph (Rear View)**
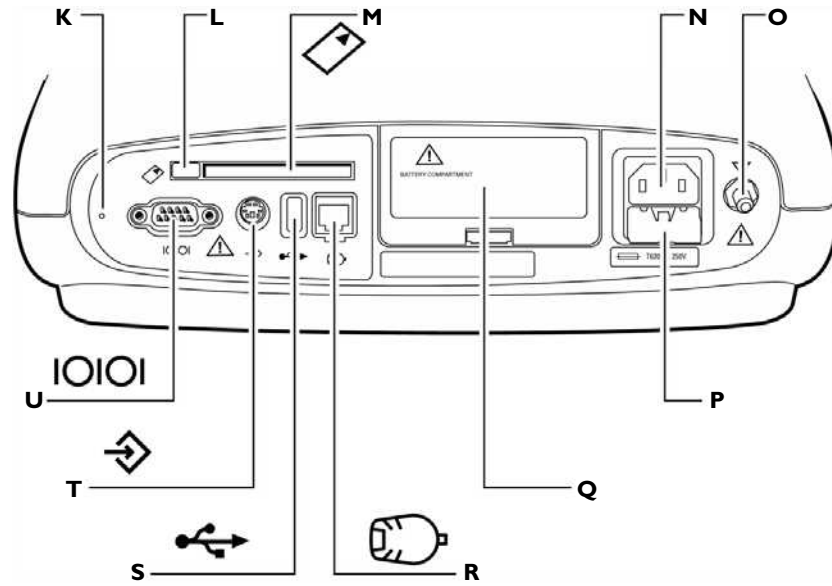
K	Reset Button	**Q**	Battery Door
L	PC Card Eject Button	**R**	PIM Connector
M	PC Card Slot	**S**	SmartCard Reader (USB) Connector
N	AC Power Connector	**T**	Barcode Reader or Magnetic Card Reader Connector
O	Equipotential Post	**U**	Serial Connector (not supported)
P	Fuse Door		

WARNING   **Do not connect the LAN cable connector into the PIM connector.**
Do not plug a telephone connector into the PIM connector.

Installing the Battery

The cardiograph is shipped with one removable battery. Install the battery before plugging the cardiograph into AC power.

Figure 1-3   Installing the Battery
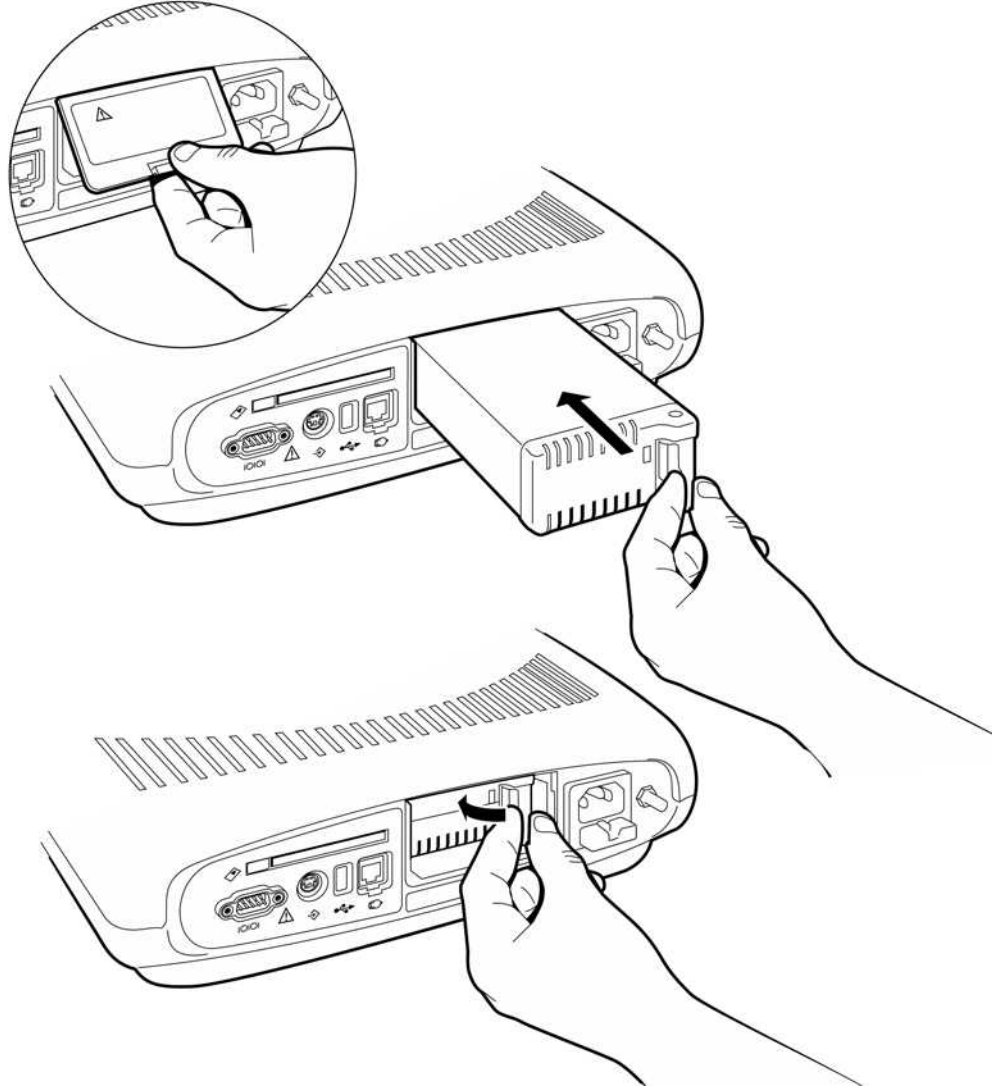
To install the battery:

1   Open the battery door on the rear of the cardiograph. Push the recessed tab in and pull it down to open the battery door.

2   Insert the battery into the compartment with the connector facing down and the pull tab facing out.

3   Push in the pull tab to lock it.

4   Reattach and close the battery door.

5   Attach the AC power cord to the rear of the cardiograph.

6   Plug the AC power cord into a grounded electrical outlet. Check that the green AC power indicator light is on (front of cardiograph).

7   Charge the battery for at least 24 hours before mobile use.

Battery Charging Indicator, PageWriter Trim II and III

On the PageWriter Trim II and III, a lightening bolt icon ( ) appears on the Battery Level Indicator on the Status Bar when the cardiograph is plugged into AC power and the battery is charging. Check the Battery Power Indicator on the Status Bar to ensure that the battery is fully charged, see "PageWriter Trim II and III Status Bar" on page 1-27. The cardiograph can operate on AC power while the battery is charging, but the battery will charge at a slower rate.

Battery Charging Indicator, PageWriter Trim I

On the PageWriter Trim I, the following battery icon ( ) flashes on the LCD display when the cardiograph is plugged into AC power and the battery is charging, see "LCD Display" on page 1-24. The battery level indicator displays the following battery icon ( ) when the battery is fully charged. The cardiograph can operate on AC power while the battery is charging, but the battery will charge at a slower rate.

Loading the Printer Paper

Replace the printer paper when a red stripe appears on the printed ECG report. Only use Philips Medical Systems replacement printer paper. For part number and ordering information, see page 7-20.

Tips for loading printer paper

- Always load less than 100 sheets of printer paper into the paper tray

- Ensure that the entire first page of the new paper roll is fully draped over the roller before closing the printer door

PageWriter Trim II and III:

- Ensure that the paper size configured for the cardiograph is the same size paper being loaded into the paper drawer (see page 5-18)

Figure 1-4   Loading Printer Paper
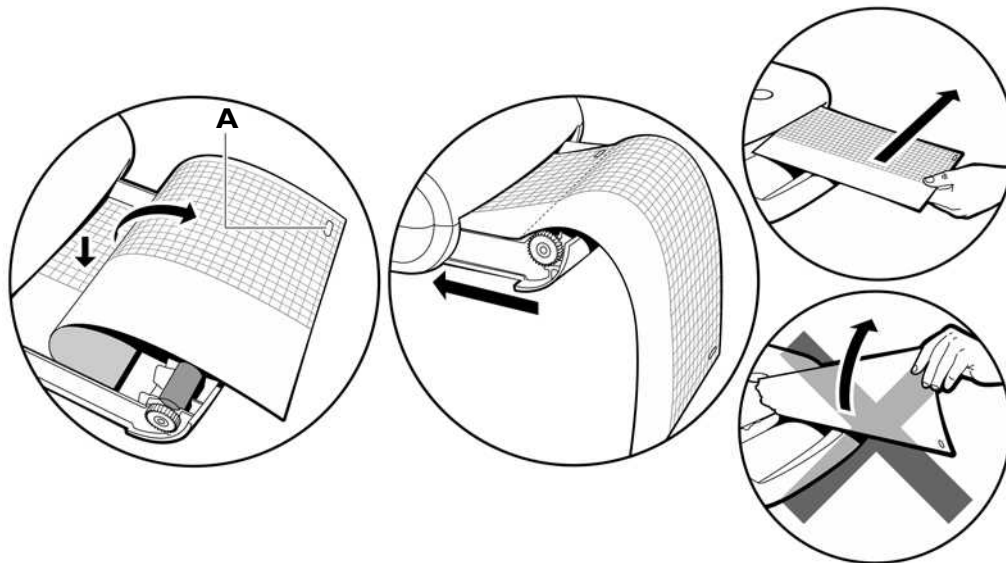
A   Paper sensor hole

To change the printer paper:

1   Open the paper drawer on the front of the cardiograph.

2   Insert a new pack of printer paper with the printed side facing up. Ensure that no more than 100 sheets are being inserted into the paper tray.

3   Ensure that the paper sensor hole (**A**) is positioned as shown in Figure 1-4.

4   Drape the entire first sheet over the roller. Ensure that the perforated edge of the paper aligns with the edge of the paper drawer.

5   Close the paper drawer.

6   Tear off the first sheet as shown in Figure 1-4.

Patient Interface Module (PIM)

The Patient Interface Module (PIM) is a hand-held device that connects to the cardiograph. The lead wires on the PIM attach to the electrodes placed on the patient. The exterior of the PIM is labeled and color-coded for quick and easy lead identification.

Figure 1-5   Patient Interface Module
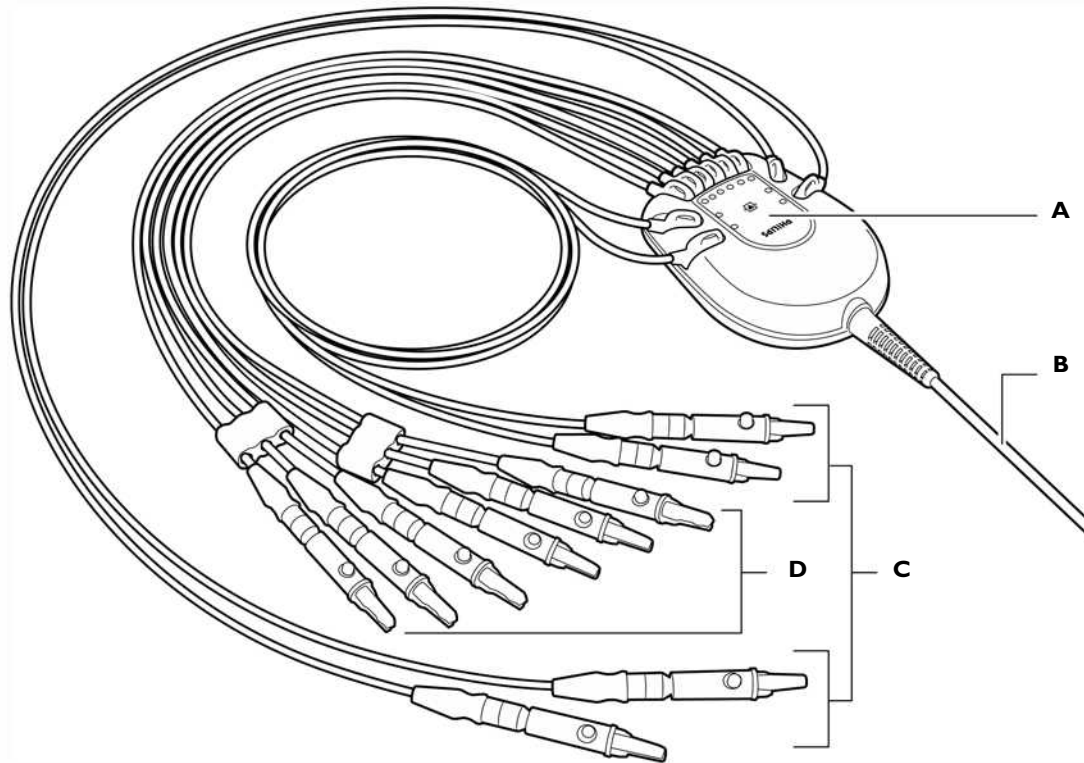
A	Lead Wire Labeling	**C**	Limb Lead Wires
B	Patient Data Cable	**D**	Precordial (Chest) Lead Wires

Inserting the Lead Wires into the PIM

The exterior of the PIM is color-coded for quick and easy lead identification. The lead wires that are included with the cardiograph must be inserted into the correct lead wire connector on the PIM.

Figure 1-6   PIM connector and lead wire labeling
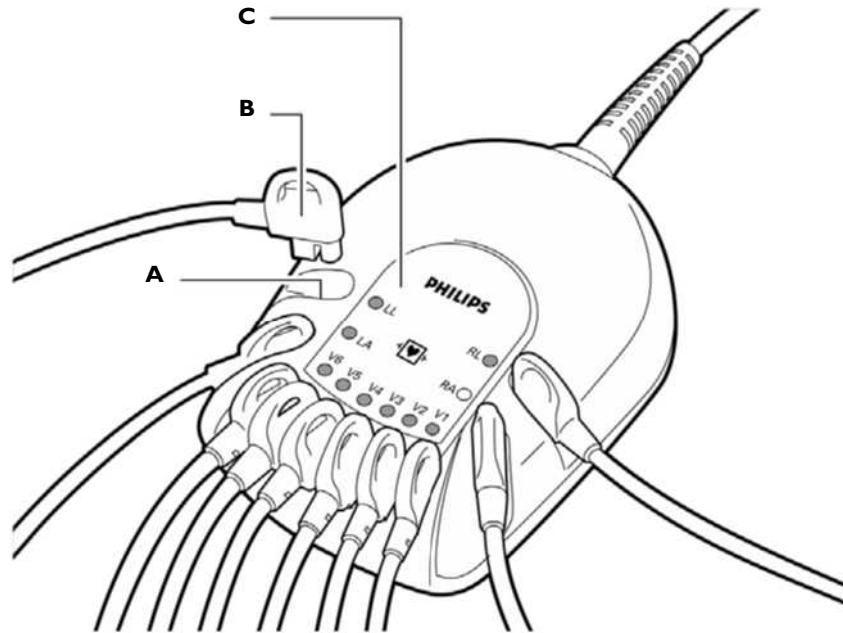
A Lead Wire Connector   **C** Lead Wire Labeling
B Lead Wire

To insert the lead wires into the PIM:

1   Locate the lead wires in the cardiograph packaging.

2   Match the lead wire to the correct lead wire connector on the PIM.

3   Insert each lead wire into the correct lead wire connector on the PIM.

4   Push down on the lead wire to ensure that there is no gap between the lead wire and the connector.
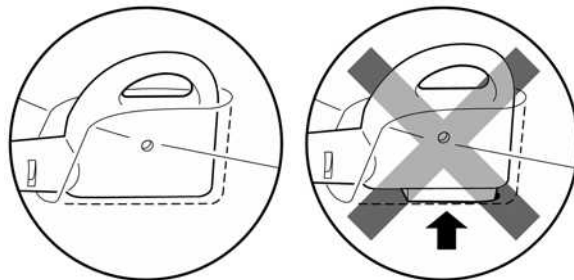
Connecting the PIM to the Cardiograph

Connect the patient data cable on the PIM to the PIM connector port (⬠) on the rear panel of the cardiograph.

To connect the PIM to the cardiograph:

▶   Connect the patient data cable to the PIM connector port on the rear of the cardiograph.
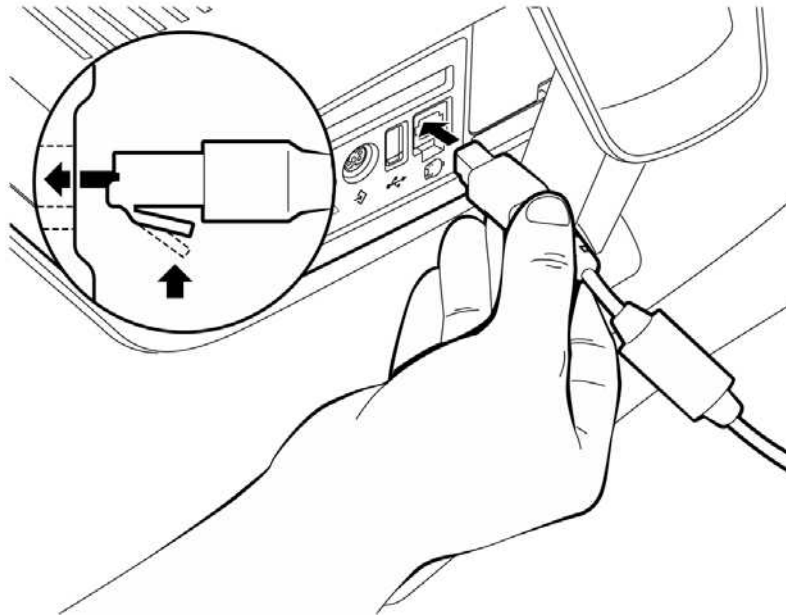
WARNING	**To ensure safety and prevent damage to the system, only connect the patient data cable to the PIM connector port on the rear of the cardiograph.**

Placing the PIM in the Holder

Place the PIM in the holder when not in use. The PIM holder is located on the rear of the optional cardiograph cart. Ensure that the lead wires are facing down.

Figure 1-7   Inserting the PIM into the holder
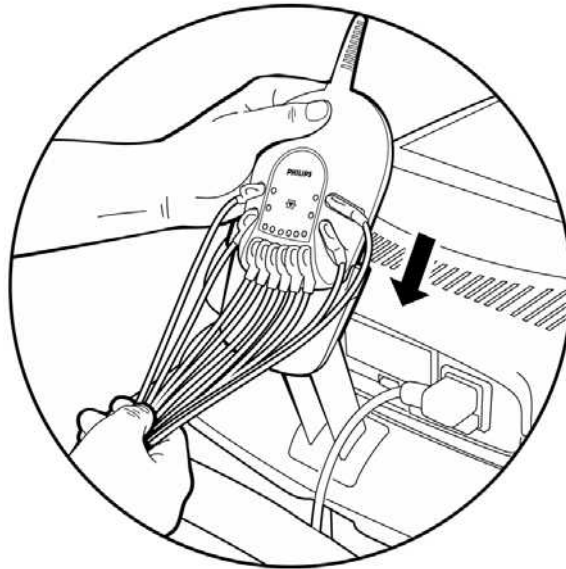
CAUTION	Ensure that the PIM patient data cable and lead wires do not drag on the ground or become tangled in the cart wheels.

Using the PC Card Slot

PageWriter Trim II and III only

The PC Card slot (rear of cardiograph) is used with the optional PC Card, LAN Card, or Modem Card. All of these are optional accessories available with the cardiograph and are inserted into the PC Card slot. For information on ordering any of these accessories, see "Supplies and Ordering Information" on page 7-20.

Using the PC Card

The PC Card is an optional accessory available with the cardiograph. The PC Card contains a 128 MB removable memory card that can be used to transfer Auto reports to and from the cardiograph. For information on transferring Auto reports, "Transferring Auto Reports to a TraceMaster ECG Management System" on page 4-9.

Figure 1-8   The PC Card
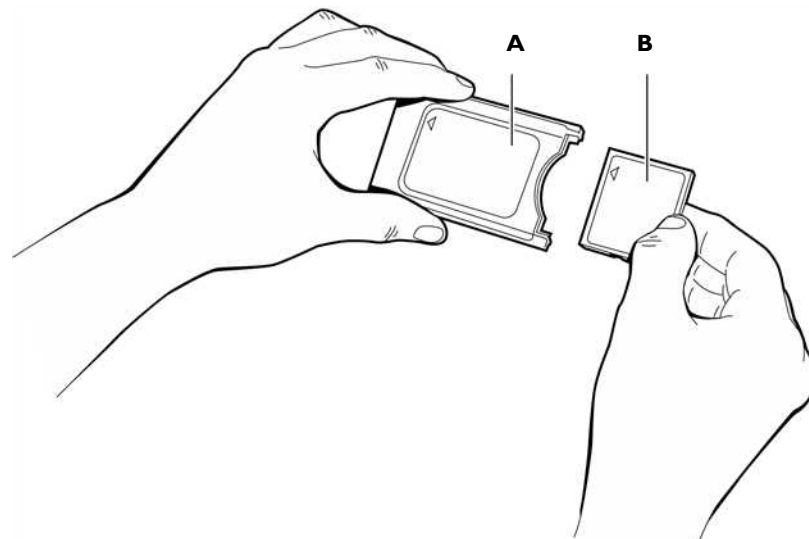
A   PC Card Adapter   **B**   128 MB Removable Memory Card

Using the Modem Card

The modem card is an optional accessory used with the cardiograph to fax Auto reports, or to transfer Auto reports by modem to a TraceMaster ECG Management System (version A.04.02 or higher) or to a TraceMasterVue ECG Management System (version A.01 or higher). For information on ordering the modem card, "Supplies and Ordering Information" on page 7-20.

The modem card used either as a fax or as a modem must be configured before initial use with the cardiograph, see page 5-24. For information on faxing reports or transferring reports by modem, see page 4-9.

Figure 1-9   The Modem Card
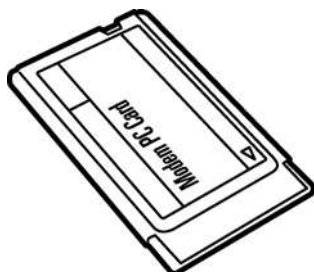
Using the LAN Card

The LAN Card is used with the cardiograph to provide a network connection between the cardiograph and a network. The LAN Card must be configured before using it with the cardiograph, see page 5-27. For information on ordering the LAN card, see "Supplies and Ordering Information" on page 7-20.

CAUTION   Only use the shielded LAN cable provided with the PageWriter Trim cardiograph. Do not use LAN cables with the cardiograph that have not been approved by Philips Medical Systems.

Figure 1-10   LAN Card
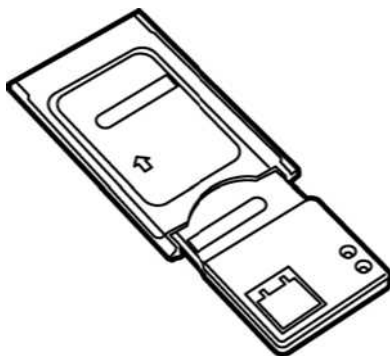
Inserting or Removing a PC Card

The PC Card, modem card, and LAN card are all inserted into the PC Card slot.

Figure 1-11   Removing the PC Card from the cardiograph
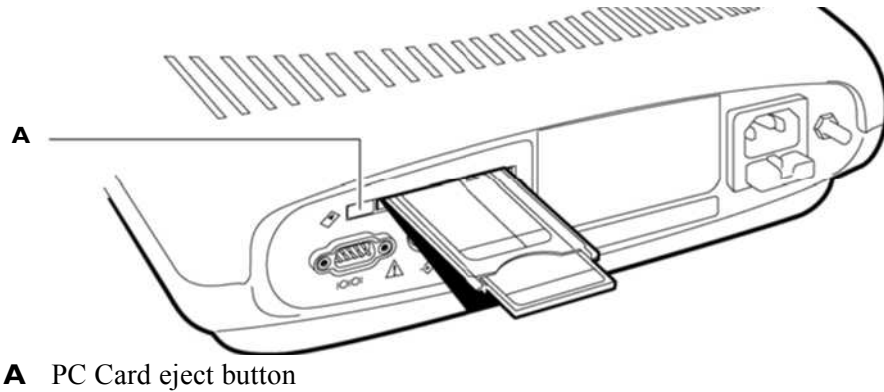
A   PC Card eject button

To insert or remove a card from the PC Card slot:

1   Insert the card into the PC Card slot (rear of cardiograph) and gently push it in.

2   Push the PC Card eject button to the left of the card slot to eject the card.

3   Pull out the card.

Using the Barcode Reader

PageWriter Trim II and III only

The barcode reader is an optional accessory available with the cardiograph. The barcode reader is used to quickly enter Patient ID information by scanning a barcode.

The barcode reader attaches to the barcode reader connector ( ) on the rear panel of the cardiograph. For information on ordering the barcode reader, see "Supplies and Ordering Information" on page 7-20.

Figure 1-12   The Barcode Reader
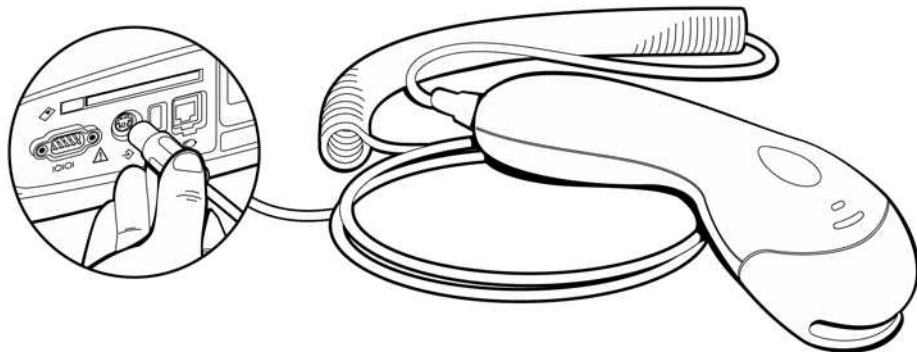
Using the Magnetic Card Reader

PageWriter Trim II and III only

The magnetic card reader is an optional accessory available with the cardiograph. The magnetic card reader is used to quickly enter Patient ID information. The Patient ID fields that are entered when a magnetic card is scanned are configurable, see page 5-35.

The magnetic card reader attaches to the magnetic card reader connector (➜) on the rear panel of the cardiograph. For information on ordering the magnetic card reader, see "Supplies and Ordering Information" on page 7-20.

Figure 1-13   The Magnetic Card Reader
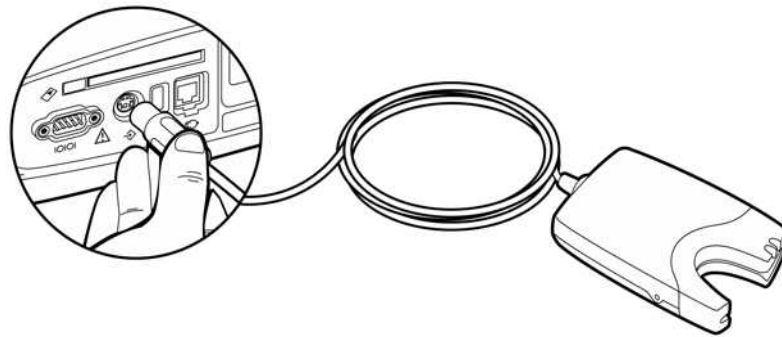
Using the SmartCard Reader

PageWriter Trim II and III only

The SmartCard Reader is an optional accessory available with the cardiograph. The SmartCard Reader is used to quickly enter Patient ID information.

The SmartCard Reader attaches to the USB connector (⊷) on the rear panel of the cardiograph. For information on ordering the SmartCard Reader, see "Supplies and Ordering Information" on page 7-20.

Figure 1-14   The SmartCard Reader
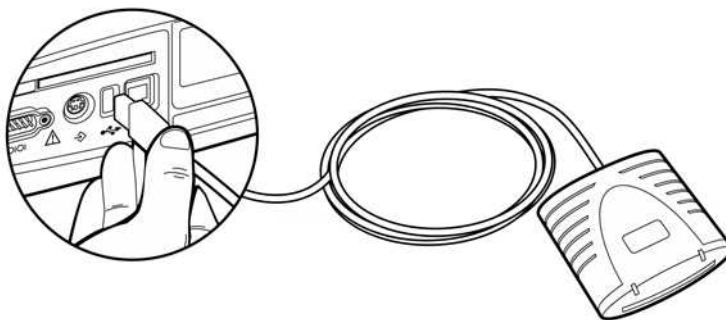
Powering On the Cardiograph

Ensure that the battery is inserted into the cardiograph before turning on AC power to the cardiograph. See "Installing the Battery" on page 1-9. The cardiograph runs on battery or on AC power. The battery must be inserted into the cardiograph at all times. The cardiograph printer will not function without the battery installed.

With the battery fully charged, the cardiograph will print up to 30 Auto ECGs or provide 30 minutes of continuous Rhythm printing. The green AC indicator light shows that the battery is charging when the cardiograph is plugged into AC power. Plug the cardiograph into AC power whenever possible.

To disconnect the cardiograph from AC power, unplug the AC power cord from the grounded electrical outlet.

Check the Battery Power Indicator on the Status Bar to ensure that the battery is fully charged before operating the cardiograph on battery power only. On the PageWriter Trim I the following icon (▉▉) displays on the LCD display to indicate that the battery is fully charged. On the PageWriter Trim II and III the following icon (▉▉▉▉) displays on the Status Bar to indicate that the battery is fully charged.

For information about PageWriter Trim II and III power management options, see "Using the On/Standby Button" on page 1-21.

A On/Standby button   **B** AC Power Indicator Light
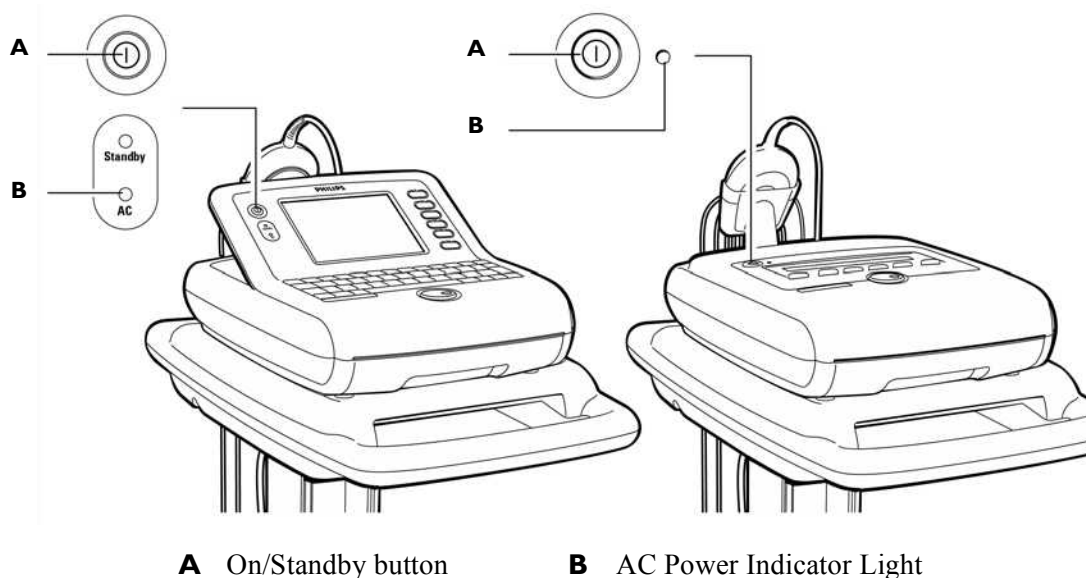
To turn on the cardiograph:

1   Plug the AC power cord into the AC power connector on the rear of the cardiograph.

2   Plug the AC power cord into a grounded electrical outlet with appropriate electrical ratings. The AC power indicator light on the front panel of the cardiograph is illuminated when the cardiograph is plugged into AC power.

3   Press the On/Standby or On button on the front of the cardiograph.

Using the On/Standby Button

PageWriter Trim II and III only

The On/Standby button is used to put the cardiograph into Standby and to shut off the cardiograph.

Table 1-1   Standby and Shut Down Description

Mode	Description
Standby	■ The cardiograph is in a "sleep" mode ■ The display screen is black ■ Patient ID information is not saved when the cardiograph is put into Standby ■ Temporary report settings are saved when the cardiograph is put into Standby ■ The battery charges when the cardiograph is plugged into AC power ■ The green Standby indicator light (front of cardiograph) is lit ■ The cardiograph returns to the previously viewed screen when taken out of Standby ■ Use between brief periods of inactivity to save battery power
Shut Down	■ The cardiograph is shut down ■ The display screen is black ■ The battery charges when the cardiograph is plugged into AC power ■ The cardiograph starts up from the reboot screen when turned on ■ Use for extended periods of cardiograph inactivity

TIP There are configurable features on the cardiograph that can be used to help prolong battery life (see page 5-18). Proper battery care and maintenance will also help to prolong battery life (see page 7-5).

To put the cardiograph into Standby:

▶ Press the On/Standby button. A message appears that the cardiograph is entering Standby. The green Standby indicator light (front of cardiograph) is lit. The battery is charging in Standby when the cardiograph is plugged into AC power.

NOTE The cardiograph cannot be put into Standby if the Patient ID screen is open or if the cardiograph is printing a report.

To exit Standby:

▶ Press the On/Standby button. The splash screen appears. The previously viewed screen appears.

To shut down the cardiograph:

▶ Press and hold the On/Standby button for 3 seconds. Release the button. A message appears that the cardiograph is shutting down.

To turn on the cardiograph:

▶ Press the On/Standby button. The cardiograph displays a series of startup screens and then the R/T (real-time) ECG screen displays.

Using the Trim Knob

All models of the PageWriter Trim cardiograph have a Trim Knob that is used to scroll through and select items on any display menu.

Figure 1-15   The Trim Knob
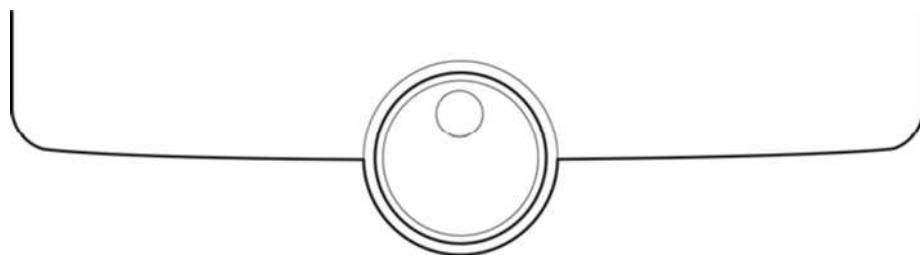
To use the Trim Knob:

1 Turn the Trim Knob left or right to scroll through the selections in a menu list.

2 Push the Trim Knob to select an item on the menu.

PageWriter Trim I Features

The PageWriter Trim I has an LCD display that shows all operating information. The buttons on the main panel of the cardiograph are used for all cardiograph functions. Simply select the buttons on the main panel to use the different functions on the cardiograph.

N O T E Complete the Interactive Training Program on CD before operating the cardiograph. The Interactive Training program includes instructional information on what an ECG is, patient preparation techniques, how to operate the cardiograph, and quality assessment techniques to ensure high-quality ECGs. For information on using the training program, see page 1-2.

Control Panel

The control panel contains all of the main functions on the cardiograph. For more information on any feature, see "The Patient Session" on page 2-1.

Figure 1-16   PageWriter Trim I Control Panel
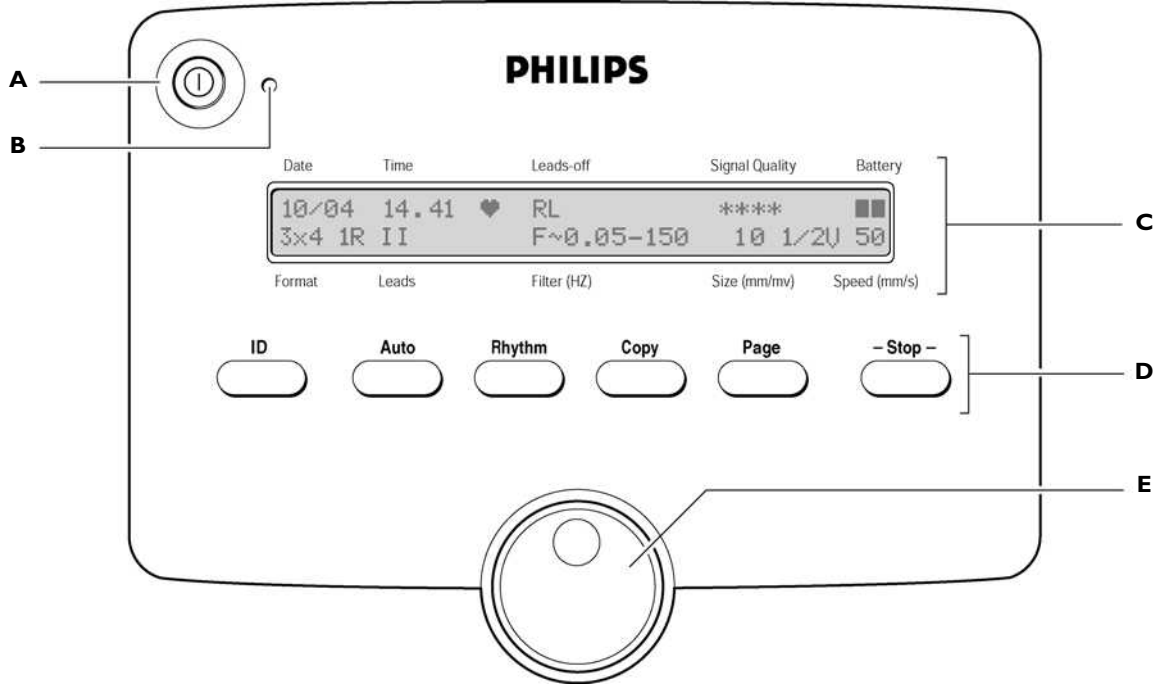
	A On/off button		**D** Function Buttons
	B AC power on indicator light		**E** Trim Knob
	C LCD Display		

LCD Display

The LCD display shows the current settings on the cardiograph.

Figure 1-17   PageWriter Trim I LCD Display
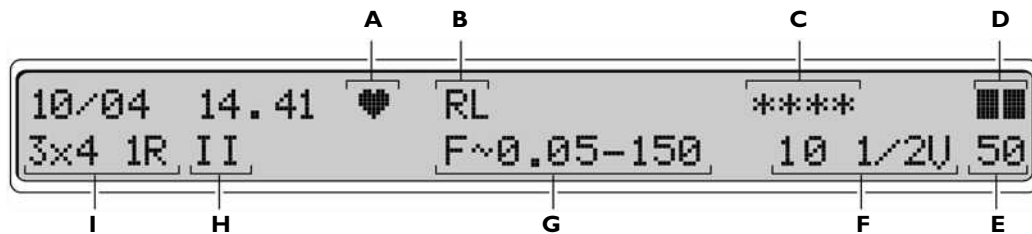
Table 1-2   PageWriter Trim I LCD Display

Label	Description
A	■ Heart Beat Detector ■ For more information, see page 2-8.
B	■ Leads Off Indicator ■ For more information, see page 2-8.
C	■ Signal Quality Indicator ■ For more information, see page 2-8.
D	■ Battery Level Indicator ■ For more information, see page 1-9.
E	Waveform Speed (mm/sec)
F	Waveform Size (mm/mV)
G	■ Filter Settings ■ For more information, see page 2-13.
H	■ Rhythm Lead ■ For more information, see page 2-27.
I	■ Report Format ■ For more information, see page 2-24.

Function Buttons

All of the functions on the PageWriter Trim I cardiograph are controlled by the function buttons located on the main panel of the cardiograph.

Figure 1-18   Function Buttons on PageWriter Trim I cardiograph
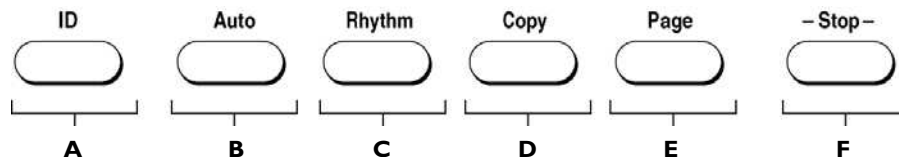
Table 1-3   Function Button description

Label	Button	Push button to...
A	ID	■ Enter Patient ID information (age, gender). ■ For more information, see page 2-18.
B	Auto	■ Take a 3x4, 1R Auto report. ■ For more information, see page 2-24.
C	Rhythm	■ Print out a continuous Rhythm report (3 or 6 leads) until the Stop button (**F**) is pressed. ■ For more information, see page 2-27.
D	Copy	Print out a copy of the last recorded Auto 12-lead report.
E	Page	Advance the printer paper to the beginning of the next page.
F	Stop	■ Stop the printing of a Rhythm report. ■ Return to the previous screen on the LCD display.

PageWriter Trim II and III Features

For more information on any feature, see "The Patient Session" on page 2-1.

Figure 1-19   PageWriter Trim II and III Control Panel
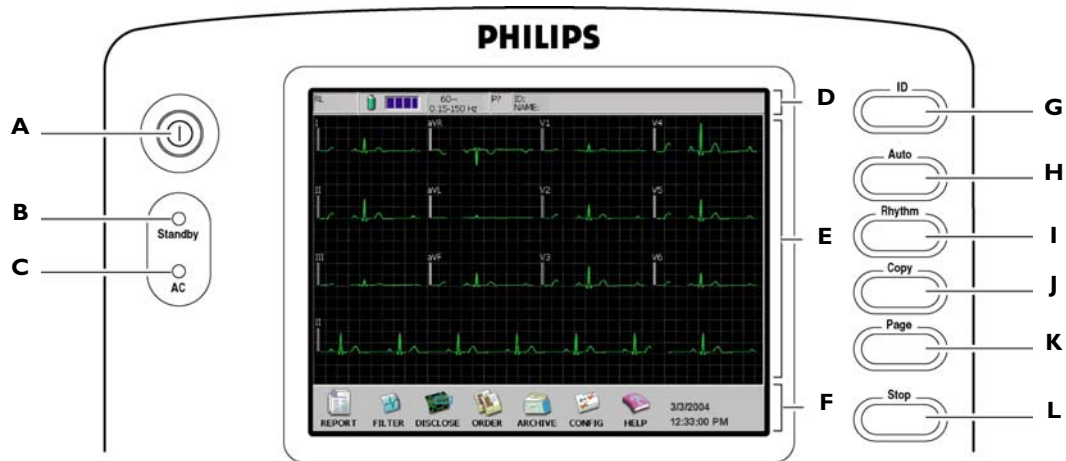
Table 1-4   PageWriter Trim II and III Control Panel

Label	Feature Name	Description
A	**On/Standby button**	■ Push to turn on the cardiograph or to put the cardiograph into Standby (power save) when the cardiograph is not in use. ■ Push and hold for 3 seconds, then release to shut down the cardiograph for extended periods of inactivity.
B	**Standby indicator**	When lit, the cardiograph is in Standby (power save) mode and the screen is black.
C	**AC Power Indicator**	When lit, the cardiograph is plugged into AC power.
D	**Status Bar**	■ Displays current cardiograph settings including: Leads off, battery level indicator, filters, pacing detection settings, and Patient name and ID. ■ For more information, see page 1-27.
E	**Waveform Display**	■ Displays real-time waveforms (waveforms are color-coded by signal quality on the PageWriter Trim III). ■ For more information, see page 2-10.
F	**Command Toolbar**	■ Buttons contain the major functions of the cardiograph, with the current date and time at the right. ■ For more information, see page 1-28.

Table 1-4   **PageWriter Trim II and III Control Panel** *(continued)*

Label	Feature Name	Description
G	**ID button**	■ Press button to enter Patient ID information at the beginning of a patient session. ■ For more information, see page 2-19.
H	**Auto button**	■ Press button to print out an Auto 12-lead report. ■ For more information, see page 2-24.
I	**Rhythm button**	■ Press button to print out a continuous Rhythm report (up to 12 leads) until the Stop button (**L**) is touched. ■ For more information, see page 2-27.
J	**Copy button**	Press button to print out a copy of the last recorded Auto 12-lead report.
K	**Page button**	Press button to advance the printer paper to the beginning of the next page.
L	**Stop button**	Press button to stop the printing of a Rhythm report or any other printing function.

PageWriter Trim II and III Status Bar

The Status Bar includes all current operating information for the cardiograph.

Figure 1-20   Status Bar
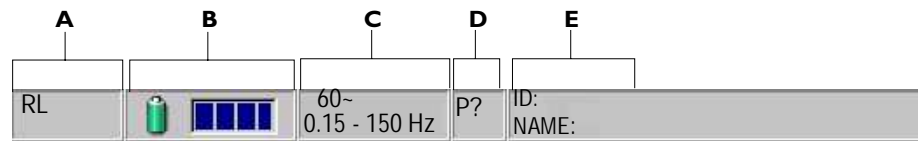
Table 1-5   Status Bar Description

Label	Feature Name	Description
A	**Leads Off Indicator**	■ Displays the name of any loose or disconnected leads or electrodes. ■ For more information, see page 2-9.
B	**Battery Level Indicator**	Displays the current battery level and if the batteries are charging (🔋).
C	**Filter Settings**	■ Displays the filter settings for the current patient session. ■ For more information, see page 2-11.

Table 1-5   **Status Bar Description** *(continued)*

Label	Feature Name	Description
D	**Pacing Detection Settings**	■ Displays the Pacing Detection Setting used for the current patient session. ■ For more information, see page 2-30.
E	**Patient Name and ID**	Displays the patient name and ID for the current patient session.

PageWriter Trim II and III Command Toolbar

The Command Toolbar includes all of the main functions of the cardiograph. Turn the Trim Knob to highlight a button. Press the Trim Knob to select the button.

Figure 1-21   Command Toolbar

REPORT   FILTER   DISCLOSE   ORDER   ARCHIVE   CONFIG   HELP   3/3/2004 12:33:00 PM

Table 1-6   Command Toolbar

Button	Select this Button to...
REPORT	■ Change Auto report settings. ■ Change pacing detection settings. ■ Change the leads on a Rhythm report. ■ Change the lead on a Disclose report.
FILTER	■ Turn on or turn off optional filters (Baseline Wander, Artifact). ■ For more information, see page 2-11.
DISCLOSE	■ Print a report of one minute of continuous waveform data for one selected lead. ■ For more information, see page 2-29.
ORDERS	■ Enter an Order, edit an Order, or to delete an Order using the cardiograph keyboard. ■ For more information, see page 4-1.
ARCHIVE	■ Review, edit, or print saved 12-lead reports ■ Transfer 12-lead reports to a TraceMaster ECG Management System (version A.04.02 or higher) or a TraceMasterVue ECG Management System (version A.01 or higher) ■ For more information, see page 4-1.

Table 1-6   Command Toolbar *(continued)*

Button	Select this Button to...
CONFIG	- Configure the cardiograph or change configured settings. - Change the access passwords for features on the cardiograph. - Save all cardiograph configured settings to a PC Card in case of system failure. - Save all cardiograph configured settings to a PC Card in order to upload the settings to multiple cardiographs. - For more information, see page 5-1.
Help	- Get Help when using the cardiograph. - For more information, see page 2-32.

The Patient Session

Introduction

A patient session is the period of time when waveform data is acquired and processed from a single patient. A patient session begins by entering accurate Patient ID information. Patient ID information is linked with all waveform data acquired during the patient session.

CAUTION	Enter accurate and complete Patient ID information if using the Philips 12-Lead Algorithm to generate ECG interpretation. For more information see the *Philips 12-lead Algorithm Physician's Guide* on the PageWriter Trim User Documentation CD or download the file from www.medical.philips.com.

The steps in a typical patient session are described below.

Table 2-1   The Patient Session

The Patient Session		
Prepare the Patient		
Step	**Description**	**More Information See...**
1	Prepare the patient for the procedure.	"Patient Preparation" on page 2-2.
2	Prepare the electrode sites and attach the electrodes.	"Preparing the Skin" on page 2-3.
3	Attach the lead wires.	"Attaching the Lead Wires" on page 2-7.
Enter Patient ID Information		
Step	**Description**	**More Information See...**
1	Press the On/Standby button.	"Using the On/Standby Button" on page 1-21.
2	Enter Patient ID information for the patient.	"Entering Patient ID Information" on page 2-17.
Check the Signal Quality		
Step	**Description**	**More Information See...**
1	Check the signal quality to ensure a quality ECG.	"Checking Signal Quality" on page 2-7.

Table 2-1   The Patient Session *(continued)*

The Patient Session	
Select an ECG Acquisition Mode	
Step	**Description**	**More Information See...**
1	Do any of the following:	
	■ Print an Auto 12-lead Report	"Taking an Auto ECG" on page 2-24.
	■ Print a Rhythm report	"Rhythm ECG Acquisition" on page 2-27.
	PageWriter Trim II and III only: ■ Print a 1-minute continuous report of one selected lead	"Disclose ECG Acquisition" on page 2-29.
End the Patient Session		
Step	**Description**	**More Information See...**
1	Disconnect the patient and replace the PIM in its holder with the lead wires facing down.	"Inserting the PIM into the holder" on page 1-15.
The patient session ends when: ■ The On/Standby button is pressed ■ New Patient ID information is entered ■ The patient is disconnected or leads are off for more than 10 seconds		

Patient Preparation

For complete information on patient preparation, proper electrode placement, and other patient preparation issues see Lesson 2 of the *PageWriter Trim Cardiograph Interactive Training Program* on CD.

TIP   Good ECG technique is very important to achieve the best quality results.

Instructing the Patient

Before attaching the electrodes, greet the patient and explain the procedure. Explaining the procedure decreases anxiety and informs the patient about what to expect.

■   Privacy is important to relaxation. When possible, take the ECG in a quiet room or area where others can't see the patient. Draw the curtains around the bed when taking the ECG in a room with other people.

■   Reassure the patient that the procedure is painless.

- Make sure the patient is lying down and is comfortable. The patient's arms and hands must be relaxed. If the table is too narrow, place the patient's hands under the buttocks to prevent muscle tension in the arms.

Once the electrodes and lead wires are attached, instruct the patient to:

- Remain still and do not talk

- Breathe normally

- Try not to shiver

- Do not chew or clench teeth

The more relaxed the patient, the less the ECG will be affected by noise.

Preparing the Skin

Thorough skin preparation is very important. The skin is a poor conductor of electricity and frequently creates artifact that distorts the ECG signal. There is a natural resistance on the skin surface due to dry, dead epidermal cells, oils, and dirt.

To prepare the skin:

1   Shave hair from electrode sites if necessary (excessive hair prevents a good connection).

2   Wash thoroughly with soap and water.

3   Dry the skin vigorously to increase capillary blood flow to the tissues and to remove the dead, dry skin cells and oil.

TIP   **Do not use alcohol** to clean the skin because it dries the skin. If there is no time to follow the procedure above, rub the site with gauze to remove dead, dry skin and to increase capillary flow.

Attaching the Electrodes

Review the male and female electrode placement diagrams in Figures 2-1 and 2-2 to ensure proper electrode placement.

WARNING   **Do not use disposable electrodes on more than one patient**. Using disposable electrodes on multiple patients may cause infectious materials to be transferred between patients. Always discard disposable electrodes after patient use.

WARNING   **Always clean and disinfect reusable electrodes before patient use.** See "Reusable Electrode Cleaning" on page 7-2 for information on cleaning and disinfecting reusable electrodes. Failure to properly clean and disinfect reusable electrodes may cause infectious materials to be transferred between patients.

Review the following lead wire labeling and electrode placement information to ensure a quality ECG.

Table 2-2   AAMI and IEC Lead Labeling and Electrode Placement

AAMI Lead	IEC Lead	Electrode Position
RL	**N**	On the right leg (inside calf, midway between knee and ankle)
LL	**F**	On the left leg (inside calf, midway between knee and ankle)
RA	**R**	On the right arm (on the inside)
LA	**L**	On the left arm (on the inside)
V1	**C1**	Right side of the sternum in the 4th intercostal space
V2	**C2**	Left side of the sternum in the 4th intercostal space
V3	**C3**	Midway between V2 and V4
V4	**C4**	Left midclavicular line in the 5th intercostal space
V5	**C5**	Anterior axillary line at the same level as V4, midway between V4 and V6
V6	**C6**	Left midaxillary line at the same level as V4

Figure 2-1   Male 12-Lead Electrode Placement (AAMI/IEC)
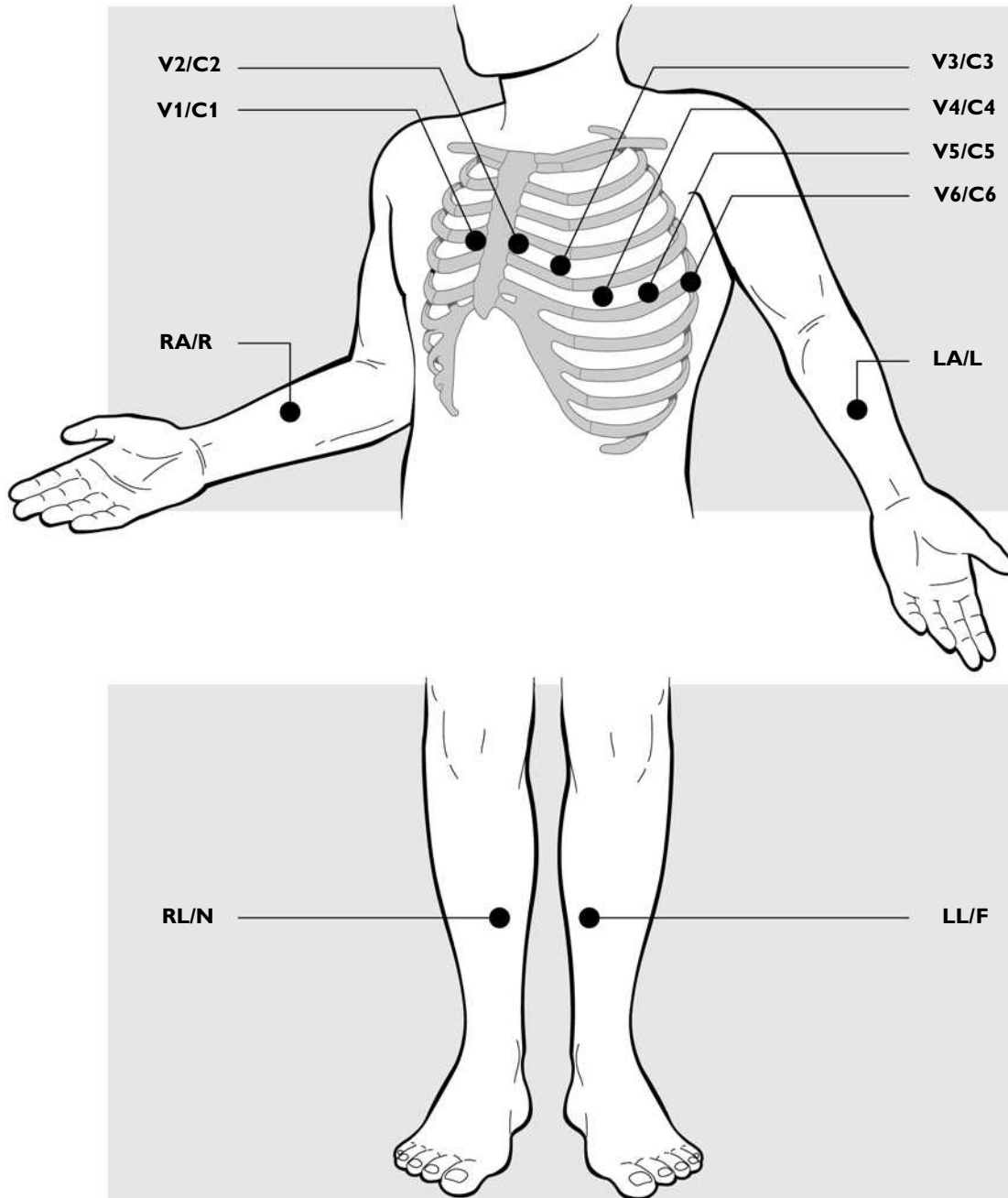
Figure 2-2   Female 12-Lead Electrode Placement (AAMI/IEC)
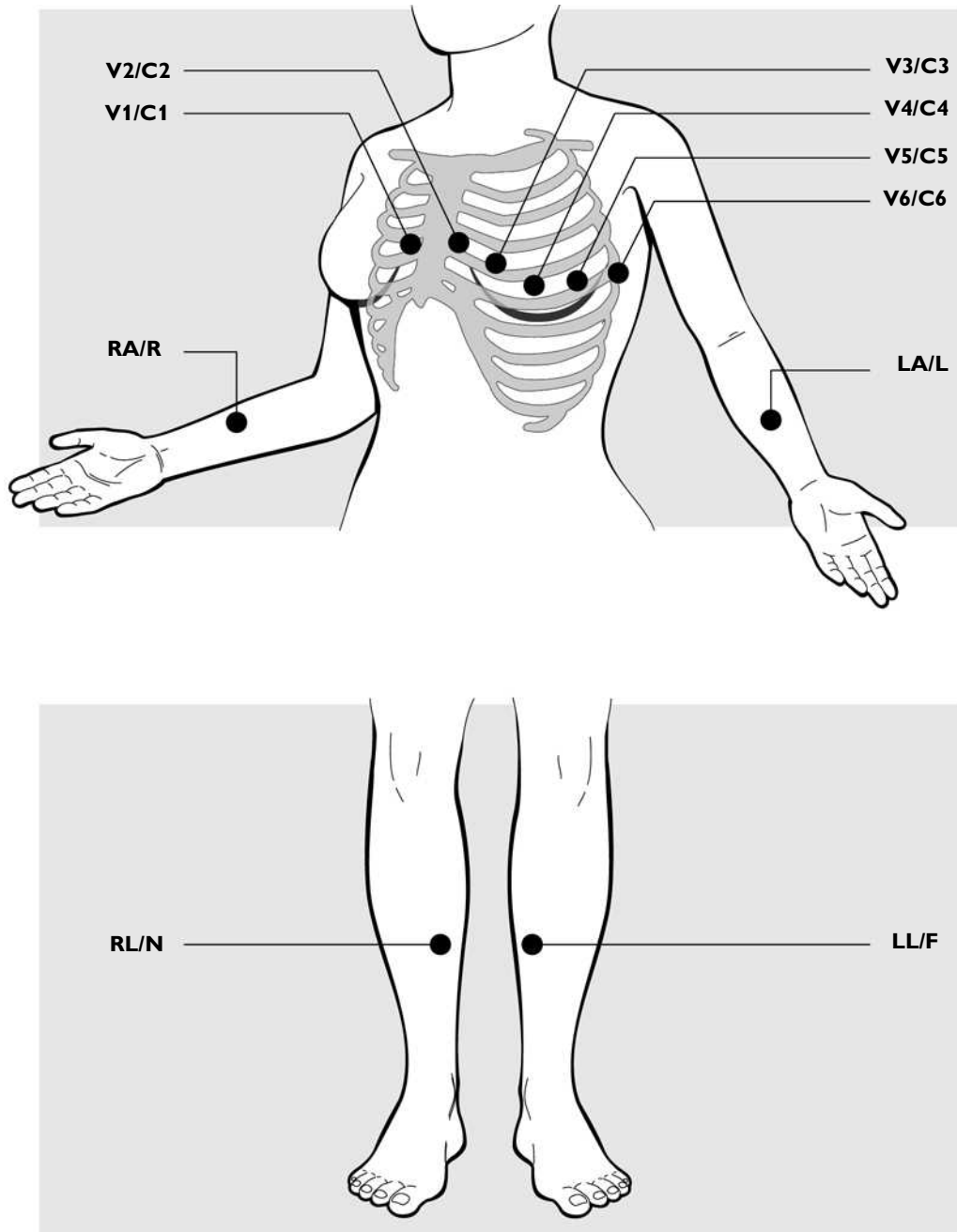
To attach the electrodes:

1   Expose the arms and legs of the patient (to place the limb electrodes).

2   Place the electrodes on flat, fleshy parts of the arms and legs.

3   Place the electrodes on the inside of each arm (between the wrists and elbows).

4   Place the electrodes on the inside of each calf (between the knee and the ankle).

5   Place the limb electrodes equal distance from the heart. Position the electrodes at the same place on each limb.

6   For female patients, place the precordial electrodes on top of the breast (not underneath the breast tissue).

7   If a limb site is not available (amputation, injury) place the electrodes closer to the torso.

8   Attach the electrodes to the skin. A good test for firm electrode contact is to try to move it. If it moves easily, the electrode connection is too loose. Do not allow the electrodes to move in any way.

Attaching the Lead Wires

Each lead wire tip is labeled and color-coded for easy identification.

To attach the lead wires:

▶   Attach the lead wire to the corresponding electrode.

Checking Signal Quality

Review Lesson 4 "Quality Assessment" of the *PageWriter Trim Interactive Training Program* on CD for complete information on signal quality assessment techniques to use with the PageWriter Trim cardiograph. This information is essential for taking quality ECGs each and every time.

Each PageWriter Trim cardiograph has built-in signal quality indicators that provide instant signal quality feedback. Be sure to check the signal quality indicators before printing the ECG.

Using the PageWriter Trim I Signal Quality Indicators

The signal quality indicators on this cardiograph include:

- Heart beat detector

- Leads off indicator

- Signal quality indicator

Figure 2-3   PageWriter Trim I Signal Quality Indicators
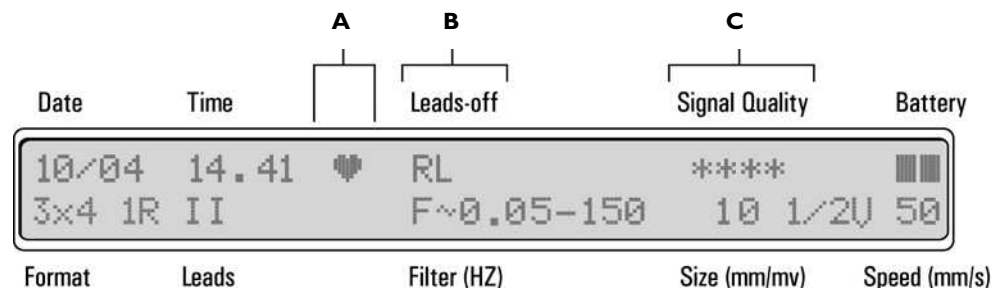
A   Heart Beat Detector   **C**   Signal Quality Indicator
B   Leads off Indicator

Heart Beat Detector

The heart beat detector icon (▓) appears on the LCD display when a patient heart beat is detected by the cardiograph. If the icon does not appear on the LCD display, check that the patient data cable on the PIM is securely attached to the PIM connector on the cardiograph (see page 1-14).

Leads Off Indicator

The leads off indicator displays the name of any loose or disconnected leads or electrodes.

Table 2-3   Leads Off Indicators

Leads Off Code	Indicates...
RL or N	■ The RL or N electrode or lead wire are loose or disconnected ■ RL or N is the only lead wire or electrode connected ■ All 12 leads or electrodes are loose or disconnected ■ Two limb leads (I, II, III) are loose or disconnected
LL or F (left leg)	■ LL or F electrode or lead wire are loose or disconnected
RA or R (right arm)	■ RA or R electrode or lead wire are loose or disconnected
LA or L (left arm)	■ LA or L electrode or lead wire are loose or disconnected
V1-6 or C1-6	■ One or more chest electrodes or lead wires are loose or disconnected ■ **V13** or **C13** indicates that electrodes or lead wires V1and V3 or C1and C3 are loose

Signal Quality Indicator

This feature displays the overall signal quality for all leads and electrodes. This indicator provides information on the amount of overall noise in the patient signal.

Table 2-4   Signal Quality Indicator

Symbol	Indicates...
No symbol	A good connection
*	Slight noise or interference in signal
**	Moderate noise or interference in signal

Table 2-4   Signal Quality Indicator *(continued)*

Symbol	Indicates...
****	■ Extreme noise or interference ■ Lead wires or electrodes are disconnected

Troubleshooting Signal Quality

For information on troubleshooting signal quality see:

- "Using Filters" on page 2-11
- Table 6-8 on page 6-10
- Lesson 4 of the *PageWriter Trim Interactive Training Program* on CD

Using the PageWriter Trim II and III Signal Quality Indicators

The signal quality indicators on the PageWriter Trim II and III cardiographs include:

- Leads off indicator
- Color-coded waveforms (PageWriter Trim III only)
- Preview screen

Using the Leads off indicator

The leads off indicator is located on the Status Bar.

Figure 2-4   Leads off Indicator on Status Bar

A Leads off indicator

The leads off indicator displays the name of any loose or disconnected leads or electrodes.

Table 2-5   Leads Off Indicators

Leads Off Code	Indicates...
RL or N	■ The RL or N electrode or lead wire are loose or disconnected ■ RL or N is the only lead wire or electrode connected ■ All 12 leads or electrodes are loose or disconnected ■ Two limb leads (I, II, III) are loose or disconnected
LL or F (left leg)	■ LL or F electrode or lead wire are loose or disconnected
RA or R (right arm)	■ RA or R electrode or lead wire are loose or disconnected
LA or L (left arm)	■ LA or L electrode or lead wire are loose or disconnected
V1-6 or C1-6	■ One or more chest electrodes or lead wires are loose or disconnected ■ **V13** or **C13** indicates that electrodes or lead wires V1and V3 or C1and C3 are loose

Color-coded waveforms

PageWriter Trim III only

When the lead wires are attached to the patient, color-coded waveforms appear on the main R/T (real-time) ECG screen. The color of the waveform indicates the ECG signal quality.

Table 2-6   Color-coded Waveform Quality Indicators

Waveform Color	Indicates...	Possible Causes
Green waveform	■ Good connection	
Yellow waveform	■ Moderate noise level, artifact, electrical interference, or a poor electrode connection ■ 12-lead report quality will be affected	■ Inadequate patient preparation ■ Electrical interference from another device ■ Moderate patient movement, tense patient ■ Improperly gelled electrode (dried gel)

Table 2-6   Color-coded Waveform Quality Indicators *(continued)*

Waveform Color	Indicates...	Possible Causes
Orange Waveform	■ *Severe* noise, artifact, electrical interference, or a very poor electrode connection ■ 12-lead report quality will be significantly affected	■ Inadequate patient preparation ■ Significant electrical interference from another device ■ Severe patient movement ■ Very poorly gelled electrode (dried gel)
Red dotted line	■ Loose electrode connection ■ ECG waveform data that cannot be analyzed	■ Inoperative electrode, electrode that has fallen off the patient ■ Defibrillation has been performed too recently to take ECG measurements ■ Other cause that renders waveform data useless

Troubleshooting Signal Quality

For information on troubleshooting signal quality see:

■ "Using Filters" on page 2-11

■ Table 6-8 on page 6-10

■ Lesson 4 of the *PageWriter Trim Interactive Training Program* on CD

Using Filters

Filters are configurable on all models of the PageWriter Trim cardiograph. Filters can be used when all other troubleshooting methods to reduce signal quality problems fail. Before using filters:

■ Check patient and skin preparation techniques

■ Ensure that the patient is comfortable, lying still, and breathing normally

■ Check that the electrodes are correctly placed on the patient and are adhering to the skin

■ Check if any surrounding devices are causing electrical interference. Switch any surrounding devices to battery power.

Filters should be applied only after all other potential causes of interference do not resolve a signal quality problem. The filter settings are displayed on the cardiograph and are also printed on the bottom of the report inside the Filter Box.

Figure 2-5   The Filter Box on the 12-lead Report
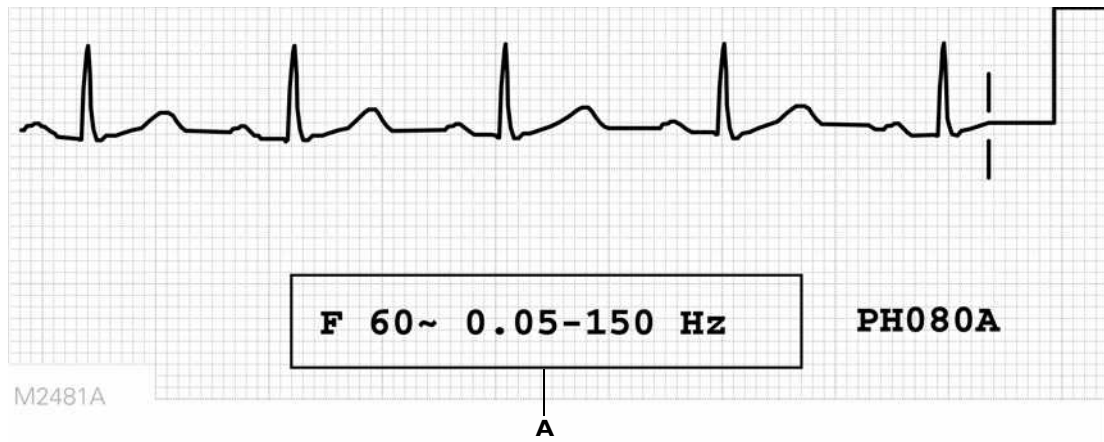
A Filter Box

Table 2-7   Filter Symbols

Filter symbol	Description
F	Artifact Filter
60 ~	AC Filter
0.05	High Pass Frequency Filter
150	Low Pass Filter Setting

Artifact Filter

The Artifact filter removes skeletal muscle artifact. This noise source is the most difficult to eliminate because it has the same frequencies as ECG signals. The Artifact filter eliminates skeletal muscle artifact, but also reduces all high frequency components of the ECG.

Figure 2-6   Artifact Filter Symbol
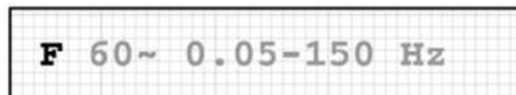
Baseline Wander Filter

Baseline wander is the slow drifting of the ECG baseline up or down during ECG recording. Baseline wander may result from patient respiration or from other sources.

N O T E   With the Baseline Wander filter turned on, the High Pass Frequency Filter automatically sets to 0.5.

Figure 2-7   Baseline Wander Filter Symbol on the 12-lead Report
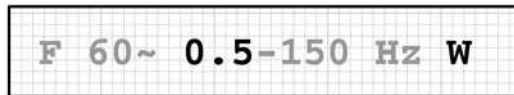
Frequency Response Filters

These filters suppress frequencies at the high and low ends of the ECG signal spectrum. The available low frequency response filter settings are 40, 100, and 150 Hz. Changing the low frequency filter to 40 or 100 Hz results in a smoother-looking ECG waveform while eliminating some fine detail in the signal. Small deflections, notches, and slurs may be distorted or may disappear if one of these filters is applied.

About High and Low Pass Frequency Filter Settings

- The 0.5 Hz High Pass frequency filter setting provides the highest level of baseline wander suppression

- The 0.15 Hz High Pass frequency filter setting provides a moderate amount of baseline wander suppression (suitable for most ECGs) without distorting the ST segment

- The 0.05 Hz High Pass frequency filter setting provides the highest fidelity signal with the least amount of baseline wander suppression

- The 40 Hz Low Pass frequency filter setting provides the maximum amount of noise suppression at low fidelity

- The 100 Hz Low Pass frequency filter setting provides a moderate amount of noise suppression while providing accurate waveform representation

- The 150 Hz Low Pass frequency filter setting provides the highest fidelity with a minimal amount of high-frequency noise suppression

Changing Filter Settings on the PageWriter Trim I

The following filters are available on the PageWriter Trim I cardiograph:

- AC

- Artifact

- High and Low Pass Frequency

All filter settings used in a patient session are shown on the LCD display.

Figure 2-8   Filter settings on the LCD Display

```
┌─────────────────────────────────────────────────┐
│ 10/04  14.41  ♥  RL            ****         ▉▉ │
│ 3x4 1R II           F~0.05-150      10 1/2V 50 │
└─────────────────────────────────────────────────┘
```
                                            |
                                            A
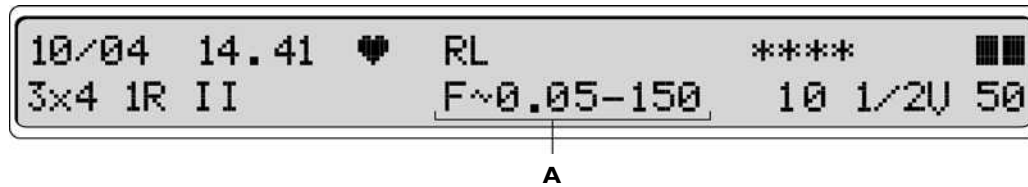
A Filter settings

Table 2-8   Filter symbols on the LCD Display

Filter symbol	Description
F	Artifact Filter
~	AC Filter
0.05	High Pass Frequency Filter
150	Low Pass Filter Setting

To change the AC filter setting:

1   Turn the Trim Knob until the **~** symbol is highlighted.

2   Press the Trim Knob. A new screen appears with the current AC filter setting (**50Hz**, **60Hz**, **0**) highlighted.

3   Push the Trim Knob to change the setting.

N O T E   Press the **Stop** button on the Control Panel to exit the screen without changing the AC filter setting.

4   Turn the Trim Knob to scroll through the available settings.

N O T E   Selecting **0** turns off the AC filter.

5   Press the Trim Knob to select the setting.

6   Turn the Trim Knob to highlight the arrow ✛ .

7   Press the Trim Knob to save the setting and to exit the screen. The new setting is applied.

To change other filter settings:

1   Turn the Trim Knob until the filter setting to be changed is highlighted.

2   Push the Trim Knob.

3   Turn the Trim Knob to scroll through the available filter settings.

4   Push the Trim Knob to select a setting.

5   Turn the Trim Knob to change additional filter settings.

N O T E   The Artifact filter (**F**) may be turned on or turned off. No symbol appears on the LCD display when the Artifact filter is turned off.

NOTE   When the High Pass Frequency Filter is set to **0.5** the Baseline Wander filter (**W**) is automatically
turned on.

Changing Filter Settings on the PageWriter Trim II and III

The following filters are available on the PageWriter Trim II and III cardiographs:

- AC

- Artifact

- Baseline Wander

- High and Low Pass Frequency

All filter settings used in a patient session are shown on the Status Bar.

Figure 2-9   Filter settings on the Status Bar

RL			F W 60~ 0.15 - 150 Hz	P?	ID: NAME:

A
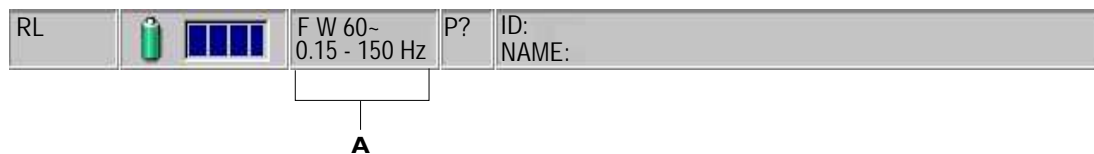
A   Filter settings

Table 2-9   Filter symbols on the Status Bar

Filter symbol	Description
F	Artifact Filter
W	Baseline Wander Filter
60~	AC Filter
0.15	High Pass Frequency Filter
150	Low Pass Filter Setting

There are two sets of configured filters available on the PageWriter Trim II and III
cardiographs: **Main Settings** and **Rhythm Settings**. These filters are applied to both the
printed report and to the real-time waveforms that display on the R/T ECG screen. These filter
settings may only be changed in Configuration (see page 5-21).

The table below describes these filter settings.

Table 2-10   Filter Settings

Filter Setting	Description
Main Settings	■ These filter settings are applied to all Auto and Disclose Reports ■ These filter settings may only be changed in Configuration ■ These filter settings include: High and Low Pass Frequency, Artifact, and Baseline Wander ■ The Artifact and Baseline Wander filters may be turned on or turned off for individual patient sessions; the High and Low Pass Frequency filters are turned on for all patient sessions ■ These filter settings can be applied to the real-time waveform display on the R/T ECG screen
Rhythm Settings	■ These filter settings are used for all Rhythm reports ■ These filter settings may only be changed in Configuration ■ These filter settings include Artifact, and High and Low Pass Frequency ■ The Artifact filter may be turned on or turned off for individual patient sessions ■ These filter settings may be applied to the real-time waveform display on the R/T ECG screen

The AC filter may be configured to be turned on or turned off for all patient sessions. The AC frequency Hertz is also set in Configuration (see page 5-21).

Artifact and Baseline Wander Filters

During a patient session, the Artifact and Baseline Wander filters (if configured) may be turned on or turned off.

FILTER

To turn on or to turn off the artifact or baseline wander filter:

1   Turn the Trim Knob to highlight the **Filter** button on the Command Toolbar.

2   Push the Trim Knob. The Filter window appears.

N O T E   Press the Esc key on keyboard to exit the Filter window without changing filter settings.

3   Turn the Trim Knob to highlight the **Filter On** text under **Report Filter**.

4   Push the Trim Knob to select the setting. When the check box is selected, the Artifact and Baseline Wander filters are enabled. Clear the check box to turn off the Artifact and Baseline Wander filters.

5   Press the Enter key on keyboard to save the filter settings and to exit the window.

The new filter settings are applied. The Artifact Filter (**F**) or Baseline Wander (**W**) symbol appear on the Status Bar.

N O T E   When the High Pass Frequency Filter is set to **0.5** the Baseline Wander filter (**W**) is automatically turned on.

Display Filter Settings

The Display Filter settings are applied to the real-time waveforms that appear on the R/T ECG screen. The **Main Settings** or **Rhythm Settings** may be applied to the waveforms on the R/T ECG screen.

The Display Filter settings do not affect printed reports. The configured Main Settings are applied to printed Auto reports, and the configured Rhythm Settings are applied to printed Rhythm reports.

FILTER

To change the display filter settings:

1   Turn the Trim Knob to highlight the **Filter** button on the Command Toolbar.

2   Push the Trim Knob. The Filter window appears.

N O T E   Press the Esc key on keyboard to exit the Filter window without changing filter settings.

3   Turn the Trim Knob to highlight **Main Settings** or **Rhythm Settings** under **Display Filter**.

4   Push the Trim Knob to select the setting.

5   Press the Enter key on keyboard to save the filter settings and to exit the window.

The new filter settings are applied to the real-time waveforms on the R/T ECG screen and appear on the Status Bar.

N O T E   The Rhythm Settings Low Pass Frequency filter setting will not appear on the R/T ECG screen. The Main Settings Low Pass Frequency setting will be applied.

N O T E   When the High Pass Frequency Filter is set to 0.5 the Baseline Wander filter (**W**) is automatically turned on.

Entering Patient ID Information

Patient ID information is very important and must be entered for each patient session.

CAUTION   Enter accurate and complete Patient ID information if using the Philips 12-Lead Algorithm to generate ECG interpretation. For more information see the *Philips 12-lead Algorithm Physician's Guide* on the PageWriter Trim User Documentation CD or download the file from www.medical.philips.com.

Entering Patient ID Information on the PageWriter Trim I

The PageWriter Trim I requires that Patient ID information be entered before printing an Auto report.

The following Patient ID information is entered on the PageWriter Trim I:

- patient age

- patient gender

Patient age may be entered in either adult and pediatric units.

To enter Patient ID information:

1   Press the **ID** button on the Control Panel. The Patient ID entry screen appears.

2   The default age of **50** (years) is highlighted. Push the Trim Knob to change the patient age.

3   Turn the Trim Knob to highlight an age.

4   Push the Trim Knob to select the age.

5   Turn the Trim Knob to highlight the age unit, if necessary. The following age units are available.

Table 2-11   PageWriter Trim I Age Units

Age Unit	Description
Y	Years
M	Months
W	Weeks
D	Days
H	Hours

6   Push the Trim Knob to select an age unit.

7   Turn the Trim Knob to highlight a patient gender icon (female or male).

8   Push the Trim Knob to select the patient gender.

9   Turn the Trim Knob to highlight the arrow .

N O T E   Push the **Stop** button on the Control Panel to exit the Patient ID screen without saving the settings.

10   Push the Trim Knob to save the Patient ID settings and to exit the screen.
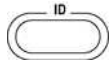
Entering Patient ID Information on the PageWriter Trim II and III

Patient ID information is very important and must be entered for each patient session.

CAUTION	Enter accurate and complete Patient ID information if using the Philips 12-Lead Algorithm to generate ECG interpretation on the PageWriter Trim III. For more information see the *Philips 12-lead Algorithm Physician's Guide* on the PageWriter Trim User Documentation CD or download the file from www.medical.philips.com.

The amount and type of Patient ID information that is entered on the cardiograph is configurable (see page 5-4). There are three main types of Patient ID information: patient information, clinical information, and order information. Patient ID information that is required to be complete before an Auto report can be transferred to a TraceMaster or TraceMasterVue ECG Management System is also configurable (see page 5-4).

Patient ID information is entered by:

- Keyboard

- Selecting a Pending Order

- Barcode reader (optional)

- Magnetic card reader (optional)

- SmartCard reader (optional)

Entering Patient ID Information with the Keyboard

To enter Patient ID information with the keyboard:
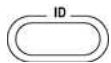
1   Press the **ID** button on the right side of the cardiograph. The Patient ID screen appears with the **Patient Info.** tab (top of screen) selected.

2   The **ID** field is selected. Enter the Patient ID number.

3   Turn the Trim Knob to select the next field on the screen. Enter the information.

4   For **Gender**, turn the Trim Knob to highlight the text. Push the Trim Knob to select the patient gender.

5   If other tabs appear at the top of the screen (**Clinical Info**, **Order Info**), press and hold down the Alt key on the keyboard.

6   Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info** tab, press and hold down the Alt key, and then press the C key on the keyboard.

7   Continue to enter information on the screen.

8   When all Patient ID information has been entered, press the Enter key on the keyboard to save the information and to exit the screen. Press the Esc key on the keyboard to exit the screen without saving the Patient ID information.

NOTE   A message appears if the Patient ID screen is exited before completing the required Patient ID information.

Opening a Pending Order

ORDERS

Pending Orders consist of pre-loaded Patient ID information. This information is entered on the Orders screen using the cardiograph keyboard. Once entered onto the cardiograph, these Pending Orders may be selected on the Patient ID screen.

For more information on using the Orders screen, see page 4-2.

To open a Pending Order:
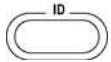
1   Press the **ID** button on the right side of the cardiograph. The Patient ID screen appears.

2   Turn the Trim Knob to highlight the **Orders** button (top left of screen).

3   Push the Trim Knob to select the button. The Select Pending Order window appears.

NOTE   The **Orders** button only appears on the Patient ID screen when there are Pending Orders loaded on the cardiograph.

4   The available Pending Orders appear on the screen as a list. Turn the Trim Knob to highlight the **Left**, **Right**, **Up**, or **Down** buttons at the bottom of the screen.

5   Push the Trim Knob to select one of these buttons in order to navigate left, right, up, or down through the Pending Orders list. The highlighted Pending Order appears in gray.

6   Turn the Trim Knob to highlight the **Select** button.

7   Push the Trim Knob to select the highlighted Pending Order. A selected Pending Order is deleted from the Pending Order list. The Pending Order window closes and the Patient ID screen appears. The information from this Pending Order will be loaded on the Patient ID screen.

8   Enter any missing Patient ID information with the keyboard. Turn the Trim Knob move between the different fields.

9   If other tabs appear at the top of the screen (**Clinical Info**, **Order Info**), press and hold down the Alt key on the keyboard.

10 Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info** tab, press and hold down the Alt key, and then press the C key on the keyboard.

11 When all Patient ID information has been entered, press the Enter key on the keyboard to save the information and to exit the screen. Press the Esc key on the keyboard to exit the screen without saving the Patient ID information.

NOTE   A message appears if the Patient ID screen is exited before completing the required Patient ID information.

Entering Patient ID Information with the Barcode Reader

The barcode reader is an optional cardiograph feature available for purchase (see page 1-18). The barcode reader is used to automatically enter Patient ID information on the Patient ID screen by scanning a barcode. The barcode reader is shipped preconfigured for use with the PageWriter Trim cardiograph.

Attach the barcode reader to the barcode connector port ( ) on the rear of the cardiograph (see page 1-18).

To enter Patient ID information with the barcode reader:

1   Press the **ID** button on the right side of the cardiograph. The Patient ID screen appears. The **ID** field is highlighted.

2   Hold the barcode reader at a 45° angle over the barcode. The barcode automatically scans the information and it appears in the **ID** field. If the barcode does not automatically scan, press the button on the top of the scanner.

N O T E   The barcode reader will only operate when held at a 45° angle.

3   Turn the Trim Knob to highlight the next Patient ID field.

4   Hold the barcode reader at a 45° angle over the barcode. The barcode automatically scans. The information appears in the field.

5   Enter any missing information with the keyboard.

6   If other tabs appear at the top of the screen (**Clinical Info**, **Order Info**), press and hold down the Alt key on the keyboard.

7   Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info** tab, press and hold down the Alt key and then press the C key on the keyboard.

8   When all Patient ID information has been entered, press the Enter key on the keyboard to save the information and to exit the screen. Press the Esc key on the keyboard to exit the screen without saving the Patient ID information.

N O T E   A message appears if the Patient ID screen is exited before completing the required Patient ID information.

Entering Patient ID Information with the Magnetic Card Reader

The magnetic card reader is an optional cardiograph feature that is available for purchase (see page 1-19). The magnetic card reader is used to automatically enter up to four fields of Patient ID information by scanning a magnetic card. The four fields that are entered onto the Patient ID screen are configurable (see page 5-31).

Attach the magnetic card reader to the magnetic card reader port ( ) on the rear of the cardiograph (see page 1-19).

To enter Patient ID information with the magnetic card reader:

1   Press the **ID** button on the right side of the cardiograph. The Patient ID screen appears.

2   Turn the Trim Knob to highlight the **MagCard** button (top left of screen).

3   Push the Trim Knob to select the button. The Magnetic Card Reader window appears.

4   Insert the magnetic card all the way into the slot. Leave the card in the slot for five seconds before removing it. The scanned information appears on the screen.

5   The **OK** button (bottom of window) is highlighted. Push the Trim Knob to save the displayed Patient ID information and close the window. Turn the Trim Knob to highlight the **Cancel** button if the Patient ID information did not scan correctly. Push the Trim Knob to close the window. Repeat steps 2 through 5.

6   Enter any missing information with the keyboard.

7   If other tabs appear at the top of the screen (**Clinical Info**, **Order Info**), press and hold down the Alt key on the keyboard.

8   Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info** tab, press and hold down the Alt key and then press the C key on the keyboard.

9   When all Patient ID information has been entered, press the Enter key on the keyboard to save the information and to exit the screen. Press the Esc key on the keyboard to exit the screen without saving the Patient ID information.

N O T E   A message appears if the Patient ID screen is exited before completing the required Patient ID information.

Entering Patient ID Information with the SmartCard Reader

The SmartCard reader is an optional cardiograph feature that is available for purchase (see page 1-19). The SmartCard reader is used to automatically enter up to two fields of Patient ID information (ID number and patient name) by scanning a SmartCard.

Attach the SmartCard reader to the USB connector ( ) on the rear of the cardiograph (see page 1-19).
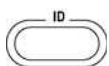
To enter Patient ID information with the SmartCard reader:

1   Press the **ID** button on the right side of the cardiograph. The Patient ID screen appears.

2   Turn the Trim Knob to highlight the **Smart Card** button (top left of screen).

3   Push the Trim Knob to select the button. The Smart Card Reader window appears.

4   Insert the SmartCard all the way into the slot. The scanned information appears on the screen in the **ID:** and **Name:** fields.

5   The **OK** button (bottom of window) is highlighted. Push the Trim Knob to save the displayed Patient ID information and to close the window. Turn the Trim Knob to highlight the **Cancel** button if the Patient ID information did not scan correctly. Push the Trim Knob to close the window. Repeat steps 2 through 5.

6   Enter any missing information with the keyboard.

7   If other tabs appear at the top of the screen (**Clinical Info**, **Order Info**), press and hold down the Alt key on the keyboard.

8   Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info** tab, press and hold down the Alt key and then press the C key on the keyboard.

9   When all Patient ID information has been entered, press the Enter key on the keyboard to save the information and to exit the screen. Press the Esc key on the keyboard to exit the screen without saving the Patient ID information.

N O T E   A message appears if the Patient ID screen is exited before completing the required Patient ID information.

Editing Patient ID Information

Patient ID information may be edited at any time during the patient session, or may be edited after the patient session ends by editing the saved ECG in the Archive. The Archive provides temporary storage for ECGs until they are transferred to an external ECG Management System. For more information on editing Patient ID information in the Archive, see page 4-13. On the PageWriter Trim III, a message appears if changes made to Patient ID information could affect ECG interpretation.

Changes to Patient ID information are applied to all reports taken during the current patient session.

N O T E   The magnetic card reader or Pending Orders cannot be used to edit existing Patient ID information. These buttons will not appear on the top of the Patient ID screen when editing existing Patient ID information.
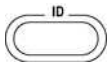
To edit Patient ID information during the patient session:

1   Press the **ID** button on the right side of the cardiograph.

2   The message **Is this a New Patient?** appears. Turn the Trim Knob to highlight the **No** button.

3   Push the Trim Knob to select the button. The Patient ID screen appears.

4   Edit the Patient ID information.

5   Press the Enter key on keyboard to save the edits. Press the Esc key on keyboard to exit the screen without saving the edits.

Emergency (STAT) ECGs

PageWriter Trim II and III only

Patient ID information does not have to be entered in an emergency situation in order to take an Auto report. An emergency or STAT ECG can include a configurable STAT designation on the printed report (see page 3-10). A STAT pull-down list may be configured to appear on the Patient ID screen under the **Order Info.** tab. The STAT pull-down list is enabled in Configuration (see page 5-10).

Complete all Patient ID information after the emergency ECG is taken, but before the patient session ends. All required Patient ID information must be complete in order to transfer an Auto report to a TraceMaster or TraceMasterVue ECG Management System (see page 4-9).
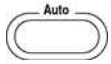
To take an emergency ECG:

1 Press the **Auto** button on the right side of the cardiograph. A message appears that **Patient ID is missing required fields**.

2 Turn the Trim Knob to highlight the **Cancel** button.

3 Push the Trim Knob to select the button.

4 The Auto report prints (if configured) and appears on the Preview screen. Check the quality of the Auto report. If the quality is good, press the Enter key (on keyboard) to print the report. Press the **Copy** button to print out a copy of the Auto report. Press the Esc key (on keyboard) to exit the Preview screen without printing the report.

5 Press the **Auto** button again at any time to take another ECG.
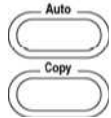
NOTE On the PageWriter Trim III, if no Patient ID information is entered a statement is included on the Auto report that interpretation used a default age (50 years) and gender (male). The default age for interpretation is configurable (see page 5-5).

NOTE Patient ID information is required to transmit an Auto report from the Archive to an ECG Management System (see page 4-9).

Taking an Auto ECG

The Auto feature is used to quickly print a 12-lead Report. The Auto report captures the most recent 10-seconds of waveform data. Follow the procedures below to take an Auto report.

Taking an Auto ECG with the PageWriter Trim I

The Auto 12-lead report format available on the PageWriter Trim I is the 3x4, 1R report. The Rhythm lead may be changed.

To change the Rhythm lead:

1 Ensure that the 3x4 1R report is selected in the **Format** field. If the report is not selected, turn the Trim Knob to highlight the displayed report format. Push the Trim Knob. Turn the Trim Knob to highlight the **3x4 1R** report. Push the Trim Knob to select the report format.

2 Turn the Trim Knob to highlight the Rhythm lead selected in the **Leads** field.

3 Push the Trim Knob.

4 Turn the Trim Knob to highlight the Rhythm lead to be selected for the report.

5 Push the Trim Knob to select the Rhythm lead.

To take an Auto report:
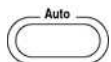
1 Press the Auto button on the Control Panel. The Patient ID entry screen appears.

2 Follow the procedure to enter Patient ID information, see page 2-18.

The Auto report progress bar appears (▮▮▮▮▮) on the LCD display under **Leads-off**. The Auto report prints.

Taking an Auto ECG with the PageWriter Trim II and III

The Auto report captures the most recent 10-seconds of waveform data. When the **Auto** button is pressed, the Auto report appears on the Preview screen. Auto reports can be configured to be automatically saved to the Archive (see page 5-18).

The Preview Screen

The Preview screen displays the waveforms of the Auto report exactly as they appear when printed. The waveforms on the Preview screen can be checked for normal quality indicators to ensure a quality ECG.

CAUTION   Only the waveforms shown on the report preview are an accurate representation of what is printed on the report. Interpretation, Patient ID, or other information may appear truncated or not appear at all on the report preview, but will appear on the printed report.

For information on ECG quality indicators, see Lesson 4 of the *PageWriter Trim Interactive Training Program* on CD.

Reviewing Auto reports on the Preview screen before printing saves printer paper and ensures a quality report.

To take an Auto ECG:
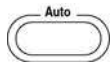
1   On the R/T ECG screen, press the **Auto** button on the right side of the cardiograph. The Auto report displays on the Preview screen and prints (if configured).

2   Review the quality of the Auto report on the Preview screen. If the report quality is good, press the Enter key (on keyboard) to print the report. If the report quality is poor, press the Esc key (on keyboard) to exit the Preview screen and not print the report.

3   Press the **Copy** button to print out a report copy.

Changing Auto Report Settings

The Auto report settings may be changed at any time during a patient session. To review printed examples of the available Auto report formats, see page 3-18.

To change Auto report settings:

1   Turn the Trim Knob to highlight **Report** button on the Command Toolbar.

2   Push the Trim Knob to display the Report settings window.
     The **Auto** tab (top of screen) is selected and the current Auto report settings are displayed on the screen.

3   The **Format:** drop-down list is highlighted.

4   Push the Trim Knob to display the drop-down list of available Auto report formats.

NOTE   The Pan-12 report format prints with **Cabrera** lead sequence and **Time-Sequential** acquisition. For more information, see page 3-24.

NOTE   The 12x1 report format prints with **Simultaneous** acquisition. For more information, see page 3-22.

5   Turn the Trim Knob to highlight an Auto report format.

6   Push the Trim Knob to select an Auto report format.

7   Continue to select Auto report settings by following the same procedure.

NOTE   The **Size (VLeads)** selection sets the precordial leads to full or half the scale of the limb and augmented leads, see page 3-11.

For information on **Pacer Detect** settings, see page 2-30.

8   To save the new Auto report settings, press the Enter key on the keyboard. To exit the Auto report settings screen without saving the new settings, press the Esc key on the keyboard.

Using the Metronome with Auto ECG

PageWriter Trim II and III only

The cardiograph can be configured to automatically display the Metronome each time the **Auto** button is pressed (see page 5-31). A typical use of the Metronome is during a Masters' Two-Step stress test: the patient exercises at a rate indicated by the metronome chime, and the cardiograph records an Auto report after the exercise session is complete.

The Metronome feature must be enabled in Configuration before using it with the Auto ECG feature. The procedure below is a recommend example of how to use the Metronome.

To use the Metronome feature:

1   Prepare the patient for the procedure.

2   Press the **ID** button on the right side of the cardiograph and enter the Patient ID information (see page 2-19).

3   Press the **Auto** button on the right side of the cardiograph. The **Metronome** window appears.

The default Metronome settings appear on the screen. The displayed settings may be changed.

4   The **Number of Steps** field is highlighted. Type in the number of steps (16-70) that the patient will complete during the test.

5   Turn the Trim Knob to select a setting under **Stress Test Protocol**. Highlight the **Master Single** (90 seconds) or **Master Double** (180 seconds) test.

6   Push the Trim Knob to select a test setting.

7   Turn the Trim Knob to highlight the **Start** button.

8   When the patient is ready, press the Trim Knob to start the Metronome.

The Metronome "beeps" and the icon moves to indicate each time that the patient should take a step. The Metronome window displays the number of steps completed.

A long "beep" indicates that the metronome cycle is complete. The message **Timed ECG Test Completed** appears at the top of the Metronome window.

9   To adjust the volume of the Metronome, turn the Trim Knob to highlight the **<<** or **>>** buttons. Push the Trim Knob to lower or to raise the volume.

10 Connect the electrodes on the patient to the lead wires. Ensure that the lead wires are securely attached.

11 Turn the Trim Knob to highlight **Cancel** button.

12 Push the Trim Knob to close the Metronome window.

The R/T ECG screen appears. The Auto ECG is acquired and appears on the Preview screen.

13 Review the quality of the Auto report on the Preview screen. If the report quality is good, press the Enter key (on keyboard) to print the report. If the report quality is poor, press the Esc key (on keyboard) to exit the Preview screen and not print the report. Press the **Copy** button to print out a report copy.
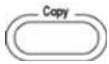
Rhythm ECG Acquisition

Rhythm ECG acquisition is used to print continuous rhythm strips until the **Stop** button is pressed. Rhythm reports are not saved and are not interpreted (see page 3-25).

Taking a Rhythm Report on the PageWriter Trim I

Rhythm reports may be printed with three or six preconfigured lead groups.

To select Rhythm report format and leads:

1   Turn the Trim Knob to highlight the displayed report format above **Format** (on the LCD display).

2   Push the Trim Knob to display the available report formats.

3   Turn the Trim Knob to highlight **3** (three lead) or **6** (six lead) Rhythm report.

4   Push the Trim Knob to select the Rhythm report format.

5   Turn the Trim Knob to highlight the displayed Rhythm leads above **Leads**.

6   Push the Trim Knob to display the available preconfigured Rhythm lead groups.

Table 2-12   Preconfigured Rhythm Lead Selections

Rhythm report	Lead selections
3 lead report	▪ **II-aVF-V2** (C2)
	▪ **I-II-III**
	▪ **aVR-L-F** (aVR, aVL, aVF)
6 lead report	▪ **V1-V6** (C1-C6)
	▪ **I-aVF** (I, II, III, aVR, aVL, aVF)

7 Turn the Trim Knob to highlight a Rhythm lead group.

8 Push the Trim Knob to select the Rhythm lead group.

To record a Rhythm ECG:

1 Press the **Rhythm** button on the Control Panel.

2 The Patient ID entry screen appears. Enter the Patient ID information for the patient (see page 2-19).

The Rhythm report progress bar appears (▮▮▮▮▮) on the LCD display under **Leads-off**. The Rhythm report prints.

3 Press the **Stop** button on the Control Panel to stop printing the Rhythm report.

4 Press the **Page** button on the Control Panel to advance the paper to the top of the next page.

Taking a Rhythm Report on the PageWriter Trim II and III

Rhythm reports may be printed with up to 12 selected leads. The leads that appear on the Rhythm report may be individually selected, and the size and speed of waveforms appearing on the report may also be selected.

To select Rhythm report leads:

1 Turn the Trim Knob to highlight **Report** button on the Command Toolbar.

2 Push the Trim Knob to display the Report settings window. Three tabs appear at the top of the screen.

3 To select the **Rhythm** tab, press and hold down the Alt key on the keyboard.

4 Press the R key. The Rhythm screen appears.

5 Turn the Trim Knob to highlight the **Lead Groups** button to select a preconfigured group of three or six leads.

6 Push the Trim Knob to display the lead group list.

7 Turn the Trim Knob to scroll through the list.

8 Push the Trim Knob to select a lead group. The selected leads appear on the screen under the **Lead Groups** button.

9 To select leads individually, turn the Trim Knob until the **I** lead on the lead list is highlighted.

10 Push the Trim Knob to select the individual lead. The check box for that lead is selected.

11 Continue to select leads individually, or turn the Trim Knob to highlight the **Select All** check box. Push the Trim Knob to select all twelve leads.

To set the size and speed of waveforms:

1 On the Rhythm settings screen, turn the Trim Knob to highlight the drop-down list under **Speed**.

2 Push the Trim Knob to display the drop-down list.

3   Turn the Trim Knob to highlight a speed setting.

4   Push the Trim Knob to select the speed setting.

5   Follow the same procedure to set the **Size (mm/mV)** and **Size (V Leads)** settings.

NOTE   **Size (V leads)** sets the precordial leads to full or half the scale of the limb and augmented leads.

6   Press the Enter key on keyboard to save the Rhythm lead settings and exit the screen. Press the Esc key to exit the screen without saving the settings.

To record a Rhythm ECG:
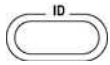
1   Press the ID button to enter the Patient ID information for the patient.
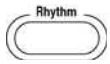
2   Press the **Rhythm** button on the right side of the cardiograph.

The **Printing Rhythm Report** progress window appears. The Rhythm report prints.
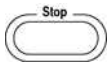
3   Press the **Stop** button on the right side of the cardiograph to stop printing the Rhythm report.

4   Press the **Page** button on the right side of the cardiograph to advance the paper to the top of the next page.

Disclose ECG Acquisition

PageWriter Trim II and III only

Disclose ECG acquisition prints a continuous 1-minute report of one selected lead. Disclose reports are not saved to the Archive and are not interpreted, see page 3-28.

REPORT

To change the Disclose lead:

1   Turn the Trim Knob to highlight **Report** button on the Command Toolbar.

2   Push the Trim Knob to select the button. The Report settings window appears. Three tabs appear at the top of the screen.

3   To select the **Disclose** tab, press and hold down the Alt key on the keyboard.

4   Press the D key. The Disclose screen appears.

5   The **Lead** drop-down list is highlighted. Press the Trim Knob to display the drop-down list.

6   Turn the Trim Knob to highlight a lead.

7   Press the Trim Knob to select the lead for the Disclose report.

DISCLOSE

To print a Disclose report:

1   Turn the Trim Knob to highlight the **Disclose** button on the Command Toolbar.

2   Push the Trim Knob to select the button.

3   The **Printing Disclose Report** progress window appears. The Disclose report prints.

Pacing Detection Settings

PageWriter Trim II and III only

The Pacing Detection Settings are found on the Status Bar and may be changed for an individual patient session. The default Pacing Detection Setting is set in Configuration (see page 5-2).

Figure 2-10   Pacing Detection Setting on the Status Bar
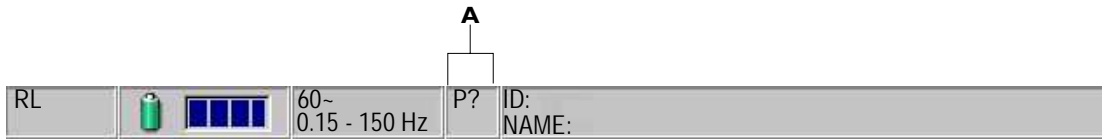
A   Pacing Detection Setting

Pacemaker pulses that are detected by the cardiograph are marked on the Auto report with small vertical tick marks. These marks enable the overreader to identify false pacemaker pulse detections, or if true pulses are not being detected.

Table 2-13   Pacing Detection Settings

Setting	Description	Symbol on Status Bar
Not known if paced	■ This is the default setting and normally is used for both paced and non-paced patients ■ Pacemaker pulse detection is on and is at normal sensitivity ■ Occasional false pacemaker pulse detections may occur in ECGs with excessive noise ■ False detections may result in an incorrect interpretive statement appearing on the report ■ Small amplitude pacemaker pulses may not be detected using this setting	**P?**
Non-paced	■ Pacemaker pulse detection is off ■ Use this setting if there are false pacemaker pulse detections from noise, or if incorrect interpretive statements or inappropriate paced ECG complexes appear on the report	No code appears on the Status Bar if the Non-paced setting is selected

Table 2-13   Pacing Detection Settings *(continued)*

Setting	Description	Symbol on Status Bar
Paced	■ Pacemaker pulse detection is on and is set at a higher sensitivity ■ Use this setting if small amplitude pacemaker pulses are not being detected at the default (Not Known if Paced) setting ■ False pacemaker pulse detections may occur if the ECG is noisy	**P**
Paced (magnet)	■ Use this setting if the ECG is acquired with an active pacemaker magnet or programmer in place ■ Pacemaker pulse detection is on and is at a higher sensitivity ■ Magnets or programmers often put the pacemaker into a fixed-rate, non-sensing mode ■ The statement ECG ACQUIRED WITH MAGNET IN PLACE is printed on the 12-lead Report notifying the overreader that a magnet or programmer was used and would explain the fixed rate behavior of the pacer	**PM**

REPORT

To change the pacing detection setting:

1 Turn the Trim Knob to highlight **Report** button on the Command Toolbar.

2 Push the Trim Knob to select the button. The Report settings window appears. Three tabs appear on the top of the screen. The **Auto** tab is selected.

3 Turn the Trim Knob until the **Not Known if Paced** (recommended setting) is highlighted under **Pacer Detect**.

4 Turn the Trim Knob to highlight a setting.

5 Push the Trim Knob to select the setting.

6 Press the Enter key on keyboard to save the Pacing Detection Setting and to exit the screen. Press the Esc key to exit the screen and without saving the new setting.

The new pacing detection setting is applied and appears on the Status Bar. After the patient session ends, the default pacing detection setting (set in Configuration) is restored and will appear on the Status Bar.

Getting Help on the Cardiograph
PageWriter Trim II and III only

The **Help** button on the Command Toolbar may be selected at any time while using the cardiograph. Help provides basic information on cardiograph operation and on signal quality troubleshooting.

To open Help:

1   Turn the Trim Knob to highlight the **Help** button on the Command Toolbar.

2   Push the Trim Knob to select the button.

3   The Help screen appears. Turn the Trim Knob to go forward or back through the screens. Press the Esc key on keyboard to exit the Help.

3

Reading the Printed ECG Report

The following chapter describes the printed report formats available on the PageWriter Trim I, II and III cardiographs. Figure 3-1 describes the 3x4 1R report format that is available on all cardiograph models. For information on additional report formats, see page 3-18.

Figure 3-1   A 12-Lead 3x4, 1R Report (page one)
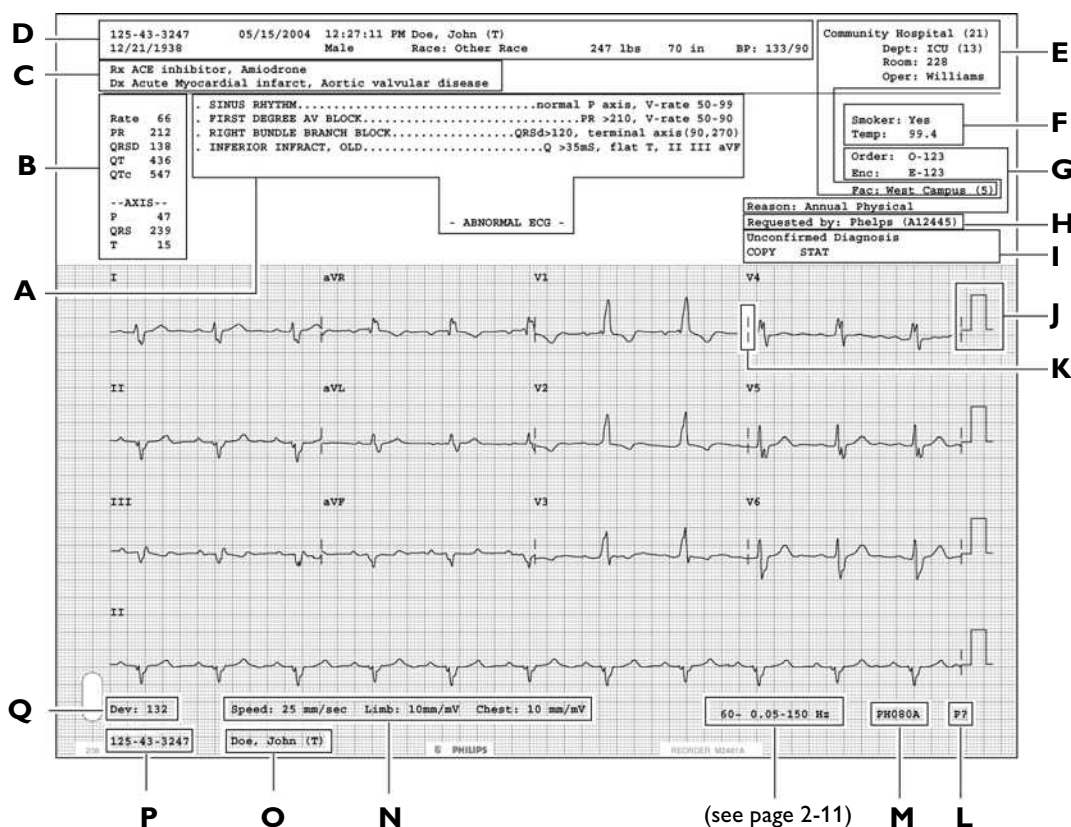
A Interpretive, Reason, and Severity Statements (see page 3-2)
B Basic Measurements (see page 3-4)
C Patient ID Clinical Information (see page 3-5)
D Patient ID Information (see page 3-6)
E Institution Information (see page 3-7)
F Configurable Clinical Information (see page 3-8)
G ECG Order Information (see page 3-9)
H Physician Information (see page 3-10)
I Report Information (see page 3-10)
J Calibration Information (see page 3-11)
K Time Separator (see page 3-13)
L Pacing Detection Setting (see page 3-13)
M Algorithm Version (see page 3-16)
N Speed and Sensitivity Settings (see page 3-16)
O Patient Name (see page 3-7)
P Patient ID Number (see page 3-7)
Q Device Identification Number (page 3-17)

Additional Patient ID Clinical Information may appear on the top of a second page of the ECG report if more than two clinical fields (Rx, Dx, Sx, Hx) are entered with the Patient ID information.

Additional Configurable Clinical Information may also appear on the top of a second page of the ECG report if more than two fields are entered.

Figure 3-2   A 12-Lead 3x4, 1R Report (page two)
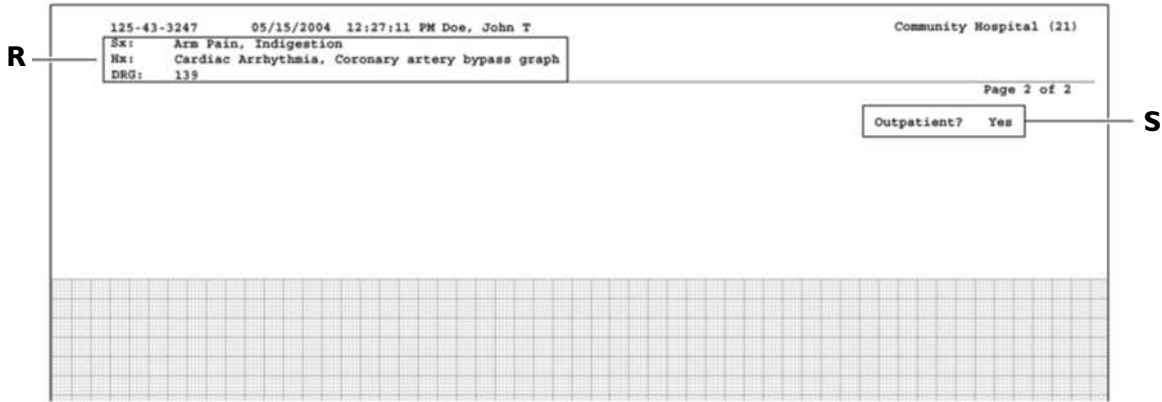
R Additional Patient ID Clinical Information (see page 3-5)
S Additional Configurable Clinical Information (see page 3-8)

Interpretive, Reason, and Severity Statements

This area of the report contains the interpretive, reason, and severity statements generated by the Philips 12-Lead Algorithm. This feature is only available on the PageWriter Trim I and III.

Figure 3-3   Interpretive, Reason, and Severity Statements on the ECG Report
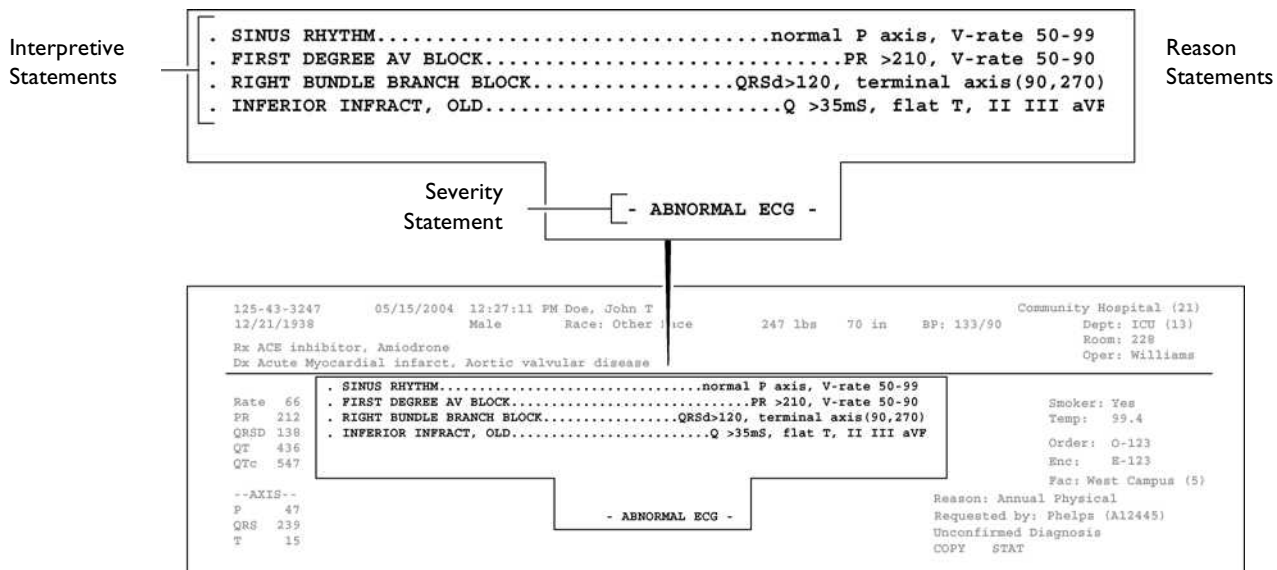
Interpretive statements may include a reason statement that summarizes the criteria that generated the interpretive statement.

NOTE   The interpretive statements may include quality statements that describe a signal quality problem that occurred during recording, such as `ARTIFACT IN LEAD(S) I, III, aVL.`

For a complete listing (in alphabetical order and by diagnostic category) of all of the criteria included in the Philips 12-lead Algorithm, see Appendices B and C of the *Philips 12-lead Algorithm Physician's Guide* on the User Documentation CD or download the file from www.medical.philips.com.

Severity Statement

Each interpretive statement included on the ECG report has an associated severity. Severities that are more abnormal override lesser severities. The severities of all selected interpretive statements are combined to determine the overall severity of the ECG. This severity code is printed on the front page of the ECG report.

Table 3-1 Overall ECG Severity with Code

Severity	Code
No Severity	NS
Normal ECG	NO
Otherwise Normal ECG	ON
Borderline ECG	BO
Abnormal ECG	AB
Defective ECG	DE

Basic Measurements

These measurements provide standard interval and duration measurements in milliseconds, and limb lead axis measurements in degrees. These are the values measured from the representative beat pattern in the ECG. This feature is only available on the PageWriter Trim II and III.

Figure 3-4   Basic Measurements on the ECG Report

```
Rate    66
PR     212
QRSD   138
QT     436
QTc    547

--AXIS--
P       47
QRS    239
T       15
```

```
125- 3-3247      05/15/2004  12:27:11 PM Doe, John T                          Community Hospital (21)
12/  /1938               Male        Race: Other Race       247 lbs    70 in   BP: 133/90      Dept: ICU (13)
                                                                                               Room: 228
Rx A E inhibitor, Amiodrone                                                                    Oper: Williams
Dx A ute Myocardial infarct, Aortic valvular disease

           . SINUS RHYTHM...........................normal P axis, V-rate 50-99
Rate  66   . FIRST DEGREE AV BLOCK.............................PR >210, V-rate 50-90        Smoker: Yes
PR   212   . RIGHT BUNDLE BRANCH BLOCK.................QRSd>120, terminal axis(90,270)      Temp:  99.4
QRSD 138   . INFERIOR INFRACT, OLD........................Q >35mS, flat T, II III aVF
QT   436                                                                                    Order: O-123
QTc  547                                                                                    Enc:   E-123
                                                                                            Fac: West Campus (5)
--AXIS--                                                                                Reason: Annual Physical
P     47                          - ABNORMAL ECG -                                      Requested by: Phelps (A12445)
QRS  239                                                                                Unconfirmed Diagnosis
T     15                                                                                COPY   STAT
```

Table 3-1   Basic Measurements

Label	Description	Units
RATE	Heart rate	beats per minute
PR	PR interval	milliseconds
QRSD	QRS duration	milliseconds
QT	QT interval	milliseconds
QTc	QT interval corrected for rate	milliseconds
P	Frontal P axis	degrees
QRS	Frontal QRS axis	degrees
T	Frontal T axis	degrees

Patient ID Clinical Information

This area of page one or page two of the report contains clinical patient information that is entered with the Patient ID. This includes information about the patient's Medications (Rx), Diagnoses (Dx), Symptoms (Sx), History (Hx), and a Diagnosis Related Group (DRG) code. This information is optional and configurable (see page 5-7). The example below is for informational purposes only. This feature is only available on the PageWriter Trim II and III.

Figure 3-5   Patient ID Clinical Information on the ECG Report (page one)

If more than two Patient ID Clinical Information fields are entered, the third and subsequent fields appear at the top of a second page of the report.

Figure 3-6   Patient ID Clinical Information on the ECG Report (page two)

Patient ID Information

This section contains patient identification information. This block of information is configurable (see page 5-4). The example below is for informational purposes only.

Figure 3-7   Patient ID Information on the ECG Report

```
125-43-3247    05/15/2004  12:27:11 PM  Doe, John T
               12/21/1938  Male            Race: Other Race    247 lbs    70 in    BP: 133/90
```

```
125-43-3247      03/15/2003  12:27:11 PM Doe, John T                         Community Hospital (21)
12/21/1938       Born 1936   Male      Race: Other Race      247 lbs   70 in   BP: 133/90      Dept: ICU (13)
                                                                                               Room: 228
Rx ACE inhibitor, Amiodrone                                                                    Oper: Williams
Dx Acute Myocardial infarct, Aortic valvular disease

         . SINUS RHYTHM................................normal P axis, V-rate 50-99
Rate  66 . FIRST DEGREE AV BLOCK.............................PR >210, V-rate 50-90           Smoker: Yes
PR   212 . RIGHT BUNDLE BRANCH BLOCK.................QRSd>120, terminal axis(90,270)         Temp:   99.4
QRSD 138 . INFERIOR INFRACT, OLD......................Q >35mS, flat T, II III aVF
QT   436                                                                                     Order: O-123
QTc  547                                                                                     Enc:   E-123
                                                                                             Fac: West Campus (5)
--AXIS--                                                                              Reason: Annual Physical
P     47                                                                              Requested by: Phelps (A12445)
QRS  239                              - ABNORMAL ECG -                                 Unconfirmed Diagnosis
T     15                                                                              COPY    STAT
```

Table 3-2   Patient ID Information

Label	Description
125-43-3247	■ Patient identification number
03/15/2003; 12:27:11 PM	■ Date and time of ECG acquisition ■ Cannot be edited
Doe, John T.	■ Patient name
Born 1936	■ Patient date of birth (may be configured to display patient age)
Male	■ Patient gender
Race	■ Patient ethnicity (see table below for codes)
247 lbs, 70 in.	■ Patient weight and height
BP: 133/90	■ Patient blood pressure (mm/Hg)

Additional Patient ID Information

Additional Patient ID information can be configured to appear at the bottom of the report (see page 5-18). This may be helpful if the patient name and ID is being cut off in the printed report format. This feature is only available on the PageWriter Trim II and III.

Figure 3-8   Patient Name and ID information on the bottom of report

Institution Information

This block of identification information is optional and is fully configurable (see page 5-31). The example below is for informational purposes only. This feature is only available on the PageWriter Trim II and III.

Figure 3-9   Institution Information on the ECG Report
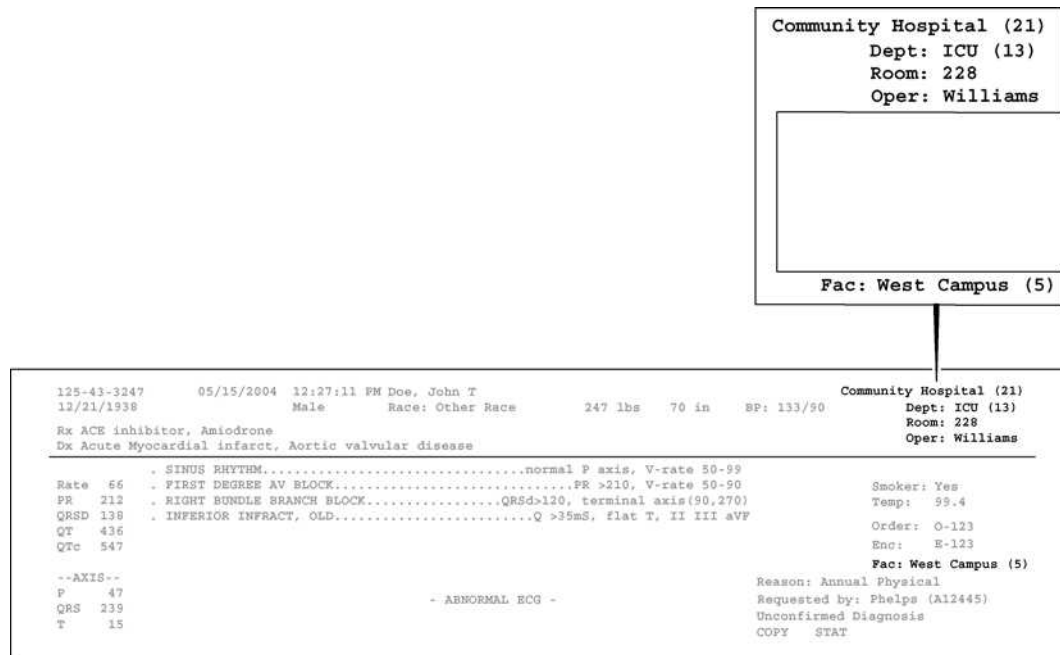
Table 3-3   Institution Information

Label	Description
Community Hospital (21)	■ Name and ID number of institution
Dept: ICU (13)	■ Name and ID number of department

Table 3-3   Institution Information *(continued)*

Label	Description
Room: 228	■ Room number of patient or room number where ECG was acquired
Oper: Williams	■ Operator identification
Fac: West Campus (5)	■ Name and ID number of facility or other unit within an institution

Configurable Clinical Information

This information is configurable to fit specific clinical needs (see page 5-7). Up to six configurable drop-down fields are available. This feature is only available on the PageWriter Trim II and III.

The first four text fields appear on page one of the ECG report. The fifth and subsequent text fields appear on page two of the ECG report. The examples below are for informational purposes only.

Figure 3-10   Configurable Clinical Information on the ECG Report (page one)

Figure 3-11   Configurable Clinical Information on the ECG Report (page two)

ECG Order Information

This area of the report is configurable to meet the requirements of an order management system (see page 5-10). This feature is only available on the PageWriter Trim II and III.

Figure 3-12   ECG Order Information on the ECG Report
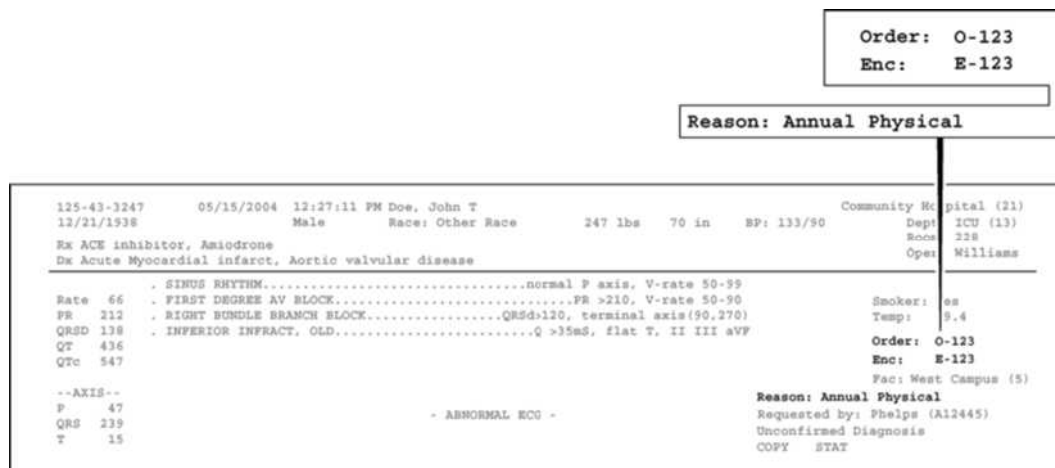
Table 3-4   ECG Order Information

Label	Description
Order: 0-123	▪ Institution-defined order number, part of order management system
Enc: E-123	▪ Institution-defined encounter number, part of order management system
Reason: Annual Physical	▪ The reason for acquiring the ECG, may be part of an order management system

Physician Information

This information block is configurable (see page 5-10) and contains physician identification information, including the name of the ordering physician and UPIN (Universal Physician Identification Number). This feature is only available on the PageWriter Trim II and III.

Figure 3-13   Physician Information on the ECG report

Report Information

Information about the status of the ECG report is included in this section. The statement indicating that the ECG report has not been overread by a physician is configurable (see page 5-2). This feature is only available on the PageWriter Trim II and III.

Figure 3-14   Report Information on the ECG Report

Table 3-5   Report Information

Label	Description
Unconfirmed Diagnosis	■ Indicates that the ECG report has not been overread by a qualified physician
COPY	The ECG report is a printed copy of an original
STAT	The ECG report is designated as STAT

Table 3-5 Report Information *(continued)*

Label	Description
Non-standard lead gains	■ The limb leads or precordial leads were recorded at a gain other than the standard 10mm/mV ■ See "Calibration Information" on page 3-11

Calibration Information

The calibration pulse is the rectangular waveform shown in each line of ECG trace. It shows the hypothetical deflection of the trace in response to a 1 mV calibration pulse applied to the acquisition circuitry.

Figure 3-15 Calibration Pulse on the ECG Report
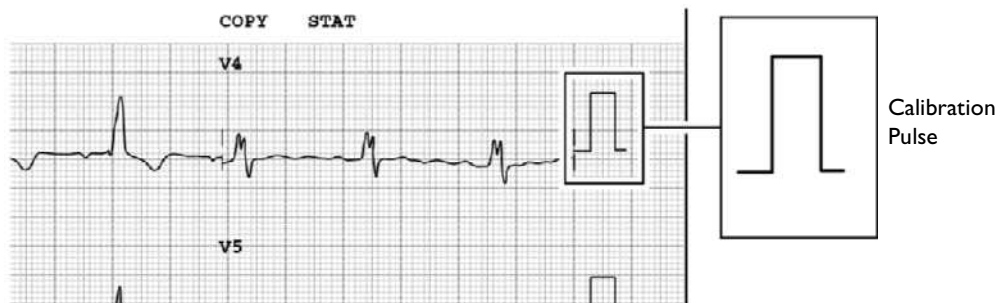
The shape of the calibration pulse reflects the scaling of the trace.

■ If the calibration pulse is square ⊓ the precordial leads and limb leads were recorded at the same scale.

■ If the calibration pulse is stepped ⊓⌐ the precordial leads were recorded at half the scale of the limb leads.

Table 3-6 Calibration Pulse Shapes
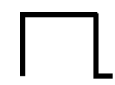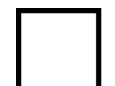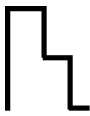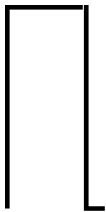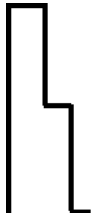
Calibration Pulse Shape	Limb (mm/mV)	Precordial (mm/mV)
⊓	5	5
⊓⌐	5	2.5
⊓	10	10

Table 3-6   Calibration Pulse Shapes *(continued)*

Calibration Pulse Shape	Limb (mm/mV)	Precordial (mm/mV)
	10	5
	20	20
	20	10

NOTE   For ECG recordings where the precordial leads or limb leads were recorded at a gain other than 10mm/mV, the statement `Non-standard lead gains` appears in the Report Information section on the printed report.

Figure 3-16   Calibration information on the ECG report

Time Separator

The time separator marks indicate whether the ECG data is displayed simultaneously or time-sequentially. These settings are configured as part of a report or copy profile (see page 5-12). The data for each lead is always acquired simultaneously.

Figure 3-17   Simultaneous time separator on ECG report

The double line indicates that the ECG data for each lead is displayed simultaneously. The starting point of each lead is the same time even though they may appear to start at different times on the printed report.

Figure 3-18   Time sequential separator on ECG report

The single line indicates that the ECG data for each lead is displayed over a continuous period of time. For example, on a 3x4 grid all signals start at 0 in the first column, 2.5 seconds in the second column, 5.0 seconds in the third column, and 7.5 seconds in the fourth column.

Pacing Detection Settings

This area of the report contains information about the pacing detection settings that were selected when the ECG report was printed.

Pacemaker pulses that are detected by the cardiograph are marked on the ECG report with small vertical tick marks. These marks enable the overreader to identify false pacemaker pulse detections, or if true pulses are not being detected.

WARNING	Pace pulse tick marks do not appear on any PageWriter Trim II and III report that include simultaneous (not time-sequential) acquisition settings. For information on simultaneous acquisition, see page 3-13. For information on report settings, see page 2-25.

Figure 3-19   Pacing Detection Setting on the ECG report
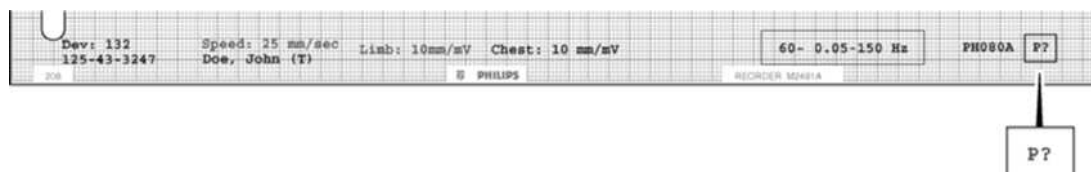
The table below describes the available Pacing Detection Settings with the pacing detection code that appears on the printed ECG report.

Table 3-7   Pacing Detection Settings

Setting	Description	ECG Report Code
Not known if paced	■ This is the default setting and normally is used for both paced and non-paced patients. ■ Pacemaker pulse detection is on and is at normal sensitivity. ■ Occasional false pacemaker pulse detections may occur in ECGs with excessive noise. ■ False detections may result in an incorrect interpretive statement appearing on the report. ■ Small amplitude pacemaker pulses may not be detected using this setting.	P?
Non-paced	■ Pacemaker pulse detection is off. ■ Use this setting if there are false pacemaker pulse detections from noise, or if incorrect interpretive statements or inappropriate paced ECG complexes appear on the report.	■ No code appears on the ECG report if the Non-paced setting is selected.

Table 3-7   Pacing Detection Settings *(continued)*

Setting	Description	ECG Report Code
Paced	■ Pacemaker pulse detection is on and is set at a higher sensitivity. ■ Use this setting if small amplitude pacemaker pulses are not being detected at the default (Not Known if Paced) setting. ■ False pacemaker pulse detections may occur if the ECG is noisy.	P
Paced (magnet)	■ Use this setting if the ECG is acquired with an active pacemaker magnet or programmer in place. ■ Pacemaker pulse detection is on and is at a higher sensitivity. ■ Magnets or programmers often put the pacemaker in a fixed-rate, non-sensing mode. ■ On the PageWriter Trim I and III, the statement ECG ACQUIRED WITH MAGNET IN PLACE is printed on the ECG report. This statement notifies the overreader that a magnet or programmer was used and would explain the fixed rate behavior of the pacer.	PM

Algorithm Version Number

The version number of the Philips 12-Lead Algorithm is printed at the bottom of the ECG Report. This feature is only available on the PageWriter Trim I and III.

Figure 3-20   Algorithm Version Number on the ECG Report
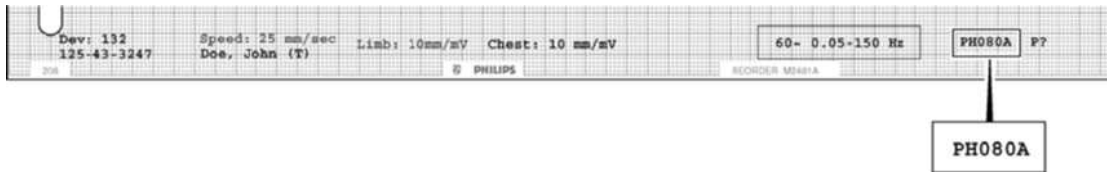
Table 3-8   Algorithm Version Number

Label	Description
PH080A	- PH refers to Philips 08 refers to the version of the measurement program 0A refers to the criteria version installed on the cardiograph

Speed and Sensitivity Settings

This area contains information about the speed and sensitivity settings that were used for the ECG recording.

Figure 3-21   Speed and Sensitivity Settings on the ECG Report
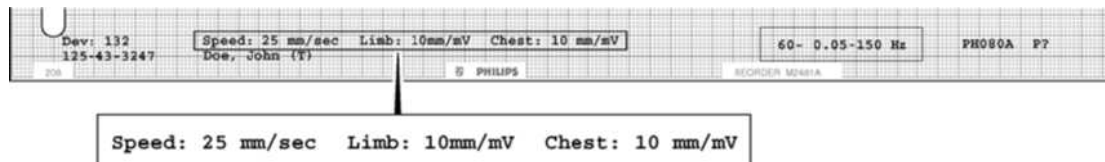
Table 3-9   Speed and Sensitivity Settings

Label	Description
Speed	- The speed at which the ECG was printed - Available settings: 25mm/sec 50 mm/sec

Table 3-9   Speed and Sensitivity Settings *(continued)*

Label	Description
Limb	■ The limb lead sensitivity setting ■ Available settings: – 5, 10, or 20 mm/mV
Chest	■ Precordial lead sensitivity setting ■ Available settings: – 2.5, 5, 10, or 20 mm/mV

N O T E   For ECG recordings where the precordial leads or limb leads were recorded at a gain other than 10mm/mV, the statement `Non-standard lead gains` appears in the Report Information section on the printed report.

Device Identification Number

This number is entered in Configuration (see page 5-31). This number is used to identify the individual cardiograph that was used to acquire the ECG. This feature is only available on the PageWriter Trim II and III.

Figure 3-22   Device ID on the ECG Report
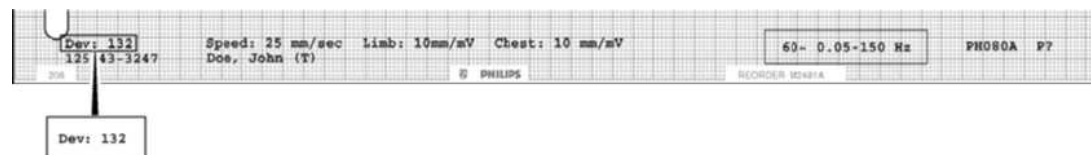
12-Lead ECG Report Examples

The following section includes examples of other 12-Lead report formats available on the PageWriter Trim II and III cardiographs.

- 3x4, 3R report with Standard Leads

- 3x4, 1R report with Cabrera Leads

- 6x2 report (5-second waveform segments) with Cabrera Leads

- 12x1 report with Cabrera Leads. The 12x1 report shows 10 seconds of continuous waveform data for 12 leads and includes a second page with interpretive, reason, and severity statements (if configured).

- Panoramic (Pan-12) report with Cabrera Leads. The Pan-12 report shows a one-second representative complex for each Cabrera Lead with three pre-selected rhythm strips at the bottom (aVF, V2, V5).

N O T E The available PageWriter Trim I report formats are 3x4 1R with Standard lead sequence and 3 and 6 lead Rhythm reports.

Figure 3-23   3x4, 3R Report with Standard Leads

Figure 3-24   3x4, 1R Report with Cabrera Leads and Simultaneous Acquisition


```
125-43-3247        05/15/2004   12:27:11 PM Doe, John T                              Community Hospital (21)
12/21/1938                      Male       Race: Other Race       247 lbs   70 in   BP: 133/90        Dept: ICU (13)
                                                                                                      Room: 228
Rx ACE inhibitor, Amiodrone                                                                           Oper: Williams
Dx Acute Myocardial infarct, Aortic valvular disease

   . SINUS RHYTHM...................................normal P axis, V-rate 50-99
   . FIRST DEGREE AV BLOCK....................................PR >210, V-rate 50-90      Smoker: Yes
Rate  66 . RIGHT BUNDLE BRANCH BLOCK.............QRSd>120, terminal axis(90,270)         Temp:  99.4
PR   212 . INFERIOR INFRACT, OLD................Q >35mS, flat T, II III III aVF
QRSD 138                                                                                 Order: O-123
QT   436                                                                                 Enc:   E-123
QTc  547                                                                                        Fac: West Campus (5)
--AXIS--
P     47                                             Reason: Annual Physical
QRS  239                          - ABNORMAL ECG -   Requested by: Phelps (A12445)
T     15                                             Unconfirmed Diagnosis
                                                     COPY    STAT
```

Dev: 132   Speed: 25 mm/sec   Limb: 10mm/mV   Chest: 10 mm/mV   60-- 0.05-150 Hz   PH080A   P?
125-43-3247 Doe, John (T)

Figure 3-25   6x2 Report with Cabrera Leads
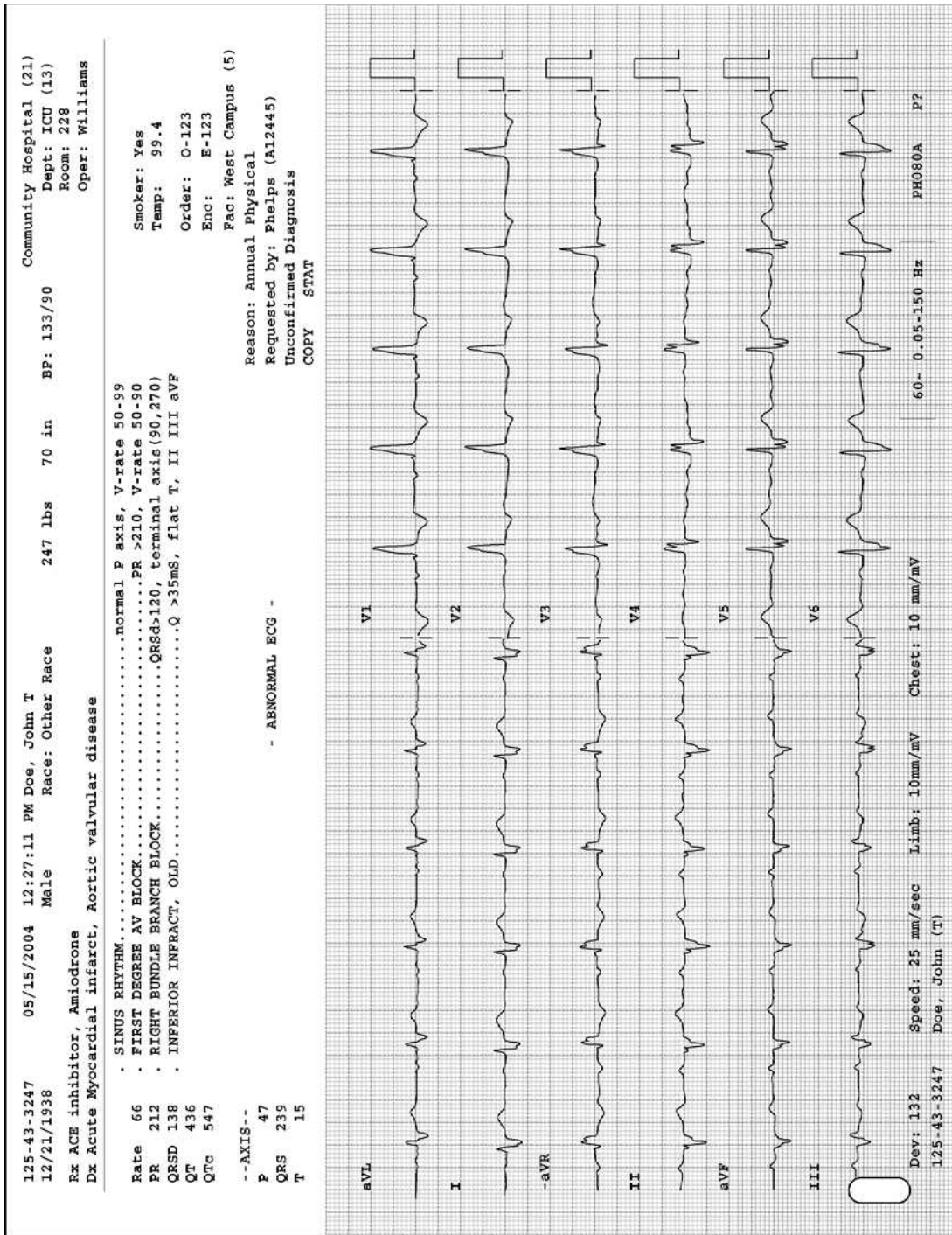
Figure 3-26   12x1 Report with Cabrera Leads (page one)
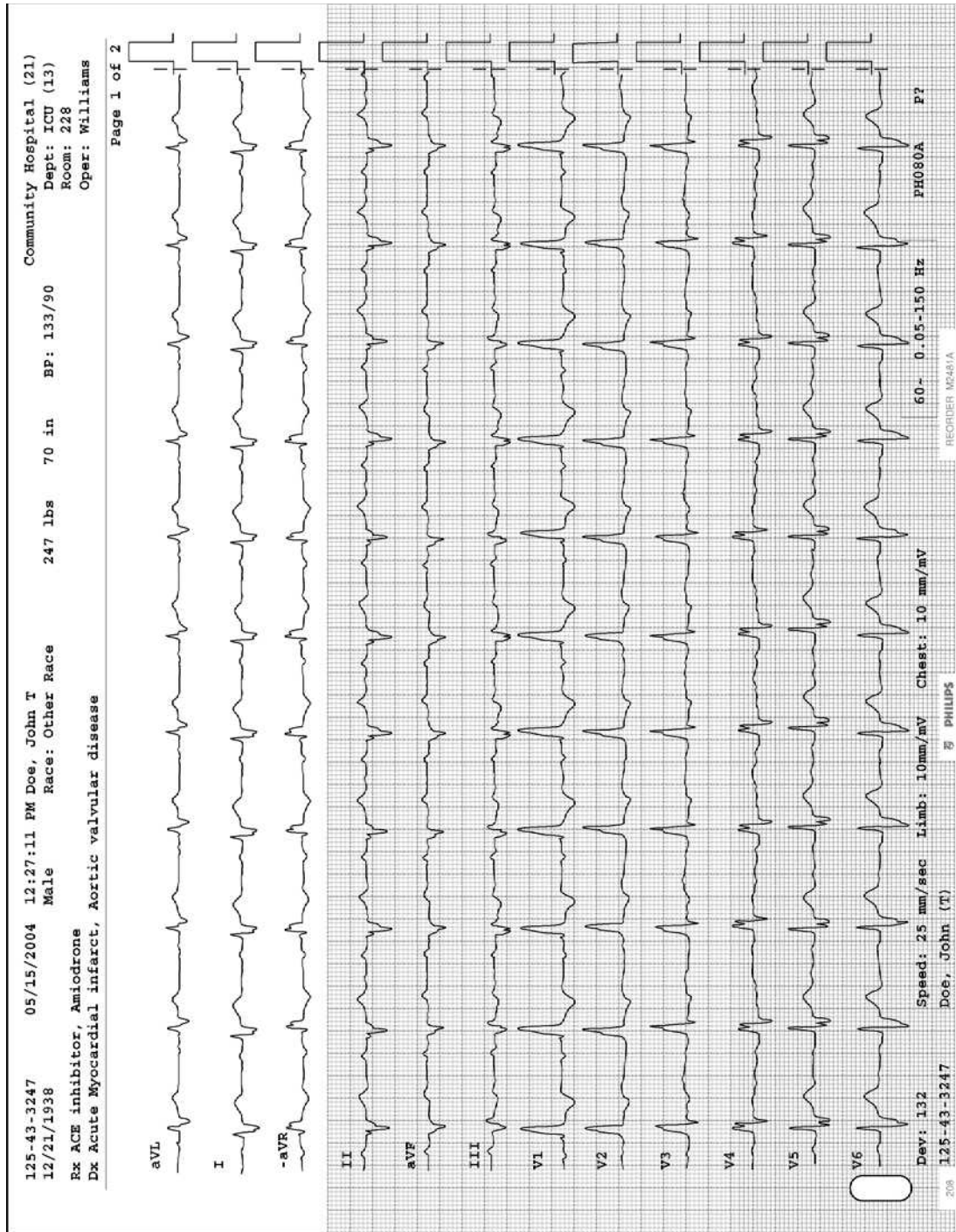
Figure 3-27   12x1 Report with Cabrera Leads (page two)
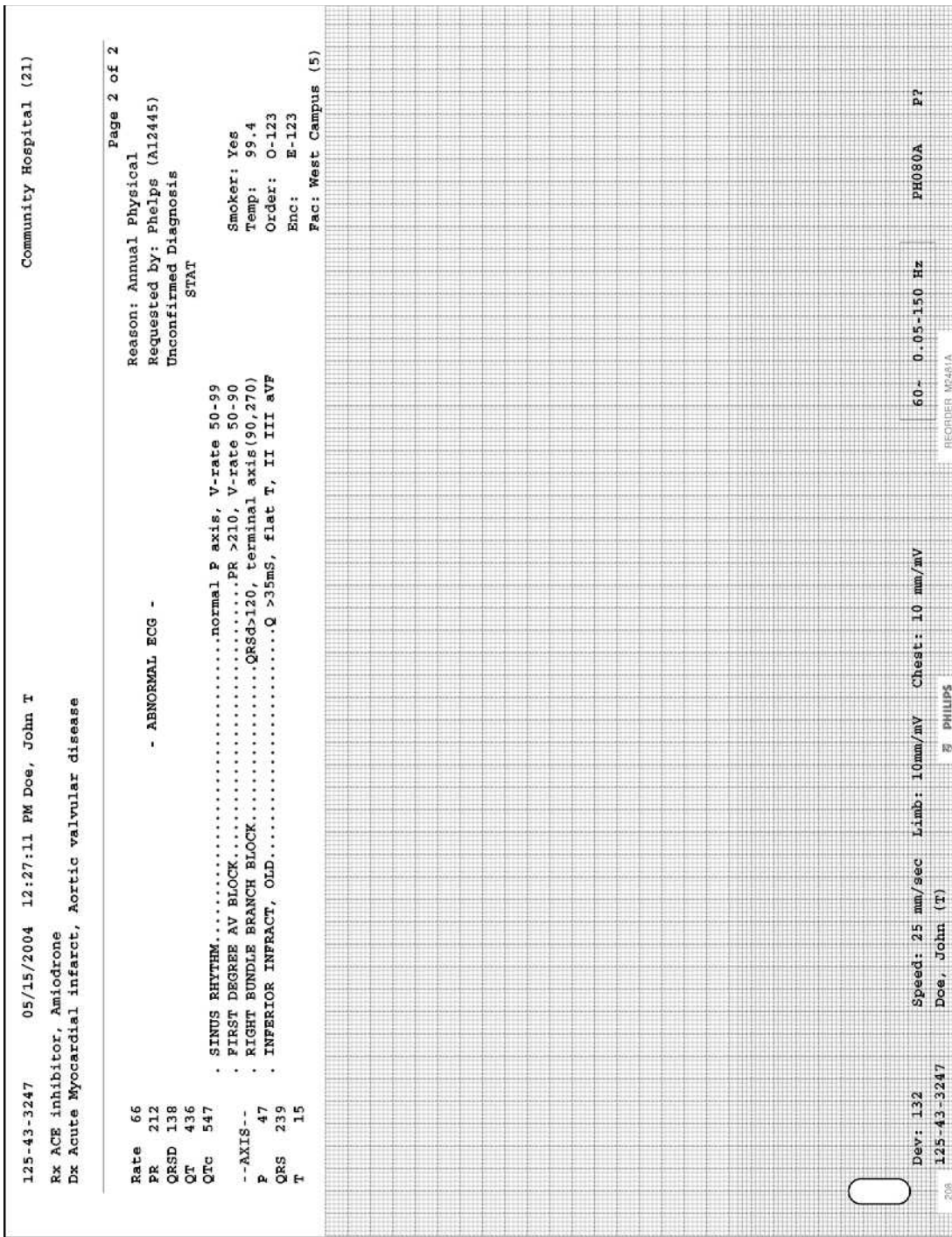
Figure 3-28   Panoramic (Pan-12) Report
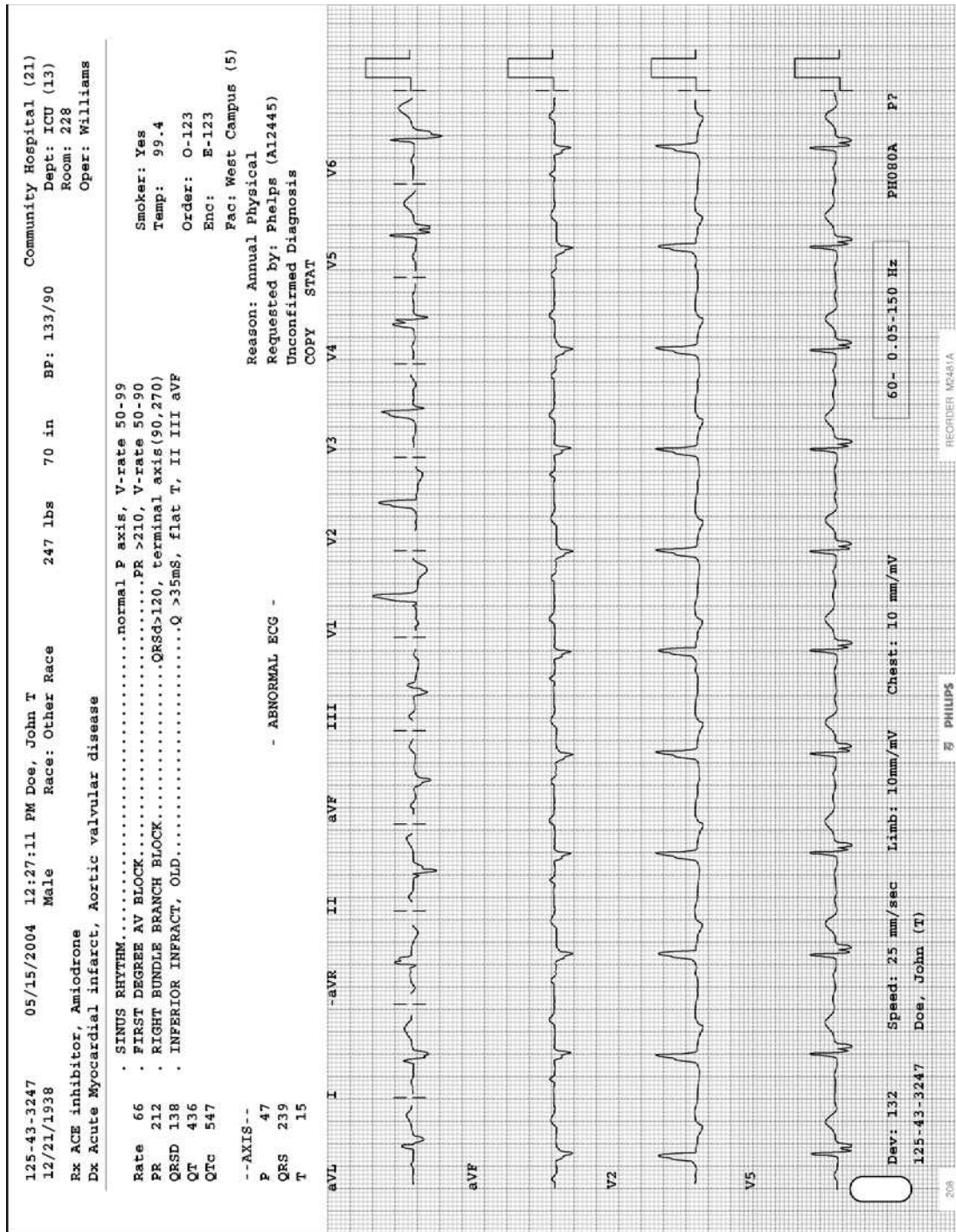
NOTE   Leads are displayed in Cabrera sequence on the Panoramic (Pan-12) Report regardless of the selected lead standard on the cardiograph.

Extended Measurements Report

PageWriter Trim III only

The Extended Measurements report summarizes the output of the Philips 12-Lead Algorithm. The report includes the morphology characteristics for the individual leads, and the rhythm characteristics for the rhythm groups. The algorithm uses this measurement information to generate interpretive statements. The Extended Measurements report is especially useful if you want to examine the measurements used to generate an interpretation.

For more information on the Extended Measurements Report, see Chapter 5 of the *Philips 12-Lead Algorithm Physician's Guide* on the User Documentation CD or download the file from: www.medical.philips.com.

Rhythm Report

Rhythm reports show up to 12 leads of continuous waveform data. The amount of report information that is included on the report is dependent upon the number of leads selected for recording. Information on the report may include:

- Patient ID information

- Date and time of recording

- Settings information (scale and sensitivity, filter settings)

Rhythm reports are not analyzed, so they do not provide measurement information or interpretive statements, and they are not saved to the Archive. The calibration pulse appears at the beginning of the ECG trace.

Figure 3-29   A Rhythm Report with 6 Leads
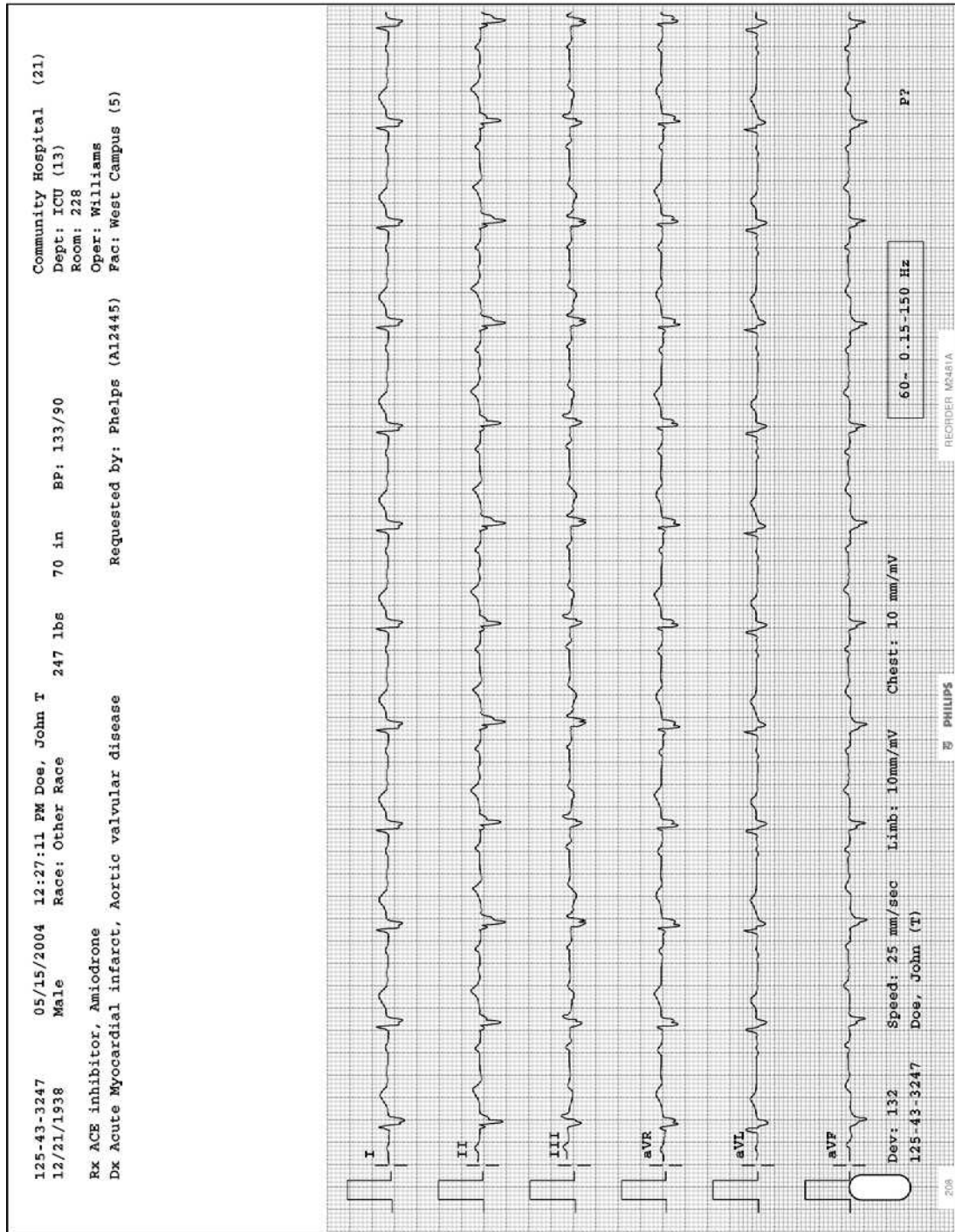
Figure 3-30   A Rhythm Report with 12 Leads
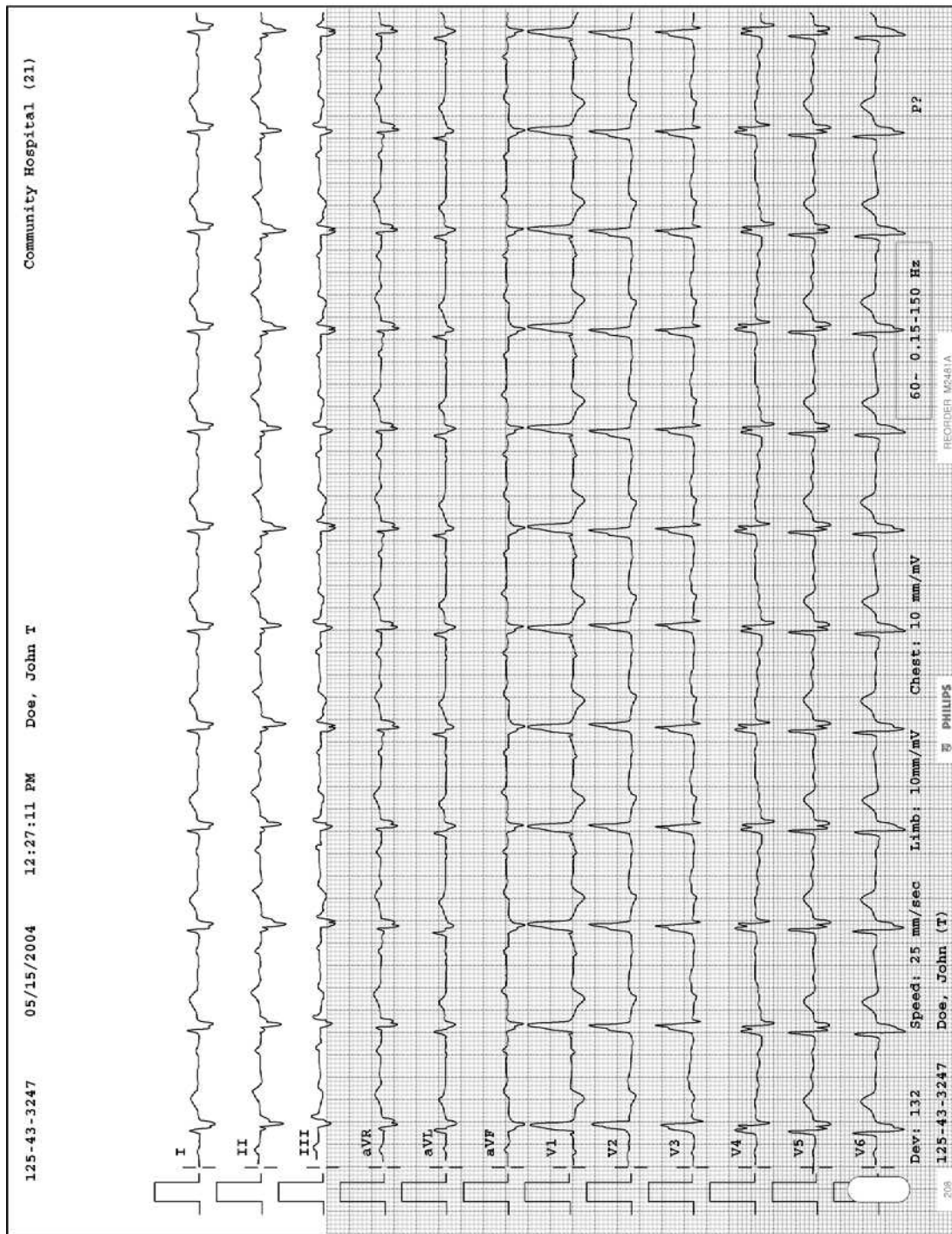
Disclose Report

PageWriter Trim II and III only

The Disclose report displays up to one minute of continuous ECG waveform data for one selected lead. Disclose reports are not analyzed, so they do not provide measurement information or interpretive statements, and they are not saved to the Archive. Each 10-second waveform segment on the report is labeled next to the lead name.

Figure 3-31   1 Minute Disclose Report
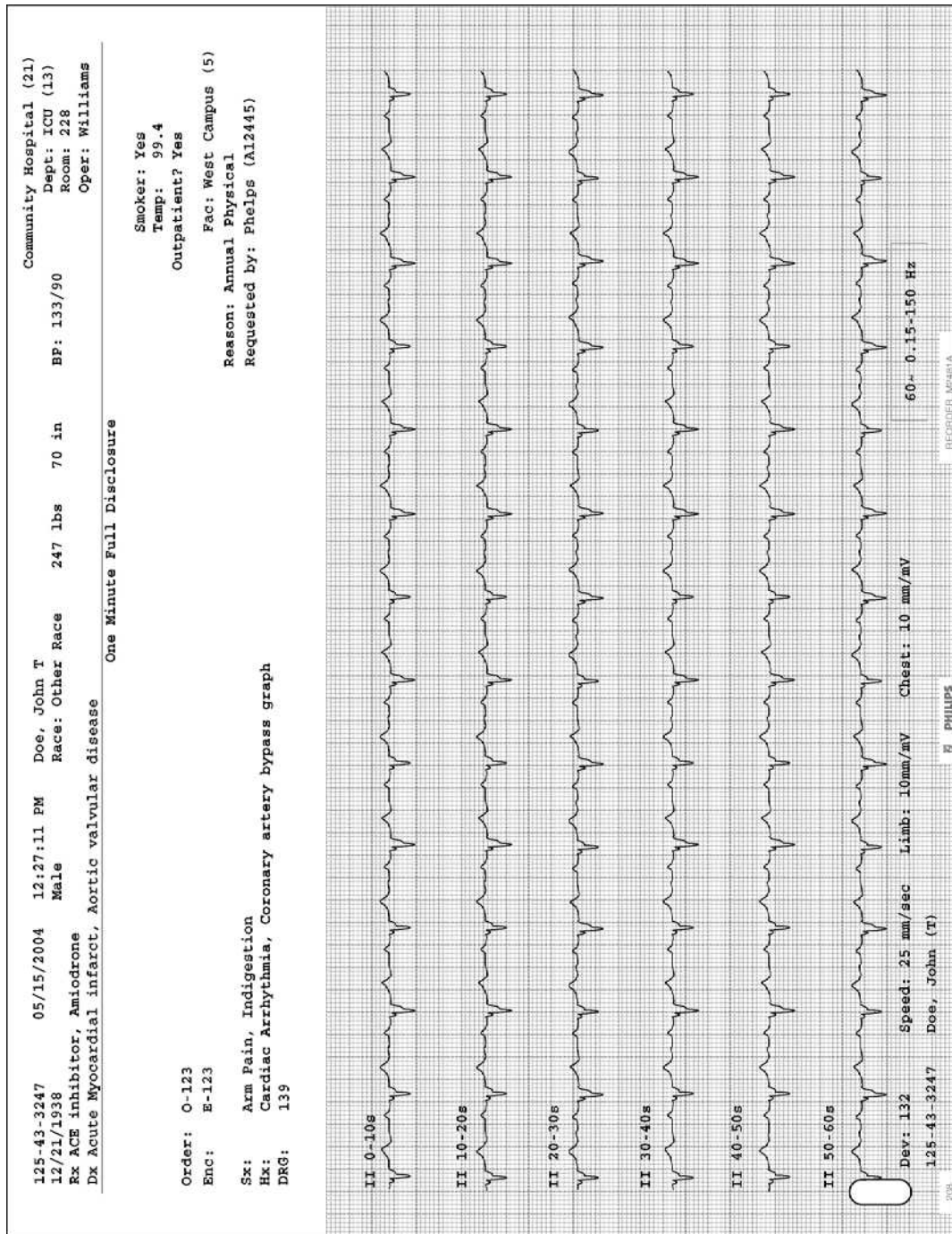
PageWriter Trim II and III Orders and Archive

About Orders

The Order screen is used to pre-load Patient ID information onto the cardiograph. Once the Patient ID information is loaded onto the cardiograph it becomes a Pending Order. Pending Orders may be selected on the Patient ID screen during a patient session. For more information, see page 2-20.

About the Archive

The Archive provides storage for Auto reports. Any Auto report stored in the Archive may be viewed, printed, and the Patient ID information may be edited and saved.

The Archive is also used to transmit Auto reports from the cardiograph to a TraceMaster ECG Management System (version A.04.02) or TraceMasterVue ECG Management System (version A.01 or higher) by modem or by a network connection. Auto reports may also be transferred to any external ECG management system that accepts XML (Extensible Markup Language) files. For more information on the PageWriter Trim XML Schema, see the User Documentation CD.

The Archive can also be used to search a configured TraceMaster Remote Site for stored 12-lead reports to print on the PageWriter Trim cardiograph. For information on configuring the cardiograph to work with Remote Sites, see page 5-22.

Using the Order Screen

Orders are created, edited, and deleted on the Order screen.

To open the Order screen:

ORDER

1 Turn the Trim Knob until the **Order** button on the Command Toolbar is highlighted.

2 Push the Trim Knob to select the button. The Order screen appears.

Figure 4-1   The Order Screen

Table 4-1   Order Screen Description

Letter	Description	Function
A	Patient ID Information tabs	■ The number of tabs that appear on the screen are dependent upon the amount and type of Patient ID information configured for the cardiograph. ■ For information on configuring Patient ID information, see page 5-4. ■ To select a tab, press and hold down the Alt key on the keyboard. Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info.** tab, press and hold down the Alt key and then press the C key.
B	Patient ID columns	These column headers list the Patient ID fields that are contained under each tab.

Table 4-1   **Order Screen Description** *(continued)*

Letter	Description	Function
C	**ID Complete check box**	■ This check box indicates that all required Patient ID information fields for the Order are complete. ■ Required Patient ID information is set in Configuration. For more information, see page 5-4.
D	**Available Space Information**	Displays the number of loaded Orders on the cardiograph along with the number of remaining Orders that may be loaded onto the cardiograph.
E	**Order LIst**	■ Lists all of the Orders loaded onto the cardiograph. ■ These Orders have not yet been selected on the Patient ID screen during a patient session.
F	**Order Function Buttons**	Buttons that are used to navigate on the Order screen or are used to perform functions on the screen (see Table 4-2 below).

Table 4-2   **Function Button Description**

Button	Select this button to...
Left	Move to the left on the screen
Right	Move to the right on the screen
Up	Move up on the Order List
Down	Move down on the Order List
Select	Select an Order on the Order List
Select All	Select all Orders displayed on the Order List
Add Order	Add an Order to the Order List
Edit Order	Edit an Order on the Order List
Delete Order	Delete an Order from the Order List

Entering New Orders

Orders may be entered on the cardiograph using the keyboard.

To enter orders:

1   Turn the Trim Knob to highlight the **Add Order** button (bottom of screen).

2   Push the Trim Knob to select the button.

3   The **Please input data Patient ID** window appears. The **ID:** field at the top of the screen is selected. The cursor appears in the field.

4   Type in the Patient ID information.

5   Turn the Trim Knob to select the next field on the screen.

6   Type in the information. Repeat the procedure to complete all of the Patient ID fields on the screen.

7   If additional tabs appear at the top of the screen, press and hold down the Alt key on the keyboard. Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info.** tab, press and hold down the Alt key and then press the C key.

8   Press the Enter key to save the Order and to exit the screen. Press the Esc key to exit the screen without saving the Order.

    The Order screen appears. The new Order appears on the Order List and may be selected during a patient session (see page 2-20).

Deleting an Order

Orders may be deleted at any time from the Order screen. One Order may be deleted, or multiple Orders may be deleted at the same time.

NOTE   Deleted Orders may not be retrieved.

To delete an order:

1   The Order to be deleted is highlighted in dark blue (or in dark gray) on the Order List. To select a different Order, or to select multiple Orders, turn the Trim Knob to highlight the **Up** or **Down** button (bottom of screen).

2   Push the Trim Knob to select the button and to scroll through the Order List.

3   Once an Order to be deleted is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button.

4   Push the Trim Knob.An Order selected to be deleted appears in light gray on the Orders List.

5   To deselect an Order (in light gray), turn the Trim Knob to highlight the **Up** or **Down** button. Push the Trim Knob to scroll up or down through the Orders List. When the Order to be deselected is highlighted, the **Unselect** button (bottom of screen) appears. Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob to select the button. The deselected Order appears highlighted in dark blue (or in dark gray).

6   Continue to select Orders to be deleted, or to delete all Orders from the list, turn the Trim Knob to highlight the **Select All** button. Push the Trim Knob to select the **Select All** button.

7   Once all Orders to be deleted are selected, turn the Trim Knob to highlight the **Delete Order** button.

8   Push the Trim Knob to select the button. The **Deleting Selecting Orders** window appears. The **OK** button is highlighted.

9   Push the Trim Knob to select the button. The Order is deleted.

NOTE   Select the **Cancel** button to not delete the Order.

Editing an Order

An Order may be edited at any time from the Order screen.

NOTE   Only one Order may be edited at a time.

To edit an order:

1   The Order to be edited must be highlighted in dark blue (or in dark gray) on the Order List. To highlight a different Order to be edited, turn the Trim Knob to highlight the **Up** or **Down** button (bottom of screen).

2   Push the Trim Knob to select the button and to scroll through the Orders List.

3   Once the Order to be edited is highlighted, turn the Trim Knob to highlight the **Select** button.

4   Push the Trim Knob to select the button. The Order selected to be edited appears in dark gray on the Orders List.

5   To deselect an Order (in light gray), turn the Trim Knob to highlight the **Up** or **Down** button. When the Order to be deselected is highlighted, the **Unselect** button appears (bottom of screen). Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob. The deselected Order appears highlighted in dark blue (or in dark gray). Turn the Trim Knob to highlight the **Up** or **Down** button to scroll through the Order List to select another Order for editing.

6   Once the Order to be edited is selected, turn the Trim Knob to highlight the **Edit Order** button.

7   Push the Trim Knob to select the button.

8   The Patient ID information for the Order appears on the screen.

9   Edit the Patient ID information. If additional tabs appear at the top of the screen, press and hold down the Alt key on the keyboard. Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info.** tab, press and hold down the Alt key and then press the C key.

Using the Order Screen

ORDER

Orders are created, edited, and deleted on the Order screen.

To open the Order screen:

1 Turn the Trim Knob until the **Order** button on the Command Toolbar is highlighted.

2 Push the Trim Knob to select the button. The Order screen appears.

Figure 4-1   The Order Screen

Table 4-1   Order Screen Description

Letter	Description	Function
A	**Patient ID Information tabs**	■ The number of tabs that appear on the screen are dependent upon the amount and type of Patient ID information configured for the cardiograph. ■ For information on configuring Patient ID information, see page 5-4. ■ To select a tab, press and hold down the Alt key on the keyboard. Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info.** tab, press and hold down the Alt key and then press the C key.
B	**Patient ID columns**	These column headers list the Patient ID fields that are contained under each tab.

10 Press the Enter key to save the edits to the Order and to exit the screen. Press the Esc key to exit the screen without saving the edits.

The edited Order appears on the Orders list.

Using the Archive

The Archive can be used for the following:

- Print Auto reports (see page 4-9)

- Transfer Auto reports to a TraceMaster ECG Management System or to a TraceMasterVue ECG Management System, or to a PC Card (see page 4-9)

- Export Auto reports in XML format to an external data management system (see page 4-14)

- Print a list of all of the Auto reports saved in a selected Archive (see page 4-14)

- Search a TraceMaster Remote Site for Auto reports to print on the cardiograph (see page 4-15)

- Delete Auto reports from the Archive (see page 4-16)

Saving Auto Reports to the Archive

The Archive provides storage for Auto reports. The cardiograph can be configured to automatically save Auto reports to the Archive (see page 5-18), or Auto reports can be individually saved to the Archive during a patient session.

Any Auto report saved to the Archive is saved to the **Main Archive**. The Main Archive can hold approximately 50 Auto reports (PageWriter Trim II) or 150 Auto reports (PageWriter Trim III). When the limit of 50 or 150 Auto reports has been reached, reports will have to be transferred and deleted from the Main Archive before more Auto reports can be saved. For information on deleting Auto reports from the Archive, see page 4-16.

There are two categories of Auto Reports saved to the Main Archive: **ID Complete** and **ID Incomplete**.

Table 4-3   ID Complete and ID Incomplete Auto Reports

ID Complete	ID Incomplete
- All required Patient ID fields are complete	- Required Patient ID information is not complete
- The Auto report can be transferred to a TraceMaster or TraceMasterVue ECG Management System, or to a PC Card	- The Auto report cannot be transferred to a TraceMaster or TraceMasterVue ECG Management System, or to a PC Card

Table 4-4   Archive Screen Description *(continued)*

Letter	Description	Function
C	**Available Space Information**	Displays the number Auto reports in the Archive, along with the number of remaining Auto reports that may be saved to the Archive.
D	**Selected Archive**	■ This drop-down list displays all of the available Archives. ■ The **Main Archive** is the internal cardiograph Archive.
E	**Archive Report LIst**	Displays all of the reports saved to the Selected Archive.
F	**Print/Preview button**	Select this button to view the selected Auto report on the Preview screen and to print the Auto report.
G	**Function buttons**	Buttons that are used to navigate on the Archive screen or are used to perform functions on the Archive screen (see Table 4-5 below).

Table 4-5   Archive Funtion Buttons Description

Button	Select this button to...
Left	Move to the left on the screen
Right	Move to the right on the screen
Up	Move up on the report list
Down	Move down on the report list
Select	Select a report
Select All	Select all displayed reports
Edit	Edit the Patient ID Information on the selected report
Transfer	Transfer the selected report to a TraceMaster or TraceMasterVue ECG Management System, or to a PC Card
Reports	Print out a list of all reports in the selected Archive
Delete	Delete the selected report
Fax	Fax the selected report

Transferring Auto Reports to a TraceMaster ECG Management System

An Auto report must have all required Patient ID information before it can be transferred from the cardiograph to a TraceMaster ECG Management System (version A.04.02) or to a TraceMasterVue ECG Management System (version A.01 or higher). Auto reports are transferred using a configured modem or network connection. For information on configuring a modem or LAN connection used to transfer Auto Reports from the Archive, see page 5-25.

All Auto reports that appear in the **Main Archive-ID Complete** Archive have complete Patient ID information and may be transferred. For more information on configuring required Patient ID fields, see page 5-4. Auto reports that have complete Patient ID information are marked with a selected check box under the **ID Complete** column.

Auto reports that are missing required Patient ID information do not appear in **Main Archive-ID Complete** and may not be transferred. Complete all required Patient ID fields before transmitting the Auto report. For more information, see page 4-13.

Auto reports may be transferred one at a time, or multiple Auto reports in an Archive may be transferred at the same time.

Before transferring Auto reports, ensure that the modem or network LAN card is fully inserted into the PC Card slot on the rear of the cardiograph. For more information, see page 1-16.

WARNING **Do not connect the Modem Card to a phone line, or do not connect the LAN card to a network connector when the cardiograph is connected to a patient.**

To transfer an Auto report from the archive:

1 Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2 Push the Trim Knob to open the drop-down list.

3 Turn the Trim Knob to highlight **Main Archive-ID Complete**.

4 Push the Trim Knob to select the Archive. The Auto reports that can be transferred are displayed on the screen.

5 When the Archive appears, an Auto report selected to be transferred appears highlighted in dark blue (or in dark gray) on the Report List. To select different Auto report(s) to be transferred, turn the Trim Knob to highlight the **Up** or **Down** button (bottom of screen). Push the Trim Knob to scroll through the Report List and to highlight the Auto report to be transferred.

6 To transfer a single Auto report, go to step 11. To transfer multiple reports, continue to step 7.

7 To select other Auto report(s) to be transferred, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen) to scroll through the Report List.

8   When the Auto report to be transferred is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button. Or, to select all of the Auto reports on the Report List, highlight the **Select All** button.

9   Push the Trim Knob to select the Auto report(s) to be transferred. A selected Auto report appears highlighted in light gray.

10   To deselect an Auto report (in light gray), turn the Trim Knob to highlight the **Up** or **Down** button. Push the Trim Knob to select the button and to scroll through the Report List. Highlight the Auto report to be deselected. When the selected Auto report is highlighted, the **Unselect** button appears (bottom of screen). Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob to select the button. The Auto report is deselected and appears highlighted in dark blue (or in dark gray).

N O T E   When an Auto report that has already been selected is highlighted on the Report List, it will not display as dark blue or in dark gray. The Auto report will appear in a lighter gray to indicate that it has been selected. Only the ID Complete check box will appear with gray shading to indicate that the selected Auto report is highlighted.

11   When all Auto report(s) to be transferred have been selected, turn the Trim Knob to highlight the **Transfer** button.

12   Push the Trim Knob to transfer the selected Auto report(s). The **Transfer Selected ECGs** window appears.

13   Turn the Trim Knob to highlight the drop-down list under **Select Transfer Destination**.

14   Push the Trim Knob to display the drop-down list.

N O T E   If selecting **PC Card**, ensure that the PC Card is fully inserted into the PC Card slot on the rear of the cardiograph. For more information, see page 1-16.

15   Turn the Trim Knob to highlight a transfer destination.

16   Push the Trim Knob to select the transfer destination.

17   Turn the Trim Knob to highlight the **Delete Selected ECGs** text. Selecting this option deletes the Auto report from the **Main Archive** and **Main Archive-ID Complete** after it is successfully transferred. Push the Trim Knob to select the check box and to enable the feature.

18   Turn the Trim Knob to highlight the **OK** button.

19   Push the Trim Knob to transfer the Auto report(s).
The **Transfer Selected ECGs** window appears and the Auto report(s) are transferred.

Viewing and Printing Auto Reports in the Archive

Any Auto report in an Archive can be viewed or printed on the cardiograph using the original report settings. A single Auto report may be viewed or printed, or multiple Auto reports in a selected archive may be viewed or printed.

To print an Auto report:

1   Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2   Push the Trim Knob to open the drop-down list.

3   Turn the Trim Knob to highlight an Archive.

4   Push the Trim Knob to select the Archive. The Auto reports contained in the selected Archive appear on the screen.

5   The Auto report selected to be viewed or printed appears highlighted in dark blue (or in dark gray) on the Report List. To select a different Auto report to be printed, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen).

6   Push the Trim Knob to select the button and to scroll through the Report List.

7   Once the Auto report to be printed is highlighted, turn the Trim Knob to highlight the **Select** button. Or, turn the Trim Knob to highlight the **Select All** button to print all Auto reports in the Archive.

8   Push the Trim Knob to select the button. The Auto report(s) to be printed are selected and appear on the Report List in light gray.

9   To select multiple Auto reports to be viewed and printed, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen) to scroll through the Report List.

10 When the Auto report to be viewed and printed is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button.

11 Push the Trim Knob to the button. A selected Auto report appears highlighted in light gray.

12 To deselect an Auto report (in light gray), turn the Trim Knob to highlight the **Up** or **Down** button. Push the Trim Knob to select the button and to scroll through the Report List. Highlight the Auto report to be deselected. When the selected Auto report is highlighted, the **Unselect** button appears (bottom of screen). Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob to select the button. The Auto report is deselected and appears highlighted in dark blue (or in dark gray).

13 Once all Auto reports have been selected, turn the Trim Knob to highlight the **Print/ Preview** button.

14 Push the Trim Knob to select the button.

The **Print Selected ECGs** progress bar window appears. If the cardiograph is configured to automatically print, the report prints out. If the cardiograph is not configured to automatically print, the Auto report appears on the Preview screen. Press the Enter key on

the keyboard to print out the report. Press the Esc key to exit the Preview screen and not print the report.

If multiple Auto reports are have been selected, the next selected Auto report appears on the Preview screen.

NOTE   For information on automatic print features, see page 5-18.

Faxing Auto Reports in the Archive

Any Auto report saved in the Archive can be faxed to a Remote Site using the configurable fax feature, see page 5-24. The fax feature requires that the removable modem card be fully inserted into the PC Card slot located on the rear of cardiograph. For more information, see Figure 1-9 on page 1-17.

A single Auto report may be faxed, or multiple Auto reports may be faxed at the same time.

NOTE   No guarantee is made as to the suitability of the faxed 12-lead Report for any particular purpose, due to the variability inherent in fax technology.

WARNING   **Do not connect the Modem Card to a phone line when the cardiograph is connected to a patient.**

To fax an Auto report:

1   Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2   Push the Trim Knob to open the drop-down list.

3   Turn the Trim Knob to highlight an Archive.

4   Push the Trim Knob to select the Archive. The Auto reports contained in the selected Archive appear on the screen.

5   The selected Auto report appears highlighted in dark blue (or in dark gray) on the Report List. To select a different Auto report to be faxed, turn the Trim Knob to highlight the **Up** or **Down** buttons.

6   Push the Trim Knob to select the button and to scroll through the Report List.

7   Once the Auto report to be faxed is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button. Or, turn the Trim Knob to highlight the **Select All** button to fax all Auto reports in the Archive.

8   Push the Trim Knob to select the button. A selected Auto report appears highlighted in light gray.

9   To select multiple Auto reports to be faxed, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen) to scroll through the Report List.

10   When the Auto report to be faxed is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button.

11   Push the Trim Knob to select the button. A selected Auto report appears highlighted in light gray.

12   To deselect an Auto report, turn the Trim Knob to highlight the **Up** or **Down** button. Push the Trim Knob to select the button and to scroll through the Report List. Highlight the Auto report to be deselected. When the selected Auto report is highlighted, the **Unselect** button appears (bottom of screen). Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob to select the button. The Auto report is deselected and appears highlighted in dark blue (or in dark gray).

13   Once all Auto reports to be faxed are selected, turn the Trim Knob to highlight the **Fax** button. The **Fax Selected ECGs** window appears.

14   Turn the Trim Knob to highlight the drop-down list under **Select Fax Destination**.

15   Push the Trim Knob to display the drop-down list.

16   Turn the Trim Knob to highlight the desired configured fax destination.

NOTE   For information on configuring a Remote Site fax destination, see page 5-24.

17   Push the Trim Knob to select the highlighted fax destination.

18   Turn the Trim Knob to highlight the **OK** button.

19   Push the Trim Knob to fax the selected Auto report(s).

The **Fax Selected ECGs** window appears and the Auto report(s) are faxed to the Remote Site.

Editing Patient ID Information

Patient ID information may be edited or completed on any Auto report saved in the Archive. On the PageWriter Trim III, edited Patient ID information (date of birth, gender, clinical information) may affect ECG interpretation and result in new interpretive, reason, and severity statements appearing on the Auto report.

NOTE   Only one Auto report may be edited at a time.

To edit Patient ID information:

1   Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2   Push the Trim Knob to open the drop-down list.

3   Turn the Trim Knob to highlight an Archive.

4   Push the Trim Knob to select the Archive. The Auto reports contained in the selected Archive appear on the screen.

5   The selected Auto report appears highlighted on the Report List. To select a different Auto report to be edited, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen).

6   Push the Trim Knob to select the button.

7   Once the Auto report to be edited is highlighted, turn the Trim Knob to highlight the **Select** button.

8   Push the Trim Knob to select the button.

9   Turn the Trim Knob to highlight the **Edit** button.

10 Push the Trim Knob to select the button. The **Get Selected ECGs** progress bar window appears, and then the Patient ID screen appears for the selected Auto report. The **ID** field is selected.

11 Edit the Patient ID information as required. Turn the Trim Knob to move between the different Patient ID fields.

12 If additional tabs appear at the top of the screen, press and hold down the Alt key on the keyboard. Press the letter key in parenthesis on the tab. For example, to select the **Clinical Info.** tab, press and hold down the Alt key and then press the C key.

13 When done, press the Enter key to save the edited Patient ID information and to exit the screen. Press the Esc key to exit the screen without saving the edits to the Patient ID information.

14 If patient age (date of birth), gender, or clinical information is edited, the message **Patient Data Changes will cause ECG to be reinterpreted** appears. Push the Trim Knob to select the **OK** button. The new Patient ID information is saved with the Auto report, and the interpretive, reason, and severity statements (if configured) may change.

Exporting 12-lead Reports in XML Format

Auto reports may be transferred to an external data management system as an XML (Extensible Markup Language) file. Details of the PageWriter Trim Cardiograph XML Schema are included on the *PageWriter Trim Cardiograph User Documentation* CD. Click on the PageWriter Trim Cardiograph XML Information link (on the User Documentation CD main menu) to view the schema.

CAUTION   The PageWriter Trim cardiograph only supports the importing of XML files from the PageWriter Trim or PageWriterTouch cardiographs. Do not import XML files from other devices.

Printing a List of Auto Reports in the Archive

The cardiograph can print multiple page reports that list all of the Auto reports saved to an individual Archive. This printed report includes a listing of all Auto reports saved to the Archive, the date and time that each report was acquired, transmission information, and Patient ID information for each report including ID number, patient last name, date of birth, and gender.

To print a list of Auto reports:

1   Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2   Push the Trim Knob to open the drop-down list.

3   Turn the Trim Knob to highlight an Archive.

4   Push the Trim Knob to select the Archive. The Auto reports contained in the selected Archive appear on the screen.

5   Turn the Trim Knob to highlight the **Reports** button (bottom of screen).

6   Push the Trim Knob to select the button.

      The message **Printing Archive Report** appears and the report prints.

Searching a TraceMaster Remote Site

A configured TraceMaster Remote Site can be searched for Auto reports to save to the cardiograph and to print on the cardiograph. All Auto reports saved to the cardiograph from a Remote Site are saved to the **Remote Sites** Archive. The Remote Sites Archive is selected from the **Selected Archive** drop-down list.

For information on configuring the cardiograph for use with a TraceMaster Remote Site, see page 5-22.

Searching a Remote Site with the Wildcard Character

When searching a Remote Site, the wildcard character (%) can be used to perform the broadest search possible using minimal information. The wildcard character used is the percentage sign (%). For example, if searching for all Auto reports for patients with the last name of Smith, entering **Smith%** into the Query **Patient Name** field searches the Remote Site for all Auto reports of patients with the last name is Smith.

To search a remote site for Auto reports:

1   Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2   Push the Trim Knob to open the drop-down list.

3   Turn the Trim Knob to highlight the **Remote Sites** Archive.

4   Push the Trim Knob to select the Archive. The Auto reports contained in the Remote Sites Archive appear on the screen.

5   Turn the Trim Knob to highlight the **Get ECGs (Query)** button (bottom of screen).

6   Push the Trim Knob to select the button. The Remote Sites Query window appears.

7   Turn the Trim Knob to highlight the **Selected Remote Site** drop-down list.

8   Push the Trim Knob to display the drop-down list.

9   Turn the Trim Knob to highlight a configured Remote Site.

10 Push the Trim Knob to select the Remote Site.

11 Turn the Trim Knob to select the **OK** button.

12 Push the Trim Knob to select the button. The Search screen appears.

13 Turn the Trim Knob to highlight the fields under **Query (Wildcard = %)** at the bottom of the screen. Type in the search information using as many fields as necessary. The wildcard character (%) may be used.

NOTE   If only the wildcard character is entered into a search field, all 12-lead reports saved to the Remote Site will be retrieved. Up to 100 ECGs may display in the Results window.

NOTE   If no information is entered into a search field that field will not be used to search the Remote Site.

14 Turn the Trim Knob to highlight the **Search** button.

15 Push the Trim Knob to select the button. The **Remote Site Search** progress bar window appears. After the search is complete, the ECGs that match the entered search information appear on the screen under **Search Results**.

16 To scroll through the list, turn the Trim Knob to highlight the **Left**, **Right**, **Up**, or **Down** buttons.

17 Push the Trim Knob to select the button and to scroll through the list.

18 To select an Auto report to be saved to the cardiograph, turn the Trim Knob and highlight the **Select** button. To select all of the Auto reports on the list, highlight the **Select All** button.

19 Push the Trim Knob to select the Auto report(s).

20 Turn the Trim Knob to highlight the **Get Selected ECG(s)** button.

21 Push the button to save the selected Auto report(s) to the Remote Sites Archive on the cardiograph.

22 Turn the Trim Knob to highlight the **Close** button.

23 Push the Trim Knob to select the button.

The Search window closes and the saved Auto reports appear on the Remote Sites Archive list. To print a saved Auto report, see page 4-11.

Deleting Auto Reports from the Archive

Auto reports can be deleted from an Archive at any time. Auto reports may be deleted one at a time, or multiple Auto reports may be deleted. As Auto reports are deleted, the available space information for the selected Archive is updated (see figure 4-2 on page 4-7).

CAUTION   Deleted Auto reports cannot be retrieved.

To delete an Auto report from an archive:

1 Turn the Trim Knob to highlight the drop-down list under **Selected Archive** (bottom of screen).

2 Push the Trim Knob to open the drop-down list.

3 Turn the Trim Knob to highlight an Archive.

4 Push the Trim Knob to select the Archive. The Auto reports contained in the Archive appear on the screen.

5 The selected Auto report appears highlighted (in dark blue or in dark gray) on the Report List. To select a different Auto report to be deleted, turn the Trim Knob to highlight the **Up** or **Down** buttons.

6 Push the Trim Knob to select the button and to scroll through the Report List.

7 When the report to be deleted is highlighted, turn the Trim Knob to highlight the **Select** button. To select all of the Auto reports in the Archive, turn the Trim Knob to highlight the **Select All** button.

8 To select multiple Auto reports to be deleted, turn the Trim Knob to highlight the **Up** or **Down** buttons (bottom of screen) to scroll through the Report List.

9 When the Auto report to be deleted is highlighted (in dark blue or in dark gray), turn the Trim Knob to highlight the **Select** button.

10 Push the Trim Knob to select the button. A selected Auto report appears highlighted in light gray.

11 To deselect an Auto report, turn the Trim Knob to highlight the **Up** or **Down** button. Push the Trim Knob to select the button and to scroll through the Report List. Highlight the Auto report to be deselected. When the selected Auto report is highlighted, the **Unselect** button appears (bottom of screen). Turn the Trim Knob to highlight the **Unselect** button. Push the Trim Knob to select the button. The Auto report is deselected and appears highlighted in dark blue (or in dark gray).

12 When all Auto reports to be deleted have been selected, turn the Trim Knob to highlight the **Delete** button.

13 Push the Trim Knob to select the button. The **Delete Selected ECGs** window appears. The **OK** button is highlighted.

14 Push the Trim Knob to select the button and to delete the selected Auto reports. To not delete the Auto reports, select the **Cancel** button.

The **Delete Selected ECGs** progress bar window appears and the selected Auto reports are deleted from the Archive.

PageWriter Trim II and III Configuration

Introduction

All of the settings on the PageWriter Trim II and III cardiographs are configurable to meet the needs of any clinical environment. The cardiograph is shipped with factory default settings, and any of these settings may be changed. All cardiograph configuration is done on the Configuration screens.

Configuring Multiple Cardiographs

When configuring multiple cardiographs with the same settings, all settings may be saved to to a PC Card and then uploaded to additional cardiographs (see page 5-36).

Password Access

Access to all Configuration screens may be set to be password controlled. It is recommended that the Password screen be configured first (see page 5-30).

Configuration with a Philips TraceMaster ECG Management System

If a Philips TraceMaster ECG Management System (version A.04.02 or higher) or a TraceMasterVue ECG Management System (version A.01) is used with a PageWriter Trim cardiograph, please note that certain types of ECG information will not be transferred from the cardiograph to TraceMaster. Refer to the *TraceMaster ECG Management System Installation and Reference Guide* or the *TraceMasterVue System Installation and Reference Guide*. These guides are available for download from: www.medical.philips.com. Please note these restrictions when configuring the cardiograph for use with a Tracemaster or TraceMasterVue ECG Management System.

Restoring Cardiograph Configured Settings

After configuring the cardiograph, save the settings to a PC Card in case of system failure. If the cardiograph loses configured settings, the settings may be quickly and easily restored by loading them onto the cardiograph with a PC Card (see page 5-36).

Opening the Configuration Screen

CONFIG

All cardiograph configuration is done on the Configuration screens.

To open the configuration screen:

1 Turn the Trim Knob and select the **Config** button on the Command Toolbar.

2 Push the Trim Knob. The Configuration screens appear.

A series of tabs appear at the top of the screen. Under each tab are a set of configurable features.

Figure 5-1   The Configuration Screen

Analysis (A)	Patient ID (I)	Profiles (P)	System (S)
(page 5-2)	**(page 5-4)**	**(page 5-12)**	**(page 5-18)**

Filter (F)	Remote Sites (R)	Network (N)	Passwords (W)	Locale (L)	Cardiograph (C)
(page 5-21)	**(page 5-22)**	**(page 5-27)**	**(page 5-30)**	**(page 5-31)**	**(page 5-31)**
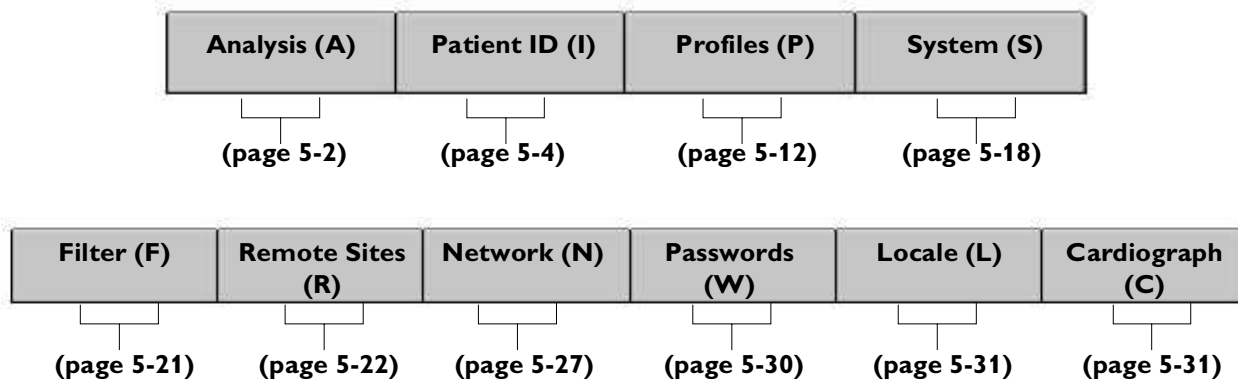
To select a tab:

1 Press and hold down the Alt key on the keyboard.

2 Press the letter shown in parenthesis on the tab. For example, to select the Analysis tab, press and hold down the Alt key, and then press the A key on the keyboard.

To save settings on any configuration screen:

▶ After making all changes to the cardiograph configuration screens, press the Enter key on the keyboard to save the settings and exit the screen.

To exit the configuration screens without saving changes:

▶ Press the Esc key on keyboard to exit any configuration screen without saving the changes.

Analysis Settings

This section is used to configure settings used with the Philips 12-lead Algorithm, including the default pacing detection setting, the adult bradycardia limit, and the statement that appears on the printed 12-lead report indicating that the ECG has not been overread by a qualified physician.

The default pacing detection setting appears on the Status Bar at the beginning of each patient session.

N O T E   The default Pacing Detection Setting may be changed at any time during a patient session by selecting the **Report** button on the Command toolbar (see page 2-30).

Figure 5-2   Pacing Detection Setting on the Status Bar
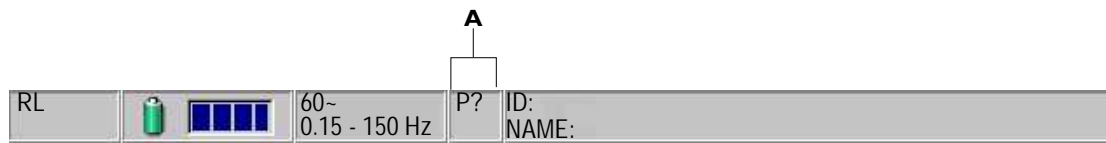
A   Pacing Detection Setting

The default adult bradycardia limit that is used when interpreting waveform data with the Philips 12-lead Algorithm is configurable. For more information on adult bradycardia limits and the Philips 12-Lead Algorithm, see the *Philips 12-Lead Algorithm Physician's Guide* on the PageWriter Trim User Documentation CD or download the file from: medical.philips.com.

The statement **Unconfirmed Diagnosis** can be configured to appear on the ECG report to designate that the report has not been overread by a qualified physician (see page 3-10).

Factory Default Settings

- Pacing Detection Setting: **Not Known if Paced** (**P?**) Recommended for most ECGs

- Report Confirmation Label: **Unconfirmed Diagnosis**

- Adult Bradycardia Limit: 50 (bpm)

To set the default pacing detection setting:

1   Press and hold down the Alt key on the keyboard.

2   Press the A key on the keyboard.

3   The Analysis screen appears. Under **Pacer Detect**, **Not Known if Paced** (recommended setting) is selected.

4   To select another setting, turn the Trim Knob to highlight the setting.

5   Push the Trim Knob to select the setting.

To turn on or turn off the report confirmation label:

1   Turn the Trim Knob to select the setting under **Report Confirmation Label**.

2   Push the Trim Knob. The drop-down list appears.

3   Turn the Trim Knob to select a setting. Select the white blank to not have the statement **Unconfirmed Diagnosis** appear on the ECG report.

4   Push the Trim Knob to select the setting.

To set the adult bradycardia limit setting:

1   Turn the Trim Knob to select the setting under **Adult Bradycardia Limit**.

2   Push the Trim Knob. The drop-down list appears.

3   Turn the Trim Knob to highlight a setting.

4   Push the Trim Knob to select the setting.

Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Patient ID Settings
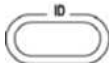
The Patient ID settings are used to configure the amount and type of information that appears on the Patient ID screen when the **ID** button (right side of the cardiograph) is pressed. The Patient ID screen is used during a patient session to enter Patient ID information.

CAUTION	**Age** and **Gender** Patient ID information are required if using the Philips 12-Lead Algorithm for ECG interpretation. For more information see the *Philips 12-Lead Algorithm Physician's Guide* on the PageWriter Trim User Documentation CD or download the file from: medical.philips.com.

To open the Patient ID configuration screen:

1   Push and hold down the Alt key on the keyboard.

2   Press the I key on the keyboard to open the Patient ID configuration screen.

3   Three tabs appear at the top of the screen. These tabs display the three types of configurable Patient ID information available on the cardiograph. The **Patient Info.** tab is selected.

Figure 5-3   Patient ID Configurable Settings

Patient Info. (T)	Clinical Info. (X)	Order Info. (O)
(page 5-5)	**(page 5-7)**	**(page 5-12)**
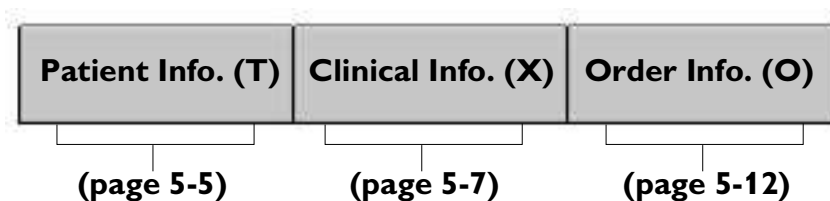
Patient ID Configuration Options

Each type of Patient ID information may be configured with up to four options as described in Table 5-1. These options appear as columns of check boxes on the left side of the screen. Select the check box underneath the option to enable it.

Table 5-1   Patient ID configuration options

Setting	Description
Enabled	■ Select this check box to make this type of Patient ID information appear on the Patient ID screen ■ This information is transferred with the ECG to an ECG Management System

Table 5-1   Patient ID configuration options *(continued)*

Setting	Description
Required	Select this check box to require that this type of Patient ID information be complete before the ECG is transferred to a Philips TraceMaster ECG Management System
Indexed	Select this check box to make this type of Patient ID information appear as a column on the Archive or Orders screen (see Figure 4-1 on page 4-2)
Printed	Select this check box to include this type of Patient ID information on the printed ECG report

To select a check box:

1   Turn the Trim Knob to highlight the **ON** text next to the check box.

2   Press the Trim Knob to select the check box. A check mark appears and the feature is enabled.

Configuring Patient Information

These selections include demographic information about the patient including name, ethnicity, age, gender, and other configurable information fields. This information appears under the **Patient Info.** tab when the **ID** button (right side of cardiograph) is pressed.

There are two optional and configurable text entry fields available labeled **<User Field 1>** and **<User Field 2>**. These optional text entry fields appear on the Patient ID screen during a patient session.

Each type of Patient Information can be configured using four different settings: **Enabled**, **Required**, **Indexed,** and **Printed** (see Table 5-1 on page 5-4).

Table 5-2   Patient Information Description

Patient Information	Description
Patient First Name	Up to 40 characters
Patient Last Name	Up to 40 characters
Patient Additional Name	Up to 40 characters
Race (Ethnicity)	■ Drop-down list selection ■ Pre-defined drop-down list

Table 5-2   Patient Information Description *(continued)*

Patient Information	Description

Patient Age	▪ Patient age is configurable and can be entered by:
	  – Configurable units (years, hours days, weeks, months)
	  – Date of birth (month, day, year)
	▪ Configurable default age used for ECG interpretation when no patient age is entered for STAT ECG

Patient Gender	Radio button selection (male, female, unknown)
User Defined text entry field	▪ Text entry field label up to 16 characters ▪ Text entry field is free text entry up to 32 characters

Factory Default Settings

Patient ID fields selected:

▪ Patient Last Name (Enabled, Required, Indexed, Printed)

▪ Age and DOB/Date of Birth (Enabled, Required, Indexed, Printed), 50 (default age)

▪ Gender (Enabled, Required, Indexed, Printed)

To configure Patient Information:

1 Press and hold down the Alt key on the keyboard.

2 Press the I key. The Patient ID screen appears.

3 Press and hold down the Alt key on the keyboard.

4 Press the T key to select the Patient Info. tab (if not selected).

5 Turn the Trim Knob to highlight the **ON** text next to a check box of a feature to be enabled.

6 Press the Trim Knob to select a check box. A check mark appears in the selected check box and turns on the feature.

7 Turn the Trim Knob to select the drop-down list next to **Age/DOB**.

8 Push the Trim Knob to display the drop-down list.

9 Turn the Trim Knob to highlight a default age unit (**DOB**-date of birth, **Years**, **Days**, **Weeks**, **Hours**).

10 Press the Trim Knob to select the age unit.

11 Turn the Trim Knob to highlight the age displayed under **Default Age (Years)**.

The **Default Age (Years)** selection sets the default age that is used for ECG interpretation when no patient age is entered when the ECG is acquired. The Factory Default Age is 50.

12 Type in the default age (using keyboard).

13 Turn the Trim Knob to highlight the drop-down list next to **Weight** or **Height**.

14 Push the Trim Knob to display the drop-down list.

15 Turn the Trim Knob to highlight the selected weight or height unit.

16 Push the Trim Knob to select the weight or height unit.

User Defined Patient Information

There are two optional Patient Information text entry fields labeled **<User Field 1>** and **<User Field 2>**. When the ID button is touched during a patient session, these configurable text entry fields appear under the **Patient Info.** tab on the Patient ID screen.

A text label is created in Configuration to describe the text entry field. The text entry field is completed on the Patient ID screen during a patient session.

To configure the text field label:

1 Ensure that **<User Field 1>** and **<User Field 2>** check boxes for **Enabled**, **Required**, **Indexed**, or **Printed** are selected. If these check boxes are not selected, the user defined fields will not appear on the Patient ID screen.

2 Turn the Trim Knob to select the field next to **<User Field 1>** or **<User Field 2>**. The cursor appears in the field.

3 Type in any 16 letters or numbers with the keyboard. The text field label is entered and will appear on the Patient ID screen.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and exit the Configuration screen. The new changes are applied.

Configuring Clinical Information

The available configurable Clinical Information fields include: **Symptoms (Sx)**, **History (Hx)**, **Medications (Rx)**, **Diagnoses (Dx), Diagnostic Related Group (DRG),** and **Blood Pressure**. There are two optional and configurable text entry fields available labeled **<User Field 3>** and **<User Field 4>**. These optional text entry fields appear on the Patient ID screen during a patient session.

The user selects Clinical Information from a pre-defined group of entries in a drop-down list. The user must select an entry from the available choices in the drop-down list. The drop-down list can only be changed in Configuration.

Each type of Clinical Information can be configured using four different settings: **Enabled**, **Required**, **Indexed,** and **Printed** (see Table 5-1 on page 5-4).

Factory Default Settings

■ No Clinical Information fields are selected

Table 5-3   Clinical Information Description

Clinical Information	Description
Sx (Symptoms)	■ Configurable drop-down list ■ Selections from drop-down list can be up to 32 characters
Hx (History)	■ Configurable drop-down list ■ Selections from drop-down list can be up to 32 characters
Rx (Medications)	■ Configurable drop-down list ■ Selections from drop-down list can be up to 32 characters
Dx (Diagnoses)	■ Configurable drop-down list ■ Selections from drop-down list can be up to 32 characters
DRG (Diagnostic Related Group)	■ Configurable drop-down list ■ Selections from drop-down list can be up to 32 characters
Blood Pressure	■ Free text entry ■ Systolic, diastolic
User Defined text entry field	■ Drop-down list label up to 16 characters ■ Text field is free text entry up to 32 characters

To configure Clinical Information:

1   Press and hold down the Alt key on the keyboard.

2   Press the I key. The Patient ID screens appear.

3   Press and hold down the Alt key on the keyboard.

4   Press the X key to select the **Clinical Info.** tab.

5   Turn the Trim Knob to highlight the **ON** text next to a check box of a feature to be enabled.

6   Press the Trim Knob to select a check box. A check mark appears in the selected check box and turns on the feature.

7   Turn the Trim Knob to highlight the drop-down list next to **Sx** (Symptoms).

8   Push the Trim Knob to display the available selections in the drop-down list.

9   Turn the Trim Knob to highlight the **Add** button.

10   Push the Trim Knob to add a new symptom to the drop-down list. The **Please input data** window appears.

11   Type in the new symptom (up to 32 characters).

12   Turn the Trim Knob to highlight the **OK** button.

13   Push the Trim Knob to add the symptom. The new symptom appears in the drop-down list.

14   To delete a user defined symptom from the drop down list, turn the Trim Knob to highlight the symptom to be deleted

NOTE   Factory default symptoms cannot be deleted from the drop-down list.

15   Push the Trim Knob to highlight a symptom.

16   Turn the Trim Knob to highlight the **Delete** button.

17   Push the Trim Knob. The **Delete Sx Label** window appears.

18   Push the Trim Knob to select the **OK** button. The user defined symptom is deleted from the drop-down list.

19   Follow the same procedure to add drop-down list entries for **Hx** (History), **Rx** (Medications), **Dx** (Diagnosis), and **DRG** (Diagnostic Related Group).

User Defined Clinical Information

There are two optional Clinical Information text entry fields that can be configured labeled **<User Field 3>** and **<User Field 4>**. When the ID button is touched during a patient session, these configurable text entry fields appear under the **Clinical Info.** tab on the Patient ID screen.

A text label is created in Configuration to describe the text entry field. The text entry field is completed on the Patient ID screen during a patient session.

To configure the text label:

1   Ensure that the **<User Field 3>** and **<User Field 4>** check boxes for **Enabled**, **Required**, **Indexed**, or **Printed** are selected. If these check boxes are not selected, the user defined fields will not appear on the Patient ID screen or on the printed report.

2   Turn the Trim Knob to select the field next to **<User Field 3>** or **<User Field 4>**. The cursor appears in the field.

3 Type in any 16 letters or numbers with the keyboard. The text field label is entered and will appear on the Patient ID screen.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Configuring Order Information

Patient ID Order information is configurable to include information about **Reason for Order**, **Physician Name** and **UPIN** (Universal Physician Identification Number), **Department**, **Operator ID**, **Room** (number), **Order Number**, **Encounter ID** and **STAT ECG**. There are two optional and configurable text entry fields available labeled **<User Field 5>** and **<User Field 6>**. These optional text entry fields appear on the Patient ID screen during a patient session.

The user selects Clinical Information from pre-defined group of entries in a drop-down list. The user must select an entry from the available choices in the drop-down list. The drop-down list can only be changed in Configuration.

Each type of Clinical Information can be configured using four different settings: **Enabled**, **Required**, **Indexed,** and **Printed** (see Table 5-1 on page 5-4).

Factory Default Settings

- No Order Information fields are selected

Table 5-4   Order Information Description

Order Information	Description
Reason for Order	■ Configurable drop-down list ■ Drop-down list selections up to 32 characters
Physician Name and UPIN (Universal Physician Identification Number)	■ Configurable drop-down list ■ Drop-down list selections up to 32 characters
Department Number	■ Configurable drop-down list ■ Drop-down list selections up to 32 characters
Operator ID	■ Configurable drop-down list ■ Drop-down list selections up to 32 characters

Table 5-4   **Order Information Description** *(continued)*

Order Information	Description
Room Number	■ Free text entry ■ Up to 32 characters
Order Number	■ Free text entry ■ Up to 32 characters
Encounter ID	■ Free text entry ■ Up to 32 characters
STAT ECG	■ Selectable drop-down list on Patient ID screen ■ STAT label printed on 12-lead report
User Defined text entry field	■ Text entry field label up to 16 characters ■ Free text entry up to 32 characters

To configure Order Information:

1   Press and hold down the Alt key on the keyboard.

2   Press the I key. The Patient ID screens appear.

3   Press and hold down the Alt key on the keyboard.

4   Press the O key to select the **Order Info.** tab.

5   Turn the Trim Knob to highlight the **ON** text next to a check box of a feature to be enabled.

6   Press the Trim Knob to select a check box. A check mark appears in the selected check box and turns on the feature.

7   Turn the Trim Knob to highlight the **Add** button next to **Reason for Order**.

8   Push the Trim Knob. The **Please input data** window appears.

9   Type in a reason for order (up to 32 characters).

10   Turn the Trim Knob to highlight the **OK** button.

11   Push the Trim Knob to add the reason for order. The new reason for order appears in the drop-down list.

12   To delete a reason for order from the drop down list, turn the Trim Knob to highlight the drop-down list.

13   Turn the Trim Knob to select the reason for order to be deleted.

14   Push the Trim Knob to select the reason for order.

15   Turn the Trim Knob to select the **Delete** button.

16   Push the Trim Knob. The **Delete Reasons** window appears.

17 Push the Trim Knob to select the **OK** button. The reason for order is deleted from the drop-down list.

18 Follow the same procedure to add or to delete drop-down list entries for **Physician Name and UPIN, Department,** and **Operator ID**.

User Defined Order Information

There are two optional Order Information text entry fields that can be configured labeled **<User Field 5>** and **<User Field 6>**. When the ID button is touched during a patient session, these configurable text entry fields appear under the **Order Info.** tab on the Patient ID screen.

A text label is created in Configuration to describe the text entry field. The text entry field is completed on the Patient ID screen during a patient session.

To configure the text label:

1 Ensure that the **<User Field 5>** and **<User Field 6>** check boxes for **Enabled**, **Required**, **Indexed**, or **Printed** are selected. If these check boxes are not selected, the user defined fields will not appear on the Patient ID screen or on the printed report.

2 Turn the Trim Knob to select the field next to **<User Field 5>** or **<User Field 6>**. The cursor appears in the field.

3 Type in any 16 letters or numbers with the keyboard. The text field label is entered and will appear on the Patient ID screen.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and exit the Configuration screen. The new changes are applied.

Configuring Auto Report Profiles

T I P   Review Chapter 3 "Understanding the Printed Report" before configuring Auto report profiles.
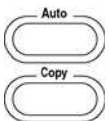
A profile is a group of settings applied to Auto reports and copies of Auto reports. A profile defines how the Auto report or report copy appears when printed. The Auto report or report copy is generated when the Auto or Copy buttons (right side of cardiograph) are pressed during a patient session.

Figure 5-4   The Report and Copy Profile

The Profile

- Speed (mm/sec) and Size (mm/mV) of waveforms

- Lead Sequence: Standard or Cabrera

- ECG Signal Acquisition: Time-Sequential or Simultaneous

- Lead Configuration on printed report (3x4, 3x4 1R, 3x4 3R, 6x2, 12x1, Pan-12)

- *PageWriter Trim III only:* Extended Measurements (see page 3-25)

- *PageWriter Trim III only:* level of ECG interpretation using the Philips 12-Lead Algorithm (Measurements, Interpretive and Reason Statements, Severity Codes)

There is one factory default report profile (**Default Main**) and one factory default copy report profile (**Default Copy**).

The factory default report and copy profile may be edited, or new, customized profiles may be created.

NOTE The factory default report profile (**Default Main**) and copy profile (**Default Copy**) may not be deleted.

Figure 5-5   The Factory Default Report Profile (Default Main)

Default Main

- Speed: 25 mm/sec

- Size: 10 mm/mV

- Chest Leads: Full Scale

- Lead Configuration: 3x4

- Lead Sequence: Standard

- Acquisition: Time-Sequential

- Interpretation Level: None

Figure 5-6   The Factory Default Copy Profile (Default Copy)

Default Copy

- Speed: 25 mm/sec

- Size: 10 mm/mV

- Chest Leads: Full Scale

- Lead Configuration: 3x4, 1R (Rhythm Lead: II)

- Lead Sequence: Standard

- Acquisition: Time-Sequential

- Interpretation Level: None

- Number of report copies printed: 1
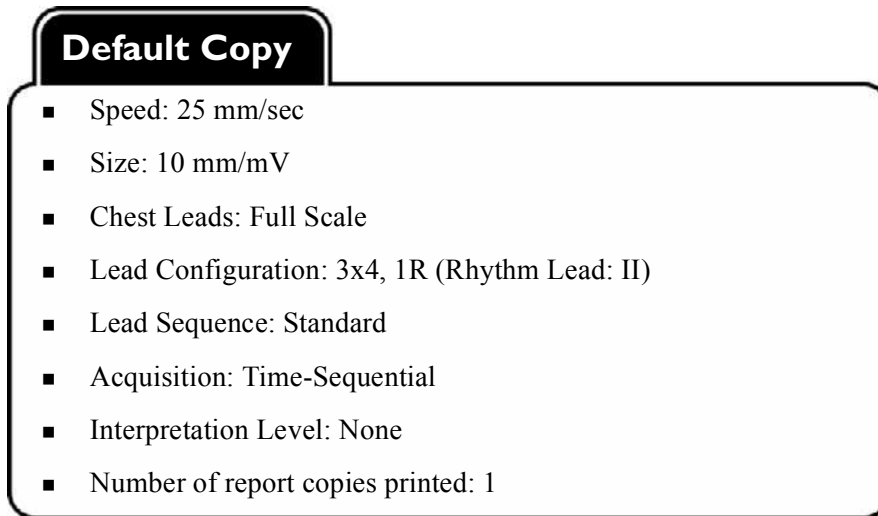
To open the profile screens:

1 Press and hold down the Alt key on the keyboard.

2 Press the P Key on the keyboard. The Profile screen appears.

Under **Profiles List** (left side of screen) **Default Main** is highlighted. Default Main is the factory default Auto 12-lead report profile. This profile may be edited or new profiles may be created.

Four tabs appear on the left side of the Profiles screen. Under each tab are report settings that may be edited.

Figure 5-7   The Profile tabs

Format (M)	Interps (G)	Scale (J)	Type (K)
(page 5-15)	**(page 5-16)**	**(page 5-16)**	**(page 5-16)**
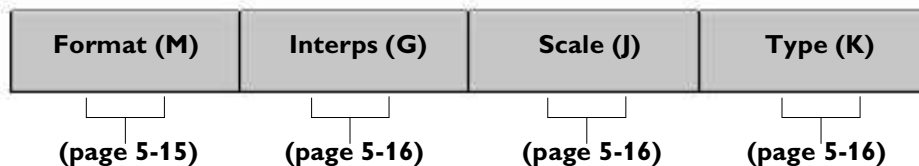
N O T E   The Type (K) tab is only available on the PageWriter Trim III.

To edit a factory default or existing profile:

1 Under **Profiles List** (left side of screen) an Auto report profile is highlighted. This is the profile selected to be edited. The settings for this profile are displayed on the screen.

2 To select a different profile for editing, press the Trim Knob to display the drop-down list.

3 Turn the Trim Knob to scroll through the list.

4 Push the Trim Knob to select a different report profile for editing. The drop-down list closes and the selected report profile appears highlighted under **Profiles LIst.**

Editing the Profile Report Format

The profile report format settings define the lead sequence and acquisition type that appear on the Auto report.

To edit the report format:

1   If the **Format (M)** tab is not selected, press and hold down the Alt key on keyboard. Press the M key. The Format screen appears.

2   Turn the Trim Knob until the drop-down list under **Lead Configuration** is highlighted.

3   Push the Trim Knob to display the list of available report formats. Turn the Trim Knob to scroll through the list.

TIP   For more information on available 12-lead report formats, see Chapter 3, "Reading the Printed ECG Report."

4   Push the Trim Knob to select a report format. The selected report format appears highlighted under **Lead Configuration**.

      If the selected report format includes rhythm strips, the default rhythm leads are displayed under **Rhythm**.

5   Turn the Trim Knob to highlight the **Lead Groups>>>** button (3x4, 3R only). Push the Trim Knob to display pre-defined groups of three rhythm leads. Or, turn the Trim Knob to highlight the drop-down list next to **R1** (**R2**, **R3**) and select the rhythm leads individually.

6   Under **Lead Sequence**, the default settings for the selected report format are displayed.

NOTE   The Pan-12 report format is only available with **Cabrera** lead sequence and **Time-Sequential** acquisition. Turn the Trim Knob to highlight the lead sequence drop-down list (**Standard**, **Cabrera**).

NOTE   The 12x1 report format is only available with **Simultaneous** acquisition.

7   Push the Trim Knob to display the drop-down list.

8   Turn the Trim Knob to highlight a lead sequence.

9   Push the Trim Knob to select a lead sequence.

10   Follow the same procedure to select an ECG acquisition type (**Simultaneous**, **Time-Sequential**) for the report profile.

TIP   For more information on ECG acquisition types, see "Time Separator" on page 3-13.

Editing Profile Interpretation

PageWriter Trim III only

The interpretation settings define how much interpretive information from the Philips 12-lead Algorithm appears on the Auto report.

To edit interpretation options:

1 Press and hold down the Alt key.

2 Press the G key on the keyboard. The Interpretation screen appears.

Under **Interpretations,** the different levels of interpretive information available with the Philips 12-lead Algorithm are displayed.

TIP For more information on ECG interpretation appearing on the printed 12-lead report, see page 3-2.

3 Turn the Trim Knob to highlight the desired setting.

NOTE Selecting **None** will have no interpretive information (including Basic Measurements) appear on the printed 12-lead report.

4 Push the Trim Knob to select the interpretive setting.

Editing Profile Scale Information

The scale settings define the speed and size of the waveforms appearing on the printed report.

1 Press and hold down the Alt key on the keyboard.

2 Press the J key. The Scale screen appears.

3 Turn the Trim Knob to select settings under **Speed**, **Size**, and **Chest Leads**.

NOTE **Chest Leads** sets the precordial leads to full or half the scale of the limb and augmented leads, see page 3-11.

4 Push the Trim Knob to select a setting.

Editing Report Type Information

PageWriter Trim III only

The Type setting enables the optional Extended Measurements Report. The Extended Measurements report summarizes the output of the Philips 12-Lead Algorithm. The report includes the morphology characteristics for the individual leads, and the rhythm characteristics for the rhythm groups. The algorithm uses this measurement information to generate interpretive statements. The Extended Measurements report is especially useful if you want to examine the measurements used to generate an interpretation.

For more information on the Extended Measurements Report, see page 3-25.

1 Press and hold down the Alt key on the keyboard.

2 Press the K key. The Type screen appears.

3 Turn the Trim Knob to highlight **Extended Measurements**.

4 Push the Trim Knob to select the check box. With the check box selected, the full Extended Measurements is included with the Auto report.

Saving the Report Profile

The selected settings may be saved to the current report profile, or a new report profile may be created using the selected settings.

To save the settings to the selected report profile:

1 Turn the Trim Knob until the **Save** button (top of screen) is highlighted. The new settings will be saved to the profile displayed under **Profiles List**.

N O T E To select a different profile, turn the Trim Knob until the drop-down list under **Profiles List** is highlighted. Push the Trim Knob to open the drop-down list. Turn the Trim Knob to select a profile. Push the Trim Knob to select the profile.

2 Push the Trim Knob to apply the new settings to the selected profile.

The new settings are saved to the profile.

To create a new report profile:

1 Turn the Trim Knob until the **Add** button (top of screen) is highlighted.

2 Push the Trim Knob.

3 The **Please input data** window appears. Type in the name of the new profile (up to 32 characters).

4 Turn the Trim Knob to highlight the **OK** button.

N O T E Highlight the **Cancel** button and push the Trim Knob to exit without saving the profile name.

5 Push the Trim Knob to save the new profile.

The new profile appears in the **Profiles List** drop-down list.

Setting the Default Auto Report and Copy Profile

The default Auto report and copy profile are selected on the Profile configuration screen. Any Auto report or report copy printed on the cardiograph will apply the selected default profile.

During a patient session, the default profile may be changed and new settings applied by selecting the Report button on the Command Toolbar.

REPORT

To set the default report and copy profile:

1 Turn the Trim Knob until the drop-down list under **Select Defaults (Main)** (right side of screen) is highlighted.

2 Push the Trim Knob to display the drop-down list of available Auto report profiles.

3 Turn the Trim Knob to highlight a profile as the default Auto profile.

4 Push the Trim Knob to select the profile as the default Auto profile.

5 Turn the Trim Knob to highlight the drop-down list under **Copy**.

6 Push the Trim Knob to display the drop-down list of available Copy profiles.

7 Turn the Trim Knob to highlight a profile as the default.

8 Push the Trim Knob to select the profile as the default Copy profile.

9 Turn the Trim Knob to highlight the drop-down list next to **Number of Copies**.

10 Push the Trim Knob to display the drop-down list.

11 Turn the Trim Knob to select the number of Auto report copies (1-5) printed each time the **Copy** button (right side of cardiograph) is pressed.
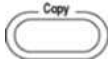
Setting Other Print Options

Other configurable print options are available on the Profiles configuration screen. The **Auto Save When Print** option automatically saves all Auto reports to the Archive. The Archive serves as temporary storage for ECGs until they are saved to a PC Card or transferred with a modem, fax, or a LAN connection to an external ECG Management System. ECG reports that are not saved to the Archive are deleted. If this option is not selected, the user will need to individually save Auto reports to the Archive.

The **Second ID Label** option prints the Patient name and ID at the top and the bottom of the report (see page 3-7).

The **Print Immediately** option automatically prints each Auto report when the Auto button (right side of cardiograph) is pressed. If this option is not selected, the Auto report appears on the Preview screen. The user can assess the quality of the report and select to print it by pressing the Enter key on the keyboard.

TIP Previewing the Auto Report before printing it saves printer paper and helps to ensure a quality report.

To select other print options:

1 Turn the Trim Knob until the option is highlighted (lower right of screen)

2 Push the Trim Knob to select the option. A selected check box next to a feature enables the feature.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

System Settings

The configurable cardiograph settings in this section include:

- paper size

- lead standard setting for printed reports (AAMI or IEC)

- battery power saving modes

- simulated waveform feature

This section also includes tools under **Configuration Management** (see page 5-36) and other maintenance and diagnostic tools under **Diagnostics** (see page 7-10).

Factory Default Settings

- Paper Size (varies by region)

- Lead standard (varies by region)

- Battery Power Saving Modes:
  - Standby: On with Idle Timeout: 60 minutes
  - Shut Down: On with Idle Timeout: 120 minutes

- Simulated Data: Not enabled

The cardiograph is shipped configured for the common paper size for your country or region. The paper size can be changed in Configuration.

To change the default paper size:

1 Press down and hold the Alt key on the keyboard.

2 Press the S key. The System screen appears.

3 Turn the Trim Knob until the **A** or **A4** setting under **Paper Size** is highlighted.

4 Press the Trim Knob to select a default paper setting.

The cardiograph can be configured to print reports with the AAMI or IEC lead standard. The R/T (real-time) ECG screen on the cardiograph will always display AAMI leads, regardless of the printed report setting.

To change the printed report lead standard:

1 Turn the Trim Knob until the AAMI or IEC lead standard is highlighted.

2 Press the Trim Knob to select a default print lead standard.

Battery Power Saving Modes

The **Battery Power Saving Modes** are used to set the **Standby** and **Shutdown** features. Both features are fully configurable and are used to help prolong battery life between charges. These features may be disabled.
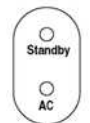
The **Standby** feature turns off the cardiograph display (screen is black) if the cardiograph is not used for a pre-set number of minutes. When the cardiograph is in Standby, the green Standby indicator light is lit (left side of cardiograph). Standby can be entered on any cardiograph screen by pressing the On/Standby button. Press any key on the cardiograph to exit Standby. The cardiograph returns to the previously viewed screen.

N O T E   The cardiograph will not enter **Standby** if the Patient ID screen is open, or if the cardiograph is printing a report.

The **Shutdown** feature is used to shut down all cardiograph power if the cardiograph is not used for a pre-set number of minutes after the cardiograph enters Standby. The green Standby indicator light is not lit when the cardiograph is shut down. Press the On/Standby button to turn on the cardiograph after it enters Shutdown. The cardiograph will require a full reboot.

To set the battery power saving features:

1   Turn the Trim Knob until **Standby** is highlighted.

N O T E   Push the Trim Knob to turn off the Standby feature (check box is not selected).

2   Push the Trim Knob to highlight the setting under **Idle Timeout (Minutes)**.

3   Enter the number of minutes (5-1000) that pass before the cardiograph enters Standby.

4   Turn the Trim Knob until **Shutdown** is highlighted.

5   Turn the Trim Knob to highlight the setting under **Idle Timeout (Minutes)**.

6   Enter the number of minutes (10-3000) that pass before the cardiograph enters Shutdown.
Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Simulated Waveform Data

The cardiograph can be configured to display simulated waveforms (no data is acquired from the Patient Interface Module). This simulated waveform display may be helpful when training users on cardiograph operation.

Any simulated file may be loaded onto the cardiograph from a PC Card.

When simulated waveforms appear on the screen, the statement **Simulated Data** appears on the R/T ECG screen in the same location as the Patient ID number, see "PageWriter Trim II and III Status Bar" on page 1-27. No Patient ID information can be entered when simulated waveforms are displayed on the cardiograph.

Any report printed using simulated waveforms will include the statement **Simulated data** on the report in the same location as the Patient ID number.

To turn on or to turn off simulated waveform data:

1   Turn the Trim Knob until the **ON** check box under **Simulated Data** (bottom of screen) is highlighted.

2   Push the Trim Knob to turn on the feature.

3   If the file name needs to be changed, turn the Trim Knob until the text **Simu_ECGData.wave** is highlighted. Type in the file name.

4   Press and hold the On/Standby button for 3 seconds, then release it to shut down the cardiograph.

5   Insert the PC Card that contains the simulated waveform file into the PC Card slot on the rear of the cardiograph.

6   Press the On/Standby button to turn on the cardiograph.
The cardiograph starts up and the simulated waveforms appears on the R/T ECG screen.

Filter Settings

FILTER

The filter settings are used to configure filters (AC, Artifact, Baseline Wander, High and Low Pass Frequency) that are used during a patient session. The Artifact and Baseline Wander filters are optional filters that may be turned on or turned off during an individual patient session. These optional filters are turned on or turned off by selecting the Filter button on the Command Toolbar (see page 2-11).

The AC filter (if configured) and High and Low Pass Frequency filters are turned on for all patient sessions and may not be turned off.

About High and Low Pass Frequency Filter Settings

- The 0.5 Hz High Pass frequency filter setting provides the highest level of baseline wander suppression

- The 0.15 Hz High Pass frequency filter setting provides a moderate amount of baseline wander suppression (suitable for most ECGs) without distorting the ST segment

- The 0.05 Hz High Pass frequency filter setting provides the highest fidelity signal with the least amount of baseline wander suppression

- The 40 Hz Low Pass frequency filter setting provides the maximum amount of noise suppression at low fidelity

- The 100 Hz Low Pass frequency filter setting provides a moderate amount of noise suppression while providing accurate waveform representation

- The 150 Hz Low Pass frequency filter setting provides the highest fidelity with a minimal amount of high-frequency noise suppression

For more information on using filters, see page 2-11.

Factory Default Settings

- Artifact (**F**) Filter: On

- High Pass (Hz) Frequency: 0.15

- Low Pass (Hz) Frequency: 150

- AC Filter (**~**): On

- Rhythm Settings:
    - High Pass (Hz) Frequency: 0.15
    - Low Pass (Hz) Frequency: 150
    - Artifact (**F**) Filter: On

To configure filters:

1   Press and hold the Alt key on the keyboard.

2   Press the F key. The Filter screen appears.

3   Turn the Trim Knob to highlight the **Filter On** setting.

4   Push the Trim Knob to select the check box (if not selected). Selecting this check box turns on the optional filters (Artifact, Baseline Wander or both) for all patient sessions.

5   Under **Main Settings** turn the Trim Knob to select the optional filters (Artifact, Wander, or both) that are turned on for all patient sessions.

6   Push the Trim Knob to select the filter setting.

7   Turn the Trim Knob to select a **High Pass** and **Low Pass** frequency setting that is used for all patient sessions.

TIP   The High and Low Pass frequency settings of 0.15 and 150 Hz are recommended for most ECGs.

8   Push the Trim Knob to select a setting.

9   Turn the Trim Knob to highlight the **On** check box under **AC Filter (Hz)** (bottom of screen.).

10   Push the Trim Knob to select the **On** check box.

NOTE   Clear the **On** check box to turn off the AC filter.

Setting Default Rhythm Filter Settings

Rhythm reports require a separate set of filter settings. The Artifact filter (**F**) is automatically turned on for all Rhythm reports. The High and Low Pass frequency settings are used for all Rhythm reports.

NOTE   The 0.05 Hz High Pass Frequency setting is recommended for all Rhythm reports. This setting minimizes the potential for any ST segment distortion.

To set high and low pass frequency settings for rhythm reports:

1   Turn the Trim Knob to select a **High Pass (Hz)** and **Low Pass (Hz)** frequency filter setting.

2   Push the Trim Knob to select the setting.

Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Remote Sites Settings

The Remote Sites feature on the cardiograph is used with the Philips Tracemaster ECG Management System (version A.04.02) or with the TraceMasterVue ECG Management System (version A.01 or higher). The Remote Sites settings are used to configure how TraceMaster ECG Management System Remote Sites (1 or more) receive ECGs from the

cardiograph or transmit ECGs to the cardiograph. ECG transmission to and from a Remote Site can be done with a modem, or with a network connection.

The following illustration provides an overview of how Auto reports can be transferred from the cardiograph to a TraceMaster ECG Management System.

Figure 5-8   Transferring Auto reports from the cardiograph
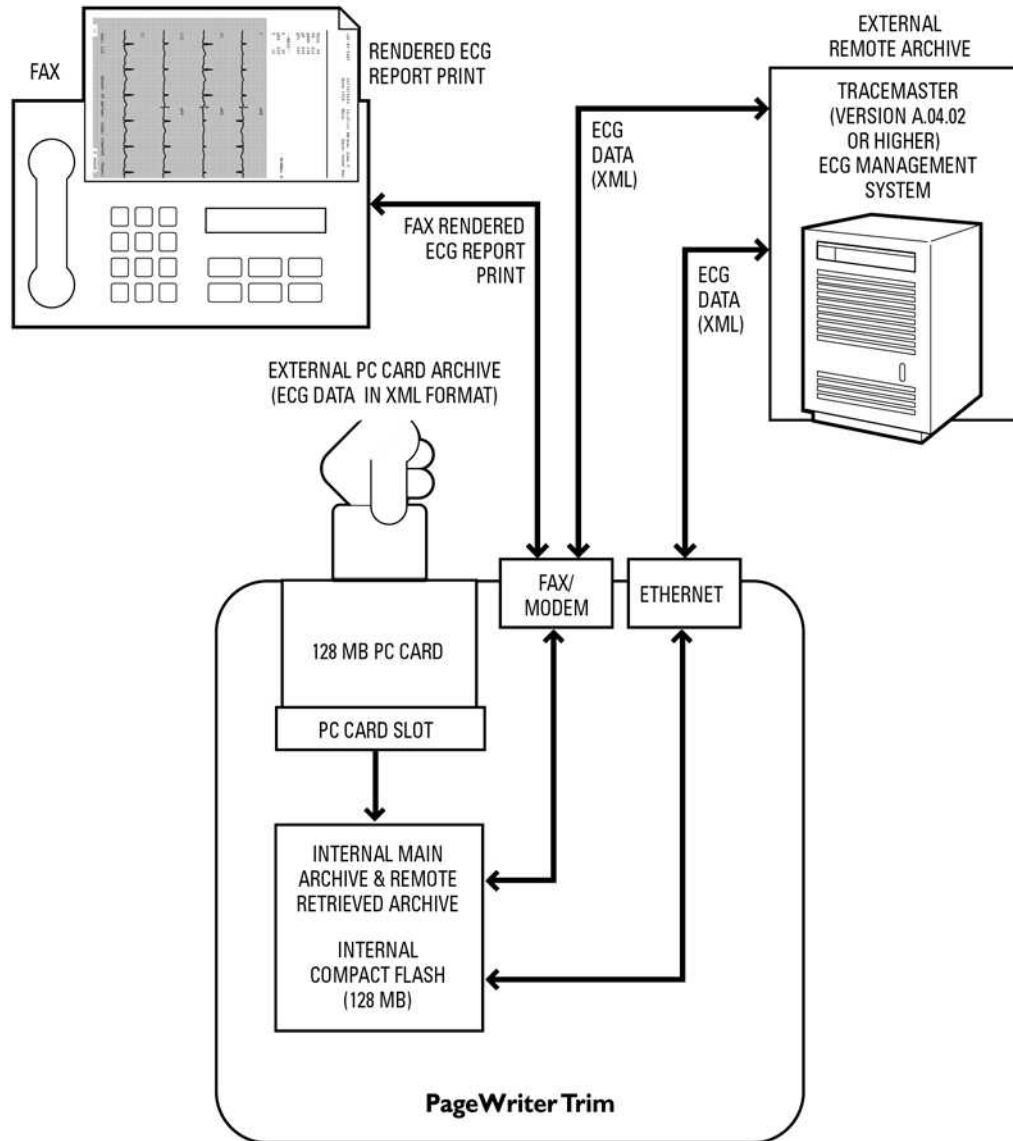
TraceMaster Remote Sites that are defined in Configuration appear in the **Selected Archive** drop-down list in the Archive (see page 4-6). The Archive is used to transmit files to and from the cardiograph, and to search the Remote Site for ECGs to print on the cardiograph using the Query feature.

Remote Site Fax and Modem Connection (USA and Canada only)

The cardiograph supports fax transmission of hard copy (non-editable) ECGs and modem transmission of ECG data to a TraceMaster ECG Management System. The cardiograph uses a PCMCIA Card modem (optional feature, see page 1-17) that supports printing to Group 3 Fax machines, and supports Class 1 or 2 Fax modem protocol (USA and Canada only).

For information on compatible PCMCIA card modem used outside of the USA and Canada, contact the nearest Philips Response Center (see page 7-23) or your local distributor.

Insert the PC Card modem into the PC Card slot on the rear of the cardiograph before configuring the fax or modem connection.

WARNING   **Never connect the PC Card modem to a phone line when the cardiograph is connected to a patient.**

To configure a remote site with fax transmission:

1   Press and hold down the Alt key on the keyboard.

2   Press the R key. The Remote Sites screen appears.

3   Turn the Trim Knob to highlight **Fax** or **Network** (modem, LAN).

4   Push the Trim Knob to select the setting.

For Fax:

1   Turn the Trim Knob to highlight the **Name:** field. The cursor appears in the field.

2   Type in up to 40 numbers or letters to represent the name of the sender of each fax transmission.

3   Turn the Trim Knob to highlight the **Station ID** field. The cursor appears in the field.

4   Type in up to 40 numbers or letters.

5   Turn the Trim Knob to highlight the **Name** field. The cursor appears in the field.

6   Type in up to 40 numbers or letters to represent the name of the recipient of each fax transmission.

7   Turn the Trim Knob to highlight the **Fax Number** field. The cursor appears in the field.

8   Type in the receiving fax number.

9   Turn the Trim Knob to highlight the drop-down list under **Dialing Devices**.

10 Push the Trim Knob to display the drop-down list.

11 Turn the Trim Knob to select the installed modem card.

N O T E   If the installed modem card does not appear on the drop-down list, ensure that the modem card is fully inserted into the PC Card slot on the rear of the cardiograph. If the card is not installed, or was not fully inserted into the slot, press and hold down the On/Standby button for 3 seconds, then release it. The cardiograph shuts down. Push the On/Standby button again. After the R/T ECG screen appears, follow the procedure "Opening the Configuration Screen" on page 5-2 and then return to this procedure.

12   Turn the Trim Knob to highlight the **Memo:** field. The cursor appears in the field.

13   Type in optional memo text to appear on the fax cover sheet.

A new Remote Site can be created using these settings, or any existing Remote Site may be saved with these new settings. See the next procedure to edit an existing Remote Site.

14   At the top of the screen a check mark and the word **Modified** appears. Turn the Trim Knob to highlight the **Add New** button.

15   Push the Trim Knob. The **Add New Remote Site** window appears.

16   Type in a name for the Remote Site configured with these fax settings.

17   Turn the Trim Knob to highlight the **OK** button.

18   Push the Trim Knob. The new Remote Site with fax transmission is created.

Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

To change remote site fax settings:

1   Turn the Trim Knob until the Remote Sites Archive drop-down list is highlighted.

2   Push the Trim Knob to display the drop-down list.

3   Turn the Trim Knob to scroll through the drop-down list.

4   Push the Trim Knob to select a Remote Site.

5   Make all changes to the selected Remote Site on the screen.

6   When all changes are complete, a check mark and the word **Modified** appears at the top of the screen.

7   Turn the Trim Knob until the **Save** button is highlighted.

8   Push the Trim Knob to save the new settings to the selected Remote Site.

Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Remote Sites Network Connection

The cardiograph supports the following network connection for Remote Sites:

■   10/10-Base T Ethernet using a PCMCIA network LAN card (see page 1-17)

For more information on configuring network settings, see your Network Administrator.

To configure a remote site with a network connection:

1   Press and hold down the Alt key on the keyboard.

2   Press the R key. The Remote Sites screen appears.

3   Turn the Trim Knob to highlight **Network** (modem, LAN).

4   Push the Trim Knob to select the setting.

5   Turn the Trim Knob to highlight the settings **Receive (Query)** and **Copy/Transfer** (left side of screen).

NOTE   Selecting the **Receive (Query)** check box enables the user to search the Remote Site (in **Archive**) for ECG files to print on the cardiograph (see page 4-15). Selecting the **Copy/Transfer** check box enables the user to transfer ECGs from the Archive to an ECG Management System.

6   Under the **Network** tab (right of screen) turn the Trim Knob to highlight the **Server URL** field. The cursor appears in the field.

7   Type in the URL address of the Remote Site server. The Server URL is the TraceMaster file server URL. The Server URL must be entered in the following format: http://*computername*/EMSCOMM/. *Computername* is the TraceMaster file server computer name or IP address. Examples of valid URLs include: http://tracemaster/EMSCOMM/ or http://10.101.2.42/EMSCOMM/.

8   Turn the Trim Knob to highlight the **User Name** field. The cursor appears in the field.

9   Type in the TraceMaster User Name.

10   Turn the Trim Knob to highlight the **Password** field. The cursor appears in the field.

11   Type in the Password for the TraceMaster User Name.

12   Press and hold down the Alt key on keyboard.

13   Press the Z key. The Net Connect screen appears.

14   Turn the Trim Knob to highlight **Always Connected** or **Dial-up** (modem) connection.

15   Press the Trim Knob the select the setting.

For Dial-up Modem:

1   Turn the Trim Knob to highlight the **Dialing Devices** drop-down list.

2   Push the Trim Knob to display the drop-down list.

3   Select the installed modem card.

NOTE   If the installed modem card does not appear on the drop-down list, ensure that the modem card is fully inserted into the PC Card slot on the rear of the cardiograph. If the card is not installed, or was not fully inserted into the slot, press and hold down the On/Standby button for 3 seconds, then release it. The cardiograph shuts down. Push the On/Standby button again. After the R/T ECG screen appears, follow the procedure "Opening the Configuration Screen" on page 5-2 and then return to this procedure.

4   Turn the Trim Knob to highlight the **Phone** field. The cursor appears in the field.

5   Type in the dial-up modem telephone number.

6 Turn the Trim Knob to highlight the **User Name** field. The cursor appears in the white box.

7 Type in the TraceMaster User Name for the dial-up modem connection.

8 Turn the Trim Knob to highlight the **Password** field. The cursor appears in the field.

9 Type in the password for the TraceMaster user name.

10 Turn the Trim Knob to highlight the **Domain** field. The cursor appears in the white box.

11 Type in the Domain name (optional).

12 At the top of the screen a check mark and the word **Modified** appears. Turn the Trim Knob to highlight the **Add New** button.

13 Push the Trim Knob. The **Add New Remote Site** window appears.

14 Type in a name for this Remote Site.

15 Turn the Trim Knob to highlight the **OK** button.

16 Push the Trim Knob.

The Remote Site appears in the **Remote Sites Archive** drop-down list (top of screen) and may be selected in the **Archive**.

Select another tab (top of screen) to continue making changes. If done making changes press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Network Settings

The settings in this section include network protocol settings used with the LAN connection. The cardiograph supports the following network connection:

- 10/10-Base T Ethernet using a PCMCIA network card (see page 1-17)

The network configuration settings support TCP/IP using a static IP address or a DNS or WINS server.

Networking Overview

The PageWriter Trim cardiograph communicates with the TraceMaster ECG Management System (A.04.02 or higher) or the TraceMasterVue ECG Management System (A.01 or higher) through a network connection. In the cardiograph network configuration settings, all TCP/IP settings are configurable based on the specific needs of the clinical environment. Both DHCP (Dynamic Host Configuration Protocol) and fixed IP (Internet Protocol) address settings are available.

DHCP

With DHCP, the LAN automatically provides a dynamic IP address to the cardiograph. The LAN logs the cardiograph's unique MAC (Media Access Control) address and provides a temporary DHCP IP address for the cardiograph.

If the cardiograph is connected to different LAN servers within the same facility, it may have to be reset in order to be recognized and assigned a DHCP IP address. Or, if the cardiograph has not been connected to the network for a specified period of time (defined by the LAN), the network may not recognize the cardiograph. In this case, the cardiograph may also have to be reset. Resetting the cardiograph at multiple locations on the LAN may be time consuming.

If the cardiograph is going to be connected to multiple sites within a facility, or to different LAN servers within a facility, it may be more efficient to assign the cardiograph a fixed IP address.

Fixed IP Address

Fixed IP addresses allow the cardiograph to be recognized throughout a network. With a fixed IP address, the cardiograph will be recognized at multiple locations throughout a LAN and will not require a full reset in order to be recognized. Using fixed IP addresses will also avoid the problem of having multiple IP addresses assigned to a single cardiograph.

An important question to consider when determining whether to assign a DHCP or a fixed IP address is: will the cardiograph be connected to multiple sites within a facility, or only from one or two locations?

Auto Negotiation

When the cardiograph is connected to a LAN, it automatically configures the correct settings for Ethernet speed and mode (half or full duplex). If the auto-negotiation fails, it may be necessary to lock a specific switch or router port to a fixed setting (for example, 100BaseT Full Duplex) in order to obtain a connection.

Issues with the timing of the PageWriter Trim auto negotiation have been reported with certain CISCO switches (such as the CISCO 4506). To obtain a LAN connection with these switches, the specific LAN port may have to be locked down with fixed Ethernet port settings. The cardiograph should only be connected to these locked down ports.

For more information on networking options or to troubleshoot specific networking issues, consult your network administrator.

To configure cardiograph network settings:

1   Press and hold down the Alt key on the keyboard.

2   Press the N key. The Network screen appears.

3   Under **Network ID**, turn the Trim Knob to highlight the text field next to **Computer Name** (if not highlighted).

4   Type in the computer name for the cardiograph (up to 16 letters or numbers).

NOTE   The Computer Name may not contain spaces.

5   Turn the Trim Knob to highlight the **Obtain IP Address Automatically** (DNS) or **Specify IP Address** (fixed IP address) setting depending on your network requirements.

6   Push the Trim Knob to select the setting.

For Fixed IP address:

1   Turn the Trim Knob to select the **IP Address**, **Subnet Mask**, and **Default Gateway** fields. A cursor appears in the white box. Type in the IP address information for each field.

2   Turn the Trim Knob to select the **Primary DNS Server** or **Primary WINS** fields. The cursor appears in the white box.

3   Type in the server information.

4   Turn the Trim Knob to select the **Secondary DNS** or **Secondary WINS** fields (if necessary).

5   Type in the server information.

6   To apply the new network settings the cardiograph must restart. Press the Enter key on keyboard to save the settings.

7   Press and hold the On/Standby button for three seconds and then release the button. The message **PageWriter Trim is shutting down...** appears. The cardiograph shuts off.

8   Press the On/Standby button to restart the cardiograph. The cardiograph restarts and the new network settings are applied.

Password Settings

The following cardiograph features can be configured to be password controlled:

- Archive

- Configuration

Passwords can be up to 6 letters or numbers in length and are case-sensitive (capital and lower case letters can be used). The **Password Config** password must be configured first. This password controls access to all Password settings in Configuration. Entering a correct password allows the user to change all password settings on the cardiograph. The **Archive** password must be entered to open the Archive screen. The **Configuration** password must be entered to open the Configuration screens.

To configure passwords:

1 Press and hold down the Alt key on keyboard.

2 Press the W key. The Passwords screen appears. At the bottom of the screen, the **Password Config System** password needs to be configured first.

3 Turn the Trim Knob until the first field to the right of **Password Config System** (under the **Enter Password** column) is selected. The cursor appears in the field.

4 Type in a password (up to 6 letters or numbers).

5 Turn the Trim Knob until the cursor appears in the second field (under the **Confirm Password** column).

6 Re-enter the password.

7 Turn the Trim Knob to highlight the **On** check box to the right of **Password Config System** (under the **Enabled** column).

N O T E   If the password is re-entered incorrectly, the message **Invalid Password Entered** appears. Push the Trim Knob to select **OK**. Re-enter the password.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Lost Passwords

If a cardiograph password is lost and cannot be retrieved, contact the nearest Philips Response Center for assistance (see page 7-23).

Locale Settings

The settings in this section include setting the current date and time, time format, date format, numerical, and unit measurements for specific countries or regions.

To change the date and time:

1   Press the hold down the Alt key on the keyboard.

2   Press the L key. The Locale screen appears.

3   The **Year:** drop-down list is highlighted. Push the Trim Knob to display the drop-down list.

4   Turn the Trim Knob to highlight the current year.

5   Repeat the procedure to set the current **Month**, **Day**, **Hour**, **Minute**, and **Second**.

N O T E   The **Hour:** is set on a 24-hour clock. If the **Regional Settings** are set to display a 12-hour clock, the cardiograph will display the time based on the 12-hour clock setting.

6   Turn the Trim Knob to highlight the **Apply Changes** button.

7   Push the Trim Knob to apply the new date and time settings.

To change regional settings:

1   Turn the Trim Knob until the **Region** drop-down list under **Regional Settings** is highlighted.

2   Push the Trim Knob to display the drop-down list of available regional settings.

N O T E   The **Regional Settings** only change the displayed time, date, and decimal formats.

3   Push the Trim Knob to select a regional setting. The regional settings appear on the screen.

To change the units system:

1   Turn the Trim Knob to highlight a setting under **Units System**.

2   Turn the Trim Knob to highlight **Metric** or **English**.

3   Push the Trim Knob to select the setting.
    Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Cardiograph Settings

The optional settings in this section provide information about a specific cardiograph including: **Location Code** (LOC), **Device ID** (identification number to track a specific cardiograph), **Institution Label**, **Institution Number**, **Facility Label**, **Facility Number**, **Department Label** and **Department Number**.

Each of these fields may be customized with any 32 letters or numbers. **Location Code** (LOC) is limited to 5 numbers only.

Each of these configured information fields appear on the printed 12-lead report (see page 3-7) and are transferred with the report to an ECG Management System. The table below describes each cardiograph identification information field.

Table 5-5   Cardiograph Identification Information Fields

Cardiograph Identification Field	Description
LOC (Location Code)	■ Only used with a TraceMaster ECG Management System (version A.04.02 or higher) ■ Limited to 5 numbers ■ Does not appear on the printed report ■ Configuring this information field disables the **Institution Number** and **Department Number** fields
Device ID	■ Appears on the printed report (see page 3-17) ■ Limited to 32 letters or numbers
Institution Label	■ Appears on the printed report (see page 3-7) ■ Limited to 32 letters or numbers
Institution Number	■ Appears on the printed report (see page 3-7) ■ Limited to 32 numbers
Facility Label	■ Appears on the printed report (see page 3-7) ■ Limited to 32 letters or numbers
Facility Number	■ Appears on the printed report (see page 3-7) ■ Limited to 32 numbers
Department Label	■ Appears on the printed report (see page 3-7) ■ Limited to 32 letters or numbers
Department Number	■ Appears on the printed report (see page 3-7) ■ Limited to 32 numbers

Factory Default Setting

■ No cardiograph information fields are entered

To configure institution information

1 Under **Identification**, turn the Trim Knob until the field next to **Location Code** is selected. The cursor appears in the field.

N O T E The **Location Code (LOC)** is only used with the Philips Tracemaster ECG Management System (version A.04.02 or higher) and does not appear on the printed 12-lead Report. Configuring the LOC disables the **Institution Number** and **Department Number** fields. For more information see the *Philips Tracemaster ECG Management System Installation and Reference Guide*. The file may be downloaded from: medical.philips.com.

2 Enter the Location Code.

N O T E The **Location Code** is limited to 5 numbers. The first 3 numbers are used to identify an institution number and the last 2 numbers are used to identify a department number.

3 Turn the Trim Knob to select the field next to **Device ID**. The cursor appears in the field.

N O T E The **Device ID** is limited to 32 numbers.

4 Enter the number.

5 Turn the Trim Knob to select the field next to **Institution Label**. The cursor appears in the field.

6 Enter the text.

7 Turn the Trim Knob to select the field next to **Institution Number**. The cursor appears in the field.

8 Enter the number.

9 Turn the Trim Knob to select the field next to **Facility Label**. The cursor appears in the field.

10 Enter the text.

11 Turn the Trim Knob to select the field next to **Facility Number**. The cursor appears in the field.

12 Enter the number.

13 Turn the Trim Knob to select the field next to **Department Label**. The cursor appears in the field.

14 Enter the text.

15 Turn the Trim Knob to select the field next to **Department Number**. The cursor appears in the field.

16 Enter the number.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and to exit the Configuration screen. The new changes are applied.

Metronome Settings

This section is also used to configure the **Metronome** feature. The Metronome is used with the Auto ECG function to perform exercise stress tests such as the Master's Two Step. Using this feature, the patient exercises at a rate indicated by the metronome chime, and an Auto ECG is taken after the patient stops exercising. The default settings for the Metronome are set in Configuration, but these settings may be changed by the user during a patient session.

For more information on using the Metronome feature during a patient session, see page 2-26.

Factory Default Settings

Metronome

■ Set to Off

■ Number of Steps 50

■ Stress Test Protocol: Master Double

To set metronome settings:

1 Turn the Trim Knob until the **ON** check box under **Metronome** is highlighted.

2 Push the Trim Knob to select the check box. Selecting the **ON** check box turns on the Metronome feature. Each time the Auto button is pressed during a patient session the Metronome window appears on the screen.

3 Turn the Trim Knob to highlight the field to the right of **Number of Steps** (under **Speed**). Type in the number of default steps (16-70) to be used with the Metronome feature during a typical stress test. This setting can be changed by the user during a patient session.
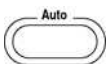
4   Turn the Trim Knob to highlight a setting under **Stress Test Protocol.** This setting sets
the default Masters' Two Step stress test used with the Metronome. This setting can be
changed by the user during a patient session.

Table 5-6   Masters' Two Step Stress Test Settings

Test	Description
Master Single	▪ Patient exercises for 90 seconds
Master Double	▪ Patient exercises for 180 seconds

5   Push the Trim Knob to select a Masters' Two Step Stress Test setting.

Select another tab (top of screen) to continue making changes. If done making changes,
press the Enter key (on keyboard) to save the changes and to exit the Configuration screen.
The new changes are applied.

Magnetic Card Reader Settings

This section also sets the default Patient ID field settings for the optional magnetic card reader
(see page 1-19).

TIP   Ensure that the selected Patient ID fields (see page 5-4) and the Patient ID fields selected for the
magnetic card reader are consistent.

The magnetic card reader supports the following standards:

▪   ISO 7810, 7811-1, -2, -3, -4, -5

▪   JIS X 6301 and X 6302

Factory Default Settings

▪   Magnetic Card Reader:
   –   Field 1: Patient ID (number)
   –   Fields 2, 3, 4: no fields selected (None).

To configure the magnetic card reader:

1   Turn the Trim Knob until the **Field 1** drop-down list under **Magnetic Card Reader -
Track 1** is highlighted.

2   Push the Trim Knob to display the drop-down list of available Patient ID information
fields.

3   Turn the Trim Knob to scroll through the drop-down list.

4   Push the Trim Knob to select a Patient ID field.

5   Repeat the procedure for Fields 2-4.

Select another tab (top of screen) to continue making changes. If done making changes, press the Enter key (on keyboard) to save the changes and exit the Configuration screen. The new changes are applied.

Saving Configured Settings

All cardiograph configured settings may be saved (as a configuration file) to a PC Card and then uploaded to multiple cardiographs. Use this feature when configuring multiple cardiographs with the same settings.

Select all of the default cardiograph configuration settings before saving them to a PC Card as a configuration file.

TIP   It is recommended to save cardiograph configuration settings to a PC Card in case of system failure.

To save configuration settings to a PC Card:

1   Select all cardiograph configured settings to be saved to the configuration file.

2   Insert the PC Card into the PC Card slot on the rear of the cardiograph (see page 1-16).

3   Press and hold down the Alt key on the keyboard.

4   Press the S key. The System screen appears.

5   Turn the Trim Knob until the **Save Configuration File** button under **Configuration Management** is highlighted.

6   Press the Trim Knob. The **Input configuration file name** window appears. The cursor appears in the blank field.

7   Type in a name for the configuration file.

8   Turn the Trim Knob until the **OK** button is highlighted.

The configuration file is saved to the PC Card and may be uploaded to additional cardiographs using the following procedure.

Loading the Configuration Settings File

If the cardiograph loses all configuration settings, upload the cardiograph configured settings file to the cardiograph using a PC Card.

This procedure may also be used when loading cardiograph configuration settings onto multiple cardiographs.

To load the configuration settings file onto the cardiograph:

1   Insert the PC Card that contains the configuration settings file into the PC Card slot on the rear cardiograph.

2   Push the Trim Knob to select the button. The Configuration screen appears.

3   Press and hold down the Alt key on the keyboard.

4   Press the S key. The System screen appears.

5   Turn the Trim Knob until the **Load Configuration File** button under **Configuration Management** is highlighted.

6   Press the Trim Knob. The **Input configuration file name** window appears. The cursor appears in the blank field.

7   Type in a name of the configuration file saved to the PC Card.

8   Turn the Trim Knob until the **OK** button is highlighted.

9   The configuration settings file is loaded onto the cardiograph. Press the Enter key to continue. The new settings are applied.

Restoring Factory Default Configuration Settings

The factory default settings on the cardiograph can be restored at any time. Ensure that before reverting to factory default settings that any custom configuration settings are saved to a PC Card (see page 5-36).

To restore factory default configuration settings:

CONFIG

1   From the R/T ECG screen, turn the Trim Knob to select the **Config** button on the Command Toolbar.

2   Push the Trim Knob to select the button. The Configuration screen appears.

3   Press and hold down the Alt key on the keyboard.

4   Press the S key. The System screen appears.

5   Turn the Trim Knob until the **Reset to Default** button under **Configuration Management** is highlighted.

6   Press the Trim Knob. The **Configuration Management** window appears with the message **Are you sure you want to reset to factory settings?** Turn the Trim Knob to highlight the **Yes** button.

NOTE   Select the **No** button to not apply the factory default settings and to exit the window.

7   Push the Trim Knob to select the **Yes** button.

8   The **System reset to factory default settings window** appears. Push the Trim Knob to close the window.
The factory default configuration settings are loaded onto the cardiograph.

Troubleshooting

Introduction

Common troubleshooting topics are discussed in this chapter. If additional assistance is required, contact the nearest Philips Response Center (see page 7-23).

Troubleshooting Topics

The following table lists all of the Troubleshooting topics included in this chapter.

Table 6-1   Troubleshooting Topics

Topic	Page Number
Archive	see page 6-2
Barcode Reader	see page 6-6
Battery and AC Power	see page 6-6
LAN and Modem card	see page 6-8
Leads Off	see page 6-9
Magnetic Card Reader	see page 6-10
Printer	see page 6-10
Signal Quality (bad electrode connection, interference or noise in ECG signal)	see page 6-14
System Freeze	see page 6-16

Archive

The following table includes common error messages that may appear when using the Archive and common problems that may occur when using the Archive to transmit ECGs to a TraceMaster (version A.04.02 or higher) or TraceMasterVue (version A.01 or higher) ECG Management System.

Table 6-2   Archive Troubleshooting

Error Message or Problem	Possible Cause	Solution
Archive Error: Command Timed Out	The TraceMaster or TraceMasterVue ECG Management system is busy at the receiving end.	Wait and try again.
Archive Error: Command Timed Out	The analog phone line is disconnected or was interrupted while an ECG is being transferred to a TraceMaster or TraceMasterVue Remote Site.	Check that the phone connector is properly inserted into the modem card and the modem has a dial tone.
Cannot Access Selected Archive	The Selected Archive is PC Card and there is no PC Card inserted into the PC Card slot (rear of cardiograph) or the PC Card is not fully inserted into the PC Card slot.	Check that the PC Card is correctly orientated in the PC Card slot and that the PC Card is fully inserted into the slot.
Remote Connection Failed	The connection between the TraceMaster or TraceMasterVue server and the PageWriter Trim cardiograph is not established, or is not configured properly.	■ Check the cardiograph Network settings, and the Remote Site settings in Configuration (see page 5-22). ■ Check with your System Administrator regarding TraceMaster or TraceMasterVue network permission and access. ■ Check that the LAN card or modem card is correctly orientated in the PC Card slot and that the card is fully inserted.

Table 6-2   Archive Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
Cannot store additional ECG	The selected Archive is full.	Delete unwanted ECGs from the Archive (see page 4-16).
Archive Error: XML Error	■ ECG files have been corrupted during the transfer or retrieval from a TraceMaster or TraceMasterVue server. ■ XML files from an unknown device are being transferred to the cardiograph.	■ Try transferring or retrieving the ECG again. ■ If the error message is received a second or subsequent time, contact the nearest Philips Response Center for further assistance (see page 7-23). ■ The PageWriter Trim cardiograph only supports the importing of XML files from the PageWriterTouch and other PageWriter Trim cardiographs.
Archive Error: Invalid Database	There are unspecified errors on the PC Card inserted into the PC Card slot on the rear of the cardiograph, or on the internal cardiograph CompactFlash card.	■ Try accessing the Archive again. ■ If the error message is received a second or subsequent time, contact the nearest Philips Response Center for further assistance (see page 7-23).
Archive Error: Requested Function Failed	An unsupported Auto report format is being transferred to TraceMaster or to TraceMasterVue.	Pan-12 and 12x1 reports may not be transferred to a TraceMaster or to a TraceMasterVue.

Table 6-2   Archive Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
When multiple ECGs are being transferred from the cardiograph to a TraceMaster or TraceMasterVue Remote Site, not all ECGs transfer and are not deleted from the Archive.	The ECG transfer was interrupted for an unknown reason.	■ Transfer the ECGs again. ■ If the ECGs do not transfer after a second or subsequent time, contact the nearest Philips Response Center for assistance (see page 7-23).
After selecting the **Archive** button on the Command Toolbar, it takes longer than 40 seconds for the Archive Report List to display on the screen.	The Main Archive (internal cardiograph Archive) contains more than 130 ECGs and is full.	Transmit and delete ECGs from the Main Archive (see page 4-9).
An ECG cannot be transferred to a PC Card when there are less than 200 ECGs on the PC Card.	There are other non-ECG files on the PC Card that are taking up space.	Delete files from the PC Card and attempt to transfer the ECG again.

Table 6-2   Archive Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
The ECG retrieved from a TraceMaster or TraceMasterVue ECG Management System does not print as expected or appear as expected on the Preview screen.	The ECG was not originally generated on a PageWriter Trim or PageWriterTouch cardiograph.	Retrieving and printing ECGs that were not generated on a PageWriter Trim or a PageWriterTouch cardiograph may result in the following: ■ The algorithm version number appears as HP*xx* on the TraceMaster or TraceMasterVue ECG Management System, but will appear as PH on the PageWriter Trim (see page 3-16). ■ Pacer tick marks do not appear on the ECG report printed on the PageWriter Trim. ■ If the ECG was originally generated using the Frank lead system, the PageWriter Trim will print the report with 3 flat Rhythm strips with no lead information. ■ Custom lead names will not appear on a report printed on a PageWriter Trim.

CAUTION   Do not pull the PC Card out of the PC Card slot on the rear of the cardiograph while the cardiograph is accessing ECG files from the PC Card.

Barcode Reader

The following table describes a potential problem with the barcode reader.

Table 6-3   Barcode Reader Troubleshooting

Problem	Possible Cause	Solution
The barcode reader does not accurately read a scanned barcode.	The barcode reader has been unplugged or plugged into the cardiograph when the cardiograph is in use.	Shut down all power to the cardiograph. Press and hold the On/Standby button for 3 seconds and then release. Securely attach the barcode reader to the barcode reader port ( ) on the rear of the cardiograph. Press the On/Standby button.

Battery and AC Power

The following table describes common problems with the battery and AC power.

Table 6-4   Battery and AC Power Troubleshooting

Problem	Possible Cause	Solution
The AC power indicator light on the front of the cardiograph does not illuminate when the cardiograph is plugged into AC power.	The AC fuse is not functional.	The AC fuse needs to be replaced (see page 7-8).

Table 6-4   Battery and AC Power Troubleshooting *(continued)*

Problem	Possible Cause	Solution
No battery detected.	■ The battery is completely depleted of power and requires a full recharge. ■ The battery is damaged. ■ The battery has been removed from the cardiograph.	■ Check that the battery is properly inserted (see page 1-9). ■ Recharge the battery. Plug the cardiograph into AC power and press the On/Standby button. Charge the battery until the Battery Power Indicator on the Status Bar displays that the battery is fully charged (see page 1-27). ■ Replace the battery (see page 7-7). Only use the PageWriter Trim replacement battery with Philips part number 989803130151.

LAN and Modem Card

The following table lists some common problems with the LAN or Modem PCMCIA card.

Table 6-5   LAN and Modem Card Troubleshooting

Problem	Possible Cause	Solution
The **Transfer**, **Query**, **Search** or **Fax** functions do not operate.	■ The LAN cable or phone cable is not connected to the card. ■ The configured settings for the TraceMaster or TraceMasterVue Remote Site are incorrect.	■ Check that the LAN cable or phone cable are correctly and securely attached to the card. ■ Only use the shielded LAN cable supplied with the PageWriter Trim cardiograph with Philips part number 989803138021. Do not use any other LAN cable with the cardiograph. ■ Check the configured settings for the Remote Site (see page 5-22).
The modem card does not respond.	The modem card is not fully inserted into the PC Card slot, or was removed and replaced while the cardiograph was in operation.	■ Ensure that the modem card is fully inserted into the PC Card slot on the rear of the cardiograph. ■ Reset the cardiograph (see page 6-17) and attempt to use the modem card again. ■ If the modem card fails to respond a second or subsequent time, contact the nearest Philips Response Center for assistance (see page 7-23).

Leads Off

The following table lists some common problems with leads off.

Table 6-6   Leads Off Troubleshooting

Lead(s) shown disconnected	Possible Cause	Solution
RL or N	■ The PIM (Patient Interface Module) patient data cable is not securely attached to the PIM connector port on the rear of the cardiograph. ■ The RL or N electrode or lead wire are lose or disconnected. ■ More than two of the following leads: LA or L, LL or F, or RA or R are loose or disconnect3ed.	■ Check that the patient data cable is securely attached to the PIM connector port ( ) on the rear of the cardiograph. ■ Check that the RL or N electrodes or lead wires are securely attached. ■ Check that the electrodes and lead wires are correctly positioned on the patient (see page 2-3). ■ Ensure that there are at least two limb lead wires securely connected.
LL or F	LL or F (left leg) electrode and lead wire are loose or disconnected.	Check LL or F lead wire and electrode are securely attached.
LA or L	LA or L (left arm) electrode and lead wire are loose or disconnected.	Check LA or L electrode and lead wire are securely attached.
RA or R	RA or R (right arm) electrode and lead wire are loose or disconnected.	Check RA or R electrode and lead wire are securely attached.
V1-V6 or C1-C6	V1-V6 (C1-C6) precordial electrodes and lead wires are loose or disconnected.	Check the V1-V6 (C1-C6) electrodes and lead wires are securely attached.

Magnetic Card Reader

The following table describes a potential problem with the magnetic card reader.

Table 6-7   Magnetic Card Reader Troubleshooting

Problem	Possible Cause	Solution
The magnetic card reader does not correctly read the magnetic card data.	The magnetic card reader has been connected or disconnected from the cardiograph while the cardiograph is in use.	Shut down all power to the cardiograph. Press and hold the On/Standby button for 3 seconds and then release. Securely attach the magnetic card reader to the magnetic card reader port (⬦) on the rear of the cardiograph. Press the On/Standby button.

Printer

The following table contains a list of common error messages and other problems that may occur when using the cardiograph printer.

Table 6-8   Printer Troubleshooting

Error Message or Problem	Possible Cause	Solution
PageWriter Trim II and III: **Printer Error: Door is Open** *PageWriter Trim I:* **0203**	■ The paper drawer is open. ■ There is an unknown problem with the printer.	■ Open and close the printer drawer and ensure that it is securely closed. ■ If the problem persists, contact the nearest Philips Response Center for further assistance (see page 7-23).
PageWriter Trim II and III: **Printer Error: Out of Paper** *PageWriter Trim I:* **0204**	No printer paper in the paper drawer.	Replace the printer paper (see page 7-4).

Table 6-8   Printer Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
PageWriter Trim II and III: **Printer Error: Paper Jam** *PageWriter Trim I:* **0204**	There is a paper jam.	Pull out the paper drawer and fix the paper jam.
PageWriter Trim II and III: **Printer Error: Printer Busy** *PageWriter Trim I:* **0202**	■ The cardiograph is configured for a particular paper size (A or A4), and the paper drawer is loaded with a different size paper. ■ The battery charge level is at low power. ■ The paper drawer was opened while the cardiograph was printing a report.	■ Check that the paper size setting in configuration is correct (see page 5-18). ■ Plug the cardiograph into AC power and fully charge the battery, or replace the battery with a new fully charged battery (see page 7-7). ■ Reset the cardiograph (see page 6-17).

Table 6-8   Printer Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
PageWriter Trim II and III: **Printer Error: USB** *PageWriter Trim I:* **0201**	■ The battery power level is too low to print a report. ■ The printer is not responding.	■ Plug the cardiograph into AC power and fully charge the battery, or replace the battery with a new fully charged battery (see page 7-7). ■ Open the paper drawer and securely close it. ■ If all other methods fail to resolve the error message, press and hold the On/ Standby button for 3 seconds. Release the On/ Standby button to shut down the cardiograph. Push the On/Standby button again to restart the cardiograph. The cardiograph will fully reboot. ■ For further assistance, contact the nearest Philips Response Center (see page 7-23).
PageWriter Trim II and III: **Printer Error: Unknown Error** *PageWriter Trim I:* **0207**	Unknown cause for problem.	■ Open and securely close the paper drawer and then reset the cardiograph (see page 6-17). ■ For further assistance, contact the nearest Philips Response Center (see page 7-23).

Table 6-8   Printer Troubleshooting *(continued)*

Error Message or Problem	Possible Cause	Solution
The printer makes a "click" noise and will not respond.	The printer is unable to function due to an unknown cause.	■ Follow the cardiograph reset procedure (see page 6-17). ■ If the problem persists, contact the nearest Philips Response Center for further assistance (see page 7-23).
The cardiograph prints out a blank ECG report and will not stop printing.	The cardiograph is configured for a particular paper size (A or A4), and the paper drawer is loaded with a different size paper.	■ Press the Stop button on the cardiograph to stop the printer. ■ Press the On/Standby button for 3 seconds then release it to shut down the cardiograph. Press the On/Standby button again to restart the cardiograph. ■ Configure the cardiograph for the correct paper size (see page 5-18).
The printer paper does not advance to the correct position at the top of the next sheet. The perforated edge does not appear at the end of the report.	■ The cardiograph is configured for a particular paper size (A or A4), and the paper drawer is loaded with a different size paper. ■ The printer paper is being torn off incorrectly.	■ Configure the correct paper size in Configuration (see page 5-18). ■ Review the correct procedure to tear off the printer paper (see page 7-4).
The printer stops printing unexpectedly.	The battery is depleted of power or is defective.	■ Plug the cardiograph into AC power. If the cardiograph prints reports normally, fully charge the battery or replace it. ■ If the problem persists, contact the nearest Philips Response Center (see page 7-23).

Table 6-8   **Printer Troubleshooting** *(continued)*

Error Message or Problem	Possible Cause	Solution
Blank pages appear at the end of the ECG report.	The cardiograph is configured for a particular paper size (A or A4), and the paper drawer is loaded with a different size paper.	Configure the correct paper size in Configuration (see page 5-18).

Signal Quality

The following section describes common signal quality problems with suggested solutions.

Figure 6-1   AC interference
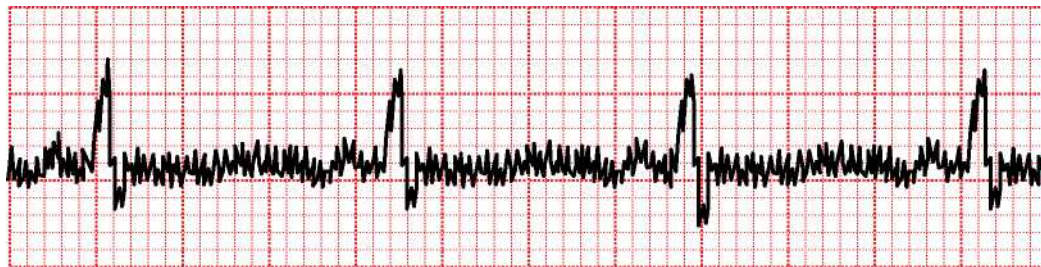
Table 6-9   **AC Interference Troubleshooting**

Possible Cause	Solution
■ An improperly gelled electrode (dried gel)	■ Check that the electrodes are firmly attached.
■ Electrical interference from another device (IV pump, microwave oven, cellular phone, wireless device)	■ Check for devices that could be causing electrical interference. Unplug the devices or switch to battery power.
■ An electrical device near the cardiograph that is improperly grounded	■ Lay the lead wires alongside the limbs and away from any electrical devices.
	■ Turn on the AC filter (see page 2-11).

Figure 6-2   Wandering Baseline

Table 6-10   Wandering Baseline Troubleshooting

Possible Cause	Solution
■ Inadequate patient preparation, or a sweaty patient ■ Moderate patient movement, tense patient ■ Very poor electrode contact, dry electrodes ■ Patient respiratory interference	■ Reassure the patient and make sure that the patient is comfortable. If the patient has tremors, attach the limb electrodes higher on the patient (closer to torso). ■ Ensure that the lead wires are not pulling on the electrodes. ■ Check that the electrodes are firmly attached or reapply new electrodes if the gel is dry. ■ Turn on the Baseline Wander filter (see page 2-11).

Figure 6-3   Somatic Tremors
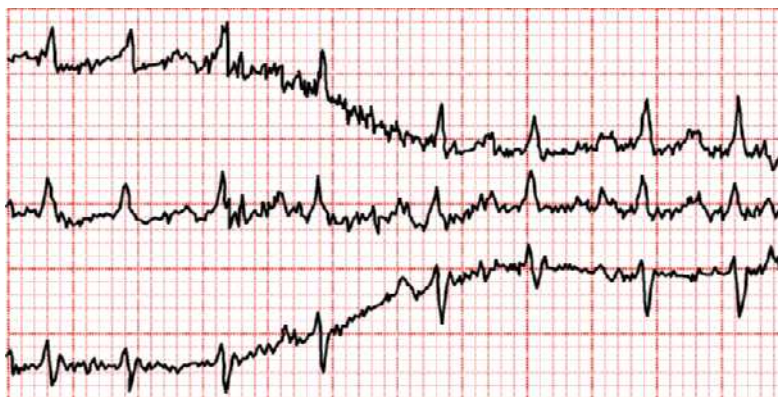
Table 6-11   Somatic Tremors Troubleshooting

Possible Cause	Solution
■ The patient is cold and shivering ■ Patient has tremors	■ Place a blanket on the patient to warm the patient ■ Assist with limiting patient movement

Figure 6-4   Loose Electrode
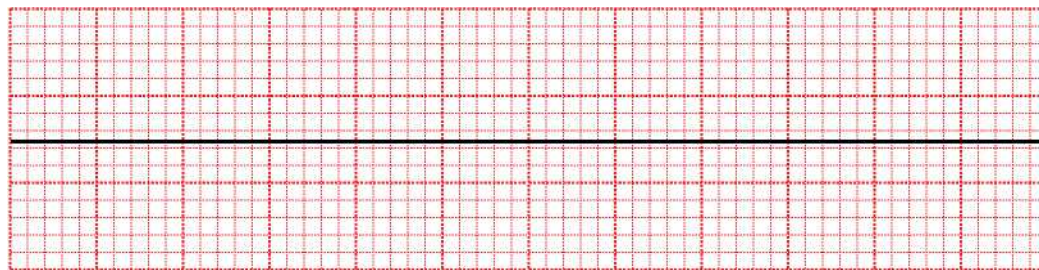
Table 6-12   Loose Electrode Troubleshooting

Possible Cause	Solution
■ An electrode is loose or is not adhering to the skin ■ An electrode has fallen off ■ A lead wire is disconnected	■ Check all electrodes ■ Replace dry electrodes ■ Check all lead wires

System Freeze

If the cardiograph freezes on any screen and cannot be used, follow the procedure below to reset the cardiograph. For further assistance with system freeze issues, contact the nearest Philips Response Center (see page 7-23).

Table 6-13   System Freeze Troubleshooting

Problem	Possible Cause	Solution
The cardiograph cannot perform any function. The cardiograph does not respond when the Trim Knob is turned or pressed, or when a key on the keyboard is pressed.	The cardiograph software is frozen.	Follow the cardiograph reset procedure (see page 6-17).
If the cardiograph automatically resets.	The cardiograph resolved a problem by resetting.	Continue with normal cardiograph operation after the reset is complete. If the cardiograph continues to reset automatically, contact the nearest Philips Response Center for assistance (see page 7-23).

Resetting the Cardiograph

Follow the procedure below to reset the cardiograph.

To reset the cardiograph:

1 Press and hold down the On/Standby button for 3 seconds, and then release it. If the cardiograph does not shut down, follow the next step in this procedure.

2 Press and hold the On/Standby button for 5 seconds, then release it. Press the On/Standby button again. If the cardiograph does not shut down, perform the following steps in this procedure.

3 Using a paper clip or other item with a small tip, gently press the Reset button on the rear of the cardiograph.

Figure 6-5   Pressing the Reset button on the PageWriter Trim I
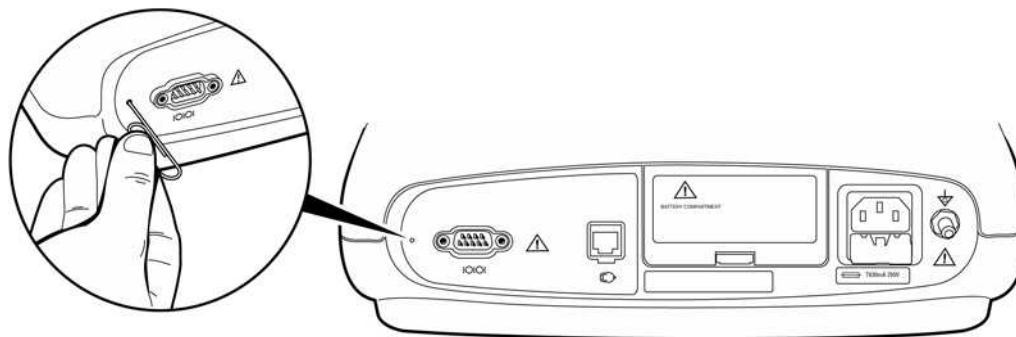
Figure 6-6   Pressing the Reset button on the PageWriter Trim II and III
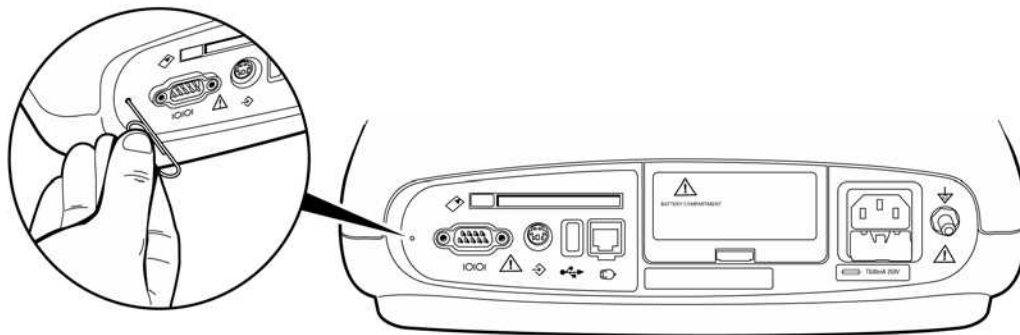
The cardiograph display shuts off and the cardiograph restarts.

4 If the cardiograph does not restart after pressing the Reset button, disconnect the AC power cord from the cardiograph. Ensure that the AC power indicator light on the front of the cardiograph is not lit. Open the battery door and remove the battery from the cardiograph (see page 7-7). Reinsert the battery and connect the AC power cord to the AC power connector on the rear of the cardiograph. Press the On/Standby button.

After the cardiograph is reset, a series of screens appear. At the end of the restart sequence, the R/T ECG screen appears and the cardiograph can be returned to normal use.

Cardiograph Care and Maintenance

The following chapter contains information on basic cardiograph care and periodic maintenance. If further technical assistance is required, contact the nearest Philips Response Center (see page 7-23).

Cardiograph Cleaning

To clean the cardiograph:

1 Unplug the AC power cord.

2 Wipe the external surfaces of the cardiograph with a soft cloth dampened in any of the approved cleaning solutions listed below.

CAUTION When cleaning, avoid the lead wire connectors and the connectors on the rear panel.

Approved Cleaning Solutions

- Mild soap and water
- Isopropyl alcohol

CAUTION **Do not** spill liquids on the surface of the cardiograph.

Do not use any of the following to clean the cardiograph:

- Acetone
- Iodine-based cleaners
- Phenol-based cleaners
- Ethylene oxide sterilization
- Chlorine bleach
- Ammonia-based cleaners
- The cardiograph or PIM should not be autoclaved, ultrasonically cleaned, or immersed.

PIM, Patient Data Cable and Lead Wire Cleaning

To clean the PIM, patient data cable and lead wires:

1   Dampen a soft cloth with one of the disinfectants or cleaning agents listed below. Clean the patient data cable and lead wires with any of the following:

■   Cidex Ortho Phthaladehyde

■   Cetylcide

■   Vesphene 2 Aqueous Phenolic Germicidal Agent

CAUTION   **Do not:**

- Use isopropyl alcohol
- Autoclave the PIM, patient data cable or lead wires or use ultrasonic cleaners
- Immerse
- Use abrasive materials
- Wet the connectors

2   Wring excess moisture from the cloth before cleaning.

Reusable Electrode Cleaning

To clean reusable electrodes:

1   Dampen a soft cloth with one of the disinfectants or cleaning agents listed below.

■   Cidex Ortho Phthaladehyde

■   Cetylcide

■   Vesphene 2 Aqueous Phenolic Germicidal Agent

CAUTION   **Do not:**

- Use isopropyl alcohol
- Autoclave the reusable electrodes or use ultrasonic cleaners
- Use abrasive materials

2   Wring excess moisture from the cloth before cleaning.

Changing the Date and Time on the PageWriter Trim I

To change the date and time:

1 Turn the Trim Knob until the date on the LCD display is highlighted.

2 Push the Trim Knob. A screen appears showing the current date and time settings.

3 Turn the Trim Knob until the field to be changed is highlighted.

4 Push the Trim Knob to select the field.

5 Turn the Trim Knob to scroll through the options for that field.

6 Push the Trim Knob to select a setting.

7 Repeat the procedure to set the current **Month**, **Day**, **Year**, **Hour**, **Minute**, and **Second**.

8 When all settings are complete, turn the Trim Knob to highlight the arrow icon ▪┣▪.

9 Push the Trim Knob to save the settings and to exit the screen.

Changing the Date and Time on the PageWriter Trim II and III

CONFIG

To change the date and time:

1 Turn the Trim Knob to highlight the **Config** button on the Command Toolbar.

2 Push the Trim Knob to select the button. The Configuration screen appears.

3 Press the hold down the Alt key on the keyboard.

4 Press the L key to select the Locale tab. The Locale screen appears.

5 The **Year:** drop-down list is highlighted. Push the Trim Knob to display the drop-down list.

6 Turn the Trim Knob to highlight the current year.

7 Repeat the procedure to set the current **Month**, **Day**, **Hour**, **Minute**, and **Second**.

8 Turn the Trim Knob to highlight the **Apply Changes** button.

9 Push the Trim Knob to apply the new date and time settings.

10 Press the Enter key (on keyboard) to exit the Locale screen.

Printer Paper

Replace the printer paper when a red stripe appears on the printed ECG report. Only use Philips Medical Systems replacement printer paper. For part number and ordering information, see page 7-20.

Tips for changing printer paper

- Always load less than 100 sheets of printer paper into the paper tray

- Ensure that the entire first page of the new paper roll is fully draped over the roller before closing the printer door

PageWriter Trim II and III:

- Ensure that the paper size configured for the cardiograph is the same size paper being loaded into the paper drawer (see page 5-18)

Figure 7-1   Changing Printer Paper
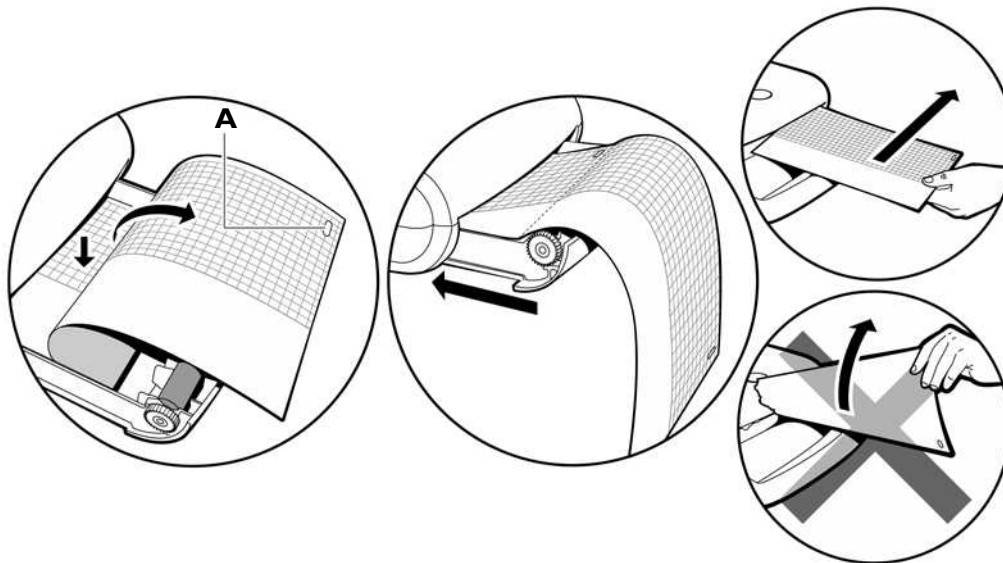
A   Paper sensor hole

To change the printer paper:

1   Open the paper drawer on the front of the cardiograph and remove any remaining sheets.

2   Insert a new pack of printer paper with the printed side facing up. Ensure that no more than 100 sheets are being inserted into the paper tray.

3   Ensure that the paper sensor hole (**A**) is positioned as shown in Figure 7-1.

4   Drape the entire first sheet over the roller. Ensure that the perforated edge of the paper aligns with the edge of the paper drawer.

5   Close the paper drawer.

6   Tear off the first sheet as shown in Figure 7-1.

Battery Maintenance and Care

The cardiograph uses one sealed lead-acid battery that supplies power to the cardiograph during mobile use, and provides a power supply to the cardiograph printer at all times. The battery must be inserted into the cardiograph at all times. The cardiograph cannot print a report without the battery, even when it is plugged into AC power.

With the battery fully charged, the cardiograph can print approximately 30 Auto ECGs or provide 30 minutes of continuous Rhythm printing.

Review the following important information about the care and use of the cardiograph battery.

For optimal battery performance:

- Only use Philips Medical Systems PageWriter Trim replacement battery with the cardiograph (Philips Part Number 989803130151).

- Plug the cardiograph into AC power whenever possible to maximize battery life and performance. Regularly and consistently charging the battery will prolong battery life.

CAUTION   Repeated undercharging of the battery will damage the battery and will reduce battery life.

- If the battery has been fully charged and requires recharging after only a few ECGs, consider replacement.

- Charging the battery at temperatures above 45 °C (113° F) can damage the battery and can reduce overall battery life.

- Check the battery power indicator on the Status Bar to ensure that the battery is fully charged, see "PageWriter Trim II and III Status Bar" on page 1-27.

- For the PageWriter Trim II and III, configure and turn on the Battery Power Saving Modes (**Standby**, **Shutdown**) feature in Configuration, see page 5-18.

- For the PageWriter Trim II and III, put the cardiograph into Standby mode when not in use. Push the On/Standby button to put the cardiograph into Standby. For the PageWriter Trim I, push the On/Off button to turn off the cardiograph when not in use.

- Always charge the battery when the cardiograph is not in use. Plug the cardiograph into AC power. Ensure that green AC power indicator light is on. The battery will charge while the cardiograph is in use, but will charge at a slower rate.

- The use of cardiograph accessories (barcode reader, magnetic card reader, SmartCard Reader, PC Card, modem and LAN card) will deplete battery power at a faster rate. The battery will require more frequent charging if these accessories are used with the cardiograph.

- Operate the cardiograph, charge the battery, and store the battery at a temperature of 40 °C (104° F) or lower. Exposure to higher temperatures may reduce battery life, damage the battery, and degrade overall cardiograph performance.

- For optimal battery performance store the battery at a cooler temperature, but not below freezing (0 °C/32°F).

- If the cardiograph will be stored for more than thirty days without use, unplug the cardiograph from AC power and remove the battery. See "Battery Storage" on page 7-6 for more information.

- A fully charged battery stored outside the cardiograph will need to be recharged every six months. If the battery is not charged every six months it will be damaged. See "Battery Storage" on page 7-6 for more information.

Charging the Battery

Plug the cardiograph into AC power whenever possible to charge the battery. The battery will charge when the cardiograph is in use and is plugged into AC power, but will charge at a slower rate.

If the battery is fully depleted, a charge time of at least 16 hours is necessary to fully recharge the battery. The battery will operate for approximately 8 hours before it requires a full recharge.

CAUTION Repeated undercharging of the battery will degrade battery performance and reduce overall battery life.

For the PageWriter Trim I, check the Battery Level Indicator on the LCD display (■■■) to confirm that the battery is fully charged, see "LCD Display" on page 1-24. For the PageWriter Trim II and III, check the Battery Level Indicator on the Status Bar (🔋■■■■) to confirm that the battery is fully charged, see "PageWriter Trim II and III Status Bar" on page 1-27.

Battery Storage

Remove the battery from the cardiograph if it will be stored for more than 30 days without use. While in storage, the battery will require a full recharge every 6 months. Charge the battery for at least 16 hours. This will ensure that the battery does not completely discharge while in storage. The battery life will be prolonged when stored in cooler temperatures, but will be damaged if stored below freezing (0 °C/32°F). Store the battery at a temperature of 40 °C (104° F) or lower.

To store the battery:

1 Charge the battery for 16 hours before removing it from the cardiograph. Ensure that the AC power cord is connected to the cardiograph and is plugged into a grounded AC power outlet. Check that the green AC power indicator light on the front of the cardiograph is lit.

2 Remove the battery from the cardiograph and store in a cool, dry location. For information on removing the battery, see "Replacing the Battery" on page 7-7.

3 Recharge the battery for 16 hours for every 6 months that the battery is in storage.

Replacing the Battery

WARNING   **Properly dispose of or recycle the depleted battery according to local regulations. Do not disassemble, puncture, or incinerate the disposed battery.**

How often battery needs to be replaced depends on how well the battery is maintained and how much it is used. If the battery is fully charged but loses significant power after only a few ECGs, consider replacement.

Figure 7-2   Replacing the Battery
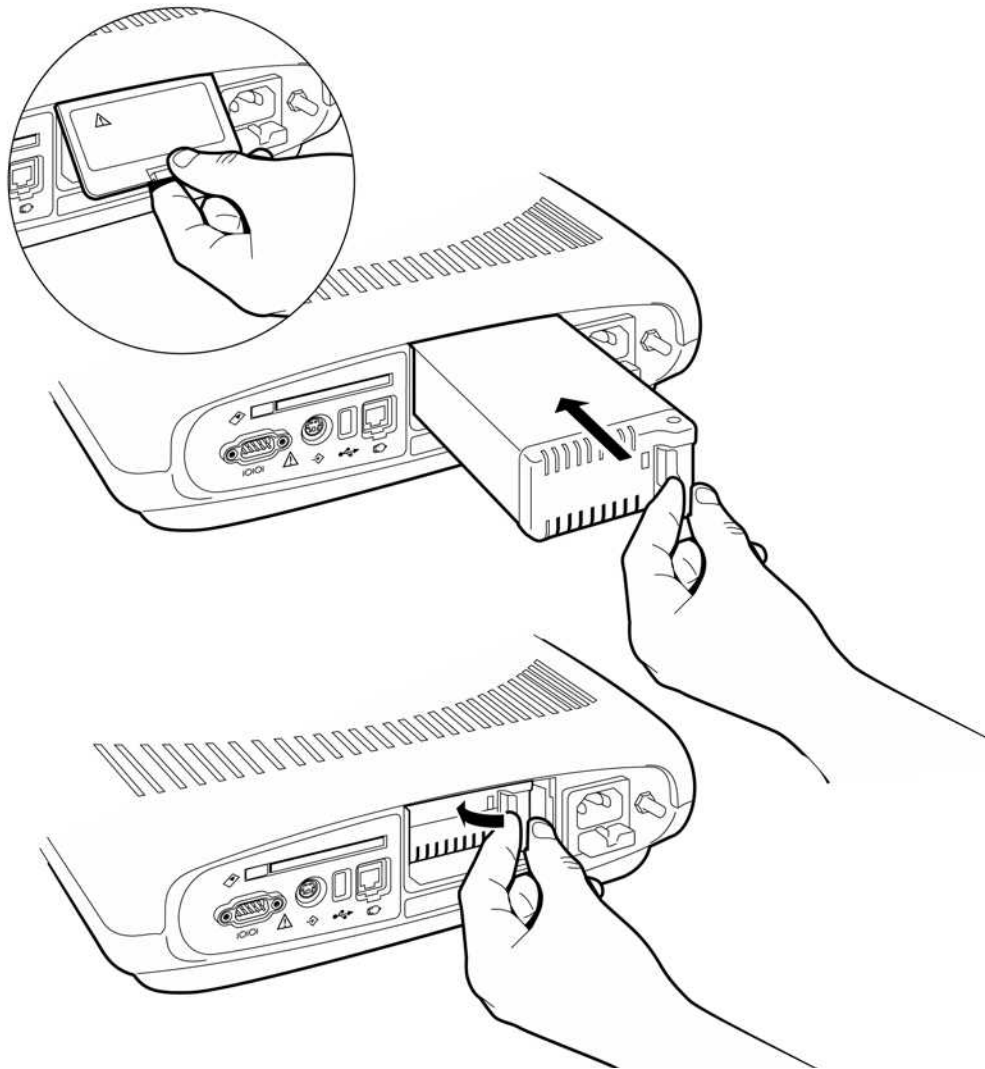
To replace the battery:

1   Unplug the cardiograph from AC power and ensure that the green AC power indicator light on the front of the cardiograph is not lit.

2   Open the battery door on the rear of the cardiograph. Push the recessed tab in and pull it down to open the battery door.

3   Remove the battery.

4   Insert the replacement battery into the compartment with the connector facing down and the pull tab facing out.

5   Push in the pull tab to lock it.

6   Reattach and close the battery door.

7   Attach the AC power cord to the rear of the cardiograph.

8   Plug the AC power cord into a grounded electrical outlet. Check that the green AC power indicator light on the front of the cardiograph is illuminated.

9   Charge the battery for at least 16 hours before mobile use. The cardiograph can operate on AC power while the battery is charging but it will charge at a slower rate.

Replacing the AC Fuse

The AC fuse needs to be replaced when the cardiograph is plugged into AC power, but the green AC power indicator light on the front of the cardiograph does not illuminate.

Only use replacement AC fuses with Philips part number 453564000371 (see page 7-20) or use a 1.5 amp (250V) time-delay fuse the same size and configuration as the original fuse.

Figure 7-3   Replacing the AC Fuse
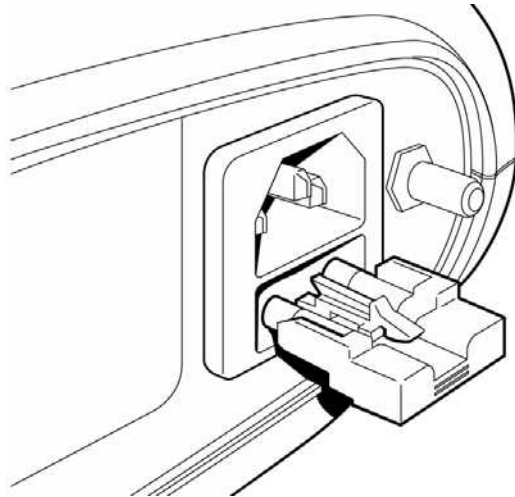
To replace the AC fuse:

1   Unplug the cardiograph from AC power. Pull out the AC power cord from the AC power connector on the rear of the cardiograph.

2   Locate the AC fuse, which is directly below the AC power connector.

3   Push down on the center tab on the fuse and pull out the fuse from the fuse holder slot.

4   Insert the new fuse using the same orientation, with the center tab facing up.

5   Push the fuse all the way into the fuse holder slot. The fuse snaps into place.

Replacing the Lead Wires on the PIM

To replace the lead wires:

1   Disconnect the PIM from the PIM connector ( ) located on the rear of cardiograph.
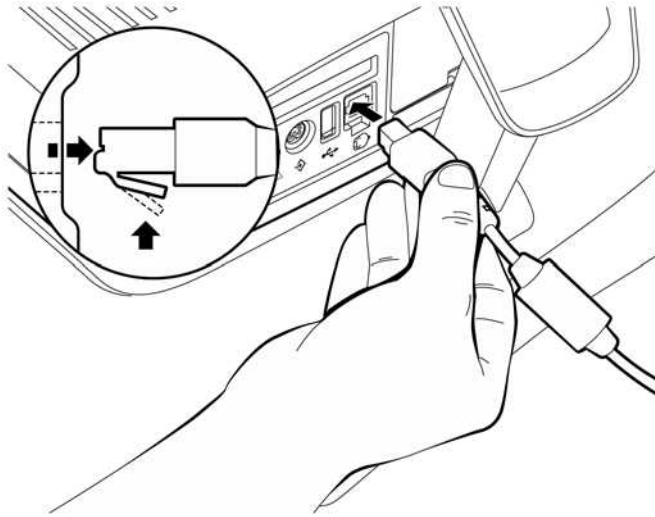
2   Remove the lead wire(s) by pulling the connector up.
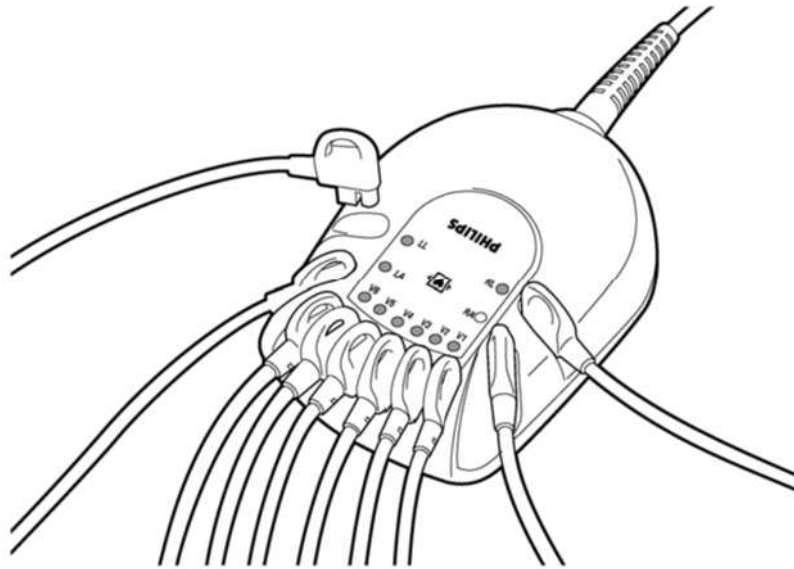
3   Match the lead wire labeling (on lead) with the same lead wire connector on the PIM. Replace the lead wire by snapping it into the connector.

4   Reattach the patient data cable to the PIM connector.
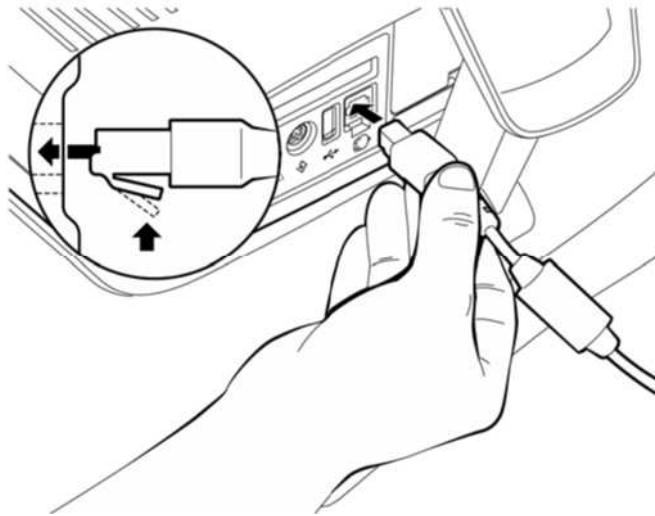
WARNING   **To ensure safety and prevent damage to the system, only connect the patient data cable to the correct PIM connector on the rear of the cardiograph.**

Maintenance Tests

PageWriter Trim II and III only

Maintenance tests and diagnostic utilities are included in Configuration. These tests are used to verify or to optimize cardiograph performance. They can be used as a first step to identify a technical problem with the cardiograph. For more information about these tests contact the nearest Philips Response Center (see page 7-23).

CONFIG

To open the Maintenance Test screen:

1   Turn the Trim Knob to highlight the **Config** button on the Command Toolbar.

NOTE   Access to Configuration may be password controlled (see page 5-30).

2   Push the Trim Knob to select the button. The Configuration screen appears.

3   Press and hold down the Alt key on the keyboard. Press the S key to select the System tab. The System screen appears.The five available tests appear as buttons under **Diagnostics** (right side of screen).

Figure 7-4   Diagnostic Tests

PIM Test

(page 7-12)

Barcode Test

(page 7-12)

Magcard Test

(page 7-13)

Printer Test

(page 7-13)

Network

(page 7-16)
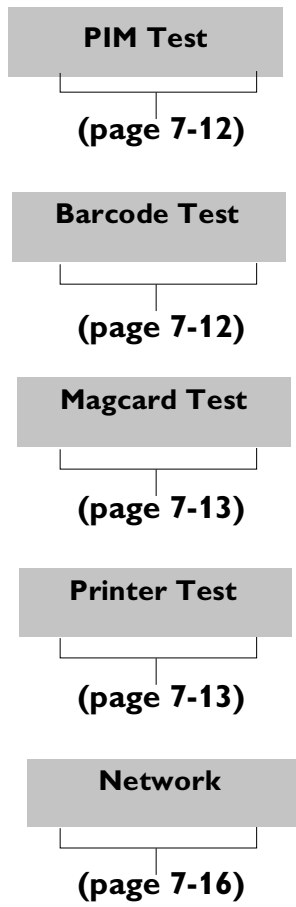
PIM Test

This test is used to confirm that the Patient Interface Module (PIM) is communicating with the cardiograph. This test can be performed when the cardiograph displays Patient Interface Module error messages, or when the cardiograph is unable to acquire data from the PIM when the PIM patient data cable is securely attached to the PIM connector ( ) on the rear of the cardiograph.

If this test fails, it may indicate a problem with the PIM or with the PIM patient data cable. For further assistance, contact the nearest Philips Response Center (see page 7-23).

To perform the PIM Test:

1   Turn the Trim Knob to highlight the **PIM Test** button under **Diagnostics**.

2   Push the Trim Knob to select the button. The message **Accessing PIM...** appears. The **PIM Test Result** window appears and indicates that the PIM Test has passed, or that the cardiograph is unable to communicate with the PIM.

3   If the message **PIM Test Passed** appears, the PIM is communicating properly with the cardiograph. The **OK** button is highlighted. Push the Trim Knob to close the window.

4   If the message **Please Check the Patient Interface Module** appears, check that the PIM patient data cable is securely attached to the PIM connector on the rear of the cardiograph. If the patient data cable is securely attached to the PIM connector, but still fails the PIM Test, contact the nearest Philips Response Center for further assistance (see page 7-23).

Barcode Reader Test

The Barcode Reader Test is used with the optional barcode reader (see page 1-18). The barcode reader is used to enter Patient ID information by scanning a barcode. This test can be used to confirm that the barcode reader is accurately scanning barcode data. To perform the barcode reader test:

1   Ensure that the barcode reader is securely attached to the barcode reader connector ( ) on the rear of the cardiograph. If the barcode reader is not attached to the cardiograph, press and hold down the On/Standby button for 3 seconds, then release it. The cardiograph shuts down. Connect the barcode reader to the barcode reader connector ( ) on the rear of the cardiograph. Press the On/Standby button. Follow the procedure to open the Maintenance Test screen, see page 7-10.

2   Turn the Trim Knob to highlight the **Barcode Test** button under **Diagnostics**.

3   Push the Trim Knob to select the button. The Barcode Reader test window appears.

4   Hold the barcode reader at a 45° angle and scan a test barcode.

5   The barcode data appears next to the **Patient ID** field. Review the barcode data to ensure that it is accurate. The **OK** button is highlighted. If the barcode data is accurate, push the Trim Knob to select the **OK** button. Turn the Trim Knob to highlight the **Cancel** button if the barcode data is incorrect. Try the test again. If the test fails a second or subsequent time, contact the nearest Philips Response Center for further assistance (see page 7-23).

Magnetic Card Reader Test

The Magnetic Card Reader Test is used with the optional magnetic card reader (see page 1-19). The magnetic card reader is used to scan a magnetic card in order to enter Patient ID information. This test can be used to confirm that the magnetic card reader is correctly reading data from a magnetic card.

To perform the magnetic reader test:

1   Ensure that the magnetic card reader is securely attached to the magnetic card reader connector (⤳) on the rear of the cardiograph. If the magnetic card reader is not attached to the cardiograph, press and hold down the On/Standby button for 3 seconds, then release it. The cardiograph shuts down. Connect the magnetic card reader to the magnetic card reader connector (⤳) on the rear of the cardiograph. Press the On/Standby button. Follow the procedure to open the Maintenance Test screen, see page 7-10.

2   Turn the Trim Knob to highlight the **Magcard Test** button.

3   Push the Trim Knob to select the button. The Magnetic Card Reader window appears.

4   Insert the magnetic card into the slot on the reader.

5   Leave the magnetic card in the slot for five seconds and then pull it out.

6   The magnetic card data appears next to the **Patient ID field.**

7   Review the data to ensure that it is correct. The **OK** button is highlighted. If the magnetic card data is accurate, push the Trim Knob to select the **OK** button. Turn the Trim Knob to highlight the **Cancel** button if the magnetic card data is incorrect. Push the Trim Knob to select the button. Try the test again. If the test fails a second or subsequent time, contact the nearest Philips Response Center for further assistance (see page 7-23).

Printer Test

The Printer Test is used to verify that the cardiograph printer is able to correctly print out the test page. Use this test to verify proper printer performance or when reports appear to have print quality errors.

To perform the print test:

1   Turn the Trim Knob to highlight the **Printer Test** button under **Diagnostics**.

2   Push the Trim Knob to select the button. The message **Printing Test Page...** appears and the test page prints out.

3   Review the printer test page at points A, B, C, and D as seen on Figure 7-5, on page 7-15.

Table 7-1   Printer Test Page Description

Test Point	Description
A	■ The stepped bars are sharp edged and printed cleanly without distortion or missing segments
B	■ The spacing between the vertical lines is 25 mm with a discrepancy of no more or less than 2%

Table 7-1   Printer Test Page Description *(continued)*

C	▪ The diagonal lines should be straight and printed cleanly without distortion or breaks in the lines
D	▪ The character set is printed cleanly without distortion or missing characters, and all characters are clearly legible

Figure 7-5   Printer Test Page
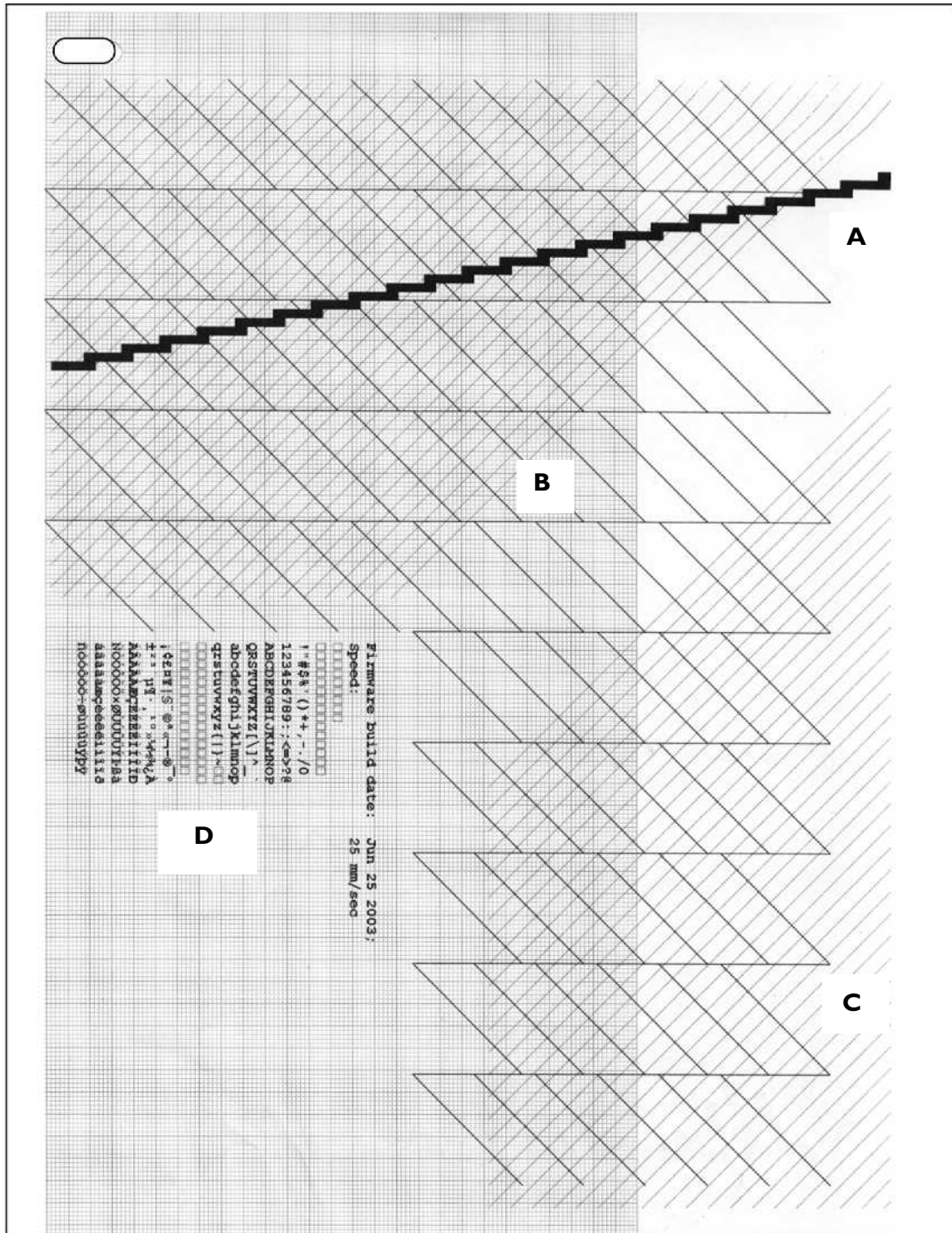
8 If the printer test page matches the printer test points as described in Table 7-2, the cardiograph has passed the printer test. If the printer test page does not match the printer test points, the cardiograph has failed the print test. If the cardiograph fails the printer test, contact the nearest Philips Response Center for further assistance (see page 7-23).

Network Test

The Network Test displays the configured network information for the cardiograph. All cardiograph network configuration is completed on the Network screen. From any Configuration screen, press and hold down the Alt key on the keyboard, and then press the N key to select the Network tab and to open the Network screen. Before performing the Network test, ensure that the LAN card is fully inserted into the PC Card slot on the rear of the cardiograph, and that the LAN cable is fully inserted into the cable connector on the card.

WARNING   **Do not connect the LAN card to a network connector when the cardiograph is connected to a patient.**

CAUTION   Only use the shielded LAN cable provided with the PageWriter Trim cardiograph (Philips Part Number 989803138021). Do not use LAN cables with the cardiograph that have not been approved by Philips Medical Systems.

To perform the network test:

1 Turn the Trim Knob to highlight the **Network** button.

2 Press the Trim Knob to select the button. The Network Connection window appears. The configured network information for the cardiograph appears on the window.

3 Review the network data to ensure that it is correct. The **Retry** button is highlighted. If the network data does not display, push the Trim Knob. If the test fails a second or subsequent time, contact the nearest Philips Response Center for further assistance (see page 7-23).

4 If the network data displays correctly, turn the Trim Knob to highlight the **Close** button. Push the Trim Knob to select the button.

Important Patient and Safety Information

The PageWriter Trim cardiograph isolates all connections to the patient from electrical ground and all other conductive circuits in the cardiograph. This reduces the possibility of hazardous currents passing from the cardiograph through the patient's heart to ground, and from other equipment connected to the patient passing through the leads into the cardiograph to ground.

WARNING   **Failure to follow these warnings could affect both patient and operator safety.**

■ When operating the cardiograph on AC power, ensure that the cardiograph and all other electrical equipment connected to or near the patient are effectively grounded.

■ Use only grounded power cords (three-wire power cords with grounded plugs) and grounded electrical outlets. **Never** adapt a grounded plug to fit an ungrounded outlet by removing the ground prong. Use the equipotential post when redundant earth ground is necessary according to IEC 60601-1-1.

■ If a safe ground connection is not ensured, operate the cardiograph on battery power only.

■ The use of equipment that applies high frequency voltages to the patient (including electrosurgical equipment and some respiration transducers) is not supported and may produce undesired results. Disconnect the patient data cable from the cardiograph, or detach the leads from the patient prior to performing any procedure that uses high frequency surgical equipment.

■ Do not perform ST analysis on the R/T ECG screen display or on Rhythm reports when the 0.5 Hz Baseline Wander filter is applied.

■ If abnormal ECG data appears on the printed report, and the abnormal data does not have a physiological origin, perform the printer diagnostic test to assess printer performance (see page 7-13).

■ When printing a Rhythm report, there may be a slight delay before the Rhythm report begins to print on the cardiograph. Rhythm printing is not completed in real-time.

■ Pace pulse tick marks will not print on an Auto report that uses simultaneous acquisition.

WARNING   **Do not touch accessible connector pins and the patient simultaneously.**

Electrical shock hazard. Keep cardiograph, Patient Interface Module (PIM) and all cardiograph accessories away from liquids. Do not immerse cardiograph, PIM, or other accessories in any liquids.

■ Periodically inspect the patient data cable, lead wires, and AC power cord for any worn or cracked insulation to ensure that no inner conductive material is exposed. Discard worn accessories and replace them only with Philips Medical Systems accessories (see page 7-20).

■ Keep the patient data cable away from power cords and any other electrical equipment. Failure to do so can result in AC power line frequency interference on the ECG trace.

■ The Philips Medical Systems patient data cable (supplied with cardiograph) is an integral part of the cardiograph safety features. Use of any other patient data cable may compromise defibrillation protection, degrade cardiograph performance, and may result in distorted ECG data.

■ Only qualified personnel may service the cardiograph or may open the cardiograph housing to access internal cardiograph components. Do not open any covers on the cardiograph. There are no internal cardiograph components that are serviced by the operator.

■ Do not use this cardiograph near flammable anesthetics. It is not intended for use in explosive environments or in operating rooms.

- Do not touch the patient, the patient data cable, any unused patient leads, or the cardiograph during defibrillation. Death or injury may occur from the electrical shock delivered by the defibrillator.

- The PageWriter Trim I is not recommended for diagnostic cardiograph use during defibrillation. It does not provide less than 10 seconds of real-time data.

- Always use electrode gel with reusable electrodes during defibrillation as ECG recovery will be greater than 10 seconds. Philips Medical Systems recommends the use of disposable electrodes at all times.

- Ensure that the electrodes or lead wires do not come in contact with any other conductive materials (including earth-grounded materials) especially when connecting or disconnecting electrodes to or from a patient.

- Connecting multiple medical electrical equipment to the same patient may pose a safety hazard due to the summation of leakage currents. Any combination of instruments should be evaluated by local safety personnel before being put into service.

- Portable medical equipment such as X-rays and MRI may produce electromagnetic interference that produces noise in the ECG signal. Move the cardiograph away from these potential sources of electromagnetic interference.

- Do not pull on the paper while an ECG report is being printed. This can cause distortion of the waveform and can lead to potential misdiagnosis.

- Only use the Philips Medical Systems AC power cord supplied with the cardiograph. Periodically inspect the AC power cord and AC power connector (rear of cardiograph, (see Figure 1-2 on page 1-8)) to ensure that both are in a safe and operable condition. If the AC power cord or AC power connector is not in a safe or operable condition, operate the cardiograph on battery power and contact Philips Medical Systems for service.

- The cardiograph has been safety tested with the recommended accessories, peripherals, and leads, and no hazard was found when the cardiograph is operated with cardiac pacemakers or other stimulators.

- Do not connect any equipment or accessories to the cardiograph that are not manufactured or approved by Philips Medical Systems or that are not IEC 60601-1 approved. The operation or use of non-approved equipment or accessories with the cardiograph is not tested or supported, and cardiograph operation and safety are not guaranteed.

- The list of cables and other accessories with which Philips claims compliance with the emissions and immunity requirements of IEC standard 60601-1-2 are listed in "Supplies and Ordering Information" on page 7-20.

WARNING   **When using additional peripheral equipment powered from an electrical source other than the cardiograph, the combination is considered to be a medical system. It is the responsibility of the operator to comply with IEC 60601-1-1 and test the medical system according to the requirements. For additional information contact Philips Medical Systems.**

WARNING	Do not use non-medical peripherals within 1.83 meters or 6 feet of a patient unless the non-medical peripherals receive power from the cardiograph or from an isolation transformer that meets medical safety standards.

- Only install Philips Medical Systems software on the cardiograph. The installation or use of software not approved by Philips Medical Systems is strictly prohibited and cardiograph safety and performance are not guaranteed.

- Only use Philips Medical Systems replacement parts and supplies with the cardiograph. The use of non-approved replacement parts and supplies with the cardiograph is strictly prohibited. Cardiograph safety and performance are not guaranteed when non-approved replacement parts and supplies are used with the cardiograph.

- Manual measurements of ECG intervals and magnitudes should be performed on printed ECG reports only. Do not make manual measurements of ECG intervals and magnitudes on the R/T ECG display since these ECG representations are scaled.

- Only use patient electrodes that are approved by Philips Medical Systems. The use of non-approved patient electrodes may degrade cardiograph performance.

- The Philips Medical Systems warranty is applicable only if you use Philips Medical Systems approved accessories and replacement parts. See "Supplies and Ordering Information" on page 7-20 for more information.

- Before using the Patient Cable Arm with the cardiograph cart, properly install the counter balance on the cardiograph base.

- Only use the shielded LAN cable provided with the PageWriter Trim cardiograph, Philips Part Number 989803138021. Do not use any other LAN cables with the PageWriter Trim cardiograph. Use of unapproved LAN cables may result in radiated emissions that exceed the limit specified by CISPR11 Class B.

- The combined maximum weight that can be placed on the cardiograph cart shelf and the top surface of the cart cannot exceed 20 kg (44 lbs). Do not place more than the specified weight on the cardiograph top surface and shelf.

- Do not connect any device to the RS-232 port on the rear of the cardiograph when the patient data cable is connected to a patient.

- There are no cardiograph parts that can be sterilized.

- The cardiograph is not intended for direct, or invasive cardiac monitoring purposes.

- Excessive, repetitive use of the cardiograph keyboard and the cardiograph Trim Knob may result in a risk of developing carpal tunnel syndrome.

- Ensure that the patient data cable is tucked away from the cardiograph cart wheels when transporting the cardiograph. Ensure that the patient data cable does not present a hazard when pushing the cardiograph cart.

Supplies and Ordering Information

The part numbers for all supplies for the PageWriter Trim cardiograph are listed in this section.

Ordering Supplies

All supplies may be ordered on the web at:

http://shop.medical.philips.com

Use the part numbers listed below for reference to ensure that the correct supplies are ordered.

PageWriter Trim Cardiograph Supply Part Numbers

Patient Interface Module (PIM)

Part Number	Description
989803130091	Patient Interface Module (AAMI)
989803130101	Patient Interface Module (IEC)

Replacement Fuse

Part Number	Description
453564000371	1.5 amp (250 V) Time-Delay Fuse

Complete Lead Sets

Part Number	Description
989803129161	Complete Lead Set (AAMI)
989803129191	Complete Lead Set (IEC)

Replacement Lead Sets and Accessories

Part Number	Description
989803129141	Limb Lead Set, 99 cm/39 in (AAMI)
989803129151	Chest Lead Set, 61 cm/24 in (AAMI)
989803129171	Limb Lead Set, 99 cm/39 in (IEC)
989803129181	Chest Lead Set, 61 cm/24 in (IEC)

Replacement Lead Sets and Accessories *(continued)*

Part Number	Description
989803129201	Long Limb Lead Set, 137 cm/54 in (IEC)
989803129211	Long Chest Lead Set, 99 cm/39 in (IEC)
989803129221	Long Complete Lead Set (IEC)

Electrodes

Part Number	Description
13943B	Disposable cardiography electrode, resting diagnostic ECG
M2253A	Disposable electrode, adult, resting ECG (not available in Japan)
40420A	Disposable electrode, diagnostic, pre-gelled
13944B	Wet Gel Foal Electrode, resting ECG
989803129231	Alligator Clips for Disposable Tab Electrodes (AAMI)
989803129241	Alligator Clips for Disposable Tab Electrodes (IEC)
M2254A	Tab electrode adapter
40431B	Alligator Clip Adapter for 1/8 post
40498E	Snap Lead Electrode (IEC)
40475A	Snap Lead Electrode Adapter
40490E	15mm Suction Electrode
40421A	Push-in Connect Welsh Electrode
40494E	Limb Clamp Electrode C400 (4 per box)
40491E	Limb Plate Electrode C400 (4 per bag)
40424A	Limb Plate Electrode (4 pack)
14030A	Strap Electrode, 14 inch limb (4 per pack)

Printer Paper

Part Number	Description
M3707A	Thermal Paper (100 sheets), A size (8.5 x 11 in/21.6 x 28 cm)

Printer Paper *(continued)*

Part Number	Description
M3708A	Thermal Paper (100 sheets) A4 size (8.27 x 11.69 in/21 x 29.69 cm)

Battery

Part Number	Description
989803130151	PageWriter Trim Replacement Battery

Optional Cardiograph Accessories

For more information on optional cardiograph accessories or to place an order, contact your Philips Sales Representative the Philips Response Center nearest you, see page 7-23.

Optional Cardiograph Accessories

Part Number	Description
989803129931	Barcode Reader
989803129941	Magnetic Card Reader
989803127331	PC Card (128 MB storage)
989803129961	SmartCard Reader
989803130131	Patient Cable Arm
989803129951	LAN PCMCIA Network Card
989803130061	PageWriter Trim Cardiograph Interactive Training CD (additional copies)
989803130081	PageWriter Trim Cardiograph User Documentation CD (additional copies)
989803130111	PageWriter Trim Cardiograph Cart
989803130121	PageWriter Trim Cardiograph Cart Additional Shelf
989803127461	Modem Card (USA and Canada only)
989803138021	LAN Cable

Contacting a Philips Response Center

The Philips Response Center can assist with product troubleshooting and provide technical expertise to help with any issue with the PageWriter Trim cardiograph or any of its accessories.

For more information on the Philips Response Center go to:

www.medical.philips.com/main/services/response_center

North America Response Centers

Country	Telephone Number
Canada	(800) 323 2280
Mexico	52 55 5269 9000
Puerto Rico	1 787 730 2345
United States Miami (Spanish speaking)	(800) 548 8833 954 835 2650

South America Response Centers

Country	Telephone Number
Argentina	54 11 4546 7686
Brazil	55 11 4689 6880
Chile	56 2 730 2500
Columbia	57 1 422 2600
Venezuela	58 21 2207 6800

Europe Response Centers

Country	Telephone Number
United Kingdom	07 002 432 58 472 or 07 002 HEALTHRC
Austria	01 25125 333
Belgium	32 2 525 7102 (French) 32 2 525 7103 (Flemish)
Finland	010 855 2455
France	0803 35 34 33
Germany	0180 5 47 5000

Europe Response Centers *(continued)*

Country	Telephone Number
Italy	0800 8256087
Netherlands	31 4 027 87630
Spain	34 90 230 4050
Sweden	08 5064 8830
Switzerland	0800 80 10 23

Asia Response Centers

Country	Telephone Number
Australia	1800 251 400
China	800 810 0038
Hong Kong	852 2876 7578
India New Delhi Mumbai Calcutta Chennai Bangalore Hyderabad	 011 2695 9734 022 5691 2643/2431 2485 3718 044 555 01000 080 5091 911 040 5578 7974
Indonesia	021 794 7542
Japan	0120 381 557
Korea Seoul	080 372 7777 (toll free) 02 3445 9010
Macau	0800 923
Malaysia	1800 886 188
New Zealand	0800 251 400
Philippines	02 845 7875
Singapore	1800 Philips
Taiwan	0800 005 616
Thailand	02 614 3569

A

Specifications

Technical Specifications

ECG Acquisition

- Auto (12 leads)
- Rhythm (up to 12 leads)
- Disclose (1 lead)

Keyboard

- Full alphanumeric capability

Screen Display

- 640 x 480 pixel resolution
- Color TFT display

Patient Interface Module

- Remote, microprocessor-controlled module

Cardiograph Cart

- The cardiograph cart (optional accessory) has been tested for stability using the IEC 60601-1 test protocol.
- The IEC 60601-1 protocol calls for the cardiograph cart to not tip over using a 10 degree angle of incline in any direction. It is possible to exceed this amount of incline when the cardiograph and cart are moved over a roadside curb or some other small but steep incline. Use care when moving the cardiograph cart.
- Always remove the patient cable arm before transporting. Install the cart counterbalance prior to the installation of the Patient Cable Arm.

Signal Processing/Acquisition

Sampling Rate

- 2,000 samples per second per electrode/lead

- 24 bit A/D conversion provides 5µV resolution

Auto Frequency Response

0.05-150 Hz, 0.15-150 Hz, 0.5-100 Hz
0.05-100 Hz, 0.15-100 Hz, 0.5-100 Hz
0.05-40 Hz, 0.15-40, 0.5-40 Hz

Rhythm Frequency Response

0.05-150 Hz, 0.15-150 Hz, 0.05-150 Hz
0.15-100 Hz, 0.05-40 Hz, 0.15-40 Hz

Filters

- AC noise

- Baseline Wander

- Artifact

- High and Low Pass Frequency

Printer

Printer Resolution

- High-resolution, digital-array printer using thermal-sensitive paper

- 200 dpi at 25 mm/sec (voltage axis) by 500 dpi (time axis)

Report Formats

- 3x4 1R, 3R (Standard, Cabrera)

- 6x2 (Standard, Cabrera)

- Panoramic 12 (Cabrera)

- 12x1(Standard, Cabrera)

- Rhythm (up to 12 selected leads)

- 12-Lead Extended Measurements

- Disclose (1 minute of continuous waveform data for 1 selected lead)

Battery Operation

Capacity

- Typically 30 ECGs on a single charge or 30 minutes of continuous rhythm recording

- No fail operation during ECG printing

Recharge

- Eight hours to full capacity

Network Connection

- 10 Base-T IEEE 802.3 Ethernet LAN

FAX Capability (optional)

- Group 3, Class 1 or 2 fax modem protocol

- Support for PCMCIA fax modem

Modem (optional for USA and Canada)

- V.90, K56flex, enhanced V.34, V.32bis, V.32, V.22 bis and below

Barcode Reader (optional)

- Reads Code 39 (standard and full ASCII) Symbology

Magnetic Card Reader (optional)

- Reads cards adhering to ISO 7810, 7811-1, -2, -3, -4, -5, and JIS X 6301 and X6302

ECG Storage

- 150 ECGs typical for the optional 128 MB PC Card

PageWriter Trim II:

- 50 ECGs

PageWriter Trim III:

- 150 ECGs

ECG File Formats

- XML and XML SVG

Power and Environment

■ Class I, continuous operation

Line Power

■ 100-240 Vac, 50/60 Hz, 65 VA max

Environmental Operating Conditions

■ 10° to 40°C (50° to 104°F)

■ 15% to 80% relative humidity (non-condensing)

■ Up to 4,550 m (15,000 ft.) altitude

Environmental Storage Conditions

■ 0° to 50 °C (32° to 122°F)

■ 15% to 90% relative humidity (non-condensing)

■ Up to 4,550 m (15,000 ft.) altitude

Cardiograph Dimensions

■ 310 mm width x 388 mm depth x 176 mm height (12.2 x 15.3 x 6.9 inches)

Cardiograph Weight

■ 7.38 Kilograms (16.3 pounds)

Cardiograph Shipping Container Dimensions

■ 603.2 mm (width) x 1016 mm (depth) x 742.95 mm (height) (23.74 x 40 x 29.25 inches)

Cardiograph Shipping Container Weight

■ 6.325 Kilograms (14 pounds)

Cardiograph Cart Dimensions

■ 416 mm (width) x 600 mm (depth) x 930 mm (height) (16.37 x 23.6 x 36.6 inches)

Cardiograph Cart Weight

■ 21 Kilograms (46.29 pounds) without patient cable arm and counter weight installed on cart

Cardiograph Cart Shipping Container Dimensions

- 609.6 mm (width) x 736.6 mm (depth) x 1016 mm (height) (24 x 29 x 40 inches)

Cardiograph Cart Container Weight

- 6.57 Kilograms (14.48 pounds)

Safety and Performance

Meets or exceeds the following requirements for safety and performance:

- IEC 60601-1: 1988 +A1:1991 +A2:1995 General Requirements for Safety including all National Deviations

- IEC 60601-1-2: 2001 General Requirements for Safety Electromagnetic Compatibility

- IEC 60601-2-25 1993 +A1:1999 Safety Of Electrocardiographs

- CISPR 11:1997 Radio Frequency disturbance, Limits and Methods of Test

- AAMI EC11: 1991 Diagnostic Electrocardiographic Devices

- JIST 1202: 1998 Japanese Industrial Standard for Electrocardiographs

Electromagnetic Compatibility (EMC)

Electromagnetic compatibility with surrounding devices should be assessed when using the PageWriter Trim cardiograph.

An electronic device can either generate or receive electromagnetic interference. Testing for electromagnetic compatibility (EMC) has been performed on the PageWriter Trim cardiograph according to the international standard for EMC for medical devices (IEC 60601-1-2). This IEC standard has been adopted in Europe as the European Norm (EN 60601-1-2).

The PageWriter Trim cardiograph should not be used adjacent to, or stacked on top of other equipment. If the PageWriter Trim cardiograph must be used adjacent to or stacked on top of other equipment, verify that the cardiograph operates in an acceptable manner in the configuration in which it will be used.

The cardiograph will not malfunction when used with electrosurgical equipment.

Fixed, portable, and mobile radio frequency communications equipment can affect the performance of medical equipment. See Table A-4 on page A-9. For more information on troubleshooting, see "Troubleshooting" on page 6-1.

Reducing Electromagnetic Interference

The PageWriter Trim cardiograph and accessories may become sensitive to interference from other RF energy sources including power lines. RF energy sources include other medical devices, wireless devices, information technology equipment, and radio/television

transmission. Should interference be encountered, as demonstrated by artifact on the ECG trace, attempt to locate the source by assessing:

- if the interference is intermittent or constant?

- does the interference occur only in certain locations?

- does the interference occur only when in close proximity to certain medical devices?

- does the ECG signal quality change dramatically when the AC power cord is unplugged?

Once the source of the interference is located, attempt to attenuate the EMC coupling path by distancing the cardiograph from the source of the interference as much as possible. If further assistance is needed, contact the Philips Response Center nearest you.

Table A-1   Guidance and Manufacturer's Declaration: Electromagentic Emissions

The PageWriter Trim cardiograph is intended for use in the electromagnetic environment specified in the table below. The customer or the user of the PageWriter Trim cardiograph should assure that it is used in such an environment.

Emissions Test	Compliance	Electromagnetic Environment: guidance
RF Emissions CISPR 11	Group 1	The PageWriter Trim cardiograph uses RF energy only for its internal function. Therefore, its RF emissions are very low are not likely to cause any interference in nearby electronic equipment.
RF Emissions CISPR 11	Class B	The PageWriter Trim cardiograph is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table A-2   Guidance and Manufacturer's Declaration: Electromagnetic Immunity

The PageWriter Trim cardiograph is intended for use in the electromagnetic environment specified below. The customer or the user of the PageWriter Trim cardiograph should assure that it is used in such an environment.

Emissions Test	Compliance	Compliance Level	Electromagnetic Environment: guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	+/- 6 kV contact +/- 8 kV air	Complies	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.

Table A-2   Guidance and Manufacturer's Declaration: Electromagnetic Immunity *(continued)*

The PageWriter Trim cardiograph is intended for use in the electromagnetic environment specified below. The customer or the user of the PageWriter Trim cardiograph should assure that it is used in such an environment.

Emissions Test	Compliance	Compliance Level	Electromagnetic Environment: guidance
Electrical Fast transient/burst IEC 61000-4-4	+/- 2 kV for power supply line +/- 1 kV for input/output lines	Complies	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	+/- 1 kV differential mode +/- 2 kV common mode	Complies	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (>30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 seconds	Complies	Mains power quality should be that of a typical commercial or hospital environment. If the user of the PageWriter Trim cardiograph required continued operation during power mains interruptions, it is recommended that the PageWriter Trim be powered from an uninterruptable power supply or a battery.
Power frequency (50./60 Hz) magnetic field	3 A/m	Complies	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Note: U_T is the a.c. mains voltage prior to application of the test level.

Table A-3   Guidance and Manufacturer's Declaration: Electromagentic Immunity

The PageWriter Trim cardiograph is intended for use in the electromagnetic environment specified below. The customer or the user of the PageWriter Trim cardiograph should assure that it is used in such an environment.

Emissions Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment: guidance
Conducted RF IEC 61000-4-6	3 *Vrms* 150 kHz to 80 MHz	Complies	Portable and mobile RF communications equipment should be used no closer to any part of the PageWriter Trim, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \left[\dfrac{3,5}{3\,Vrms}\right]\sqrt{P}$
Radiated RF IEC 61000-4-3	3 *Vrms* 80 MHz to 2,5 GHz	Complies	$d = \left[\dfrac{3,5}{3\,V/m}\right]\sqrt{P}$ 80 MHz to 800 MHz
			$d = \left[\dfrac{7}{3\,V/m}\right]\sqrt{P}$ 800 MHz to 2,5 GHz Where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and *d* is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a], should be less than the compliance level in each frequency range[b]. Interference may occur in the vicinity of equipment marked with the following symbol:

Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from surfaces, objects, and people.

a.   Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) tele-
phones and land mobile radios, amateur radios, AM and FM radio broadcast and TV broadcast can-
not be predicted theoretically with accuracy. To assess the electromagnetic environment due to
fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field
strength in the location in which the PageWriter Trim cardiograph is used exceeds the applicable
RF compliance level above, the PageWriter Trim cardiograph should be observed to verify normal
operation. If abnormal performance is observed, additional measures may be necessary, such as
reorienting or relocating the PageWriter Trim cardiograph.

b.   Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [3] V/m.

**Table A-4   Recommended Separation Distances Between Portable and Mobile RF
Communications Equipment and the PageWriter Trim Cardiograph: for
equipment and systems that are not life-supporting**

The PageWriter Trim cardiograph is intended for use in the electromagnetic
environment in which radiated RF disturbances are controlled. The customer or the
user of the PageWriter Trim cardiograph can help to prevent electromagnetic
interference by maintaining a minimum distance between portable and mobile RF
communications equipment (transmitters) and the PageWriter Trim cardiograph as
recommended below, according to the maximum output power of the communications
equipment.

Rated Maximum Output Power of Transmitter W	Separation Distance According to Frequency of Transmitter (m)	
	150 KHz to 800 KHz	800 MHz to 2.5 GHz
	$d = 1.2 \ \sqrt{P}$	$d = 2.3 \ \sqrt{P}$
0,01	0.1 m	0.2 m
0,1	0.4 m	0.7 m
1	1.2 m	2.3 m
10	4.0 m	7.0 m
100	12.0 m	23.0 m

For transmitters rated at a maximum output power not listed above, the recommended
separation distance *d* in meters (m) can be estimated using the equation applicable to
the frequency of the transmitter, where P is the maximum output power rating of the
transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency
range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation
is affected by the absorption and reflection from structures, objects, and people.

B

Assembling the Patient Cable Arm

Overview

This appendix provides instructions on assembling the optional patient cable arm. The patient cable arm is used to hold the Patient Interface Module (PIM). For information on ordering the patient cable arm, see page 7-20.

NOTE Pay close attention to all of the cautions included in this appendix.

The patient cable arm ships with four Phillips head screws, a cart base counterweight with two hex bolts, four cable clips, one small Phillips head lock screw, three hex bolts, and two hex wrenches.

Figure B-1   Patient cable arm assembly kit
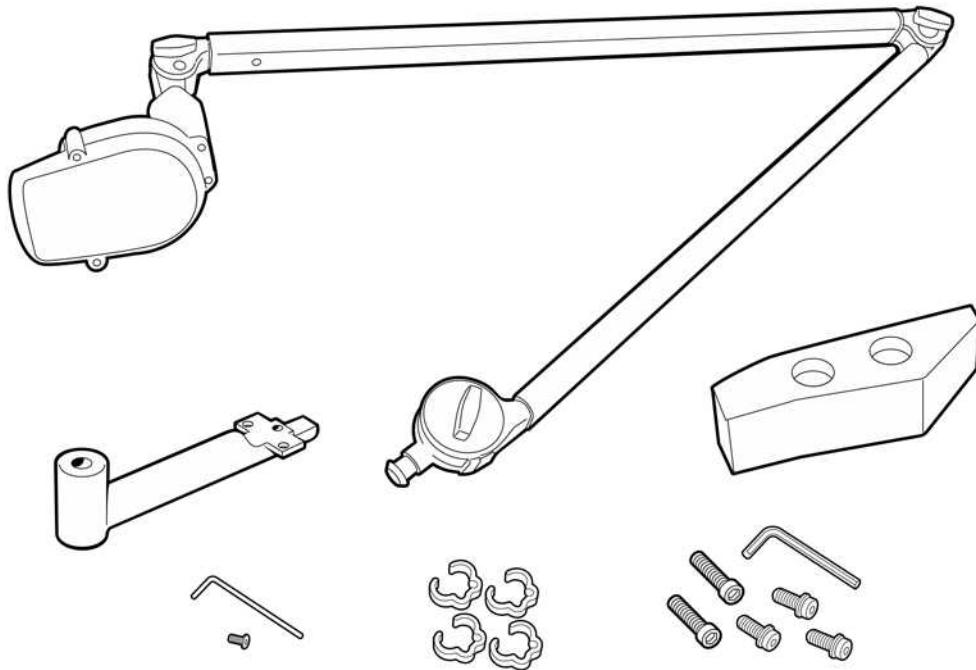
Assembly Instructions

To assemble the patient cable arm:

1   Remove the cardiograph from the cart. For more information, see page 1-3.

2   Flip the cart upside down and place onto a plastic sheet to prevent scratches on the cart surface.

CAUTION   Do not place pressure on the Patient Interface Module (PIM) holder when the cart is upside down.

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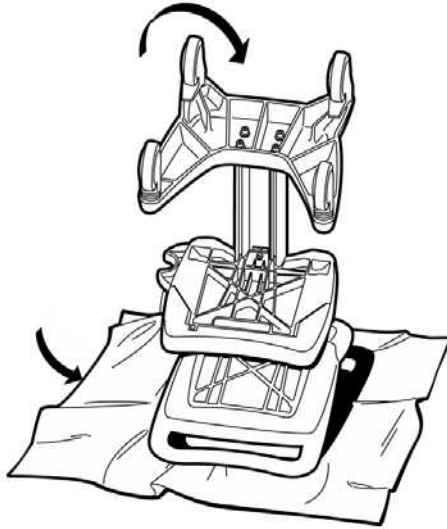
3   Attach the cart base counterweight to either side of the cart base with the two hex bolts. The patient cable arm will be installed on the opposite side of the cart as the cart base counterweight.

CAUTION   The cart base counterweight must be installed to the cart base before installing the patient cable arm.

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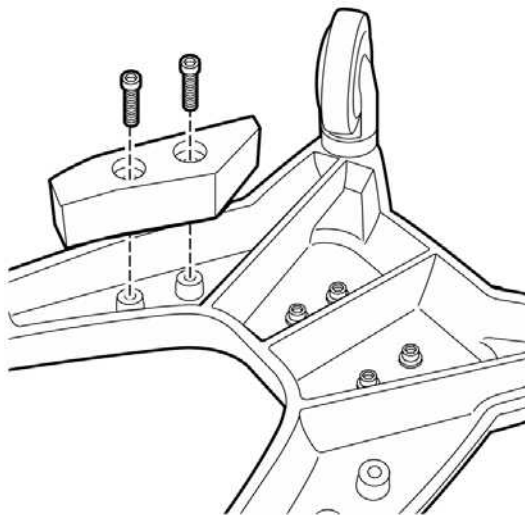
4   Flip the cart upright.
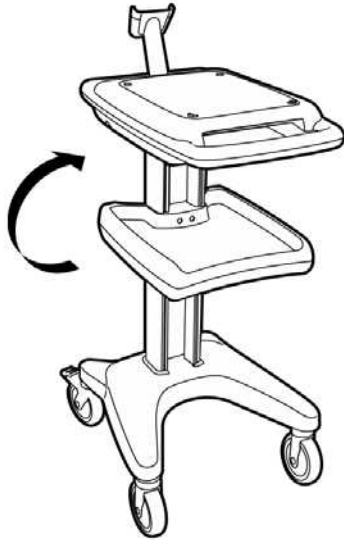
5   Attach the patient cable arm base to the opposite side of the cart that the base counterweight is attached to.

CAUTION   Do not install the patient cable arm base to the same side of the cart that the cart base counterweight is attached to.
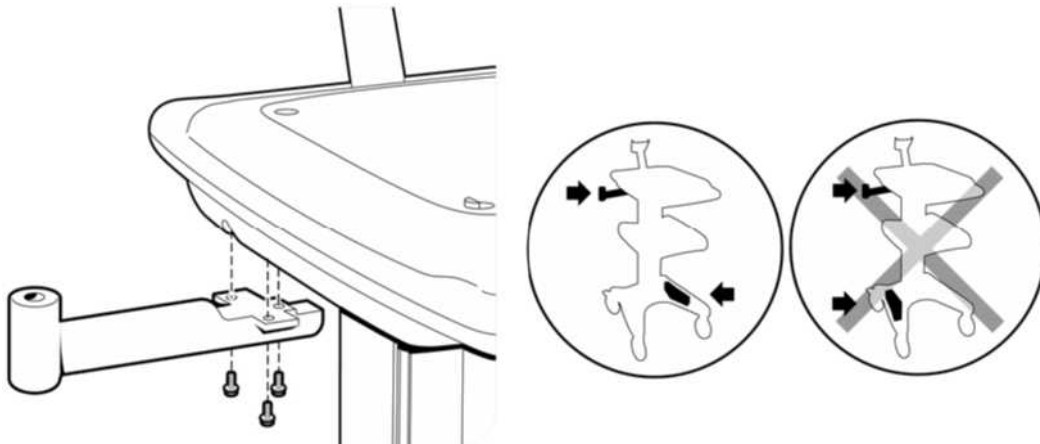
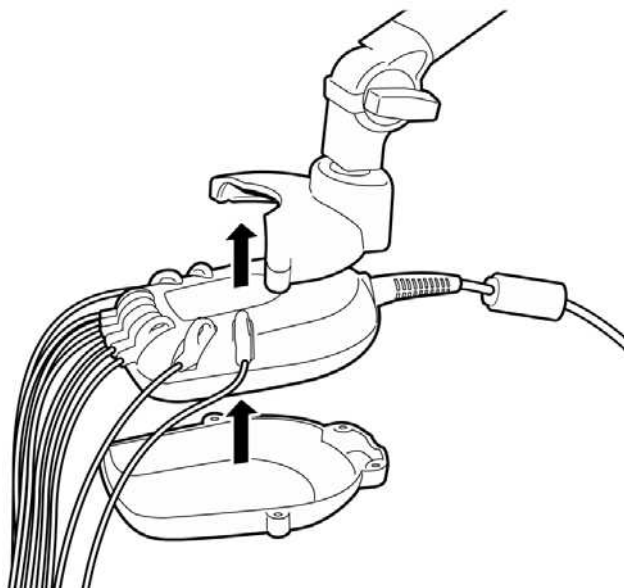**6** Insert the patient cable arm into the base.
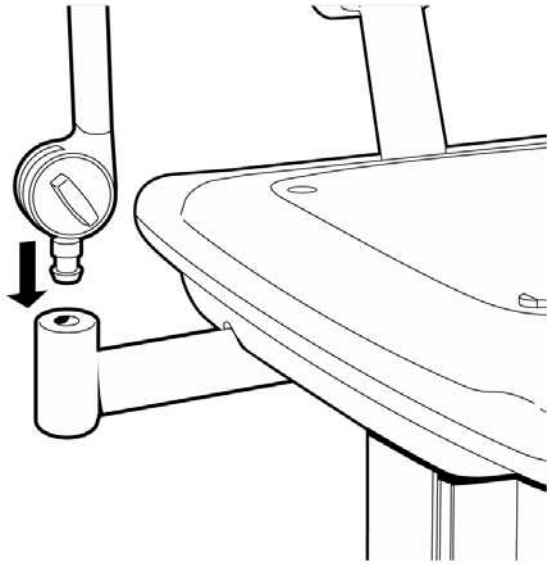
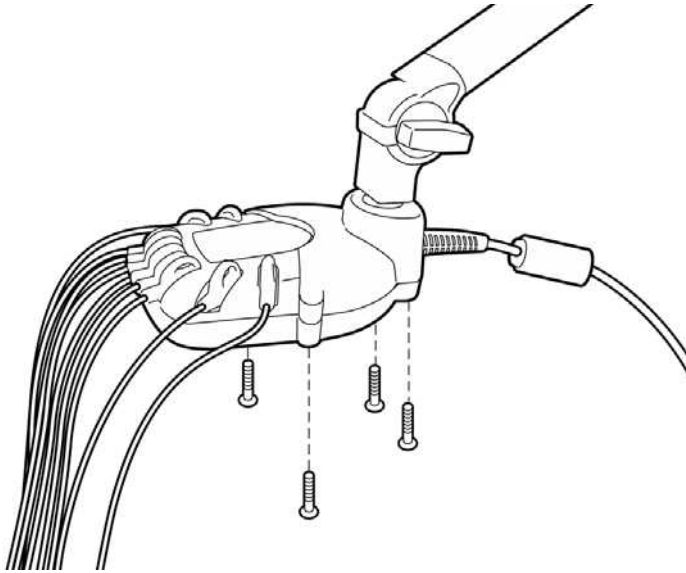**7** Insert the small Phillips head lock screw into the base.
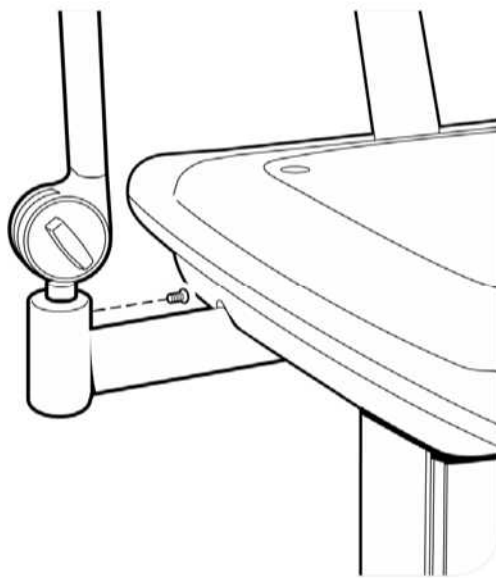
8   Remove the four Phillips head screws and panel from the Patient Interface Module (PIM) holder and set it aside.
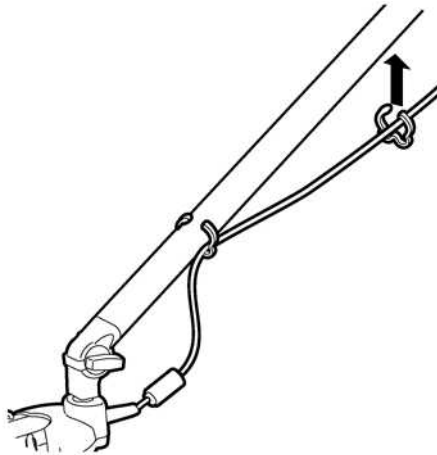

9   Place the PIM in the holder and replace the panel.
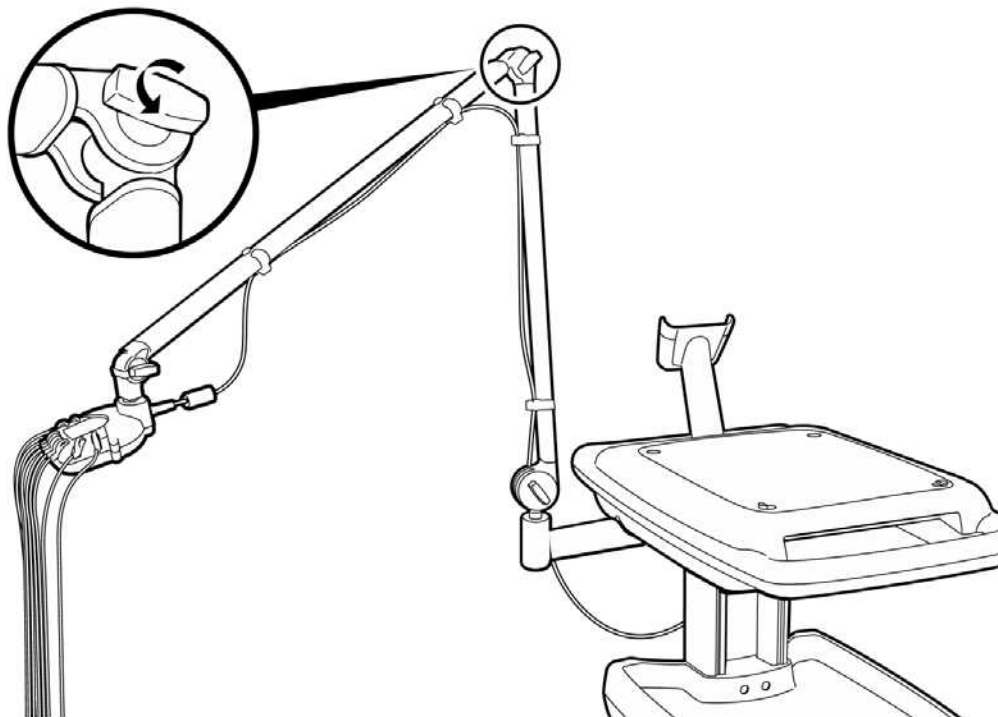
10 Replace the four Phillips head screws.

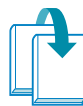**11** Clip the PIM patient data cable to the patient cable arm in four places.

12 Loosen the elbow hinge on the patient cable arm.

CAUTION   Loosen the elbow hinge carefully. The patient cable arm will spring open suddenly.

13 Reattach the cardiograph to the cart. For more information, see page 1-3.

For additional copies go to:

www.medical.philips.com/main/products/cardiography

and click on **Documentation & Downloads**