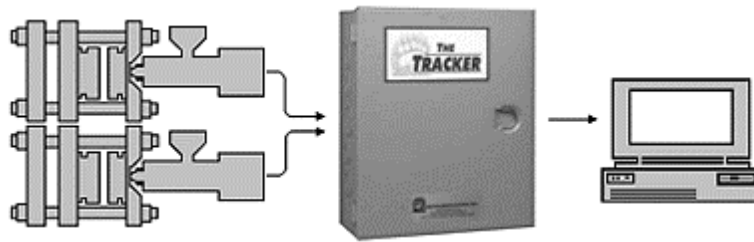


The Tracker



How the Tracker Works

Hardware

- Tracker interface circuit board
- Tracker input circuit
- Connecting the machine signals to the Tracker
- Connecting the Tracker to your computer
- Powering up the Tracker
- Using the Comtest Program

Software

- Software installation
- Software removal

Where to Store the Files

Starting Tracker for the First Time

- Change Host Directory
- Change Archive Directory
- Change COM Port Assignments

The Screens

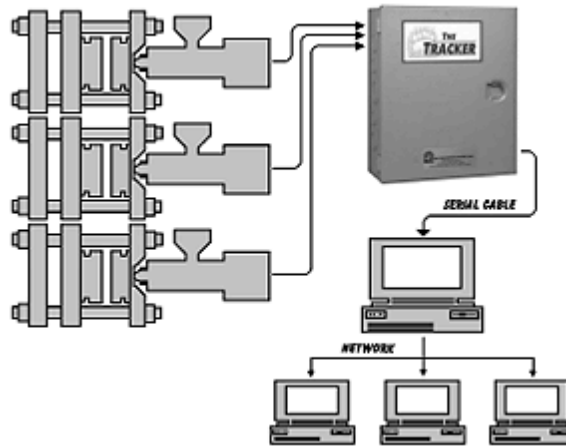
- Line Status Screen
- Job Status Screen
- Last 50 Cycles Screen
- Summary Screen

How To:

- Update Machine Tags
- Update Shift Times
- Update Passwords
- Update Summary Screen Assignments
- Enter Downtime Reasons
- Enter Presets
- Enter Jobs into the Job Queue
- Update, Reset, or Close Current Jobs
- Enter Rejects and Reasons
- Edit and View Shift Notes
- Edit the Debouncers

How The Tracker Works

The TRACKER unit monitors up to forty eight (48) machines by continuously scanning each optically isolated input for a cyclic electrical signal from your machines at a thousandth of a second. As the machines cycle, the signals will change state from de-energized, to energized, and back again. Upon detection of a state change, the TRACKER unit will transmit a one (1) byte code for each detection via the RS232 serial connection to your personal computer, designated as the **host computer**. The serial interrupt causes the software to receive the code, time stamp it, and store it in a circular buffer to be processed in a first in, first out (FIFO) manner.



When a mold is put into a machine, a job should be entered into the Tracker system. This tells the Tracker the duration of a nominal cycle, the upper and lower limits of that cycle, how much time is allowed to pass without seeing a cycle, and the number of parts you want to produce. The Tracker will now monitor that machine for cycles, displaying counts, cycle times, efficiencies, and updating predictive information such as parts to go, hours to go, material to go, and the job's stop date. When the job is completed, the operator closes the job in the Tracker system and the information is archived.

If you know which jobs are to be run on a machine and in which order, you can preload them into the job queue. As a job is closed, the next job in the job queue is automatically loaded for monitoring.

Finding all the running parameters for a job can be a hassle. The Tracker can save the job's parameters so you can recall them just by selection the description from a list.

Report fields are selectable and are displayed to the screen first. If you like what you see, click the *Print* button to send the report to any printer.

If the host computer is on a network, workstations can be setup to run the Tracker program so they have virtually full access to the Tracker data, including edit and reporting capabilities.

Tracker Interface Circuit Board

The TRACKER unit itself is housed in a steel Hoffman box for industrial use. The knockouts located around the box provide easy access for cables and power. There are two holes on the back of the box for mounting convenience.

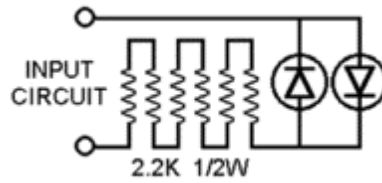


On the inside of the TRACKER unit, you will find a single printed circuit board with one (1) 3-pin connector on the top center just above the microprocessor, one (1) 2-pin connector by the power supply, and forty-eight (48) 2-pin connectors in four columns.

Should the need ever arise to **remove** the board for service, simply unplug all the connections and remove the four (4) corner screws.

Tracker Input Circuit

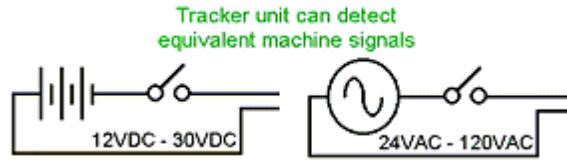
Each input circuit consists of six (6) 2.2Kohm @ 1/2W resistors in series connected to two (2) 500mcf leds, one in reverse polarity from the other. The on voltage can be either twelve (12) to thirty (30) volt VDC, or twenty-four (24) to one hundred twenty (120) volt VAC. If an AC voltage is applied, both leds will light. If a DC voltage is applied without regard to polarity, either one of the leds will light.



NOTE: The translucent cover over the input circuits was installed to allow you to see the machine signals as they occur. The input circuits are sensitive to external ambient light.

Connecting the Machine Signals to the Tracker

The 2-pin connectors arranged in four columns are where each machine terminates on the TRACKER interface circuit board. The **machine signal** should be cyclic and that you get only ONE off-on-off transition per physical cycle. The **on voltage** can be either twelve (12) to thirty (30) volt VDC, or twenty-four (24) to one hundred twenty (120) volt VAC. Since each line is optically isolated, you can mix and match the voltages to the TRACKER interface circuit board.

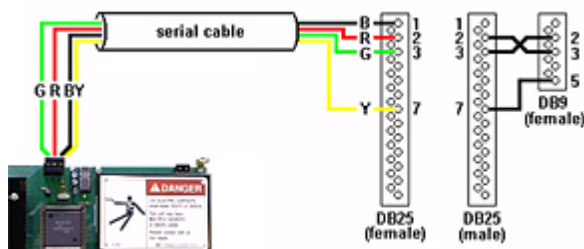


Wiring from the machines should be at least **20AWG 2-conductor unshielded twisted pair**.

Connecting the Tracker to your Computer

The TRACKER unit comes with a 6-foot temporary serial cable for immediate use. The serial connection has been tested out to 1000 feet. The **serial cable** has a 3-pin plug at one end and a **DB25 connector** joined at the other end by an **RJ-11** connection.

NOTE: Please note that when routing the serial cable, avoid close proximity to transformers and fluorescent lighting fixtures, as they tend to disrupt the data signal.



The only **pinout** connections used in the serial cable are pin #1 (black) and pin #7 (yellow) for ground, pin #2 (red) for receive and pin #3 (green) for transmit. Be sure that the AC power to the Tracker is disconnected when working on the serial connection. If the transmit and receive wires touch when the unit is powered up, damage may result to the RS232 interface chip.

Insert the 3-pin plug into the 3-pin socket at the top center of the board, the wires facing away from the board, with the green on the left, red in the center, and black & yellow tied together on the right.

Hold the RJ-11 connector that plugs into the DB25 connector so the tab is facing away from you, and you can see the gold pins on top. The wires inside the connector should be, from left to right, black, red, green, yellow. Plug the RJ-11 connector into the end of the DB25-connector.

The DB25 connector should be plugged into the computer's serial port. This should be either a 25-pin male connection or a 9-pin male connection on the computer. To connect the DB25 connector to a 9-pin serial port, you'll need a 25-to-9 **serial adapter** that has a 25-pin male connection on one side and a 9-pin female connection on the other side. These can be purchased at Radio Shack or Sears.

Serial communication settings are fixed at **19200 baud, no parity, 8 data bits, and 1 stop bit.**

Powering up the Tracker

The 2-pin connector by the power supply is for the 120VAC to power the TRACKER unit. With the serial cable in place, power up the TRACKER unit. The **status led** at the top center of the board to the right of the microprocessor should start to flash constantly, indicating that the on-board microprocessor is up and scanning the lines. If the status led is either steady on or off, reset the TRACKER unit by unplugging the power, count to five, then plug it back in.

Whenever the TRACKER unit is powered up, the microprocessor's first task is to send the following serial **firmware message**. Being able to read this message on your computer indicates that the serial connection is working properly. Any **graphic characters** BEFORE or AFTER the message are data bytes that occur whenever an electrical transition is sensed on any line.

```
TRACKER firmware  version 2.1  
Bear Technologies Inc., Rochester, New York, U.S.A. c(1992)
```

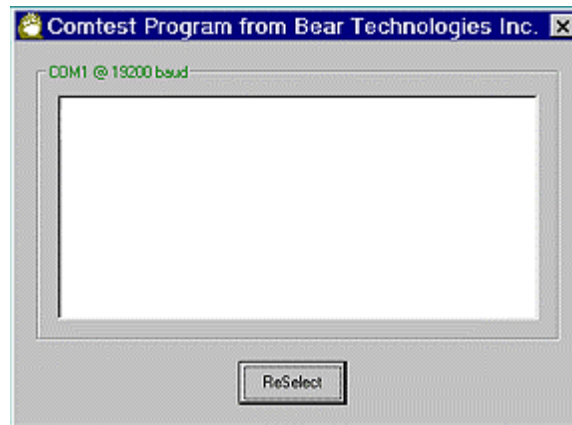
Using the Comtest Program

To test the serial connection to your personal computer, we've provided a small program called **COMTEST.EXE** that takes the data received at the designated serial port and displays it on the screen.

To start the program, click on COMTEST.EXE, located in the Tracker directory on the host system. The program will display all the available serial ports and selectable baud rates, with 19200 already selected for the Tracker hardware. Click on the desired serial port, click on the desired baud rate (other than 19200 for the Tracker), and click *Connect*.




The program will display the serial port and baud rate selected, and a box where any serial data received will be displayed. To clear the data in the box, simply double click inside the box.



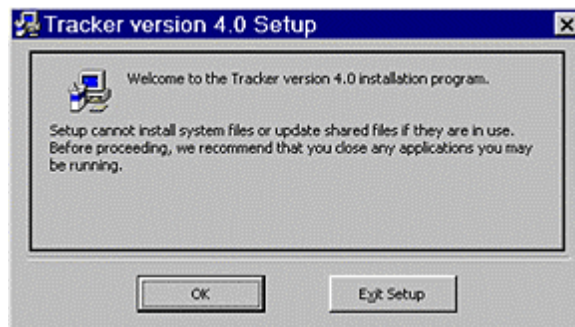
To check if the serial connection to the Tracker hardware is working, remove the power from the TRACKER unit so that the status led stops flashing, wait three seconds and plug the power back in again. The status led on the TRACKER unit should start flashing and your screen should display the firmware version message "Tracker firmware version 2.1" clearly and without any extraneous characters imbedded, that the TRACKER unit sends each time it's powered up. Any graphic characters after the message are data bytes that occur whenever an electrical transition is sensed on any line.

Tracker Software Installation

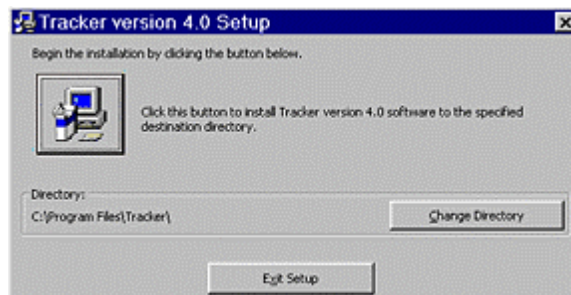
To install the TRACKER production monitoring software:

- Make sure the TRACKER software is not currently running on your computer.
- Remove any previous installations of the TRACKER software from your computer
- Place the TRACKER software distribution CDROM into your computer's drive.
- Double click on My Computer, your CDROM drive, and the Setup  icon.

NOTE: If you are running the original version of Windows 95, and setup notes that your files are outdated, **Exit Setup** and run the **VBRUN60.EXE** application on the CDROM.



- Click OK on the Welcome screen.



NOTE: If you click on **Exit Setup**, you will start the application removal process. **Please be patient** until the Program Installation Removed window displays

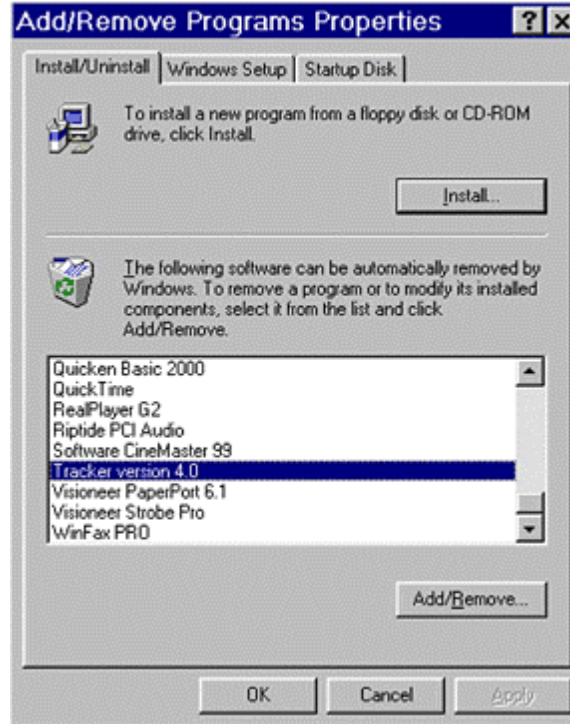
- Click icon on the Begin Installation screen.



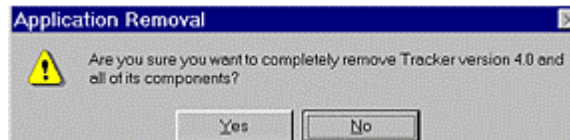
Tracker Software Removal

To remove the TRACKER production monitoring software:

- Make sure the TRACKER software is not currently running on your computer.
- Double click on My Computer, Control Panel, and the Add/Remove Programs icon.



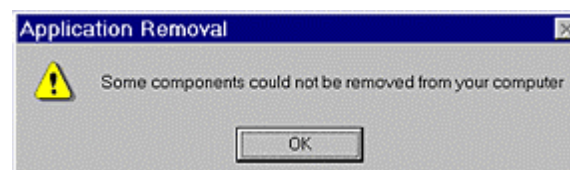
- Select Tracker in the list and click OK.



- Click Yes to begin the removal process.



- The removal program might be unable to remove the Tracker folder because of existing files that were not there upon installation. Continue the removal process by clicking OK.



- Again, these same files that were not there upon installation were detected. Continue the removal process by clicking OK.

Once the Tracker software has been removed, the Tracker will no longer appear in the Add / Remove Programs Properties list. You can now delete the Tracker folder and any subfolders it might contain using Windows Explorer:

Starting the Tracker for the First Time

If starting the Tracker software for the first time, the program will display the **Primary Setup** window. This window shows the current settings for the host directory, archive directory, and COM port assignments.



The host directory is where the Tracker's active files will be stored. The archive directory is where the completed shift files will be stored. The COM port assignments designate what device is connected to which COM port.

To change the current settings, click EDIT on the menu bar. The submenu that appears will allow you to change each setting. When you are satisfied with the settings, simply click Done to proceed.

Where to Store the Files

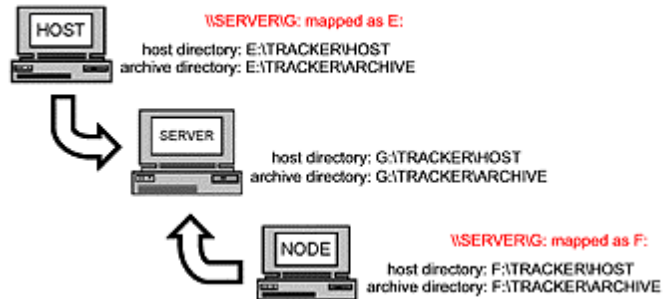
The host directory is where the Tracker's active files will be stored. The archive directory is where the completed shift files will be stored. These directories can be located on the host computer (default), or on a network server

Store Files on the Host



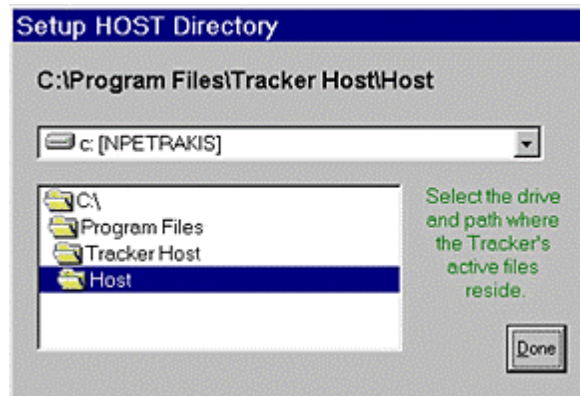
The advantage of keeping the files on the host computer is that as data is processed, the line files and such are constantly updated. If the files are on the host, the only **network traffic** is from any workstations that access the host for updates, and that can be controlled by adjusting the **network refresh interval**.

Store Files on the Server



Change the Host Directory

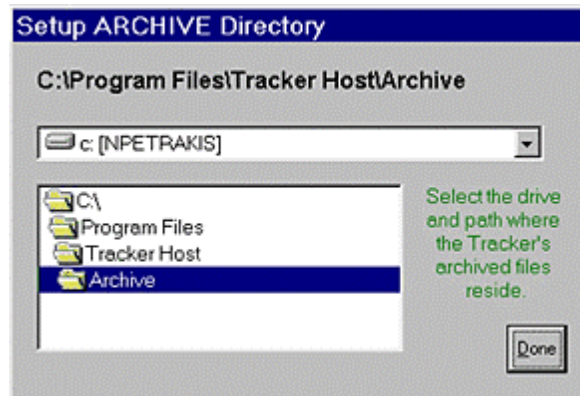
The **host directory** is where the Tracker's active files will be stored.



To change the host directory, double click on the drive and path so that the desired destination appears in bold above the drive selection, and click *Done*.

Change the Archive Directory

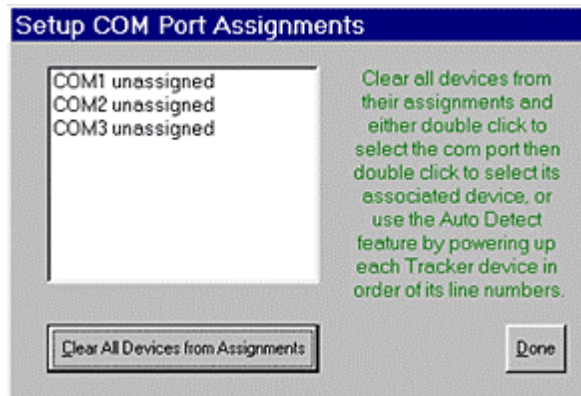
The **archive directory** is where the Tracker's completed shift files will be stored.



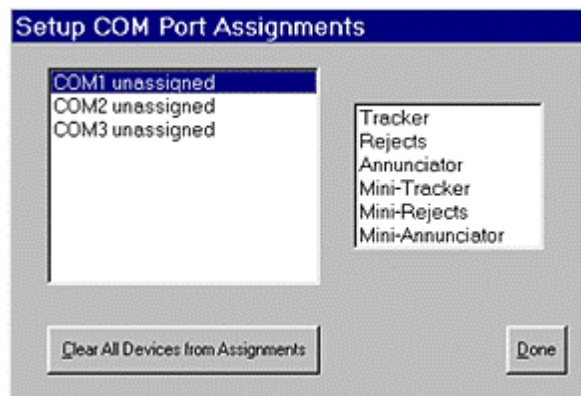
To change the archive directory, double click on the drive and path so that the desired destination appears in bold above the drive selection, and click *Done*.

Change the COM Port Assignments

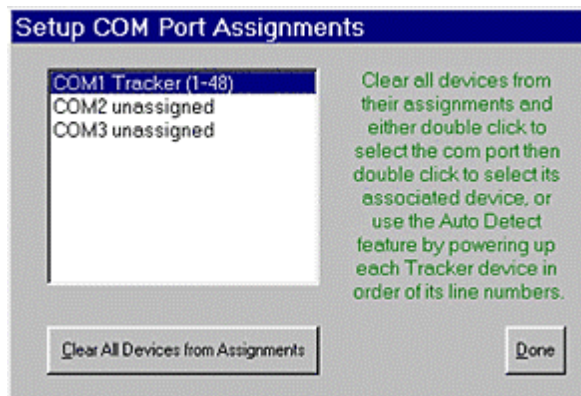
The COM port assignments designate what device is connected to which COM port.



To change the COM port assignments, double click on the desired COM port.



Double click on the Tracker device connected to the designated COM port.

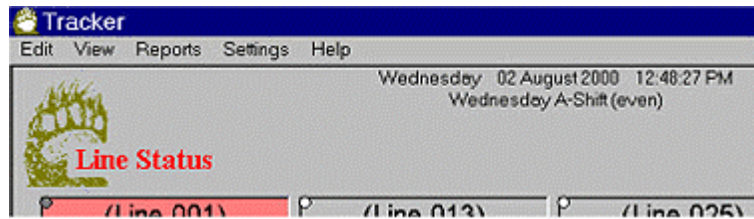


The device should now appear to the right of the COM port designated. If you make a mistake, just click on the Clear button and start over.

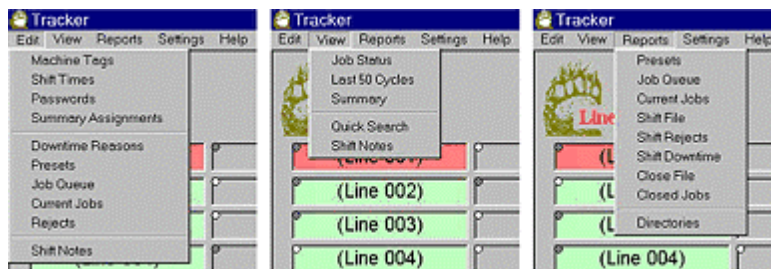
If you don't know what device is connected to which COM port, The program has an auto detect feature that will watch all the detected COM ports for the serial message sent from every Tracker device when they are powered up. To use the **auto detect**, simply leave the Setup COM Port Assignments window up and click on Clear All Devices. Now go to each Tracker device connected, power it down, count to 5, and power it back up again. If the serial connection is correct, the device should appear to the right of the correct COM port. The devices should be powered up in the order of their importance, so power up the Tracker with lines 1 through 48, then the Tracker with lines 49 through 96, and so on.

Main Screens

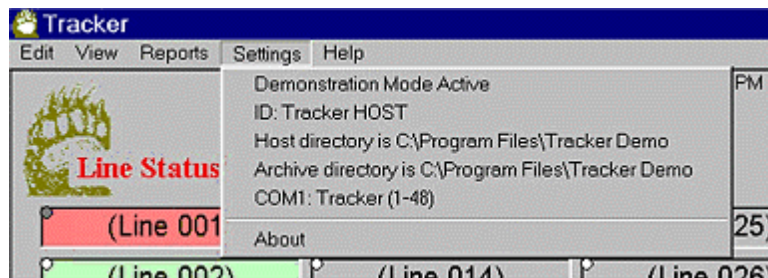
There are four main screens in the Tracker program. The screen name is displayed in red within the bear paw, the host system's date and time are displayed at the top center of the screen, followed by the current shift, directly underneath.



The **menu bar** allows access to edit, view, and reporting features, by moving the mouse pointer to the desired selection and pressing the left mouse button.



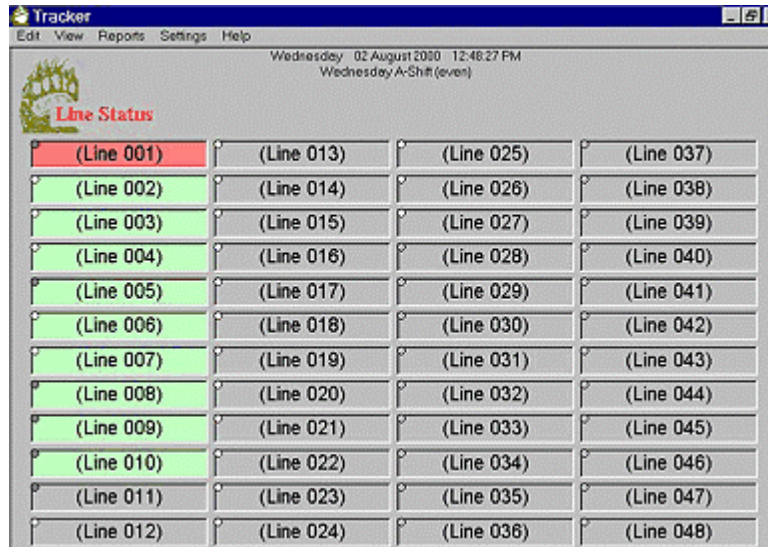
To use the menu bar without the mouse, simply press the <alt> key. This will display a box around the menu bar's first entry. Use the <left arrow> and <right arrow> keys to move the box to the desired entry, and press <enter> to select it.



The **Settings** menu entry displays your computer's identification, the host and archive directories, and what devices are assigned to which COM ports.

Line Status Screen

This screen displays the current status of each Tracker line, allowing you to see your whole plant at a glance. This is the first screen that is displayed whenever the Tracker program starts again.



Tracker			
Edit View Reports Settings Help			
Wednesday 02 August 2010 12:46:27 PM			
Wednesday A-Shift (even)			
Line Status			
(Line 001)	(Line 013)	(Line 025)	(Line 037)
(Line 002)	(Line 014)	(Line 026)	(Line 038)
(Line 003)	(Line 015)	(Line 027)	(Line 039)
(Line 004)	(Line 016)	(Line 028)	(Line 040)
(Line 005)	(Line 017)	(Line 029)	(Line 041)
(Line 006)	(Line 018)	(Line 030)	(Line 042)
(Line 007)	(Line 019)	(Line 031)	(Line 043)
(Line 008)	(Line 020)	(Line 032)	(Line 044)
(Line 009)	(Line 021)	(Line 033)	(Line 045)
(Line 010)	(Line 022)	(Line 034)	(Line 046)
(Line 011)	(Line 023)	(Line 035)	(Line 047)
(Line 012)	(Line 024)	(Line 036)	(Line 048)

The current **state indicator** at the top left corner of each line shows the electrical state of the machine signal to the Tracker. White indicates the line is energized, black indicates the line is de-energized.

The default **status colors** are gray, green, magenta, yellow, and red. **Gray** denotes that there is no job to be monitored for this machine, so the machine is available. **Green** denotes that a job is being monitored and is running within the minimum and maximum cycle limits set. **Magenta** denotes that the machine is running faster than the minimum cycle limit. This warning is used if running too fast creates questionable parts. **Yellow** denotes that the machine is running slower than the maximum cycle limit. This warning alerts you to productivity and inefficiency problems that may affect due dates and product costs. **Red** denotes that the time since the last cycle was received from the machine is greater than the downtime limit, so the machine is declared down.

To change to the next screen, either select *View* in the menu bar at the top left of the screen and select the screen you desire, or press the <space bar> to go to the next screen. The <space bar> will only work if there is not drop down menu being displayed.

Job Status Screen

This screen displays all the information about an active job. To display a job, click on the *Job* button, and double click on the desired job that appears in the list.

The screenshot shows the Tracker Job Status screen. At the top, it displays the date and time: Thursday, 17 August 2000, 07:08:26 AM, Thursday A-Shift (even). The job title is 005 (Line 005): Job 005A: A1. A 'Job' button is visible next to the job title.

	JOB		CURRENT			
	11Aug2000	17Aug2000	16Aug2000	16Aug2000	16Aug2000	16Aug2000
min cycle	4.00					
nom cycle	5.00					
max cycle	5.00					
down limit	10.00					
castles	1					
part weight	0.100					
requested	100000					
current cycle	1.22					
last cycle	5.06					
parts to go	2434					
hours to go	3.45					
material to go	0.54					
start date	11Aug2000	17Aug2000	16Aug2000	16Aug2000	16Aug2000	
start time	07:18 AM	07:00 AM	11:00 PM	03:00 PM	07:00 AM	
stop date	17Aug2000	17Aug2000	17Aug2000	16Aug2000	16Aug2000	
stop time	10:35 AM	03:00 PM	07:00 AM	11:00 PM	03:00 PM	
runtime	143:50:08	08:25	8:00:00	8:00:00	8:00:00	
downtime	5:41:21		24:23	34:09	09:45	
cycle count	97966	100	5402	5282	5669	
parts made	97966	100	5402	5282	5669	
rejected						
% rejected						
avg cycle	5.31	5.05	5.33	5.45	5.17	
efficiency	94.21%	99.01%	93.78%	91.70%	96.68%	
run cycle	5.10	5.05	5.06	5.06	5.07	
efficiency	98.09%	99.01%	98.80%	98.73%	98.69%	

At the bottom of the screen, there is a 'Hide' button and a list of downtime events:

- Down = 8/17/00 5:30:55 AM to 8/17/00 5:35:47 AM.
- Down = 8/17/00 4:45:15 AM to 8/17/00 4:50:08 AM.
- Down = 8/17/00 2:03:02 AM to 8/17/00 2:07:55 AM.
- Down = 8/17/00 1:11:39 AM to 8/17/00 1:16:32 AM.
- Down = 8/17/00 12:05:01 AM to 8/17/00 12:09:53 AM.

The first column contains the current run parameters, current cycle in seconds, last cycle in seconds, parts to go, hours to go until the job is completed, and material to go in pounds.

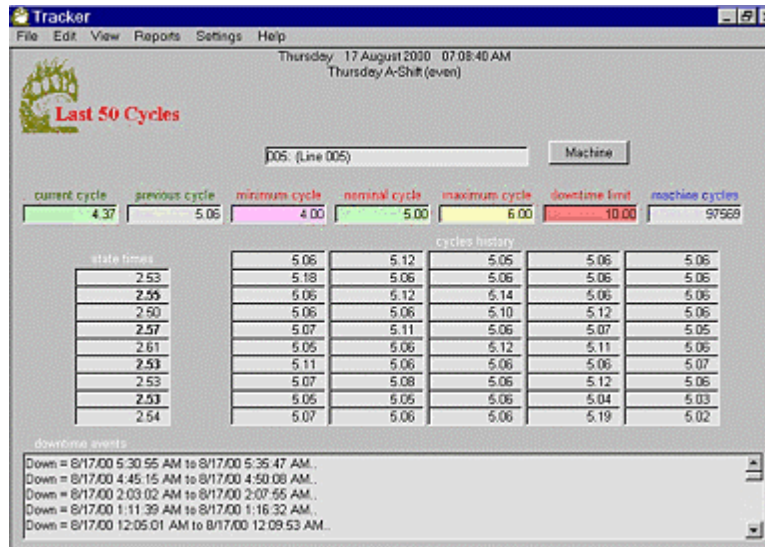
The second column under JOB shows how the job has run since it was started, and the predicted stop date for the job.

The third column under CURRENT shows how the job is running on the current shift. The columns that follow show the last three shifts that have occurred.

To change to the next screen, either select *View* in the menu bar at the top left of the screen and select the screen you desire, or press the <space bar> to go to the next screen. The <space bar> will only work if there is not drop down menu being displayed.

Last 50 Cycles Screen

This screen displays all the information about an active job. To display a job, click on the *Job* button, and double click on the desired job that appears in the list.



If there is an active job being monitored for the selected machine, the job's running parameters will be displayed.

The **state times** displays the duration, in seconds, of the on / off state of the machine signal. The bold entries are the durations that the machine signal was energized. The other entries are the durations that the machine signal was de-energized. Adding an energized duration to its adjacent de-energized duration will yield the cycle time. Normally the energized durations should be about the same, as should the de-energized durations. If you are getting multiple counts for a single physical machine cycle, check the state times for very short durations that might indicate a problem.

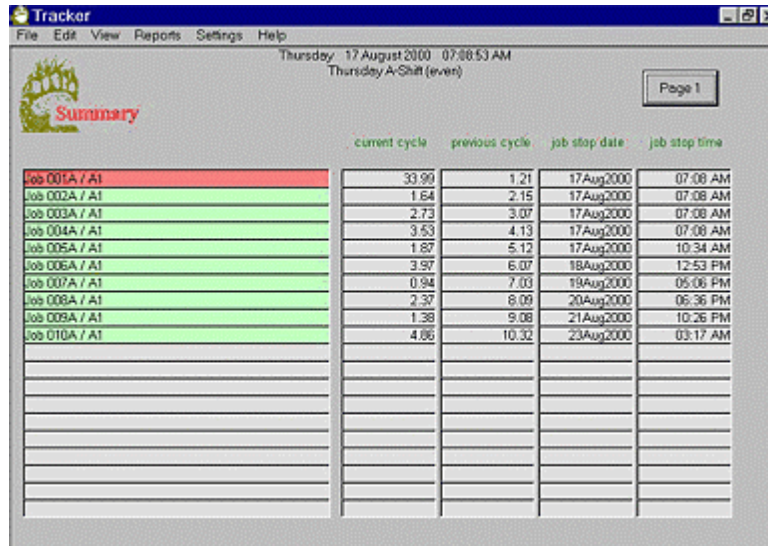
The cycles history shows the last 50 cycles that have occurred. The most current is listed at the top-left and the oldest at the bottom-right.

To change to the next screen, either select *View* in the menu bar at the top left of the screen and select the screen you desire, or press the <space bar> to go to the next screen. The <space bar> will only work if there is not drop down menu being displayed.

Summary Screen

This screen displays up to four (4) fields for all the currently active jobs. Up to ten (10) different pages of fields can be customized by going through the Summary Assignments.

To display the next page, click on the Page button. If a page has no assigned fields, it is skipped. Should there be more than twenty (20) active jobs, a vertical scroll bar will appear on the right that can be used to view any jobs not being displayed.



The screenshot shows the Tracker application window with the Summary screen. The window title is "Tracker" and the menu bar includes File, Edit, View, Reports, Settings, and Help. The status bar at the top indicates "Thursday 17 August 2000 07:08:53 AM" and "Thursday A-Shift (even)". A "Page 1" button is visible in the top right corner. The main area displays a table with the following columns: "current cycle", "previous cycle", "job stop date", and "job stop time". The table contains ten rows of job data, with the first row highlighted in red and the others in green.

	current cycle	previous cycle	job stop date	job stop time
Job 001A / A1	33.90	1.21	17Aug2000	07:08 AM
Job 002A / A1	1.64	2.15	17Aug2000	07:08 AM
Job 003A / A1	2.73	3.07	17Aug2000	07:08 AM
Job 004A / A1	3.53	4.13	17Aug2000	07:08 AM
Job 005A / A1	1.87	5.12	17Aug2000	10:34 AM
Job 006A / A1	3.97	6.07	18Aug2000	12:53 PM
Job 007A / A1	0.94	7.03	18Aug2000	05:06 PM
Job 008A / A1	2.37	8.09	20Aug2000	06:36 PM
Job 009A / A1	1.38	9.08	21Aug2000	10:26 PM
Job 010A / A1	4.06	10.32	23Aug2000	03:17 AM

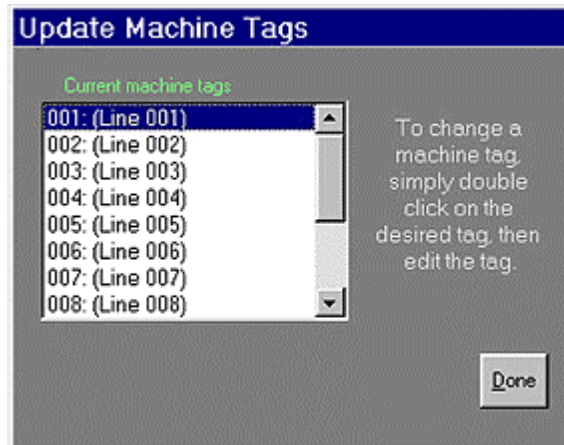
To change to the next screen, either select *View* in the menu bar at the top left of the screen and select the screen you desire, or press the <space bar> to go to the next screen. The <space bar> will only work if there is not drop down menu being displayed.

Update Machine Tags

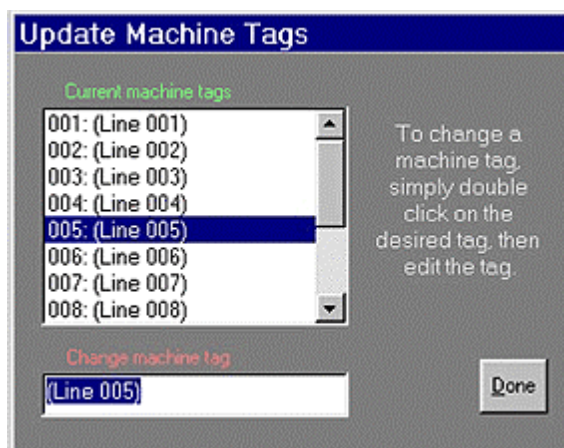
Machine tags are descriptions of the machines associated with the specific line numbers that they are connected to on the Tracker interface circuit board, such as 'Husky 201', 'H10', or 'Dopey'.

If a line on the Tracker should malfunction, the line to the machine can be switched to another position on the Tracker interface circuit board, and the machine tag can be changed to the new line.

To update the machine tags, click on *Edit* on the menu bar, and *machine tags* in the sub menu.



Double click on the line number whose machine tag you wish to change.



The current machine tag will appear, highlighted in blue. Simply type in the new machine tag and press <enter>. The new machine tag will now appear in the machine tags list. To change another one, simply repeat the process. When you are finished, click on *Done* to return to the program.

Update Shift Times

The **shift times** indicate the week to week times that your plant is in operation. The program provides for two (2) weeks, each with seven (7) days containing the start and stop times for four (4) shifts each. The times are in 4-digit military format, with midnight entered as 2400.

The **odd / even** week provides a way to run certain shifts one week and different shifts the next week. The **odd week** is defined as the first full week of the calendar year.

The screenshot shows a dialog box titled "Update Shift Times" with a blue header. It contains two tables for "Odd Weeks" and "Even Weeks", each with columns for days of the week (Sun-Sat) and rows for shift start and stop times (A, B, C, D). The default values are: A shift start 0700, A shift stop 1500, B shift start 1500, B shift stop 2300, C shift start 2300, C shift stop 0700, D shift start (blank), and D shift stop (blank). A text box on the right explains the 4-digit military format and the odd/even week logic. A "Done" button is at the bottom right.

Odd Weeks		Sun	Mon	Tue	Wed	Thu	Fr	Sat
A shift start		0700	0700	0700	0700	0700	0700	0700
A shift stop		1500	1500	1500	1500	1500	1500	1500
B shift start		1500	1500	1500	1500	1500	1500	1500
B shift stop		2300	2300	2300	2300	2300	2300	2300
C shift start		2300	2300	2300	2300	2300	2300	2300
C shift stop		0700	0700	0700	0700	0700	0700	0700
D shift start								
D shift stop								

Even Weeks		Sun	Mon	Tue	Wed	Thu	Fr	Sat
A shift start		0700	0700	0700	0700	0700	0700	0700
A shift stop		1500	1500	1500	1500	1500	1500	1500
B shift start		1500	1500	1500	1500	1500	1500	1500
B shift stop		2300	2300	2300	2300	2300	2300	2300
C shift start		2300	2300	2300	2300	2300	2300	2300
C shift stop		0700	0700	0700	0700	0700	0700	0700
D shift start								
D shift stop								

The program has default times in it. Sunday through Saturday for both odd and even weeks are set up to run A-shift between 07:00AM and 03:00PM, B-shift between 03:00PM and 11:00PM, and C-shift between 11:00PM and 07:00AM the next day.

For a simple example, let's say you run one shift, 08:00AM to 05:00PM, Monday through Friday. You would fill in Monday A-shift start with 0800, A-shift stop with 1700, and repeat these same entries for Tuesday, Wednesday, Thursday and Friday. All the times in Saturday and Sunday would be blank. This has to be entered for both odd and even weeks.

The screenshot shows the "Update Shift Times" dialog box with a custom configuration. The "Odd Weeks" table has A shift start 0800, A shift stop 1700, and B shift start 1700, B shift stop 1700. The "Even Weeks" table has A shift start 0800, A shift stop 1700, B shift start 1700, B shift stop 1700, and D shift start 1500, D shift stop 2300. All other cells are blank. The text box and "Done" button are also present.

Odd Weeks		Sun	Mon	Tue	Wed	Thu	Fr	Sat
A shift start		0800	0800	0800	0800	0800	0800	0800
A shift stop		1700	1700	1700	1700	1700	1700	1700
B shift start								
B shift stop								
C shift start								
C shift stop								
D shift start								
D shift stop								

Even Weeks		Sun	Mon	Tue	Wed	Thu	Fr	Sat
A shift start		0800	0800	0800	0800	0800	0800	0800
A shift stop		1700	1700	1700	1700	1700	1700	1700
B shift start								
B shift stop								
C shift start								
C shift stop								
D shift start								
D shift stop								

A more complex example might be running A-shift from 07:00AM to 03:00PM and C-shift from 03:00PM to 11:00PM one week, then running B-shift from 07:00AM to 03:00PM and D-shift from 03:00PM to 11:00PM the next week. You would fill in the odd week Sunday A-shift start with 0700, A-shift stop with 1500, C-shift start with 1500, C-shift stop with 2300, and repeat these same entries for the rest of the week. Then fill in the even week Sunday B-shift start with 0700, B-shift stop with 1500, D-shift start with 1500, D-shift stop with 2300, and repeat these same entries for the rest of the week.

Update Shift Times

Odd Weeks	Sun	Mon	Tue	Wed	Thu	Fri	Sat
A shift start	0700	0700	0700	0700	0700	0700	0700
A shift stop	1500	1500	1500	1500	1500	1500	1500
B shift start							
B shift stop							
C shift start	1500	1500	1500	1500	1500	1500	1500
C shift stop	2300	2300	2300	2300	2300	2300	2300
D shift start							
D shift stop							
Even Weeks	Sun	Mon	Tue	Wed	Thu	Fri	Sat
A shift start							
A shift stop							
B shift start	0700	0700	0700	0700	0700	0700	0700
B shift stop	1500	1500	1500	1500	1500	1500	1500
C shift start							
C shift stop							
D shift start	1500	1500	1500	1500	1500	1500	1500
D shift stop	2300	2300	2300	2300	2300	2300	2300

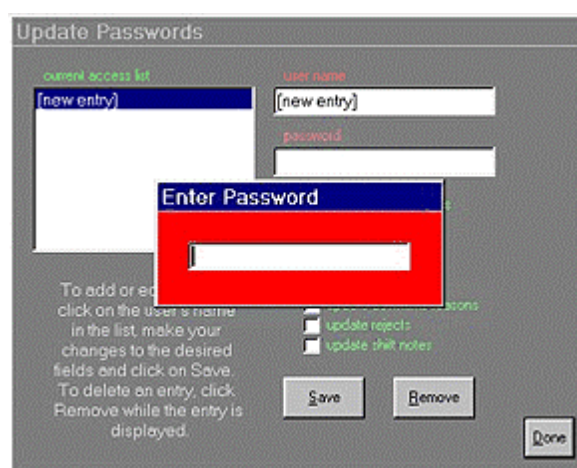
The times are entered in four digit military format, with midnight entered as either 0000 or 2400. The odd week starts with the first full week of the calendar year. If the same shift times run each week, then copy the odd week to the even week.

Update Passwords

Passwords can be entered to restrict access of specific edit functions to certain individuals. For example, John can edit the presets and job queue but Jim can only edit the job queue.

If any passwords exist in the password access table for a specific edit function, a password will be requested when anyone tries to access that edit function.

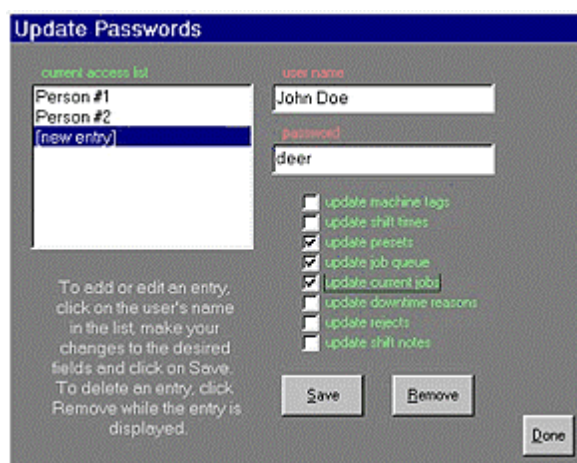
To setup the passwords, click on *Edit* on the menu bar, then *passwords* in the submenu. The passwords window is displayed with an access window on top of it. The master password has to be entered into the access window, followed by <enter>, to remove it.



If an invalid password is entered in the access window, the **Access Denied** warning sign will be displayed, and you'll have to try again.



To enter a new person, click on *[new entry]* in the access list. The user name can now be replaced with the person's name. Passwords are case sensitive so you'll have to use them just as they are typed in. Click on the edit functions that this person will have access to, and click on *Save* to store the entry in the access list.



To display an entry, click on the person's name in the access list.

To update a password, click on the person's name in the access list, made the necessary changes, and click *Save*.

To remove a password, click on the person's name in the access list, and click *Remove*.

Update Passwords

current access list

Person #1
Person #2
John Doe
[new entry]

To add or edit an entry, click on the user's name in the list, make your changes to the desired fields and click on Save. To delete an entry, click Remove while the entry is displayed.

user name: Person #1

password: geezer

- update machine tags
- update shift times
- update presets
- update job queue
- update current jobs
- update downtime reasons
- update rejects
- update shift notes

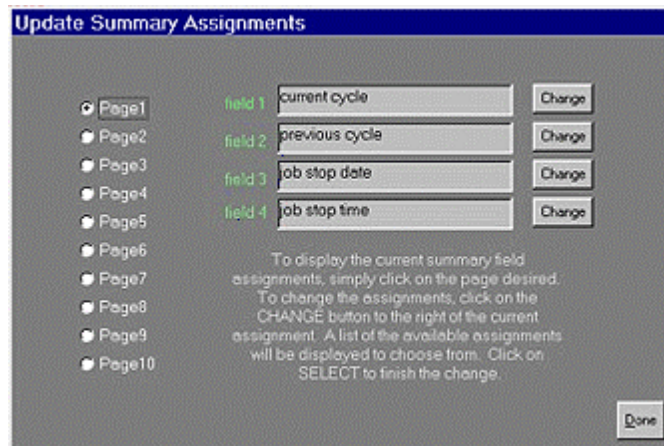
Save Remove Done

Change Summary Assignments

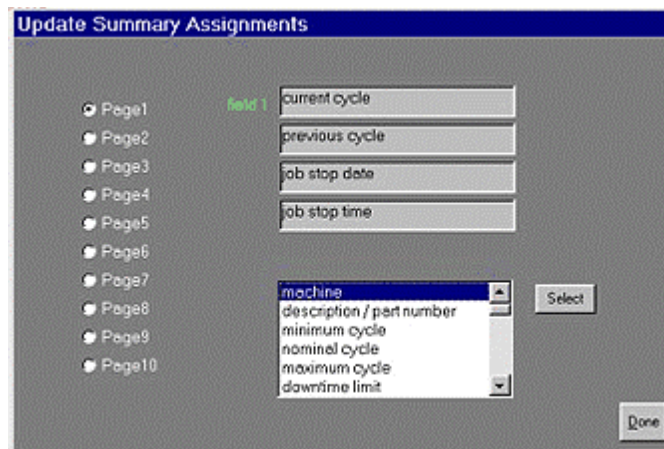
The fields which appear on the Summary screen are defined here in the Update Summary Assignments window. Each page can have up to four fields. If there are no fields defined for a page, that page is skipped when cycling through the pages on the Summary screen.

To change the summary assignments, click *Edit* on the menu bar, then *Summary Assignments* in the submenu.

Click on the desired Page to display the current field assignments. To change the assignments, click on *Change* to the right of the field assignment you want to change.



The Change buttons are removed, the field being changed is identified, and the fields list is displayed. Select the desired field from the fields list and click *Select*.



The selected field becomes the new field assignment, and the change buttons reappear. Repeat the process to change any other field assignments for the selected page, or select a different page.

Update Summary Assignments

<input checked="" type="radio"/> Page1	field 1	machine	Change
<input type="radio"/> Page2	field 2	previous cycle	Change
<input type="radio"/> Page3	field 3	job stop date	Change
<input type="radio"/> Page4			
<input type="radio"/> Page5	field 4	job stop time	Change
<input type="radio"/> Page6			
<input type="radio"/> Page7			
<input type="radio"/> Page8			
<input type="radio"/> Page9			
<input type="radio"/> Page10			

To display the current summary field assignments, simply click on the page desired.
To change the assignments, click on the CHANGE button to the right of the current assignment. A list of the available assignments will be displayed to choose from. Click on SELECT to finish the change.

Done

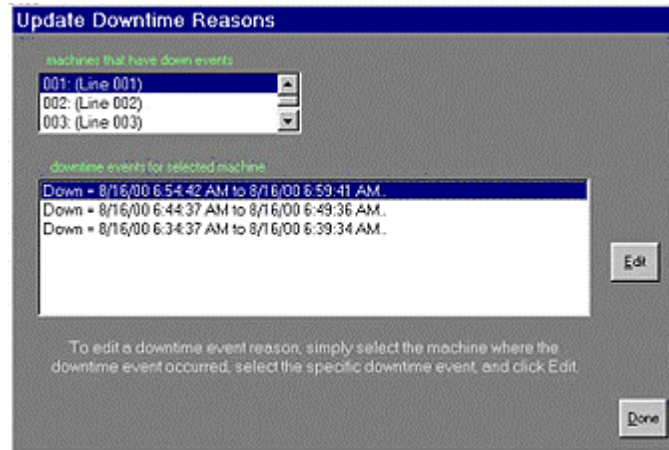
When all your changes have been made, click *Done* to return to the program.

Downtime Reasons

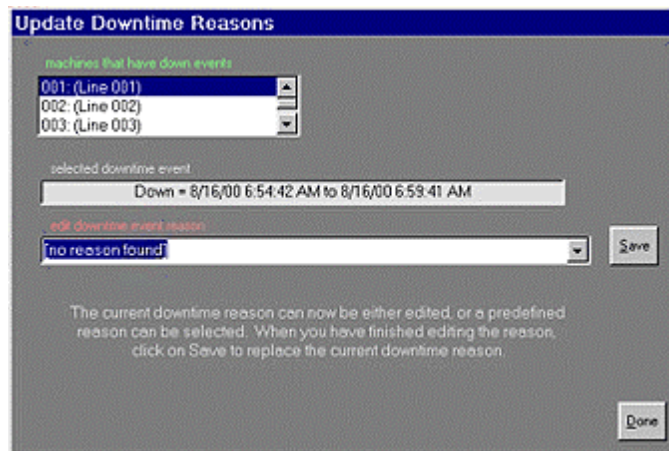
Whenever the current cycle of a job surpasses the downtime limit entered, that job is considered down and a downtime event is recorded. A **downtime event** consists of the date and time the job went down, the date and time the job started running again, and a downtime reason if entered.

Down = 8/16/00 6:54:42 AM to 8/16/00 6:59:41 AM..Downtime reason #5

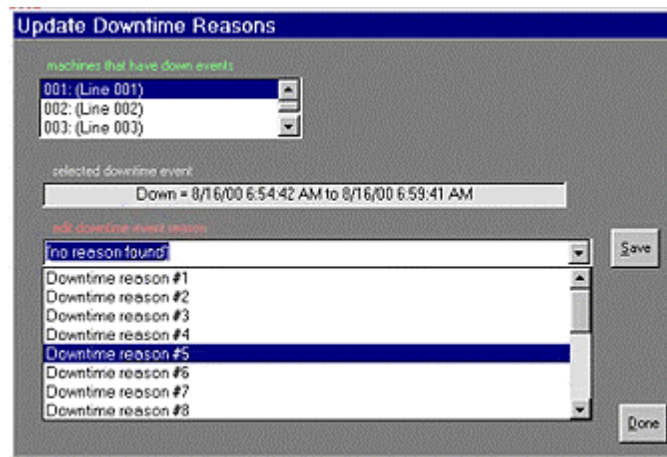
To enter or change a reason for a downtime event, click *Edit* on the menu bar, then *Downtime Reasons* in the submenu.



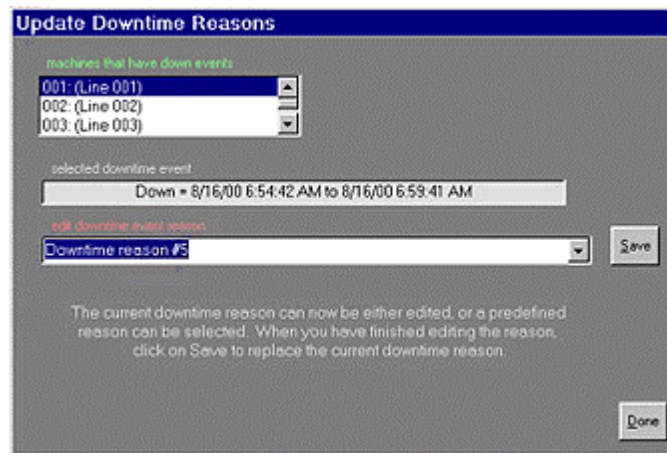
Select the machine where the downtime event occurred. The downtime events for that machine, as well as their current downtime reasons will be listed. Select the desired downtime event and click *Edit*.



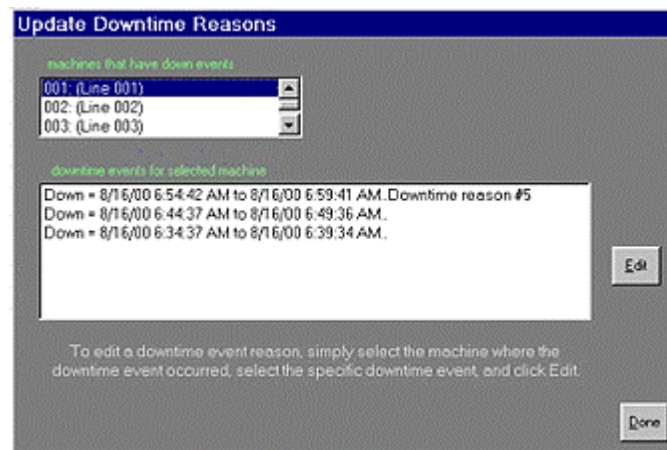
The selected downtime event will be displayed along with its current downtime reason, highlighted in blue. You can either type in the downtime reason you want, or select from the predefined downtime reasons by clicking on the down arrow to the right, and selecting one of the reasons listed.



The **predefined downtime reasons** are stored in a file named DowntimeReasons.txt in the host directory. This is a text file that you can create and maintain by using Windows Notepad, or any other text editor. Each line is a separate downtime reason. A sample file should be in the Tracker folder on your host system.



When you are satisfied with the reason for the selected downtime event, click **Save** to store it and return to select another downtime event. Clicking **Done** before **Save** will keep the original reason.



Click *Done* to return to the program.

Presets

Presets are repeated jobs that have their cycle limits, cavitation, and part weight predefined so that when a job is to be run, you just have to select the job description from the presets list and the program will preload all the applicable fields for you.

To enter or change a preset, click *Edit* on the menu bar, then *Presets* in the submenu.

The screenshot shows the 'Update Presets' dialog box. On the left, a list of presets includes 'Preset 013' through 'Preset 019' and a '[new entry]' option at the bottom. The 'description' field is set to '[new entry]'. Below it are four input fields for 'minimum cycle', 'nominal cycle', 'maximum cycle', and 'downtime limit', all of which are currently empty. At the bottom, there is a table for parts with columns for 'part number', 'cavities', and 'part weight', which is also empty. 'Save' and 'Remove' buttons are visible, along with a 'Done' button in the bottom right corner. A text box on the left provides instructions: 'To display a preset, simply click on its description in the list. To edit the preset, make your changes to the desired fields and click on Save. To delete the preset, click Remove while the preset is displayed.'

To add a new preset, click on [new entry] in the presets list. Replace the [new entry] in the description with the job description. The minimum cycle is used to compare against the current cycle to alert if a machine is running too fast. This alert can be disabled by leaving the field empty. The nominal cycle is the time duration of the ideal cycle. This is a required field, and the standard against which the cycle efficiencies are calculated. The maximum cycle is used to compare against the current cycle to alert if a machine is running too slow. The downtime limit is used to compare against the current cycle to alert if a machine has stopped running and is down. Each of these alerts can be disabled by leaving the associated field empty. Each preset can have up to four (4) individual parts with different cavitation and part weight. Only one part is necessary to have a valid preset. After all the appropriate fields have been entered, click Save to add the preset to the list.

The screenshot shows the 'Update Presets' dialog box with 'Preset 015' selected in the list. The 'description' field contains 'Preset 015'. The 'minimum cycle' field is set to '14.00', 'nominal cycle' to '15.00', 'maximum cycle' to '16.00', and 'downtime limit' to '30.00'. The parts table is populated with four entries:

part number	cavities	part weight
A1	1	0.100
B2	2	0.200
C3	3	0.300
D4	4	0.400

'Save' and 'Remove' buttons are visible, along with a 'Done' button in the bottom right corner. The same instructional text box is present on the left.

To edit a preset, click on the desired entry in the presets list. The fields will be filled in with the preset's current settings. Make any desired changes and click Save to store the changes.

To remove a preset, click on the desired entry in the presets list, and click *Remove*.

The Job Queue

The job queue is a prioritized list of jobs to be run on a particular machine. The program checks each machine every five (5) seconds to see if a job is currently being run. If not, the program then checks that machine's job queue to see if any jobs are pending. If a job is found, it is removed from the job queue and becomes an active job.

Jobs can be entered into the job queue by filling in the required fields, or by recalling a preset. Jobs can be reprioritized at any time while they are in the job queue.

To enter or change a job to the job queue, click *Edit* on the menu bar, then *Job Queue* in the submenu.

Update Job Queue

machine list
001 (Line 001)
002 (Line 002)
003 (Line 003)

line / priority / job
001,002 Job 001B
001,003 Job 001C
[new entry]

To display a queued job, simply click on the desired machine to display the queued jobs, then click on the job's description in the list. To edit the job, make your changes and click on Save. To delete the job, click on Remove while the job is displayed.

description: [new entry] priority: []

minimum cycle: [] nominal cycle: [] maximum cycle: [] downtime limit: []

Get Preset

Save Job in Presets:

part number	cavitation	part weight	parts requested

Save Remove Done

To add a new job to the job queue, click on the machine where the job is to be run. The job queue for the selected machine will list the line number, the job's priority in the job queue, and the job description. Click on [new entry] in the job queue list so that it appears in the description field. Click on the description field to highlight the field, and display the *Get Preset* button, which only appears for a new entry. If you want to load a stored preset, click on the *Get Preset* button to display the presets list. Selecting a preset from the list will load the preset's stored fields into the job's fields.

Update Job Queue

machine list
001 (Line 001)
002 (Line 002)
003 (Line 003)

line / priority / job
001,002 Job 001B
001,003 Job 001C
[new entry]

presets list
Preset 001
Preset 002
Preset 003
Preset 004
Preset 005
Preset 006
Preset 007

description: Preset005 priority: []

minimum cycle: 4.00 nominal cycle: 5.00 maximum cycle: 6.00 downtime limit: 10.00

Get Preset

part number	cavitation	part weight	parts requested
A1	1	0.100	
B2	2	0.200	
C3	3	0.300	
D4	4	0.400	

Save Remove Done

To enter a job that is not a preset, replace the [new entry] in the description with the job description. The minimum cycle is used to compare against the current cycle to alert if a machine is running too fast. This alert can be disabled by leaving the field empty. The nominal cycle is the time duration of the ideal cycle. This is a required field, and the standard against which the cycle efficiencies are calculated. The maximum cycle is used to compare against the current cycle to alert if a machine is running too slow. The downtime limit is used to compare against the current cycle to alert if a machine has stopped running and is down. Each of these alerts can be disabled by leaving the associated field empty. Each preset can have up to four (4) individual parts with different cavitation and part weight. Only one part is necessary to have a valid job.

The parts requested field is a required field that is not stored in the preset because you never know how many pieces you will need for the same job the next time.

If you want to save a [new entry] as a preset, click on the checkbox labeled *Save Job as Preset*.

After all the appropriate fields have been entered, click *Save* to add the job to the job queue list. The program will automatically assign it as the last job to run.

To **change priority** of jobs in the job queue, select a job from the job list so that its fields are displayed. Change the priority number to the position number in the job queue where this job should be placed. Click *Save* to reprioritize the job queue.

To remove a job from the job queue, select the job from the job list so that its fields are displayed, and click *Remove*

Current Jobs

To edit the running parameters of a currently active job, click on *Edit* on the menu bar, then *current jobs* in the submenu.

Update Current Job

line job: 001: Job 001A, 002: Job 002A, 003: Job 003A, 004: Job 004A, **005: Job 005A**, 006: Job 006A

description: Job 005A

minimum cycle: 4.00
nominal cycle: 5.00
maximum cycle: 6.00
downtime limit: 10.00

part number	cycles	part weight	parts requested	reset	close
A1	1	0.100	100000		

To edit a current job, simply click on the desired job's description in the list, make your changes and click on Save.

Save Done

Select the job from the job list to display the current settings. Make any changes desired, and click Save to store them.

Update Current Job

line job: 001: Job 001A, 002: Job 002A, 003: Job 003A, 004: Job 004A, **005: Job 005A**, 006: Job 006A

description: Job 005A

minimum cycle: 4.00
nominal cycle: 5.00
maximum cycle: 6.00
downtime limit: 10.00

part number	cycles	part weight	parts requested	reset	close
A1	1	0.100	100000	Yes	

To edit a current job, simply click on the desired job's description in the list, make your changes and click on Save.

Save Done

To **reset a job** so that all the counts are reset to zero, click on the *Reset* button to the right of the part. The word Yes will appear in the button to denote that this part will reset when saved.

Update Current Job

line job: 001: Job 001A, 002: Job 002A, 003: Job 003A, 004: Job 004A, **005: Job 005A**, 006: Job 006A

description: Job 005A

minimum cycle: 4.00
nominal cycle: 5.00
maximum cycle: 6.00
downtime limit: 10.00

part number	cycles	part weight	parts requested	reset	close
A1	1	0.100	100000		Yes

To edit a current job, simply click on the desired job's description in the list, make your changes and click on Save.

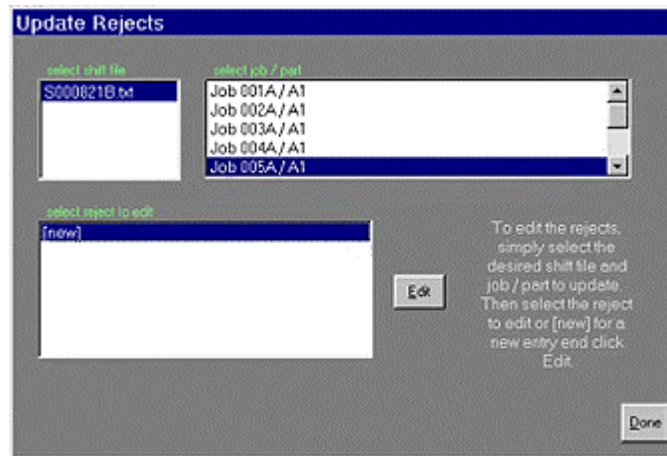
Save Done

To **close a job** so that the next job in the job queue loads, click on the *Close* button to the right of the part. Again, the word Yes will appear in the button to denote that the job will be closed when the Save button is clicked.

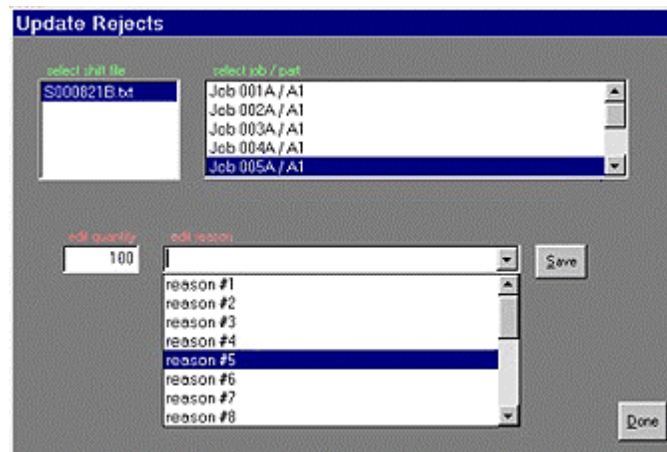
Enter Rejects and Reasons

Since the program does not detect between good and bad parts, the reject counts can be manually entered anytime after the end of the shift. These counts affect the job's stop date, parts to go, hours to go, and material to go.

To enter or change rejects and / or reject reasons, click *Edit* on the menu bar, then *Reject Reasons* in the submenu.

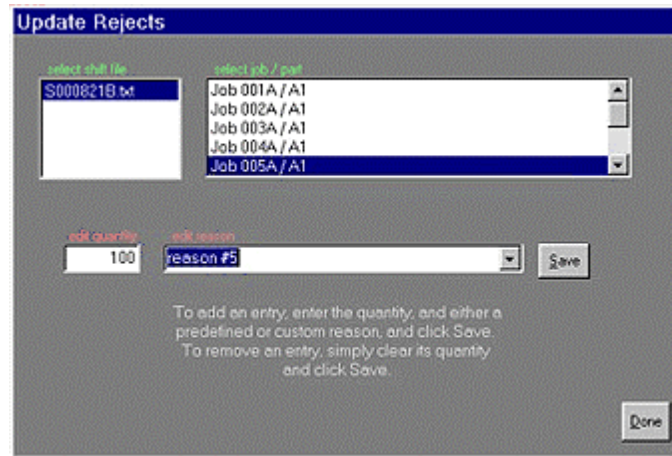


Select the shift file in which the job was running, and the job whose rejects you wish to change. The job's current rejects and reasons will be listed. Select the desired reject to change or *[new]* and click *Edit*.

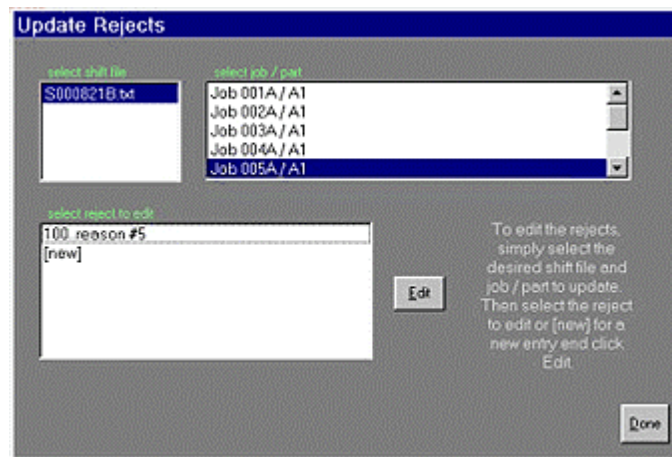


The selected reject will be displayed along with its current reject reason. Enter a reject quantity, then either type in the reject reason you want, or select from the predefined reject reasons by clicking on the down arrow to the right, and selecting one of the reasons listed.

The **predefined reject reasons** are stored in a file named RejectReasons.txt in the host directory. This is a text file that you can create and maintain by using Windows Notepad, or any other text editor. Each line is a separate reject reason. A sample file should be in the Tracker folder on your host system.



When you are satisfied with the quantity of rejects and the reason, click **Save** to store it and return to select another reject count. Clicking **Done** before **Save** will keep the original reason.

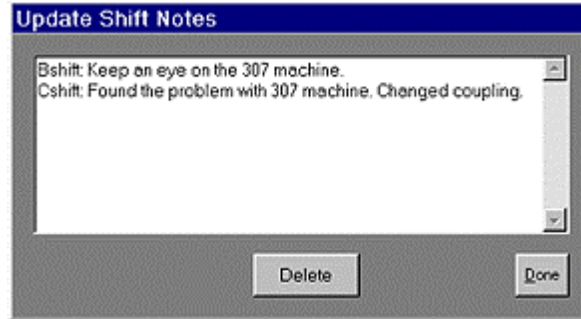


Click *Done* to return to the program.

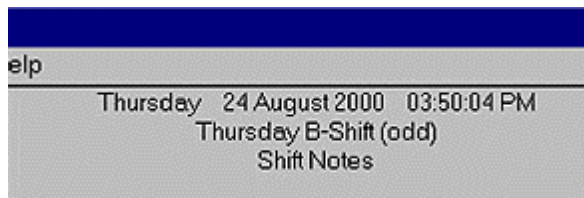
Shift Notes

Shift notes are messages that are left for the next shift, or just a log of what has been going on. Shift Notes are accessible on any system running the Tracker software.

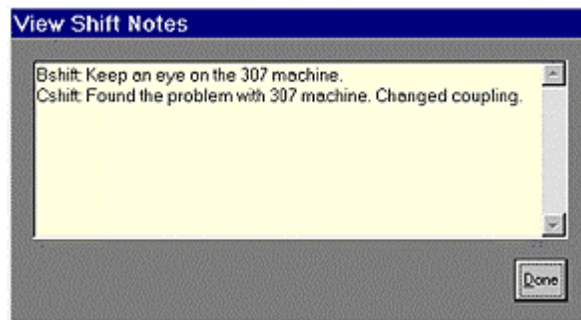
To update the shift notes, click on *Edit* on the menu bar, and *shift notes* in the sub menu.



Move the mouse inside the text box and click. A cursor should appear where the next character will be inserted. To clear the current shift notes, click on *Delete*. To return to the program, click on *Done*.



If there are any entries, Shift Notes will appear under the current date, time and shift.



To view the current shift notes, click on *View* on the menu bar, and *shift notes* in the sub menu. Use the scroll bar on the right to view the entire text. Click *Done* to return to the program.

Software Debouncers

If a particular line is recording multiple counts for a single cycle, chances are that the machine is controlled by older relay logic. As time passes, the relay contacts may start to chatter when opening and closing. This chatter is detected by the Tracker and recorded as individual cycles.

To help filter out these false cycles, a software debouncer has been added to the Tracker software. When an electrical transition is detected, no other electrical transitions are acknowledged by the Tracker software for the duration of the debouncer interval. If a debouncer is in effect, its value will be displayed at the bottom of the state times table on the Last 50 Cycles screen.

To change the debouncer intervals, display the *Last 50 Cycles* screen on the host system and type in the word **Debouncer**. A secondary window should appear with the line number, machine tag, and current debouncer value for each line. Double click on the desired line, and edit the value that appears. Click on Done when you have finished changing the debouncer values.