G.L McGAVIN

MODIEWARK MINI TESTERS

MODIEWARK
MINI SWER & POLE
NON-CONTACT VOLTAGE DETECTOR

MODIEWARK
AC 30
NON-CONTACT VOLTAGE DETECTOR

MODIEWARK
MINI WPT (WATER PIPE TESTER)
NON-CONTACT CURRENT DETECTOR

OPERATIONAL MANUAL

ACMA N15191

WARNING
High voltage testing should only be carried out by trained personnel do not hold this instrument in your hand and make contact with live electrical conductors in excess of 650 vac.

CONTACT US

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GL McGavin Pty. Ltd. Is a company that was formed in Sydney Australia in 1968, out of a need to protect electrical workers from being electrocuted. With its state of the art product the first of many models of the Modiewark non-contact voltage detector was designed. The Australian power industry accepted this tester as a life saving device, implementing a national roll out in the early 1970's.

From this point the Modiewark became a vital asset to the needs of the industry, improving itself by providing self testing capabilities, voltage selectors to suit each application and accessories to perform substation spout testing and phase compatibility testing.

In 2004 the Morris family, Darrell & Norma Morris (owner directors) and their sons Ashley & Linsey Morris (directors) of the Morris Group, took ownership of the company and consolidated its operation in Newcastle New South Wales, Australia. Long overdue improvements in its manufacturing techniques were put into place providing in house quality control on all construction processes. This made the product a safer and more reliable test instrument. With the aid of their experienced staff the product improved to include phase identification, spout testing application and water resistance devices.

In 2007 a team association with a local engineer, Mathew Dick developed a new product line of Modiewarks, The Modiewark Mini Testers provided a miniature and user friendly product allowing us to keep pace with the changing industry. Rescue departments in New South Wales Australia, accepted the new rescue tester, providing their staff with a safe approach procedure. The Mini SWER and Pole tester was designed for Country Energy for the testing of SWER(single wire earth return) and the application of pole leakage detection which costs the industry many thousands of dollars per year. The MR tester (Meter Reader) was developed to ensure the safety of the approach to meter boxes in case of life threatening faults.

To ensure quality control with this safety device Pritchard Electronics became an acquisition of the Morris group providing improved technologies and in house quality control.

With new technology on the way the goal of GL McGavin and its staff is to keep pace with the current industry standards and provide a better solution for electrical safety in the future. As one of the oldest and most reliable testers on the market today the GL McGavin Modiewark range of testers will assist the electrical industry in all electrical hazard safety applications.

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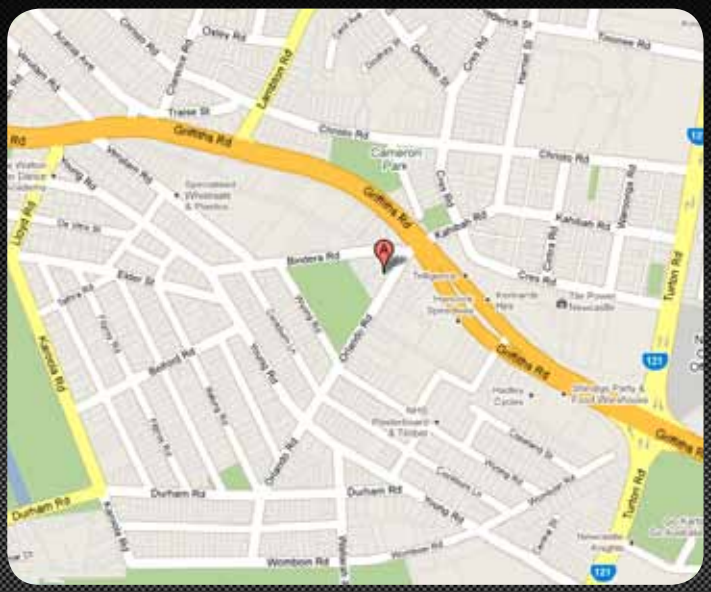

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MODIEWARK
GLM MINI
RESCUE TESTER

The Modiewark GLM Mini Rescue is a universal pocket size proximity tester, operating in the AC voltage range from 20 volts given the correct setting. The GLM Mini has been designed for emergency rescue, linesmen, tree surgeons, electricians and trained personnel for the determination of “Live or Dead” situations for safety purposes and life threatening situations. This unit can be operated in the hand, pocket, pouch and body mounted. A Special universal or sunrise fitting can be added to attach to a hot stick.




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EMERGENCY SERVICES PERSONAL PROTECTION NON-CONTACT VOLTAGE DETECTOR

FUNCTIONS

BATTERY REPLACEMENT

The battery compartment is located on the rear of the tester and requires a 9 volt PP3 battery. There is an option of a rechargeable battery for some models. Ensure the battery is fitted the correct way placing the positive terminal as indicated.

POWER ON INDICATOR

When the unit is activated a GREEN indicator light is illuminated stating the unit is on. This indicates a good battery connection only.

LOW BATTERY INDICATOR

To the bottom right of the GLM AC30 Tester, an Orange indicator light will appear when battery levels reach 8.2 volts, this indicates the battery should be replaced or recharged. As the battery output lowers below this point the tester will continually show activation without turning off. (See: battery replacement)

PUSH TO TEST BUTTON

The Self Test Button located on the front face of the GLM AC 30 is a full function test of all the components of the unit.

Testing:

- Audio indicator
- Visual indicator
- Battery condition
- Transistor circuit verification

This feature should be activated every time the unit is turned on and at regular intervals during the working day. In the event the tester fails please refer to (service and trouble shooting).

HIGH/LOW VOLTAGE SENSITIVITY SWITCH

This switch controls the sensitivity of the GLM AC 30 The high setting will allow detection of high voltages 7,000 volts to ground outdoors 15 metres away and detect 240 volts 3 metres away. The low setting will change the detection distance to 5 metres away at 7,000 volts to ground outdoors and detect 240 volts inside at 500 mm away from an active GPO.

OPERATIONAL PROCEDURES

A) Switch the unit to the “ON” position, a Green LED power light will immediately illuminate, indicating a good battery connection.

B) Place the unit on the high setting for the greatest detection range.

C) Check the low battery indicator is not (orange) and continue with the operation. If the orange LED illuminates, replace battery before use or recharge NIMH battery with approved charger.

D) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard indicating a healthy circuit. A two second delay will occur between the self test operation and the normal unit detection operation. Your personal electrical safety device is now ready to use.

E) It is recommended that regular checks using the self test function be used during the working period to ensure optimal performance.

F) The unit can be held in the hand, on a helmet, on your shoulder or in the nylon pocket pouch. By placement in the belt pouch the detection distance is reduced and will only detect on the side of the body the detector is located.

G) Always hold the GLM AC30 with your thumb placed on the indicated position with your arm outstretched. This allows maximum detection distance. The closer the unit is to the trunk of the body the lower the detection distance.

Note: To detect a voltage source at close range of two to three metres at voltages only over 7,000 volts, place your hand around the middle of the tester not covering the end marked TEST AREA and approach known voltage source with extreme care to determine live components

H) Always allow the Test Area Label to be placed on the side of the body that is most likely to be placed in harms way.

I) When an electric field is detected by your tester an audible alarm will be heard and a red indicator LED will flash alerting you that you are within a hazard area.

J) If this occurs retrace your steps in a slow and calm manner until the alert is diminished. (You are now in a safe area again).

K) To determine the exact location of the voltage source place the unit on the low setting and approach with care, you can now identify live components.

L) When voltage has been officially disconnected by the supply authority retest the area again by placing the unit on high and holding with thumb on indication and arm outstretched.

This unit can detect AC voltages from up to 20 metres away on high voltage supply lines. When approaching these lines personal protective equipment insulation gloves and shoes must be worn at all times.

IMPORTANT SAFETY CONCERN

If power lines are broken, one or both of the lines may still be energised and a safe distance must still be maintained from both sections or electrocution may occur.

- Always assume the conductor is alive until proven de-energised.
- Do not touch wire or car or any conductor as you could experience ground potential (shock).

Always hold the Rescue tester at the base of the unit where indicated.
By holding the unit close to the body or by the head of the Rescue tester reduces the sensitivity of the unit.

IMPORTANT SAFETY CONCERN

The Modiewark Mini Tester is not designed to operate where mains cables are armoured or enclosed in metal conduit, underground or any situation where the AC field is negated by metal shielding.
The unit will not detect DC voltages and must be used by trained personnel around train tracks and railway control boxes and signals.

RESCUE VEHICLE ACCIDENTS

In the event a vehicle is the cause of damage to a power pole, the result may bring down the attached lines. These lines are active and the surrounding area can be energised. A HAZARD AREA must be established until electrical authorities disconnect power.

A) When arriving at the incident, turn on the GLM Ac30 to the **HIGH** sensitivity setting.

B) Press and hold the Self Test Button and an audible repeating tone will be heard indicating a healthy unit.

C) Place thumb and hand as indicated on unit with arm outstretched as the position of your hand and body determines the sensitivity of the unit. In this position maximum sensitivity is achieved.

D) Wave the unit from side to side in the direction of the incidence.

E) If the RED indicator and alarm sounds a voltage is detected.

Note: As unit may detect power lines above in order to determine the location of the voltage source place the unit on the **LOW** setting and move to detect if power line is on the ground or above. By placing your hand in the middle of the unit not covering the front Test Area Label, sensitivity is decreased providing an accurate location of voltage source.

F) When voltage is detected from fallen power lines, contact supply authority immediately and erect a hazard area around scene to protect service officers and the general public .

G) On notification from supply authority that power has been isolated retest the area again placing the unit on high with thumb on bottom of unit and follow the previous steps.

WARNING!! If power lines are broken the two halves of the line may still be energized and a safe distance must still be maintained from both sections or electrocution could occur.

Always assume conductor is alive until
proven de-energised.
Do not touch wire or car as you could experience
ground potential (shock).

COMMERCIAL / RESIDENTIAL PROPERTIES

On the arrival at a structure fire, identification of power lines and connection to property must be located and identified; procedures for active live power isolation and disconnection should be followed.

A) When arriving at the incident, turn on the GLM MINI to the high sensitivity setting.

B) Press and hold the Self Test Button and an audible repeating tone will be heard indicating a healthy unit.

C) Place thumb and hand as indicated on unit with arm outstretched as the position of your hand and body determines the sensitivity of the unit. In this position maximum sensitivity is achieved.

D) Identify the main power supply line on the street and access point to the property checking for damage to these lines and clearance levels.

E) With arm outstretched hold the detector over your head and trace power from street supply to property connection.

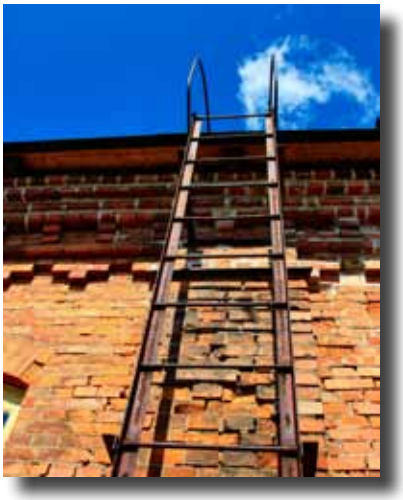
F) If the Red LED indicates and a continuous alarm sounds a voltage is detected.

G) Isolation protocol should now be followed. Contact the local supply authority for disconnection of power supply.

H) On notification from supply authority that the power has been isolated retest the area again placing the unit on high with thumb on bottom of unit and follow the above steps.

When circumstances require access to the property before power has been disconnected use the GLM MINI to determine live power areas. Examples of the areas are:

Placing a metal ladder against the metal gutter.



A) Use procedures above for the activation of the GLM MINI.

B) As we know the power to the property is active, place the unit on high and test against conductive components.

C) If voltage detected switch to low setting on the unit and aim at conductive components moving closer. When within 100mm and no AC voltage is detected, the ladder and gutter are not active.

D) The ladder may be insulated from the ground by rubber feet and may not show active. By placing a hand on the ladder a circuit is made to ground through you resulting in electrocution.

E) It is highly recommended to not attach metal items to exterior of property until supply to property has been disconnected.

Upon entering a property

A) Use above procedures for the activation of the GLM MINI.

B) Enter the property holding the GLM MINI with thumb on indicated area and arm outstretched and the unit set on the high setting, if property disconnected no signal should be detected.

C) If voltage detected and the property disconnected by supply authority place the unit on the low setting and move around room to determine where voltage is located.

D) Have trained personnel isolate or disconnect source.

NOTE: Because the property is still live the high setting on the GLM MINI may be detecting other voltage sources such as wires in the roof or walls or the adjacent property. To overcome this use the low setting on the detector and more accurate location of AC voltage sources can be determined. By placing your hand in the middle of the unit not covering the front Test Area Label, sensitivity is decreased providing an accurate location of voltage.

IMPORTANT SAFETY CONCERN

The voltage to a property may be officially disconnected by supply authority. This may not always be the case as power can be present by illegal wiring and from other sources, Solar panels, generator units and neighbouring locations. Faults in the electrical networks may cause residual voltages to be carried in water pipes and neutral link connections. These voltages may be low but the current high. Use the GLM MINI Rescue to verify voltage at all instances.

SWITCH YARDS TRANSFORMERS

Do not enter switch yards or transformer rooms unless authorised by supply authority. These contain high and extra high voltage lines, which may arc over to the human body or equipment.

Transformer units located on ground level and pole tops contain large amounts of oil which in faulty units may leak. This oil is a conductor and may be electrically energised. Take care to never become enveloped with this oil.

A) In the incidences above contact the supply authority immediately for disconnection and isolation procedures.

B) When arriving at the incidence, turn on the GLM MINI to the high sensitivity setting.

C) Press and hold the Self Test Button and an audible repeating tone will be heard indicating a healthy unit.

D) Place thumb and hand as indicated on unit with arm outstretched as the position of your hand and body determines the sensitivity of the unit. In this position maximum sensitivity is achieved.

E) Test the area surrounding the switch yard or transformer to detect fallen lines and leaking oil. Note: oil is a conductor stay clear.

F) If the RED indicator and alarm sounds a voltage is detected.

G) Isolation protocol should now be followed.

H) On notification from supply authority power has been isolated retest the area again placing the unit on high with thumb on bottom of unit and follow the above steps.

IDENTIFICATION OF UNDERGROUND (URD) TEST POINTS.

Structures such as these contain voltage sources and can be detected by the GLM MINI using the above procedures.




STORM DAMAGE ELECTRICAL PROCEDURE

In all natural disasters electricity is a major concern, as fallen power lines and water make a dangerous mix. The GLM MINI can be used in all of these situations.

The GLM MINI will not detect submerged power cables as water decreases the electromagnetic field generated.

1) When arriving at the incident, turn on the GLM MINI to the high sensitivity setting.

2) Press and hold the Self Test Button and an audible repeating tone will be heard indicating a healthy unit.

3) Place thumb and hand as indicated on unit with arm outstretched as the position of your hand and body determines the sensitivity of the unit. In this position maximum sensitivity is achieved.

4) Locate the area to be worked in and conduct a hazard assessment of the area. Wave the unit from side to side to identify the direction of voltage source. This is the area to isolate and contact the supply authority for disconnection. Have trained personnel isolate or disconnect source.

5) To detect a voltage source at close range, two to three metres at voltages only over 7,000 volts. Place your hand around the middle of the tester not covering the end marked TEST AREA and approach known voltage source with extreme care to determine live components.

6) On notification from supply authority power has been isolated retest the area again placing the unit on high with thumb on bottom of unit and follow the above steps.

Always assume line is energised on initial test. Never assume de-energised lines will remain in that state.

RESCUE SPECIFICATIONS

Voltage sensing range: 20 volts AC to 500 K volts AC
(Given correct settings)

Light source: High intensity LED

Sound Source: Piezo 4000KHz 90 dB @ 10cm (3.937')

Operating temperature : -20 to 65˚C (14 to 149˚F)

IP rating: IP 66

Weight (no Batteries): 140g (4.93 oz)

Dimensions: L= 40 mm (5.51')

W= 73 mm (2.87')

H= 23 mm (0.9')

Battery: 9 volt PP3 Alkaline **Rechargeable Battery:** 9 volt PP3 NIMH 200mA

(Use only NIMH)

Battery Life (200mA NIMH Rechargeable):

ON (no alarm) 30+ Hours

ON (alarm on) 8+Hours

OFF 3 Months

Battery Life (500mA Alkaline):

ON (no alarm) 40+ Hours

ON (alarm on) 10+Hours

OFF 3 Months

IMPORTANT SAFETY CONCERN

If power lines are broken, one or both of the lines may still be energised and a safe distance must still be maintained from both sections or electrocution may occur.

- Always assume the conductor is alive until proven de-energised.
- Do not touch wire or car or any conductor as you could experience ground potential (shock).

Always hold the SWER & Pole Tester at the base of the unit as indicated.
By holding the unit close to the body or by the head of the SWER & Pole tester reduces the sensitivity of the unit.

IMPORTANT SAFETY CONCERN

The Modiewark Mini Tester is not designed to operate where mains cables are armoured or enclosed in metal conduit, underground or any situation where the AC field is negated by metal shielding.
The unit will not detect DC voltages and must be used by trained personnel around train tracks and railway control boxes and signals.

MODIEWARK
GLM MINI
SWER & POLE TESTER

SWER (SINGLE WIRE EARTH RETURN) & POWER POLE TESTER

The Modiewark GLM Mini SWER and Pole Tester is a universal pocket size voltage proximity tester, which has been designed for the testing of power poles of all heights or situations that require a manual variation in voltage distance detection. This unit is designed for qualified personnel.
With this unique ability the testing of pole leakages is a quick and easy task. This allows identification of cracked and broken insulators which can be replaced and save the loss of energy.

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PART IDENTIFICATION

High/Low Sensitivity Switch

Sensitivity Dial

LED and Audio Alarm Indicator

Push To Test

Power On Indicator GREEN

Low Battery Indicator ORANGE

Power Switch

Correct Position to Hold Tester

Battery Compartment On Rear

BATTERY REPLACEMENT

The battery compartment is located on the rear of the GLM MINI and requires a 9 volt PP3 battery. There is an option of a rechargeable battery for some models.

Ensure the battery is fitted the correct way placing the positive terminal as indicated.

POWER ON INDICATOR (GREEN)

LOW BATTERY INDICATOR (ORANGE)

When the unit is turned on a GREEN LED is illuminated. This indicates good battery condition and circuitry connectivity. As the battery decreases below this point the unit will switch the tester to a continuous ORANGE LED.

PUSH TO TEST BUTTON

The Self Test Button located on the front face of the GLM Mini is a full function test of all the components of the unit.

Testing:

- Audio indicator
- Visual indicator
- Battery condition
- Transistor circuit verification

This feature should be initiated every time the unit is turned on and at regular intervals during the working day. In the event the tester fails please refer to (Service and Trouble Shooting).

HIGH / LOW VOLTAGE SENSITIVITY SWITCH

This switch is used to enable the GLM Mini to be operated through the 12 point switch for the calibration of distance in high and low electrical fields.

E.g. If the mains are 11kV/22kV/33kV the high setting is required because the field is not as strong. If the over head mains are from 66kV-132kV the low setting is required.

SENSITIVITY DIAL

The dial allows for the adjustment of the unit to the work site signal strength given network voltage and distance (height of conductor), use this dial to adjust the sensitivity for the site conditions.

HIGH VOLTAGE POLE LEAKAGE TESTING

1) Switch the unit to the "ON" position, a Green LED power light will immediately illuminate, indicating good battery condition and circuitry connectivity.

2) For power pole testing place the Sensitivity Switch to HIGH (to the RIGHT) and the Sensitivity Dial to the far RIGHT to position 12. This setting will also allow testing with the Modielive low frequency testing unit which is supplied separately. If applicable.

3) Confirm the low battery LED is still GREEN and continue to step 4. If the (orange) LED illuminates, replace battery before use or recharge NIMH battery with approved charger and repeat steps 1 - 3.

4) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard indicating a correct operation. A two second delay will occur between the self test operation and the normal unit detection operation. The GLM Mini is ready for operation.

5) It is recommended that regular checks using the self test function be made before and during the safe approach of electrical voltage testing.

6) Always hold the GLM MINI with your thumb placed on the indicated position with your arm outstretched. This allows maximum effectiveness and detection.

7) For the initial calibration procedure on a SWER system it is recommended that the minimum distance from the pole under test be 10 metres and stand directly below the conductor.

8) If trees are in close proximity or low voltage wires are below the SWER conductor, stand at right angles (still 10 meters from the pole) to the line and pole to enable the detection of high voltage.

Note: Electric fields from power lines can be disturbed and redirected by objects that are grounded. A tree near a power line will lower the strength of an electric field which may cause adjustments to the settings on the GLM Mini. Other factors which influence the electric field and the initial calibration setup include rainy and humid conditions. More information on hazards.

9) After correct test instrument procedure has been carried out, raise the tester above the head and adjust the sensitivity dial until the voltage in the line above is detected

Method: Placing your right hand on the tester as indicated use the other hand to move the Sensitivity Dial slowly to the left until the alarm is a strong and continuous sound.

10) If Tester does not alarm If over head mains cannot be detected by the GLM Mini at arm's length at HIGH 12. It is our recommendation that with the self test function showing correct battery voltage and circuit operation, the self test function can then be used as a dependable correct safety procedure to approach the pole.

Note: If the sensitivity switch and dial are adjusted correctly to pick up the live conductors. A strong field would produce a switch setting of low sensitivity position and the sensitivity dial would be in a position suited, to the on site conditions. A low field would produce a switch setting of high sensitivity position and sensitivity dial would be in a position suited, to the on site conditions.

11) When the over head line conductor is located (by the activation of the alarm), lower the tester to chest height, at this point no alarm should be heard. The overhead field will be broken and the approach to the pole can be made. If the tester continues to alarm at chest height raise it above the head again and adjust the sensitivity dial one position to the left to desensitise it, then repeat step 11.

Method: By leaving the hand placed on the tester with the thumb as indicated, remove the other hand and lower the unit to chest height.

Note: When using the unit on power lines where lower voltage mains, i.e. 415V AC are beneath the HV conductors a null or dead zone will occur. To overcome this situation move out from beneath the HV line until the alert tone is heard.

12) Verify the calibration of the over head mains again to check voltage is still present and lower to chest height where the alert tone should dissipate. The tester should not alarm in this position or pole test will not be correct.

13) With the tester at arm's length approach the pole to be tested.

Method: Whilst approaching the pole keep arm out stretched and your other arm beside your body; walk calmly and slowly towards the pole, to a point where the Test Area Label is 25mm (1 inch) from pole. If the Tester alarms while approaching the pole, stop and raise the GLM mini towards the overhead conductors to make sure the GLM Mini is not picking up overhead field, if field is still broken above (no alert tone) proceed to step 15.

14) If the tester does not alarm there is no significant voltage running through the pole.

Method: At this point to verify results touch the pole with unit on the end marked Test Area only. The contact will increase sensitivity.

15) If an alert signal is heard do not panic but check your results proceed to step 16.

Method: To check your results take a step back until signal has discontinued then take a step forward to verify activation of unit. Please note the further you are away from the pole and the tester is alarming, the higher the leakage in that pole. A set of calibration tables are available for switch positions and voltages if required.

16) Follow standard isolation procedures with a ten metre perimeter, assess the area around pole to ensure no conductive material have contacted pole. I.e. Fences, machinery and water, as where you are standing may be active.

Note: If a voltage cannot be detected by the GLM Mini at arm's length at HIGH 12, then three possible situations can exist:

- The over head mains are not alive.
- The over head mains voltage does not have a strong enough field to be picked up.
- Low voltage mains are below the High voltage conductors causing a null.

In these circumstances it is our recommendation that because the self test function checks battery and circuitry it can be relied upon (after the self test procedures have been carried out) that safe pole approach can be carried out.

WARNING

HIGH VOLTAGE TESTING
SHOULD ONLY
BE CARRIED OUT BY TRAINED PERSONNEL
DO NOT HOLD, THIS INSTRUMENT IN YOUR HAND AND MAKE
CONTACT WITH LIVE ELECTRICAL CONDUCTORS IN EXCESS OF 650 VAC.
THE GLM MINI TESTER
IS NOT DESIGNED TO OPERATE
WHERE MAINS CABLE IS ARMOURED OR ENCLOSED
IN METAL CONDUIT, UNDERGROUND OR ANY SITUATION WHERE THE AC
FIELD IS NEGATED BY METAL SHIELDING.
THE UNIT WILL NOT DETECT DC VOLTAGES AND MUST BE USED
BY TRAINED PERSONNEL
AROUND TRAIN TRACKS AND RAILWAY CONTROL BOXES AND SIGNALS

LOW VOLTAGE POLE LEAKAGE TESTING

In situations where a test is required to check the voltage leak of a pole, where low voltage (415 volts) is the overhead supply the following procedure is recommended.

1) Switch the unit to the "ON" position, a green LED power light will immediately illuminate, indicating good battery condition and circuitry connectivity.

2) For low voltage pole testing place the Sensitivity Switch to HIGH (to the RIGHT) and the Sensitivity Dial to the far RIGHT to position 12. This setting will allow testing with the Modielive mark 3 testing unit which is supplied separately. If applicable.

3) Confirm the low battery LED is still (green) and continue to step 4. If the (orange) LED illuminates, replace battery before use or recharge NIMH battery with approved charger and repeat steps 1 - 3.

4) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard indicating a correct operation. A two second delay will occur between the Self Test operation and the normal unit detection operation. The GLM Mini is ready for operation.

5) It is recommended that regular checks using the self test function be made before and during the safe approach of electrical voltage testing.

6) Always hold the GLM mini with your thumb placed on the indicated position, with your arm outstretched. This allows maximum effectiveness and detection.

7) For the initial calibration procedure on a low voltage mains pole keep the pole to be tested at a minimum distance of three metres (3m) at the initial setup.

8) Place yourself directly under the low voltage line away from hazards such as trees, other electric fields keeping a distance of 3m from the pole under test.

Note: Electric fields from power lines can be disturbed and redirected by objects that are grounded. A tree near a power line will lower the strength of an electric field which may cause adjustments to the settings on the GLM Mini. Other factors which influence the electric field and the initial calibration setup include rainy and humid conditions. More information on hazards.

9) After correct test instrument procedure has been carried out, raise the tester above the head and adjust the sensitivity dial until the voltage in the line above is detected.

Method: Placing your right hand on the Tester as indicated use the other hand to move the Sensitivity Dial slowly to the left until the alarm is a strong and continuous sound.

10) If Tester does not alarm If over head mains cannot be detected by the GLM Mini at arm's length, at HIGH 12. It is our recommendation that with the self test function showing correct battery voltage and circuit operation, the self test function can then be used as a dependable correct safety procedure to approach the pole.
Note: If the sensitivity switch and the sensitivity dial are adjusted correctly to pick up the live conductors.

- A strong field would produce a switch setting of low sensitivity position and the sensitivity dial would be in a position suited, to the on site conditions.
- A low field would produce a switch setting of high sensitivity position and the sensitivity dial would be in a position suited, to the on site conditions.

11) When the over head line conductor is located (by the activation of the alarm), lower the tester to chest height, at this point no alarm should be heard. The overhead field will be broken and the approach to the pole can be made. If the Tester continues to alarm at chest height raise it above the head again and adjust the sensitivity dial one position to the left to desensitise it, then repeat step 11.

Method: By leaving the hand placed on the Tester with the thumb as indicated, remove the other hand and lower the unit to chest height.

12) Verify the calibration of the over head mains again to check voltage is still present and lower to chest height where the alert tone should dissipate. The tester should not alarm in this position or pole test will not be correct.

13) With the tester at arm's length approach the pole to be tested.

Method: Whilst approaching the pole keep arm out stretched and your other arm beside your body; walk calmly and slowly towards the pole, to a point where the Test Area Label is 25mm (1 inch) from pole. If the tester alarms while approaching the pole, stop and raise the GLM mini towards the overhead conductors to make sure the GLM mini is not picking up overhead field, if field is still broken above (no alert tone) proceed to step 15.

14) If the tester does not alarm there is no significant voltage running through the pole.

Method: At this point to verify results touch the pole with unit on the end marked Test Area only. The contact will increase sensitivity.

15) If an Alert signal is heard do not panic but check your results proceed to step 16.

Method: To check your results take a step back until signal has discontinued then take a step forward to verify activation of unit. Please note the further you are away from the pole and the tester is alarming the higher the leakage in that pole. A set of calibration tables are available for switch positions and voltages if required.

16), Follow standard isolation procedures with a ten metre perimeter, assess the area around pole to ensure no conductive material have contacted pole. E.g. Fences machinery and water, as where you are standing may be active.

Note: If a voltage cannot be detected by the GLM Mini at arm's length at HIGH 12 then three possible situations can exist:

- The over head mains are not alive.
- The over head mains voltage does not have a strong enough field to be picked up.
- Low voltage mains are below the High voltage conductors.

In these circumstances it is our recommendation that because the self test function checks battery and circuitry it can be relied upon (after the self test procedures have been carried out) that safe pole approach can be carried out.

IF A VOLTAGE IS DETECTED, THERE IS NO NEED TO BRING THE DETECTOR ANY CLOSER TO THE VOLTAGE

METER BOX TESTING

The GLM Mini can be used to check the safety of meter or junction boxes in the same way a pole test is conducted. In the situations where overhead SWER, transformers and meter boxes appear on the same pole. It is possible that larger leakage voltages can be present in overhead SWER situations caused by varying earth conditions and earth connections.

1) Switch the unit to the “ON” position, a Green LED power light will immediately illuminate, indicating good battery condition and circuitry connectivity.

2) For power pole meter box testing place the Sensitivity Switch to HIGH (to the RIGHT) and the Sensitivity Dial to the far RIGHT to position 12. This setting will allow testing with the Modielive testing unit which is supplied separately. If applicable.

3) Confirm the low battery LED is still (green) and continue to step 4. If the (orange) LED illuminates, replace battery before use or recharge NIMH battery with approved charger and repeat steps 1 - 3.

4) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard indicating a correct operation. A two second delay will occur between the self test operation and the normal unit detection operation. The GLM Mini is ready for operation.

5) It is recommended that regular checks using the self test function be made before and during the safe approach of electrical voltage testing.

6) Always hold the GLM MINI with your thumb placed on the indicated position with your arm outstretched. This allows maximum effectiveness and detection.

7) For the initial calibration procedure on a SWER system it is recommended that the minimum distance from the pole under test be 10 metres and stand directly below the conductor.

8) If trees are in close proximity or low voltage wires are below the SWER conductor, stand at right angles (still 10 meters from the pole) to the line and pole to enable the detection of high voltage.

Note: Electric fields from power lines can be disturbed and redirected by objects that are grounded. A tree near a power line will lower the strength of an electric field which may cause adjustments to the settings on the GLM Mini. Other factors which influence the electric field and the initial calibration setup include rainy and humid conditions. More information on hazards

9) After correct test instrument procedure has been carried out, raise the tester above the head and adjust the sensitivity dial until the voltage in the line above is detected

Method: Placing your right hand on the tester as indicated use the other hand to move the Sensitivity Dial slowly to the left until the alarm is a strong and continuous sound.

10) If Tester does not alarm If over head mains cannot be detected by the GLM Mini at arm’s length at HIGH 12. It is our recommendation that with the self test function showing correct battery voltage and circuit operation, the self test function can then be used as a dependable correct safety procedure to approach the pole.

Note: If the sensitivity switch and the sensitivity dial are adjusted correctly to pick up the live conductors.

- A strong field would produce a sensitivity switch setting of low sensitivity position and the sensitivity dial would be in a position suited, to the on site conditions.
- A low field would produce a sensitivity switch setting of high sensitivity position and the sensitivity dial would be in a position suited, to the on site conditions.

11) When the over head line conductor is located (by the activation of the alarm), lower the tester to chest height, at this point no alarm should be heard. The overhead field will be broken and the approach to the pole can be made. If the tester continues to alarm at chest height raise it above the head again and adjust the sensitivity dial one position to the left to desensitize it, then repeat step 11.

Method: By leaving the hand placed on the tester with the thumb as indicated, remove the other hand and lower the unit to chest height.

Note: When using the unit on power lines where lower voltage mains, i.e. 415V AC are beneath the HV conductors a null or dead zone will occur. To overcome this situation move out from beneath the HV line until the alert tone is heard.

12) Verify the calibration of the over head mains again to check voltage is still present and lower to chest height where the alert tone should dissipate. The tester should not alarm in this position or pole test will not be correct.

13) With the tester at arm's length approach the meter box enclosure to be tested.

Method: Whilst approaching the meter box enclosure keep arm out stretched and your other arm beside your body; walk calmly and slowly towards the pole, to a point where the Test Area Label is 25mm (1 inch) from pole. If the tester alarms while approaching the pole, stop and raise the GLM Mini towards the overhead conductors to make sure the GLM Mini is not picking up overhead field, if field is still broken above (no alert tone) proceed to step 15.

14) If the tester does not alarm there is no significant voltage running through the Pole or meter box enclosure.

Method: At this point to verify results touch the meter box enclosure with unit on the end marked Test Area only. The contact will increase sensitivity. Activation of the unit should not take place until the unit is within close proximity to the box or not at all if the enclosure is properly grounded.

15) If an Alert signal is heard do not panic but check your results proceed to step 16.

Method: To check your results take a step back until signal has discontinued then take a step forward to verify activation of unit. Please note the further you are away from the meter box enclosure the higher the leakage in that pole. A set of calibration tables are available for switch positions and voltages if required.

16) Follow standard isolation procedures with a ten metre perimeter, assess the area around pole to ensure no conductive materials have contacted pole. E.g. Fences machinery and water as where you are standing may be active.

Note: If a voltage cannot be detected by the GLM Mini at arm's length at HIGH 12 then three possible situations can exist:

- The over head mains are not alive.
- The over head mains voltage does not have a strong enough field to be picked up.
- Low voltage mains are below the high voltage conductors.

In these circumstances it is our recommendation that because the Self Test function checks battery and circuitry it can be relied upon (after the self test procedures have been carried out) that safe pole approach can be carried out.

The GLM Mini tester will not activate where mains are armoured or in metal conduit,may not be detected.
The tester is designed to operate as a proximity device and relies on an AC field to operate.

STORM DAMAGE APPROACH

When live mains are knocked down by storm condition or accidents, the Pole tester with its directional characteristics can be very useful in preventing injury to electrical line personnel or rescue staff. As the tester is directional it will alarm when approaching live mains that are hanging or lying on the ground. The unit can be tuned to ignore the electric field from above and only detect in the direction the user is pointing at chest height or lower. This prevents the user walking on or into fallen cables.

In the situation below one of the three phases is down leaving two phases in the air and one on the ground. This situation may occur at night in low light conditions, in snow falls and drifts, concealing the live elements. Follow the procedure below.

1) Switch the unit to the "ON" position, a Green LED power light will immediately illuminate, indicating good battery condition and circuitry connectivity.

2) For safety location testing place the Sensitivity switch to HIGH (to the RIGHT) and the Sensitivity Rotary Dial to the far RIGHT to position 12.

3) Confirm the low battery LED is still GREEN and continue to step 4. If the (orange) LED illuminates, replace battery before use or recharge NIMH battery with approved charger and repeat steps 1 - 3.

4) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard indicating a correct operation. A two second delay will occur between the self test operation and the normal unit detection operation. The tester is ready for operation.

5) It is recommended that regular checks using the self test function be made before and during the safe approach of electrical voltage testing.

6) Always hold the tester with your thumb placed on the indicated position with your arm outstretched. This allows maximum effectiveness and detection.

7) After correct test instrument procedure has been carried out, raise the tester above the head and adjust the sensitivity dial until the voltage in the line above is detected.

Method: Placing your right hand on the tester as indicated use the other hand to move the Sensitivity Rotary Dial slowly to the left until the alarm is a strong and continuous sound.

8) If tester does not alarm, If over head mains cannot be detected by the tester at arm's length at HIGH 12. It is our recommendation that with the self test function showing correct battery voltage and circuit operation, the self test function can then be used as a dependable correct safety procedure to approach the pole.

9) When the over head line conductor is located (by the activation of the alarm), lower the tester to chest height. If the tester is still alarming then turn the rotary switch back until the field is broken.

Method: By leaving the hand placed on the tester with the thumb as indicated, remove the other hand and lower the unit to chest height.

10) Verify the calibration of the over head mains again to check voltage is still present and lower to chest height where the alert tone should dissipate

11) With the tester at arm's length approach the hazard to be tested.

Method: Whilst approaching the hazard keep arm out stretched and your other arm beside your body; walk calmly and slowly towards the test area, Moving the unit from knee height to chest height. If the Tester alarms while approaching the area under test, stop and raise the tester towards the overhead conductors to make sure the tester is not picking up overhead field, if field is still broken above (no alert tone) proceed to step 13.

12) If the tester does not alarm there is no significant voltage in that area.

13) If an alert signal is heard do not panic but check your results proceed to step 14.

Method: To check your results take a step back until signal has discontinued then take a step forward to verify activation of unit. Please note the further you are away from the area under test and the tester is alarming, the higher the leakage in that pole. A set of calibration tables are available for switch positions and voltages if required.

14) Follow standard isolation procedures with a ten metre perimeter, assess the area around the pole and conductor and ensure no conductive material has contacted pole. ie. Fences machinery and water, as where you are standing may be active

SWER TEST RESULTS

Guide only

POLE TEST BENCH RESULTS 29/04/08									
VOLTAGE DETECTION SWITCH LOW					VOLTAGE DETECTION SWITCH HIGH				
SWITCH SETTINGS	20 V	150V	550V	1000V	SWITCH SETTINGS	20 V	150V	550V	1000V
L1					H1		150mm	450mm	775mm
L2			0		H2			550mm	
L3			20mm		H3			550mm	
L4			40mm		H4			600mm	
L5			65mm		H5			600mm	
L6		0	100mm	300mm	H6		200mm	625mm	900mm
L7		40mm	260mm		H7	0		710mm	
L8			410mm		H8	0		750mm	
L9		180mm	475mm		H9	5mm		770mm	
L10			525mm		H10	10mm		775mm	
L11			525mm		H11	10mm		825mm	
L12		180mm	575mm	775mm	H12	10mm	310mm	750mm	1100mm

Approach to Pole, with energised reference points.

These calibration figures can vary due to varying weather conditions, but it will be a safe guide on pole approach, that the further away the GLM Mini alerts the higher the leakage that is present.

HAZARDS & RISKS

When using the unit on power lines where lower voltages e.g. 415 volts lines are below higher voltage power lines, an affect will occur where a null or dead zone may appear.

Solution: To overcome this move out from under the line parallel or adjacent until a signal is heard and repeat procedures 1 to 16.

Electric fields from power lines can be disturbed and redirected by objects that are grounded. A tree near a power line will lower the strength of an electric field which causes you to change the setting on your tester. Other influences such as weather, water (humidity) will change the electric field strength.

Pole mounted transformers cause null effects when stepping down voltage shown here 11kv to 415 volts the surface area is greater therefore a stronger signal is generated.

Solution: By moving around the pole at a distance of 10 metres a clear and free signal can be gained.

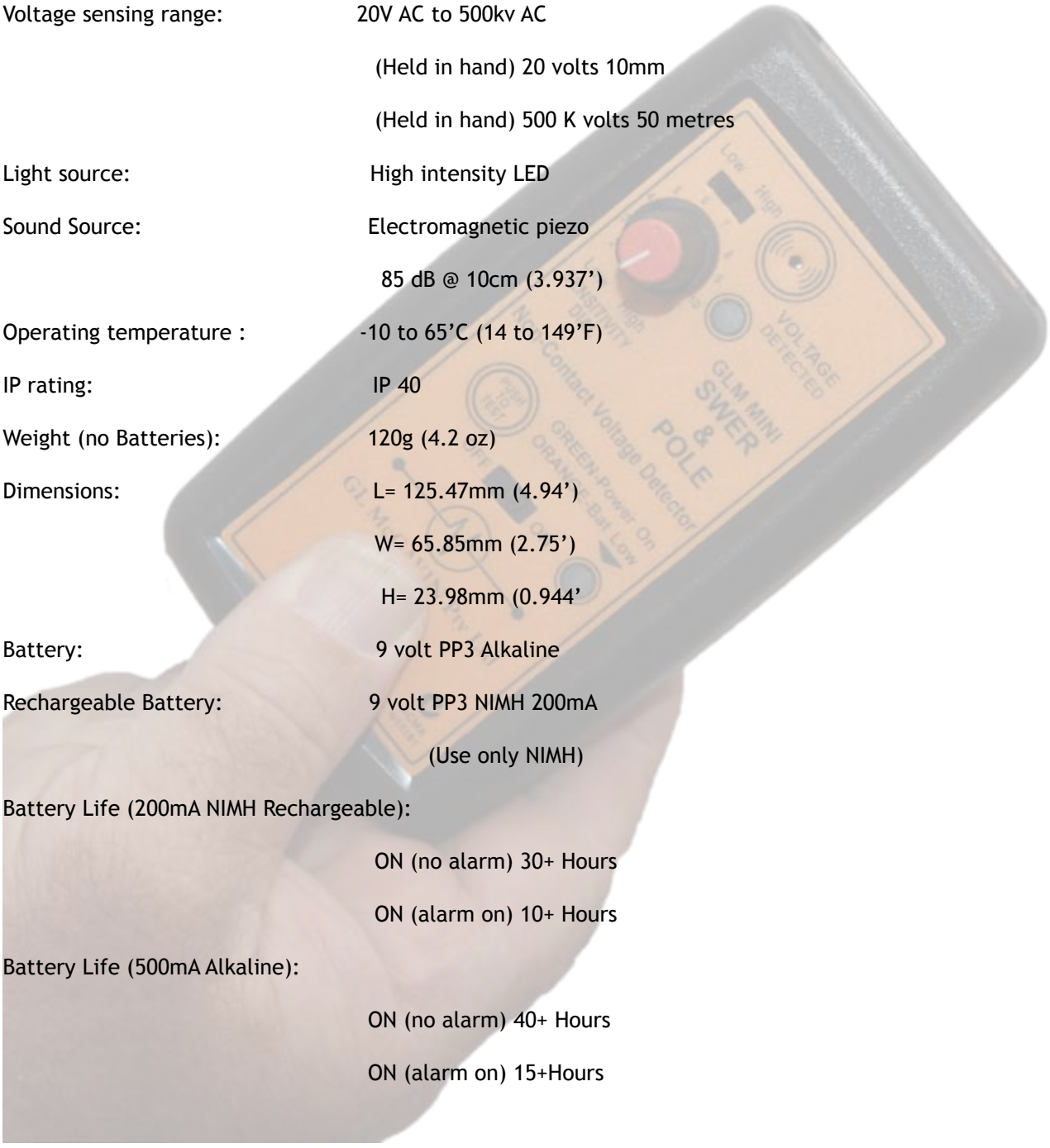
When dealing with water and puddles care must be taken as electromagnetic field are absorbed by pools of water allowing detection of a voltage difficult to obtain.

The Modiewark tester is not designed to operate where mains cable are armoured, enclosed in metal conduit, underground or any situation where the AC field is negated by metal shielding.

The unit will not detect DC voltages and must be used by trained personnel around train tracks and railway control boxes and signals.

SPECIFICATIONS

Voltage sensing range:	20V AC to 500kv AC
	(Held in hand) 20 volts 10mm
	(Held in hand) 500 K volts 50 metres
Light source:	High intensity LED
Sound Source:	Electromagnetic piezo
	85 dB @ 10cm (3.937')
Operating temperature :	-10 to 65'C (14 to 149'F)
IP rating:	IP 40
Weight (no Batteries):	120g (4.2 oz)
Dimensions:	L= 125.47mm (4.94')
	W= 65.85mm (2.75')
	H= 23.98mm (0.944'
Battery:	9 volt PP3 Alkaline
Rechargeable Battery:	9 volt PP3 NIMH 200mA
	(Use only NIMH)
Battery Life (200mA NIMH Rechargeable):	
	ON (no alarm) 30+ Hours
	ON (alarm on) 10+ Hours
Battery Life (500mA Alkaline):	
	ON (no alarm) 40+ Hours
	ON (alarm on) 15+Hours



MODIEWARK
GLM MINI WPT
WATER PIPE TESTER

The Modiewark GLM Mini Water Pipe Tester is a universal pocket size proximity non-contact current detector, operating in the AC current range. The unit is preset to detect 2.1 amps and over.

The GLM Mini Water Pipe Tester has been designed for testing mains and secondary water pipes, in commercial and residential areas to detect a fault current over a preset current of 2.1 amps. The unit is designed for qualified and trained personnel in the electrical and plumbing fields.

WPT INDEX

1) PART IDENTIFICATION — Page 28

2) TESTER FUNCTIONS

- Battery Replacement — Page 29
- Power On Indicator — Page 30
- Low Battery Indicator — Page 30
- Push to Test (Self Testing) — Page 30

3) OPERATIONAL PROCEDURE

- General Operational Procedures — Page 31-32

4 WPT SPECIFICATIONS — Page 33

PART IDENTIFICATION

Place Pipe in Correct Position (See Below)

LED and Audio Alarm Indicator

Push To Test

Power On Indicator GREEN
Low Battery Indicator ORANGE

Power Switch

Correct Position to Hold Tester

Battery Compartment On Rear

IMPORTANT SAFETY CONCERN

This unit is not a voltage detector and will not detect voltage sources with a current usage of under two amps. This product must be used by trained personnel.

BATTERY REPLACEMENT

The battery compartment is located on the rear of the GLM MINI and requires a 9 volt PP3 battery. There is an option of a rechargeable battery for some models.

Ensure the battery is fitted the correct way placing the positive terminal as indicated.

POWER ON INDICATOR (GREEN)

LOW BATTERY INDICATOR (ORANGE)

When the unit is turned on a GREEN LED is illuminated. This indicates good battery condition and circuitry connectivity. When the battery power decreases below a point were the power is to low to sufficiently power the unit, the battery indicator LED will change to a continuous orange, at this point change the PP3 battery.

PUSH TO TEST BUTTON

The Self Test Button located on the front face of the GLM Mini is a full function test of all the components of the unit.

Testing:

* Audio indicator
* Visual indicator
* Battery condition
* Transistor circuit verification

This feature should be initiated every time the unit is turned on and at regular intervals during the working day. In the event the Tester fails please refer to (Service and Trouble Shooting).

IMPORTANT SAFETY CONCERN

The Modiewark Mini Tester is not designed to operate where mains cables are armoured or enclosed in metal conduit, underground or any situation where the AC field is negated by metal shielding.
The unit will not detect DC voltages and must be used by trained personnel around train tracks and railway control boxes and signals.

1) Switch the unit to the “ON” position a GREEN LED power light will immediately illuminate, indicating a good battery connection and circuitry connectivity

2) Confirm the Low Battery LED is still GREEN and continue to step 4. If ORANGE LED illuminates, replace battery and repeat steps 1-2.

3) Press the Self Test Button to check the unit is operating correctly. A repeating tone will be heard, indicating a correct operation. A two second delay will occur between the self test operation and the normal unit detection operation.

4) Always hold the GLM Mini with your thumb placed on the indicated position with your arm outstretched. This allows maximum detection distance. The closer the unit is to the trunk of the body the lower the detection distance.

5) When approaching a water pipe or fitting always use care when unsure of electrical potential. Approach the water fitting at right angles to the pipe as shown in the figure below.

CORRECT METHOD OF USE

INCORRECT METHOD OF USE

INCORRECT METHOD OF USE

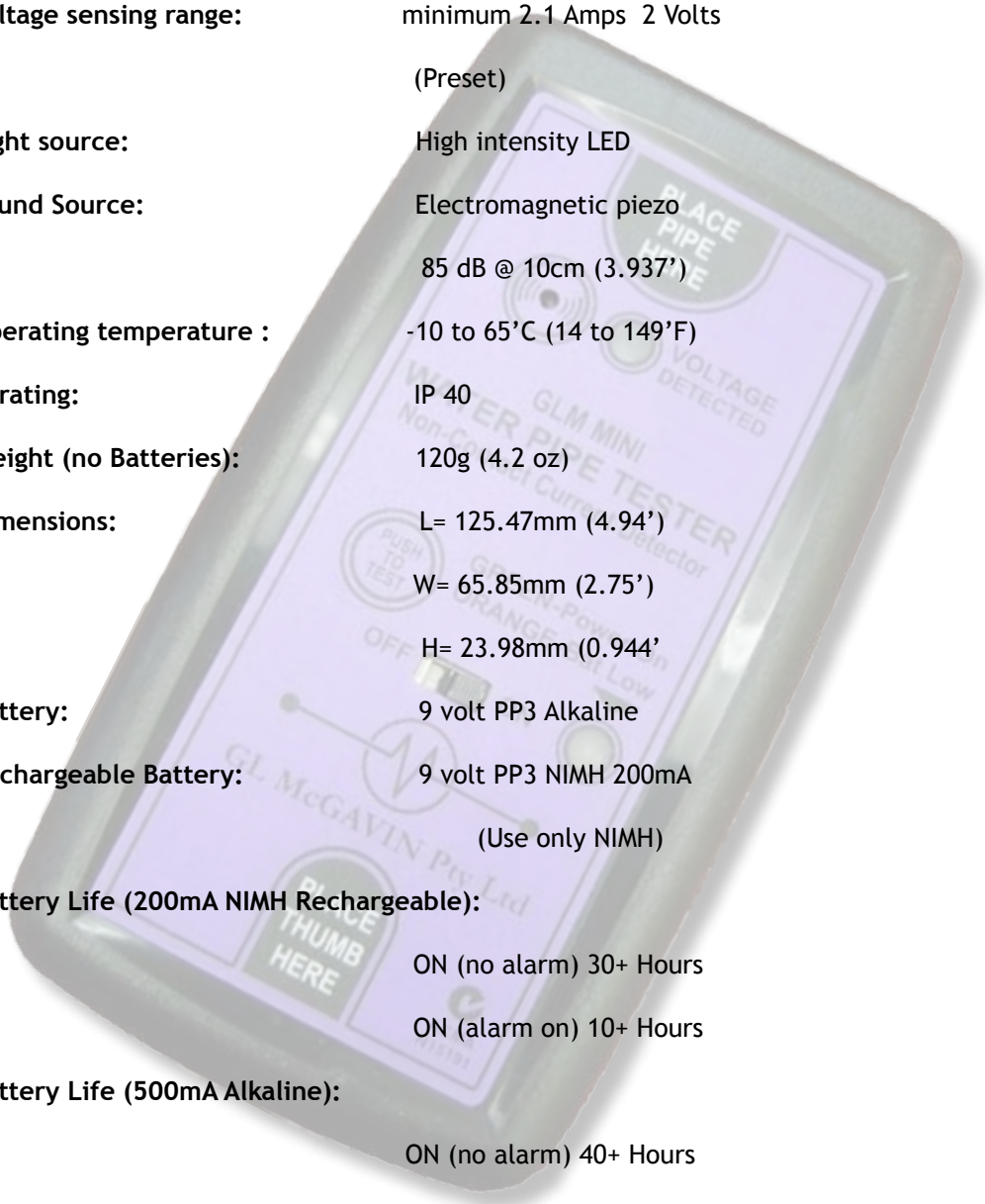
6) If a current over 2.1 amps is detected a tone will be heard and a red LED will flash.

7) DO NOT PANIC and commence isolation procedures to protect others from the fault. Contact your supervisor or electrical contractor for assistance.

IMPORTANT SAFETY CONCERN

This unit is not a voltage detector and will not detect voltage sources with a current usage of under two amps.
This product must be used by trained personnel

SPECIFICATIONS



Voltage sensing range:	minimum 2.1 Amps 2 Volts
	(Preset)
Light source:	High intensity LED
Sound Source:	Electromagnetic piezo
	85 dB @ 10cm (3.937')
Operating temperature :	-10 to 65'C (14 to 149'F)
IP rating:	IP 40
Weight (no Batteries):	120g (4.2 oz)
Dimensions:	L= 125.47mm (4.94')
	W= 65.85mm (2.75')
	H= 23.98mm (0.944'
Battery:	9 volt PP3 Alkaline
Rechargeable Battery:	9 volt PP3 NIMH 200mA
	(Use only NIMH)
Battery Life (200mA NIMH Rechargeable):	
	ON (no alarm) 30+ Hours
	ON (alarm on) 10+ Hours
Battery Life (500mA Alkaline):	
	ON (no alarm) 40+ Hours
	ON (alarm on) 15+Hours

G.L McGAVIN

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