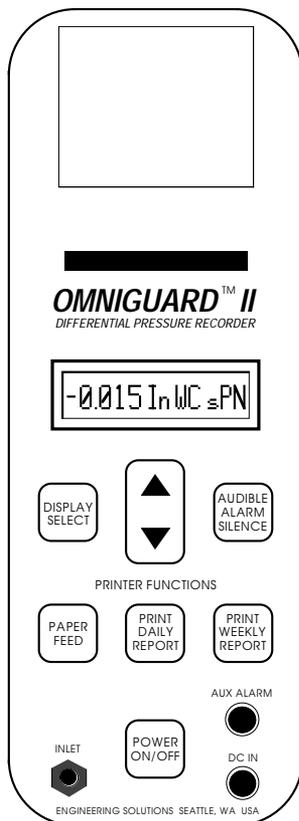


OMNIGUARD II™

DIFFERENTIAL PRESSURE RECORDER



USER'S GUIDE

V1.22

OMNIGUARD II

Differential Pressure Recorder

Serial #: _____

The serial number is located inside the case lid

Dealer Name and Address:

Name

Address

City, State, Zip

Phone

Date of Purchase: _____

Date Registered: _____

Registered to:

Name

Address

City, State, Zip

Phone

Manufactured by:

Engineering Solutions, Inc.
6000 Southcenter Blvd
Suite 70
Tukwila, WA 98188-4801

206-241-9395
206-241-9411 fax

OMNIGUARD II™

Differential Pressure Recorder

FEATURES

- Real time bi-directional monitoring of vacuum/pressure level
- Store data in internal memory and provide printed/down-loadable record of operation
- 7 day memory stores pressure readings, alarms and set points with a time/date reference
- Digital printout with 3 digit precision
- Temperature compensation circuitry eliminates the need for off site calibration, increases accuracy
- Easy to read LCD display shows vacuum/pressure in inches of WC and status, backlit for improved readability
- Microprocessor circuitry eliminates inaccuracies of analog strip chart recorders
- Programmable high and low alarm limit settings
- Audible and visual alarm systems with Audible Alarm Silence function.
- Operating temperature range 30°- 130°F
- 1 Year Warranty

OPTIONS

- Remote high intensity strobe light with 95db alarm and 25 ft. cable
- 50ft. cord/connector for automatic start of OMNIFORCE Air Filtration System
- Data transmittal program for serial data transfer to PC or telecommunications device with interface cable
- NBS traceable certification
- Alternate operating ranges
- Battery powered operation

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Introduction

Unpacking

Please take time to check that you have received all of the items listed.

- 1 *OMNIGUARD II*
 - 1 roll thermal paper (installed)
 - 1 10' tubing (inside case)
- 1 +6V DC Wall Transformer
- 1 User's Guide
- 1 Registration Card

Save the original packing materials and box which your unit was shipped in. They provide the best protection for your *OMNIGUARD II* should the need arise to store or ship it again. If you are missing any items shown on the packing list, or if you have any other questions regarding your *OMNIGUARD II*, please call your dealer or call Engineering Solutions.

Registration Card

Please fill out and return the enclosed registration card. If you did not receive one, please let us know immediately. As a registered owner, you will receive any information pertinent to you as an *OMNIGUARD II* user.

User's Guide Overview

This guide covers the basic set up and operation of the *OMNIGUARD II*. Once the unit is set up, field operation is easy. Complete reports are virtually automatic, providing you the most accurate records of your job site conditions available.

Several different fonts and other special characters are used in this guide to easily identify different functions and types of reporting.

Items shown in the LCD display appear in quotes and in bold face Courier type: “**n**”.

Items printed out appear in bold face Helvetica type: **NORMAL OP**.

Keys and connectors on the front panel are identified in brackets and in bold face Stone Serif type: [**Audible Alarm Silence**].

Version History

There are currently two versions of the *OMNIGUARD II*. Version 1.0x (began shipping February 1993) have the Serial Number series “**G20xxxx**”. Version 2.0x units (began shipping in March 1994) and have the Serial Number series “**G30xxxx**”. Version 2.0x units also indicate the unit’s software version in the display during the Power-On sequence.

The Version 2.0x units have several enhancements over the original version. This User’s Guide is intended for use with both versions of *OMNIGUARD II*.

Version 2.0x Enhancements

- Bi-Directional Pressure Monitoring
- Printer Auto Shut-off if Jammed
- Larger Printer Paper Slot
- LCD Display Backlight On/Off
- Battery Operation Optional
- Paper Loading Instructions Sticker

Version 1.0x Operational Differences

Monitoring in Positive Pressure Applications is **NOT** possible. Usage is limited to Negative Pressure Applications only. Instructions and features listed above are not applicable to Version 1.0x units.

Section 1: Basic Care

Following these basic steps will insure that you get maximum use from your *OMNIGUARD II*.

- This unit is designed to measure differential pressure only up to +0.250 to -0.250 inches WC. Never apply pressure to the inlet port by mouth or with any other strong pressure device. High pressure may permanently damage the sensor.
- Use only *OMNIGUARD II* thermal paper. The printer paper lid must be installed to avoid printer problems by allowing the paper to be torn off cleanly from the printer slot.
- Always store the unit away from sources of excessive heat, dust and moisture.
- Never attempt to repair any of the internal components of the unit.
- Protect the unit from strong shocks or vibrations. Always close the lid securely when transporting the unit.
- The *OMNIGUARD II* uses a wall transformer to supply +6V DC to the unit. **DO NOT** use a transformer with other output type.
- Be sure to plug your *OMNIGUARD II* into a power supply that complies with the National Electrical Code. Keep all connections dry. As with any electrical device, this unit has the potential to cause an electrical shock hazard.

If you have any further questions about the best way to care for your *OMNIGUARD II*, please call your dealer or Engineering Solutions.

Section 2: Location of Controls

Locations and Descriptions of Controls

The front panel contains the LCD display, paper housing, eight keys and three connectors. Optional ports and connectors are described in Appendix A: *OMNIGUARD II* Options. The diagram locates and identifies each feature.

Liquid Crystal Display (LCD)

The display shows the differential pressure as well as three status indicator characters; audible alarm silence on/off, printer on/off and unit in normal operation.

“S” = Audible Alarm Silenced “P” = Printer On
“s” = Audible Alarm Silence Off “p” = Printer Off

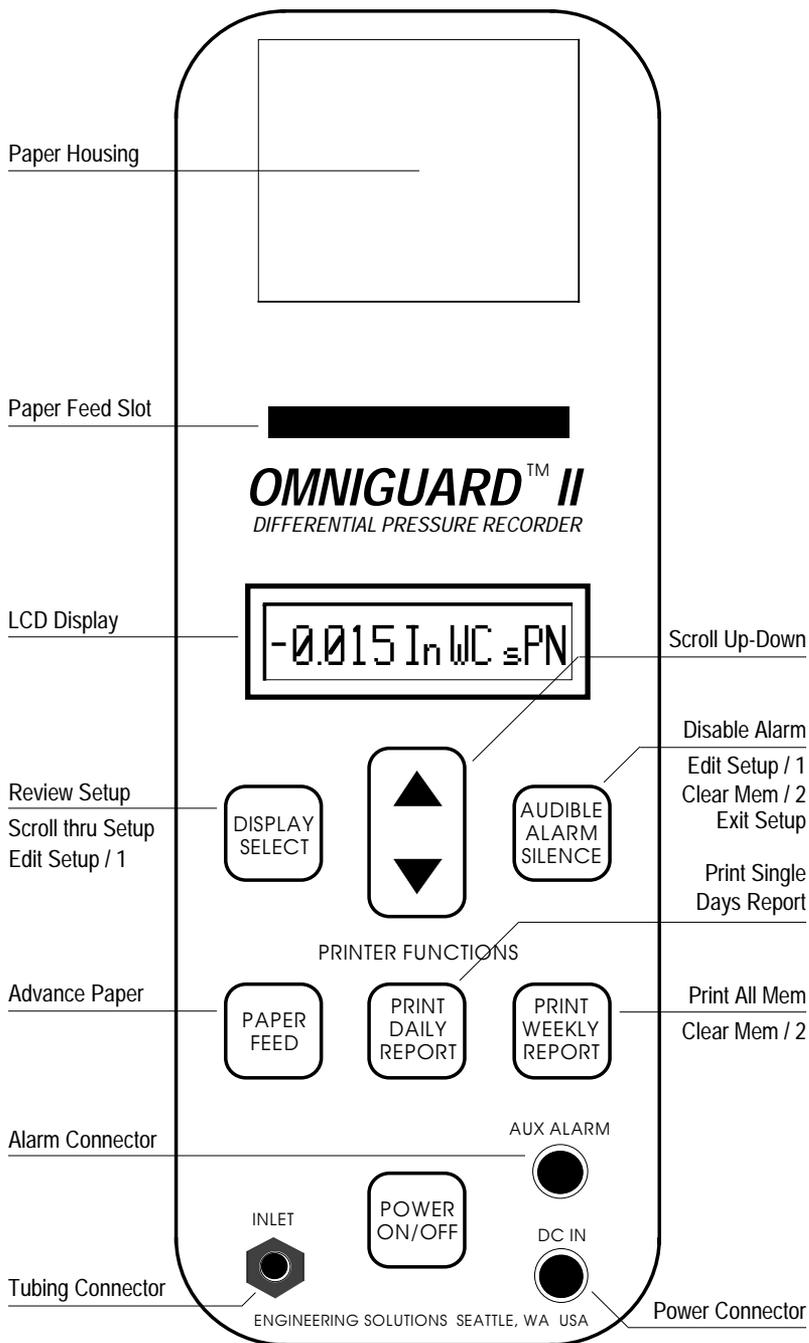
“N” = Unit in Normal Operating Mode
“n” = Unit not in Normal Operating Mode

Function of the Keypad Controls

- **[Power On/Off]** - turns unit on and off
- **[Display Select]** - review setup, each time the key is pressed the display scrolls through the unit settings in the order shown:

```
Alarm Hi:-0.025"  
Alarm Lo:-0.105"  
Time:HH:MM:SS  
Date:MM/DD/YY  
Printer:On  
Norm Print:15 min  
Alrm Prnt:15 sec  
Response:Med
```

Exit by pressing **[Audible Alarm Silence]**.



- **[▲ / ▼]** - increases/decreases or steps thru the choices for various settings
- **[Audible Alarm Silence]** - toggles internal buzzer and **AUX ALARM** connector output to be on or off when an Alarm Condition occurs. The status is displayed in the display. Default is Off (alarm will sound).
- **[Paper Feed]** - advances the printer paper

At the end of Section 4 there is a diagram showing how to properly load the paper. Use only OMNIGUARD II thermal paper, available through your dealer:

- **[Print Daily Report]** - prints data for the current date, with a sign off header. **Abort** printing by pressing any key.
- **[Print Weekly Report]** - prints all the data that was stored in memory, which is generally 7 days under normal conditions. If the unit has been in an alarm condition for an extended period of time, the memory will contain log entries on a much more frequent basis and will therefore not print a full week. **Abort** printing by pressing any key.

Key Combinations

- Edit Setup Mode - entered by pressing **[Display Select]** and **[Audible Alarm Silence]** at the same time. Settings appear in the same order as in the view settings mode. Step through the settings by pressing **[Display Select]**. Use the **[▲ / ▼]** to alter a setting. Exit by pressing **[Audible Alarm Silence]**.
- Clear Memory - press **[Audible Alarm Silence]** and **[Print Weekly Report]** simultaneously.

- Zero Calibrate (V2.0 units only) - to rezero the unit, disconnect all hoses from the nozzles, then press [**Display Select**] and [**▼**] simultaneously.

Functions of the Standard Ports

- **DC IN** - the +6V DC wall transformer which accompanied your *OMNIGUARD II* is plugged in here.

It is extremely important that you do not plug in any other wall transformer to this connector. If you have any questions about this, please call your dealer.

- **AUX ALARM** - connector for optional remote auxiliary alarm or remote switching unit.
- **INLET** - connector for pressure tubing from containment.

*Caution: Extra pressure applied to the sensor through this connector may cause permanent damage to the unit. Do **NOT** turn or twist the **INLET** nozzle, doing so may damage internal connections.*

- **Paper Housing** - provides protected storage of printer thermal paper. Open the paper housing by loosening the screw to the cover. The printer paper lid must be installed to avoid printer problems by allowing the paper to be torn off cleanly from the printer slot.

*At the end of Section 4 there is a diagram showing how to properly load the paper. Use only *OMNIGUARD II* thermal paper, available through your dealer.*

Section 3: Work Area Setup

The *OMNIGUARD II* monitors and records the differential pressure between the inlet port tubing (the end of which is usually placed in the containment area) and the ambient pressure where the unit is placed. In asbestos abatement the *OMNIGUARD II* should be located outside the work area, so a supervisor or hygienist can monitor negative pressure readings without entering the work area. This is known as negative containment.

The intake end of the pressure tubing must be located away from negative air machines and airlock entrances. Choose a location away from excessive amounts of dust or moisture.

- Cut a 1/2" slit in the polyethylene barrier and feed about 1 ft. of pressure tubing through it. Tape the tubing securely to the polyethylene.
- Connect the free end of the tubing securely over the **INLET** port on the *OMNIGUARD II*. Be careful not to turn the **INLET** port.
- The **Alarm Hi** and **Alarm Lo** settings should be in negative inches of WC when used to monitor a negative containment area.

NOTE: It is important that there be no kinks or sharp bends in any part of the tubing. Any blockage could inhibit accurate recording of the negative pressure in the containment area.

For positive containment, the **Alarm Hi** and **Alarm Lo** settings should be positive inches of WC. The placement of the *OMNIGUARD II* does **not** change.

Section 4: Detailed Operation

Operation Described in Brief

On power-up the *OMNIGUARD II* will automatically run a diagnostic test and print the current alarm settings, date and time then immediately begins to monitor containment pressure.

You will need to customize the factory Alarm Hi and Alarm Lo settings for your application!

When the containment pressure reaches the normal operating window, i.e.: within the window you have set between Alarm Hi and Alarm Lo, the unit's operation status character changes to an uppercase "N" in the display and the unit prints **NORMAL OP** along with the time.

Until the containment pressure has reached the normal operating window, the status character will be shown as a lowercase "n".

Power-Up

To begin operating the *OMNIGUARD II*, press the [Power On/Off] key.

If the unit was properly turned off after the last use **POWER OFF** will print, otherwise **POWER FAIL** will print. Either message will be followed by the date and time the unit was last powered off.

The unit immediately begins monitoring containment pressure.

*Note: Recording and printing of monitored pressure readings does **not** begin until the containment pressure has reached the normal operating window !*

Calibration

The *OMNIGUARD II* does not require calibration. Internal temperature compensation circuitry provides unsurpassed accuracy over a 30°- 130° Fahrenheit range.

Allow the unit to warm up for 15 minutes prior to using, to allow the pressure sensor to stabilize its readings.

Clearing Memory

When starting a new project, clear the memory. This will not erase any setpoints nor alter any other settings but it will provide you with maximum storage space for the recording of data.

It is a good idea to print out the memory contents prior to clearing so a hard copy of the previous project exists.

The memory has a capacity to store 860 lines of printed data. This represents about 7-10 days of normal operation and approximately 200 alarm messages. When the memory is full, the new data will begin to overwrite the oldest data.

- To clear memory press [**Audible Alarm Silence**] and [**Print Weekly Report**] at the same time.

Alarm Silence

The alarm silence function is controlled by the [**Audible Alarm Silence**] key. An alarm silence status character in the display indicates whether the audible and remote auxiliary alarms are armed or silenced. When an uppercase "**S**" is shown the alarms are silenced, and when a lowercase "**s**" appears the alarms are armed.

The alarms are always armed when the unit is first turned on. The alarm silence function also controls the

AUX ALARM connector output.

When in an alarm condition, to silence the buzzer:

- Press [**Audible Alarm Silence**] once, the status character will be displayed in uppercase.

To rearm the alarms:

- Press [**Audible Alarm Silence**] again, the status character will change back to lowercase.

Printing Reports

The *OMNIGUARD II* provides a printout of all recorded data, alarm messages and changes in operation settings. Daily or Weekly reports can be printed anytime, the unit will continue to monitor and record pressure readings while printing.

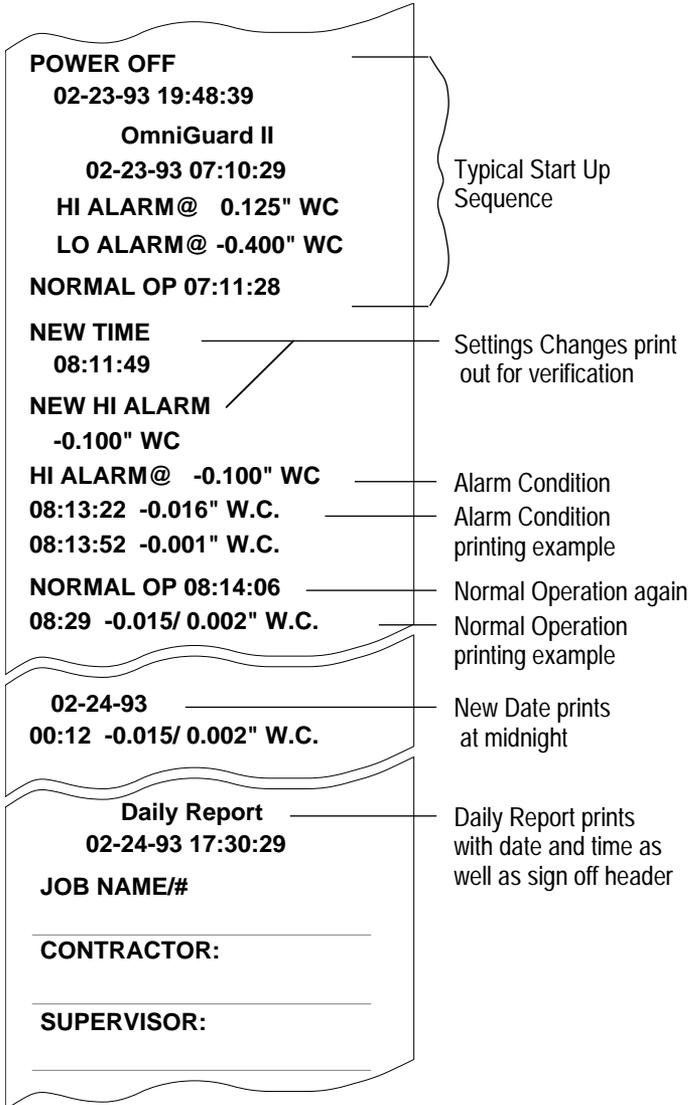
- To produce a Daily Report, press [**Print Daily Report**] once. This will produce a daily report with a sign-off section.
- To produce a Weekly Report, press [**Print Weekly Report**] once. Everything in memory will be printed, this may contain more than a week's worth of information.

*Report printing may be **aborted** by pressing any key.*

Reports may be reprinted at any time by changing the **DATE** setting to the desired report date, this would print everything in memory from that date forward when [**Print Daily**] is pressed. Printing a report does not cause any data to be erased from memory, only the **MEMORY CLEAR** key combination will erase memory.

Example of a Typical Report

- **A Typical Report** - This illustration details the printed report elements. Use it as a reference for understanding your own printed report.



Edit Setup Mode

The following key combination lets you change/edit the *OMNIGUARD II* operational settings.

- To enter the edit setup mode, press [**Display Select**] and [**Audible Alarm Silence**] at the same time. Follow the sequence below to edit a particular setting.

The display will show each setting with the editable portion flashing. Use the [**▲/▼**] arrow keys to change the flashing setting. Once the desired changes have been made, step through to the next selection by pressing [**Display Select**]. Changes made to a particular operational setting are recorded to memory and printed out.

Exit edit mode by pressing [**Audible Alarm Silence**]. You can exit the editing session at any time.

The settings appear in the following order, the values shown are the factory default settings:

- **Alarm Hi: -0.025"** (range is +/- 0.250" in 0.005" increments)
-upper setpoint of operating window
- **Alarm Lo: -0.105"** (range is +/- 0.250" in 0.005" increments)
-lower setpoint of operating window
(cannot be greater than or equal to Alarm Hi)
- **Date: MM/DD/YY**
-default set to current date
- **Time: HH:MM**
-default set to Pacific Coast time
- **Printer: On** (On or Off)
-when in normal operation, all data is recorded regardless of Printer setting

-printer status is always shown in the display as:

“P” - printer On (uppercase)

“p” - printer Off (lowercase)

- **Print/Record Rate - Normal Operating Window**
Norm Print: 15 min (range is 5, 15 or 30 minutes)
-rate the highest & lowest monitored pressure readings are recorded to memory and printed during normal operating conditions
- **Print/Record Rate - Alarm Condition**
Alrm Prnt: 15 sec (range is 15, 30, 60 or 120 seconds)
-rate the highest & lowest monitored pressure readings are recorded to memory and printed during an alarm condition
- **Inlet Pressure Response Time**
Response: Med (range is Slow, Med, or Fast)
-indicates how quickly the unit will react to pressure changes. Adjust this setting if working in conditions such as high wind, where fluctuations in air pressure change rapidly. In this case, set **Response** to Slow.
- **Backlight: On** (On or Off)
-display backlight control; when On, the backlight automatically dims after 4 minutes to extend battery and backlight life, it can be reactivated by pressing any key.

Setting the Operating Window Alarm Levels

The levels of the operating window are determined by the **Alarm Hi** and **Alarm Lo** settings. The levels can be set anywhere within the operating range of the unit, +/- 0.250" WC.

The *OMNIGUARD II* can be used in both Positive and Negative pressure monitoring applications. Placement of the unit and the procedure for setting of **Alarm** levels

are the same for both applications.

Positive Pressure Application - Clean room or HVAC system

example settings: **Alarm Hi** @ +0.050" WC

Alarm Lo @ +0.025" WC

Negative Pressure Application - Asbestos abatement

Alarm Hi is the level closest to **0.000" WC**.

Alarm Lo is the level farthest from **0.000" WC**.

*The **Alarm Lo** setting cannot be greater than or equal to the **Alarm Hi** setting.*

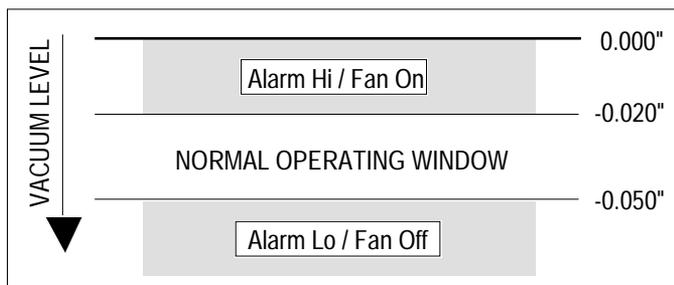
example settings: **Alarm Hi** @ -0.020" WC

Alarm Lo @ -0.050" WC

Example of Setting Alarm Levels

This is an example of setting the alarm levels for negative containment area with the operating window from -0.020 to -0.050 inches WC, then return to pressure monitoring mode.

Press [**Display Select**] with [**Audible Alarm Silence**] to get into the edit setup mode. **Alarm Hi** will be the first setting to appear. The alarm setting is shown as flashing in the display. Use the [**▲/▼**] arrows increment and/or decrement the setting.



First ... set the **Alarm Hi** level to -0.020" WC. Then press **[Display Select]** to switch to the **Alarm Lo** setting.

Second ... set the **Alarm Lo** level to -0.050" WC. Then **exit** the edit mode by pressing **[Audible Alarm Silence]**.

When the containment pressure is between -0.020" and -0.050" WC the unit will be in normal operation mode, with the display indicating the current pressure reading.

IF the containment pressure ...

... rises to -0.019" WC the **Alarm Hi** will trip.

... falls to -0.051" WC the **Alarm Lo** will trip.

Alarm Condition

When the containment pressure exceeds your selected operating window, the following will occur:

- Internal buzzer and **AUX ALARM** output will be activated and will remain active until silenced.
- The pressure reading shown in the display will begin flashing.
- Printer will indicate which alarm setpoint was exceeded. The rate at which readings are recorded to memory and printed out will increase to your selected **Alrm Prnt** printing/recording interval. Printouts will show the time and current pressure readings.

When the containment pressure returns to within your normal operating window, the printer will print **NORMAL OP** and the time, the buzzer and **AUX ALARM** output will turn off. The unit will also record to memory the ending of the **Alarm** condition. If the Audible Alarm was silenced, it should be re-enabled now.

Setting Date & Time

Once in the edit setup mode, scroll through the settings until **"Date:MM/DD/YY"** appears. Use the arrow keys to set the month, advance to the day by pressing **[Display Select]**. Set the day using the arrow keys, then advance to the year by pressing **[Display Select]** again. Set the year by using the arrow keys.

Pressing **[Display Select]** once more will scroll the setting to **"Time:HH:MM:SS"**. The **"Date"** setting will be updated and saved to memory. Use the arrow keys to set the hours and minutes using the same method as used in setting the **"Date"**. The seconds are not editable.

Exit the edit mode and save the updated **"Time"** by pressing **[Audible Alarm Silence]**.

Inlet Pressure Response Time

This setting determines how quickly the unit will react to pressure changes. Adjust this setting if working in conditions such as high wind, where fluctuations in air pressure change rapidly, causing false alarms. The default setting is Medium.

Once in the edit setup mode, scroll through the settings until **"Response:Med"** appears. The arrow keys will scroll thru the choices. Exit the edit mode and save the updated setting by pressing **[Audible Alarm Silence]**.

- Inlet Pressure Response Time
Response:Med (range is Slow, Med, or Fast)

Controlling the Display Backlight

The display has a backlight that is activated when the unit is turned on. The backlight enhances the readability of the display. The backlight control setting allows the backlight to be turned off, saving power when used

in optional battery operation. When set to On, the backlight automatically dims after 4 minutes to extend battery and backlight life, it can be reactivated by pressing any key. The default setting is On.

Once in the edit setup mode, scroll through the settings until "**Backlight:On**" appears. The arrow keys will scroll thru the choices. Exit the edit mode and save the updated setting by pressing [**Audible Alarm Silence**].

- **Backlight:On** (On or Off)

Turning Printer On/Off

Once in the edit setup mode, scroll through the settings until "**Printer:On**" appears. The arrow keys will toggle the printer setting. All readings are recorded to memory regardless of printer setting. If a printer error is detected, the printer is automatically turned off. Exit the edit mode and save the updated setting by pressing [**Audible Alarm Silence**].

- **Printer:On** (On or Off)
 - printer status is always shown in the display as:
"P" - On (uppercase) "p" - Off (lowercase)

Setting Print/Record Rates

The recording to memory and printing of monitored pressure readings begins once the unit is in normal operation, indicated by the uppercase "**N**" in the display.

Once in normal operation, there are two user definable rates at which the printing/recording occurs.

- 1) If the monitored pressure is **within** the operating window... uses the "**Norm Print**" rate.
- 2) If the monitored pressure is **outside** the operating window... uses the "**Alrm Prnt**" rate.

To set the print/record rates ... get into the edit setup mode and scroll through the settings using the **[Display Select]** key until "**Norm Print:15min**" or "**Alrm Prnt:15sec**" appears. Then use the arrow keys to scroll thru the rate choices. To exit the edit mode, press **[Audible Alarm Silence]**. The new setting will be recorded to memory and printed out.

Normal Print/Record Rate

When operating **within** your selected operating window, the rate the highest & lowest monitored pressure readings are recorded to memory and printed. The default setting is 15 minute intervals. To change the interval, follow the procedure "*To set the print/record rates*" in the previous section..

- Print/Log Rate - Normal Operating Window
Norm Print:15 min (range is 5, 15 or 30 minutes)

Alarm Print/Record Rate

When operating **outside** your selected operating window, the rate the highest & lowest monitored pressure readings are recorded to memory and printed. The default setting is 15 second intervals. To change the interval, follow the procedure "*To set the print/record rates*" in the previous section..

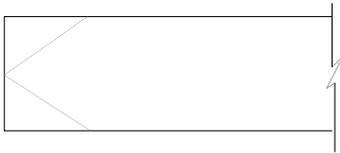
- Print/Log Rate - Alarm Condition
Alrm Prnt: 15 sec (range is 15, 30, 60 or 120 seconds)

Loading the Printer Thermal Paper

Open the **Paper Housing** by loosening the thumb-screw that secures the printer lid. Refer to the adjacent diagrams for proper placement of the paper.

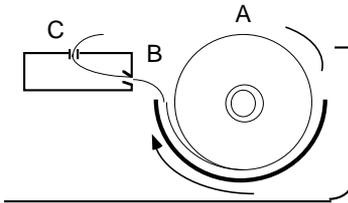
Caution: Only use OMNIGUARD II thermal printer paper!

Thermal paper prints on only **one** side, the side away from the paper roll. If the roll is installed incorrectly the printer will be able to advance the paper but unable to print on it.



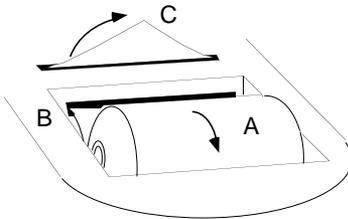
1) Cut the end of the paper to a tapered point.

2) Place the paper into the housing so the paper unrolls from the bottom.



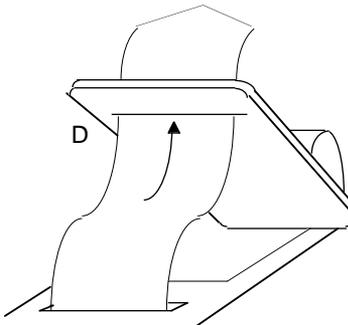
3) Insert tapered point into the slot marked **B**, feed thru the printer until the point can be grabbed from the top at **C**.

Do NOT use the [Paper Feed] key to advance the paper.



4) From the top at **C**, gently pull until the tapered portion is completely exposed and there is sufficient length to feed through the printer lid slot, marked **D**.

5) Feed tapered portion through the slot in the printer lid, **D**. Replace lid onto the paper housing and secure with thumbscrew.



Do NOT operate without the printer lid installed.

Section 5: Troubleshooting

If you experience problems with your *OMNIGUARD II* use this section to try to solve the problem. If you are unable to solve the problem using this guide, consult with your dealer or call Engineering Solutions at (206) 575-2524 and ask for Technical Support.

- **Problem: No response when plugged in.**

Remedy: Double check the connections to the power source. Make sure that the **DC IN** connection is made securely.

Remedy: The unit may have inadvertently been put into its factory diagnostic mode. Return to normal operation by unplugging the power cord from the **DC IN** connector, wait for 10 seconds and then reconnect.

- **Problem: The LCD display does not record pressure changes properly.**

Remedy: Check to see that the tubing is connected properly to the **INLET** port.

Remedy: Make sure that the tubing does not have a kink or a sharp bend.

Remedy: Make sure that the tubing connection into the containment are is properly placed and secured as described in Section 3: Work Area Setup.

- **Problem: Excessive momentary alarms.**

Remedy: Adjust operating window limits to allow for normal air pressure fluctuations caused by entries into work area or other equipment. Make sure that you are within the minimum negative air pressure requirements. If you sus-

pect that wind may be causing rapid fluctuations, edit the setting for **RESPONSE**. See Section 4: Detailed Operation.

- **Problem: Printer indicates an alarm but audible alarm was not activated.**

Remedy: Make sure that **Audible Alarm Silence** is off, so that the lowercase “s” appears in the right corner of the display.

- **Problem: Printer is not working properly or a paper jam occurs.**

Remedy: Make sure that the paper is fed properly, using only *OMNIGUARD II* thermal paper. Refer to the diagram near the end of Section 4: Detailed Operation. The printer paper lid must be installed to avoid printer problems by allowing the paper to be torn off cleanly from the printer slot.

Paper jams occur if the paper is allowed to fall back into the printer head after tearing off a report. If a paper jam occurs, the unit will automatically shut the printer off to prevent damage. The printer indicator will display “P” for printer off. “**Paper Jam**” will appear in the display at power on if the paper jam still exists. After the paper jam is cleared, go into Edit Setup mode to turn the printer back on.

- **Problem: OMNIGUARD II unit does not enter normal operation at power on, and does not print.**

Remedy: For normal operation, the monitored pressure **must** be between the **Alarm Hi** and **Alarm Lo** set points. At power on, the containment pressure will not likely be within the alarm set points, and the unit will not record data or print data. The unit will begin recording

and printing data after it senses containment pressure within the normal operating window.

- **Problem: The unit displays “Initializing...” and the memory is empty after the power has been off.**

Remedy: If the battery is dead you will observe in the display is “Initializing...” and the printer will print **MEMORY CLEARED**. All settings will default to factory settings. Contact Engineering Solutions for a battery replacement.

Appendix A: *OMNIGUARD II* Options

There are several options for the *OMNIGUARD II* which may be of use to you. Contact your dealer about ordering a unit incorporating the optional features described here.

- **AutoStart**

This feature requires a special ROM, cable and adds the **AutoStart / PC Serial** connector. It installs as a factory option at the time of purchase, or it can be retrofitted into existing units by the factory.

AutoStart - allows the *OMNIGUARD II* to automatically start up the OMNIFORCE Air Filtration System. When an alarm condition occurs, the OMNIFORCE system is turned on or off, depending on the alarm exceeded, reestablishing Normal Operating Window conditions.

- **AutoDialing**

The **AUX ALARM** connector can be used to activate a preprogrammed phone autodialer through a special cable. In an alarm condition the unit will activate the autodialer, then be enabled to alert in case of alarm using the telephone. The output will stay active until the [**Audible Alarm Silence**] key is pressed.

- **Auxiliary Alarm**

A remote auxiliary alarm may be purchased for your *OMNIGUARD II* which uses a red strobe light in addition to the audible buzzer for use in a noisy work environment. The remote alarm plugs into the **AUX ALARM** connector on the front panel, and comes with a 25' cord.

- **Battery Operation**

This feature requires additional hardware and a special ROM. It installs as a factory option at the time of purchase, or it can be retrofitted into existing units by the factory.

A unit modified for battery operation can be run for 24-48 hours of operation from an external battery pack for use when AC power is unavailable or during intermittent power conditions. Operates up to 48 hours, when printer and LCD backlight are turned off; 24 hours when printer and LCD backlight are turned on. Control of printer power and the display backlight allow the units overall power consumption to be greatly reduced. Battery pack recharges overnight (6-8 hours charge time).

- **Contrast Control**

Allows the LCD contrast to be adjusted for different operating conditions. In the Edit Setup mode, the contrast control is the last item in the edit list. The up and down arrow keys darken and lighten the display.

- **NBS Traceable Certification**

If you need to have your *OMNIGUARD II* certified for the NBS, please contact your dealer to find out how this can be done for you.

- **Optional Ranges**

If the *OMNIGUARD II* does not operate over the range which is applicable to your job site specifications, ask your dealer about the ordering a unit with the custom range to meet your requirements.

- **Personal Computer Connection**

This feature requires a special cable and adds the **AutoStart / PC Serial** connector. It installs as a factory option at the time of purchase, or it can be retrofitted into existing units by the factory.

PC Serial Connector - allows you to quickly and easily download the recorded job site information from your *OMNIGUARD II* to an IBM compatible personal computer. This feature is extremely easy to use, requiring very little setup or downloading time. The information recorded in the units memory is transferred to your computer in a text format which can then be stored or printed as an independent computer report.

Appendix B: LIMITED WARRANTY

Engineering Solutions warrants that all products, component parts and accessories will, for a period of twelve (12) months from the date of purchase, be free from defects in material and workmanship under normal use and service

THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS F.O.B., ENGINEERING SOLUTIONS, INC., 1050 INDUSTRY DRIVE, TUKWILA, WA 98188.

In order to keep this warranty in effect, the purchaser must (a) return the signed WARRANTY/REGISTRATION card to Engineering Solutions within fifteen (15) days of purchase: (b) have promptly informed Engineering Solutions customer service department of any defects in writing: (c) properly used, maintained and repaired the Product.

This warranty does not cover normal wear and tear or defects due to (a) improper or negligent handling or unauthorized modifications: (b) defective or improper premises, chemical, electro-chemical or electrical influences: (c) weather or other influences of nature.

LIMITATIONS OF WARRANTY - THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND OBLIGATIONS OF ENGINEERING SOLUTIONS OR ITS SUPPLIERS, EXPRESS OR IMPLIED, AND ENGINEERING SOLUTIONS EXPRESSLY DISCLAIMS AND WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF REMEDY- Under no circumstances shall Engineering Solutions or any of its suppliers be liable for any loss or damage, including, but not limited to, loss or damage arising out of the failure of the Product to operate for any period of time, inconvenience, the use of rental or replacement equipment, loss of profit or other economic loss, or general, direct, special, indirect, incidental or consequential damages or property damages.

PRODUCT SUITABILITY - Many states and localities have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Engineering Solutions attempts to assure that its Products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the Products are installed or used. Engineering Solutions recommends that, before purchasing and using a Product, purchasers review the Product application, and federal, state and local regulations, to be sure that the Product, installation, and use will comply with them.

Appendix C: Shipping and Repair

If you experience problems with your OMNIGUARD II, please consult the troubleshooting section first, then contact your dealer, then call Engineering Solutions.

Before returning the OMNIGUARD II for repair, you must first obtain an RMA (Returned Material Authorization) number from Engineering Solutions. Write this number clearly on the outside of the package. No COD's will be accepted.

If the original packing materials are not available to you, please package the unit securely in a sturdy container with enough padding to surround the unit on all sides. The unit should not be able to be moved once packed in the box. Engineering Solutions cannot be responsible for damage which may occur during shipping.

Engineering Solutions, Inc.
6000 Southcenter Blvd. Suite 70
Tukwila, WA 98188
206-241-9395
206-241-9411 fax

Appendix D: Specifications

Operating Range: +0.250 to -0.250 inches WC

Resolution: 0.001" WC

Accuracy: +/- 1% or better

Calibration: Not required

Overpressure Protection: 2 psi

Data Storage: 7+ days of readings (over 2,000 logged events)

Display: Liquid Crystal Display (LCD) with backlight for improved readability

Printer: 2.2" wide thermal printer paper

Printing/Recording Rates:

Normal Operation

-Programmable updates at 5, 15 or 30 minute intervals of highest/lowest readings

Alarm Conditions

-Programmable updates at 15, 30, 60 or 120 second intervals of highest/lowest readings

Alarms: Audible and Visual, High and Low alarms independently programmable at any pressure level within operating range

Input Connection: 3/16" OD barbed hose connector

Outputs: External Alarm (data transmittal to PC or telecommunications device optional)

Power: +6V DC wall transformer with 6' power cord

Case: Heavy duty ABS plastic with lid and handle

Size: 11" L x 4" W x 3.5" H

Weight: 2.2 lbs not including transformer



ENGINEERING SOLUTIONS, INC.
6000 SOUTHCENTER BLVD,
SUITE 70
TUKWILA WA 98188
206-241-9395
Fax 206-241-9411

\$10.00 P/N 515-064-G122

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