SOUTHERN CROSS
A SPARUS Company

46 Hawk

"TWO-FOR-ONE"
Leak Search & Pin Pointer

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Phone: (800) 241-5057 ~ Fax: (770) 662-5228
www.southerncrosscorp.com

Rev 11-08

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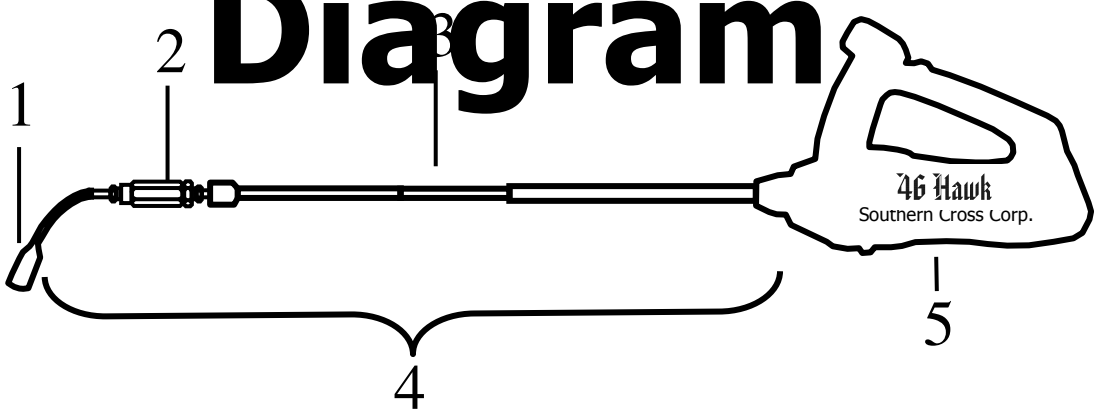
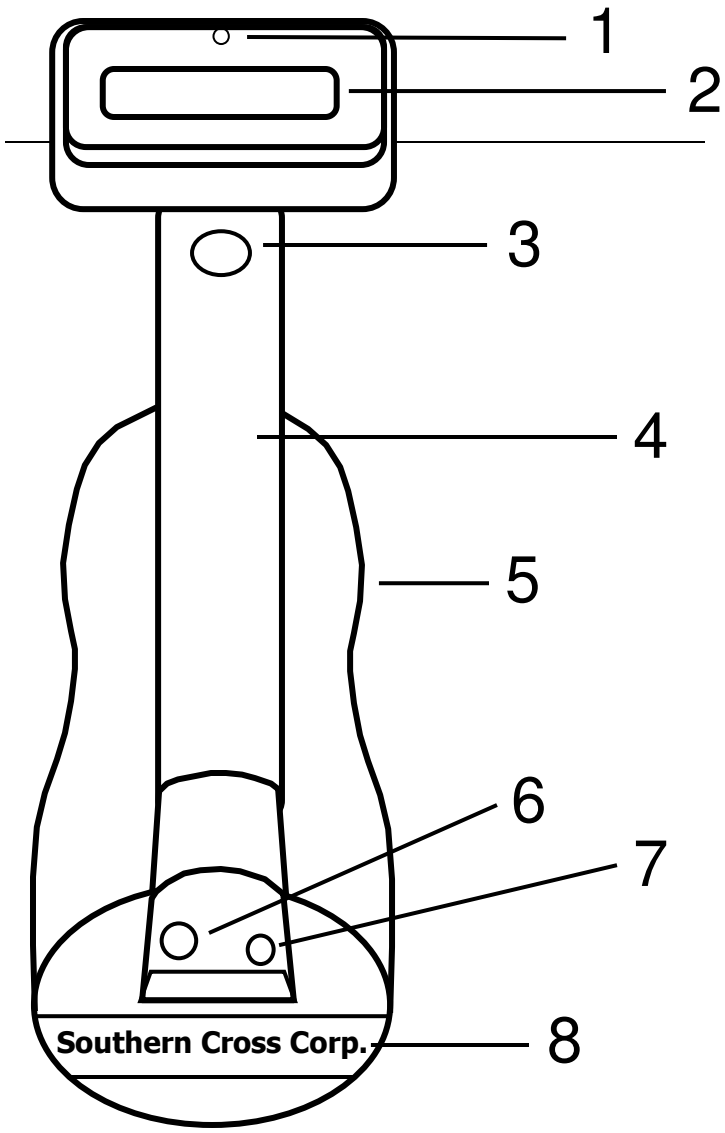
46 Hawk Diagram



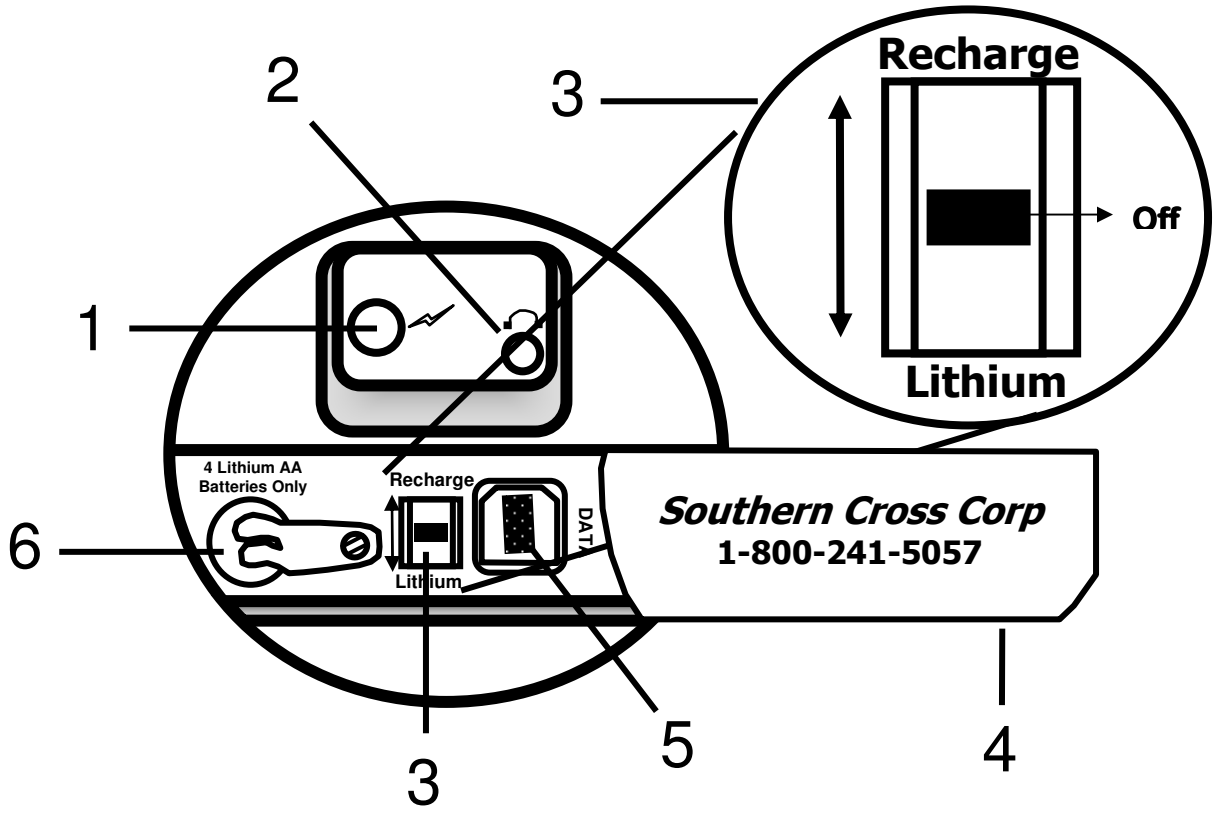
Number	Name	Description
1	ɔbe Cone	Intake port for air samples. A pleated polyester filter may be placed here under dusty conditions.
2	Filter Housing	Contains filter element that should be changed daily.
3	Probe Stiffener	Stiffens normally flexible probe tubing for greater precision.
4	Probe Assembly	Directs filtered air samples to the laser diode for analysis.
5	Laser Diode Methane Detector	Provides rapid, specific, and accurate detection of methane leaks.



46 Hawk Rear View Diagram

Number	Name	Description
1	ting Diode (LED)	Lights during operation
2	Liquid Crystal Display (LCD)	Readout for functions
3	Operation Button	Turns on the LCD backlight, scrolls through options menu
4	Handle	Handgrip for use
5	Instrument Body	Houses electronic and sampling components.
6	Recharge Port	Receptacle for the 110-volt battery recharger. Use only Ault I.T.E. Power Supply PW117RA0903B01.
7	Headset Port	Receptacle for optional alarm earphone headset.
8	Rear Panel Door	o the right for access to backup battery tube, power switch, and computer connection.

46 Hawk
Rear Panel Diagram



Number	Name	Description
1	Recharge Port	Receptacle for the battery recharger.
2	Headset Port	Receptacle for optional alarm earphone headset.
3	3 Way Power Switch (expanded view)	Place in the upper (Recharge/on) position to power up using rechargeable batteries, middle position (shown above) to turn the unit off, or lower position (Lithium) to run on disposable backup batteries.
4	Rear Panel Sliding Door	Provides access when open.
5	Data Port	Connects to computer for data logging downloads.
6	Backup Battery Holding Tube	Place 4 Lithium batteries in tube with the positive (+) terminals facing inward.

INTRODUCTION

Congratulations! You now have the finest leak survey instrument available. The 46 Hawk revolutionized gas leak survey by providing you with both tools required for an efficient survey in one lightweight instrument. The 46 Hawk requires no fuel, thereby eliminating hazmat worries. Your new survey tool operates over 12 hours on rechargeable batteries. Emergency lithium AA backup batteries provide an additional 8 hours of operation.

The 46 Hawk simplified leak survey with easy to operate one-button operation. After you have selected your alarm point, begin your survey. When natural gas is detected, the instrument will automatically range from PPM (Parts Per Million) to %LEL (Percent Lower Explosive Level) to %Gas. For in-ground pinpointing, simply attach the probe provided and take the readings. There are no switches or calculations to be made – the 46 Hawk makes the adjustments for you!

WARRANTY STATEMENT

Southern Cross Corp. will repair any 46 Hawk which develops any problem that is the fault of the Manufacturer under normal use and service, with no charge to the customer for parts and labor. This service policy is limited to repairing a 46 Hawk, which proves to be defective, with returned transportation prepaid, within ONE YEAR from date of purchase. This does not include consumable items such as batteries, filters and intake cone components.

This service policy does not apply if the 46 Hawk has been repaired, resold, or altered by unauthorized persons or has been subject to misuse, negligence, or has had serial numbers defaced or removed.

The Manufacturer reserves the right to make changes in the design of the 46 Hawk and to make additions or improvements without incurring any obligation to modify any units previously sold.

After the one-year warranty period, the customer is responsible for any 46 Hawk repairs at then current material and labor prices.

A. FEATURES AND SPECIFICATIONS

- Designed for above and below ground leak searches and investigations
- Detects methane only
- Detects 1 PPM within 3 seconds
- Renders readings in actual PPM's
- Operates 12+ hours on rechargeable batteries
- Runs up to 8 hours on 4 lithium AA disposable batteries

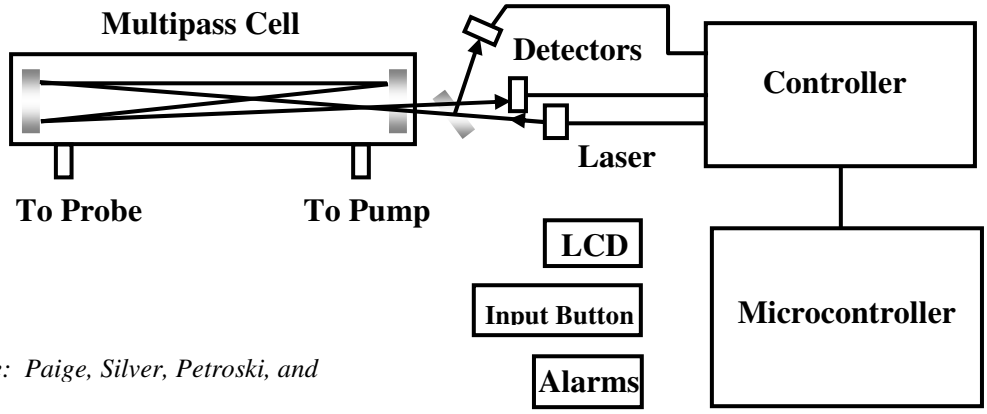
- Records and stores monthly calibration data that can be downloaded onto any computer with Microsoft Excel
- Laser reference and sample diodes are rated to last 5 years
- Pump rated to last 3 years
- Rechargeable batteries are rated to last 2 years
- Carrying case with battery charger, 4 backup batteries, and filters included

B. PRINCIPLES OF OPERATION

Past models of handheld natural gas leak detectors used flame ionization detection technology. This technology called for the burning of sample air and the electronic detection of flame-produced hydrocarbon ions. These instruments required a constant flame powered by a consumable non-hydrocarbon gas supply and this posed some risk in hazardous environments.

Southern Cross Corp. utilizes a new generation of laser diode-based handheld natural gas leak detectors replacing the FI instruments. Advantages to the laser-based instrument include: no need for hazardous fuel supplies, no risk of natural gas ignition by the instrument, and full range (1 PPM to % LEL to % GAS) automatic detection.

The 46 Hawk draws sample air through a chamber in which a laser beam is reflected multiple times across two mirrors (see diagram below). This is known as a Multi-pass Cell. The laser then touches a detector, which then communicates data to a digital signal processor (Controller) and on to a Micro-controller for the alarm systems. The controller looks for absorption of a certain wavelength of laser light that is caused only by methane and no other gases.



Source: Paige, Silver, Petroski, and

This results in methane detection only and the elimination of false alarms. The laser diode responds faster than other technologies, to presence of methane and recovers faster from exposure to high methane levels, than do other types of instruments. The 46 Hawk's sensitivity and specificity for methane meets or exceeds that of older technologies.

C. SAFETY GUIDELINES

The instrument is inherently safe carrying no flame or spark producing components. The instrument operates on very low voltage and has eye safe low intensity laser.

Use Care When Installing Batteries

- The power switch **MUST** be in the Off (middle) position
- Do not damage terminals
- Double check battery connections

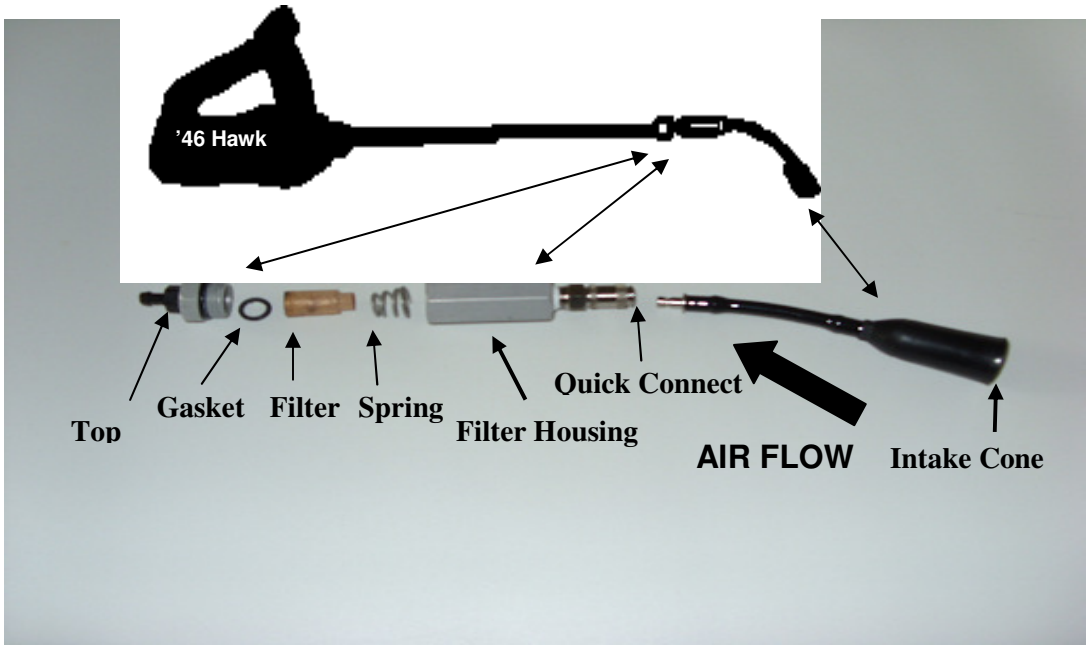
Proper precautions for personal safety must be observed as described in the "Survey Procedure" section.

D. DAILY IN-LINE FILTER INSTALLATION

It is crucial that the in-line filter be installed correctly each day. Incorrect installation will allow dirt into sample chamber, which could lead to an ERROR message and to costly repair. The filter housing for the 46 Hawk is located in line in the probe.

Steps To Install In-Line Filter:

1. Unscrew filter housing – remove gasket, spring, and micron filter. Gasket may stay in the Top Section of the filter housing. Be careful not to lose the gasket.
2. Attain clean filter (remove dirty filter – replace with clean filter)
3. Install spring with wide end first into filter housing.
4. Install closed end of filter on top of spring (small end of spring) in filter housing.
5. Place gasket at other end of filter (see photo below).
6. Assemble both parts of filter housing.
7. Tighten by hand: It is not necessary to use a wrench. The O- Ring on the Top Section of the filter housing will provide a leak free seal.



A DIRTY FILTER message indicates blockage from the following:

- Dirty filter
- Moisture
- Obstruction of the sample flow into the instrument
- Filter installed incorrectly

To correct DIRTY FILTER, follow the instructions below:

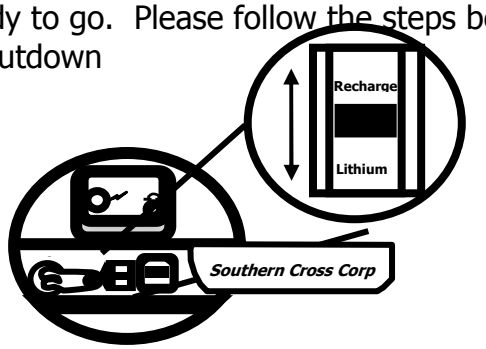
- Replace with a clean, dry filter
- Inspect probe for obstructions
- Ensure Spring, O-ring, and filter are positioned in filter housing correctly
- Push Operation Button – The LCD will display **CLEARING CELL** and then **0PPM**

E. PRE-START INSPECTION

Prior to turning on the 46 Hawk, Southern Cross recommends to conduct a visible inspection of the unit for damage or defects; cracks, broken probe, missing or loose unattached components

F. START-UP

The 46 Hawk will arrive fully assembled and ready to go. Please follow the steps below for Startup out of the box or after a complete shutdown



Warm-Up/Initial Set Up

Step 1. To Power On - Slide rear panel door to right - push power switch to upper (recharge) position – Unit will start -Slide panel back to closed position.

Step 2. The liquid crystal display (LCD) will display '**46 HAWK + current software** on the screen.

Step 3. LCD will display **BATTERY %** *
Unit must be in Sleep Mode to charge battery–see "Charging Battery" LCD will display amount of tim needed to fully charge.

Step 4. Several seconds later, the LCD displays **WARM-UP.** The Warm-up will count down from 5 minutes.

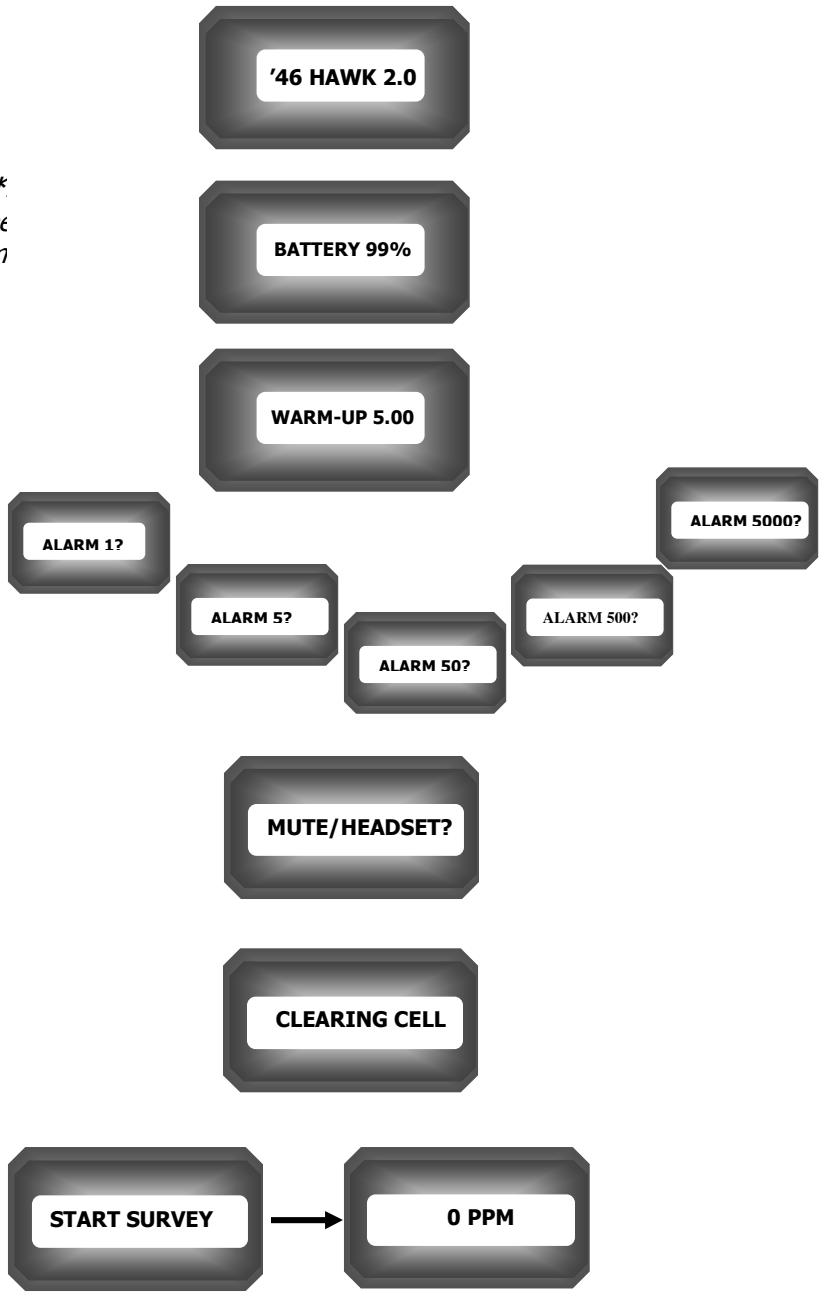
Step 5. Choose an Alarm Option - To set your Alarm point by pressing Operation Button - When you find your desired Alarm point, hold Operation Button & wait for beep.

***Note:** You must choose an alarm point - Unit will repeat alarm choices, until alarm is chosen.*

Step 6. Mute Alarm/Headset – If you do not choose to mute alarm, unit will by pass this option and continue onward.

Step 7. The LCD will display, **CLEARING CELL.** This will last for approximately 1.5 minutes

Step 8. The LCD will display **START SURVEY**, and then display 0 PPM – You are ready to survey.

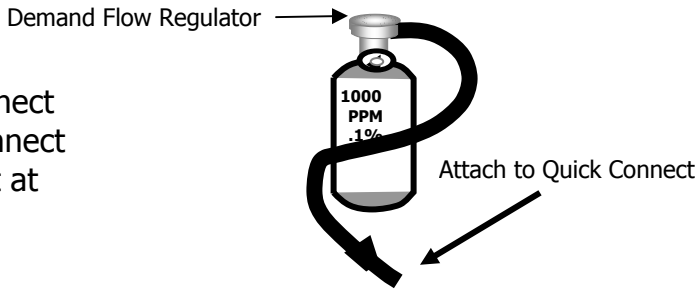


***Note:** Daily Response (Bump) Testing is recommended at this point. See Daily Response Testing in next section*

G. DAILY RESPONSE (BUMP) TEST

Step 1. Each day, the Survey Technician should perform a Daily Response Test (Bump Test). Once initial warm-up/start up is completed and LCD displays **0 PPM**, the response test can be conducted.

Step 2. Twist demand flow regulator onto the 1000-PPM test gas cylinder. Detach Quick Connect between filter housing and cone on probe. Connect demand flow regulator tubing to Quick Connect at cone end of probe.



Step 3. The LCD will display reading between **2%-3% LEL.**

Step 4. Disconnect demand flow regulator and gas cylinder- Ensemble probe Quick Connect to cone quick connect.

NOTE: *If LCD does not display 2% or 3% LEL or does not return to 0 PPM, proceed to calibration procedure.*

H. CALIBRATION PROCEDURE

Step 1. Start in Survey Mode; **0 PPM** is displayed on LCD. Press & Hold Operation Button (Notice back lit light is illuminated) press until you see **OPTION MENU**

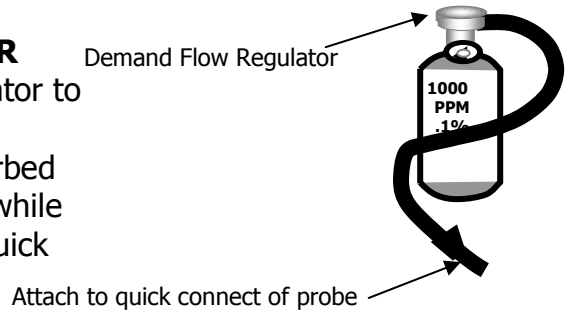
Step 2. **OPTION MENU** will prompt the following: **GO TO SURVEY, GO TO SLEEP, ALARM LEVEL, MUTE ALARM/HEADSET,** and **CALIBRATE?** – Press & Hold Operation Button at **CALIBRATE?** prompt.

Step 3. The LCD will display **CALIBRATION.** Do not press button – This step takes approximately 1.5 minutes

Step 4. The LCD will then display **ZERO CHECK for approx. 1.5 minutes**. Do not press Operation Button - wait for next prompt.

Step 5. The LCD will now display **ENTER 1000 ppm**. Connect demand flow regulator to

1000 ppm test gas cylinder – Twist on barbed connector of the demand flow regulator, while attached to gas cylinder, into the probe quick connect and leave connected. (See daily response test for connection details)



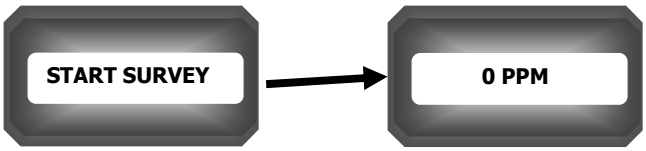
Step 6. Once gas and regulator are connected, Press & Hold Operation Button. The LCD will display **CALIBRATING** for approx 1.5 minutes

Step 7. LCD will display **CAL ACCEPTED –** LCD will display **REMOVE 1000 ppm -** Disconnect demand flow regulator from unit probe cone, and press & hold Operation Button

Step 8. The LCD will display **CLEARING CELL** for approximately 1.5 minutes

Step 9. Connect cone quick connect to the probe quick connect.

Step 10. Next, the LCD will display **START SURVEY** and go immediately to **0 PPM**



Step 11. If LCD displays **CALIBRATION FAIL**, Check connections are secure. Check 1000-PPM Calibration Test Gas to be correct type and above 350 P.S.I. – Next, Press Operation Button for **OPTION MENU**, then choose **CALIBRATE?** and retry Calibration. If **CALIBRATION FAIL** occurs again, turn unit completely **OFF** and restart with **WARM-UP** mode, then try to calibrate. Call Southern Cross Support if Calibration Fails more than 3 times @ **800-241-5057.**

***Note:** Provided response testing (bump test) is performed daily, once per month calibration is recommended in a clean air environment. The 46 Hawk is not sensitive to false positive readings or calibration interference from non-methane hydrocarbons.*

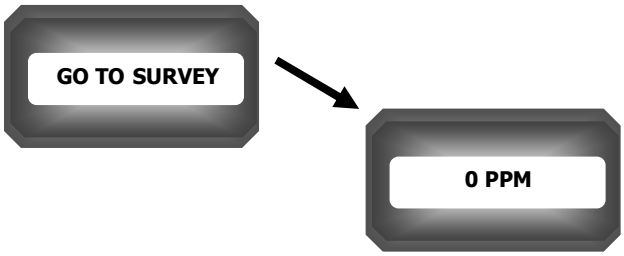
I. OPTION MENU WHILE IN SURVEY MODE

Step 1. To access the **OPTION MENU** while in Survey Mode, press and hold the Operation Button for at least 3 seconds. You will see **OPTION MENU** displayed on the LCD

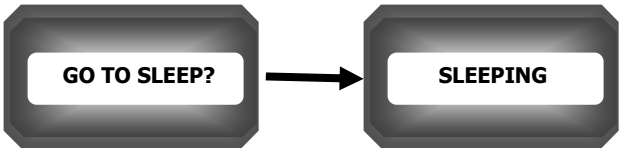
Step 2. Next, the LCD will display **ALARM RESET?** If you want to change alarm level – press/hold Operation Button. LCD will prompt user to choose alarm level – Press/Hold Operation Button at desired alarm level. Not pressing Operation Button will lead to next option screen

Step 3. Next **MUTE ALARM?** Press Operation Button to mute alarm. If you decide you do not want to mute alarm, do not press Operation Button- the next prompt will be displayed.

Step 4. The LCD will display **GO TO SURVEY?** If you want to go to survey, press/hold Operation Button. **0 PPM** will appear on LCD. You are now ready to survey. Not pressing Operation Button will go to next prompt.



Step 5. Next prompt is **GO TO SLEEP** Press/hold Operation Button to place the instrument in sleep mode. Sleep mode is <u>required</u> for recharging the battery. Not pressing the Operation Button will take you back out of the **OPTION MENU** and directly to survey mode

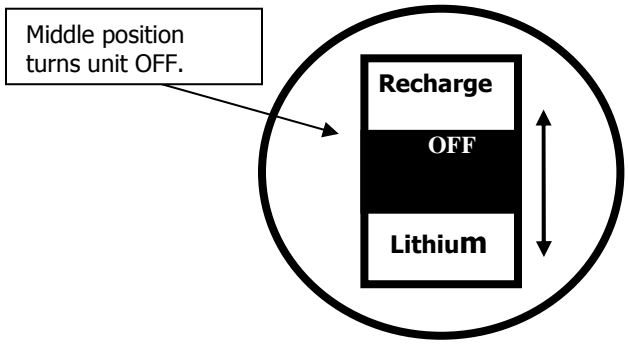


J. SHUTDOWN

Step 1. When finished surveying for the day, put the 46 Hawk into sleep mode by selecting **GO TO SLEEP** from the **OPTION MENU**

***Note:** You can either shut Unit completely **OFF** or place Unit into Sleep Mode to recharge – You must have Unit in Sleep Mode to Recharge. See* "Charging Battery" section

Step 2. To shut Unit **OFF**, move power switch to middle position - Unit will turn completely **OFF**. The power switch is located behind the back rear slide panel.



Step 3. Wipe down the instrument with a clean, dry cloth, and store it in the case.

Step 4. For daily use, it is best to keep Unit running all day. The rechargeable batteries will last for more than 12 hours.

K. START-UP WHILE IN SLEEP MODE

Step 1. Press/hold the Operation Button; The LCD will display **'46 HAWK**

Step 2. The LCD will go through same start up sequence as described in "Warm-up/Initial Start-Up" section.

L. OPERATIONAL SUGGESTIONS

- The 46 Hawk is manufactured with precision parts. Unnecessary shaking or shock to the instrument should be avoided.
- Keep liquid from entering the 46 Hawk, either up the probe or through other openings. If the 46 Hawk gets wet for any reason (dropped in water or extensively rained on etc.), shut unit off, remove backup batteries, dry instrument completely.

M. IN-GROUND PIN POINTER

- To attach the in-ground pinpointer, detach the quick connect below filter housing. The probe is now detached from cone.
- Connect in-ground pinpointer end to the quick connect on probe cone end.
- The Hawk will automatically read in-ground leaks the same as the Hawk reads above ground leaks without switching or changing settings.

Know the Importance of Pinpointing!

- Pinpointing the gas leak using the below ground probe will save time, money, frustration and mitigate potential hazards.
- It is important to have accurate locations of all below ground gas pipes in the area of the leak. Make use of available maps, drawings; locate marks, and your own expertise.

- Center the leak by determining the highest sustained gas reading at the outer boundaries of the leakage spread.
- Start bar holes at the estimated leak location and work outward along the pipe. The spacing of the bar holes depends on the leak spread. Small spreads could be started with bar holes every 5 feet while larger spreads may require bar holes every 10 – 15 feet.
- Maintain consistency in the spacing and depth of all bar holes. Bar holes must be taken to probe depth for the most accurate pinpointing. Be careful not to damage the pipe!
- All below ground readings must be taken at an equal depth. The highest sustained reading usually indicates the leak location. Additional bar holes can be made to narrow the source of the leak.
- In some cases, several bar holes will give equal readings. A useful technique is to measure the concentration at the top of the bar hole. The hole with the highest reading is probably nearest the leak.

N. SURVEY PROCEDURE

- The most effective method of survey is to walk slowly and drag the intake cone on the ground. When doing this, the probe stiffener should be partially retracted.

- Operators should test all likely leak, venting, and visual leak indications.
- Meter sets and above ground piping can be checked by sampling the mechanical connections. The probe stiffener allows the operator to extend the reach of unit.
- A positive reading triggers the audible alarm, a handle vibrator alarm, and visible alarms – one on liquid crystal display (LCD) – the other on light emitting diode (LED) above the LCD. The audible alarm can be muted or a set of headphones can be attached through a receptacle on the back of the unit
- The 46 Hawk automatic centering feature allows the user to center on the greatest concentration of gas without having to manually desensitize the unit.
- To eliminate warm up delays after brief breaks away from the unit, it is best to leave the 46 Hawk running, since either sleep mode or turning the unit off will require a 5-minute warm up period. There is sufficient battery reserve to get through a routine working day without having to place the unit in sleep mode when not in use for short periods. Place the 46 Hawk in a safe place with temperature and humidity similar to working conditions for that day.
- Leaking gas follows the path of least resistance. Use caution when conducting your survey. Gas does not always vent close to the leak source. Surface and underground conditions may cause gas to vent at a considerable distance from the actual hole in the pipe. Some conditions which may move the vent source from the actual leak source are; paving, ice, snow, water, crusted soil, and subsurface paths such as sewer lines and telephone conduits.

Reference AGA GPTC Guide for Gas Transmission and Distribution Systems 1995-98 Gas Leakage Control Guidelines Appendix G-192-11.

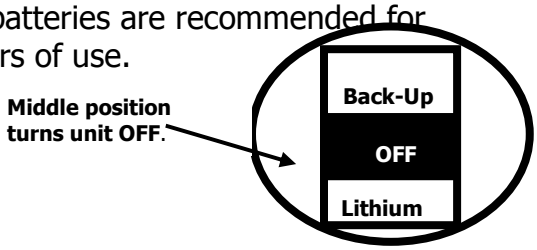
O. CHARGING BATTERY

The LCD will display **LOW BATTERY** warning approximately 1 hour before your re-chargeable battery is fully discharged. This allows you time to finish your immediate survey. Be careful not to fully discharge battery. The 46 Hawk must be in sleep mode to re-charge battery. Attach charger to the port in the back of the instrument; plug into a 110-volt wall outlet - **Use only Ault I.T.E. Power Supply PW117RA0903B01.** In the event that the rechargeable battery becomes completely discharged, place the power switch in the middle position. Connect charger to a 110-volt power supply for about 5-30 minutes. This is long enough to power the 46 Hawk back up so it can be placed in **SLEEP** mode, which is required for continuing the recharging process.

P. BACK-UP BATTERY USE

Four AA disposable lithium batteries are for back up only in the event that the rechargeable battery is too low to function. Lithium batteries are recommended for optimum performance and should give another 8 hours of use.

Step 1. Place the power switch, located under the back plate of the instrument, in the middle position



***Note**: SCC recommends to leave backup batteries out of unit unless in use to refrain from battery corrosion*

Q. DATA LOGGING

- Unlimited monthly calibration data can be stored in your computer. The data port is conveniently located at the rear of the 46 Hawk behind the sliding door.
- Connect the 46 Hawk to a PC serial port. The instrument uses Excel software to store calibration information, which includes: date, time, reading, acceptance or failure of calibration. Calibration data is stored in the 46 Hawk indefinitely.
- To transfer data from Unit to PC, refer to 46 Hawk Calibration Software CD for complete instructions.

R. CLEANING AND CARE

Cleaning the 46 Hawk is essential for proper operation. Follow instructions below:

Step 1. Blow dirt out of the intake cone if working in a very dusty area. Use oil free compressed air, P/N 450.050

Step 2. Properly install a clean filter with the cleaned gasket and spring. Replace top of housing until the o-ring is engaged and the filter housing does not leak. Do not bend o-ring.

Step 3. Wipe down probe and 46 Hawk with slightly damp cloth using household cleaning solution. Wipe exposed surfaces. Open probe stiffener cleaning entirely.

Step 4. Turn case over and clean out dust and dirt. Wipe out case with damp cloth. Knock dirt and dust out of foam, and wipe down. Allow case and foam to dry while cleaning accessories. Be sure case is completely dry before storing Unit.

Step 5. To clean sintered bronze filters, fill sink or clean non-glass container with warm water and use a household cleaner. Wash filters by vigorously shaking them. Vigorously rinse twice by shaking filters in clean water.

Step 6. Allow sintered bronze filters to dry overnight or preferably longer. Use each filter once and then clean before reusing. Filter cleaning is recommended weekly.

Step 7. Do not store the 46 Hawk in an area that is markedly cooler and dryer than the intended use area, especially if the intended use area is hot and humid.

S. TROUBLE SHOOTING

Listed below is common trouble shooting problems with easy to fix solutions.

- **Re-Zero:** Use this option to prompt the unit to manually perform a zero reset. This option is useful if you suspect the unit has drifted off zero (i.e. showing low ppm numbers when in know clean air). Press and hold Operational Button until **OPTIONS MENU** appears on LCD screen – release Operation Button. When the prompt **REZERO** appears, press Operation Button. The LCD will showing **CLEARING CELL** and then the LCD will display **SURVEY MODE** showing 0ppm.

- **Dead Battery:** If battery is dead and unit stops, open rear back panel – Put power switch in OFF (middle) position. Attach charger to unit, plug into 110-volt wall outlet for approximately 15 minutes. Next, turn power switch back ON (upper/recharge) position. Allow unit to start-up. Once restarted, place unit in sleep mode and plug in charger. Typical full charge time: 12-15 hrs.

- **Low Battery:** When the **LOW BATTERY** warning is displayed, time remaining is approximately one hour before battery completely discharges. Charging unit before battery is completely discharged is recommended.

- **Dirty Filter:** A **DIRTY FILTER** message indicates blockage, which can be caused by dirty filter, moisture, or any obstruction of the sample flow into the instrument. To remedy this, replace dirty filter with clean, dry filter; inspect probe for obstructions. Press Operation Button once to re-start the 46 Hawk.
- **Error Message:** If **ERROR** message is displayed on LCD, note error code Number. Press Operation Button once to clear error. If error does not clear, turn off unit; ensure clean filters are installed then re-start. If error appears after re-starting, call Southern Cross Support @800-241-5057 for assistance.

Other helpful Troubleshooting Techniques:

- Relocate to non-contaminated environment

- Recalibrate

- ♦ Shut-off and re-start (Reboot)

***Note:** Contact Southern Cross Support with questions/issues @ 800-241-5057.*

T. RETURNING EQUIPMENT FOR REPAIRS

1. Ship all components in original carrying case, which includes; 46 Hawk, battery charger, filters, and in-ground probe. Install all packing material provided with 46 Hawk. **DO NOT SHIP TEST GAS**
2. Enclose detailed Repair Card (last page of this manual) indicating 46 Hawk issues, problems encountered, attempts made to solve and troubleshoot issues and changes in operation characteristics noted in the past few weeks.
3. Include: Company Name, Contact Person, and Contact Phone Number.
4. If return shipment desired is other than UPS ground, indicate method of return and ship to address on detailed repair card.
5. Remove any backup batteries that may have been installed in the instrument.
6. Include: PO#. in 46 Hawk case or mail/fax PO# separately authorizing repairs to:

SOUTHERN CROSS

4487 South Old Peachtree Road

Norcross, GA 30071

Attention: Hawk Repair Dept.

Phone: (800) 241-5057 ~ Fax: (770) 662-5228

U. SPARE PARTS

SCC Part #	Item Description
SCC 46HK 301	5 Micron Polyester Filter
SCC 821.401K	10 Micron In-Line Filter
SCC 46HK 403	Barbed Fitting for Bar-Hole Probe & Cal Kit
SCC 821.103K	Bar-Hole In-Line Disposable Filter
SCC 46HK 443	Bar-Hole Probe
SCC 711.302	Bigg Lugg - Equipment Clip
SCC 46HK 162	Cable for downloading calibration data
SCC 46HK 164	Cal Gas – 1000 PPM
SCC 46HK 181	Cal Kit
SCC 46HK 275	Case
No Product #	CD for Calibration Software
SCC 46HK 272	Charger - 120V
SCC 864.400	Ear Bud
SCC 864.400	Headset
SCC 46HK 302	In-Line Filter Housing
SCC 46HK 120	Intake Cone
SCC 46HK 617	Lithium-Ion AA Batteries (4)
SCC 46HK 301	Poly Filter - Intake Cone
SCC 46HK 491	Primary Filter Kit Includes: - 5 Sintered Bronze Filters - 1 Spring - 2 Gaskets
SCC 481.757	Probe Tubing

Contact SCC to Order Spare Parts

Toll-Free: (800) 241-5057

Fax: (770) 662-5228

E-mail: sales@southerncrosscorp.com

V. SPECIFICATIONS

General Specifications: Impact resistant glass filled nylon case with telescoping probe.

Battery:
- Rechargeable Battery 12+ hours
- Back-up disposable lithium batteries provide 6+ hrs
- Displays battery charge and low battery warning

Laser: Low intensity laser calibrated to Methane only

Pump: Mechanical Pump draws 600 cc/minute

Control: One-button operation

Gas Detected: Methane

Sensor Range:
- 1-500 PPM
- 1% - 100% LEL
- 5% - 100% GAS

Alarm: LCD Display – Audible - Handle Vibrator – LED Displays Red Lig

Weight: 3 Pounds

Size:
- 28" Probe (customize available)
- 20" Bar-hole probe

Display: 2-1/4" x 5/8" digital

Fuel: No fuel required.

Reaction Time: Less than 2 seconds.

Tests:
- Monthly Calibration testing with 1000 PPM Methane
- Daily Response testing recommended

Data-logging: Stores calibration data permanently.

Operation Temp: -10 F to +120 F

Warranty: One Year

W. CUSTOMER SIGNATURE FOR SCC TRAINING SUPPORT

Southern Cross Corp. wants to ensure our customers are fully trained to use the '46 Hawk. Please initial each bolded heading, and checkmark each line item. Thank you. SCC

☐ **Basic Understanding of Operation**

- ☐ Understanding laser operation of Unit
- ☐ Unit detects methane only–Hydrocarbons not detected
- ☐ Automatically ranges from 1 ppm – 500 ppm to % LEL to 100% GAS

☐ **Rear Slide Panel**

- ☐ Knowledge of 3-Way Switch
- ☐ Know where Data Download cable port is
- ☐ Locate Lithium battery holder & how to install batteries
- ☐ Locate Battery Charger Outlet
- ☐ Locate Headset outlet

☐ **Pre-Start Inspection**

- ☐ Visual Inspection: Damage to probe, cracks, dents

☐ **Knowledge of Filter Installation**

- ☐ Change Filter Daily
- ☐ Install filter correctly 

☐ **Knowledge of Start-Up/Warm-Up Steps**

- ☐ To take unit out of sleep mode, press & hold Operation Button
- ☐ The LCD will display '46 HAWK, and then display remaining Battery % (take note)
- ☐ The LCD will then display 5-Minute Warm-up
- ☐ The LCD will display Alarm choices -You must choose an alarm to go to next step
- ☐ Next MUTE/HEADSET is displayed? Only Press Operation Button if you want to MUTE
- ☐ Clear Cell 1.5 minutes
- ☐ LCD will display 0 ppm (survey mode)

☐ **Daily Response Test**

- ☐ Survey Mode, connect 1000 ppm Gas regulator and to Unit
- ☐ Await LCD reading of 2% or 3% LEL
- ☐ Disconnect 1000 ppm gas and regulator from '46 Hawk

☐ **Calibration Procedure**

- ☐ Start at Survey Mode (0 ppm) – Press Operation Button
- ☐ LCD will display OPTION MENU - Press Operation Button at CALIBRATE prompt
- ☐ LCD will display CALIBRATION for approx 1.5 minutes
- ☐ LCD will display ZERO CHECK for approx 1 minute
- ☐ LCD will display – ENTER 1000 ppm (Attach Regulator to inlet sample cone)
- ☐ Press Operation Button – Wait for Unit to Calibrate
- ☐ LCD will read CAL ACCEPTED
- ☐ Remove regulator – Press Operation Button
- ☐ LCD will display CLEARING CELL for approx 2 minutes
- ☐ LCD will then display 0 ppm (survey mode)

☐ Calibration Failure

- ☐ Check Connections
- ☐ Check Calibration Gas Pressure and make sure is above 350 psi
- ☐ Go To Option Menu – Recalibrate
- ☐ If Calibration Fails again-Turn Unit OFF/Turn ON (Re-Boot)

☐ Option Menu

- ☐ You can change settings by going to OPTION MENU
- ☐ To go to OPTION MENU, Press and hold Operation Button for approx. 3 seconds
- ☐ Get Familiar with OPTION MENU Prompts and various Alarm Levels

☐ Shut Down

- ☐ Go To Option Menu–Press GO TO SLEEP at days end
- ☐ Pumps slows down even though unit is still on
- ☐ LCD will display SLEEPING

☐ Using Lithium Back-Up Batteries

- ☐ Put unit in Sleep Mode– Slide Rear Panel & put 3-way switch to middle position-OFF
- ☐ Next, Put 3-Way switch in Backup Battery - lower position
- ☐ The unit will turn back on using backup batteries- LCD will display Warm-Up process

☐ Charging The Battery

- ☐ Unit *must be* in Sleep Mode prior to recharging
- ☐ Connect Charger to charge port at rear of Unit – Plug into 110-volt outlet
- ☐ LCD will display for example, CHARGE T = 29% (T= Charge Time Remaining)

☐ Charging Completely Discharged Battery

- ☐ Put power switch in middle position (OFF)
- ☐ Connect charger to 110-volt power supply for 5 – 30 minutes
- ☐ Once Hawk starts up - put in Sleep Mode – connect charger to begin charging

☐ Above Ground Survey Techniques

- ☐ Walk slowly, drag intake cone on ground
- ☐ Methane detection triggers 3 alarms at same time – Be aware of these alarms
- ☐ Avoid mid-day warm-up delays – keep unit running all day

☐ Below Ground Survey Techniques

- ☐ Attach in-ground probe to Intake Cone – Check Inline filter for dirt
- ☐ Drop probe into bar hole – Take Reading

☐ Repair Procedure

- ☐ Contact SCC Support with repair issues: 800-241-5057
- ☐ If recommended by SCC support – send unit to address listed in manual

☐ Warranty

- ☐ One-Year Warranty – see manual for details

☐ Data Logging

- ☐ Calibrations can be downloaded to PC - see manual for details
- ☐ Contact SCC support with download issues: 800-241-5057

Customer:_____

'46 Hawk Trainee Signature:_____ Date:_____

NOTES