DataTrac® 2000

Software for AirChek 2000/3000

Cat. No. 877-91

Operating Instructions

SKC Inc.
863 Valley View Road
Eighty Four, PA 15330 USA
Tel: 724-941-9701
e-mail: skctech@skcinc.com

Form 38042 Rev 1403

Table of Contents

Indicates a premier feature of DataTrac Software

Indicates a reminder

Indicates a warning

Introduction — DataTrac 2000 Software Cat. No. 877-91

Features
- Program a sampling operation from a PC
- Calibrate pump flow to a primary standard
- Display the operating state including flow rate, temperature, atmospheric pressure, run time, and battery status of the connected pump
- Create and save pump programs on a PC for upload to pump
- Program a sampling operation of up to 10 sampling sequences, each with different flow rates
- Download pump run time data and history to a PC
- Document sampling history using the sample setup feature
- Print a history file containing pump run time data
- Print a worker exposure profile containing pump run time data and history
- Document date of pump calibration when using the CalChek Automatic Calibration feature (DataTrac 2000 version 3.59 or higher)

DataTrac System Requirements
- Hard drive with a minimum of 20 MB free disc space
- CD-ROM drive
- Available USB port for use with SKC USB DataTrac adapter cable
- Mouse
- Microsoft® Windows® XP or higher, including Windows 7 (64 bit)

DataTrac Components
- DataTrac 2000 Software and instructions on CD ROM
- DataTrac adapter cable

DataTrac 2000 Setup

Installing DataTrac 2000 Software
Installation of New Software
1. Close all applications.
2. Insert DataTrac 2000 Software CD into CD-ROM drive. *The CD is set up to autoplay. If it does not autoplay on your PC, go to Step 2a.*
    a. Click Start button on tool bar.
    b. Click on My Computer.
    c. Double-click CD Drive.
    d. Double-click Setup.exe.
3. The InstallShield (IS) Welcome window will display.
    a. Click Next.
4. The IS License Agreement window will display.
    a. Select "I accept the terms . . ." to continue installation. If you do not accept the terms, the installation will not continue.
    b. Click Next.
5. The IS Customer Information window will display.
    a. Enter User Name and Organization.
    b. Under "Install this application for:" select Anyone who uses this computer (all users) or Only for me ().
    c. Click Next.
6. The IS Ready to Install the Program window will display.
    a. To install software in folder displayed, click Next.
7. The IS Installing AirChek 2000 window will display. Installation may take several minutes. **Do not press any keys during installation.**
8. The IS Wizard Completed window will display, indicating successful installation.
    a. Click Finish to exit the IS Wizard.

If installation is unsuccessful, an error box will display indicating that installation was not successful and that the user should perform the installation procedure again.

A shortcut to AirChek 2000.exe will be installed automatically on the PC desktop.

If changes to settings are desired after installation, perform Steps 1 through 4 on page 3. The IS Program Maintenance window will display. Select Modify to change settings.

Shortcut icon on desktop

Installation of Software Update (previous version exists on PC)
1. Close all applications.
2. Insert DataTrac Software CD into CD-ROM drive. *The CD is set up to autoplay. If it does not autoplay on your PC, go to Step 2a.*
   a. Click Start button on tool bar.
   b. Click on My Computer.
   c. Double-click CD Drive.
   d. Double-click Setup.exe.
3. The IS Welcome window will display.
   a. Click Next.
4. The IS Program Maintenance window will display. Three options will appear:
   • **Modify -** used to change settings after installation
   • **Repair -** used to update previously installed software and to repair installation errors
   • **Remove -** used to remove the previously installed version of the software from the hard drive *(SKC recommended)*.
   a. Click Remove.
   b. Click Next.
   c. The IS Remove the Program window will display.
   d. Click Remove.
   e. The IS Uninstalling AirChek 2000 window will display.
   f. The IS Wizard Completed window will display, indicating successful removal of the existing software.
   g. Click Finish to exit the IS Wizard.
5. Follow instructions for Installation of New Software.

Complete DataTrac 2000 Software features are only available when an active sample pump is connected to the PC (see Connecting the Pump to a PC). The SKC DataTrac Pump Manager window may be accessed without a pump connected to the PC; however, only limited features will be available (see Connecting the Pump to a PC, Connection Error Box, Figure 2B on page 6).

Connecting the Pump to a PC *(Figure 1)*

USB port on PC: Use the supplied adapter cable to connect the pump to the PC.

Pump interface port
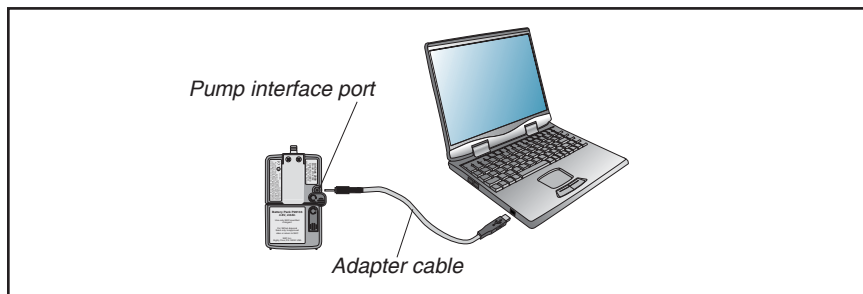
Adapter cable

Figure 1. Hardware Setup

DataTrac 2000 has limited use without an active AirChek 2000/3000 pump connected to the PC, however, a program can be set up and saved to a PC without a pump connected to the PC.

First Time Connection

1. Connect the pump to a PC using the DataTrac adapter cable.
    a. If a **Found New Hardware Wizard** window displays during connection, follow this procedure:
        i. Ensure the wizard wants to install software for "USB Serial Port."
            1. If the wizard wants to install any other software, cancel the wizard, and connect the adapter cable to a different USB port.
        ii. Select Install the software automatically (Recommended).
        iii. Click Next.
        iv. The installing USB Serial Port window will display. Installation may take several minutes. **Do not press any keys during installation.**
        v. The Completing the Found New Hardware Wizard window will display, indicating a successful installation.
        vi. Click Finish to close the wizard.
2. Activate the pump LCD by pressing any button on the pump keypad.
3. Launch DataTrac Software on the PC by double-clicking the AirChek 2000 shortcut icon on the PC desktop.
4. The AC 2000 Connection window will display *(Figure 2).*
    a. Click Connect to Pump

Shortcut icon on desktop

5. If connection is successful, the AC 2000 Connection window will display a shaking hands icon *(Figure 2A).* Proceed to Step 6. If connection is unsuccessful, an error window will display *(see box and Figure 2B on page 6).*

Figure 2. Connection window

Figure 2A. Successful pump-PC communication

Successive Connections

1. Connect the pump to a PC using the DataTrac adapter cable.
2. Activate the pump LCD by pressing any button on the pump keypad.
3. Launch DataTrac Software on the PC by double-clicking the AirChek 2000 shortcut icon on the PC desktop.
4. The AC 2000 Connection window will display *(Figure 2).*
   a. Click Connect to Pump.
5. The AC 2000 Connection window will display a shaking hands icon indicating a successful connection *(Figure 2A).* Proceed to Step 6.

Connection Error Box

If an error box displays *(Figure 2B),* follow this procedure:

a. Ensure pump LCD is activated. *See Step 2 on page 4.*

b. Check cable/adapter connections and click Retry. If the error box displays again, go to Step c.

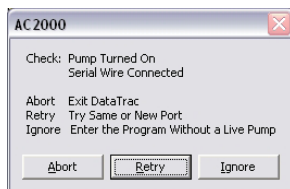c. Ensure the COM ports for the adapter cable are numbered between 1 and 9. *See changing the COM Port box below.*

*Figure 2B.
Connection error box*

Note: Another option in the error box is Ignore. Clicking Ignore opens the SKC DataTrac Pump Manager window but only allows limited access to software features.

Changing the COM Port

To **change the COM** port:

1. Ensure DataTrac adapter cable is connected to a USB port.
2. Click Start menu.
3. Right click on My Computer.
4. Select Manage.
5. Select Device Manager.
6. Expand the **Ports (COM & LPT)** menu.
7. Double-click to select USB Serial Port (COM10 or similar).
8. Select Port Settings.
9. Click on Advanced.
10. Select a COM port between 5 and 9 from the COM Port Number dropdown menu.
11. Click OK to close.
12. Follow instructions for Connecting the Pump to a PC *(see page 4).*

COM Port Window

6. If the date and time settings on the PC and pump differ by a day or more than 5 minutes, respectively, a Time Discrepancy Alert window will display *(Figure 3)*.

Figure 3. Time Discrepancy Alert Window

   a. Reconcile the date and time.
   b. If you select "Set my pump to the time of the computer," a window will appear warning that the pump time cannot be changed unless pump history is cleared *(Figure 3A)*.
      i. Select Yes if you wish pump history to be cleared and the time on the pump to be changed to the time on the PC.
      ii. Select No if you wish to maintain pump history. The time on the pump will **not** be changed to the time on the PC.
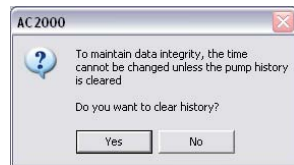

Figure 3A. Clear Pump History Window

   c. Click OK.

7. DataTrac 2000 Software will load and display the SKC DataTrac Pump Manager window *(Figure 4)*.

Figure 4. SKC DataTrac Pump Manager Window

SKC DataTrac Pump Manager

The SKC DataTrac Pump Manager window *(Figure 4)* is the first window that opens in DataTrac 2000. All windows are accessible from this main window.

Figure 4. SKC DataTrac Pump Manager Window

SKC DataTrac Pump Manager Menus

File Menu

Exit................................exits the program and returns to Windows

View Menu

Pump Scheduler ....opens the SKC Pump Scheduler window
STEL/Timed Run.........opens the STEL/Timed Run window
Sample Sheet................opens the Sample Sheet Setup window
Report ....loads a report file previously saved to a PC
Pump History ....opens the SKC Pump History window
Archive History ....loads a history file previously saved to a PC
Calibration Info ....opens the Calibration Info window
Real Time Monitor ......opens the SKC Real Time Monitor window

Tools Menu

Clear History................clears the pump history
Clear Schedule ....clears the programmed pump schedule
Set Date/Time...............opens the Set Date/Time for Pump window
Temperature and
Barometric Pressure....permits user to adjust pump reading of temperature and pressure to verified local temperature and pressure

About Menu ....displays the DataTrac Software version, pump firmware revision, pump serial number, build number, and date of last calibration

CalChek Note: If using pump version 2.59 to 2.61 without the CalChek feature, the date of manufacturer calibration will appear and remain in the About menu.

If using pump version 2.59 to 2.61 with the CalChek feature, the date of last full calibration will appear in the About menu. This date will be updated with each successful full calibration.

If using pump version 2.62 or higher with the CalChek feature, the date of last full calibration will appear in the About menu and full calibration information will appear in the Calibration Info window under the View menu. This information will be updated with each successful full calibration. Calibration Info is only available when using pump version 2.62 or higher with the latest version of DataTrac 2000 Software.

SKC Real Time Monitor Window

The SKC Real Time Monitor window *(Figure 5)* directly controls the connected pump, allows calibration of the flow, displays a real time readout of the pump operations, and provides the connected pump's serial number.
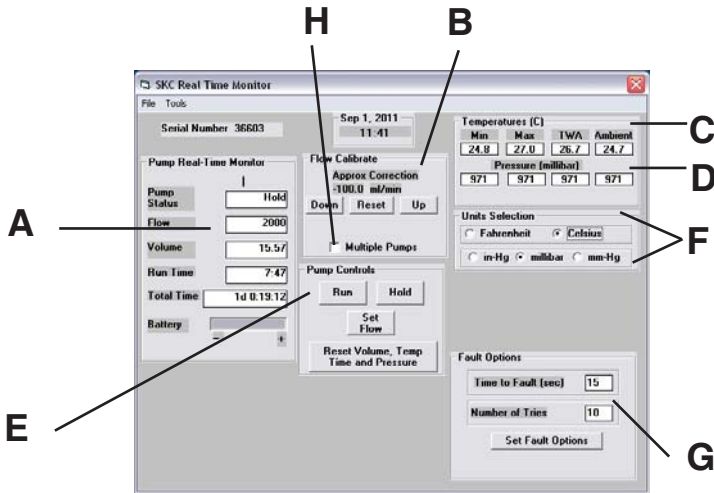

Figure 5. Real Time Monitor Window

    A. Real Time Monitor Display (page 11)
    B. Flow Calibrate (page 12)
    C. Temperature Display (page 13)
    D. Pressure Display (page 14)
    E. Pump Controls Buttons (page 14)
    F. Units Selection Buttons (page 15)
    G. Fault Options (page 15)
    H. Multiple Pumps Checkbox (page 12)

Real Time Monitor Menus

File Menu

    Exit.......................returns to the SKC DataTrac Pump Manager window

Tools Menu

    Clear Schedule ....clears the programmed pump schedule
    Clear STEL/
    Timed Run...........clears a sample time run
    Clear History.......clears the pump history
    Temperature/
    Pressure Data......opens the Environmental Data window
    Set Pump Date/
    Time ....opens the Set Date/Time for Pump window

Real Time Monitor Display

The Real Time Monitor display *(Figure 6)* shows the operating status of the connected AirChek 2000/3000 pump.
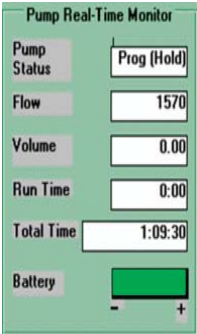

Pump Real-Time Monitor

Pump Status	Prog (Hold)
Flow	1570
Volume	0.00
Run Time	0:00
Total Time	1:09:30
Battery	

Figure 6. Real Time Monitor Display

Monitor Display	Cell Readout
Pump Status	FLOW: Pump in Run mode
	HOLD: Pump in Hold mode
	FAULT: Pump in Flow Fault mode
	PROG (HOLD): Pump program in memory, pump in Hold mode
Flow	current flow rate in mL/min
Volume	volume of air pumped
Run Time	total run time of pump since reset
Total Time	total run time of pump since factory calibration
Battery icon	graphically displays battery life. The battery life is indicated by a light-colored bar with low (-) charge indicated on the left side and full (+) charge indicated on the right side. A battery with a full charge is displayed by the length of this light-colored bar. A long light-colored bar (closer to the + end) represents a battery near a full charge. A short light-colored bar (closer to the - end) represents a battery near depletion.

The data in the cells is updated every 5 seconds. If the operation of the pump is changed, the cells will display the previous values for up to 5 seconds before they are updated.

Flow Calibrate

The Flow Calibrate buttons *(Figure 7)* allow the flow rate displayed on the connected pump LCD to be calibrated to the flow rate displayed on a primary standard calibrator.

The Approx Correction (approximate correction) is the difference between the flow rate displayed on the pump and the flow rate displayed on the calibrator. When a pump is connected to a calibrator, the flow rate readout is determined by the calibrator and not the pump.
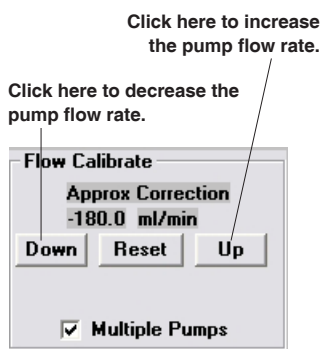
Click here to increase the pump flow rate.

Click here to decrease the pump flow rate.

Figure 7. Flow Calibrate

Adjusting the Flow Correction

To select the approximate correction rate, click on the Down or Up button. The value changes as the button is clicked.

The pump should be calibrated before each sample run. Once calibrated, all volume displays will be accurate for that flow rate. DataTrac 2000 will always display the last approximate correction value to which the connected pump has been set. Changing the flow setting on the pump clears the correction value (sets it to 0.0).

If the calibrator reads higher than the pump, decrease the flow calibrate to equal the calibrator. If the calibrator reads lower than the pump, increase the flow calibrate to equal the calibrator. The range of the correction is approximately ± 750 mL/min.

When calibrating, the flow rate displayed on the calibrator changes; the flow rate displayed on the pump LCD does not change.

Reset Button

To reset the correction value to 0.0 mL/min, click on the Reset Button.

Multiple Pumps Checkbox

Turn off Comm Checking before setting up multiple pumps. See Comm Checking Buttons on page 24.

If you wish to perform flow calibration, reset volume temperature and time, or change parameter display scales for multiple pumps, click the Multiple Pumps checkbox in the Flow Calibrate section of the Real Time Monitor window.

Once checked, a separate window will open *(Figure 7A).* Set parameters as desired for one pump,

Figure 7A. Multiple Pumps Checkbox

disconnect the interface cable from the pump, and insert the cable plug into the interface port on another AirChek 2000 pump. Once all pumps are set up, click the Multiple Pumps checkbox to deselect this option. You will be returned to the Real Time Monitor window.

Using Flow Calibrate

1. Set the pump to the desired flow rate.
2. Connect the inlet port of the pump to a primary standard calibrator and read the flow on the calibrator.
3. Set the approximate correction as needed and recalibrate. The flow rate that is displayed on the calibrator should change as a result of this operation.

Example: The desired flow rate of the pump is 1500 mL/min.
Set the pump to 1500 mL/min. If the calibrator reading is 1540 mL/min, adjust the Approx Correction to -40 mL/min and take another reading. Repeat as necessary until the flow rate displayed on the calibrator is within the required tolerance.

History

If using the CalChek feature and a Defender calibrator, history will show entries marked "Pre Cal Flow" and "Post Cal Flow." This indicates that a single point calibration was performed. Full calibration does not appear in the History. However, full calibration information can be viewed in the DataTrac Pump Manager window under the Calibration Info window in the View menu *(see page 8).*

Temperature Display

The Temperature Display *(Figure 8)* shows the temperature of the air entering the connected pump.

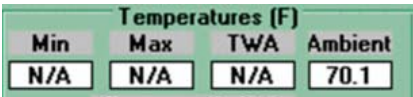| Temperature Display	Cell Readout
Min	minimum air temperature during the program run
Max	maximum air temperature during the program run
TWA	time-weighted average (TWA) of all air temperatures
Ambient	current air temperature

Figure 8. Temperature Display

The Min, Max, and TWA are calculated from the temperatures measured during the total run time of the pump. Unless reset, the temperature data will remain in memory and will be included in future Min, Max, and TWA calculations.

Pressure Display

The Pressure Display *(Figure 9)* shows the atmospheric pressure of the air entering the connected pump.

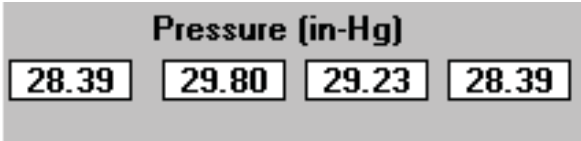| Pressure Display	Cell Readout
Min	minimum atmospheric pressure during the run
Max	maximum atmospheric pressure during the run
TWA	time-weighted average of all atmospheric pressure
Ambient	current atmospheric pressure

Pressure (in-Hg)

28.39	29.80	29.23	28.39

Figure 9. Pressure Display

The Min, Max, and TWA are calculated from the atmospheric pressure measured during the total run time of the pump. Unless reset, the pressure data will remain in memory and will be included in future Min, Max, and TWA calculations.

Pump Controls Buttons

The Pump Controls buttons *(Figure 10)* directly control the connected pump.

Pump Controls	Function
Run	places the pump in RUN
Hold	places the pump in HOLD
Set Flow	opens the Scheduler Set Flow window *(Figure 22)*
Reset Volume, Temp, Time, and Pressure	clears the accumulated data: volume, temperature (Min, Max, and TWA), time, and pressure data (Min, Max, and TWA)

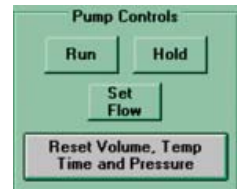**Pump Controls**

Run   Hold

Set Flow

Reset Volume, Temp Time and Pressure

Figure 10. Pump Controls Buttons

Units Selection Buttons

The Units Selection buttons *(Figure 11)* select the temperature and pressure scale of the connected pump.

Units Selection	Function
Fahrenheit ....selects the Fahrenheit temperature scale
Celsius..selects the Celsius temperature scale
in-Hg ....selects the inches Hg pressure units scale
millibars...selects the millibars pressure units scale
mm-Hg..selects the millimeters Hg pressure units scale
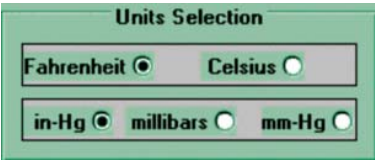
Figure 11. Units Selection Buttons

Fault Options

Figure 12. Fault Options

The Fault Options *(Figure 12)* select the time the pump spends in flow fault mode and the number of times the pump attempts to restart.

Fault Options	Enter Value
Time to Fault (sec)...................	click on the box and enter a number from 5 to 240. This value is the number of seconds the pump spends in Flow mode before going into Flow Fault Hold mode.
Number of Tries.......................	click on the box and enter a number from 0 to 25. This value is the number of times the pump attempts to restart once it goes into Flow Fault Hold mode.

Set Date/Time for Pump

The Set Date/Time for Pump window *(Figure 13)* found in the Tools menu is the interface that allows the pump's date and time to be set by clicking the various buttons.

Figure 13. Set Date/Time for Pump Window

Buttons	Function
Set & Exit	saves the current time and date settings in pump memory and returns to the Real Time Monitor
Exit (No Set)	returns to the Real Time Monitor without saving the time and date settings

STEL/Timed Run Window

The STEL/Timed Run window *(Figure 14)* is used to set the sample time function (SΓ) of the connected pump.
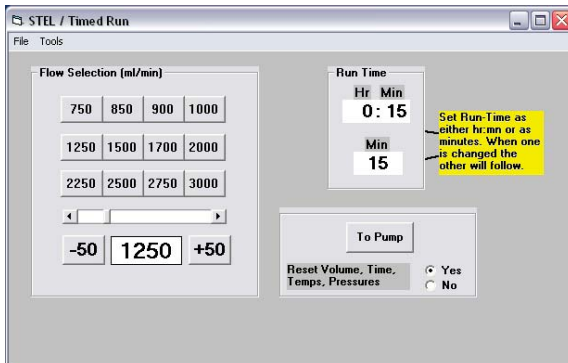
Figure 14. STEL/Timed Run Window

STEL/Timed Run Menus
File Menu

      Exit.............................exits the STEL/Timed Run window

Tools Menu

      Clear STEL
      in Pump ....cancels the pump's sample time period

      Change Default
      Flow Buttons ....displays a text box reminder on how to change the
                        default flow rates displayed on the flow selection
                        buttons

To enter a sample time run, use the Flow Selection buttons and scroll bar to select a flow rate. Enter the duration of the sample run by clicking on the Run Time box and entering the value of the sample run. The sample run can be set up to 43,200 minutes (30 days) from DataTrac (999 minutes if set with pump keypad).

Once the flow rate and time duration have been set, click the To Pump button to program the connected pump.

SKC Pump Scheduler Window

The SKC Pump Scheduler window *(Figure 15)* is the DataTrac 2000's programming window. From this window, programs can be created, uploaded to a connected pump, saved to a PC, downloaded from a pump to PC, and printed.
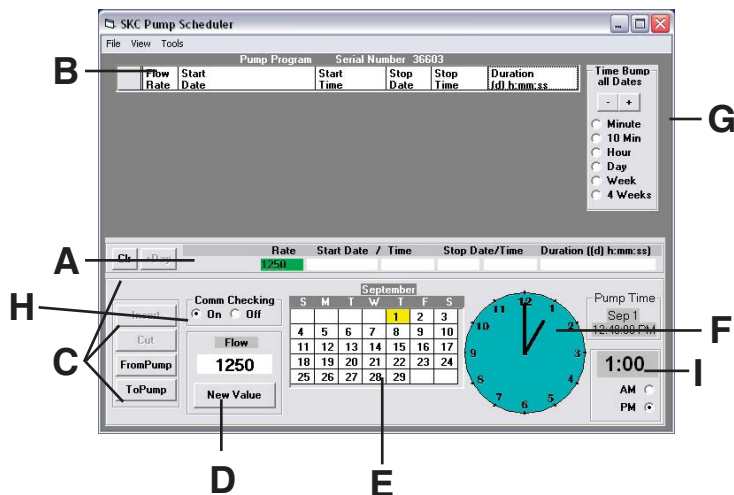

Figure 15. Pump Scheduler Window

A. *Program Edit Bar (page 19)*
B. *Pump Program Scheduler (page 20)*
C. *Programming Buttons (pages 20-21)*
D. *New Value Button (page 22)*
E. *Calendar (page 22)*
F. *Clock (page 23)*
G. *Time Bump Buttons (page 24)*
H. *Comm Checking Buttons (page 24)*
I. *Digital Time Display (page 23)*

⚠ *CalChek CAUTION: Full calibration clears all data in pump history and in the Pump Program Scheduler.*

Pump Scheduler Menus
File Menu
Open.....................opens a pump program previously saved to a PC
Save ....saves a pump program to a PC
Print.......................prints the pump program schedule displayed on the screen
Exit........................exits the Pump Scheduler window

View Menu
History ....opens the SKC Pump History window
Real Time Monitor ......opens the SKC Real Time Monitor window
Scheduler Options.......opens the SKC Pump Program Settings window
Clock Resolution ....sets the clock resolution

Tools Menu
Clear History................clears the pump history
Clear Schedule.............clears the programmed pump schedule
Compare Pump Clock/
PC Clock ....opens the Date/Time Display window and allows
                            the pump and PC times to be synchronized
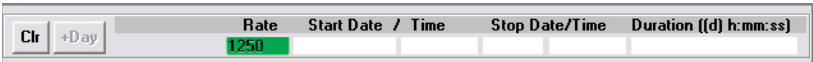
Figure 16. Program Edit Bar

Program Edit Bar
The Program Edit Bar *(Figure 16)* sets an AirChek 2000/3000 pump program. A program is set by adding the value of the Flow Rate, Start Date/Time, Stop Date/Time, and Duration to the cells of the Program Edit Bar.

An AirChek 2000/3000 pump program contains the following sampling parameters:

Parameter	Value
Rate..	flow rate in mL/min
Start Date..................................	start date of the program
Start Time	start time of the program
Stop Date	stop date of the program
Stop Time	stop time of the program
Duration	total run time of the program in days: hours: minutes: seconds

To program the above parameters into the cells of the Program Edit Bar, click on the various control buttons *(see page 18)* that select the value of the parameters, then click on the appropriate cell.

Pump Program Scheduler

The Pump Program Scheduler *(Figure 17)* contains a list of AirChek 2000/3000 programs (or Pump Program Schedules) set by the Program Edit Bar. The pump is programmed for a sampling operation by sending this list of programs to the pump memory.

	Flow Rate	Start Date	Start Time	Stop Date	Stop Time	Duration (d) h:mm:ss
1	1500	Thu Sep 1 2011	1:00:00 PM	Sep 1	9:00 PM	8:00:00

Figure 17. Pump Program Scheduler Containing One Program

Programming Buttons

The Programming buttons *(Figure 18)* select the program parameters, insert programs into the Pump Program Scheduler, write programs **to** the pump (upload), and read programs **from** the pump (download).
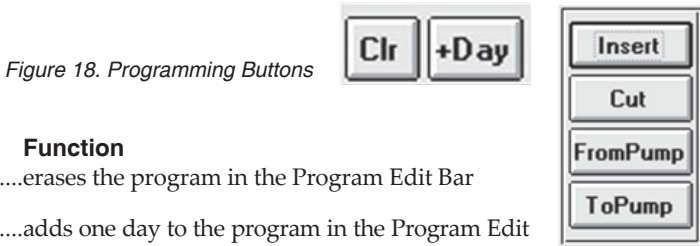
Figure 18. Programming Buttons

Button	Function
Clr	erases the program in the Program Edit Bar
+Day	adds one day to the program in the Program Edit Bar, which is useful for programming same start and stop times on consecutive days
Insert	places the program displayed in the Program Edit Bar into the Pump Program Scheduler
Cut	clears the selected (highlighted) program in the Pump Program Scheduler and places it into the Program Edit Bar, where it can be edited
FromPump	reads the program stored in the pump and displays it in the Pump Program Scheduler (download)
ToPump	writes the program displayed in the Pump Program Scheduler to the pump (upload)

Insert Button

To insert the completed program from the Program Edit Bar into the Pump Program Scheduler *(Figure 17)*, click on the Insert Button *(Figure 18).* The Pump Program Scheduler can contain up to 10 programs.

Cut Button

To clear the selected (highlighted) program from the AirChek 2000/3000 Scheduler and place it into the Program Edit Bar, click on the Cut button *(Figure 18)*. A program can also be cut by double-clicking the program number or the line number to the left of the rate column of the scheduler *(Figure 16)*.

> *Before sending a program to the pump by clicking the ToPump button, it is important to set the Run Time Options in the Options menu under Pump Settings (see SKC Pump Program Settings window, page 26). It is also important to clear the history either in the Run Time Options menu or in the Tools menu.*

ToPump Button

To write the Pump Program Schedule to the pump, click the ToPump button *(Figure 18)*. A DataTrac 2000 dialog box will appear *(Figure 19)*.
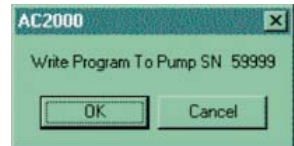
Click OK to send the program to the pump. A "Program Loaded" dialog box *(Figure 20)* will appear on screen to verify the operation.

Writing a program to the pump will cause the PROG icon to appear on the pump LCD, which will remain active until all programs are completed.

Figure 19. Dialog Box

Figure 20. Dialog Box

Edit a Program

To edit a program displayed in the Pump Program Scheduler, double-click on it. This will remove it from the Pump Program Scheduler and place it in the Program Edit Bar. Any program already in the Program Edit Bar will be erased.

FromPump Button

To display a Pump Program Schedule from a previously programmed pump, click on the FromPump button *(Figure 18)*.

Time Bump Buttons

To increase or decrease all program start and stop times in the Pump Program Scheduler, click on the Time Bump buttons *(Figure 29)*.

Save a Program

To save the Pump Program Scheduler to a PC as a program file (.pgm), select the Save command from the File menu.

> *The default extension .pgm is used to indicate AirChek 2000/3000 Scheduler files.*

Open Program
To open a previously saved program, select the Open command from the File menu.

Print Program
To print the Pump Program Scheduler displayed on the screen, select the Print command from the File menu.
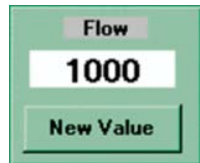
New Value Button
The New Value button *(Figure 21)* sets the flow rate of the pump.

Button	Function
New Value	opens the Scheduler Set Flow window *(Figure 22)*

Figure 21.
New Value Button

Scheduler Set Flow Window
The Scheduler Set Flow window *(Figure 22)* selects the flow rate using the numbered flow buttons and the scroll bar.

Set Flow Rate
To set the flow rate, click on the desired flow rate button. The new flow rate appears in the display cell.

Scroll Bar
To increase or decrease the displayed rate, use the scroll bar.

Enter Flow Rate
To enter the displayed flow rate into the Flow Rate cell of the Program Edit Bar, click on OK.

Previous Button
To reset the displayed flow rate to the previously set pump flow rate, click on the Previous button.
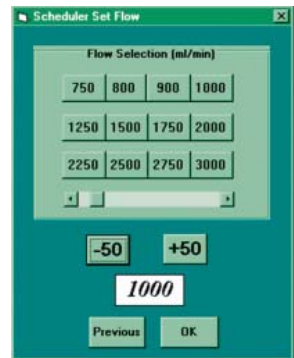
Figure 22.
Scheduler Set Flow Window

Calendar
The Calendar *(Figure 23)* shows the 28-day time interval over which the pump can be programmed. The pump can only be programmed within a 28-day time interval. Use the Calendar to select the Start and Stop Dates that appear in the Program Edit Bar.

Selecting a Date
To select a date, click on it then click on the Start or Stop Date cell in the Program Edit Bar to enter it into that cell.

Figure 23. Calendar

Clock

The Clock *(Figure 24)* consists of a clock face, a digital display corresponding to the time on the clock face, AM and PM buttons, and the current date and time. Select the Start and Stop Times of the AirChek 2000/3000 programs by clicking on the perimeter of the clock face and on the AM or PM buttons. The clock face perimeter is divided into 10, 15, and 30-minute and 1-hour intervals depending on the selected clock resolution *(Figure 26)*.
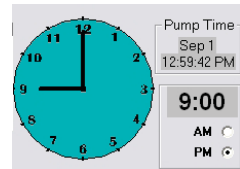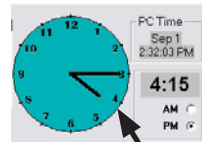
Figure 24. Clock

Selecting Time Using the Clock Face

To select the Start or Stop Times, select the clock resolution *(Figure 26)*, click on the clock face perimeter, the AM or PM button, and then click on the Start or Stop Time cell of the Program Edit Bar.

Example: To set the time to 4:15 PM, select "15 minutes" from the Clock Resolution command (Figure 26), click on the clock perimeter at 4:15 (Figure 25), and click on the PM button.

Click here

Figure 25. Select 4:15

Clock Resolution

To change the Clock Resolution or time intervals of 10, 15, or 30 minutes or 1 hour, select the Clock Resolution command *(Figure 26)* from the Options menu. These can also be selected by clicking on the clock face perimeter between the digits.
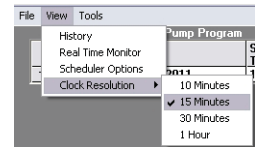
Figure 26. Clock Resolution

Selecting a Time Using the Digital Time Display

The Digital Time Display *(Figure 27)* can also be used to select the time, especially outside the clock resolution settings. Double-click on the time display to highlight it *(Figure 28)*, then key in the desired time (including the colon). One or more numbers can be individually selected by clicking and dragging across the time display. Click on the appropriate time cell in the Program Edit Bar to enter the time into that cell.
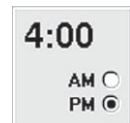
Figure 27. Digital Time Display

Figure 28. Select Time Display

Time Bump Buttons

The Time Bump buttons *(Figure 29)* add or subtract the selected time interval to all program Start and Stop Times in the Pump Program Scheduler.

Time Interval

To select the time interval, click on a time interval button.

Minus Button

To subtract the interval to all programming steps, click on the
- button.

Plus Button

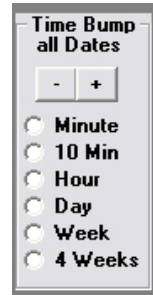To add the interval to all programming steps, click on the
+ button.

Figure 29.
Time Bump
Buttons

Comm Checking Buttons

The Comm Checking buttons *(Figure 30)* turn the communication checking function on or off. Comm Checking monitors the interface cable connection with the pump. The default value is On. If the interface cable becomes detached, an error message displays *(Figure 31).* Reconnect the pump and click on Retry.

If programming more than one pump, turn Comm Checking off by clicking the Off button. Turning Comm Checking off when programming multiple pumps will eliminate the error message that displays each time the pump is disconnected.
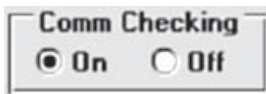
Figure 30.
Comm Checking Buttons

Figure 31.
Error Message

When Comm Checking is turned off, the pump will enter Sleep mode five minutes after the last interaction between the computer and pump.

Date/Time Display

To access the Date/Time Display window *(Figure 32)*, go to the Tools menu in the SKC Pump Scheduler and select Compare Pump Clock/PC Clock. The Date/Time Display window allows the PC and the connected pump time and date to be synchronized.
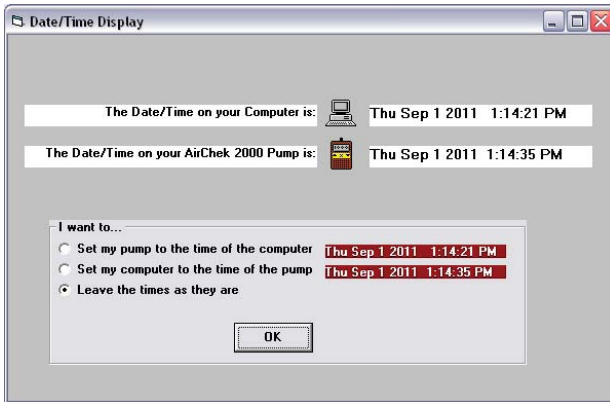

Figure 32. Time Display Window

⊘ *Resetting the pump time to the PC time will result in the display of a Clear History Message (Figure 33). The pump history must be cleared before the pump time can be reset.*
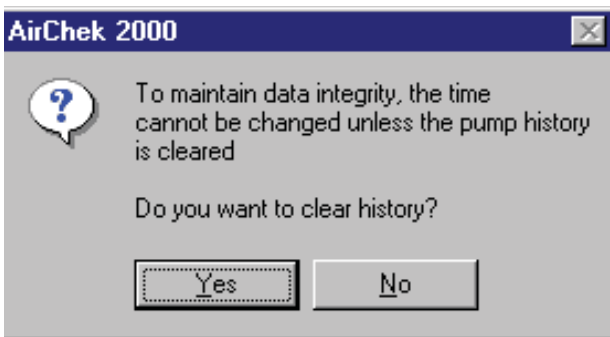

Figure 33. Clear History Message

SKC Pump Program Settings Window

The SKC Pump Program Settings window *(Figure 34)* found in the SKC Pump Scheduler under the View menu and Scheduler Options selects the Run Time Options. The Run Time Options include User Lock Out, Temperature Units (Fahrenheit or Celsius), Pressure Units (inches Hg, millibars, or mm Hg), Reset Volume, Time, Temperatures, and Pressures, and Clear History. The Run Time Options take effect when the Pump Scheduler is sent to the pump's memory from the SKC Pump Program Scheduler window *(see page 18).*
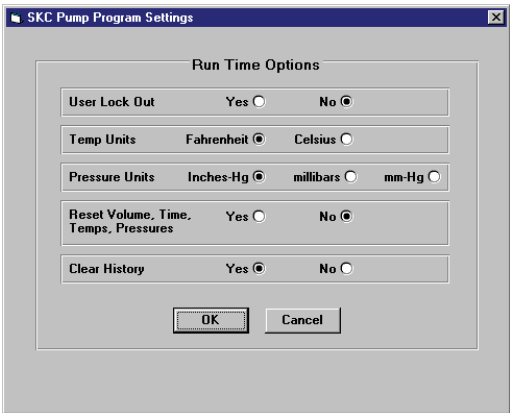
Figure 34. SKC Pump Program Settings Window

Buttons	Functions
User Lock Out......................	click on Yes to activate or No to deactivate; User Lock Out will prevent anyone from altering the pump operating parameters even if the security code is entered on the pump keypad. However, the operator will be able to scroll through the data display.
Temp Units...........................	click to select Fahrenheit or Celsius scale.
Pressure Units......................	click to select Inches Hg, millibars, or mm Hg scale.
Reset Volume, Time, Temps, Pressures.................	click on Yes to activate or No to deactivate; Yes will reset the accumulated volume pumped, time duration, minimum and maximum temperatures, and pressure data to zero (0).
Clear History........................	click on Yes to activate or No to deactivate; Yes will reset the AirChek 2000/3000 pump history. In general, it is good practice to clear the history before running a new schedule.

To set the values and return to the previous window, click the OK button.

All activated options will take effect when the To Pump button (Figure 18) is clicked. The ToPump button sends the information in the Pump Program Scheduler (Figure 17) to the pump.

Sample Program

This sample program demonstrates step-by-step how to use the SKC Pump Scheduler window *(see page 18)* to set a program:

A sampling operation requires the AirChek 2000/3000 pump to sample at a constant flow of 1000 mL/min from 8:00 AM to 4:00 PM daily for one work week. Enter the parameters as follows:

Set the flow rate
Click on the New Value button. The Scheduler Set Flow window opens. Click on the 1000 button then click on OK. "1000" appears in the Flow Rate cell of the Program Edit Bar.
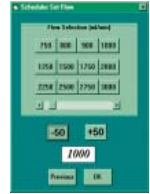
Set the start/stop date
Click on any Monday in the Calendar. The date is highlighted. Click on the Start Date cell in the Program Edit Bar. The date appears in the cell. Click on the Stop Date cell to enter the same date into the Stop Date cell.

Set the start time
Click on the Clock at 8. The clock hands will point to 8:00 and it also appears in the digital display next to the Clock. Click on the AM button, then click on the Start Time cell of the Program Edit Bar; 8:00 AM appears in the cell.

Click here

Set the stop time
Click on the Clock at 4. The clock hands will point at 4:00 and it also appears in the digital display next to the Clock. Click on the PM button, then click on the Stop Time cell of the Program Edit Bar; 4:00 PM appears in the cell. The Duration cell displays 8 hours, which is the length of the programmed operation.

Click here

Insert the program into the Pump Program Scheduler
Click on the Insert button. The program appears in the Pump Program Scheduler. Note that the program is still displayed in the Program Edit Bar. The Pump Program Scheduler has a program that tells the pump to run at a constant flow of 1000 mL/min from 8:00 AM to 4:00 PM on Monday. The same operating parameters must be entered for each day of the week.

Add extra days to the program schedule
Click on the +Day button. This will add one day to the
Start Date and Stop Date in the Program Edit Bar. Click
on Insert to place the program into the Pump Program
Scheduler.
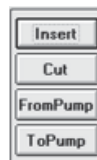
Repeat the procedure to add an additional day to the Pump Program
Scheduler until each day of the week has been entered.

	Flow Rate	Start Date	Start Time	Stop Date	Stop Time	Duration [d] h:mm:ss
1	1000	Mon Sep 5 2011	8:00:00 AM	Sep 5	4:00 PM	8:00:00
2	1000	Tue Sep 6 2011	8:00:00 AM	Sep 6	4:00 PM	8:00:00
3	1000	Wed Sep 7 2011	8:00:00 AM	Sep 7	4:00 PM	8:00:00
4	1000	Thu Sep 8 2011	8:00:00 AM	Sep 8	4:00 PM	8:00:00
5	1000	Fri Sep 9 2011	8:00:00 AM	Sep 9	4:00 PM	8:00:00

Set the desired Run Time Options
Select Pump Settings from the Options menu and click on the desired Run Time
Options *(see page 26).*

Write the program to the pump
Click on the ToPump button. DataTrac 2000 will now write all steps
contained in the Pump Program Scheduler to the connected pump.

Save the AirChek 2000/3000 program to a PC
Select the Save command from the File menu. The program displayed
in the Pump Program Scheduler will be saved as a program file (.pgm). Programs
can be saved for future use or editing.
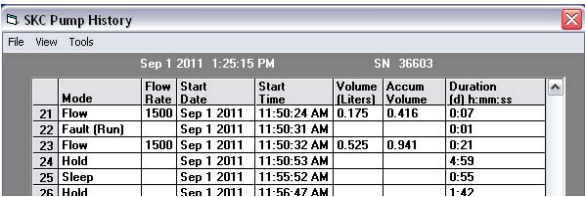
Print the AirChek 2000/3000 program
Select the Print command from the File menu; this command prints the contents of
the Pump Program Scheduler.

Erase the Pump Program Scheduler
Select Clear Schedule from the Tools menu; this will erase the Pump Program
Schedule displayed on screen and in the connected pump's memory.

SKC Pump History Window

The SKC Pump History window *(Figure 35)* displays a record of all operations performed or the history of the connected pump. Up to 40 histories can be stored in the pump memory. This window can also save to a PC or print the history.

Figure 35. SKC Pump History Window

SKC Pump History Menus

File Menu

Save .... saves a history file to a PC; view using ArchiveHistory
Print.................................... prints the current history
Exit .... exits the SKC Pump History window and returns to the previous screen

View Menu

Temperature/
Pressure .... opens the Environmental Data window
Back Pressure Profile ...... opens the Back Pressure Monitor window. This is most useful when using STEL/Timed Run or a run initiated by the Pump Program Scheduler.

Tools Menu

Clear History clears the pump history displayed on screen and in pump memory

Save Pump History

To save a pump history to a PC, select the Save command from the File menu. The pump history is saved to the PC as a history file (.hst).

The default extension .hst is used to indicate pump history files.

Print Pump History

To print the pump history file displayed on screen, select the Print command from the File menu.

Clear Pump History

To clear the pump history, select the Clear command from the Tools menu.

Example of an AirChek 2000/3000 History File Printout:

```
SKC Pump History
SN  36603
Date Printed: Thursday, September 1, 2011  1:29 PM
Min Temp  79.3F
Max Temp  79.3F
TWA Temp  79.3F
Min Pressure  28.7 In-Hg
Max Pressure  28.7 In-Hg
TWA Pressure  28.7 In-Hg
No Flow Correction
```

Mode	Value	Start	Volume Liters	Accum Volume	Duration
Sleep		Wed Aug 17 2011 2:19 PM			7:09
Hold		Wed Aug 17 2011 2:26 PM			0:19
Flow	2000	Wed Aug 17 2011 2:26 PM	0.033	0.033	0:01
Hold		Wed Aug 17 2011 2:26 PM			9:31
Sleep		Wed Aug 17 2011 2:36 PM			4d 22:40:33
Hold		Mon Aug 22 2011 1:16 PM			0:04
Flow	2000	Mon Aug 22 2011 1:16 PM	0.067	0.100	0:02
Flow Adjust		Mon Aug 22 2011 1:16 PM			0:07
Flow	2000	Mon Aug 22 2011 1:16 PM	0.033	0.133	0:01
Hold		Mon Aug 22 2011 1:16 PM			4:59
Sleep		Mon Aug 22 2011 1:21 PM			6d 21:57:42
Hold		Mon Aug 29 2011 11:19 AM			7:52
Sleep		Mon Aug 29 2011 11:27 AM			3d 0:00:22
Hold		Thu Sep 1 2011 11:27 AM			21:24
Flow	2000	Thu Sep 1 2011 11:49 AM	0.033	0.166	0:01
Hold		Thu Sep 1 2011 11:49 AM			0:07
Flow	1000	Thu Sep 1 2011 11:49 AM	0.050	0.216	0:03
Hold		Thu Sep 1 2011 11:49 AM			0:04
Flow	1500	Thu Sep 1 2011 11:49 AM	0.025	0.241	0:01
Hold		Thu Sep 1 2011 11:49 AM			0:55
Flow	1500	Thu Sep 1 2011 11:50 AM	0.175	0.416	0:07
Fault (Run)		Thu Sep 1 2011 11:50 AM			0:01
Flow	1500	Thu Sep 1 2011 11:50 AM	0.525	0.941	0:21
Hold		Thu Sep 1 2011 11:50 AM			4:59
Sleep		Thu Sep 1 2011 11:55 AM			0:55
Hold		Thu Sep 1 2011 11:56 AM			1:42
User Setup		Thu Sep 1 2011 11:58 AM			0:13
Hold		Thu Sep 1 2011 11:58 AM			11:24
Flow	1500	Thu Sep 1 2011 12:10 PM	0.375	1.316	0:15
Flow	1250	Thu Sep 1 2011 12:10 PM	0.063	1.379	0:03
Hold		Thu Sep 1 2011 12:10 PM			0:14
Flow	1250	Thu Sep 1 2011 12:10 PM	0.083	1.462	0:04
Hold		Thu Sep 1 2011 12:10 PM			5:43
Sleep		Thu Sep 1 2011 12:16 PM			2:05
Hold		Thu Sep 1 2011 12:18 PM			5:21
Sleep		Thu Sep 1 2011 12:23 PM			2:07
Hold		Thu Sep 1 2011 12:25 PM			32:41
Prog (Hold)		Thu Sep 1 2011 12:58 PM			1:21
Prog (Run)	1500	Thu Sep 1 2011 1:00 PM	0.875	2.337	0:35
Prog (Hold)		Thu Sep 1 2011 1:00 PM			28:25+

History Display

The History Display *(Figure 36)* shows the record or history of all operations performed by the connected pump. A history will remain on screen and in pump memory until it is cleared. If more

	Mode	Flow Rate	Start Date	Start Time	Volume [Liters]	Accum Volume	Duration [d] h:mm:ss
1	Hold		Sep 1 2011	1:37:38 PM			2:09
2	Flow	1500	Sep 1 2011	1:39:47 PM	0.050	0.050	0:02
3	Hold		Sep 1 2011	1:39:49 PM			0:03
4	User Setup		Sep 1 2011	1:39:52 PM			0:04
5	Hold		Sep 1 2011	1:39:56 PM			0:11+

Figure 36. History Display

than 40 history operations have occurred since history was cleared, they will roll over in memory so that the last 40 will be displayed. A history includes the following data:

Pump Mode	Operating State of the Pump
Flow...	pump in constant flow
Hold...	pump in HOLD
Flow Fault..	flow fault occurred
Low Batt	battery depleted
Prog (Flow)	Pump in flow mode while running a program
Prog (Hold)	Pump in Hold mode while running a program
Prog (Sleep).....................................	Pump on Sleep mode while running a program
User Setup	Pump's user interface accesses and user adjusting pump
Flow Adjust	Flow rate or flow correction of pump adjusted by user

Timed Run ....Pump running a preset sampling time (SΓ function)
Sleep ....pump in Sleep mode
Pre-Cal Flow ....First calibration average, date, and time when using the single-point
CalChek feature
Post-Cal Flow.................................Final calibration average, date, and time when using the single-point
CalChek feature

Parameter	Value
Flow Rate	flow rate in mL/min
Start Date	start date of the program
Start Time	start time of the program
Volume (Liters)	flow rate multiplied by the duration
Accum Volume	sum of all previous volumes (liters)
Duration	total run time of the program

Environmental Data Window

The Environmental Data window in the View menu under Temperature/Pressure Data *(Figure 37)* shows the temperature and pressure data of the air entering the connected pump.
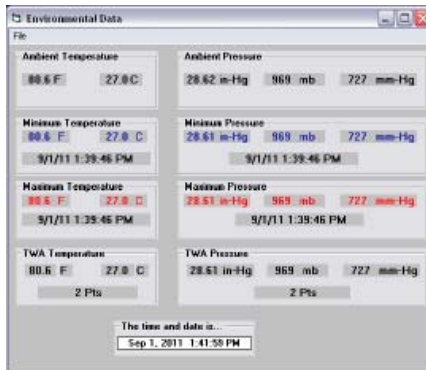
Figure 37. Environmental Data Window

This window displays the pressure and temperature data accumulated since the pump's history was cleared. To clear the accumulated temperature and pressure data, close the Environmental Data window and select Clear History from the Tools menu or click the Reset Volume, Temp, Time, and Pressure Button in the Real Time Monitor window *(see page 10)*.

Back Pressure Monitor Window

The Back Pressure Monitor window *(Figure 38)* displays the accumulated back pressure data of the pump since the pump's history was cleared. This window allows the user to view the back pressure data over a sample run, which can be an aid to determining if the pump has been tampered with. For example, if the back pressure suddenly drops, then later rises to normal, this could be an indication that the sample media was removed and replaced.

This display is for visual comparison only and should not be used to determine actual back pressure readings.
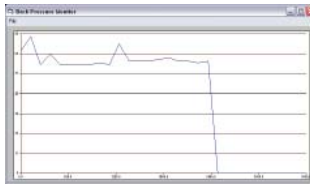
Figure 38. Back Pressure Monitor Window

Archive History Window

The Archive History window loads and displays an AirChek 2000/3000 history file saved to a PC. This window is empty until a history file (.hst) is opened.

Archive History Menus

File Menu

Open......................................opens a saved history file (.hst)
Print......................................prints the displayed history file
Exit..returns to the previous window

Open a History

To open a history file, select the Open command from the File menu.

Print a History File

To print a history file, select the Print command from the File menu.

Reports

DataTrac 2000 allows reports or worker exposure profiles to be printed or saved as text and imported into word processing software or a text editor. These files combine the setup data (information denoting sampling media, methods, location, etc.) from the Sample Sheet Setup window *(Figure 39)* and an AirChek 2000/3000 history *(see pages 30-34).*

File menu
Save as Text ....saves report as text that any word processor or text editor can read

SKC Sample Sheet Setup Window

The Sample Sheet Setup window *(Figure 39)* saves setup data pertaining to the sample run. All data displayed on the screen can be printed or saved as a setup file (.stp), or user-selected data can be saved as a template file (.tpl).

Figure 39. Sample Sheet Setup Window

Sample Setup Menus
File menu
New ....clears all data cells in the Sample Sheet Setup window
Load Setup ....loads a setup file (.stp)
Save Setup ....saves a setup file (.stp)
Print Setup........................prints the current sample sheet data displayed on screen
Load Template ....loads a template file (.tpl)
Save Template.................saves a template file (.tpl)
Exit.....................................exits the Sample Sheet Setup window and returns to the previous window

Option Menu
Merge Pump ....writes the AirChek 2000/3000 history from the connected pump memory to the displayed sample sheet setup, and creates a worker exposure profile *(see page 37)*
Merge File.........................writes the AirChek 2000/3000 history from a previously stored history file (.hst) to the displayed sample sheet setup, and creates a worker exposure profile

Reports

Setup Files
The Sample Sheet Setup window contains a list of information (in data cells) that will be printed in a report. The Sample Sheet Setup window can be saved to a PC as a setup file (.stp). A setup file consists of all the information contained in all data cells.

Enter Data into Sample Sheet
To enter the information into the data cells, click on the cell then type the data using a keyboard.

Save Setup
To save all entered data, select the Save Setup command from the File menu. The Save Setup command saves all data as a setup file (.stp).

The default extension .stp is used to indicate an AirChek 2000/3000 setup file.

Template Files
The Sample Sheet Setup window can also be saved to a PC as a template file (.tpl). A template file reduces the need to repeatedly type data that rarely changes. A template file contains only the information included in the data cells that have an active check-box (the small square button before the data cell as shown in *Figure 40*). To activate a check-box, click on it.
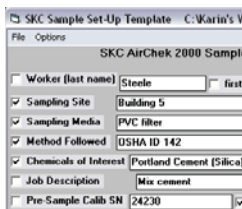
Figure 40.
Close-up of the Sample Sheet
Setup Window Showing Active Check-boxes

Save Template
To save only the information contained in data cells with active check-boxes, select the Save Template command from the File menu. The Save Template command saves the checked data as a template file (.tpl).

The default extension .tpl is used to indicate an AirChek 2000/3000 template file.

Print Sample Setup
To print the sample setup or template displayed on screen, select the Print Setup command from the File menu.

Worker Exposure Profile

A worker exposure profile contains a setup file (sample sheet) and a pump history. A worker exposure profile can be created using the connected pump's history or a history file saved to a PC.

Worker Exposure Profile created with AirChek 2000/3000 History

To create a worker exposure profile containing the sample sheet displayed on screen and the history of the connected pump, select the Merge Pump command from the Options menu. The Worker exposure profile will be saved to a PC as an .rpt file and will also appear on screen.

Worker Exposure Profile created with History File

To create a worker exposure profile containing the sample sheet displayed on screen and a history file saved to a PC, select the Merge File command from the Options menu. The worker exposure profile will be saved to disc as a .rpt file and will appear on screen.

The default extension .rpt is used to indicate an AirChek 2000/3000 worker exposure profile file.

Print Worker Exposure Profile

To print the worker exposure profile displayed on screen, select the Print command from the File menu. *See page 38 for an example AirChek 2000/3000 worker exposure profile.*

Example of an AirChek 2000/3000 Worker Exposure File Printout:

```
Worker Exposure Profile
File Name: c:\karin's work folder\operating instrux\datatrac 2000\sample worker
exposure profile.rpt
Date Printed: Thu Sep 1, 2011   2:08:49 PM
SN  36603
Min Temp 80.6F
Max Temp 82.6F
TWA Temp 81.8F
No Flow Correction

Worker (last name)        Steele
Worker (first name)       Alan
Worker ID                 3063
Sampling Site             Building 5
Sample Media              PVC filter
Sample ID                 2184
Method Followed           OSHA ID 142
Chemicals of Interest     Portland Cement (Silica)
Job Description           Mix cement
Pre-Sample Calibrator SN  24230
Post-Sample Calibrator SN 24230

Environmental Conditions

Humidity       25
Atm. Pressure  26.9

Analysis

Date Sent To Lab          1 Sept 2011
Date Returned From Lab    8 Sept 2011
Results                   10 mg/m3
Analyzed By               Martin Rogers
-------------------------------------------------
Sampled By   Gerry Harper       Date: 1 Sept 2011
Audited By   George Sherman     Date: 12 Sept 2011
-------------------------------------------------

COMMENTS:
Blasting AM, Mixing PM

Pump History Report
                                         Volume Accum
Mode            Rate  Start               Liters Volume Duration
----            ----  -----               ------ ------ --------
Hold                  Thu Sep  1 2011  1:37 PM                  2:09
Flow            1500  Thu Sep  1 2011  1:39 PM  0.050  0.050    0:02
Hold                  Thu Sep  1 2011  1:39 PM                  0:03
User Setup            Thu Sep  1 2011  1:39 PM                  0:04
Hold                  Thu Sep  1 2011  1:39 PM                  3:08
Flow            1500  Thu Sep  1 2011  1:43 PM  1.925  1.975    1:17
Fault (Run)           Thu Sep  1 2011  1:44 PM                  0:05
Flow            1500  Thu Sep  1 2011  1:44 PM  1.575  3.550    1:03
Fault (Run)           Thu Sep  1 2011  1:45 PM                  0:10
Flow            1500  Thu Sep  1 2011  1:45 PM  5.175  8.725    3:27
Fault (Run)           Thu Sep  1 2011  1:49 PM                  0:03
Flow            1500  Thu Sep  1 2011  1:49 PM  22.52  31.25   15:01
Fault (Run)           Thu Sep  1 2011  2:04 PM                  0:10
Flow            1500  Thu Sep  1 2011  2:04 PM  5.698  36.95    3:48
```

CalChek Full Calibration Data Display and Verification
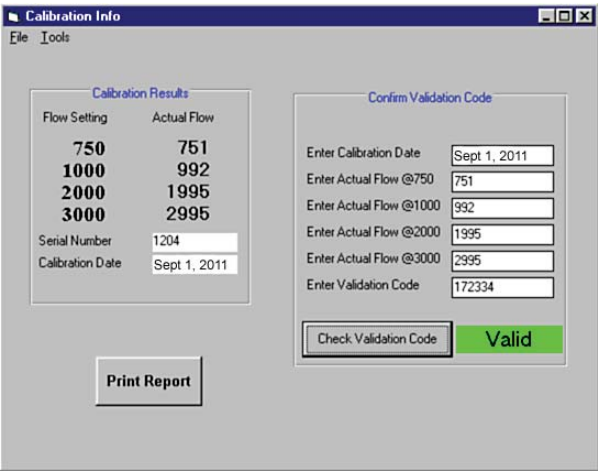
Figure 41.
Calibration Info Window

Viewing CalChek Full Calibration Data

(!) *Caution: Full calibration completely clears DataTrac 2000 pump history, run time parameters, and the Pump Scheduler.*

Full calibration data can be viewed and printed by going to the DataTrac Pump Manager window and clicking on the View menu. Choose Calibration Info. This will display calibration results, pump serial number, and date of the last full calibration.

Calibration Info Window
The Calibration Info window displays the results of a full calibration after using CalChek, allows data to be printed, and provides a means of validating printed data.

File Menu
Print......................................prints the current calibration data
Exit..exits the Calibration Info window and returns to the SKC DataTrac Pump Manager window

Tools Menu
Confirm Validation Code...allows the user to enter calibration data from a printed report to determine whether printed information has been tampered with

Validating CalChek Full Calibration Data

To confirm printed calibration data, open the SKC DataTrac Pump Manager window and click on the View menu. Choose Calibration Info. Go to the Tools menu and choose Confirm Validation Code. Enter the calibration date shown on the printed report, enter each actual flow, and then enter the validation code. Click on the Check Validation Code button. The box to the right of the button will display red and "invalid" if the data has been tampered with or green and "valid" if data is intact.

Clearing the history will not clear full calibration data. This data will only be cleared by performing another full calibration with CalChek or by obtaining more than 36 pump history records.

Caution: When entering data to confirm the validation number, enter the date in the following format: mmm dd, yyyy (e.g., Aug 18, 2011).

This feature requires pump version 2.62 or higher and DataTrac 2000 Software version 3.62 or higher.

Transferring History Files into Spreadsheets

The AirChek 2000/3000 history files (.hst) can be transferred into a spreadsheet or other application. A typical AirChek 2000/3000 history file is shown below:

AC2000/3000 HISTORY FILE
3280
SN 627
35898.637581
Min Temp 75.2F
Max Temp 75.2F
TWA Temp 75.2F
Flow Correction Approximately -20 ml/min
 9
 8

257	0	35898.637245	35898.637581
1314	0	35898.637211	35898.637245
1282	0	35898.637176	35898.637211
258	2000	35898.637164	35898.637176
1	0	35898.637153	35898.637164
1025	0	35898.637106	35898.637153
261	0	35898.635359	35898.637106
262	0	35898.634907	35898.635359
1	0	35898.630255	35898.634907

An explanation of each line of the history file:
Line 1: HISTORY FILE (file type identifier)
Line 2: 3280 (DataTrac 2000 Software revision number x 1000)
Line 3: SN 627 (serial number of the pump)
Line 4: 35898.637581 (time and date that the file was stored. *See Decoding Time Fields on page 43.*)
Lines 5, 6, 7: The minimum, maximum, and time-weighted average (TWA) of the data while the pump was running (min, max, and TWA temp are not updated when the pump is in Hold)
Line 8: 9 (the ASCII value of the character used as the column separator, the default is TAB)
Line 9: 8 (the number of periods in history)
Lines 10-17: A breakdown of each history period ordered from most recent to oldest. Each line of the history is decoded as follows:

Column 1: Mode of Pump *(See Decoding Pump Mode Fields, page 42)*
Column 2: Flow Rate of Pump
Column 3: Start Date/Time *(See Decoding Time Fields, page 43)*
Column 4: Stop Date/Time *(See Decoding Time Fields, page 43)*

Decoding Pump Mode Fields

The Pump Mode field must be converted to hexadecimal numbers. Many scientific calculators are capable of this conversion. For example:

Decimal	Hex
257	101
1314	522
1282	502
258	102
1	001
1025	401
261	105
262	106

Use the following values (or mask bits) for the hexadecimal number to determine the pump mode:

HOLD	001
RUN	002
FAULT	004
SLEEP	008
LOW BATTERY	010
SET FLOW	020
PROGHOLD	040
PROGRUN	080
STEL	100
LOCKOUT	200
USER SETUP	400
RESET	800
SINGLE POINT CAL	1000

Then add the bits to determine the code:

101 = STEL + HOLD
522 = USER SETUP + STEL + SET FLOW + RUN
502 = USER SETUP + STEL + RUN
102 = STEL + RUN
001 = HOLD
401 = USER SETUP + HOLD
105 = STEL + FAULT + HOLD
106 = STEL + FAULT + RUN

For example:

Code 1314 (hex 522): pump was in the user interface having its flow (or flow correction) adjusted.

Code 258 (hex 102): pump was running a STEL.

Decoding Time Fields

Time fields are based on a simple mathematical relationship. The number represents the time that has elapsed since midnight December 30, 1899, in days. For example:

Time Value	Represents	
0.25	Dec 30, 1899	6:00 AM
0.75	Dec 30, 1899	6:00 PM
1.5	Dec 31, 1899	Noon
365.25	Dec 30, 1900	6:00 AM
35065.625	Jan 1, 1996	3:00 PM

The integer portion of the number represents the number of days that have elapsed since Dec 30, 1899. The fractional portion is the fractional part of a day (0 is midnight, 0.5 is noon and 0.9999884 is one second before midnight).

This is a time format used in several applications. For example, if these numbers are imported into Excel for Windows they can be directly converted into time and date with the sequence:

Format, Cell, Modify, Number, Date, m/d/yy h:mm.

Note: The column width will have to be adjusted to display the day and date correctly.

Troubleshooting

DataTrac 2000 Will Not Install
1. Press the Ctrl, Alt, and Delete keys simultaneously.
2. Except for "Explorer" and "Systray," select each program in the list of applications, and then select "End Task."
3. Repeat until only "Explorer" and "Systray" are left in the list of applications.
4. Disable any anti-virus or disc tool programs installed on the PC *(see anti-virus or disc tool program documentation for instructions)*.
5. Re-install DataTrac Software.

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