G FORCE PLUS RF

Powered Industrial Vehicle Fleet Management System

INSTRUCTION MANUAL

Document #RF1
Rev. 9

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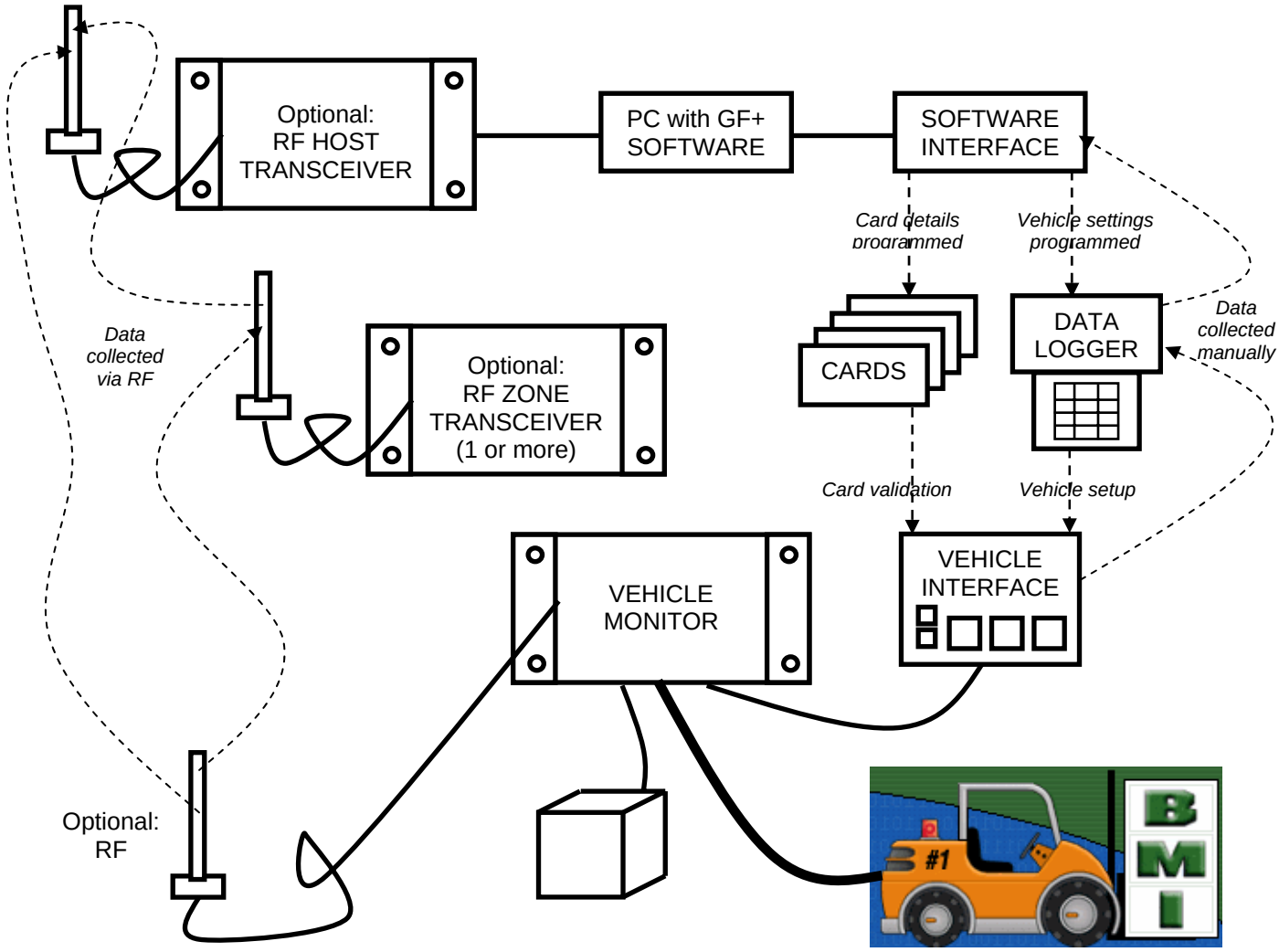
INTRODUCTION

This section provides introductory information about the G FORCE PLUS RF Powered Industrial Vehicle Fleet Management System. It also includes the necessary FCC and IC regulatory declarations.

SYSTEM DIAGRAM

The following representation depicts the system components and their relationships. Solid lines indicate a physical connection (i.e. cables, wires). Dotted lines indicate radio frequency communications.



SYSTEM FEATURES

The system includes the following features, which deliver cost savings, enhanced safety, and fleet management and data collection via RF communications.

- Vehicle access control and vehicle utilization
- Electronic vehicle inspection checklist

- Impact monitoring
- Battery monitoring for electric vehicles
- Maintenance lockout, PM scheduling and work order entry
- A user-friendly Vehicle Interface
- Comprehensive reporting
  - Impact Reports sorted by Operator, Vehicle, Supervisor and Date/Times
  - Vehicle Login History (including logins and impacts) sorted by Operator ad Vehicle
  - Productivity Reports sorted by Operator and Vehicle
  - Standard status reports for Vehicles and Cards used in the system
  - Detailed and Summary Vehicle Maintenance Reports by Technician and Vehicle
  - Failed and Passed Vehicle Inspection Reports
- Customizable settings, thresholds and alarms/interrupts/warnings

PARTS LIST

- One (1) RF Vehicle Monitor per vehicle
- One (1) Vehicle Interface per vehicle
- One (1) copy of the Fleet Manager Software and Instruction Manual
- One (1) Software Interface (reader/writer)
- One (1) Data Logger
- One (1) RF Host Transceiver
- One (1) Host Cable
- Cards for Operators, Supervisors and Maintenance Technicians (Lockout and Unlock)
- One or more RF Zone Transceivers (optional)

FCC AND IC REGULATORY DECLARATIONS

Federal Communications Commission (FCC) and Industry Canada (IC) regulations require the inclusion of this section in the Instruction Manual.

Special Accessories

The provided antenna, which operates in the 902 to 928 MHz frequency band, and antenna extension cable, must be used with the G FORCE PLUS RF Host Transceiver, G FORCE PLUS RF Zone Transceiver and G FORCE PLUS RF Vehicle Monitor. No substitutions are allowed.

Interference

The G FORCE PLUS RF Vehicle Monitor antenna and the G FORCE PLUS Vehicle Interface may not be located closer than 20cm to each other.

These devices comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) the devices may not cause harmful interference, and (2) the devices must accept any interference received, including interference that may cause undesired operation.

Component Changes or Modifications

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the G FORCE PLUS Vehicle Interface, G FORCE PLUS Data Logger, G FORCE PLUS RF Vehicle Monitor, G FORCE PLUS RF Host Transceiver, and G FORCE PLUS RF Zone Transceiver.

RF Exposure Warning

The following warning applies to the G FORCE PLUS Vehicle Interface, G FORCE PLUS RF Vehicle Monitor, G FORCE PLUS RF Host Transceiver, and G FORCE PLUS RF Zone Transceiver:

WARNING: This device meets the FCC/IC requirements for RF exposure when the antenna used for this transmitter has a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter which is closer than 20 cm.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population as indicated by Safety Code 6.

DATA LOGGER TUTORIAL

The Data Logger is a hand-held device used to transfer data between the Fleet Manager Software and a Vehicle Monitor. The power source is a single 9-volt battery, stored in the battery compartment at the back of the unit. A slot screwdriver opens the compartment for battery replacement.

1. Press **{Enter}** on the Data Logger to start its self-test. The Data Logger will display:
   a. "**Selftesting…**"
   b. "**SelfTest Passed Firmware 1V6**"
   c. "**Action?(1-9)**"
2. Press each number one at a time from **{1}** to **{9}** and watch the Data Logger display change for each selection:

Number	***Display***	***Purpose***
1	Events to PC	Download Vehicle data to Software
2	Get Vehicle ID	Get Vehicle ID from Software
3	Get Veh Settings	Get Vehicle settings from Software
4	Events from Veh	Collect Vehicle data (backup data collection method)
5	Prog Veh ID	Program Vehicle ID to Vehicle Monitor
6	Prog Veh Settngs	Program Vehicle settings to Vehicle Monitor
7	Date / Time	Transfer Date / Time from Software to Data Logger to Vehicle
8	Hot Card List	Transfer Hot Card List from Software to Data Logger to Vehicle
9	Clear Data	Clear Data Logger data (ID's, Settings, and Events)

3. Press **{7}**. The Data Logger will display "**Action?(1-9) Date / Time**"
4. Press **{Cancel}**. The Data Logger will revert to "**Action?(1-9)**"
5. Press **{4}**. The Data Logger will display "**Action?(1-9) Events from Veh**"
6. Press **{Enter}**. The DATA LOGGER will display "**Ready for Events**"
7. Do not press the keypad for one minute. The Data Logger will automatically shut down.

> ***NOTE!***
> *Press **{Cancel}** to return the Data Logger to **"Action?(1-9)"** at any time.*

- See "Initialize a Vehicle Monitor" for instructions on how functions 2, 3, 5, and 6 are used together to program Vehicle settings from the Software to a Vehicle Monitor.
- See "SYSTEM DATA" for instructions on how functions 1 and 4 are used together to manually transfer data from a Vehicle to the Software in the event of a breakdown in RF communications.
- See "OTHER DATA LOGGER FUNCTIONS" for instructions function 9.

VEHICLE AND SOFTWARE INTERFACE TECHNIQUES

Both the Vehicle Interface and the Software Interface require interaction with Cards and with the Data Logger. The methods of interaction are illustrated below:

Vehicle Interface and Cards

1. Hold the Card parallel to the face of the Vehicle Interface, making sure they are within 1" of each other.

2. Listen for the Vehicle Interface buzzer to sound, or to stop sounding as the case may be. This indicates the Card has been recognized.
3. Remove the Card from the Vehicle Interface and read the display for further information.
4. If the Vehicle Interface fails to recognize the Card, remove it from the Vehicle Interface by approximately 12" and retry.

Vehicle Interface and Data Logger

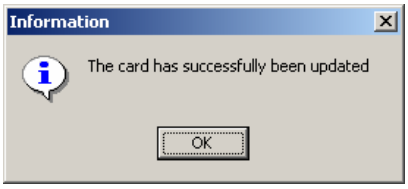
1. Place the Vehicle into Maintenance Lockout.
2. Prepare the Data Logger for the interaction by selecting the desired function.

3. Hold the Data Logger parallel to the face of the Vehicle Interface, making sure they are within 1” of each other.

4. Listen for a single beep from the Vehicle Interface. This indicates the Data Logger has been recognized.
5. Refer to instructions for individual functions to learn when the Vehicle Interface / Data Logger interaction is complete for that function.
6. When the interaction is complete, remove the Data Logger from the Vehicle Interface and read the Vehicle Interface display for further information.
7. If the Vehicle Interface fails to recognize the Data Logger, remove it from the Vehicle Interface by approximately 12” and retry.

Software Interface and Cards

1. Hold the Card parallel to the top of the Software Interface, making sure they are within 1” of each other (or lay the Card on the Software Interface).
2. Initiate the interaction between the Software Interface and Card by selecting the desired task from the Fleet Manager Software.
3. Watch the Software for progress of the interaction.
4. Click the **[OK]** button to confirm completion of the interaction when prompted by the Software.



5. Remove the Card from the Software Interface.

6. If the interaction fails, remove the Card from the Software Interface by approximately 12” and retry.

Software Interface and Data Logger

1. Prepare the Data Logger for the interaction by selecting the desired Data Logger function.
2. Hold the Data Logger parallel to the top of the Software Interface, making sure they are within 1” of each other (or lay the Data Logger on the Software Interface).

3. Initiate the interaction between the Software Interface and Data Logger by selecting the desired task from the Fleet Manager Software.
4. Watch the Software for progress of the interaction.
5. Click the **[OK]** button to confirm completion of the interaction when prompted by the Software.
6. Remove the Data Logger from the Software Interface.
7. If the interaction fails, remove the Data Logger from the Software Interface by approximately 12” and retry.

INSTRUCTION MANUAL CONVENTIONS

Software buttons	**[Add]**
Software tabs	*Vehicles*
Software menu items	**Setup | System Settings**
Software windows	*"Add Vehicle"*
Software fields	***Hours***
Data Logger keys	**{Cancel}**
Data Logger display	**"No Events!"**
Vehicle Interface keys	**{Pass}**
Vehicle Interface display	**"OPERATOR LOGIN PRESENT CARD"**

QUICK-START

This Quick-Start section summarizes the system setup steps without providing detailed how-to instructions. Complete them in the order shown. Detailed instructions follow beginning with the "INSTALLATION INSTRUCTIONS". Settings are described in the section "

DATA FIELD DEFINITIONS".

1. Install the Vehicle Monitors and Interfaces.
2. Install the Fleet Manager Software and Interface.
3. Install the RF Transceivers.
4. Set up the Fleet Manager Software.
    a. Define settings that apply to all Vehicles (**Setup | System Settings** menu).
    b. Define (up to 64) Authorization Groups and group settings (*Authorization Groups* tab).
        i. Add Authorization Groups and settings (**[Add]** button).
        ii. Select Vehicle Inspection checklist (*Inspection List* lower tab).
        iii. Select more Vehicle Inspection checklist items (*Custom List* lower tab).
        iv. Add more user-defined checklist items if required (**Setup | Custom Check List** menu).
    c. Define Vehicles and Vehicle settings and link each Vehicle to one Authorization Group (*Vehicles* tab, **[Add]** button).
    d. Define Employees and vehicle access rules for Employees (*Employees* tab).
        i. Add Employees and Employee details (**[Add]** button).
        ii. Assign (up to 64) Authorization Groups to each Operator (*Assign Authorization Groups* lower tab).
        iii. Assign (up to 32) Single Vehicles to each Operator (*Assign Single Vehicles* lower tab).
    e. Customize RF Transceiver descriptions (**Setup | Zone Description** menu).
5. Assign Cards to Employees.
6. Initialize the Vehicle Monitors with the Data Logger.
7. Begin system operation.

INSTALLATION INSTRUCTIONS

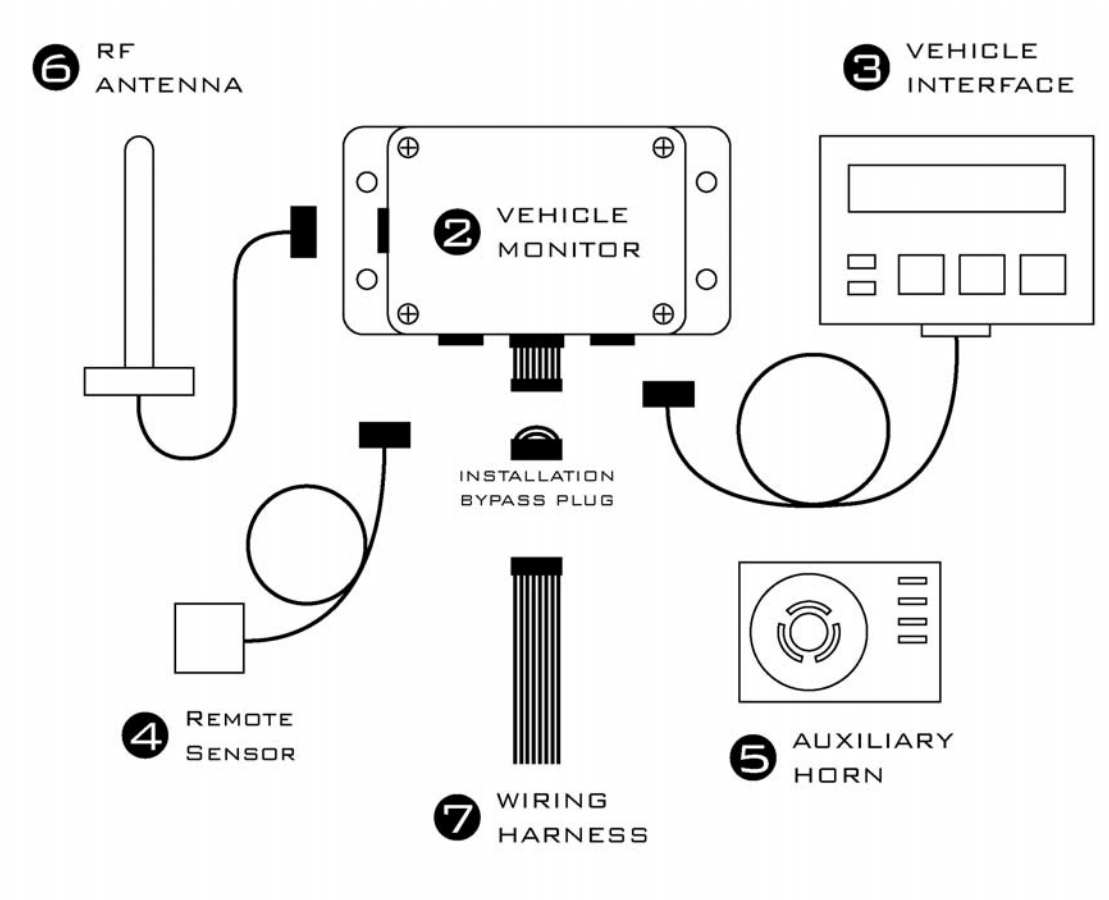
This section provides the installation instructions for the G FORCE PLUS RF system.

VEHICLE MONITOR AND INTERFACE

The Vehicle Monitor and Vehicle Interface installation instructions follow. A copy is also included with each Vehicle Monitor shipped.

> ***NOTE!***
> *Vehicle Monitor and Vehicle Interface installation may be done at the same time as the Software and Software Interface installation.*

Component Overview



Electrical Description

Input Fuse (F1)	12 – 60 volts 1A DC Slow
Lift Interrupt Relay Fuse (F2)	Max 60 volts 3.5A DC Slow
Secondary Alarm Relay Fuse (F4)	Max 60 volts 3A DC Slow
Horn Relay Fuse (F3)	Max 60 volts 3A DC Slow

Installation Steps

WARNING!

This device meets the FCC/IC requirements for RF exposure when the antenna used for this transmitter has a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter which is closer than 20 cm.

The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population as indicated by Safety Code 6.

NOTE!

The G FORCE PLUS RF Vehicle Monitor antenna and the G FORCE PLUS Vehicle Interface may not be located closer than 20cm to each other.

NOTE!

Wires and cables should be installed to avoid chafing and excess slack. Cable ties, clamps, grommets, looms, sleeves, supplementary insulation, conduit, and routing are acceptable provisions.

Wires and cables mounted on a boom, lift, or other similar moving part should be installed so that they are not subject to damage or failure as a result of kinking or abrasion.

Wires and cables should be installed to maintain clearance from moving parts, hot engine parts, exhaust systems, fuel systems and surfaces that are subject to accumulation of oil, grease, or dirt.

Follow the steps in the order below and refer to the diagram in the "Component Overview".

1. Disconnect the vehicle battery
   - Check the power circuit with a multi-meter or other testing device to ensure the absence of any residual voltage.
2. Mount the Vehicle Monitor onto the vehicle.
   - The optimal location for the Vehicle Monitor is within the plan form of the vehicle where it will be safe from electrical controls, engine heat, possible impacts, and vandalism.
   - Use the base of the Vehicle Monitor as a template to drill four ¼-inch holes in the selected location and attach the Vehicle Monitor using the hardware provided.
3. Mount and connect the Vehicle Interface.
   - The Vehicle Monitor antenna and the Vehicle Interface may not be located closer than 20cm to each other.
   - Secure the Vehicle Interface to an ergonomically accessible location on the Vehicle.
   - Feed the Vehicle Interface cable to the Vehicle Monitor and plug the cable end's 4-pin male connector into the 4-pin female receptacle on the Vehicle Monitor. Secure the connector.

4. Mount and connect the Remote Sensor.
   - ❑ The optimal location for the Remote Sensor is on a rigid part of the vehicle 2 to 4 feet from the floor (i.e. the frame). Overhead racks or masts are unsuitable.
   - ❑ Some recommended mounting locations are:

Sit-downs:	Under the floor plate on the left or right side frame with a minimum distance of 12 inches from the battery compartment on battery-powered vehicles
Stand-ups:	1-2 inches below the front cover/dash on the left or right inside perimeter of the frame
Turret trucks:	As high as possible on the main frame and as close as possible to the mast.
Walkies:	As low as possible under the cowl/cover on the main frame.
Walkie-riders:	As low as possible under the cowl/cover on the main frame.

   - ❑ Use the metal bracket provided to mount the Remote Sensor as parallel to the floor as possible, and so that the labelled arrows match the direction of the vehicle's travel (the cable should exit from the top or bottom of the Remote Sensor).
   - ❑ Or if preferred, clean the mounting surface thoroughly with degreaser and then mount the Remote Sensor using the 3M™ Dual Lock™ provided.
   - ❑ Feed the Remote Sensor cable to the Vehicle Monitor and plug the cable end's 6-pin male connector into the 6-pin female receptacle on the Vehicle Monitor. Secure the connector.
   - ❑ Secure the cable to the vehicle within 3 inches of the Remote Sensor.
5. Mount the Auxiliary Horn.
   - ❑ The optimal location for the Auxiliary Horn is where it will be audible and safe from electrical controls, engine heat and vandalism.
   - ❑ Clean the mounting surface thoroughly with degreaser and then mount the Horn using the 3M™ Dual Lock™ provided.
6. Mount and connect the antenna.
   - ❑ The optimal location for the antenna is:
     - On a rigid part of the vehicle, safe from electrical controls, engine heat, moving parts and vandalism,
     - As high as possible from the floor,
     - At least two feet away from any large metal mass for best communications results.
   - ❑ Attach the metal bracket provided to the selected location so the antenna will be vertical.
   - ❑ Insert the antenna into the bracket slot and secure the antenna by tightening the nut.
   - ❑ Prevent movement/vibration of the metal connector located between the short black and long copper-colored cables by securing the cables and protecting the connector if necessary.

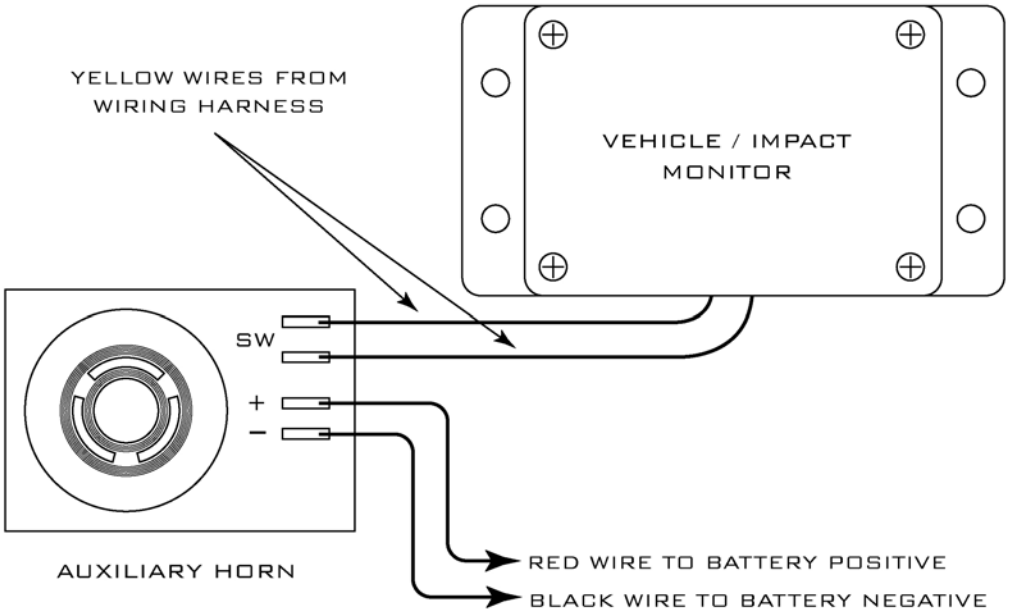
> ***NOTE!***
> *The provided antenna, which operates in the 902 to 928 MHz frequency band, and antenna extension cable,*
> *must be used with the G FORCE PLUS RF Vehicle Monitor.*
> *No substitutions are allowed.*

7. Wire the Vehicle Monitor.
   - ❑ Remove the Installation Bypass Plug from the end of the Wiring Harness and connect the Wiring Harness to the Vehicle Monitor.

> ***NOTE!***
> *Keep the Installation Bypass Plug in a safe place.*
> *You will need it again for step 9.*

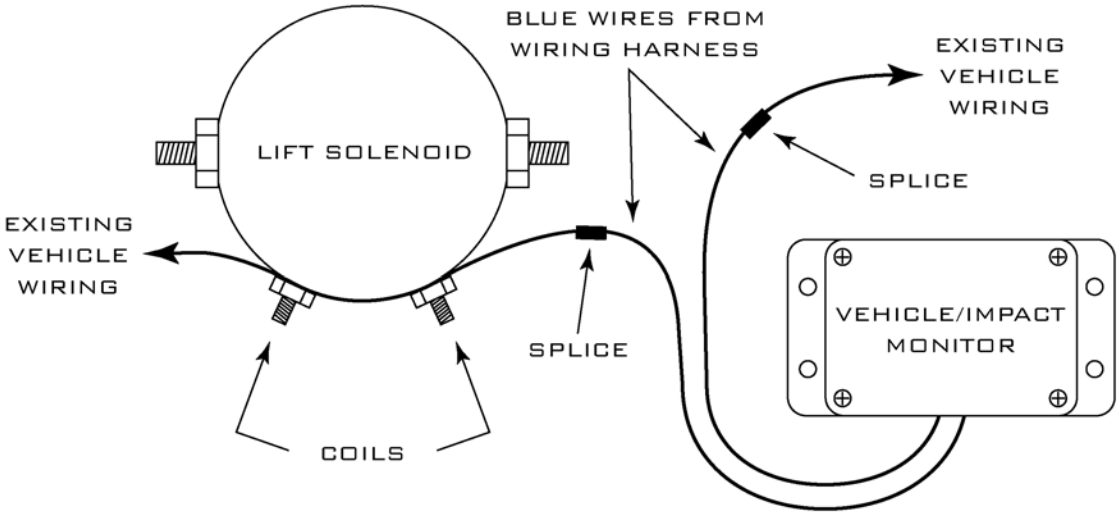
- Connect the wires to the vehicle as follows:

Orange wire/battery positive:	Connect this wire to unswitched battery positive on a **12-volt** IC truck. Tie this wire back if it is not used.
Red wire/battery positive:	Connect this wire to unswitched battery positive on a **12-** or **24-volt** battery. Tie this wire back if it is not used.
Red and white wire/battery positive:	Connect this wire to unswitched battery positive on a **36-** or **48-**volt battery. Tie this wire back if it is not used, or if this is an internal-combustion vehicle installation.
Black wire/battery negative:	For battery-powered vehicles, connect this wire directly to battery negative as close to the battery terminal as possible. For internal-combustion vehicles, connect this wire to the frame or any vehicle ground.
Green wires/key-on detect:	Connect one green wire to switched battery plus. ***IMPORTANT!*** *On an IC truck, this green wire **MUST** be connected to the **IGNITION** contact of the keyswitch, not the **ACCESSORY** contact. If it is connected to the accessory contact, the connection will be broken when the starter is engaged, which will turn the GForce unit off.* Connect the second green wire directly to battery minus as close to the battery terminal as possible. For internal-combustion vehicles, connect the second green wire to the frame or any vehicle ground.
Yellow wires/Auxiliary Horn:	Connect one yellow wire to one of the two Auxiliary Horn terminals labelled “SW”. Connect the second yellow wire to the second Auxiliary Horn “SW” terminal. Use a suitable length of red wire to make a connection between the positive terminal on the Auxiliary Horn (labelled “+”) and battery positive. An unused portion of red battery positive wire from the Wiring Harness may be used. Similarly, use a suitable length of black wire to make a connection between the negative terminal on the Auxiliary Horn (labelled “–”) and battery negative. An unused portion of black battery negative wire from the Wiring Harness may be used.



Blue wires/interrupt:

Use these wires to interrupt a device on the vehicle if desired. The contact on the blue wires is fused at 3 amps – do not create a circuit that exceeds this rating. For example, to interrupt a lift solenoid on an electric truck, do the following. Remove one vehicle wire at the coil of the lift solenoid. Splice one blue wire to the wire just removed. Connect the other blue wire to the vehicle lift solenoid terminal. Tie these wires back if they are not used, or if this is an internal-combustion vehicle installation. Other applications are possible if there is no lift solenoid available. The wires are to be attached in series with the device you want to disable, so that if the connection is broken, the device will not have power and disable the truck.



Purple wires/secondary alarm:	Use these wires to interrupt a second device if desired. The contact on the purple wires is fused at 3 amps – do not create a circuit that exceeds this rating. For customized help with your particular installation, contact Technical Assistance at BMI Technologies Inc. at 1-800-563-8867. Tie these wires back if they are not used.

8. Reconnect the battery and turn on the vehicle ignition to test the installation.
   - ❑ The vehicle should power up and the Vehicle will be in Maintenance Lockout. The Vehicle Interface will display "**MAINT LOCK OUT DD/MM/YYYY HH:MM**".
   - ❑ If the blue wires were connected for lift interrupt, the lift will be disabled.
   - ❑ If the purple wires were connected for a secondary alarm, the vehicle's behavior will reflect a secondary alarm condition.

> ***NOTE!***
> *If the installation test fails, contact Technical Assistance at BMI Technologies Inc. at 1-800-563-8867.*

9. Complete or pause the installation.
   - ❑ Refer to the section "Initialize a Vehicle Monitor" to program the Vehicle Monitor settings, OR
   - ❑ Disconnect the Vehicle Monitor and Wiring Harness and reconnect the Installation Bypass Plug to the end of the Wiring Harness to allow full vehicle use and to defer the programming of Vehicle Monitor settings.

SOFTWARE AND INTERFACE

PC Software and Interface installation may be done at the same time as the Vehicle Monitor and Interface installation. The Software Interface must be installed before the Software is installed.

System Requirements

- ❑ Stand-alone IBM PC or compatible
- ❑ Microsoft® Windows XP Pro
- ❑ CD-ROM drive
- ❑ USB port
- ❑ 9-pin serial port

Software Interface Installation

The Software Interface is used to read from and write to Cards and the Data Logger. To install it:

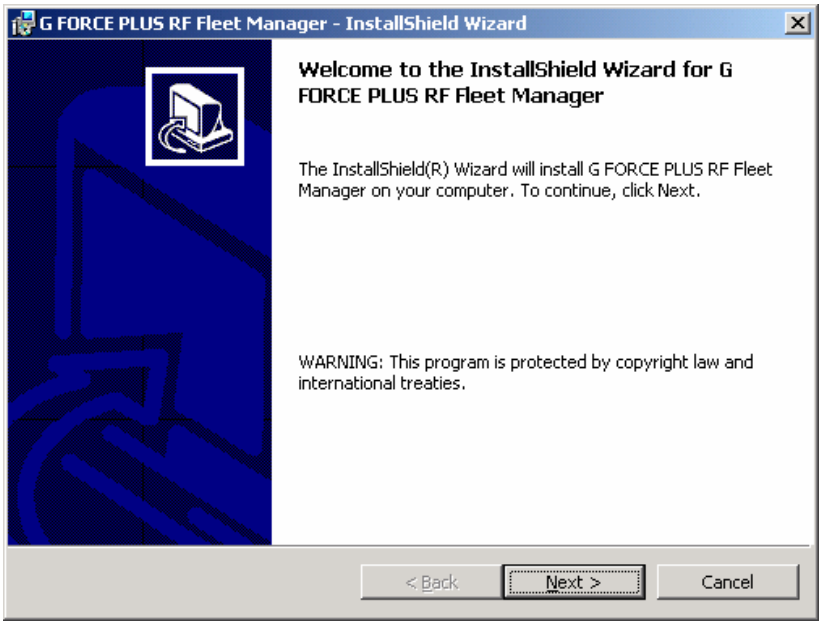
1. Connect the Software Interface to your computer using the USB cable supplied.
2. Insert the CD that came with the Software Interface.
3. The installation is complete when Software Interface LED indicates green.

> ***NOTE!***
> *If the Software Interface LED indicates flashing amber, your PC has not automatically detected the Interface. If this is the case, follow the steps outlined in the third-party FEIG Electronic OBID® USB-Driver installation instructions for your particular operating system.*

Software Installation

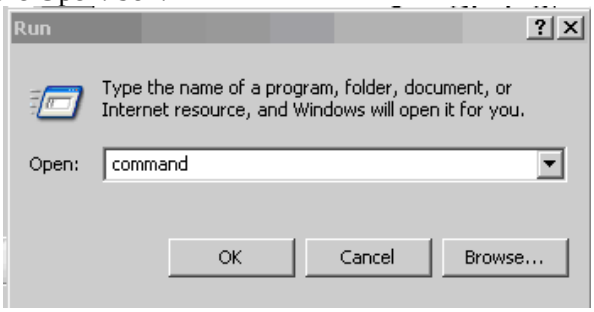
The following instructions are for a standalone installation of the Software.

1. Close all open files and applications on your computer, including any anti-virus software.
2. Insert the installation CD into your computer's CD-ROM drive.
3. Double-click the "Setup.exe" file on the CD to begin the installation process and follow the InstallShield® Wizard onscreen installation steps, accepting the default program location provided.

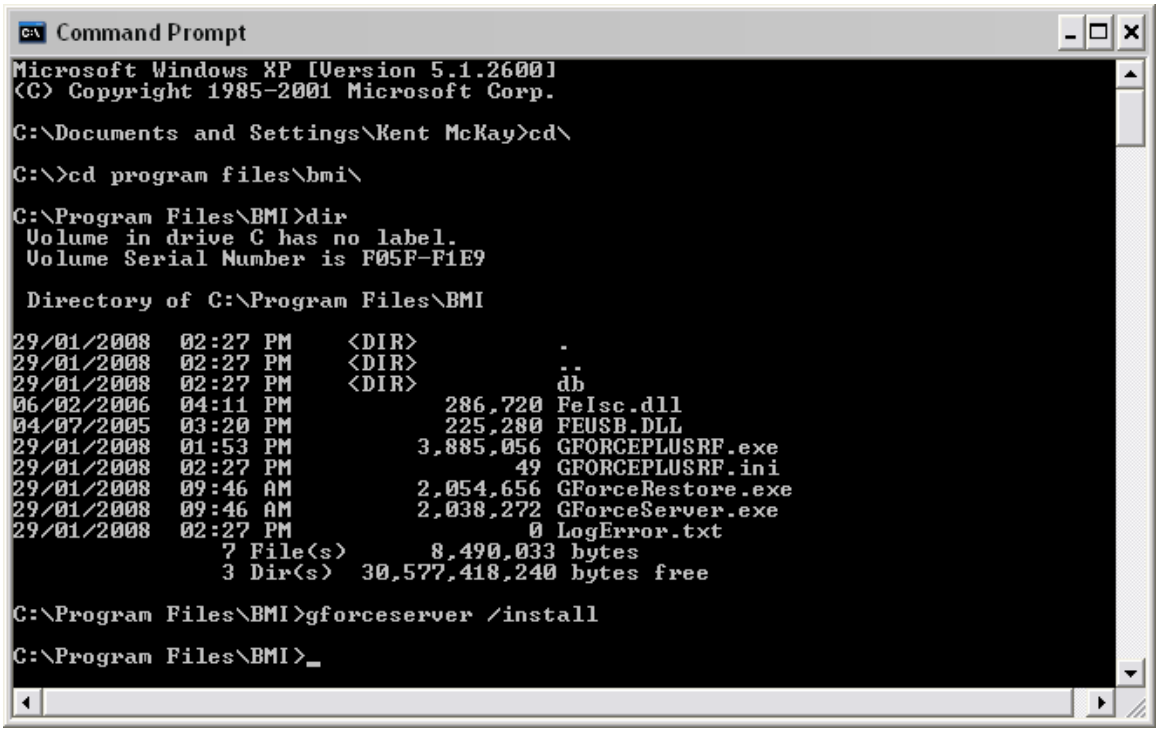


4. Remove the installation CD when Setup is complete.

5. Click Start->Run.
6. Enter “command” into the Open: box.



7. Type “cd c:\progra~1\bmi”.

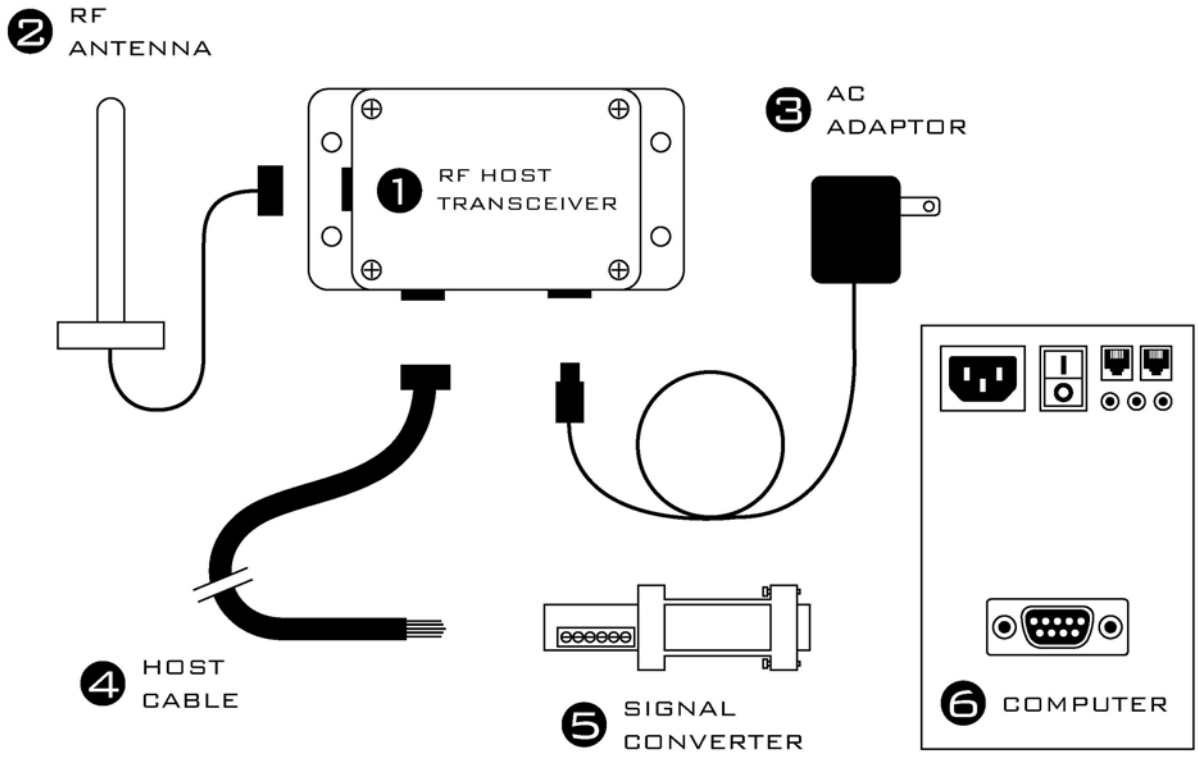


8. Type “gforceserver /install”. You should get a success message.
9. Click Ok.
10. Close the command window.
11. Reboot your computer.

RF TRANSCEIVERS

The RF Transceivers are used to create a wireless communications link between the Vehicle Monitors and the Software. The Host Transceiver has a physical connection to the computer. The Zone Transceivers are added to extend the communications coverage area by placing each of them within range of the Host Transceiver.

Component Overview



Installation Steps

Follow the steps in the order below and refer to diagram in "Component Overview".

1. Mount the Transceiver in the selected location.
   - ❑ The optimal location for a Transceiver and antenna is:
     - Where it will be safe from environmental hazards, possible impacts, and vandalism,
     - As high as possible from the floor,
     - At least two feet away from any large metal mass for best communications results,
   - ❑ Use the base of the Transceiver as a template to drill four ¼-inch holes in the selected location and attach the Transceiver using the hardware provided.

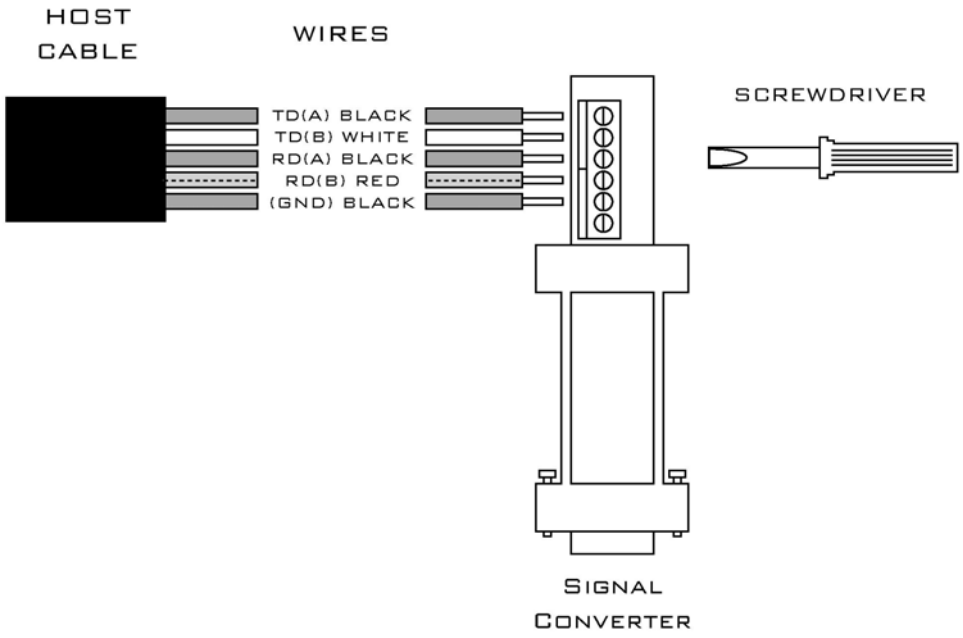
2. Mount and connect the antenna.
   - ❑ Attach the metal bracket provided to the selected location so the antenna will be **vertical**.
   - ❑ Insert the antenna into the bracket slot and secure the antenna by tightening the nut.
   - ❑ Prevent movement/vibration of the metal connector located between the short black and long copper-colored antenna cables by securing them and protecting the connector if necessary.

NOTE!
The provided antenna, which operates in the 902 to 928 MHz frequency band, and antenna extension cable, must be used with the G FORCE PLUS RF Host and Zone Transceivers. No substitutions are allowed.

3. Supply the Transceiver with 110v power.
   - ❑ Plug the power supply of the AC adaptor into a standard 110v outlet.
   - ❑ Connect the other end of the adaptor to the Transceiver.

4. Install and connect the Host Cable (Host Transceiver only).
   - ❑ Feed the Host Cable between the Host Transceiver and the computer running the Software.
   - ❑ Plug the Host Cable's 6-pin male connector into the 6-pin female receptacle on the Host Transceiver.
   - ❑ Secure the connector.
   - ❑ Secure the Host Cable within 12" of the connector to prevent accidental disconnection.

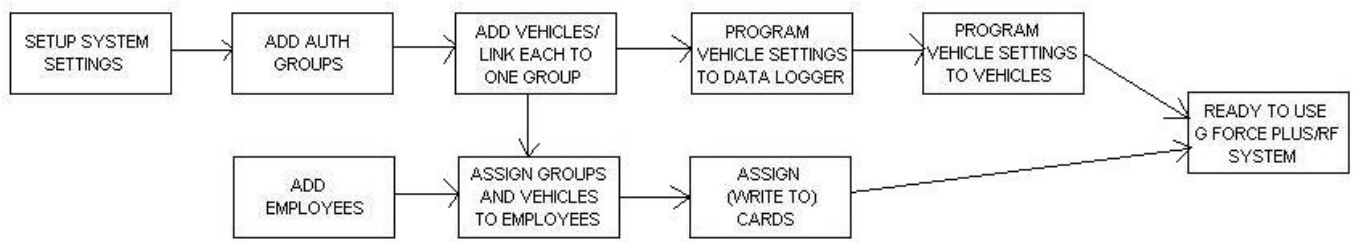
5. Connect the Host Cable and the Signal Converter (Host Transceiver only).
   - ❑ Connect the individual wires in the Host Cable to the Signal Converter as shown in the diagram below, matching the labeling on the wires and the Converter



6. Connect the Host Transceiver and the computer.
   - ❑ Insert the Signal Converter's 9-pin female receptacle into the computer's 9-pin serial port.

SYSTEM SETUP

This section provides the setup instructions for the G FORCE PLUS RF system. The diagram summarizes the setup order.

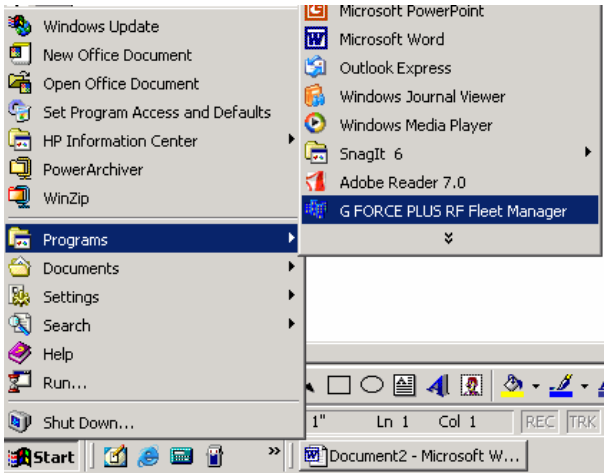


SOFTWARE

This section provides an overview of the Software, and outlines how to setup the Software for use with the G FORCE PLUS RF system.

Starting the Software

1. Start the Software by selecting “G FORCE PLUS RF Fleet Manager” from the “Programs” menu

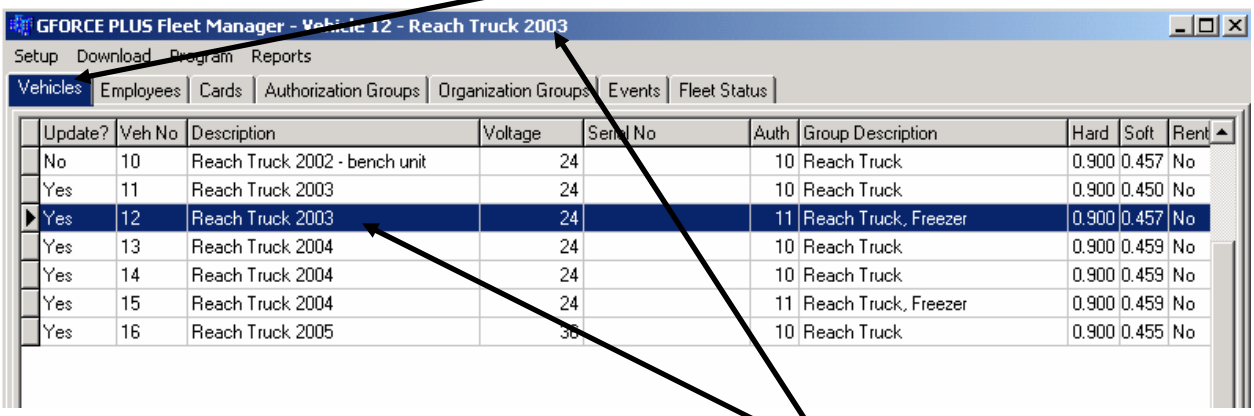


2. Or, double-click the Desktop shortcut created during the Software installation steps.

Navigation

The system's data is displayed in a file folder format, organized by tabs.

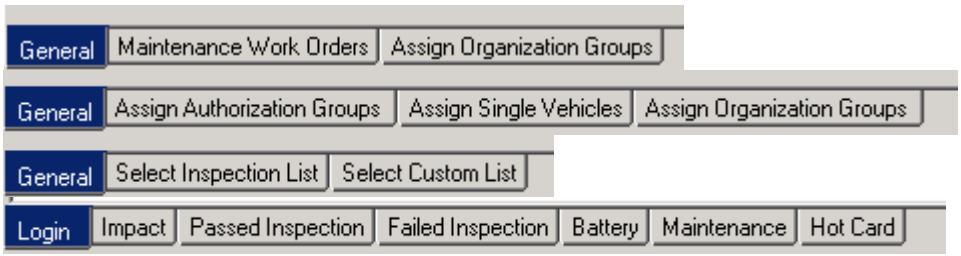
Navigate the Software by clicking on the desired tab; the selected tab will display as highlighted.



Similarly, when a line item is selected, the selected line item will display as highlighted and the title bar will display the description of the selected item.

For most tabs, double-clicking a line item will open a window that allows editing of the selected item.

For the Vehicles, Employees, Authorization Groups, and Events tabs, note the additional tabs at the bottom of the Software. These are used to store additional information related to the selected line item or tab.



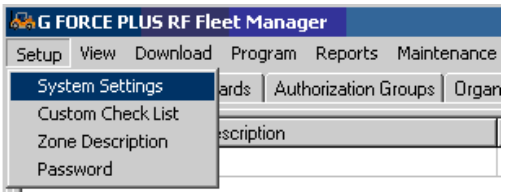
The menu provides access to additional system setup information, data collection, reports, and software maintenance.

System Settings

This section begins the detailed how-to instructions for Software setup. Begin with the System Settings and follow the Instruction Manual along in the order shown.

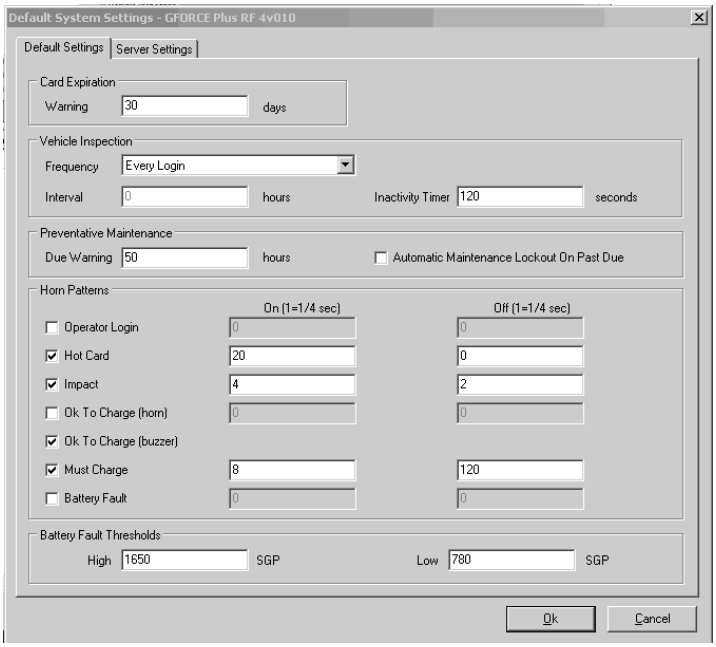
Settings defined in the "*System Settings*" window apply to all Vehicles in a fleet. If a change is made to the System Settings, all Vehicles in the fleet must be reprogrammed using the Data Logger.

1. Select **Setup | System Settings…**from the menu.



2. Complete the ***System Settings*** fields according to the requirements for your operation. Settings are defined in the section "

DATA FIELD DEFINITIONS".



***Items of Note**:*

Vehicle Inspection Interval: How many hours after the last inspection before another will be required if the inspection frequency requires it.

Vehicle Inspection Frequency: How often the GForce Plus will require the safety checklist to be performed. Options:

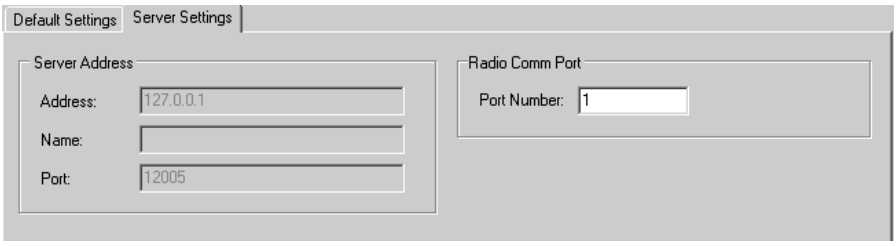
Every Login: Requires a safety inspection every time a driver logs into the truck. Does not use the interval.

Every Operator Change: Requires a safety inspection every time a new operator logs onto the truck. Does not use the interval.

First Login per Operator per Interval: If an inspection hasn't been performed by the operator currently logging in within the time specified in Interval, the operator must do a safety check.

First Login per Interval: If an inspection hasn't been performed by anybody within the time specified in Interval, the operator must do a safety check.

3. Radio Comm Port under the Server Settings tab is where you set which Serial port on the computer the Host Transceiver is connected to.



NOTE!
A reboot is required when the Port Number is changed.

4. Click the **[OK]** button to save the changes. Reboot if required.

Authorization Groups

NOTE!
Authorization Groups must be set up before

Primarily, Authorization Groups are how vehicle access rules are defined. Each Vehicle is assigned to a single Authorization Group and each Operator is assigned up to 64 Authorization Groups. The Operator then has access to all Vehicles in the assigned Authorization Groups.

Consider creating a unique Authorization Group where vehicles require different:

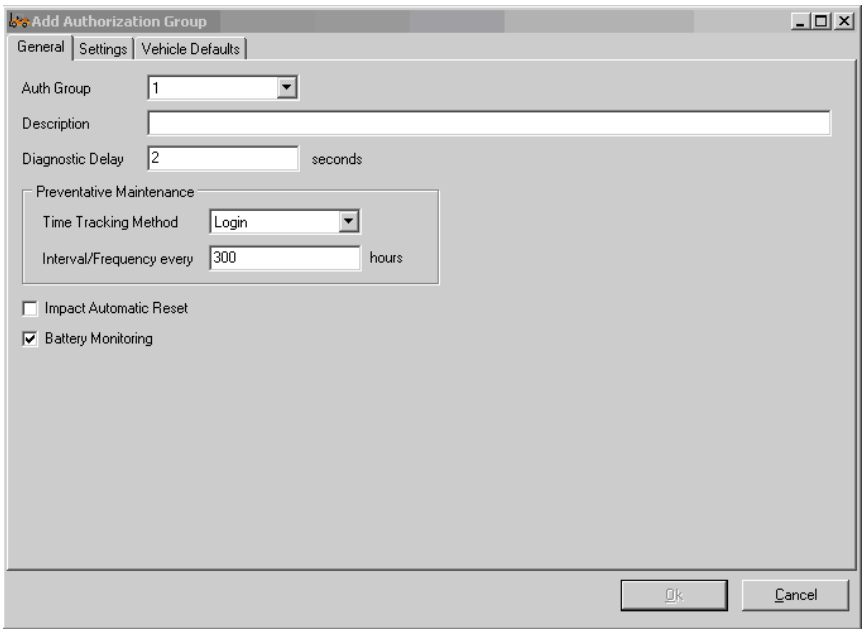
- Vehicle Inspection checklists
- Operating and training requirements (i.e. electric vs. internal combustion, pallet jacks vs. order pickers)
- Preventative Maintenance scheduling (i.e. leased vs. owned)
- Interrupts and alarms (re: battery monitoring for electrics vs. none for internal combustion)
- Battery settings due to operating environment (i.e. freezer vehicles)

Add an Authorization Group

1. Select the *Authorization Groups* | *General* tab.
2. Click the **[Add]** button to open the *"Add Authorization Group"* window. Settings are explained in the section "

DATA FIELD DEFINITIONS".

a. Complete the fields on the *General* tab.



Auth Group: An identifying number for the authorization group. You may have up to 64 auth groups.

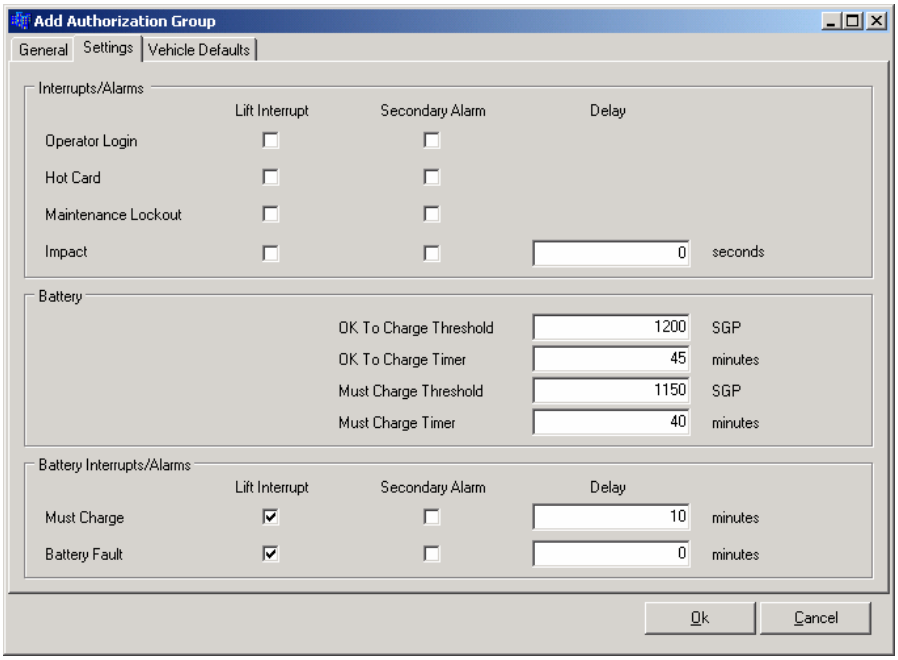
Diagnostic Delay: Some trucks have monitoring in them that can generate error codes if the interrupt in the GForce is open when the truck starts. The Diagnostic Delay is how long the GForce unit will keep the interrupt closed after startup before opening the interrupt and disabling the truck to require a logon.

Time Tracking Method: Options are Login or Motion. Login means as long as a user is logged in, the GForce preventative maintenance hour meter will run. Motion means as long as the truck is moving, the GForce preventative maintenance hour meter will run.

Impact Automatic Reset: If this is checked, on impact the GForce will go into alarm for 5 seconds, then reset itself and send the impact data to the computer. If this is unchecked, on impact the GForce will go into alarm until a supervisor card is applied to the interface.

Battery Monitoring: Enables/disables the battery monitoring capabilities of the GForce.

b. Complete the fields on the *Settings* tab.

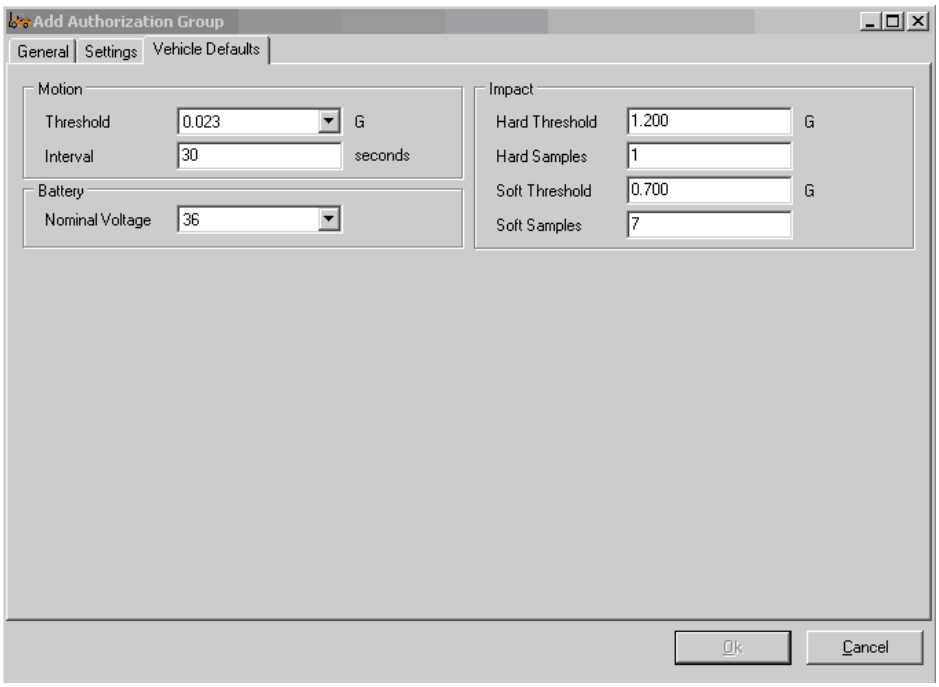


Interrupts/Alarms: Checking or unchecking these boxes will enable or disable the Lift Interrupt (blue wires) or Secondary Alarm (purple wires) connections on the listed events.

Battery: These are the thresholds for battery conditions measured in specific gravity points (SGP) which will cause the GForce to report OK to Charge or Must Charge conditions for the battery if Battery Monitoring is enabled. The Timer fields are the number of minutes of reading below the specified SGP before the GForce reports the battery condition.

Battery Interrupts/Alarms: If checked, it will disable the truck if the must charge or battery fault conditions are met for the listed number of minutes.

c. Complete the fields on the *Vehicle Defaults* tab. These values will become default values for Vehicles assigned to this Authorization Group. They can be changed for individual trucks if required in the Vehicle Settings tab.



Motion Threshold: The sensitivity of the GForce unit to determine if the truck is in motion or not. A lower number means less acceleration is required to get the GForce to sense motion.
Motion Interval: The amount of time since the last start, stop, or direction change that the GForce will consider the truck in motion.
Battery Nominal Voltage: If battery monitoring is enabled, the voltage that is expected of the battery.
Hard/Soft Threshold: The amount of force, expressed in Gs, it takes for the GForce to register a Hard/Soft impact.
Hard/Soft Samples: The amount of time (in milliseconds) the hard/soft thresholds need to be exceeded before the truck goes into Impact Alarm. Do not alter these in most circumstances.

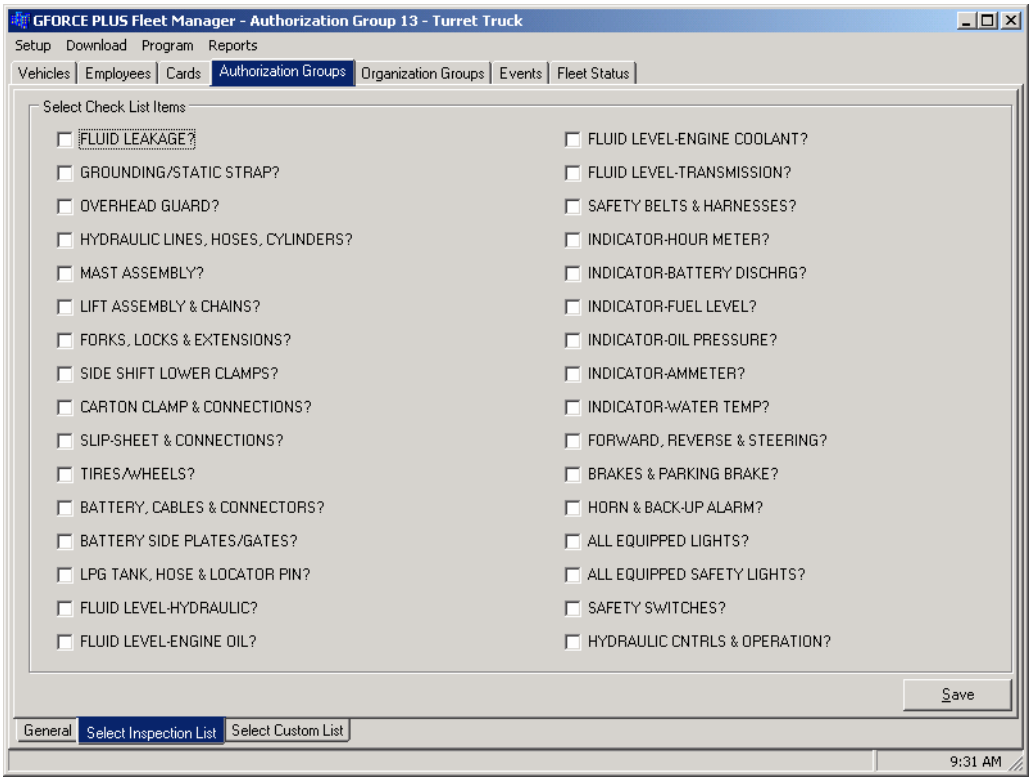
3. Click the **[OK]** button to save the changes.

Create a Vehicle Inspection Checklist

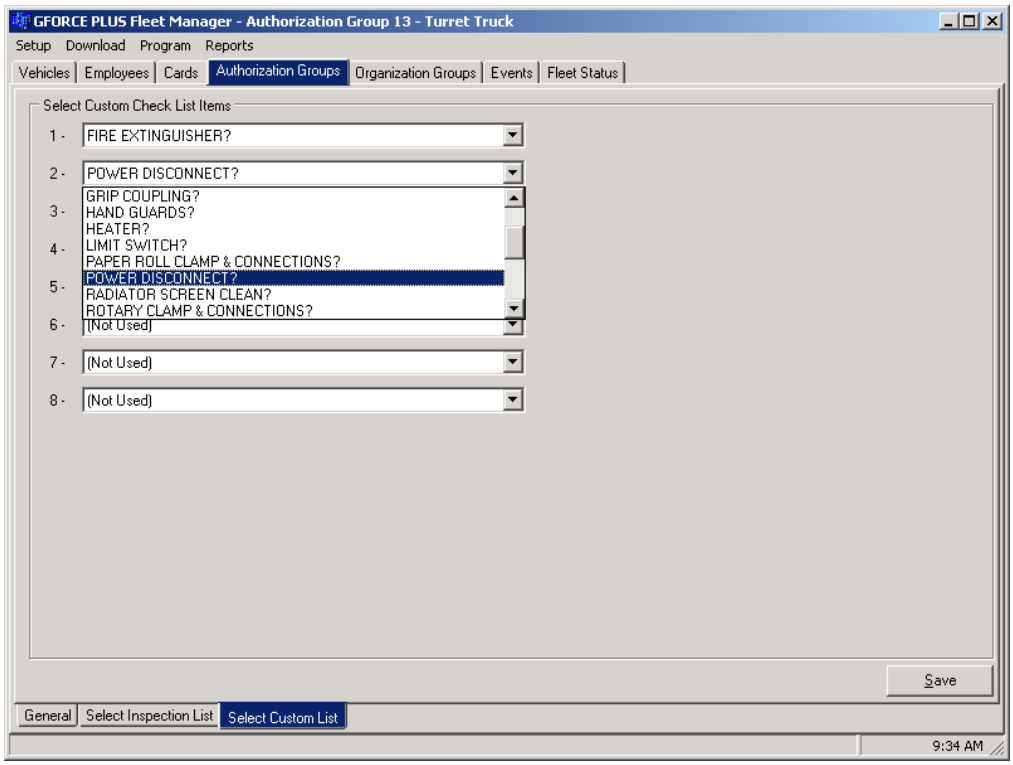
The Vehicle Inspection Checklist for an Authorization Group is created by selecting from a list of 32 system-defined items, as well as adding up to 8 user-defined (custom) items. Each selected item is displayed on the 2x16-character Vehicle Interface and requires a **{Pass}** or **{Fail}** response.

1. Select an Authorization Group from the grid.
2. Click on the *Select Inspection List* tab at the bottom of the *Authorization Group* tab.
3. Check the desired system-defined inspection items. These will display on the Vehicle Interface in the order selected from top left to bottom right.

4. Click the **[Save]** button to save the *Select Inspection List* tab changes.



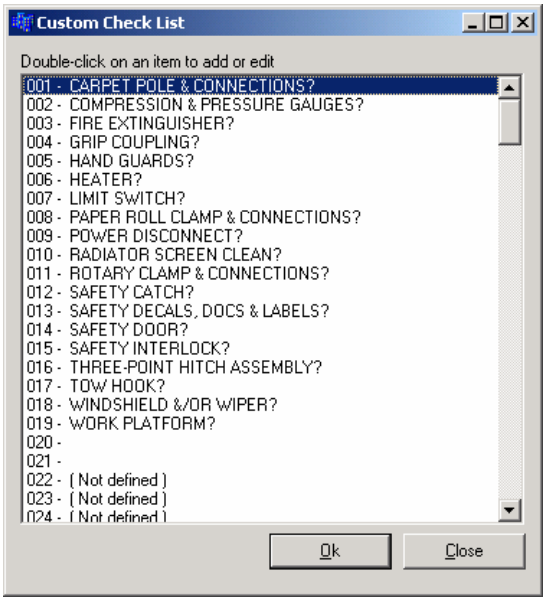
5. Click on the *Select Custom List* tab at the bottom of the *Authorization Group* tab.
6. Select up to 8 user-defined inspection items. These will appear on the Vehicle Interface in the order selected from top to bottom after the selected system-defined items.
7. Click the **[Save]** button to save the *Select Custom List* tab changes.



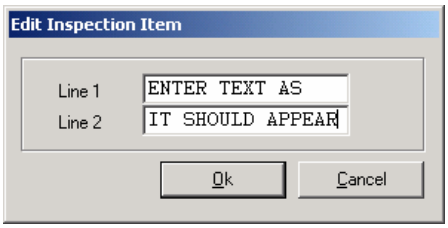
Edit the Custom Checklist

The Custom Checklist allows for an Authorization Group's Vehicle Inspection Checklist to be customized. The Software can store up to 200 fully editable user-defined items, and is preset with 18 common ones. To modify the list:

3. Select **Setup | Custom Check List** from the menu.



4. Double-click an item from the list to edit it, or double-click a [Not defined] line to add to the list.
5. Type the text the way you want it to display on the 2x16-character LCD display of the Vehicle Interface.



6. Click the **[OK]** button to add the item to the list.
7. Click the **[OK]** button to save the changes.

Edit an Authorization Group

> ***NOTE!***
> *Changes to the settings of an Authorization Group require all Vehicles in the Authorization Group to be reprogrammed with the Data Logger.*

1. Select the *Authorization Groups* | *General* tab.
2. Select the Authorization Group you want to edit from the grid.
3. Click the **[Edit]** button to open the *"Edit Authorization Group"* window.
4. HINT: Double-click an Authorization Group from the grid to save a step!
5. Change the desired field on the *General*, *Settings* or *Vehicle Defaults* tab.
6. Click the **[OK]** button to save the changes.

Vehicles

The details and desired settings of each Vehicle equipped with a Vehicle Monitor must be added to the Fleet Manager Software and linked to one Authorization Group. The Authorization Group to which the Vehicle is assigned is used to determine vehicle access by Operator Card validation, as well as the Inspection Checklist that will display on the Vehicle Interface.

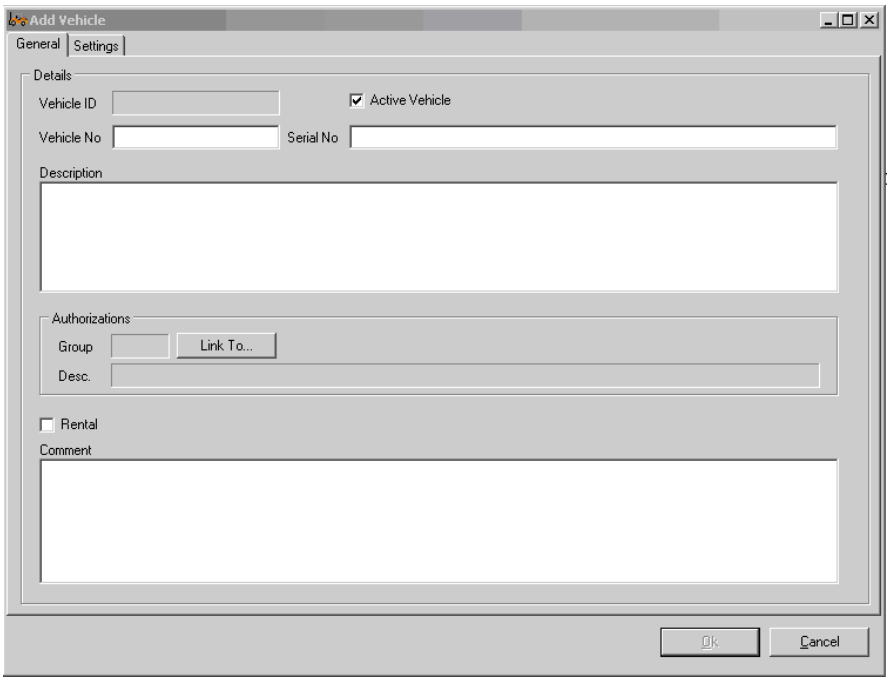
Add a Vehicle

> ***NOTE!***
> *Authorization Groups must be set up before Vehicles and Employees.*

1. Select the *Vehicles* | *General* tab.
2. Click the **[Add]** button to open the *"Add Vehicle"* window. Settings are explained in the section "

DATA FIELD DEFINITIONS".

3. Complete the fields on the *General* tab.

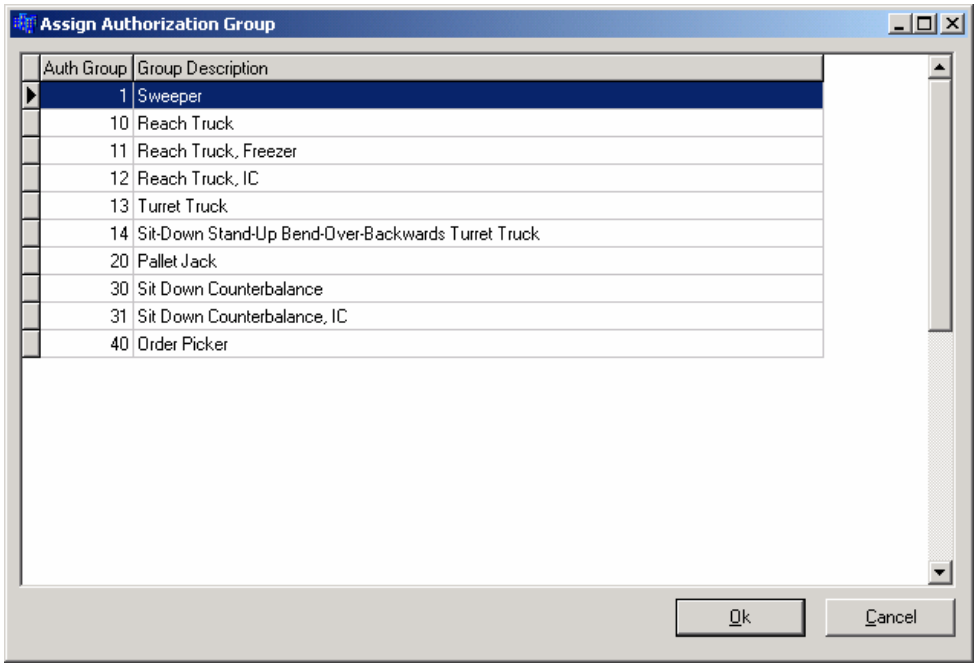


Vehicle No.: The unique vehicle identifier.

Serial No.: The vehicle serial number.

Description: A description of the truck that will appear in reports.

Click the **[Link To…]** button to open the *"Assign Authorization Group"* window. Select an Authorization Group from the grid and click the **[OK]** button.



4. If the truck requires different settings from the defaults for its Authorization Group, complete the fields on the *Settings* tab.
5. Click the **[OK]** button to save the changes.

Edit a Vehicle

> ***NOTE!***
> *Changes to the settings of a Vehicle require the Vehicle Monitor to be reprogrammed with the Data Logger.*

1. Select the *Vehicles* | *General* tab.
2. Select the Vehicle you want to edit from the grid.
3. Click the **[Edit]** button to open the *"Edit Vehicle"* window.
4. HINT: Double-click a Vehicle from the grid to save a step!
5. Change the desired field on the *General* or *Settings* tab.
6. Click the **[OK]** button to save the changes.

Employees

The following Employees must be entered in the Fleet Manager Software. Cards are assigned to each Employee based on role. An Employee may require more than one Card:

- Employees operating Vehicles for the purpose of materials handling → Operator Card
- Employees responsible for investigating Impact or Hot Card alarms → Supervisor Card
- Employees responsible for Vehicle and battery maintenance → Lockout and Unlock Cards

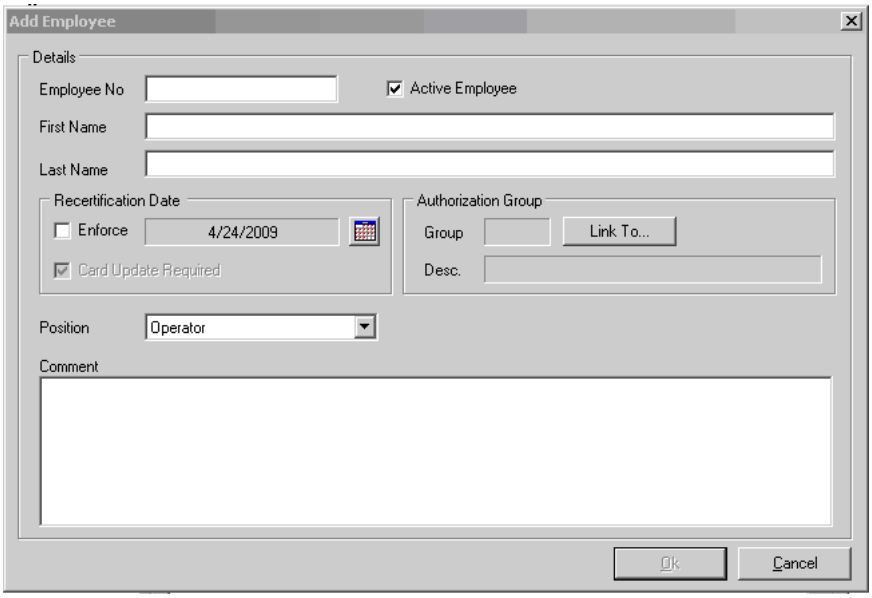
Add an Employee

> ***NOTE!***
> *Authorization Groups must be set up before Vehicles and Employees.*

1. Select the *Employees* | *General* tab.
2. Click the **[Add]** button to open the *"Add Employee"* window. Fields are explained in the section "

DATA FIELD DEFINITIONS".

3. Complete the ***Add Employee*** fields and click the **[OK]** button to save the changes.



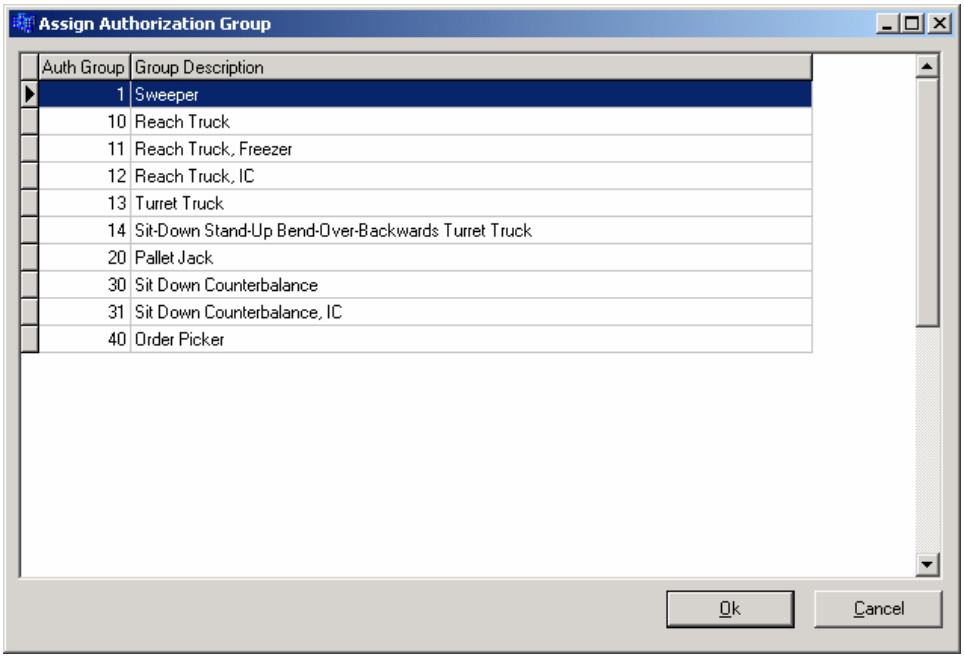
4. Define vehicle access rules for the Operator by clicking (see "Define Vehicle Access Rules for an Operator").
5. All operators must be assigned 1Authorization Group at creation by clicking the Link To… button.
6. Assign a Card to the Employee (see "CARD ASSIGNMENT").

Define Vehicle Access Rules for an Operator

Vehicle access rules must be set up for Employees who will be operating Vehicles equipped with Vehicle Monitors. This is done through the assignment of Authorization Groups to the Operator, and in the case of exceptions to this, through the assignment of single Vehicles to the Operator.

These assignments are written to an Operator Card, and when presented to a Vehicle Interface, it is determined if there is a match between the Operator Card and the Authorization Group to which a Vehicle belongs (or a match to the Vehicle itself in the case of Single Vehicle assignments).

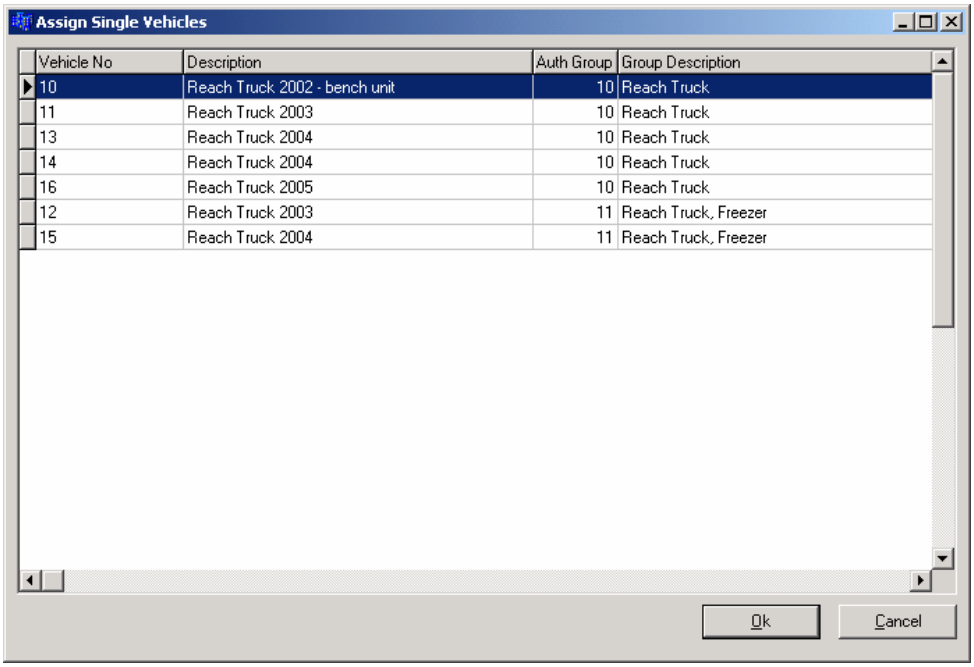
1. Select the *Employees* tab.
2. Select the desired Employee from the grid.
3. Assign Authorization Groups to the Operator.



a. Click the *Employees* | *Assign Authorization Groups* tab.
b. Click the **[Add]** button to open the *"Assign Authorization Group"* window.
c. Select an Authorization Group from the grid.
d. Click the **[OK]** button to save the addition.
e. HINT: Double-click an Authorization Group to save a step!

4. Repeat until all Authorization Groups for the Operator are shown on the *Employees* | *Assign Authorization Groups* tab.

5. Assign Single Vehicles to the Operator where Authorization Group assignments do not apply (for example, to keep an Operator-in-training off new vehicles).



a. Click the *Employees* | *Assign Single Vehicles* tab.

b. Click the **[Add]** button to open the *"Assign Single Vehicles"* window.
c. Select a Vehicle from the grid.
d. Click the **[OK]** button to save the addition.
e. HINT: Double-click a Vehicle to save a step!

6. Repeat until all Vehicles for the Operator are shown on the *Employees* | *Assign Single Vehicles* tab.
7. Delete Authorization Group or Single Vehicle assignments by using the **[Delete]** button on the *"Assign Authorization Groups"* and *"Assign Single Vehicles"* windows.

Edit an Employee

> ***NOTE!***
> *Recertification Date and vehicle access rule changes for Operators require the Employee's Operator Card to be updated.*

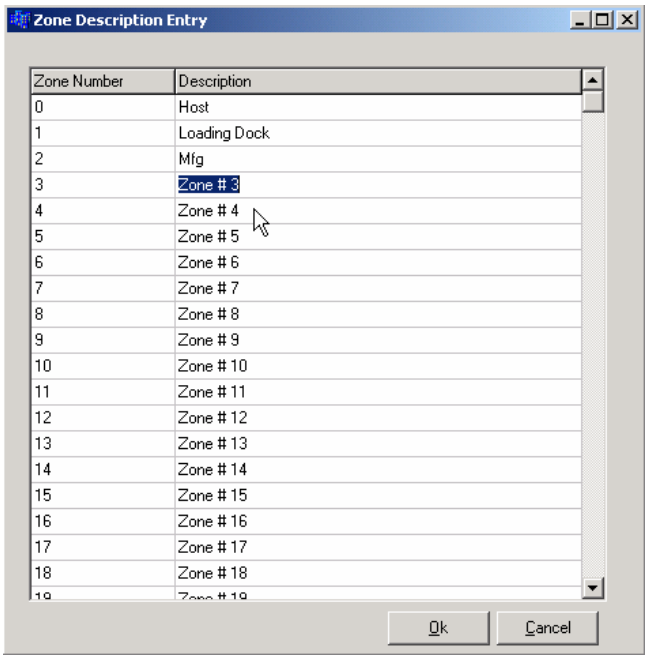
1. Select the *Employees* tab.
2. Change the Employee's general details if required.
   a. Select the Employee you want to edit from the grid.
   b. Click the **[Edit]** button to open the *"Edit Employee"* window.
   c. HINT: Double-click an Employee from the grid to save a step!
   d. Change the desired field.
   e. Click the **[OK]** button to save the changes.
3. Change the Employee's Authorization Group assignments if required.
   a. Select the Employee you want to edit from the grid.
   b. Select the *Employees* | *Assign Authorization Groups* tab.
   c. Click the **[Add]** or **[Delete]** button to add or delete Authorization Groups until the *Employees* | *Assign Authorization Groups* tab shows the desired Authorization Group assignments.
4. Change the Employee's single Vehicle assignments if required.
   a. Select the Employee you want to edit from the grid.
   b. Select the *Employees* | *Assign Single Vehicles* tab.
   c. Click the **[Add]** or **[Delete]** button to add or delete Vehicles until the *Employees* | *Assign Single Vehicles* tab shows the desired Vehicle assignments.
5. Update the Employee's Operator Card if required (see CARD ASSIGNMENT).

Transceivers

Data is communicated from an RF Vehicle Monitor-equipped Vehicle to the Fleet Manager Software by way of a network of RF Transceivers. The RF Host Transceiver is physically connected to the PC running the Fleet Manager Software and other RF Transceivers (Zone Transceivers) are each placed within range of the Host Transceiver.

While the Fleet Manager Software automatically detects the presence of the RF Transceivers once the Host Transceiver is connected to the PC, their identification within the Software can be customized for display on the *Fleet Status* tab if desired.

1. Select **Setup | Zone Description…** from the menu to open the *"Zone Description Entry"* window. The Zone Description defaults are "Zone # 0", "Zone # 1", "Zone # 2", etc.



2. Click on the desired Description to highlight the text.
3. Rename the Zone Description to match the physical location of the selected Zone Transceiver. Each Zone Transceiver is labeled with its factory-assigned Zone Number.
4. Click the **[OK]** button to save the changes.
5. It is recommended to name the Host Transceiver (Zone # 0) as "Host".
6. The new Description will be used to identify the Last Zone for each Vehicle on the *Fleet Status* tab.

CARD ASSIGNMENT

After Employees are entered in the Fleet Manager Software, they are assigned Cards that are read by the Vehicle Interface of each Vehicle. Cards are assigned to each Employee based on the role of the Employee. An Employee may require more than one Card:

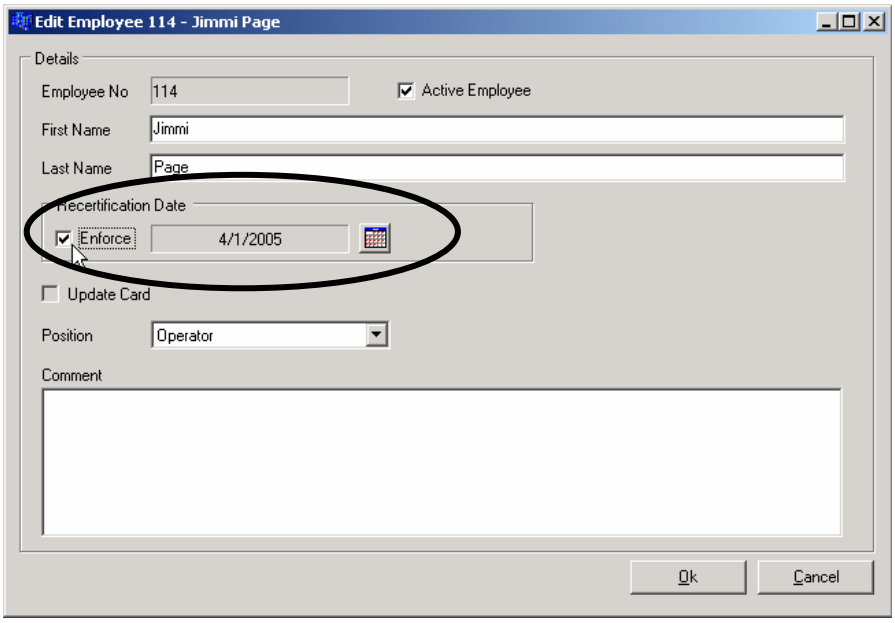
- Employees operating Vehicles for the purpose of materials handling → Operator Card
- Employees responsible for investigating Impact or Hot Card alarms → Supervisor Card
- Employees responsible for Vehicle and battery maintenance → Lockout and Unlock Cards

> ***NOTE!***
> *Employees who will be assigned Operator Cards must have vehicle access rules defined.*

Set a Card Expiry Date

There are two ways to determine how a Card can expire:

- By enforcing an Employee's Recertification Date. This date applies only to Operator Cards.

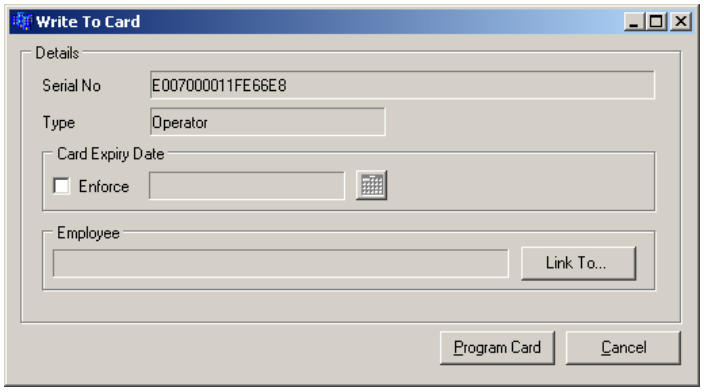


- By setting a Card's Expiry Date (see below). This is done at the time of Card assignment and can apply to all Card types. For example, it can be used for Operator Cards assigned to temporary employees or for Supervisor Cards to ensure timely Impact Event data collection in a G FORCE PLUS system.

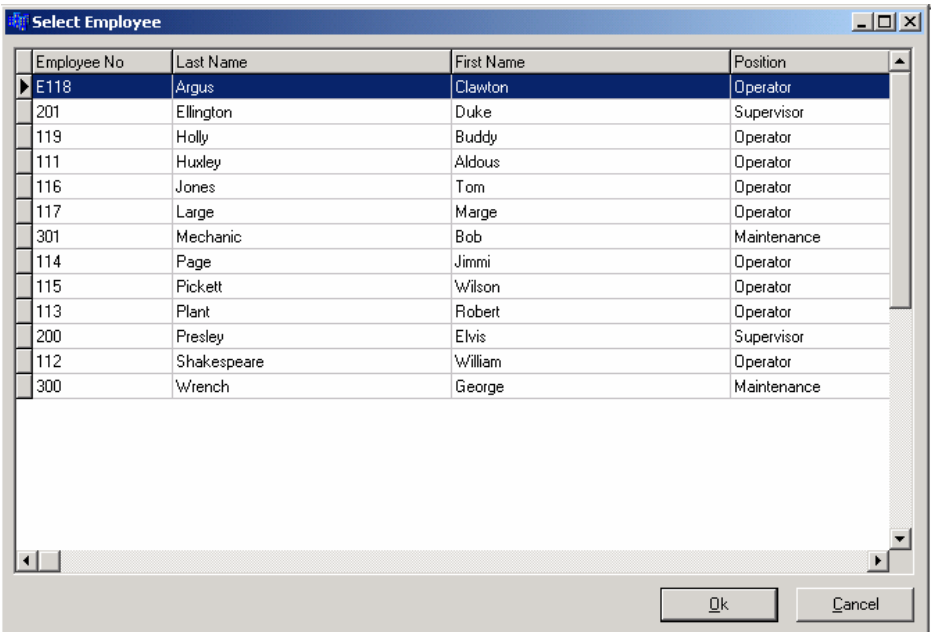
Assign a Card

Follow steps 2 to 9 for initial Card assignment, as well as for updating Cards or reassigning them to new Employees.

1. Select the *Cards* tab.
2. Place a Card on the Software Interface.
3. Click the **[Write]** button to open the *"Write to Card"* window. The Software recognizes and displays the Card serial number and type, and the Employee if the Card is being updated.



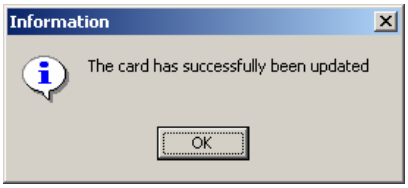
4. Enter a **Card Expiry Date** if required (for example, for temporary Employees). Setting a Card's Expiry Date renders it unusable on or after that date. This applies to all Card types.
   a. Check the **Enforce** checkbox.
   b. Click the **[**  **]** button (Calendar) to select the date.
   c. Click the **[OK]** button to close the *"Select Date"* window.
5. Select the Employee to assign the Card to.



   a. Click the **[Link To…]** button to open the *"Select Employee"* window.

b. Select an Employee from the grid.
c. Click the **[OK]** button to save the change.
d. HINT: Double-click an Employee to save a step!

6. Click the **[Program Card]** button. The mouse-pointer will turn into an hourglass (⌛) while the details are being written to the Card.
7. Click the **[OK]** button to close the window that indicates the Card has been updated.



8. Remove the Card from the Software Interface and give it to the Employee.

> ***NOTE!***
> *Don't throw a Card away if an Employee quits.*
> *Reuse it by linking a new Employee to it.*

VEHICLE MONITOR

Each Vehicle that is added to the Fleet Manager Software is assigned a system-defined identification number (ID). This ID is different than the company-assigned identification number (Vehicle No). This ID uniquely identifies the Vehicle within the system and must be programmed to the Vehicle Monitor to draw a connection between it and its entry in the Software.

In addition, settings for each Vehicle are maintained in the Software. These settings determine a Vehicle's unique behavior and must also be programmed from the Software to the Vehicle Monitor.

The Data Logger is used for both these programming tasks.

Initialize a Vehicle Monitor

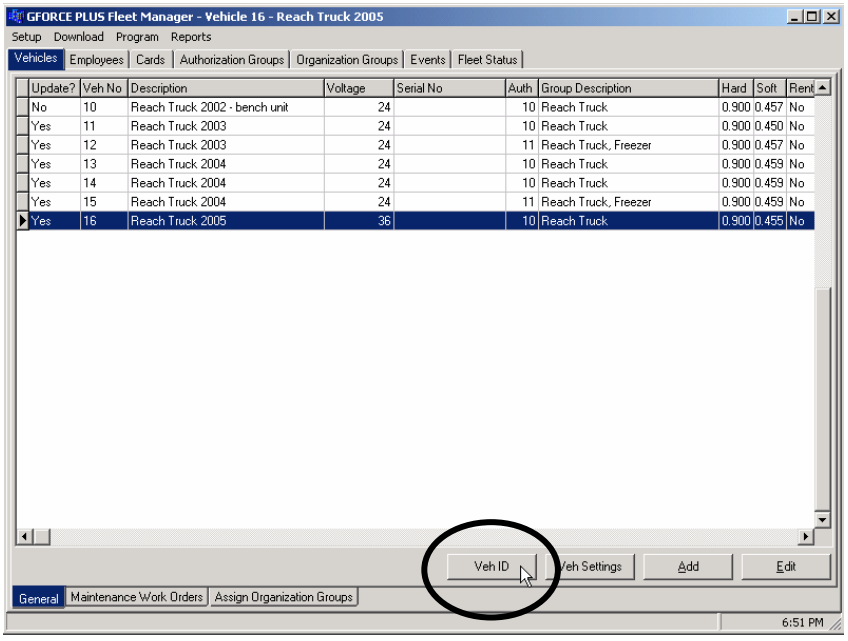
The first time a Vehicle Monitor is installed on a Vehicle, it needs to be initialized. This is when both the Vehicle ID and settings from the Software are programmed.

The Data Logger can initialize up to 9 (nine) Vehicle Monitors at a time; it has 9 (nine) memory slots for Vehicle IDs and 9 (nine) memory slots for Vehicle settings.

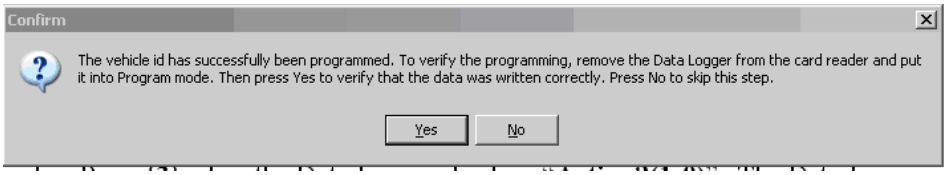
1. Get the Vehicle ID for the selected Vehicle.
   a. Press **{Enter}** on the Data Logger to start it.
   b. Press **{2}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Get Vehicle ID**"
   c. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot:**"
   d. Press **{1}** to select slot #1. The Data Logger will display "**Select Slot: 1 Free**"
   e. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot: 1 Slot 1 Ready**"

f. Present the Data Logger to the Software Interface.

g. Select the desired Vehicle from the *Vehicles* tab of the Fleet Manager Software and click the **[Veh ID]** button. The status bar at the bottom left of the Software will provide progress information ("Programming vehicle id…"). When it finishes, the Data Logger will display **"All Data Saved".**



h. This window will appear. If you wish to confirm the ID was programmed, on the Data Logger press **{Cancel},** then press **{5}, {Enter}, {1}, {Enter}** and present the Data Logger to the Software Interface, then click the **[Yes]** button. To skip this step, press [**No**]



i. If you chose to confirm the ID, this window will appear. The Data Logger will display **"All Data Prog'd"**.

j. Remove the Data Logger from the Software Interface and press **{Cancel}**. The Data Logger will display "**Action?(1-9)**"

2. Record the memory slot used for the selected Vehicle.

3. Get the Vehicle settings for the selected Vehicle.

   a. Press **{Enter}** to start the Data Logger.

   b. Press **{3}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Get Veh Settings**"

c. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot:**"

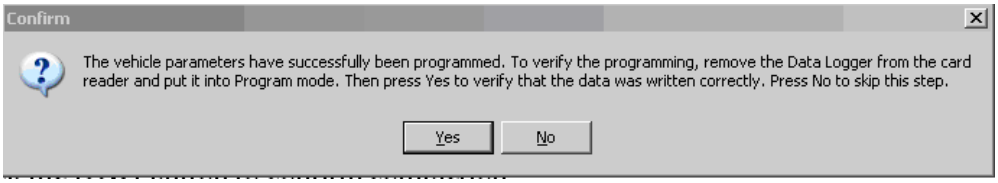
d. Press **{1}** to select slot #1. The Data Logger will display "**Select Slot: 1 Free**"

e. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot: 1 Slot 1 Ready**"

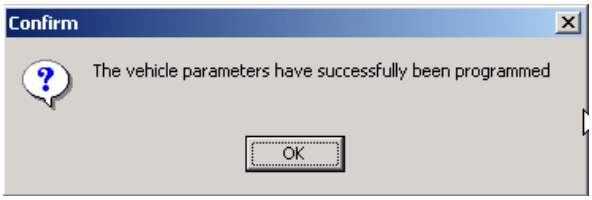
f. Present the Data Logger to the Software Interface.

g. Select the same Vehicle from the *Vehicle* tab of the Fleet Manager Software and click the **[Veh Settings]** button. The status bar at the bottom left of the Software will provide progress information ("Programming vehicle parameters…" etc).

h. When it is complete, this window will appear. If you wish to confirm the Settings were programmed, on the Data Logger press **{Cancel},** then press **{6}, {Enter}, {1}, {Enter}** and present the Data Logger to the Software Interface, then click the **[Yes]** button. To skip this step, click the [**No**] button.



i. If you chose to confirm the settings, this window will appear. Click the **[OK]** button to confirm completion.



j. Remove the Data Logger from the Software Interface and press **{Cancel}**. The Data Logger will display "**Action?(1-9)**"

4. Repeat steps 1 to 3 for up to 8 (eight) more Vehicles, working through memory slots 2 to 9 and recording the memory slot used for each Vehicle.

5. Place the Vehicle from memory slot #1 into Maintenance Lockout.

6. Program the Vehicle ID to the Vehicle Monitor.

a. Press **{Enter}** to start the Data Logger.

b. Press **{5}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Prog Veh ID**"

c. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot:**"

d. Press **{1}** to select slot #1. The Data Logger will display "**Select Slot: 1 Has Data**"

e. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot: 1 Ready**"

f. Present the Data Logger to the Vehicle Interface.

g. Listen for a sequence of three quick beeps to indicate the interaction is complete.

h. Remove the Data Logger from the Vehicle Interface. The Vehicle Interface will display "**VEHICLE ID UPDATED**".

i. Press **{Cancel}** on the Data Logger. The Data Logger will display "**Action?(1-9)**".

7. Program the Vehicle settings to the Vehicle Monitor.

a. Press **{Enter}** to start the Data Logger.

b. Press **{6}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Prog Veh Settngs**"
c. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot:**"
d. Press **{1}** to select slot #1. The Data Logger will display "**Select Slot: 1 Has Data**"
e. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Slot: 1 Ready**"
f. Present the Data Logger to the Vehicle Interface.
g. The Data Logger will display "**Progging Data:**" and then **33%, 66%, and "All Data Prog'd"**.
h. Listen for a sequence of three quick beeps to indicate the interaction is complete.
i. Remove the Data Logger from the Vehicle Interface. The Vehicle Interface will display "**PROGRAMMING SETTINGS COMPLETE**"
j. Press **{Cancel}** on the Data Logger. The Data Logger will display "**Action?(1-9)**".

8. Remove the selected Vehicle Monitor from Maintenance Lockout.
9. Repeat steps 5 to 8 for the remaining Vehicles, matching the recorded Vehicles and memory slots.

Update Vehicle Monitor Settings

Each time there is a change to the Vehicle settings in the Fleet Manager Software, the Data Logger must be used to update, or reprogram, the Vehicle Monitor settings of the affected Vehicle(s).

> ***NOTE!***
> *When changes are made to System Settings and Authorization Groups, all or many Vehicle Monitors may require updating.*

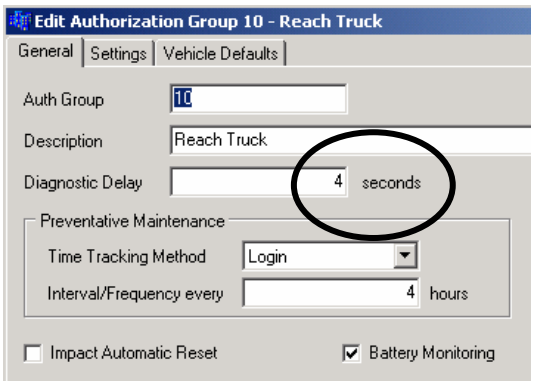
1. Program the Vehicle settings for the selected Vehicle to the Data Logger.
2. Record the memory slot for the selected Vehicle.
3. If required, repeat steps 1 and 2 for up to 8 (eight) more Vehicles.
4. Place the selected Vehicle Monitor into Maintenance Lockout.
5. Reprogram the Vehicle settings of the Vehicle Monitor for the selected Vehicle.
6. Remove the selected Vehicle Monitor from Maintenance Lockout.
7. If required, repeat steps 4 to 6 for the remaining Vehicles.

VEHICLE OPERATION

The sections below describe the various states, conditions and operating requirements of a Vehicle equipped with a Vehicle Monitor.

VEHICLE STARTUP

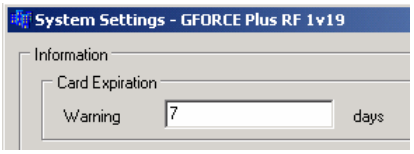
1. Turn the Vehicle ignition on.
2. If the Vehicle requires a Diagnostic Delay (setting from the Vehicle's Authorization Group), the Vehicle Interface will display "**VEHICLE SYSTEM CHECK PLS WAIT..**".



3. The Vehicle Interface will display "**OPERATOR LOGIN PRESENT CARD**" after the expiry of the Diagnostic Delay.

OPERATOR LOGIN

1. Present a valid Operator Card to the Vehicle Interface when it displays "**OPERATOR LOGIN PRESENT CARD**". This message will alternate with "**BATTERY (STATE OF CHARGE)**" if the Vehicle's Authorization Group settings require Battery Monitoring.
2. If no Operator Card is presented within three seconds, the Vehicle Interface buzzer will sound, as will the horn if programmed to do so.
3. The Vehicle Interface will indicate a Card has been validated with a single beep, or by stopping the sounding buzzer (and horn).
4. Remove the Card from the Vehicle Interface. It will display "**LOGIN APPROVED**". "**LOGIN APPROVED CARD EXPIRY SOON"** will display if the System Settings indicate a Card Expiration Warning is required.



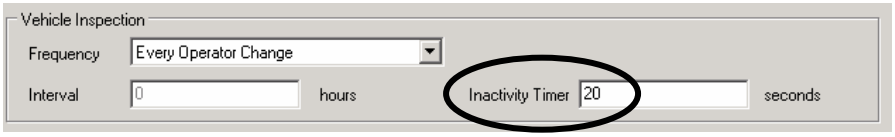
Messages other than "**LOGIN APPROVED**" indicate why a Card could not be validated. The Vehicle Interface reverts to "**OPERATOR LOGIN PRESENT CARD**" after five seconds.

"**LOGIN DECLINED CARD INVALID**" Not an Operator or Lockout Card

"**LOGIN DECLINED CARD EXPIRED**"	Expired Operator or Lockout Card, or Operator Card with an expired Recertification Date
"**LOGIN DELINED NOT AUTHORIZED**"	Operator Card with wrong Authorization Group or Single Vehicle assignments, or unassigned Operator Card

VEHICLE INSPECTION

1. Press **{Yes}** on the Vehicle Interface when it displays "**VEH INSPECTION YES TO START**" The Vehicle Interface will display the first item on the list as defined in the Authorization Group for the Vehicle. The Vehicle Interface will revert to "**OPERATOR LOGIN PRESENT CARD**" if **{No}** or **{Cancel}** is pressed.
2. Conduct the necessary test (i.e. visual inspection or operation of controls) to determine if the item should pass or fail.
3. Press **{Pass}** on the Vehicle Interface to indicate the item has passed. The Vehicle Interface will display the next item on the list as defined in the Authorization Group for the Vehicle. Repeat steps 2 and 3 until the Vehicle Interface displays "**VEH INSPECTION COMPLETE, PASSED**", OR
4. Press **{Fail}** on the Vehicle Interface to indicate the item has failed. The Vehicle Interface will display "**VEH INSPECTION FAILURE? YES/NO**"
5. Press **{Yes}** to confirm the failure of the Vehicle Inspection. The Vehicle Interface will display "**MAINT LOCK OUT YYYY/MM/DD HH:MM**" to indicate it is in Maintenance Lockout, OR
6. Press **{No}** to cancel the failure of the Vehicle Inspection. The Vehicle Interface will display the item in question again and wait for a **{Pass}** or **{Fail}** key press.
7. The Vehicle Interface will revert to "**OPERATOR LOGIN PRESENT CARD**" if **{Cancel}** is pressed in response to any Vehicle Inspection item.
8. The Vehicle Interface will revert to "**OPERATOR LOGIN PRESENT CARD**" if there is no keypad response from the Operator within the period of time determined by the Vehicle Inspection Inactivity Timer under the System Settings.



OPERATING

1. A Vehicle enters Operating state after a Passed Vehicle Inspection, or after a successful Operator Login if no Vehicle Inspection was required. The Vehicle Interface will display "**OPERATING MODE**". This message will alternate with "**BATTERY (STATE OF CHARGE)**" if the Authorization Group of the Vehicle requires Battery Monitoring.

2. Key-off the Vehicle to end the Login session for the current Operator.

3. A new Operator must restart the Vehicle in order to have his/her Operator Card validated in the Operator Login state.

IMPACT

1. If a threshold-exceeding Impact is detected, the Vehicle enters Impact state.
   a. The Vehicle Interface buzzer will sound (1 second every 2 seconds), or
   b. The Vehicle Interface buzzer and horn will sound as programmed under System Settings, and
   c. Programmed Impact behavior (i.e. lift interrupt, etc.) will exhibit, and
   d. The Vehicle Interface will display **"(TYPE) IMPACT! CONTACT SUPERVSR**", where (TYPE) is SOFT or HARD.
2. Present a valid Supervisor Card to the Vehicle Interface and hold it until the Vehicle Interface beeps solidly.
3. Remove the Card from the Vehicle Interface. It will display "**OPERATOR LOGIN PRESENT CARD**".
4. A Vehicle keyed off in Impact state will revert to Impact state when it is keyed on.

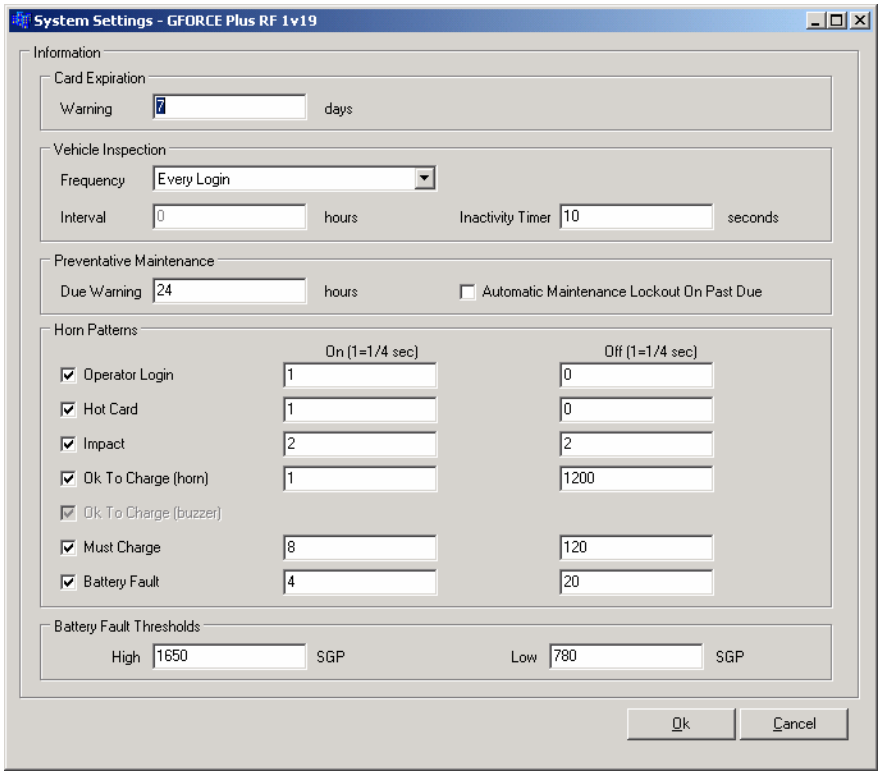
HOT CARD

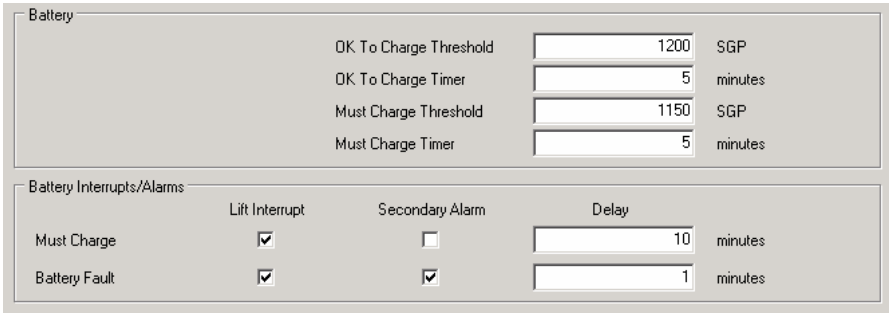
1. If a Hot Card is detected during the Operator Login, the Vehicle enters Hot Card state.
   a. The Vehicle Interface buzzer will sound, or
   b. The Vehicle Interface buzzer and horn will sound as programmed under System Settings, and
   c. Programmed Hot Card behavior (i.e. lift interrupt, etc.) will exhibit, and
   d. The Vehicle Interface will display **"HOT CARD! CONTACT SUPERVSR**".
2. Present a valid Supervisor Card to the Vehicle Interface and hold it until the Vehicle Interface stops sounding.
3. Remove the Card from the Vehicle Interface. It will display "**OPERATOR LOGIN PRESENT CARD**".
4. A Vehicle keyed off in Hot Card state will revert to Hot Card state when it is keyed on.

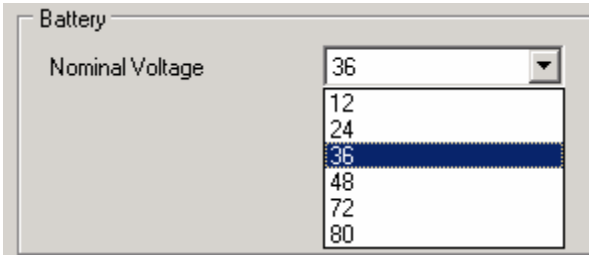
BATTERY MONITORING

Batteries are monitored for Vehicles belonging to Authorization Groups where Battery Monitoring is required.

Criteria for Battery Monitoring are based on System Settings (Horn Patterns and Fault Thresholds), Authorization Group settings (Thresholds, Interrupts/Alarms and Interrupt/Alarm Delays), and Vehicle settings (Nominal Voltage: 12v, 24v, 36v, 48v)







Based on the settings, the Vehicle Monitor measures the voltage of the Vehicle's battery and determines which of four battery states the Vehicle Interface displays.

> ***NOTE!***
> *Contact Technical Assistance at BMI Technologies Inc. at 1-800-563-8867 for assistance in determining optimal Battery settings for each Authorization Group.*

DO NOT CHARGE

Charging in the Do Not Charge state increases water consumption, wastes energy, and reduces battery life.

When the battery meets the criteria for Do Not Charge, the Vehicle Interface displays "**BATTERY DO NOT CHARGE**" and the Battery Charge LED is green.

OK TO CHARGE

Charging in the Ok To Charge state produces good lifetime battery capacity.

When the battery meets the criteria for OK To Charge, the Vehicle Interface displays "**BATTERY OK TO CHARGE**" and the Battery Charge LED is amber.

Audible alarms for the OK To Charge state are defined in the System Settings and include:
- No alarm for OK To Charge, or
- Vehicle Interface buzzer only (½-second every 60 seconds), or
- Vehicle Interface buzzer and horn (alarm pattern as determined by System Settings)

MUST CHARGE

Charging in the Must Charge state produces maximum lifetime battery capacity, the greatest number of shifts per charge, and the lowest per ampere charging costs.

When the battery meets the criteria for Must Charge, the Vehicle Interface displays "**BATTERY MUST CHARGE!"** and the Battery Charge LED flashes red. The buzzer sounds for 2 seconds every 30 seconds.

Audible alarms for the Must Charge state are defined in the System Settings and include:
- Vehicle Interface buzzer only (2 seconds every 15 seconds), or
- Vehicle Interface buzzer and horn (alarm pattern as determined by System Settings)

Vehicle behavior for the Must Charge state is defined under Authorization Group settings and includes:
- No specific behavior, or
- Immediate lift interrupt and/or secondary alarm, or
- Delayed lift interrupt and/or secondary alarm (delay as determined by Authorization Group settings)

NOTE!
Vehicle Monitor wiring must complement Vehicle settings to exhibit programmed behavior.

BATTERY FAULT

The Battery Fault state alerts an Operator to a battery problem. Minor battery problems such as cell failure, a bad inter cell connector, a broken battery post, and low water are detected before they become a major repair expense.

When the battery meets the criteria for Battery Fault, the Vehicle Interface displays "**BATTERY FAULT OVER/UNDER VOLT.**" and the Battery Fault LED is red.

Audible alarms for the Battery Fault state are defined in the System Settings and include:
- Vehicle Interface buzzer only (1 second every 3 seconds), or
- Vehicle Interface buzzer and horn (alarm pattern as determined by System Settings)

Vehicle behavior for the Battery Fault state is defined under Authorization Group settings and includes:
- No specific behavior, or
- Immediate lift interrupt and/or secondary alarm, or
- Delayed lift interrupt and/or secondary alarm (delay as determined by Authorization Group settings)

NOTE!
Vehicle Monitor wiring must complement Vehicle settings to exhibit programmed behavior.

Clear a Battery Fault

1. Place the Vehicle into Maintenance Lockout.
2. Disconnect the Vehicle battery.
3. Correct the battery problem or replace the battery.
4. Reconnect the Vehicle battery.
5. Remove the Vehicle from Maintenance Lockout (see "Remove a Vehicle from Lockout").
6. If the Battery Fault alarm recurs, the further corrective steps.

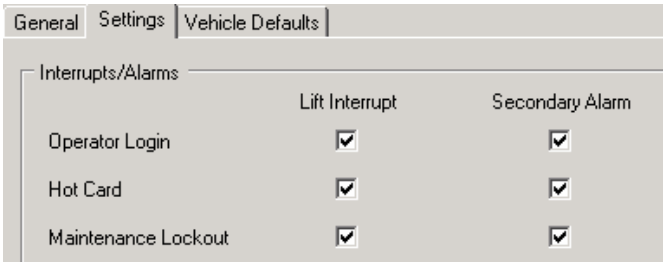
NOTE!
A Battery Fault will occur when the Nominal Battery Voltage in Vehicle Settings does not match the actual nominal battery voltage of the Vehicle.

VEHICLE MAINTENANCE

This section on Vehicle Maintenance explains Maintenance Lockout as well as how to schedule Vehicle Preventative Maintenance requirements.

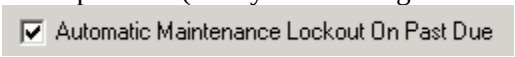
MAINTENANCE LOCKOUT

Maintenance Lockout is one of eight possible Vehicle states. A Vehicle's Maintenance Lockout behavior is defined on the *Settings* tab of the Authorization Group of the Vehicle; that is, are the ***Lift Interrupt*** and ***Secondary Alarm*** fields checked for ***Maintenance Lockout***, and are the blue and purple wires correctly hooked up?



There are three ways that a Vehicle can enter Maintenance Lockout state:

- When an Operator fails a Vehicle Inspection
- When a Vehicle's scheduled PM is past due (the System Settings for this must also be checked)



- When a Lockout Card is presented in Operator Login state

Why Lockout a Vehicle?

- To reprogram a Vehicle's settings, it must be in Maintenance Lockout
- To collect Event data with a Data Logger, a Vehicle must be in Maintenance Lockout
- To conduct scheduled Preventative Maintenance, a Vehicle must be in Maintenance Lockout
- To make a Vehicle unavailable for service, it can be placed into Maintenance Lockout

Lockout a Vehicle Manually

1. Turn the Vehicle ignition on.
2. Present a Lockout Card to the Vehicle Interface when it displays "**OPERATOR LOGIN PRESENT CARD**"
3. Remove the Card after the beep. The Vehicle Interface will display "**MAINT LOCK OUT YYYY/MM/DD HH:MM**"
4. Present the Lockout Card a second time to override the Maintenance Lockout behavior. After key-off, the programmed Maintenance Lockout behavior will again take effect.

Override Maintenance Lockout Behavior

1. Present a Lockout Card to the Vehicle Interface when it displays "**MAINT LOCK OUT YYYY/MM/DD HH:MM**".
2. Remove the Card after the beep. The Vehicle Interface will display "HOURMETER XXXXXH" "PM DUE IN: XXXXXH".
3. Programmed Maintenance Lockout behavior (i.e. lift interrupt, etc.) will no longer exhibit.
4. After key-off, the programmed Maintenance Lockout behavior will again take effect.

Remove a Vehicle from Lockout

1. Turn the Vehicle ignition on.
2. Present an Unlock Card to the Vehicle Interface when it displays "**MAINT LOCK OUT YYYY/MM/DD HH:MM**".
3. Remove the Card after the beep. The Vehicle Interface will display "**SCHEDULED PM COMPLETE? YES/NO**".
4. Press **{No}** on the Vehicle Interface unless the Lockout was to conduct scheduled PM. The Vehicle Interface will display "**OPERATOR LOGIN PRESENT CARD**".

MAINTENANCE WORK ORDERS

It is possible to keep track of Vehicle maintenance by entering Maintenance Work Orders into the Software. The reason for each Work Order is categorized as Impact, Scheduled PM, Failed Inspection or Other. This allows the Software to report maintenance costs by these reasons.

Add a Work Order

1. Select the *Vehicles* tab.
2. Highlight (click) the Vehicle you want to add a Work Order for.
3. Click the *Maintenance Work Orders* tab at the bottom of the *Vehicles* tab.
4. Click the **[Add]** button to open the *"Add Maintenance Work Order"* window.
5. Complete the fields on the Work Order as per the field descriptions below.

Reference No	Enter a Work Order number, or enter the reference number from the paper copy of the shop Work Order.
Reason	Select a reason the work was done: (1) Impact, (2) Scheduled PM, (3) Failed Inspection, (4) Other.
Service Date	Click the **[**  **]** button (Calendar) to select the date of the Work Order.
Service Hours	Enter the Hour Meter reading of the Vehicle at the time the work was completed.

Impact Date and Employee	If the Work Order reason is Impact or Failed Inspection, click the **[Link To…]** button to select the event that caused the work to be completed.
Service Technician	Click the **[Link To…]** button to select the Service Technician who completed the work.
Costing	Enter the Parts and Labor Costs of the work completed.
Parts Description	Enter a description of the Parts used to complete the work.
Comment	Enter a Comment.

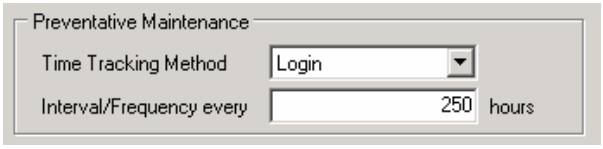
6. Click the **[OK]** button to save the changes.

Edit a Work Order

1. Select the *Vehicles* tab.
2. Highlight (click) the Vehicle you want to add a Work Order for.
3. Click the *Maintenance Work Orders* tab at the bottom of the *Vehicles* tab.
4. Highlight (click) the Work Order you want to edit.
5. Click the **[Edit]** button to open the *"Edit Maintenance Work Order"* window.
6. HINT: Double-click a Work Order from the grid to save a step!
7. Edit the fields as required.
8. Click the **[OK]** button to save the changes.

PREVENTATIVE MAINTENANCE

Vehicle Monitors can be scheduled to advise when regular Preventative Maintenance checks are required. The Preventative Maintenance settings for each Authorization Group determine how often the checks are required and how time is calculated (i.e. Login, Motion) for all Vehicles belonging to the Authorization Group.



In the example above, when a Vehicle is initialized, its first scheduled Preventative Maintenance will be after 250 hours of Login time. After that, Preventative Maintenance checks are scheduled for 250 hours from the Current Hour Meter reading. For example, if the PM is completed at 262 hours, the next PM will be required at 512 hours.

PM Due Notification

The Preventative Maintenance System Settings determine if there is a warning that Preventative Maintenance is due soon, as well as Vehicle behavior once Preventative Maintenance is due. These settings apply to all Vehicles in the system.

In the example above, when Vehicle PM's are due within 24 hours (of Login or Motion time), the Vehicle Interface displays **"OPERATOR LOGIN PM DUE SOON"** during the Operator Login and **"OPERATING MODE PM DUE SOON"** during Operating mode.

When PM's become due after 24 hours, the Vehicle Interface displays **"OPERATOR LOGIN PM DUE NOW"** during the Operator Login and **"OPERATING MODE PM DUE NOW"** during Operating mode.

If the "Automatic Maintenance Lockout On Past Due" checkbox is checked, Vehicles enter Maintenance Lockout at the next key-on after scheduled Preventative Maintenance is due. The Vehicle Interface displays **"MAINT LOCK OUT YYYY/MM/DD HH:MM"** and the programmed Maintenance Lockout behavior exhibits (i.e. lift interrupt, etc.). If the "Automatic Maintenance Lockout On Past Due" checkbox is not checked, the Vehicle will remain operable.

Conduct Preventative Maintenance

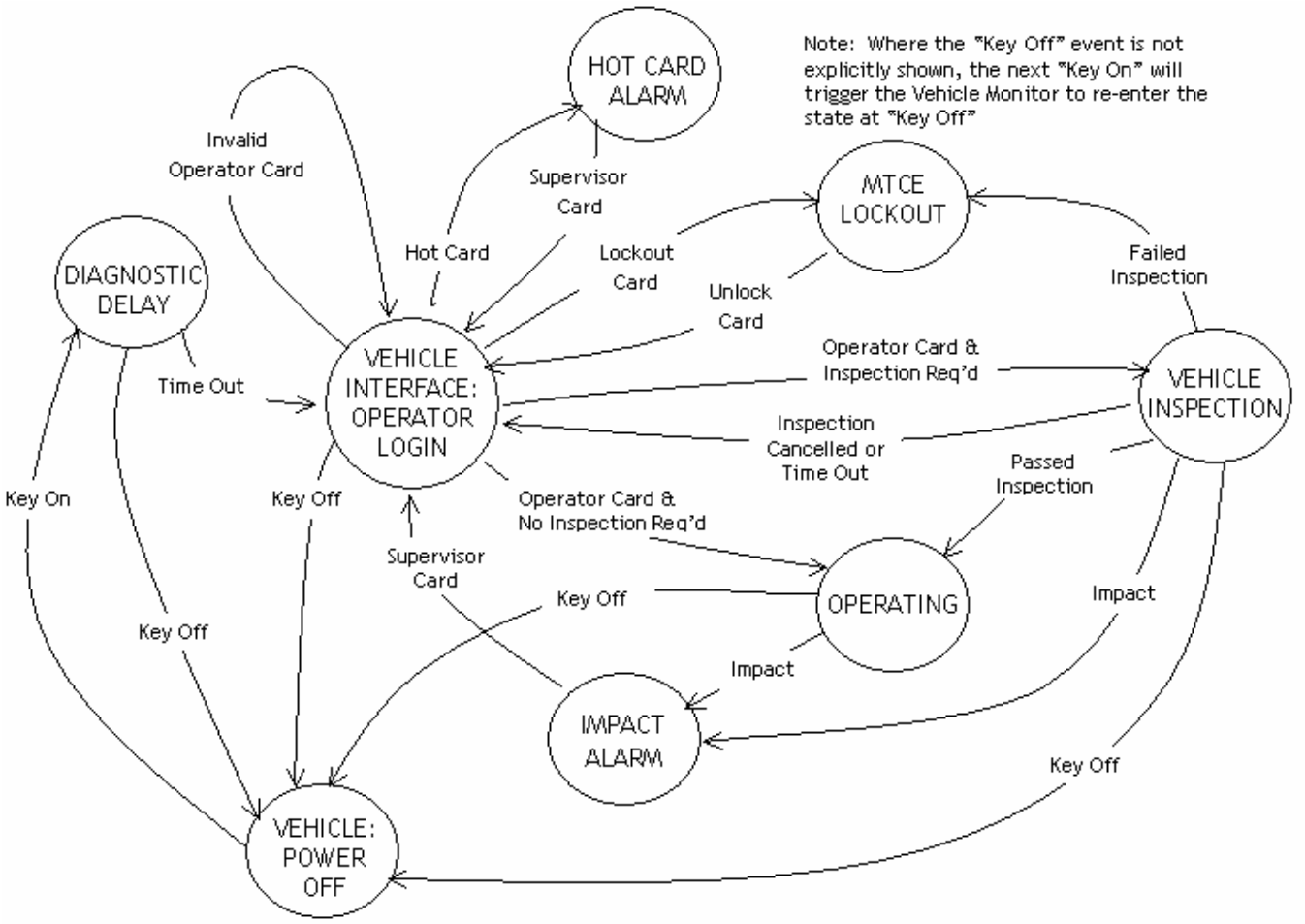
Follow these steps for Preventative Maintenance to ensure proper record keeping in the Software:

1. Place the Vehicle into Maintenance Lockout.
2. Conduct the necessary Preventative Maintenance.
3. Remove the Vehicle from Maintenance Lockout as follows:
    a. Turn the Vehicle ignition on.
    b. Present an Unlock Card to the Vehicle Interface when it displays "**MAINT LOCK OUT YYYY/MM/DD HH:MM**".
    c. Remove the Card after the beep. The Vehicle Interface will display "**SCHEDULED PM COMPLETE? YES/NO**".
    d. Press **{Yes}** on the Vehicle Interface to schedule the next Preventative Maintenance. The Vehicle Interface will display "**OPERATOR LOGIN PRESENT CARD**".
4. Complete a Maintenance Work Order with Scheduled PM selected as the reason.

SYSTEM DATA

The diagram below is a type of flowchart that shows where system data is collected. A Vehicle is always in one vehicle state (or mode of operation) and changes to a different state when an Event occurs. For example, when an Operator fails a vehicle inspection (the Event), the Vehicle state changes from Vehicle Inspection (state #1) to Maintenance Lockout (state #2). A Vehicle Monitor collects information about the Event (in this case, about the Failed Inspection) and transmits it to the Fleet Manager Software via RF communications.

NOTE!
To read the diagram,
begin at the circle at the bottom labeled "VEHICLE: POWER OFF".



EVENTS

The following information is collected about each Event:

Login	Operator, date/time of login, duration of login
Passed Inspection	Operator, date/time of completion, passed items
Failed Inspection	Operator, date/time of failure, passed items, failed item
Impact	Operator, date/time of Impact, Impact type and threshold, Supervisor
Battery	Operator, date/time of Battery Event, Battery state

Maintenance	Employee, Maintenance Event type (Lockout or Unlock), date/time of Lockout or Unlock
Hot Card	Owner of Hot Card, date/time of Hot Card use, Supervisor

Events Tab

The *Events* tab is updated each time a new Event is received by the Software. Each Event is added to the existing list of Events displayed in the *Events* tab lower tabs: *Login*, *Impact*, *Passed Inspection*, *Failed Inspection*, *Battery*, *Maintenance*, *Hot Card*. The default order is in descending date/time order (newest Event at the top of the tab).

Events in each tab can be resorted by clicking on the desired column heading of the title bar, depending on the sort order desired.

Login tab:

Login Time	Veh No	Empl No	Employee	Duration	Motion	Insp Reqd

Impact tab:

Impact Time	Veh No	Description	Empl No	Employee	Impact Type

Passed Inspection tab:

Inspection Completed	Veh No	Description	Empl No	Employee

Failed Inspection tab:

Inspection Failed	Veh No	Description	Empl No	Employee

Battery tab:

Date	Condition	Veh No	Description	Empl No	Employee

Maintenance tab:

Date	Condition	Veh No	Description	Empl No	Employee

Hot Card tab:

Date	Veh No	Description	Empl No	Employee

Fleet Status Tab

The *Fleet Status* tab is a near-real time listing of all active Vehicles (☑ Active Vehicle in Vehicle Settings) in a fleet. As the Software receives each Event, the *Fleet Status* tab is updated to reflect the most up-to-date information about each Vehicle in the fleet.

COLLECT DATA FROM A VEHICLE MANUALLY

In the event of an RF communications failure, the Data Logger is used as a backup means of data collection.

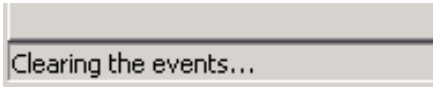
1. Place the Vehicle into Maintenance Lockout.
2. Press **{Enter}** to start the Data Logger.

3. Press **{4}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Events from Veh**"
4. Press **{Enter}** to accept the choice. The Data Logger will display "**Ready for Events XXXX/1500**"
5. Present the Data Logger to the Vehicle Interface.
6. Listen for a sequence of three quick beeps to indicate the interaction is complete.
7. Remove the Data Logger from the Vehicle Interface. The Vehicle Interface will display "**MAINT LOCK OUT YYYY/MM/DD HH:MM**"
8. Press **{Cancel}** on the Data Logger. The Data Logger will display "**Action?(1-9)**"
9. Remove the Vehicle from Maintenance Lockout.

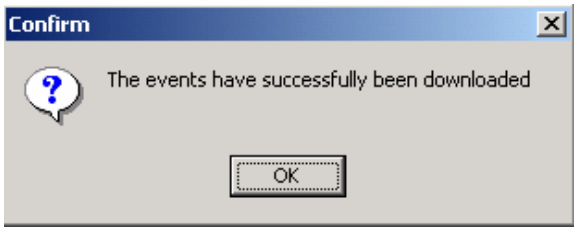
> ***NOTE!***
> *If the Data Logger is removed from the Vehicle Interface too soon, six quick beeps will sound. Return the Data Logger to the Vehicle Interface to begin data collection again. No data has been lost.*

DOWNLOAD DATA TO THE SOFTWARE MANUALLY

1. Press **{Enter}** to start the Data Logger.
2. Press **{1}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Events to PC**"
3. Press **{Enter}** to accept the choice. The Data Logger will display "**Ready for PC**"
4. Present the Data Logger to the Software Interface.
5. Start the Fleet Manager Software (optionally select the *Events* tab).
6. Select **Download | Events | Data Logger** from the menu. The status bar at the bottom left of the Software will provide progress information.



7. Click the **[OK]** button to confirm completion.



8. Remove the Data Logger from the Software Interface. The Data Logger will display "**No Events!**"
9. Press **{Cancel}** on the Data Logger. The Data Logger will display "**Action?(1-9)**"

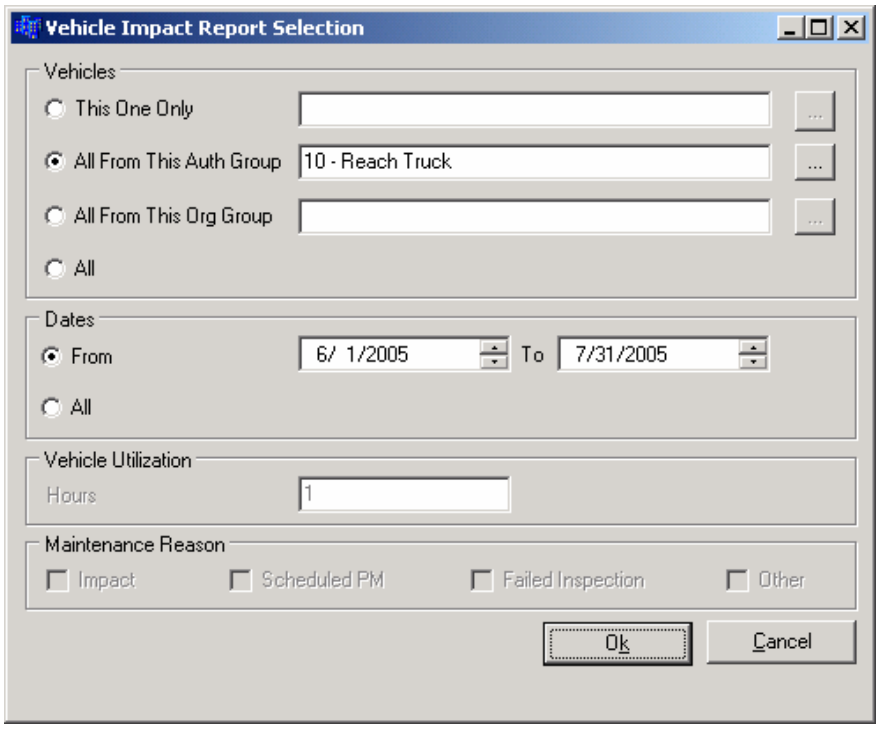
ADD A COMMENT ABOUT AN IMPACT

A Supervisor's comments about an Impact can be added to the Software. The comments are included on the Impact Reports.

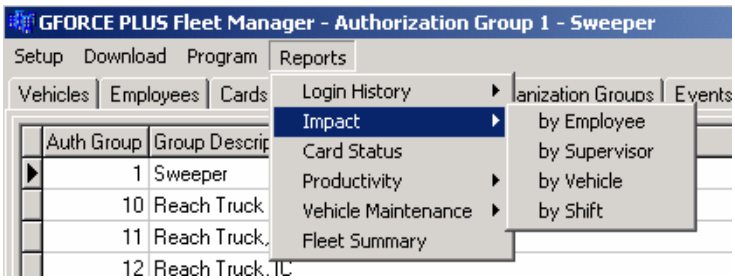
1. Select the *Events* | *Impact* tab.
2. Highlight (click) the Impact you want to add a Comment for.
3. Click the **[Impact Comment]** button to open the "*Impact Comment"* window.
4. Enter the comment in the ***Comment*** field to a maximum of 255 characters. The Software will not allow entry of more than 255 characters.
5. Click the **[OK]** button to save the changes.
6. To edit an Impact Comment, repeat steps 2 to 5, making changes to the text as required.

REPORTS

The Software provides several useful reports that can be filtered, using a *"Report Selection"* window, to display ranges of data and dates. Clicking the **[...]** button (Ellipses) opens a window that filters a report by the one selection made.



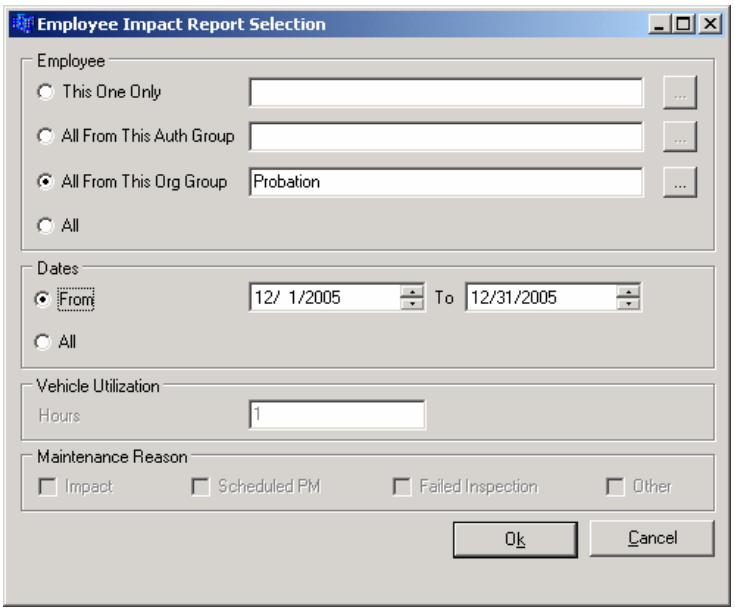
Most reports are accessible from the **Reports** menu.



ORGANIZATION GROUPS

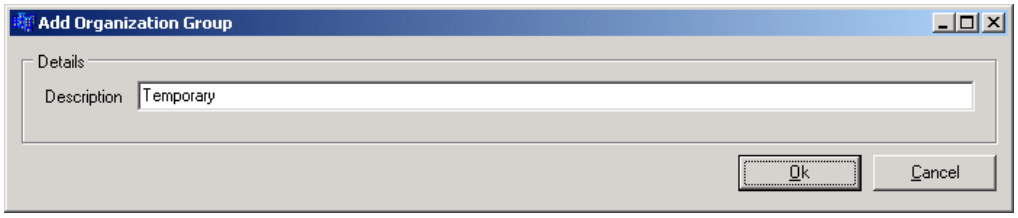
Organization Groups are optional, but if used, there is no limit to their use. Organization Groups are for additional classification of Employees and Vehicles to provide greater report filtering (i.e. they do not limit Operator access to Vehicles like Authorization Groups do).

The filtering selected in the *"Report Selection"* window below will generate an Impact Report ordered by Employee for impacts between December 1 and December 31, 2005. It will only include impacts for Employees belonging to the Probation Organization Group.



Add an Organization Group

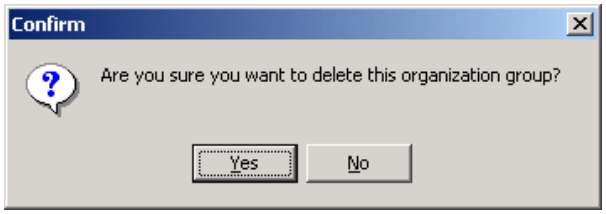
1. Select the *Organization Groups* tab.
2. Click the **[Add]** button to open the *"Add Organization Group"* window.



3. Enter an Organization Group description in the ***Description*** field.
4. Click the **[OK]** button to save the change. The added Group will be displayed in the *Organization Groups* tab.

Delete an Organization Group

1. Select the *Organization Groups* tab.
2. Select the Organization Group you want to delete from the grid.
3. Click the **[Delete]** button to open the *"Confirm"* window.

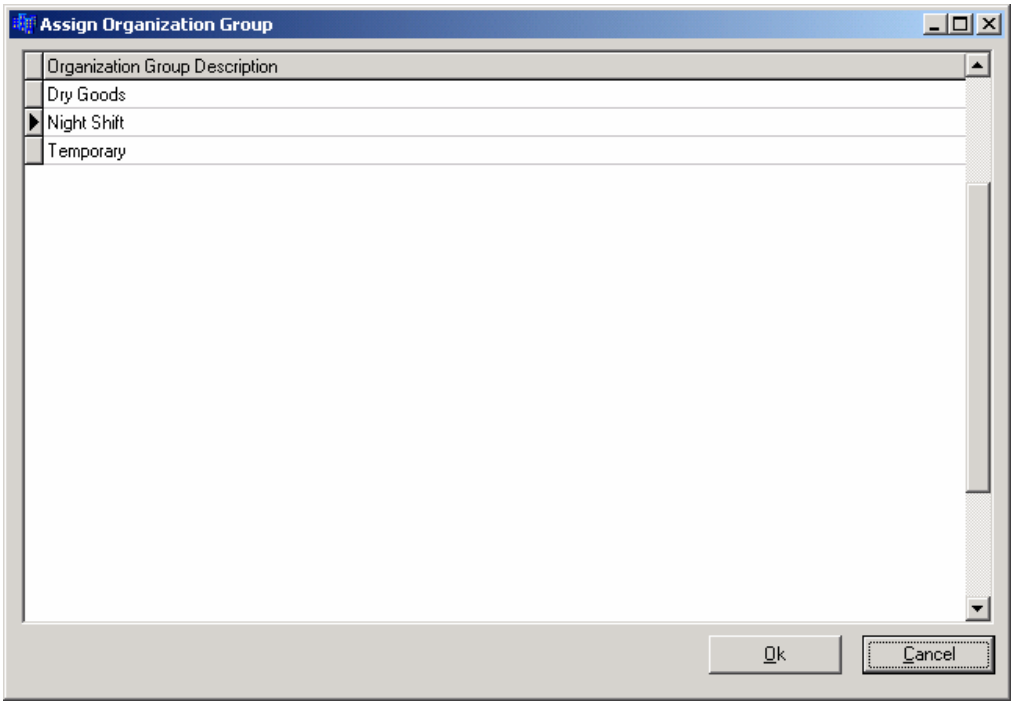


4. Click the **[Yes]** button to confirm the deletion of the Organization Group. The deleted Group will be removed from the *Organization Groups* tab.

Assign an Organization Group

After the desired Organization Groups are created, Employees and/or Vehicles are assigned the Organization Groups.

1. Select the *Employees* or *Vehicles* tab, as required.
2. Select the desired Employee or Vehicle from the grid.
3. Click the *Assign Organization Groups* tab.
4. Assign Organization Groups to the Employee or Vehicle.
   a. Click the **[Add]** button to open the *"Assign Organization Group"* window.



   b. Select an Organization Group from the grid.
   c. Click the **[OK]** button to save the addition.
   d. HINT: Double-click an Organization Group to save a step!
   e. Repeat steps a. to d. until all Organization Groups for the Employee or Vehicle are shown in the *Assign Organization Groups* tab.
5. Repeat steps 2 to 4 until all Organization Groups assignments for Employees or Vehicles are done.

Organization Group Examples

- Create a Probation group to compare Impact or Productivity Reports for all Employees and for Probation Employees
- Create a Night Shift group to compare Impact or Productivity Reports for all Employees and for Night Shift Employees
- Create an Outside group to compare Impact or Productivity Reports for all Vehicles and for Outside Vehicles

SAMPLE REPORTS

The following reports are available in the Software:

Vehicle Inspection Reports

1. Select the *Events* tab.
2. Select the *Passed Inspection* or *Failed Inspection* tab at the bottom of the *Events* tab.
3. Double-click the desired Inspection Event to generate the report in a *"Print Preview"* window.
4. Click the **[**  **]** button (Print) to print the report or click **[Close]**.

G FORCE PLUS Fleet Manager
VEHICLE INSPECTION REPORT

Printed: 1/6/2006 2:18:37 PM
Page : 1 of 1

Veh No: 10
Veh Desc: Reach Truck 2002 - bench unit
Empl No: 112
Employee Name: Shakespeare, William

Login Date/Time: 8/19/2005 2:55:36 PM
Completed Date/Time: 8/19/2005 2:55:57 PM
Inspection Time: 00:00:21

FLUID LEAKAGE?	Passed
TIRES/WHEELS?	Passed
HYDRAULIC CNTRLS & OPERATION?	Passed
FIRE EXTINGUISHER?	Passed

G FORCE PLUS Fleet Manager
FAILED VEHICLE INSPECTION REPORT

Printed: 1/6/2006 2:23:35 PM
Page : 1 of 1

Veh No: 10
Veh Desc: Reach Truck 2002 - bench unit
Empl No: 119
Employee Name: Holly, Buddy

Login Date/Time: 9/14/2005 12:57:11 PM
Failed Date/Time: 9/14/2005 12:57:20 PM
Inspection Time: 00:00:09

FLUID LEAKAGE?	Passed
TIRES/WHEELS?	Passed
HYDRAULIC CNTRLS & OPERATION?	FAILED

Impact Reports

There are four Impact Reports to choose from, ordered by Employee, Vehicle, Supervisor or Shift.

G FORCE PLUS Fleet Manager
EMPLOYEE IMPACT REPORT

Printed: 1/6/2006 2:52:55 PM
Page : 1 of 2

For : All Employees
Date Range : 7/1/2005 to 11/30/2005

Date	Time	Veh No	Vehicle Description	Impact Type	Threshold	Supervisor	Comments
111	**Huxley, Aldous**						
7/26/2005	1:02:13 PM	10	Reach Truck 2002 - bench	Soft	0.475	Ellington, Duke	
8/19/2005	2:50:37 PM	10	Reach Truck 2002 - bench	Soft	0.475	Presley, Elvis	
8/19/2005	3:57:11 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
112	**Shakespeare, William**						
7/26/2005	8:46:23 AM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
8/3/2005	1:52:31 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
8/19/2005	3:57:28 PM	10	Reach Truck 2002 - bench	Soft	0.475	Presley, Elvis	
113	**Plant, Robert**						
7/26/2005	9:05:34 AM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
7/26/2005	12:51:55 PM	10	Reach Truck 2002 - bench	Hard	0.900	Ellington, Duke	
7/27/2005	12:57:44 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
7/27/2005	1:19:24 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
7/27/2005	1:20:08 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
7/27/2005	1:21:20 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
8/3/2005	1:42:41 PM	10	Reach Truck 2002 - bench	Hard	0.900	Presley, Elvis	
8/5/2005	1:55:40 PM	10	Reach Truck 2002 - bench	Soft	0.475	Presley, Elvis	

Login History Reports

There are two Login History Reports to choose from, ordered by Employee or Vehicle. The reports include both Login and Impact details.

G FORCE PLUS Fleet Manager
EMPLOYEE LOGIN HISTORY REPORT

Printed: 3/23/2007 9:58:10 AM
Page : 1 of 5

For : All Employees
Date Range : 11/1/2006 to 11/2/2006

Vehicle	Date	Time	Login Duration (hh:mm)	Motion Detected (hh:mm)	Motion %	Vehicle Insp	Impact Time	Supervisor
04 Assaf, Adnan								
R019 Hyster Unit 19	11/1/2006	7:15:00 AM	05:21	00:00		PASSED		
R019 Hyster Unit 19	11/1/2006	12:39:55 PM	00:02	00:00		NOT REQD		
R019 Hyster Unit 19	11/1/2006	12:41:17 PM	00:01	00:00		NOT REQD		
R019 Hyster Unit 19	11/1/2006	12:42:40 PM	00:20	00:00		NOT REQD		
R019 Hyster Unit 19	11/1/2006	2:55:49 PM	03:03	00:00		NOT REQD		
R019 Hyster Unit 19	11/2/2006	7:11:12 AM	00:01	00:00		PASSED	11/2/2006 7:11:41	Imbery, Chad
R019 Hyster Unit 19	11/2/2006	7:12:17 AM	00:22	00:00		NOT REQD	11/2/2006 7:33:37	Imbery, Chad
R019 Hyster Unit 19	11/2/2006	7:37:42 AM	01:25	00:00		NOT REQD		
R019 Hyster Unit 19	11/2/2006	9:46:10 AM	03:01	00:00		NOT REQD	11/2/2006 12:46:31	Imbery, Chad
R019 Hyster Unit 19	11/2/2006	12:47:36 PM	02:32	00:00		NOT REQD	11/2/2006 3:19:52	TLs, Night
R019 Hyster Unit 19	11/2/2006	4:52:26 PM	01:01	00:00		NOT REQD		
Sub Totals			**17:12**	**00:00**	**0.0%**			

Productivity Reports

There are two Productivity Reports to choose from, ordered by Employee or Vehicle. The reports include *totals only* of Login data for each Employee or Vehicle.

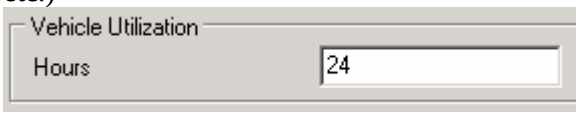
G FORCE PLUS Fleet Manager
EMPLOYEE PRODUCTIVITY REPORT

Printed: 3/23/2007 10:01:32 AM
Page : 1 of 1

For : All Employees
Date Range : 12/13/2006 to 12/13/2006

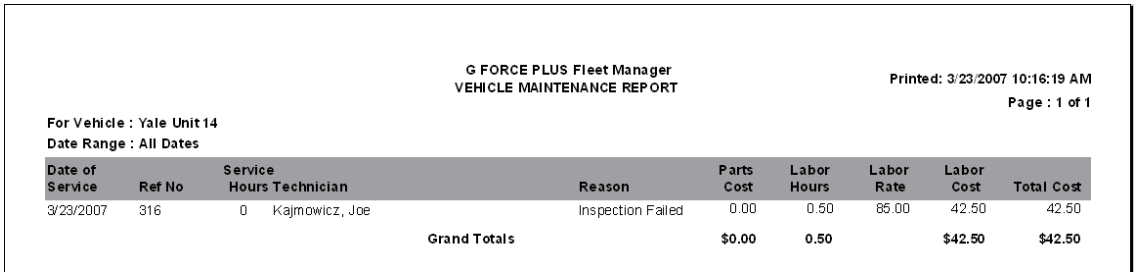
Employee Name	Login Duration (hh:mm)	Motion Detected (hh:mm)	Employee Utilization % (16 hrs)	Motion %
Assaf, Adnan	12:36	07:25	78.8 %	58.9 %
Billingsley, Reann	10:15	06:05	64.1 %	59.3 %
Contrada, Vincenzo 1	04:49	04:18	30.1 %	89.3 %
Limbu, Bhu	02:54	01:16	18.2 %	43.4 %
McQueen, Steve	00:14	00:02	1.6 %	13.4 %
Mendoza, Bonifacio	07:18	06:00	45.7 %	82.0 %
Pynn, Kevin	02:30	02:16	15.6 %	90.6 %
Russell, Desmond	08:40	07:00	54.2 %	80.8 %
Saungweme, Herbert	04:23	02:01	27.5 %	45.8 %
Storcare, Maintenance	03:08	00:31	19.6 %	16.5 %
Strome, Mervin	01:41	01:30	10.6 %	88.2 %
Wesaquate, Mary	05:59	03:56	37.4 %	65.7 %
Grand Totals	**64:32**	**42:20**	**403.0 %**	**65.6 %**

An explanation of Productivity Report columns:

Login Duration	The total login time (by Vehicle or Employee depending on the chosen report) within the selected date range
Motion Detected	The total motion time (by Vehicle or Employee depending on the chosen report) as determined by the Vehicle Monitor white wire input within the selected date range
Vehicle/Employee Utilization %	Login Duration as a percentage of available hours as entered in the "*Report Selection*" window. (Vehicle/Employee Utilization) Hours entered should be the total number of hours the resource is available for use (for example, enter 8 hours for a single shift or 24 hours for a single day of three shifts or 112 hours for a full week of two shifts or 168 hours for a full week of three shifts, etc.) 
Motion %	Motion Detected as a percentage of Login Duration.

Maintenance Reports

There are three Maintenance reports to choose from. The Technician Maintenance and Vehicle Maintenance Reports include Work Order details for one selected Technician or Vehicle over a selected date range.



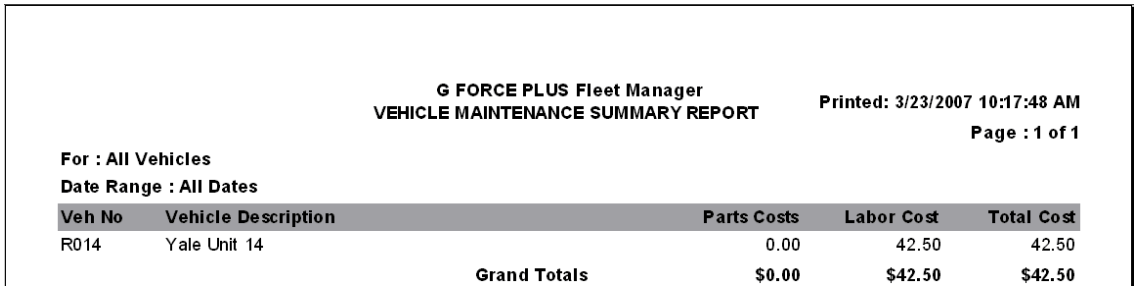
G FORCE PLUS Fleet Manager
VEHICLE MAINTENANCE REPORT

Printed: 3/23/2007 10:16:19 AM
Page : 1 of 1

For Vehicle : Yale Unit 14
Date Range : All Dates

Date of Service	Ref No	Service Hours	Technician	Reason	Parts Cost	Labor Hours	Labor Rate	Labor Cost	Total Cost
3/23/2007	316	0	Kajmowicz, Joe	Inspection Failed	0.00	0.50	85.00	42.50	42.50
			Grand Totals		**$0.00**	**0.50**		**$42.50**	**$42.50**

The Vehicle Maintenance Summary includes a total only of Work Orders for selected Vehicles over a selected date range.



G FORCE PLUS Fleet Manager
VEHICLE MAINTENANCE SUMMARY REPORT

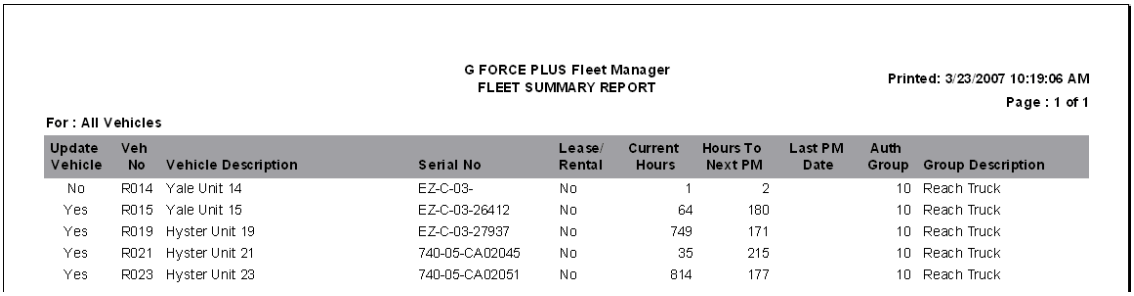
Printed: 3/23/2007 10:17:48 AM
Page : 1 of 1

For : All Vehicles
Date Range : All Dates

Veh No	Vehicle Description	Parts Costs	Labor Cost	Total Cost
R014	Yale Unit 14	0.00	42.50	42.50
	Grand Totals	**$0.00**	**$42.50**	**$42.50**

Fleet Summary Report

The Fleet Summary Report is a summary listing of selected Vehicles.



G FORCE PLUS Fleet Manager
FLEET SUMMARY REPORT

Printed: 3/23/2007 10:19:06 AM
Page : 1 of 1

For : All Vehicles

Update Vehicle	Veh No	Vehicle Description	Serial No	Lease/ Rental	Current Hours	Hours To Next PM	Last PM Date	Auth Group	Group Description
No	R014	Yale Unit 14	EZ-C-03-	No	1	2		10	Reach Truck
Yes	R015	Yale Unit 15	EZ-C-03-26412	No	64	180		10	Reach Truck
Yes	R019	Hyster Unit 19	EZ-C-03-27937	No	749	171		10	Reach Truck
Yes	R021	Hyster Unit 21	740-05-CA02045	No	35	215		10	Reach Truck
Yes	R023	Hyster Unit 23	740-05-CA02051	No	814	177		10	Reach Truck

Card Status Report

The Card Status Report is a summary listing of all Cards in ascending Recertification Date order.

G FORCE PLUS Fleet Manager
CARD STATUS REPORT

Printed: 1/6/2006 3:41:41 PM
Page : 1 of 1

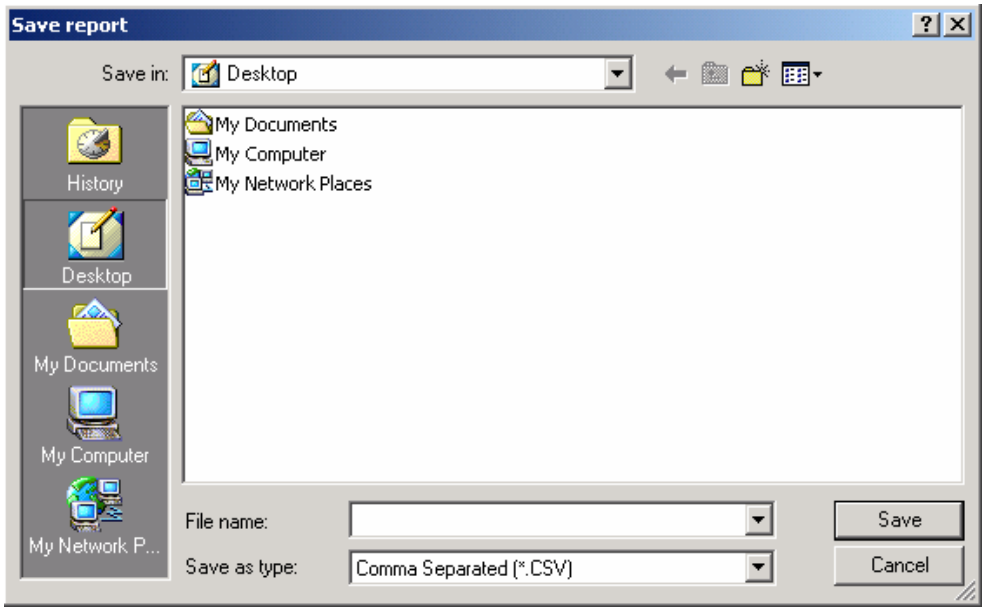
For : All Employees

Empl No	Employee Name	Recert. Date	Card S/N	Card Type	Card Expiry Date	Update Card?	Hot Card?
114	Page, Jimmi	4/1/2005	E007000011FE66D0	Operator		No	No
115	Pickett, Wilson	7/1/2005	E007000011FE700F	Operator		No	No
113	Plant, Robert	1/1/2006	E007000011FE61D5	Operator		No	No
300	Wrench, George	7/19/2006	E007000006A5CBFB	Lockout		No	Yes
300	Wrench, George	7/19/2006	E007000006C87DBC	Unlock	8/1/2005	No	Yes
200	Presley, Elvis	7/19/2006	E007000006C87EBA	Supervisor		No	No
301	Mechanic, Bob	7/25/2006	E007000006C84679	Lockout		No	No
301	Mechanic, Bob	7/25/2006	E007000006C8467B	Unlock		No	No
201	Ellington, Duke	7/25/2006	E007000011FE66CD	Supervisor		No	Yes
112	Shakespeare, William	7/25/2006	E007000011EFADC8	Operator		No	No
111	Huxley, Aldous	7/25/2006	E007000011EFADCD	Operator		No	No
116	Jones, Tom	7/25/2006	E007000011FE61D7	Operator	8/31/2006	No	No
117	Large, Marge	7/25/2006	E007000011FE66CE	Operator		No	No
E118	Argus, Clawton	7/25/2006	E007000011FE66D3	Operator		No	Yes
111	Huxley, Aldous	7/25/2006	E007000011FE7012	Operator		No	No
119	Holly, Buddy	7/25/2006	E007000011FE66E8	Operator		No	No
111	Huxley, Aldous	7/25/2006	E007000006C84C89	Operator		No	No

EXPORTING REPORT DATA

Any report data can be exported to a .CSV file for use outside the Software (i.e. in Microsoft® Excel).

1. Generate the desired report in the *"Print Preview"* window.
2. Click the **[**  **]** button (Save Report) to open the *"Save report"* window.



3. Select the desired file destination from the ***Save in:*** field.
4. Enter a meaningful file name in the ***File name:*** field.
5. Select "Comma Separated (*.CSV)" from the ***Save as type:*** field.
6. Click the **[Save]** button to save the file to the chosen location.

ADDITIONAL SYSTEM FEATURES

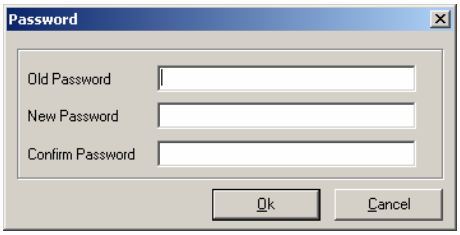
PASSWORD

While a password is not required, it is recommended to prevent unauthorized access to the Fleet Manager data. Password rules are as follows:

- Case-sensitive, meaning “goldfish”, “Goldfish”, and “GOLDFISH” are three different passwords
- Must be at least 6 characters long, and no more than 14 characters long
- Allowable characters can be from the full keyboard set, including upper and lower case A-Z, 0-9, and special characters such as: !@#$%^&*()_+{}<>?
- A space is also a valid character but cannot be the first or last position
- It is best to mix letters, numbers and characters
- Avoid easily cracked passwords like your name, telephone number, pet’s name, etc.

Set the Password

1. Select **Setup | Password…** from the menu.



2. Type the desired password in the ***New Password*** field (leave the ***Old Password*** field blank).
3. Retype the desired password in the ***Confirm Password*** field.
4. Click the **[OK]** button to save the change.

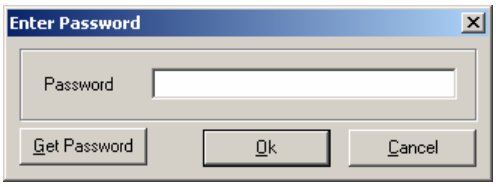
Change the Password

1. Select **Setup | Password…** from the menu.
2. Type the old password in the ***Old Password*** field.
3. Type the new password in the ***New Password*** field.
4. Retype the new password in the ***Confirm Password*** field.
5. Click the **[OK]** button to save the change.

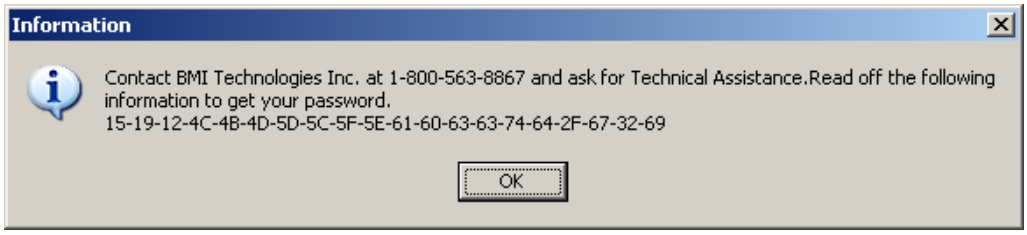
> ***NOTE!***
> *To remove the password, follow the step to change the password and leave the New Password and Confirm Password fields blank.*

Lost the Password?

1. Click the **[Get Password]** button on the *"Enter Password"* window.



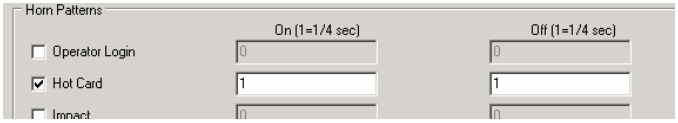
2. Contact Technical Assistance at BMI Technologies Inc. at 1-800-563-8867 and provide the code from the *"Information"* window to retrieve your password.



HOT CARDS

Hot Cards are Cards that have been identified as being on the Hot Card List. A Card can be placed on the Hot Card List to prevent its use in the system. For example, a lost or stolen card should be placed on the Hot Card List.

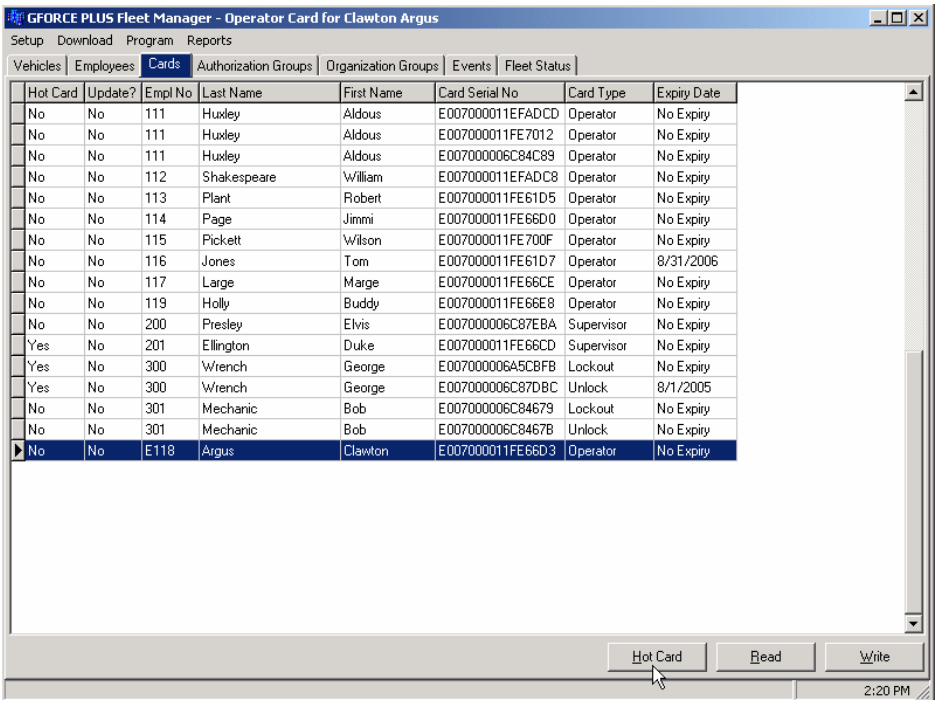
Each Vehicle Monitor stores the Hot Card List, and when a Hot Card is used, the Vehicle enters Hot Card state. The System Settings and the Authorization Group settings of the Vehicle determine the Vehicle's behavior in Hot Card state.



The Hot Card List can include up to 30 Cards and is maintained in the Fleet Manager Software. Each time there is a change to the Hot Card List, it is automatically updated on all Vehicle Monitors via RF communications. The Hot Card List includes all Cards that are flagged as "Yes" in the Hot Card column of the *Cards* tab.

Maintain the Hot Card List

1. Select the *Cards* tab.
2. Select the Card to add to the Hot Card List.



Hot Card	Update?	Empl No	Last Name	First Name	Card Serial No	Card Type	Expiry Date
No	No	111	Huxley	Aldous	E007000011EFADCD	Operator	No Expiry
No	No	111	Huxley	Aldous	E007000011FE7012	Operator	No Expiry
No	No	111	Huxley	Aldous	E007000006C84C89	Operator	No Expiry
No	No	112	Shakespeare	William	E007000011EFADC8	Operator	No Expiry
No	No	113	Plant	Robert	E007000011FE61D5	Operator	No Expiry
No	No	114	Page	Jimmi	E007000011FE66D0	Operator	No Expiry
No	No	115	Pickett	Wilson	E007000011FE700F	Operator	No Expiry
No	No	116	Jones	Tom	E007000011FE61D7	Operator	8/31/2006
No	No	117	Large	Marge	E007000011FE66CE	Operator	No Expiry
No	No	119	Holly	Buddy	E007000011FE66E8	Operator	No Expiry
No	No	200	Presley	Elvis	E007000006C87EBA	Supervisor	No Expiry
Yes	No	201	Ellington	Duke	E007000011FE66CD	Supervisor	No Expiry
Yes	No	300	Wrench	George	E007000006A5CBFB	Lockout	No Expiry
Yes	No	300	Wrench	George	E007000006C87DBC	Unlock	8/1/2005
No	No	301	Mechanic	Bob	E007000006C84679	Lockout	No Expiry
No	No	301	Mechanic	Bob	E007000006C8467B	Unlock	No Expiry
No	No	E118	Argus	Clawton	E007000011FE66D3	Operator	No Expiry

3. Click the **[Hot Card]** button at the bottom of the tab. The field indicating if the Card is a Hot Card will change from No to Yes.

4. The RF communications will update the Hot Card list on each Vehicle.

OTHER DATA LOGGER FUNCTIONS

Clear Data (#9)

This function is used to clear data from the Data Logger. This includes Vehicle ID and settings slots 1 to 9, and Events in memory.

1. Press **{Enter}** to start the Data Logger.
2. Press **{9}** when the Data Logger displays "**Action?(1-9)**". The Data Logger will display "**Action?(1-9) Clear Data**"
3. Press **{Enter}** to accept the choice. The Data Logger will display "**Select Type:**"
4. Select the desired type of data to clear.
   a. Press **{1}** for Vehicle ID slots. The Data Logger will display "**Clear IDs? Enter to Proceed**", or

b. Press **{2}** for Vehicle setting slots. The Data Logger will display "**Clear Settings? Enter to Proceed**", or

c. Press **{3}** for Events. The Data Logger will display "**Clear Events? Enter to Proceed**"

5. Press **{Enter}** to confirm the selection. The Data Logger will display "**Clearing…**", followed by "**Memory Cleared**", followed by "**Select Type:**"

6. Repeat steps 4 and 5 as required.

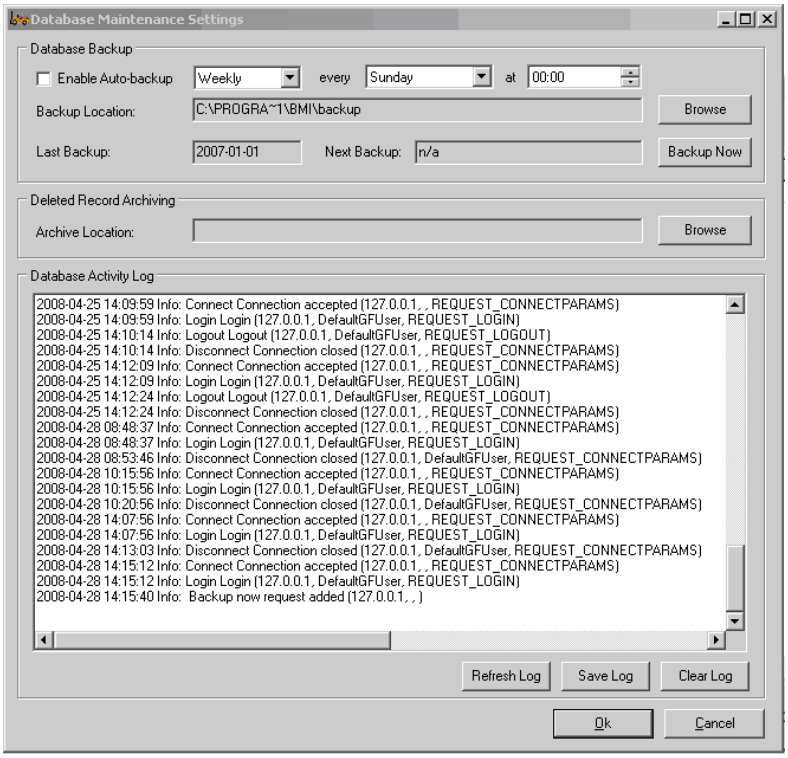
7. Press **{Cancel}** when done. The Data Logger will display "**Action?(1-9)**".

Database Maintenance

Setting up Backup

1. Click on Maintenance | Backup/Archive Options

2. This screen will appear. Automatic backups may be scheduled daily, weekly, or monthly and the location the data is backed up to can be changed. Schedules may be daily, weekly, or monthly.

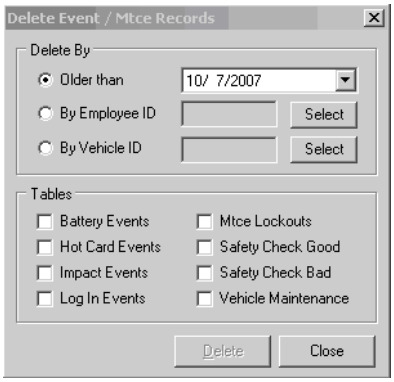


3. To perform a backup on command, simply click the Backup Now button, then Ok. The backup filename will be the date it was performed (2008-04-01.bkp for example).

Deleting Aged Records

1. Click Maintenance | Delete Aged Records.

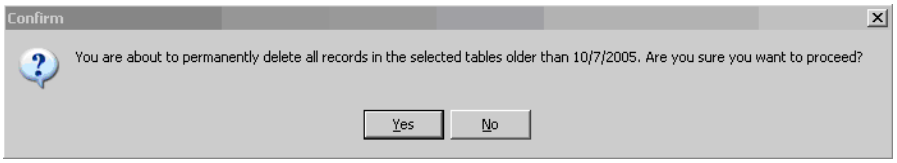
2. This window will appear:



3. Choose which items you wish to remove by date, employee ID, or vehicle ID.

4. Choose the event types you want removed.

5. Click Delete, and this window will appear. Click Yes to have the items permanently removed from the database. Click No to cancel the operation.



REFERENCE

RECOMMENDED SETTINGS

Battery Settings

The recommended situation-specific Battery Fault settings are:

Setting	General
High Fault Threshold (SGP)	1650
Low Fault Threshold (SGP)	780

The recommended situation-specific Battery Charge settings are:

Setting	General	Freezer Only
OK To Charge Threshold (SGP)	1200	1200
OK To Charge Timer (minutes)	45	45
Must Charge Threshold (SGP)	1150	1160
Must Charge Timer (minutes)	40	40

NOTE!
For help adjusting Battery settings
to reflect your company's charging policy,
contact Technical Assistance at
BMI Technologies Inc. at 1-800-563-8867.

Impact Types

A Hard Impact occurs when a Vehicle hits an immovable object such as a post or a Vehicle of the same or larger size. The Vehicle generally stops on impact and its energy is dissipated instantly. The energy from this type of impact is high in amplitude and short in duration (10 ms).

A Soft Impact occurs when a Vehicle hits an object like product or racking. The Vehicle generally comes to a stop some distance after the impact, as it takes some time for its energy to dissipate. The energy from this type of impact is low in amplitude and long in duration (300 ms). This type of impact tends to be most damaging and most often causes an Impact alarm.

DATA FIELD DEFINITIONS

This section explains the settings that must be established in the Software. It is divided by major category: System Settings, Authorization Groups, Vehicles, and Employees. Settings are listed in the order they appear in the Software.

System Settings

System Settings apply to all Vehicles in a fleet, and changes require all Vehicles to be reprogrammed with the Data Logger.

Card Expiration Warning (days)	The Vehicle Interface displays **"CARD EXPIRY SOON"** with the **"LOGIN APPROVED"** message when a Card's Expiry Date or (enforced) Recertification Date is within this period of time.
Vehicle Inspection Frequency	Choose one of five options for Vehicle Inspections: 1) Every Login 2) Every Operator Change 3) First Login Per Operator Per Interval (i.e. shift) 4) First Login Per Interval (i.e. shift) 5) No Vehicle Inspection
Vehicle Inspection Interval (hours)	When items 3) or 4) are selected for the Vehicle Inspection Frequency, enter the shift length (i.e. 8, 12, or 24 hours).
Vehicle Inspection Inactivity Timer (seconds)	The Vehicle reverts to Operator Login (Vehicle Interface displays **"OPERATOR LOGIN PRESENT CARD"**) when there is no key-press within this period of time during the Vehicle Inspection.
Preventative Maintenance Due Warning (hours)	The Vehicle Interface displays **"PM DUE SOON"** when a Vehicle's scheduled Preventative Maintenance is within this period of time. After the Preventative Maintenance is due, the Vehicle Interface displays **"PM DUE NOW"**.
PM Automatic Maintenance Lockout on Past Due (if checked)	The Vehicle enters Maintenance Lockout (Vehicle Interface displays **"MAINTENANCE LOCKOUT"**) at the next key-on after scheduled Preventative Maintenance is due.
Horn Patterns (On/Off)	Set unique horn patterns for each Vehicle state. An unchecked field indicates no horn will sound for the state. A value of 1 = ¼ second, therefore when On=2 and Off=1200, the horn sounds for ½ second every 5 minutes in that state.
Battery High Fault Threshold (SGP)	The Vehicle enters Battery Fault when a battery has a sustained level above this specific gravity point threshold. The Vehicle Interface displays **"BATTERY FAULT OVER/UNDER VOLT."** and the red Battery Fault LED illuminates. Other interrupts and alarms will exhibit as programmed. To begin clearing this condition, the Vehicle must be placed into Maintenance Lockout. See "RECOMMENDED SETTINGS".

Battery Low Fault Threshold (SGP)	The Vehicle enters Battery Fault when a battery has a sustained level below this specific gravity point threshold. The Vehicle Interface displays **"BATTERY FAULT OVER/UNDER VOLT."** and the red Battery Fault LED illuminates. Other interrupts and alarms will exhibit as programmed. To begin clearing this condition, the Vehicle must be placed into Maintenance Lockout. See "RECOMMENDED SETTINGS".

Authorization Groups

Authorization Group settings apply to all Vehicles in an Authorization Group, and changes require all Vehicles in the Authorization Group to be reprogrammed with the Data Logger.

General Tab

Auth Group	Enter a unique Authorization Group from 1 to 64.
Description	Enter an Authorization Group description.
Diagnostic Delay (seconds)	For the defined number of seconds, all electrical circuits are closed so a Vehicle can conduct its internal diagnostics without error. The Vehicle Interface displays **"VEH SYSTEM CHECK PLS WAIT.."** after key-on.
Preventative Maintenance Time Tracking Method	Select one of two options to track time for scheduled Preventative Maintenance purposes: 1) Login Time 2) Motion Time
Preventative Maintenance Interval/Frequency every (hours)	This value is used to increment the current G FORCE Hour Meter to determine when the next scheduled Preventative Maintenance should be.
Impact Automatic Reset (if checked)	When this field is checked, the Vehicle Interface displays **"OPERATOR LOGIN PRESENT CARD"** after an Impact has been detected.
Battery Monitoring (if checked)	When this field is checked, the Vehicle battery is monitored. Additional settings are required for customization.

Settings Tab

Operator Login Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens during Operator Login (lift interrupt created).
Operator Login Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens during Operator Login.
Hot Card Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens when a Hot Card is detected for Operator Login (lift interrupt created).
Hot Card Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens when a Hot Card state is detected for Operator Login).
Maintenance Lockout Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens when a Vehicle enters Maintenance Lockout (lift interrupt created).

Maintenance Lockout Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens when a Vehicle enters Maintenance Lockout.
Impact Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens when an Impact is detected (lift interrupt created)
Impact Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens when an Impact is detected.
Impact Delay (seconds)	There is a delay for the defined number of seconds before the Lift Interrupt and Secondary Alarm circuits open after an Impact is detected.
Battery OK To Charge Threshold (SGP)	The Vehicle enters OK To Charge when a battery discharges to a level below this specific gravity point threshold for a sustained period of time (see Battery OK To Charge Timer below). The Vehicle Interface displays **"BATTERY OK TO CHARGE"** and the Battery Charge LED illuminates as amber. Other alarms will exhibit as programmed. Set the upper limit of the OK To Charge battery range in specific gravity points according to your company's battery charging policy. See "RECOMMENDED SETTINGS".
Battery OK To Charge Timer (minutes)	The Vehicle enters OK To Charge when a battery discharges to a level below the Battery OK To Charge Threshold for this period of time. The Vehicle Interface displays **"BATTERY OK TO CHARGE"** and the Battery Charge LED illuminates as amber. Other alarms will exhibit as programmed. Set this value to reflect your company's battery charging policy. See "RECOMMENDED SETTINGS".
Battery Must Charge Threshold (SGP)	The Vehicle enters Must Charge when a battery discharges to a level below this specific gravity point threshold for a sustained period of time (see Battery Must Charge Timer below). The Vehicle Interface displays **"BATTERY MUST CHARGE!"** and the Battery Charge LED flashes red. Other interrupts and alarms will exhibit as programmed. Set the upper limit of the Must Charge battery range in specific gravity points according to your company's battery charging policy. See "RECOMMENDED SETTINGS".
Battery Must Charge Timer (minutes)	The Vehicle enters Must Charge when a battery discharges to a level below the Battery Must Charge Threshold for this period of time. The Vehicle Interface displays **"BATTERY MUST CHARGE!"** and the Battery Charge LED flashes red. Other interrupts and alarms will exhibit as programmed. Set this value to reflect your company's battery charging policy. See "RECOMMENDED SETTINGS".
Battery Must Charge Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens when Battery Must Charge is detected (lift interrupt created).
Battery Must Charge Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens when Battery Must Charge is detected.

Battery Must Charge Delay (minutes)	There is a delay for the defined number of minutes before the Lift Interrupt and Secondary Alarm circuits open after Battery Must Charge is detected.
Battery Fault Lift Interrupt (if checked)	The circuit wired to interrupt the Vehicle lift opens when Battery Fault is detected (lift interrupt created).
Battery Fault Secondary Alarm (if checked)	The circuit wired to create a secondary alarm opens when Battery Fault is detected.
Battery Fault Delay (minutes)	There is a delay for the defined number of minutes before the Lift Interrupt and Secondary Alarm circuits open after Battery Fault is detected.
Vehicle Defaults Tab	RECOMMENDED BUT NOT MANDATORY
Battery Nominal Voltage	Set the default nominal battery voltage for Vehicles in this Authorization Group. Editable in Vehicle settings.
Impact Hard Threshold (G)	Set the default upper limit for Vehicles in the Authorization Group for determination of hard Impacts. Editable in Vehicle settings.
Impact Hard Samples	Set the default number of samples for Vehicles in the Authorization Group for determination of hard Impacts. Editable in Vehicle settings.
Impact Soft Threshold (G)	Set the default upper limit for Vehicles in the Authorization Group for determination of soft Impacts. Editable in Vehicle settings.
Impact Soft Samples	Set the default number of samples for Vehicles in the Authorization Group for determination of soft Impacts. Editable in Vehicle settings.

Vehicles

The Vehicle settings are specific to a Vehicle, and changes require the Vehicle to be reprogrammed with the Data Logger.

Gray fields are read-only; they cannot be edited.

General Tab

Vehicle ID	A system-assigned vehicle identifier for reference only.
Vehicle No	Enter the company-assigned vehicle identifier (i.e. Unit No).
Serial No	Enter the OEM serial number.
Description	Enter the Vehicle description (i.e. make, model, year purchased).
Authorization Group	Click the **[Link To…]** button to select the Authorization Group the Vehicle belongs to.
Authorization Desc.	Description of the Authorization Group the Vehicle belongs to.
Rental (if checked)	Indicates the Vehicle is a rental. For reference only.

Comment	Comment field for reference only (i.e. year of purchase).
Settings Tab	
Impact Hard Threshold (G)	Threshold for hard impact detection for the vehicle (hard impacts have greater intensity and shorter duration). See "RECOMMENDED SETTINGS".
Impact Hard Samples	Number of samples measured for hard impact detection for the vehicle. See "RECOMMENDED SETTINGS".
Impact Soft Threshold (G)	Threshold for soft impact detection for the vehicle (soft impacts have lesser intensity and longer duration). See "RECOMMENDED SETTINGS".
Impact Soft Samples	Number of samples measured for soft impact detection for the vehicle. See "RECOMMENDED SETTINGS".
(Impact) Lift Interrupt	From Authorization Group settings. Yes for Lift Interrupt when Impact is detected. No for no Lift Interrupt when Impact is detected.
(Impact) Secondary Alarm	From Authorization Group settings. Yes for Secondary Alarm when Impact is detected. No for no Secondary Alarm when Impact is detected.
(Impact) Interrupt/Alarm Delay (seconds)	From Authorization Group settings. Number of seconds before Lift Interrupt or Secondary Alarm engages when Impact is detected.
(Impact) Automatic Reset	From Authorization Group settings. Yes if Automatic Reset occurs when Impact is detected.
Hour Meter at Installation	Vehicle hour meter reading when Vehicle equipped with a G FORCE PLUS/RF Vehicle Monitor is put into service.
G FORCE Hour Meter	G FORCE PLUS/RF Vehicle Monitor Hour Meter reading determined by PM Time Tracking Method.
Actual Vehicle Hours	Addition of values from Hour Meter at Installation and G FORCE Hour Meter.
Date of Last PM	The most recent date of a Maintenance Work Order identified with a Scheduled PM reason. If no Maintenance Work Orders are entered, this field will remain blank.
Next PM Due in (hours)	Number of hours that the next scheduled PM is due for the Vehicle.
PM Time Tracking Method	From Authorization Group settings. Method of tracking time for scheduled Preventative Maintenance purposes: Login or Motion.
PM Interval/Frequency every (hours)	From Authorization Group settings. Value used to update when the next scheduled Preventative Maintenance should be.
Battery Nominal Voltage	Nominal battery voltage for the Vehicle.
OK To Charge Threshold	Upper limit of the OK To Charge battery range in specific gravity points.
Must Charge Threshold	Upper limit of the Must Charge battery range in specific

	gravity points.

Employees

Employee No	Enter the Employee's unique company-assigned identifier.
Active Employee (if checked)	The Employee will be included on reports.
First Name	Enter the Employee's first name.
Last Name	Enter the Employee's last name.
Enforce Recertification Date (if checked)	The Employee will be denied access to a Vehicle if the Recertification Date is past due.
Recertification Date	Enter the date an Employee's Vehicle operation and safety training expires.
Update Card (if checked)	Read-only field. The Employee's Operator Card is outdated.
Position	Select Employee's Position from the drop-down list. The Position does not limit the Card Type that can be assigned.
Comment	Comment field for reference only.

TROUBLESHOOTING

> ***NOTE!***
> *For customized help with your particular installation, contact Technical Assistance at BMI Technologies Inc. at 1-800-563-8867.*

BACKING UP THE DATABASE

Care should be taken to protect the Fleet Manager data from hard drive failure by establishing a regular backup routine. The backup can be accessed through **Maintenance | Backup/Archive Options**.

Contact your organization's computer technician for assistance with this task.

SOFTWARE LICENCE

G FORCE PLUS Fleet Manager Software (herein after called the “Software”), as a component of the G FORCE PLUS and G FORCE PLUS RF Powered Industrial Vehicle Fleet Management Systems, is developed, maintained and owned by BMI Technologies Inc.

The purchase of only one (1) copy of the Software entitles the purchaser (herein after called the “User”) to load the Software on as many computers as desired for one single physical address.

The Software is certified for use on PCs running Microsoft® Windows XP Professional.

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