



P.O. Box: 48577, **DUBAI**, U.A.E.
Tel: 04 267 8866, Fax: 04 267 8855
P.O. Box: 457, **SHARJAH**, U.A.E.
Tel: 06 565 8866, Fax: 06 565 6699

صندوق بريد: 48577، دبي، الإمارات العربية المتحدة
هاتف: 04 267 8866، فاكس: 04 267 8855
صندوق بريد: 457، الشارقة، الإمارات العربية المتحدة
هاتف: 06 565 8866، فاكس: 06 565 6699

E-mail: info@zulekha Hospitals.com • Website: www.zulekha Hospitals.com



USAGE INSTRUCTIONS, CARE AND MAINTENANCE OF ECG RECORDERS

- When using your cardiograph from AC power, be sure it and all other equipment connected to or near the patient are effectively grounded (Ensure all equipments are powered using three wire power cords).
- The patient cable should be routed away from the power cords and any other electrical equipment.
- Be sure that the electrodes or leadwire tips do not come in contact with any other conductive parts, including earth-grounded parts, especially when connecting or disconnecting electrodes to / from a patient.
- Proper patient preparation and electrode placement are the most important elements in producing a high quality ECG trace.
- Following steps should be used for cleaning the cardiograph
- Unplug the power cord and ensure that the unit is in standby mode.
- Clean the outside surfaces and accessories (except the patient cable) by mild soap and water or isopropyl alcohol.
- For patient cables and PIM cidex OPA could be used for the disinfection.
- The patient cable can be cleaned with mild disinfectant or soap and water.
- Do not touch the patient, patient cable or cardiograph during defibrillation procedures.
- Do not pull on the paper while a report is being printed. This can cause distortion of the waveform and can lead to potential misdiagnosis.
- Do not spill any liquids on the surface of the cardiograph.



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TE: 06 565 8866, Fax: 06 555 8888

E-mail: info@zulekha.hospitals.com • Website: www.zulekha.hospitals.com

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Figure 3-1 Male 12-Lead Electrode Placement (AAMI/IEC)

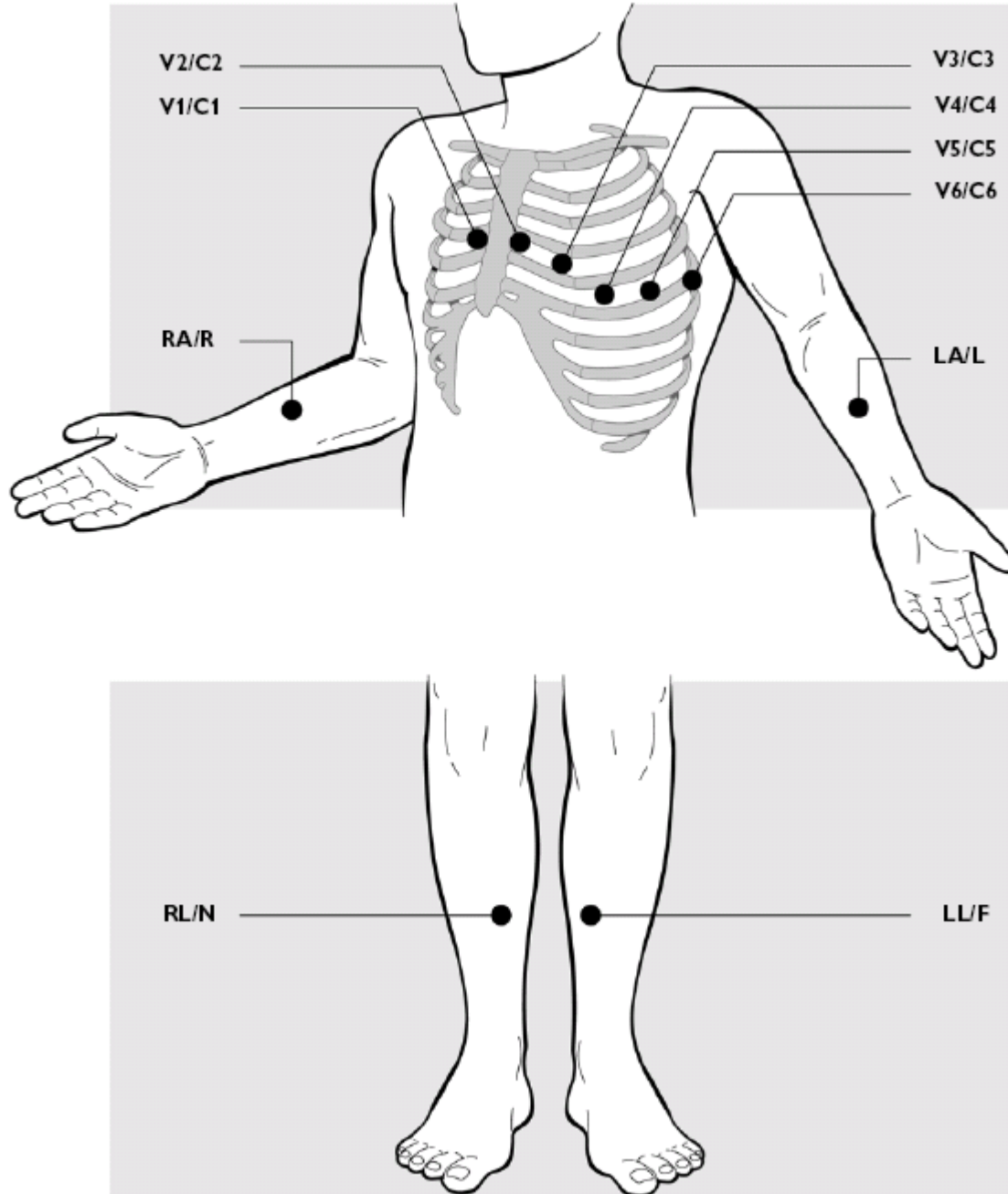
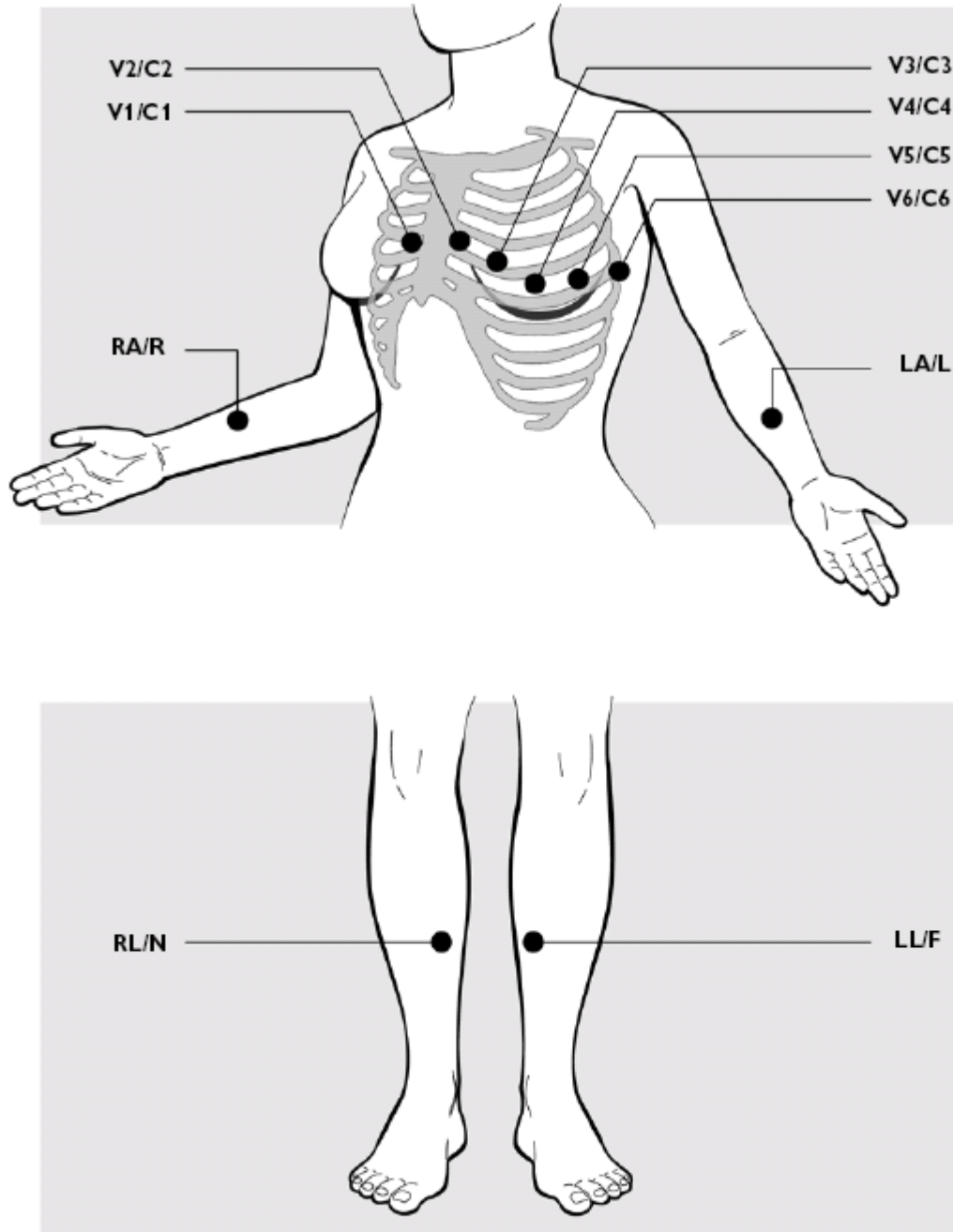


Figure 3-2 Female 12-Lead Electrode Placement (AAMI/IEC)



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.



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 Tel: 06 565 8866, Fax: 06 565 0555

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 ٤٥٧ بريد بري الشارقة
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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



P.O. Box: 48577, **DUBAI**, U.A.E.
 Tel: 04 267 8666, Fax: 04 267 8655
 P.O. Box: 457, **SHARJAH**, U.A.E.
 Tel: 06 565 8666, Fax: 06 565 8639

مستشفى زليخة
 دبي 48577
 ص.ب. 457، الشارقة
 06 565 8666
 ص.ب. 48577، دبي
 06 565 8639

E-mail: info@zulekha.ae • Website: www.zulekha-hospitals.com



Table 3-6 Color-coded Waveform Quality Indicators

Waveform Color	Indicates...	Possible Causes
Green waveform	<ul style="list-style-type: none"> Good connection 	
Yellow waveform	<ul style="list-style-type: none"> Moderate noise level, artifact, electrical interference, or a poor electrode connection 12-lead ECG report quality will be affected 	<ul style="list-style-type: none"> Inadequate patient preparation Electrical interference from another device Moderate patient movement, tense patient Improperly gelled electrode (dried gel)
Orange Waveform	<ul style="list-style-type: none"> Severe noise, artifact, electrical interference, or a very poor electrode connection 12-lead ECG report quality will be significantly affected 	<ul style="list-style-type: none"> Inadequate patient preparation Significant electrical interference from another device Severe patient movement Very poorly gelled electrode (dried gel)
Red dotted line	<ul style="list-style-type: none"> Loose electrode connection ECG waveform data that cannot be analyzed 	<ul style="list-style-type: none"> 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



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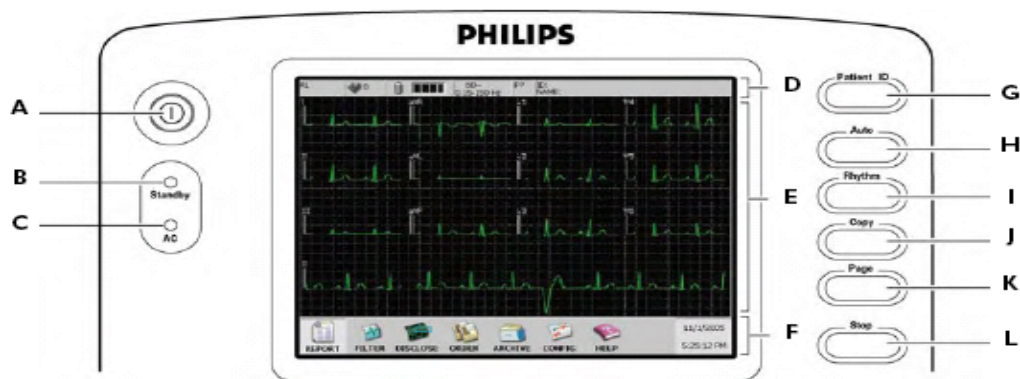




Table 1-6 PageWriter Trim II and III Control Panel

Label	Feature Name	Description
A	On/Standby button	<ul style="list-style-type: none"> 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 three 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 and the battery is charging.
D	Status Bar	Displays current cardiograph settings including: leads off, battery level indicator, patient heart rate, filter settings, pacing detection settings, and patient name and ID.
E	Waveform Display	<ul style="list-style-type: none"> Displays real-time waveforms (waveforms are color-coded to indicate signal quality on the PageWriter Trim III). Press the up  or down  arrow key to change the lead format displayed on the screen Available lead formats include: 6x2, 3x4 1R, 3x4, and 3 lead formats
F	Command Toolbar	Buttons contain the major functions of the cardiograph, with the current date and time at the right.



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Label	Feature Name	Description
G	Patient ID button	Press button to enter Patient ID information at the beginning of a patient session.
H	Auto button	<ul style="list-style-type: none">■ Press button to print out an Auto 12-lead ECG.■ Press button twice to print a STAT 12-lead ECG.
I	Rhythm button	Press button to print out a continuous Rhythm report (up to 12 leads) until the Stop button (L) is touched.
J	Copy button	Press button to print out a copy of the last recorded Auto 12-lead ECG.
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.



Signal Quality

The following section describes common signal quality problems with suggested solutions.

Figure 6-1 AC Interference

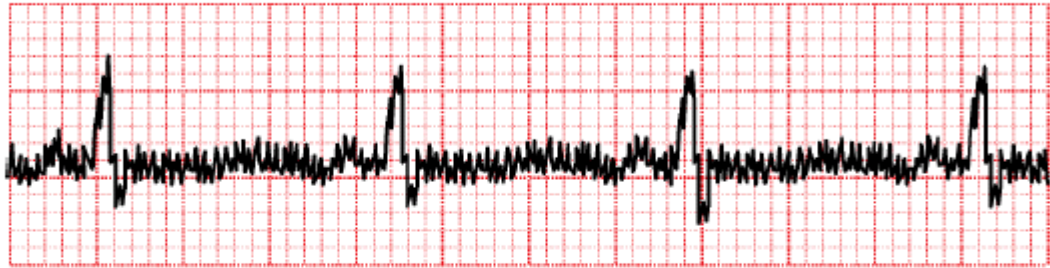


Table 6-9 AC Interference Troubleshooting

Possible Cause	Solution
<ul style="list-style-type: none"> ■ An improperly gelled electrode (dried gel) ■ Electrical interference from another device (IV pump, microwave oven, cellular phone, wireless device) ■ An electrical device near the cardiograph that is improperly grounded 	<ul style="list-style-type: none"> ■ Check that the electrodes are firmly attached. ■ Check for devices that could be causing electrical interference. Unplug the devices or switch to battery power. ■ Lay the lead wires alongside the limbs and away from any electrical devices. ■ Turn on the AC filter (see page 3-11).



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Figure 6-4 Loose Electrode

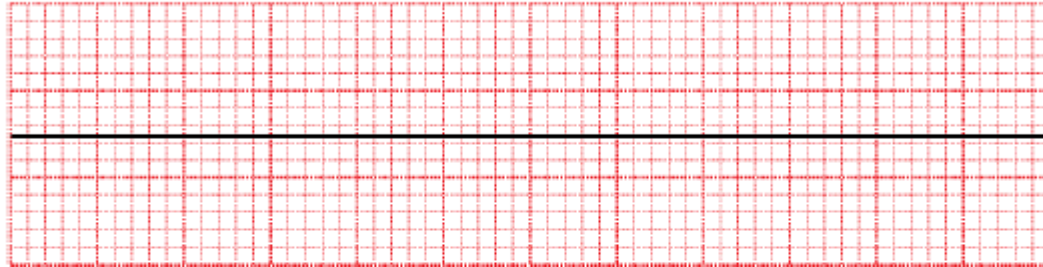


Table 6-12 Loose Electrode Troubleshooting

Possible Cause	Solution
<ul style="list-style-type: none"> ■ An electrode is loose or is not adhering to the skin ■ An electrode has fallen off ■ A lead wire is disconnected 	<ul style="list-style-type: none"> ■ Check all electrodes ■ Replace dry electrodes ■ Check all lead wires



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Figure 6-2 Wandering Baseline

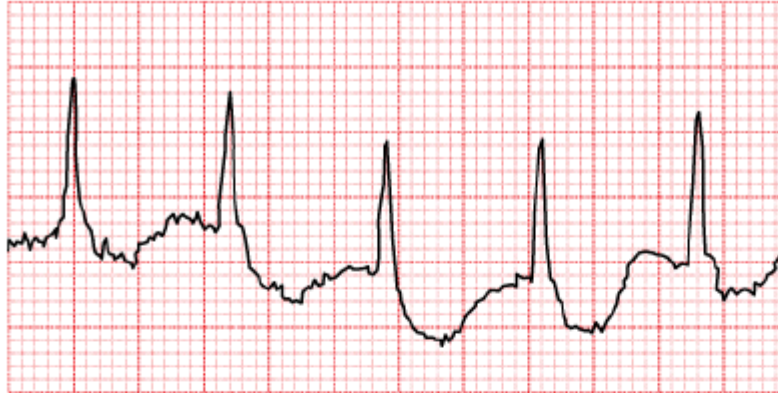
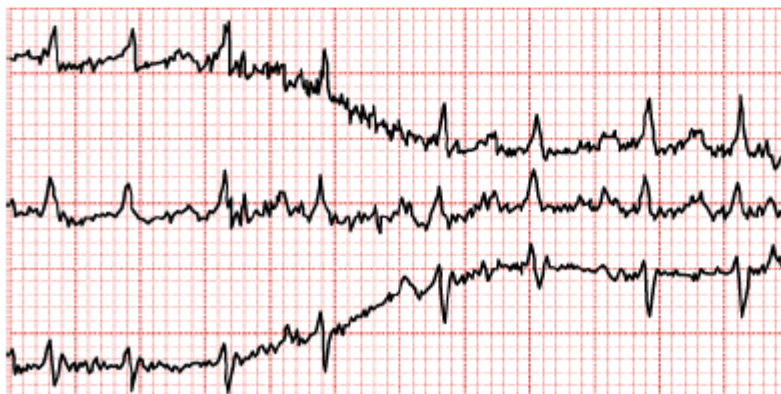


Table 6-10 Wandering Baseline Troubleshooting

Possible Cause	Solution
<ul style="list-style-type: none"> ■ Inadequate patient preparation, or a sweaty patient ■ Moderate patient movement, tense patient ■ Very poor electrode contact, dry electrodes ■ Patient respiratory interference 	<ul style="list-style-type: none"> ■ 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 3-11).

Figure 6-3 Somatic Tremors





P.O. Box: 48577, **DUBAI**, U.A.E.

TEL: 04 267 8666, Fax: 04 267 8555

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TEL: 06 565 8666, Fax: 06 565 8555

مستشفى زليخة، دبي، الإمارات

الهاتف: 04 267 8666، الفاكس: 04 267 8555

مستشفى زليخة، الشارقة، الإمارات

الهاتف: 06 565 8666، الفاكس: 06 565 8555

E-mail: info@zulekha.hospitals.com • Website: www.zulekha.hospitals.com



Table 6-11 Somatic Tremors Troubleshooting

Possible Cause	Solution
<ul style="list-style-type: none">■ The patient is cold and shivering■ Patient has tremors	<ul style="list-style-type: none">■ Place a blanket on the patient to warm the patient■ Assist with limiting patient movement