Innovative Control Systems®

Tunnel Master®*wbc*

User Manual - Version 10.0

Defining the World of Car Wash Technology

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CHAPTER 1: Introduction

Congratulations, and thank you for purchasing the Tunnel Master® *wbc*! You now have at your wash the highly acclaimed, choice of tunnel controllers in the marketplace. The WBC is a powerful tool that will help make your car wash more efficient, your customers happier, and your bottom line healthier. The first step is to review the manual so you and your staff can understand and leverage all the features of the WBC.

Version Considerations

This document is Version 10.0 released March 15, 2017, including content based on the following ICS software versions:

- Controller software version 1.2 B51
- Server-side controller software version 4.1.8.3 for *Tunnel Master*®.
- *Tunnel Master*® software version 5.30 B2
- ICS API 4.2.12.8 for *Tunnel Master*®.
- *WashConnect*® software version 1.4.12.6

Subsequent updates are summarized in "Document Version History" on page 137.

Related Documents

The following document is available for further reference:

- Tunnel Master® *wbc* Installation Guide.

Audience

This document is intended for end-user audiences. No prior experience with the Tunnel Master® *wbc* is required. Some familiarity with the Auto Sentry® payment terminal operations is assumed.

ICS developed this manual in order to:

- Provide a comprehensive, easy-to-use system reference guide.
- Enable operators and their employees to obtain the maximum value from the system.
- Furnish operators with a tool for training their employees on the Car Wash Controller.

After reading this manual, you should be able to:

- Install your Tunnel Master® *wbc* Controller
- Configure your wash settings and features
- Process vehicles through your wash
- View car counts
- View historical information
- Track sales
- Print reports
- Troubleshoot issues, if they occur

Many of the features you will find in the ICS Controller system were integrated at the request of car wash operators. We welcome your feedback and want to assure you that ICS is committed to being the leader in the industry of car wash controller and management systems.

Controller Features

- Add up to 96 internally fused single-pole relays as needed. Each of the 96 relays can be profiled in nine different ways for nearly unlimited customization for all your current and future tunnel needs.
- Connect up to four additional ICS relay boxes (24 relays per box) to maximize 192 total relays.
- 24 programmable, fused outputs, upgradeable to 48, each with two independent circuits for 24 VAC and 120 VAC.
- Programmable flashing relay.
- Exclusive, patented built-in anti-theft feature prevents unauthorized processing of car washes.
- 6 designated and 9 unassigned system inputs for Pulse, Gate, Tire, Roller Locator, Entrance Management, and Panic circuits.
- Built-in conveyor interlock circuit provides smart control of conveyor for emergency stops, panic stops, and conveyor auto start.
- Programmable staggered re-start after panic condition to reduce energy consumption.
- Auto pulse feature allows pulse simulation in the event of pulse switch failure.
- Auto Gate feature allows gate switch simulation in the event of gate switch failure.
- Roller Interlock disables the roller-up and gate switch until a valid service is programmed for the vehicle.
- Exterior indicators for easy troubleshooting.
- 16 programmable service buttons on the entry keypad, upgradeable to 32.
- Automated wet down feature for easy startup.
- Optional real-time reporting and/or receipt printers.
- Mobile Internet access via iPad, iPhone, and Android phones. Connect locally to the WBC via a Wi-Fi wireless network for reports and change settings while away from the wash location or while in the tunnel.

CHAPTER 2:
Getting Started

This chapter includes preliminary steps to take for a new Tunnel Master® *wbc* startup.

Reset Default Configuration Settings

The Tunnel Master® *wbc* ships with preloaded settings. You can erase these settings before configuring your own settings. The following procedure shows how to erase the current settings.

To erase all configuration settings, follow these steps:

1. On the main CPU board, set DIP switch 4 to the ON position.
2. Locate the reset button on the main CPU board.
   - Press and hold the reset button until the ready light goes out. Release the reset button, and then wait for the display to come back up. All settings are erased.
3. On the main CPU board, set DIP switch 4 to the OFF position again.
4. If you are currently logged in to the web interface, log out and then sign back in.

NOTE: You can also use DIP switches 1 and 2 in to initiate a partial erase. This clears only the configuration (switch 1) and shift data (switch 2). But ICS recommends doing a first-time complete erase using DIP switch 4, as described above.

For more information on DIP switch settings, see the Tunnel Master® wbc Installation Guide.

Logging In

Before you begin, the following must be complete:

- The Tunnel Master® *wbc* must be fully installed.
- The Tunnel Master® *wbc* must be connected to the network.
- A battery must be installed on the Tunnel Master® *wbc* main CPU board.
- Power must be applied to the unit.

NOTE: You will also need the IP address of the Tunnel Master® *wbc*. This is found on the Tunnel Master® *wbc* built-in monitor or via the IPSetup.exe utility on the Tunnel Master® *wbc* installation CD.

Network Setup Log In

To log in to the Tunnel Master® *wbc* interface, follow these steps:

1. On a networked computer at the site, start a browser (for example, *Internet Explorer®*).
   - Javascript or Active Scripting must be enabled on the browser.
   - The browser window should be maximized.
   - A minimum monitor resolution setting of 1024 X 768 is required.
2. Type the IP address of the Tunnel Master® *wbc* into the browser's address bar (for example, default IP address of the Tunnel Master® *wbc* is 10.0.0.200). The **Administrator Login** screen appears.

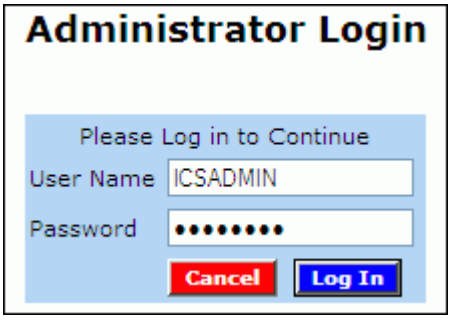


Figure 1. Administrator Login Screen

3 Type the default user name and password:

- In the **User Name** box, type `ICSADMIN`.
- In the **Password** box, type `ICSADMIN`.

4 Click **Log In**.
The **Welcome to the ICS Tunnel Controller** screen appears.

📖 *See "Set the Date and Time" on page 20.*

Non-Networked Setup Log In

📖 *See the Tunnel Master® wbc installation guide for more information.*

If the Tunnel Master® *wbc* at your site is a non-networked unit, then you can access the web interface via an Ethernet crossover cable.

1 Connect one end of the cable to your laptop or PC.

2 Connect the other end to the RJ-45 terminal on the Tunnel Master® *wbc* main CPU board.

3 Follow the steps from Network Setup Log In.

Wireless Network Setup Log In

NOTE: A wireless router is required for a Wi-Fi connection.

If you have a Wi-Fi network and a mobile device, you can have access to the Tunnel Master® *wbc* interface functions and reporting via a Wi-Fi connection.

Mobile Devices: iPad®, smart phone, Android™, laptop, etc. If the Tunnel Master® *wbc* at your site is a wireless networked unit, then you can access the web interface via a Wi-Fi connection. Wi-Fi connections are available within so many feet of the wireless router. See router for more information.

NOTE:

- Wireless router box is required.
- Smart Phone must support HTML 5.
- Javascript and cookies must be enabled on the browser.

4 On a wireless mobile device at the site, start the Tunnel Controller Interface.

5 Type the default user name and password:

- In the **User Name** box, type `ICSADMIN`
- In the **Password** box, type `ICSADMIN`

6 Click **Log In**.
The **Welcome to the ICS Tunnel Controller** screen appears.

See "Set the Date and Time" on page 20.

The iPhone® has one specific feature that works, **Relay Configuration**. From your tunnel with your iPhone®, you can fine tune your output relay settings instantly with access to Relay Configuration. You have more functions and reporting available on all other mobile devices than with the iPhone®.

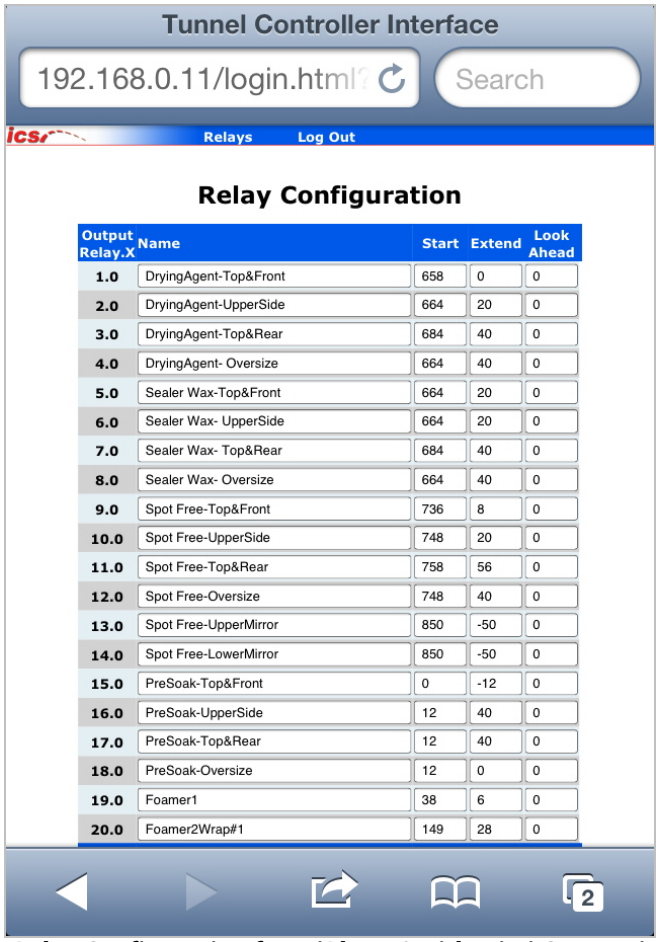


Figure 2. Relay Configuration from iPhone® with Wi-Fi Connection

Lost or Forgotten Passwords

If you cannot log in or if you have lost your password, contact ICS support for an override password. An override password utility is available through the ICS support department. Before you call, have the following information ready:

- The date as it appears on the Tunnel Master® *wbc* display.
- The last 4 digits of the Tunnel Master® *wbc* MAC address, which can be found on a sticker attached to the CPU module. The CPU module is on the main CPU board inside the Tunnel Master® *wbc* box. If you cannot find the CPU module, look for a network cable. A network cable is connected to the CPU module.

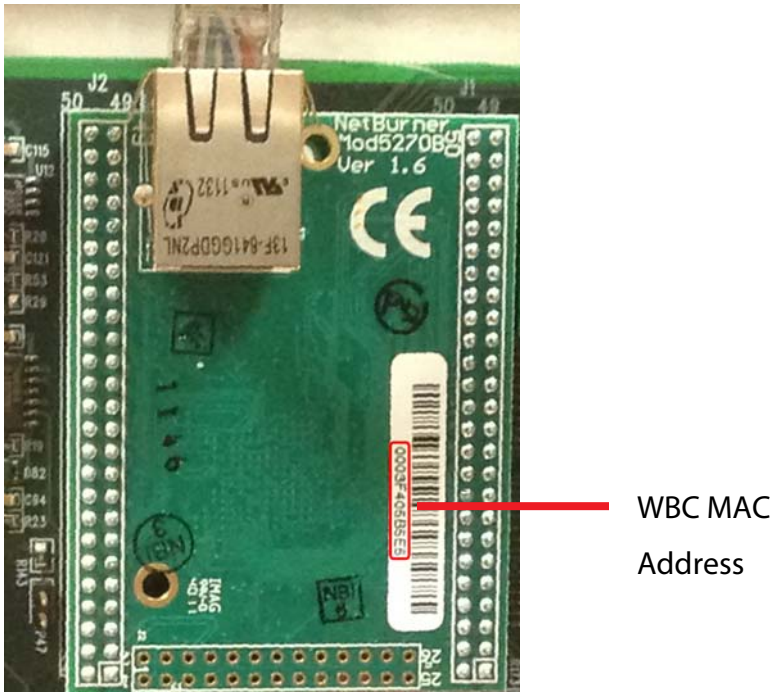


Figure 3. Tunnel Master® *wbc* MAC Address sticker attached to the CPU Module

The ICS technician will take this information from you, and then use an in-house password override utility to generate a new password. This new password can be used with a user name of ICSADMIN to login to the Tunnel Master® *wbc* web interface. The password is good for one day only. Both the password and Username should be immediately changed after you login.

📖 *See "Create a New User Name and Password" on page 21.*

Set the Date and Time

The date and time are reset during shipping. You must configure the date and time manually.

NOTE: For timed outputs to function correctly, it is important that your date and time settings are properly configured on the Tunnel Master® *wbc* web interface.

To set the date and time, follow these steps:

1 After Tunnel Master® *wbc* interface log in, select the **Configuration** menu, and then select **Administrative Settings.**
The **Administrative Settings** screen appears.

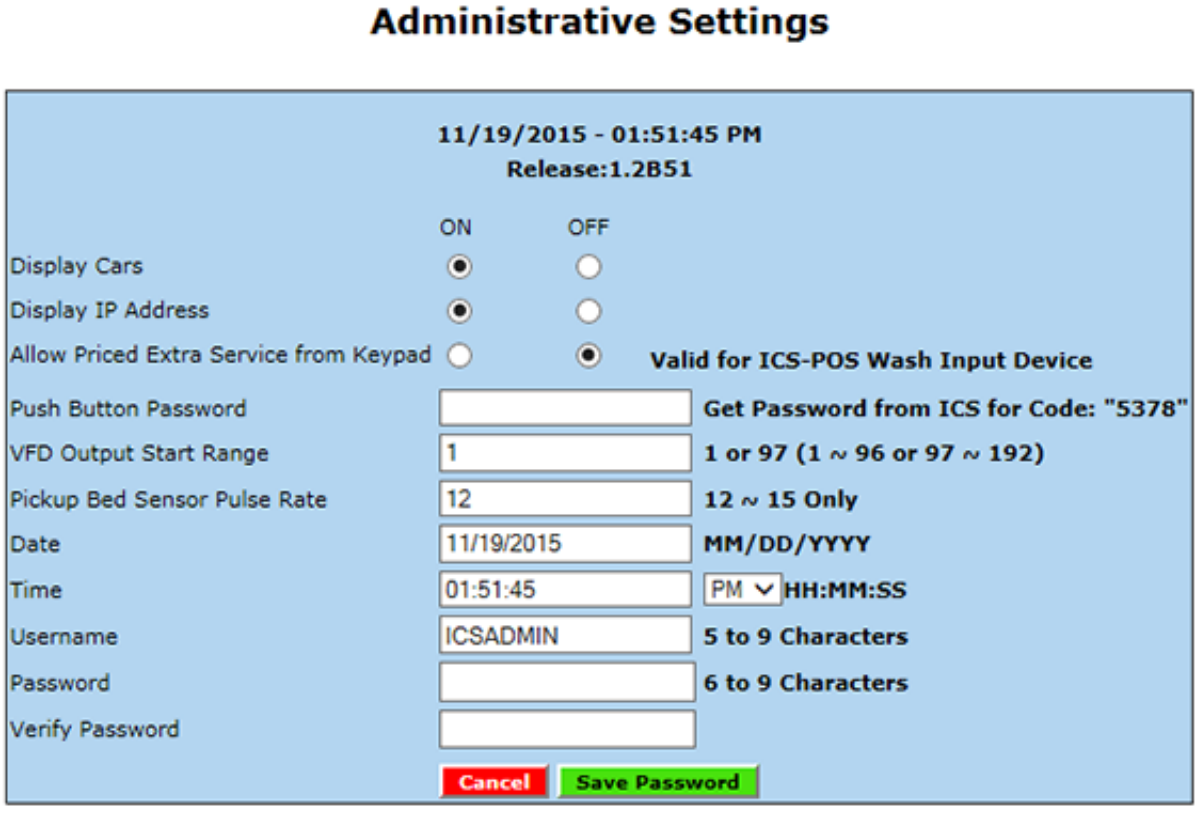


Figure 4. Administrative Settings Screen from a Personal Computer (PC)

NOTE: The current software version of the controller (for example, Version 1.2 B51) is shown at the top of the **Administrative Settings** screen.

2 In the **Date** box, type the current date.

3 In the **Time** box, type the current time.

NOTE: The information is saved immediately after you leave the box. For example, when you type the date and then press the Tab key to move to the next box, the date information is saved.

4 Press the **Esc** key on the keyboard to return to the previous menu. (Not available for Web Config pages).

See "Administrative Settings" on page 107.

Create a New User Name and Password

After you have logged in and set the correct date and time, then you can create a new user name and password.

NOTE: For enhanced security, ICS recommends you create a new user name and password to replace the default settings.

To create a new user name and password, follow these steps:

1 If the **Administrative Settings** screen is not already active, then select the **Configuration** menu, and then select **Administrative Settings**.
The **Administrative Settings** screen appears.

2 Use the arrow keys to scroll to the Username box.

3 In the **Username** box, type a user name.

- Minimum length = 5 characters
- Maximum length = 9 characters

4 In the **Password** box, type a password.

- Case Sensitive Password
- Minimum length = 6 characters
- Maximum length = 9 characters

5 In the **Verify Password** box, retype the password.

6 Press the **Enter** key to accept. The new user name and password is saved and the new user is automatically logged in. The previous user name and

password are erased. Only one user name and password can be saved at a time. The Tunnel Master® *wbc* does not support multiple user names and passwords.
-or-
Press the **Esc** key to exit without saving user name and password.
(Not available for Web Config pages.)

CHAPTER 3:
Tunnel Settings

This section includes descriptions for the **Tunnel Settings** menu items.

General Setting

On the **Configuration** menu, click **Tunnel Settings**, and then click **General Settings.**

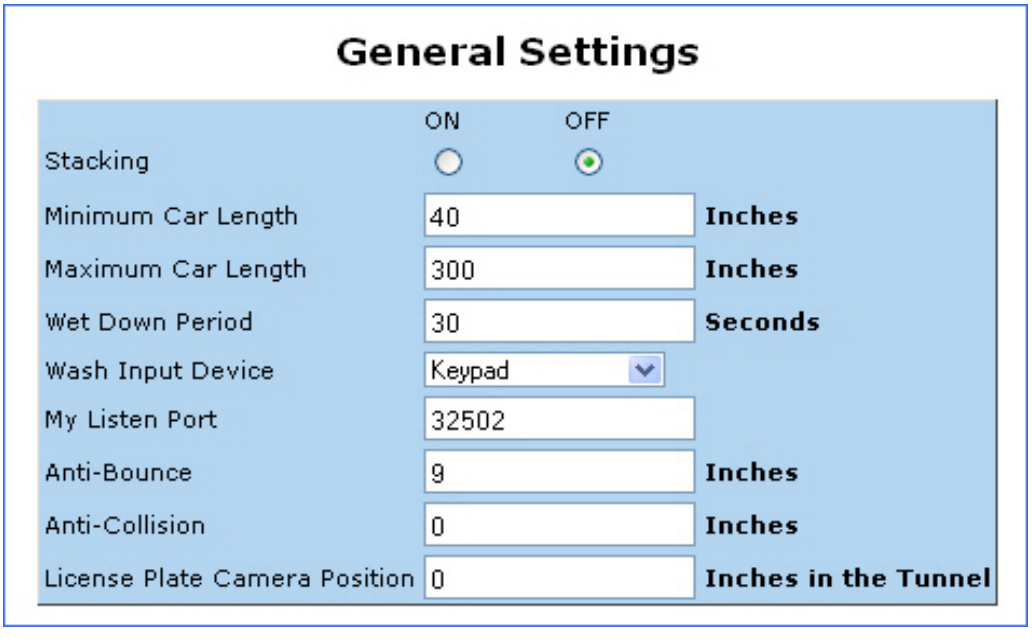


Figure 5. General Settings

Table 1: General Settings

Settings	Parameters	Description
Stacking	ON or OFF	Select **ON** to start stacking, **OFF** to stop stacking. This must be set to ON for the stand-alone Auto Sentry to Tunnel Master® *wbc* interface systems.
Minimum Car Length	Numeric Inches	Typically 48. The minimum length of a vehicle that is required to recognize it as a valid vehicle, preferably 48 inches to cover the second tire but if necessary, could go as low as 38 inches. However, the minimum car length must be greater than the anti-bounce value. Minimum Car Length is part of the anti-theft feature. For example: An employee might stand in front of the eye sensor for a few seconds. The system might read that as 6 inches of activity. But it should not be registered as a vehicle.
Maximum Car Length	Numeric Inches	The length in inches of the longest vehicle that will enter the car wash before a violation is recorded. This is part of the anti-theft feature. If a vehicle longer than the Maximum Car Length value enters the wash, the maximum length will be the only portion of the vehicle to be washed.
Wet Down Period	Numeric Seconds	Enter the number of seconds you would like to have the wash equipment turned on for the wet down process. A wet down will fire all of the relay outputs that have the **Wet Down** option turned **ON** within the **Relay Configuration** page.

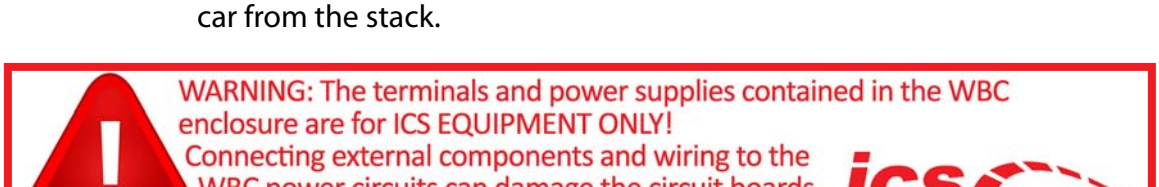
Table 1: General Settings (Continued)

Settings	Parameters	Description
Wash Input Device	List	Settings include **Keypad**, **Stack N Control**, **Computer**, and **ICS-POS**. **NOTE:** Retracts are only available in Stack N Control mode. For Retracts not in Stack N Control mode, set up Retracts as $0 extra service. • Select **Keypad** if you have a stand-alone WBC with a keypad. • Select **Stack N Control** if you have *WashConnect*® and are configuring the WBC to be directly interfaced with one or more Touch POS units. In this mode, any services configured as retracts will work on the keypad. Retracts are $0 services. • Select **Computer** if you have *Tunnel Master*® software with the **Control.exe** application. **NOTE:** Any retract or wash input has to come from the Tunnel Controller software. • Select **ICS-POS** if you are configuring the WBC to be directly interfaced with one or more stand-alone Auto Sentry units. **Push Button**: You must purchase this feature, if you have a stand-alone WBC with a push button control to wash cars. This setup does not allow for stacking. Support MUST enable the Push Button device with an override code. For information on setting up a Push Button password, See “Administrative Settings” on page 107. Again, Push Button must be enabled by support with an override code. Select **Keypad** and **Push Button** if you have a WBC with both a keypad control and a push button control. With this setup, if **Stacking** is **ON**, then you can stack vehicles with the keypad.

Table 1: General Settings (Continued)

Settings	Parameters	Description
My Listen Port	Numeric	**Default value = 32502**. Communication port number for Internet socket. Must match *Tunnel Master*® settings in **Config > Machine Setup**, **Port** field for the *Tunnel Master® wbc* device.
Anti-Bounce	Numeric Inches	The length in inches for which sensor activity (i.e., electric eye or loop sensor) can "bounce" (i.e., drop and then come on again) without being recognized as a vehicle. For example: The larger wheel wells of a truck might provide enough empty space for the eye sensor beam to make contact as the truck passes through the eye. The Anti-Bounce setting is used to ignore these momentary unbroken sensor events. Because Anti-Bounce and Minimum Car Length work together, the Anti-Bounce value **must be less than** the Minimum Car Length value. The following scenarios are true if these parameters are set: Minimum Car Length = 36. Anti Bounce = 6. **Example 1**: Eye sensor is broken for 3 inches. *Results*: No car. No error. Event ignored. Invalid Car Length. **Example 2**: Eye sensor is broken for 12 inches. *Results*: Minimum Car Length violation. Invalid Car Length and the Car is ignored. **Example 3**: Eye sensor is broken for 48 inches. *Results*: Car found. No error.
Anti-Collision	Numeric Inches	This function helps prevent vehicles from running into each other at the exit end of the tunnel. In order for this to work, an anti-collision sensing device needs to be mounted in the tunnel at potential collision location. The anti-collision distance is measured from the entrance eye to the trigger distance for the anti-collision feature. When a vehicle is in the anti-collision sensing device, and a second vehicles reaches the Anti-Collision Start Time, the system will go into a panic until the sensing device is cleared. The system must also have a Panic Enable Circuit wired in order for this function to be able to restart the conveyor.

- **Editing the Queue**. You can use the F12 key on the *WBC* keyboard to reset the gate control queue. Do this if your queue order has become incorrectly sequenced.
- **Editing the Stack**. The keypad allows stacking manipulation so the operator can edit cars to add non-zero dollar services (if **Allow Priced Services from Keypad** is set to **ON** in the **Administrative Services** dialog box, the operator can edit cars to add priced services). With the keypad, you can also delete a car from the stack.



Conveyor Settings

On the **Configuration** menu, click the **Tunnel Settings**, and then click **Conveyor Settings.**

Conveyor Settings

	ON	OFF	
Panic Stop	◉	○	
Conveyor Idle Timeout	10		**Seconds**
Auto Start	◉	○	
External Conveyor Idle Input	○	◉	**On Input1**
Auto-Stop Period	5		**Seconds**
Conveyor Relay	1		**1-192**
Average Car Length	200		**Inches (For Conveyor Speed)**
Distance Between Cars	24		**Inches (For Conveyor Speed)**
System Calculated Average Car Length	**200**		**Inches (Use as Reference)**
Conveyor Speed	**0**		**Cars/Hour**
Conveyor Travel	**0**		**Inches/Minute**

Figure 6. Conveyor Settings

Table 2: Conveyor Settings Descriptions

Setting	Parameters	Description
Panic Stop	ON or OFF	The panic stop feature manages equipment shut down with cars in the tunnel. Select **ON** to engage the panic stop circuit. Select **OFF** if a Panic Stop is not installed. This is a safety feature and is strongly recommended.
Conveyor Idle Timeout	Seconds	This feature allows the operator to briefly stop the conveyor in idle mode but not stop the equipment and entering a panic state, directly from the Entrance Sign or from Stack Management. Until this time passes, the WBC stops the conveyor but does not go into a panic state up until this time is reached.This setting will keep the conveyor stopped for up to the maximum value of the time defined. When the Idle Conveyor button on the touch screen is selected, an idle conveyor message will be received from the Stack Controller. The button will change names to Restart Conveyor. The WBC stops the conveyor and will keep it stopped for up to the maximum value of the defined Conveyor Idle Timeout entry. If the operator taps the Restart Conveyor button BEFORE the maximum Conveyor Idle Timeout period is reached, the conveyor simply restarts and the wash continues. If the operator does not tap the Restart Conveyor button within the time period defined in Conveyor Idle Timeout, the wash enters a Panic Mode and all of the defined equipment shuts off. **NOTE**: This feature is only available in the releases after DB V1.4.7.1 and requires a minimum Stack Controller version of 1.4.6.0.

Table 2: Conveyor Settings Descriptions (Continued)

Setting	Parameters	Description
Auto Start	ON or OFF	Conveyor Auto Start is a standard feature so that when a wash is programmed, the conveyor will automatically start if it is not already running. However, this operation could be viewed as a safety issue. So the Auto Start option is available to allow you to turn off the standard Auto Start conveyor feature. **NOTE**: To entirely disable the Auto Start feature, the Auto Roller function must also be set to OFF. See "Roller Settings" on page 32. If you set Auto Start to **OFF**, but leave Auto Roller **ON**, when the roller is automatically fired it will still automatically turn on the conveyor.
External Conveyor Idle Input	ON or OFF	Controls a panic circuit. For example, it monitors voltage on an input. If set to ON, then the system will monitor the Input 1 (on the main CPU board). When the system is not in a panic state, the system expects a voltage high, for example, 1 or closed, all the time. When the input drops low, for example, 0 or open, the system goes into a panic state. When the input returns to closed, then system will do a panic restart. See Conveyor Idle Timeout. TMJ type external panic is deprecated.
Auto-Stop Period	Numeric Seconds	Enter the number of seconds to wait after the last car has exited the tunnel before having the system automatically turn off the conveyor.
Conveyor Relay	Numeric 1–192	Relay number used to energize a separately configured conveyor relay. • The web interface allows you to assign a relay (1–192) to be the conveyor relay. • The conveyor relay will not turn on during a staggered restart until all staggered relays have been completed. The conveyor relay will turn on during the wetdown process. For more information, see "About the Conveyor Relay" on page 61.
Average Car Length	Numeric Inches	This value is needed for accurate conveyor speed calculation. Average length of the car that the tunnel gets on a day (sum of car lengths/number of cars). This value depends on the location of the car wash and what type of cars are being washed. Example: 200 inches is a well estimated average car length.

Table 2: Conveyor Settings Descriptions (Continued)

Setting	Parameters	Description
Distance Between Cars	Numeric Inches	This value is needed for accurate conveyor speed calculation. It is the average distance between cars in the tunnel. Example: 72 inches is a recommended distance between the front car and car being loaded.
System Calculated Average Car Length	Numeric	This value is automatically calculated by WBC for every 10,000 cars. Operators can use this as reference while configuring Average Car Length field.
Conveyor Speed	Numeric	System calculated conveyor speed is displayed in cars per hour for this field.
Conveyor Travel	Numeric Inches	This field shows conveyor travel in inches/minute.

NOTE: If the **Horn Duration** or **Conveyor Start Delay** settings do not affect the operation of your tunnel after the horn stops blowing, then you may have an older version of the WBC (Web-based Controller) firmware. Older versions of the on-board CPLD firmware can be updated via a flash memory upgrade to both the main CPU board and the Input Board. Horn duration and conveyor start delay can be set with DIP switches on the Input Board. The Input Board can only be reflashed at the ICS facility. Contact ICS for support for more information.

Pulse Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Pulse Settings.**

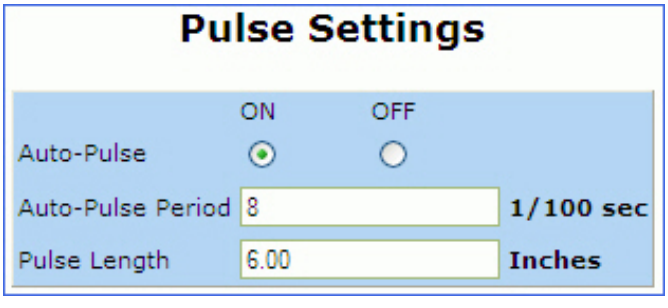


Figure 7. Pulse Settings

Table 3: Pulse Settings Descriptions

Setting	Parameters	Description
Auto-Pulse	ON or OFF	Select **ON** to simulate a pulse in the event of pulse switch failure. Select **OFF** whenever the pulses will be fed from an actual pulse switch. **NOTE:** This feature will activate as soon as **ON** is entered and the user exits the menu option.
Auto-Pulse Period	Numeric. 1/100th Seconds	Auto-Pulse Period is shown in 1/100th of second. It is the time taken for the chain to travel one inch. For example, if the value is 100, then the chain travels one inch in one second. This is the rate in which you want the conveyor to run only when in Auto Pulse mode (i.e., when the pulser device is not functional). **NOTE:** You do not calibrate this by setting Pulse Length to zero. This method was only done on the *Tunnel Master® Jr.* controller. Instead, **use the calibrate auto pulse feature**, available when you log into the WBC with the attached keyboard. If you change conveyor speeds, you should recalibrate this field.
Pulse Length	Numeric Inches	The number of inches of chain travel between two actual pulses. Round to two decimal places. You should measure the chain travel from the gate to the longest equipment to get a pulse count. Then divide the total length of chain travel by the pulse count to get Pulse Length. For example, if the total length of chain travel is 720 inches and the pulse count is 280, then the Pulse Length is 2.57 Pulse length must be set and will affect the input for Min and Max Car Length as well as Anti Bounce settings.

Roller Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Roller Settings.**

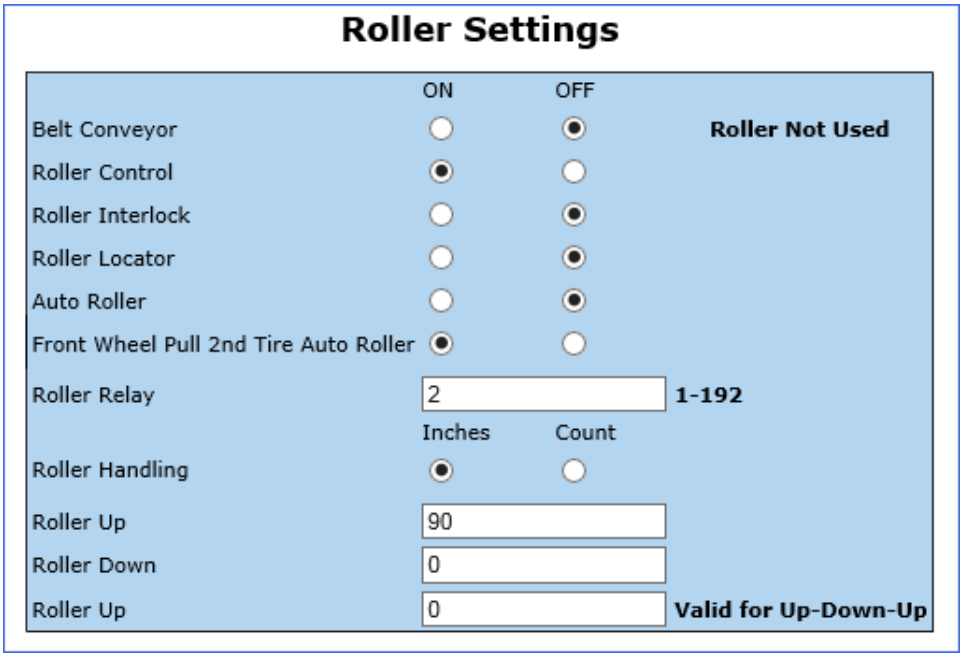


Figure 8. Roller Settings

Table 4: Roller Settings Descriptions

Settings	Parameters	Description
Belt Conveyor	ON or OFF	**ON** supports Belt Conveyor without Roller.
Roller Control	ON or OFF	**ON** if the roller is controlled by the WBC. **OFF** means the roller is controlled externally (e.g., by a button wired to an air solenoid). **NOTE:** When the Roller Control is set to **ON** and the Auto Roller is set to **OFF**, once the roller button is pressed on the input terminal to fire a roller, the conveyor will start.
Roller Interlock	ON or OFF	When set to **ON**, the system will not allow a roller to be fired without a service being selected for that vehicle. Roller Interlock disables the roller-up and gate switch until a valid service is programmed for the vehicle. Since it will not recognize a car, no outputs would be turned on in the tunnel. When set to **OFF**, the system will allow a roller to be fired for a vehicle that is not assigned to a valid service. This will allow that vehicle to be sent into the tunnel and it will receive the Unloaded wash service Roller Interlock disables the roller-up and gate switch until a valid service is programmed for the vehicle: • Roller will not fire without paid service. • Gate eyes are ignored unless roller is fired and paid service is loaded.
Roller Locator	ON or OFF	Also known as roller anti-jam. Set to **ON** to enable the anti-jam feature. The software will use the Roller Locator input to fire the roller at the correct time.
Auto Roller	ON or OFF	Enter **ON** for yes, **OFF** for no. When this option is set to **ON**, as soon as you select a base service on a non-stacking system, a roller will fire. Set to **OFF** for stacking system.
Front Wheel Pull 2nd Tire Auto Roller	ON or OFF	When this option is set to **ON**, this feature allows entrance personnel to manually fire the first roller for the front wheel and the system automatically fires the second roller for the rear wheel to push the car out of the tunnel. The Entrance Management setting also needs to be ON.
Roller Relay	Numeric 1–192	Number of the relay that fires the roller.

Table 4: Roller Settings Descriptions

Settings	Parameters	Description
Roller Handling	Inches or Count	The WBC can handle roller up/down for the number of counts if there is a roller locator defined and installed. • If **Roller Locator** = **OFF**, then select **Inches** (i.e., there is no roller locator). • If **Roller Locator** = **ON**, then select either **Inches** or **Counts** (i.e., there is a roller locator). If you select **Counts**, then: **1.** The system fires a roller. **2.** System counts the number of roller locator inputs equal to up-counts. **3.** The system cancels the roller.
Roller Count	Numeric	When configured, this setting will be compared with the number of roller locator inputs.
Roller Up	Numeric Inches	How long the roller should fire in intervals of chain travel. If chain travel is handled in inches, then this represents length in inches. Otherwise, this is the number of roller locator inputs equal to Roller Count.
Roller Down	Numeric Inches	How long the roller should not fire. Can be zero. This feature is typically used only for a front-wheel pull configurations. When Roller handling is selected as Count, this setting is ignored.
Roller Up	Numeric Inches	Valid for Up-Down-Up. When Roller handling is selected as Count, this setting is ignored.

Entrance Management Settings

The Entrance Management System keeps your employees focused, your customers informed and engaged throughout the wash process. Better manage your throughput with loading flexibility, stack management control, and customer wash selection monitoring.

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **Entrance Management Settings.**

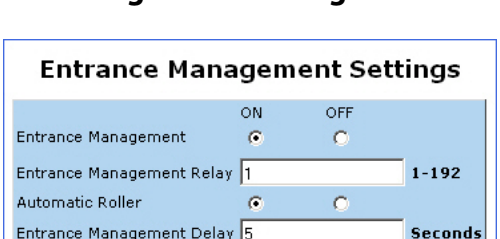


Figure 9. Entrance Management Settings

Table 5: Entrance Management Settings Descriptions

Setting	Parameters	Description
Entrance Management	ON or OFF	Select ON to enable entrance management. **NOTE**: This setting needs to be ON for Front Wheel Pull 2nd Tire Auto Roller feature.
Entrance Management Relay	Numeric 1–192	Number of the relay that controls the entrance management sign.
Automatic Roller	ON or OFF	Select ON to enable Automatic roller.
Entrance Management Delay	Numeric Seconds	Number of seconds delay time between (1) when the entrance management treadle receives its signal to fire the entrance management sign; and, (2) when the roller activates to begin moving the vehicle into the tunnel. This is typically the time given to the customer to put the vehicle into neutral.
Entrance Management Flash	ON or OFF	Provides the ability to set the entrance management relay to flash (For example, make the sign flash). **NOTE:** Only incandescent lights can be used.

Exit Management Output Settings

The Exit Management LCD reduces anti-collision shutdowns. It provides an automated countdown for full drying, and safe exit from the wash. Leave a visual image, thank your customers for using your wash, and instruct them with arrows where to go next: the exit, hand finished services, or vacuums.

On the **Configuration** menu, click the **Tunnel Settings**, and then click **Exit Sign Outputs Settings.**

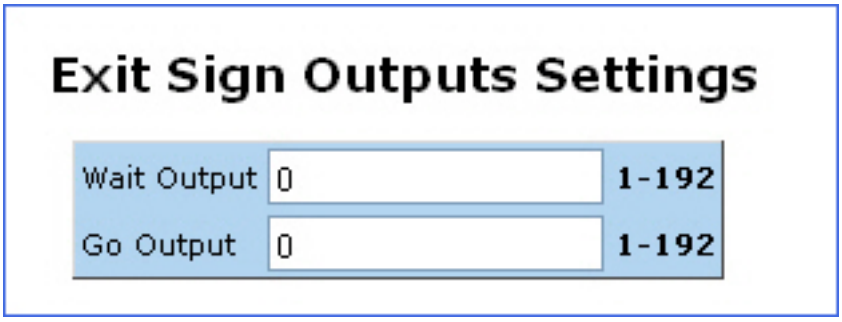


Figure 10. Entrance Management Settings

Table 6: Exit Management Settings Descriptions

Setting	Parameters	Description
Wait Output	Numeric 1–192	Number of the relay that controls the Wait Output.
Go Output	Numeric 1–192	Number of the relay that controls the Go Output.

RS485 Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **RS485 Settings.**

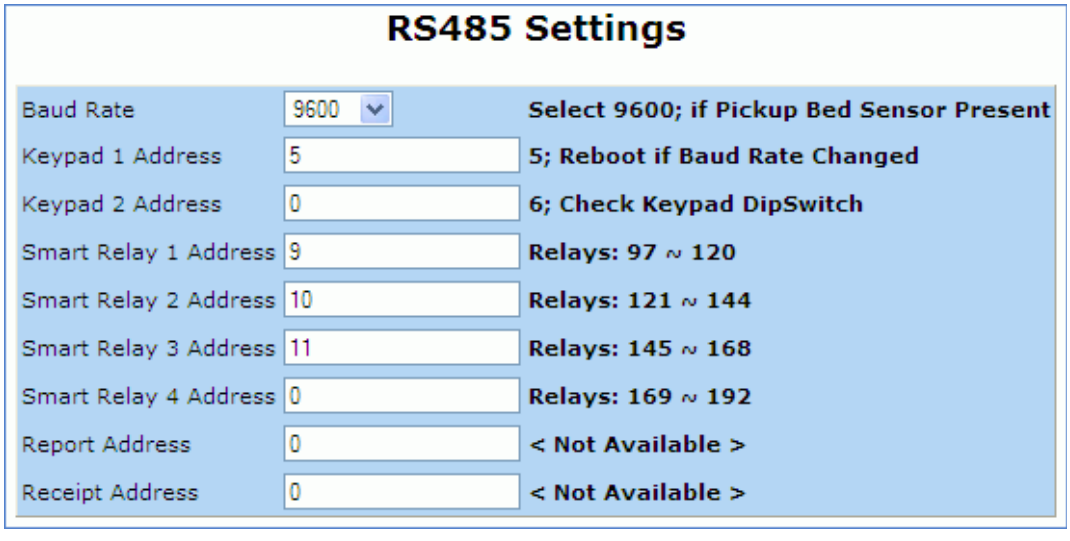


Figure 11. RS485 Settings

Table 7: RS485 Settings Descriptions

Setting	Parameter	Description
Baud Rate	List	Either 9600 or 38400. This is the RS485 connection speed to keypads and smart relay boards. **NOTE:** If the Pickup Bed Sensor option is being used, then the maximum baud rate that can be supported is 9600. This is limited by the sonic sensor which can only support 9600 baud. Smart relay boards and keypads can work up to 38400 baud. Whichever baud rate is selected, the corresponding switch selections must be made on the smart relay boards and keypads.
Keypad 1 Address	Numeric	This is the address of the first keypad. If you are using a push button station, set this to "0". By default the keypad is set to "5". If you are using multiple keypads consult the DIP switch settings on the keypad for the proper address.
Keypad 2 Address	Numeric	This is the address of the second keypad. The address of the keypad is based on the DIP switch settings on the keypad.
Smart Relay 1 Address	Numeric	These settings allow the WBC to communicate with smart relay boards over RS485 lines. Type the address for each smart relay board in these fields. Confirm DIP switch settings on each smart relay board. The relays listed next to the **Smart Relay Address** selection boxes will be the designated relay numbers in that Smart Relay box. This means that if the WBC only has two relay boards internally (relays 1–48), the first Smart Relay box will still have the relays designated as 97–120.
Smart Relay 2 Address	Numeric	
Smart Relay 3 Address	Numeric	
Smart Relay 4 Address	Numeric	
Report Address	Numeric	**FOR FUTURE IMPLEMENTATION.** This will be the address used to connect the report printer. If the report printer is hooked up to the main relay box, then set this to “0”. If the report printer is hooked up to the keypad, set this option to “5”. This is the printer where all of the reports will print out.
Receipt Address	Numeric	**FOR FUTURE IMPLEMENTATION.** This will be the address used to connect the receipt printer. If the receipt printer is hooked up to the main relay box, then set this to “0”. If the receipt printer is hooked up to the keypad, set this option to “5”. This is the printer where all of the receipts will print out.

Pickup Bed Retract Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Pickup Bed Retract Settings.**

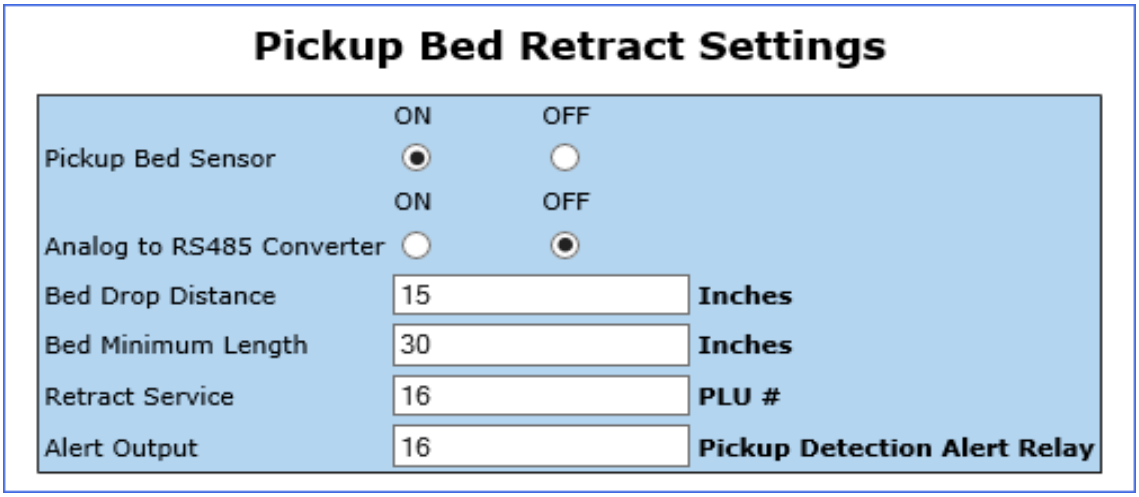


Figure 12. Pickup Bed Retract Settings

Table 8: Pickup Bed Retract Settings Descriptions

Setting	Parameter	Description
Pickup Bed Sensor	ON or OFF	You must have an IRU2004 or the Pepperl+Fuchs ultrasonic sensor wired in the tunnel for this feature. Select **ON** if you are using a pickup bed retract sensor. Otherwise select **OFF**. The pickup bed sensor is only on when the conveyor is running and can be turned off when the conveyor stops. See the *Tunnel Master® wbc Installation Guide Communications Wiring* chapter for more information. You should also test the sensor to verify it is correctly wired and operational before entering these settings. A **Test Pickup Bed Sensor** button is available on the **Actions** menu. The pickup bed sensor will stay on during testing and only will turn off during the next conveyor stop. See “Test Pickup Bed Sensor” on page 115 for more information.
Analog to RS485 Converter	ON or OFF	This setting is for the Pepperl+Fuchs Ultrasonic Sensor only. If using the installed Pepperl+Fuchs sensor, set to **ON**.

Table 8: Pickup Bed Retract Settings Descriptions

Setting	Parameter	Description
Bed Drop Distance	Numeric Inches	The minimum distance (in inches); the sensor should detect this distance from the roof of the vehicle to the bed. Recommended setting of **16** based on initial tests. The first step is that this threshold is met or exceeded. The second requirement is that the bed length measurement must remain constant for a minimum threshold distance (see the next entry).
Bed Minimum Length	Numeric Inches	The minimum threshold distance that the bed length measurement must remain constant before a pickup truck bed is identified. Recommended setting of **18** based on initial tests.
Retract Service	Numeric PLU#	PLU number for the service that is programmed to provide retracting equipment for pickup trucks. When a pickup truck is recognized, the selective outputs found in this **Retract Service** PLU are added for the vehicle being sensed, while the deselective outputs are removed. This **Retract Service** PLU should be programmed with all required retracted outputs for the pickup bed. This PLU is configured in the Services page as one of the services.
Alert Output	Numeric Relay #	Pickup Detection Alert Relay. This configuration allows you to assign a designated relay output to turn on for one second whenever a pickup truck is detected

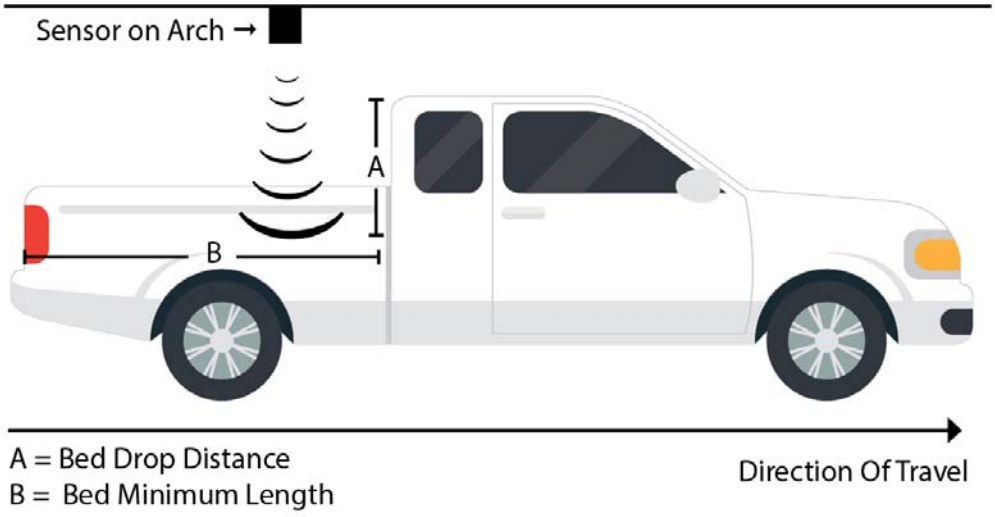


Figure 13. Pickup Truck Bed Sensor

Settings for letters A and B shown in the figure above are described below.

Table 9: Key to Sensor Settings Descriptions

Letter	Setting	Recommended Setting*	Description
A	Bed Drop Distance	16 Inches	Sensed first, from top of truck to inside floor of bed.
B	Bed Minimum Length	18 Inches	Sensed second, after bed drop distance is sensed. If both thresholds (A and B) are met, then system recognizes a pickup truck bed.

* Recommended settings based on initial ICS test results. Your settings may vary.

Testing the Pickup Bed Sensor

If you suspect the Pickup Bed Ultrasonic Sensor is not working properly or a new Ultrasonic Pickup Bed Sensor is installed, you will need to test the Pickup Bed Sensor.

To Test the Pickup Bed Sensor, follow these steps:

1. On the **Configuration** menu, click **Tunnel Settings**, and then click **Pickup Bed Retract Settings.**
2. From the Pickup Bed Sensor, select **ON**.
3. In order to test the Peppperl+Fuchs Ultrasonic Sensor: from the **Analog to RS485 Converter** setting, select **ON**.

NOTE: The Conveyor must be stopped in order to test the sensor.

4. From the **Actions** menu, click the **Test Pickup Bed Sensor** button.
5. Using the CentralLogServer app located on your desktop to monitor the WBC communication.
6. Scroll to the bottom of the screen to view the most recent logs, verify the sensor is reading the expected distance.

NOTE: If there is an open grate, you will need to cover with metal or the sensor will not work properly.

7. After the conveyor stops, test the sensor by having a person walk underneath it.
8. If the sensor is working properly, you will notice the log giving you correct distance reads.

9 If the sensor is not working properly, you will receive one of the following three logs:

- You will receive a 0 distance read.
- You will receive no new logs.
- You will receive a Communication Error log.

10 Contact ICS if you are not able to get a correct distance read to appear in the logs.

Vehicle Upper/Lower Output Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Vehicle Upper/Lower Output Settings.**

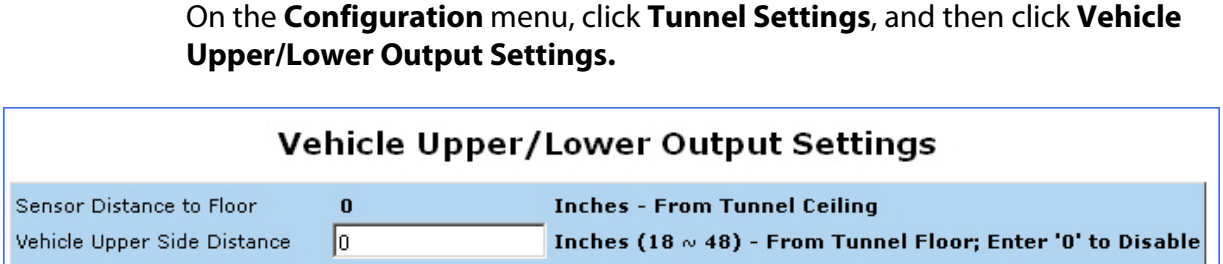


Figure 14. Vehicle Upper/Lower Output Settings

Table 10: Vehicle Upper/Lower Output Settings Descriptions

Setting	Parameter	Description
Sensor Distance to Floor	Read Only	Read only. Pickup bed sensor required. If **0**, select **Actions**, and then click **Get Distance to Tunnel Floor**.
Vehicle Upper Side Distance	Numeric Inches	Average distance from tunnel floor to upper-half of vehicle. Range is 18 to 48 inches. Enter **0** to disable the Vehicle Upper/Lower Output feature. Typically set to the lower nozzle's maximum spray height for equipment that sprays the vehicle's upper and lower half. A pickup bed sensor is required before you can set a value other than 0. This value is used by relays with **Part of Car** set to **Upper Side** in the **Relay Configuration** screen.
Oversize Vehicle Hood Distance	Numeric Inches	This value is used to detect an oversize vehicle before the minimum car length is reached (i.e., pickup trucks, vans). Detecting vehicle starts from **StartOfCar** and up to 18 inches from floor for determining Start of Car. If vehicle is not found, then detection starts when vehicles Top is detected at configured **VehicleTopDistance** from tunnel floor. Pickup bed sensor is required for Vehicle Top Distance to work.
Oversize Vehicle Top Distance	Numeric Inches	This value is used to detect an oversize vehicle after minimum car length is reached. Detecting vehicle starts from **StartOfCar** and up to Top distance from floor. Pickup bed sensor is required.

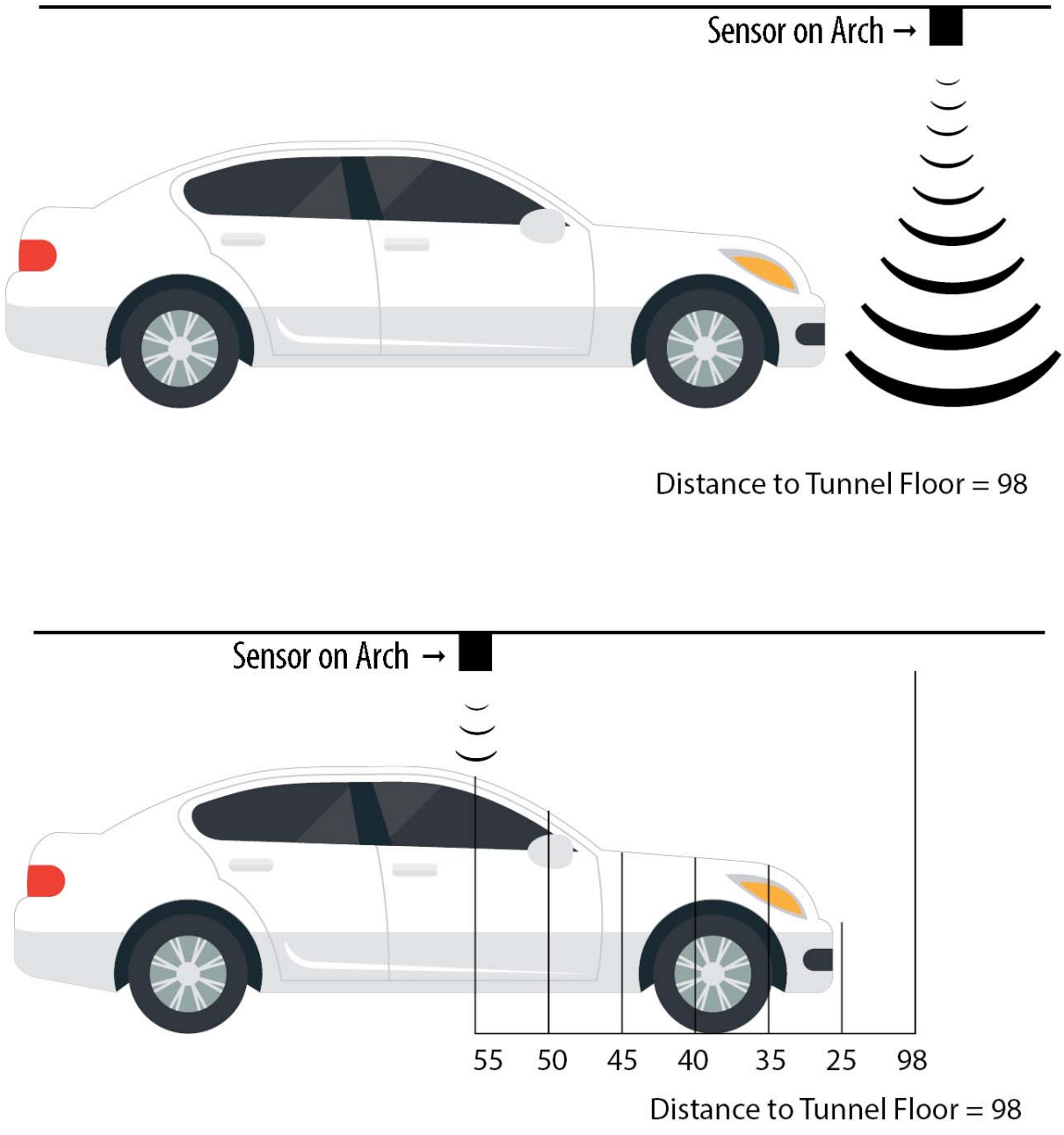


Figure 15. Vehicle Upper/Lower Output

The sensor detects the distance to the tunnel floor. The sensor also calculates the distance to the vehicle as it passes beneath the sensor. The measurements are

used to build a profile of the vehicle height. Once the vehicle profile is known, the system can fire outputs for the upper half of the vehicle at the optimum time based on the position of the nozzle in relation to the height of the vehicle. This is useful for wax and polish.

Shift Settings

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **Shift Settings.**

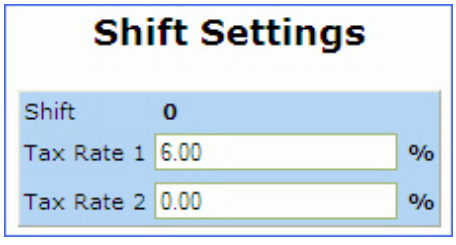


Figure 16. Shift Settings

Table 11: Shift Settings Descriptions

Setting	Parameter	Description
Shift	Numeric	
Tax Rate 1	Numeric Percentage	The percentage rate for the first tax rate charge.
Tax Rate 2	Numeric Percentage	The percentage rate for the second tax rate charge.

Gate Settings

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **Gate Settings.**

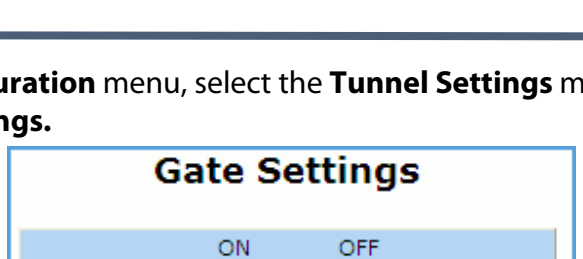


Figure 17. Gate Settings

Relay Flash On/Off Settings

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **Relay Flash On/Off Settings.**

NOTE: Only incandescent lights can be used with Flash.

Figure 18. Relay Flash On/Off Settings

Table 12: Relay Flash On/Off Settings Descriptions

Setting	Parameters	Description
Flash On	Numeric Seconds Min. = 0.5	In 100 milliseconds (tenths of a second) increments how long the relay will flash on or be closed when the relay is active. This is what the system looks at when you set the **Flash** to **ON** in the **Relay Configuration** table.
Flash Off	Numeric Seconds Min. = 0.5	In 100 milliseconds (tenths of a second) increments how long the relay will flash off or be open when the relay is active. This is what the system looks at when you set the **Flash** to **OFF** in the **Relay Configuration** table.

Hand Finished Services Alert Output Settings

This Tunnel Master® *wbc* feature turns on a relay (output) from within the WBC whenever a car has purchased a hand service so the hand finished services team will be aware that it will be arriving soon. If wired to a light/siren/bell/whistle (etc.) this indicator will alert the hand finished team that a car will be arriving soon.

The relay will close for the specified Hold Time and then open when the time is met. This combination of selecting an available relay and specifying a hold time is simply to 'wake up' your hand services crew so they will be ready to begin servicing the car when it arrives in their area.

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **Hand Finished Services Alert Output Settings.**

Figure 19. Hand Finished Services Alert Output Settings

Table 13: Hand Finished Services Alert Output Settings Descriptions

Setting	Parameters	Description
Relay	Numeric	Number of the relay that fires the Hand Finished Services Alert.
Hold Time	Numeric Seconds	Number of seconds that the relay will close and fire the wired alert such as a light/siren/bell/whistle.

POS Gate Control Settings and Gate-Open Token

Gate Control allows for one or more ICS-POS or stand-alone Auto Sentry stacking cars to a single WBC. When gate control is turned on, each ICS-POS requests a gate-open token from the WBC. Upon receiving the gate-open token, the Auto Sentry raises the gate for the car to pull in front of the tunnel.

From the **Configuration** menu, select the **Tunnel Settings** menu, and then select **POS Gate Control Settings.**

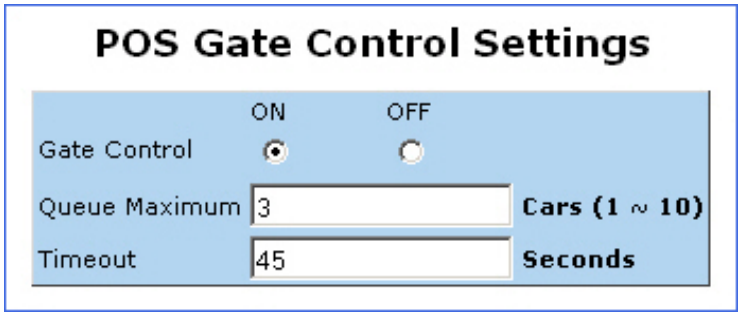


Figure 20. POS Gate Control Settings

Table 14: POS Gate Control Settings Descriptions

Setting	Parameter	Description
Gate Control	ON or OFF	Gate control turned on or off.
Queue Maximum	Numeric	Maximum number of cars that can be queued in front of the tunnel. Once this limit is met, the gates will not open and the screen will display the “stop sign” wash busy screen. For example, if you type 3, and three cars are lined up in front of the tunnel, then the gates will not open until the line is reduced to two or less. The maximum value is 10. Any value greater than 10 is reset to 10.
Timeout	Numeric Seconds	This timer indicates how long WBC has to wait once the gate-open token is granted to one ICS-POS. If there is a fifth loop, gate-close wired to the ICS-POS(s), then the close message is sent to the WBC which in turn resets this timer. If there is no close coming from the ICS-POS, then the WBC will wait until this timer expires before giving a gate-open token for the next ICS-POS.

Receipt Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Receipt Settings.**

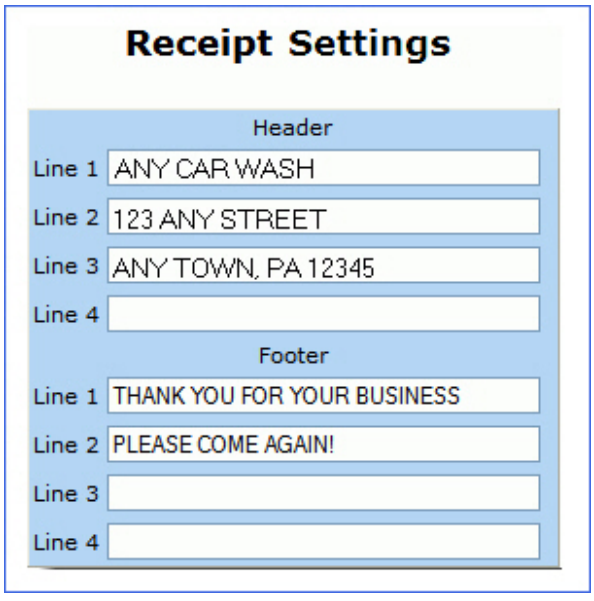


Figure 21. Receipt Settings

Table 15: Receipt Settings Descriptions

Setting	Parameters	Description
Header Line 1–4	Alphanumeric	Enter information desired to display on the four lines on the top of reports and receipts. This is usually company information.
Footer Line 1–4	Alphanumeric	Enter information desired to display on the four lines on the bottom of receipts. This is usually a message to the customer.

Error Alert Email Settings

From the **Configuration** menu, click **Tunnel Settings**, and then click **Error Alert Email Settings.**

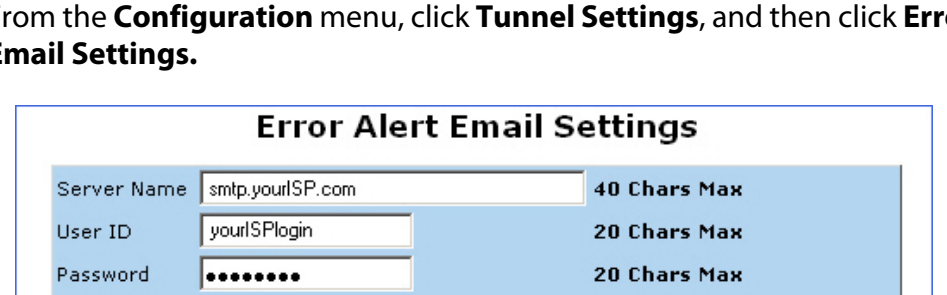


Figure 22. Error Alert Email Settings

Table 16: Error Alert Email Settings Descriptions

Setting	Parameters	Description
Server Name	Alphanumeric	Server name or IP address.
User ID	Alphanumeric	Your user ID or login name. This is the user name you use to log in to your ISP or email account. Do not include the @xxx.xxx reference.
Password	Alphanumeric	Your password. This is the password you use to log in to your ISP or email account.
From Address	Alphanumeric	The sending email address. The From name can be any informative, non-existent name such as WBC@xxx.xxx. This is informational only. It is provided to show you where the message came from when you receive it. You cannot reply to the message. The email address does not need to be an active address that can receive email. The WBC does not receive email.
To Address	Alphanumeric	To Address is the mail address that will receive the email. This is your email address.

NOTE: You cannot configure email alerts for accounts that require SSL/TLS authentication. Most free Online email services such as @gmail, @msn and @yahoo **do** require this authentication. Therefore you **cannot** configure email alerts for @gmail, @msn, and @yahoo accounts. ICS recommends you use an ISP to configure email. Most do not require SSL/TLS authentication. Contact your ISP for more information.

The WBC includes a standard email alert message for a low power indication condition. If the supplied battery on the WBC board begins to fail, a message is automatically sent to the email provided in the **To Address** field. No other configuration is required to receive this low power message.

All other email alert messages must be configured in the **Tunnel Controller Input Configuration** screen.

See "Auxiliary Inputs" on page 99 for more information.

Example Error Alert Email Message

```
Subject: !!! WBC Email Alert !!!
** Float Switch  - Input: 1 - FAILED **
```

Debug Settings

On the **Configuration** menu, click **Tunnel Settings**, and then click **Debug Settings.**

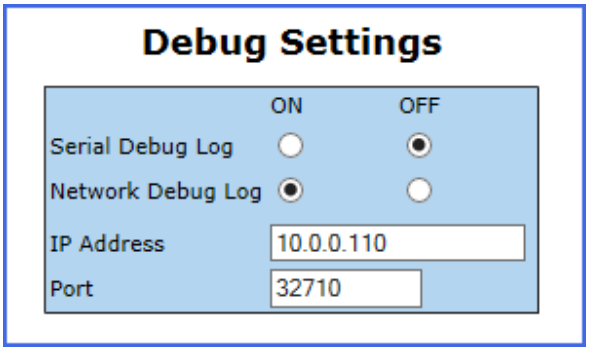


Figure 23. Debug Settings

Table 17: Debug Settings Descriptions

Setting	Parameters	Description
Serial Debug Log	ON or OFF	Select **ON** to send the debug log via network connection to a networked computer. We are now logging to the Central Log Server application that is used for logging our other applications. The logs will be written to the Logs folder in the root drive. (e.g., D:\Logs –or- C:\Logs)
Network Debug Log	ON or OFF	Select **ON** to send the debug log via network connection to networked computer. Log is written to root drive (e.g., D:/ -or- C:/).
IP Address	Numeric.	IP address of networked computer. Used only if Network Debug Log is **ON**.
Port	Numeric. Default = 32710	Port address of networked computer. Used only if Network Debug Log is **ON**.

Viewing Real-Time Debug Log

To view the debug log in real-time (as the wash is open and wash services are offered), you can use the ICS CentralLogServer.exe application. Version 1.2.0.1 is the most recent version.

ICS recommends creating a shortcut on the Desktop to the CentralLogServer.exe file, and then using that shortcut to launch the application. The debug logging over network application allows you to view tunnel processes as they happen. This information temporarily appears on the controller screen. The actual log file contains a complete list.

- Right-click to view the menu, and then click Clear Logs to clear the screen on the Debugging window. This does not clear anything in the actual log file.

CHAPTER 4:
Relay Configuration

This chapter includes descriptions for the **Relay Configuration** screen. An output relay can be set to automatically turn on and off equipment based on a defined distance in the tunnel from the eye sensor at the entrance of the tunnel.

Output relays can be set up to include a main output that is wired to a single relay which controls one piece of equipment. You can create a new main output using whole number values (i.e., decimal place value must be zero). And then each main output can include up to nine alternate outputs for Selective or Deselective outputs using decimal place values (1–9).

Relay Configuration Settings

From the **Configuration** menu, you can configure **Relays** settings. Use the scroll bars to view more Relay Configuration settings.

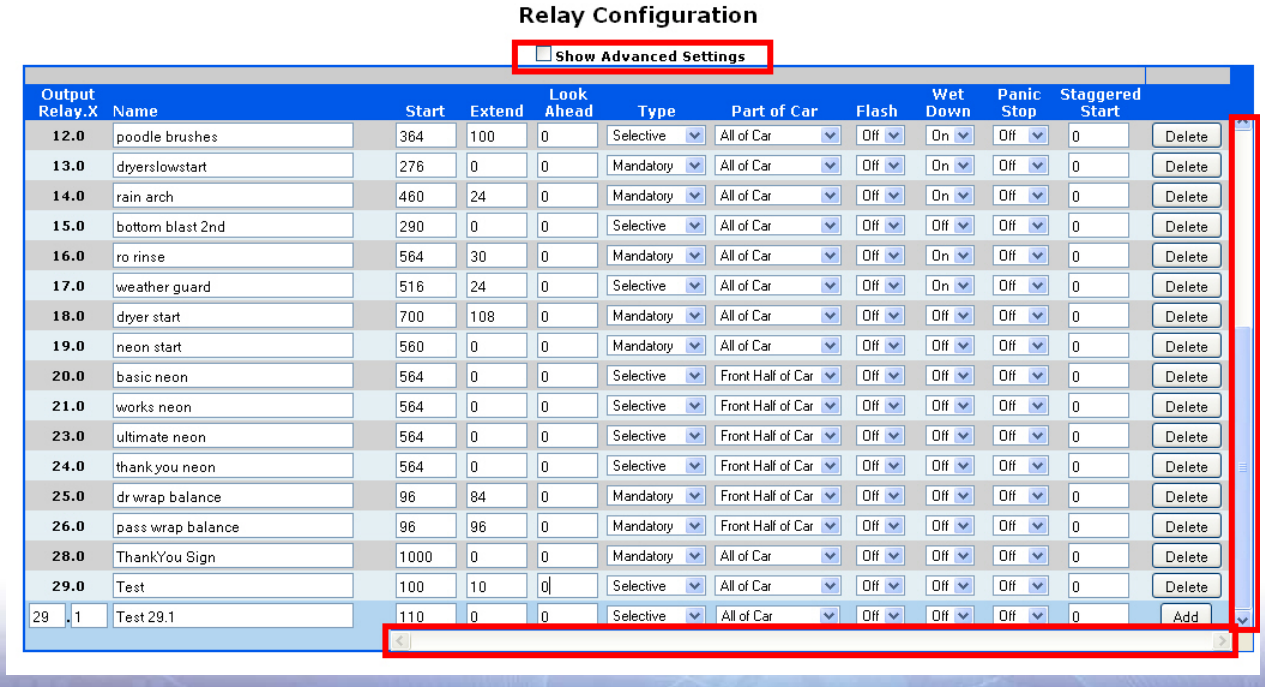


Table 18: Relay Configuration Field Descriptions

Field	Parameters	Description
Output Relay.X	Numeric Decimal	The output relay number represents a main output relay for a piece of equipment. In the Output Relay.X column, the decimal value for a main output must be zero. Each main output can include up to nine alternate outputs. These alternate outputs could be Selective or Deselective type, using the main output whole number plus the decimal place values (1—9) for the output numbers.
Name	Alphanumeric	The name for the service or product.
Start	Numeric Inches	In inches, this measurement represents the distance from the entrance eye to the equipment at the point where the equipment starts in the tunnel for the vehicle.
Extend	Numeric Inches	In the Extend column, this measurement represents how many inches the relay will be active longer than the part of car measurement.
Look Ahead	Numeric Inches	Look Ahead feature keeps a function or equipment energized if next vehicle is passed the Look Ahead distance. This feature helps reduce energy consumption. For instance, if a car is at the dryers and another car has entered the tunnel and they are past this exact Look Ahead distance, the dryers will stay energized. This prevents the spikes in the electric usage which in turn decreases the energy bill. If the second vehicle has not passed the Look Ahead distance, then the dryers will power down, and ramp up again when the second car passes the Dryers output Start distance.
Type	List	**Mandatory, External, Selective,** or **Deselective** are types of outputs. Each main output can include up to nine alternate outputs. These alternate outputs could be Selective or Deselective type, using decimal place values (1—9) for the output or profile numbers.
Part of Car	List	Select a **Part of Car** from the list. The Part of Car indicates which part of the car to use when this relay is active: **Upper Side**, **Front Bumper, Pickup Rear Half, All of Car.** The Car or vehicle is measured as it passes the entrance eye sensor.
Flash	On or Off	If set to On, the output has to flash when the vehicle is passing this relay function in the Tunnel. **NOTE**: You can use other lighting throughout the wash such as LED or neon; however, lights for the Flash relay must be incandescent only.
Wet Down	On or Off	If set to On, then this equipment output or relay profile is included in the wetdown function.

Table 18: Relay Configuration Field Descriptions

Field	Parameters	Description
Panic Stop	On, Off, or NC	If set to **OFF**, the relay turns off during a panic stop. If set to **ON**, the relay turns on during a panic stop. If set to **NC** (No change), there is no change to the state of the relay during the panic stop. For example, if it was on before the panic stop, then during a panic stop it remains on.
Staggered Start	Numeric Seconds	A programmable staggered start can be set for each piece of equipment to start up again after a panic stop, one piece of equipment after the next. This is to offset the electricity peak demand. The Staggered Start time is measured in seconds and the value is how much time it takes the piece of equipment to get from the electricity peak demand to the amps used during normal operations. The Staggered Start times are cumulative and start up in consecutive relay output order. Example: Blowers.
Add / Delete	Buttons	Select the **Add** button to add the selected relay output. Select the **Delete** button to delete the selected relay output.

Main Output

A main output is wired to a single relay which controls one piece of equipment. You can create a new main output using whole number values (i.e., decimal place value must be zero). Each main output can include up to nine alternate outputs for **Selective** or **Deselective** outputs using decimal place values (1–9).

NOTE: Decimal place values (1–9) are used for alternate outputs. Each main output can include up to nine alternate outputs using the main output number with a decimal place between .1 and .9.

See "Add an Alternate Output" on page 58 for more information.

WARNING: If you add a main output that already exists in the list, then the existing output is replaced by the new one. When you click Add (at the end of the following procedure), the output will be added immediately. You will **not** be prompted to verify this change with any type of message. So make certain you know that the output you will add is either unique or is meant to replace an existing output.

Add a Main Output

1 Select the **Configuration** menu, and then select **Relays**.
The **Relay Configuration** screen appears.

2 Scroll to the last row. The last row includes an **Add** button.

3 From the last row **Output Relay.X** box, type a main output relay number.

4 In the decimal Output Relay.X box, type the number 0.

NOTE: The decimal value for a main Output Relay.X must be zero.

5 Type or select values in all the remaining boxes (e.g., **Start**, **Extend**, **Look Ahead**, etc.).

6 Click **Add** when you are finished.
The new main output is added to the list or the output replaces an existing main output.

Figure 24. Adding a Relay

Relay Configured for Conveyor Error

If you try to add a relay that is configured for a conveyor, an error message appears.

Relay Already Used for Roller or Entrance Management

If you attempt to add a relay that is already in use for either the Roller or the Entrance Management output, then an error message appears.

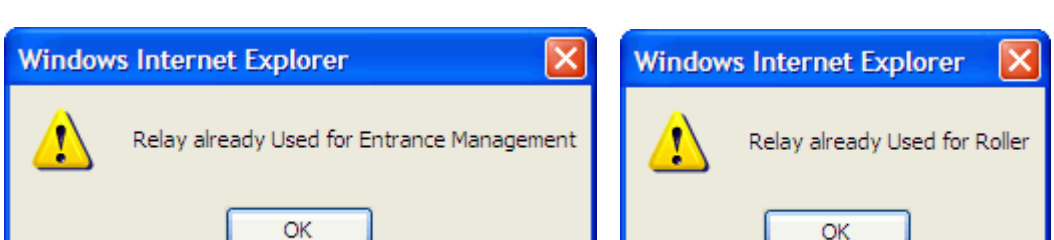


Figure 25. Relays Already in Use

You can change the output number for the Roller or Entrance Management relays in the **Configuration > Tunnel Settings > Roller** screen -or- **Configuration > Tunnel Settings > Entrance Management**.

Alternate Outputs

A main output is wired to a single relay which controls one piece of equipment. Establishing an alternate output for that main output, allows you to change the action of the equipment – using the same main output relay – based on the wash service selected.

For example, the main output **41.0** might control the **Flex Wrap Retract** with a **Start** of 520 inches and an **Extend** of 116 inches. It is a **Selective** output that fires for **All of Car**.

Output Relay.X	Name	Start	Extend	Look Ahead	Type	Part of Car	Flash	Wet Down	Panic Stop	Staggered Start	
41.0	FLEX WRAP RETRACT	520	116	0	Selective	All of Car	Off	On	Off	0	Delete

MAIN OUTPUT 41.0 IS WIRED TO ONE RELAY
WHICH CONTROLS A SINGLE PIECE OF EQUIPMENT

Figure 26. Main Output 41.0

As alternate outputs for output **41.0**, you might create **41.1**, **Flex Wrap Retract Front Bumper** (for the front-bumper retract), and **41.2**, **Flex Wrap Retract Rear Bumper** (a rear bumper retract). For example, you might configure the front bumper retract for vehicles that include front-mounted license plates, which could be damaged by the mitter. In the same way the rear-bumper retract could be used for vehicles with rear-mounted hitches. If you change the **Part of Car** selection and the **Extend Time** selection for these two alternate outputs, they are established on the same relay as 41.0, instead of using two additional relays.

Figure 27. Alternate Outputs 41.1 and 41.2.

Relay Configuration: **Wet Down**, **Panic Stop**, and **Staggered Start** (Advanced Settings: **Inrush Time** and **Start Priority** are not available for the alternate outputs but are established by the main relay and do not change for each additional alternate output.)

NOTE: Keep in mind that if the alternate output is assigned to the same wash service as the main output; then the alternate output cannot overlap the main profile start and extend times. For example, if the main profile is set to start at 50, and extend for 50, then the alternate output must start at 101 or higher. If not, it will be ignored.

Add an Alternate Output

You can create or edit a new alternate output for a main output. An alternate output is created using decimal-place values. Each main output can include up to nine alternate outputs (1-9).

NOTE: You can create alternate output for **Selective** or **Deselective** outputs. Mandatory outputs should **not** include alternate outputs.

To add an Alternate Output, follow these steps:

1. Select the **Configuration** menu, and then select **Relays**.
   The **Relay Configuration** screen appears.
2. Scroll to the last row. The last row includes an **Add** button.
3. In the last row, type a main output number in the **Output Relay.X** box.
4. Type a nonzero value (1–9) in the decimal place box. The decimal value for a new alternate output must be between 1 and 9.
5. Type or select values in the following boxes: **Start**, **Extend**, **Look Ahead**, **Type**, **Part of Car**, and **Flash**.

Add

6 Leave the remaining fields blank. The values in **Wet Down**, **Panic Stop**, **Staggered Start**, **Inrush Time** (in Seconds), and **Start Priority** are determined automatically by the main output relay.

7 Click **Add** when you are finished.

The new alternate output is added to the list and updated immediately, no need to click a **Save** button.

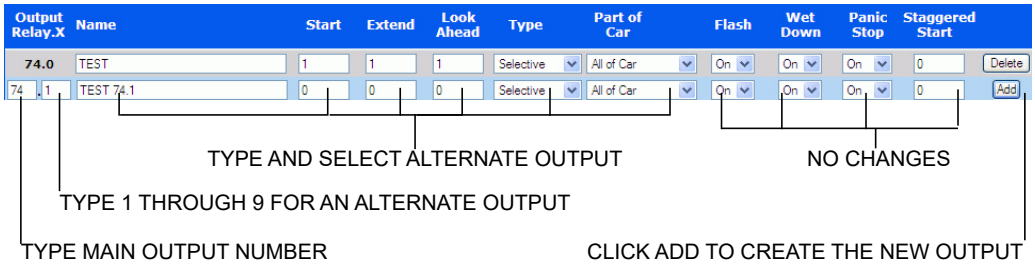


Figure 28. Adding an Alternate Output

Delete

Deleting a Relay or Output

To delete an output:

1 Click **Delete**.
The message "Are you sure you wish to delete this relay?" appears.

2 Click **OK**.
The row is deleted from the list.

About Front Bumper and Extend Settings

If **Part of Car** is set to **Front Bumper**, then **Extend** represents how many inches the relay will activate **before** (not after) the front bumper has reached the output.

About Pickup Rear and Front Half Settings

If Part of Car is set to **Pickup Rear Half**, this keeps equipment on for Rear half when the vehicle is detected as Pickup. If Part of Car is set to **Pickup Front Half**, this keeps equipment on for Front half of vehicle when Pickup is detected.

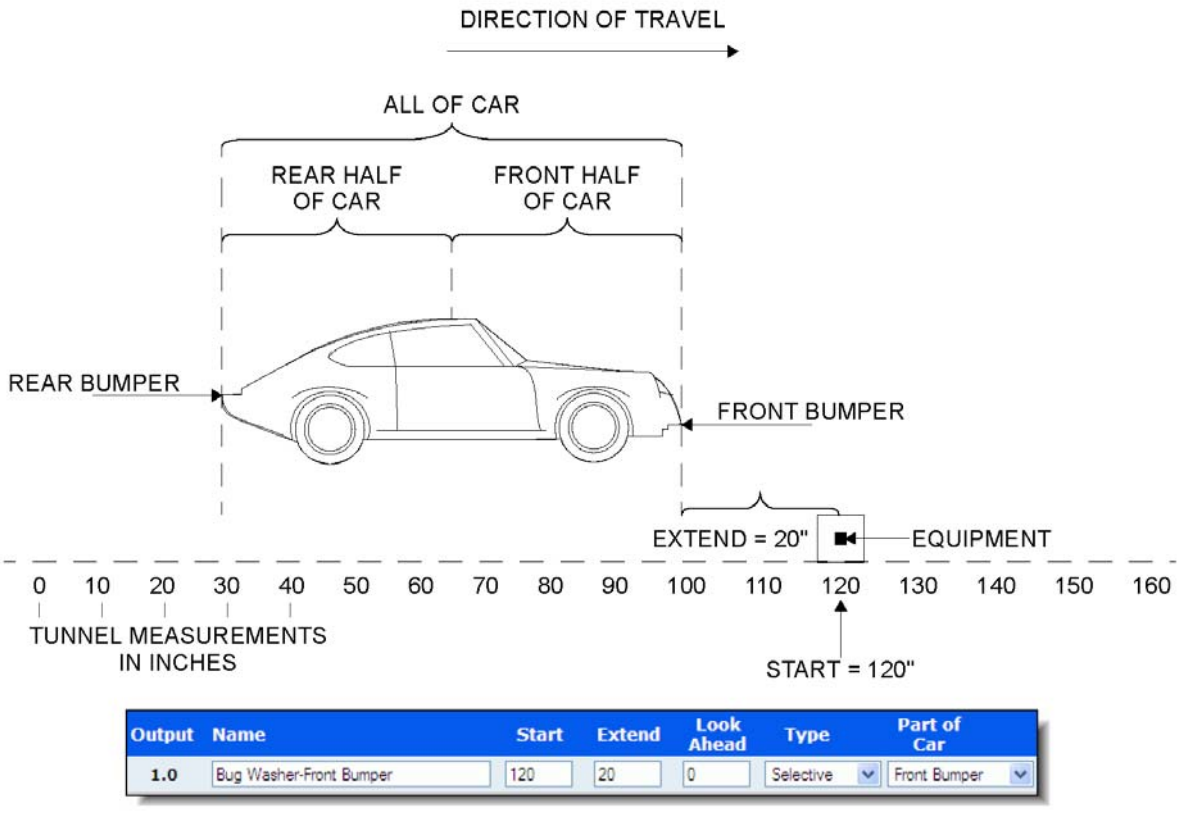
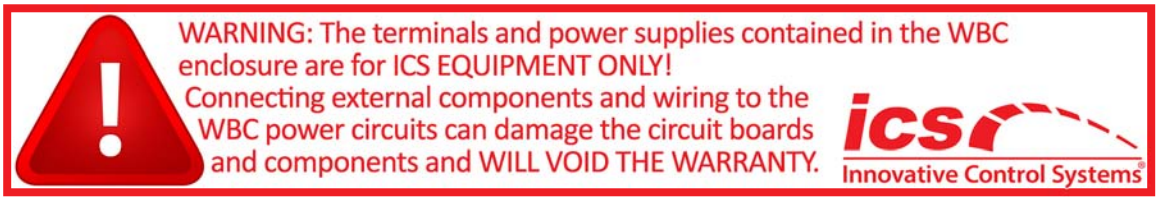


Figure 29. Part of Car Setting

In the previous figure, **Part of Car** is set to **Front Bumper**, and **Extend** is set to 20, and **Start** is set to 120, then the output will fire when the front bumper is 100 inches into the tunnel (20 inches before the front bumper reaches the output). It will continue to fire for those 20 inches, and then stop when the front bumper reaches 120 inches.

NOTE: This is only valid when **Part of Car** is set as **Front Bumper**. For example, if the **Start** setting is 100 and the **Extend** setting is 150, then **Extend** is calculated at zero inches, not negative 50 inches (which is not possible because the equipment would need to start firing before the car actually enters the tunnel). The output will fire at zero inches, and then turn off at 100 inches (the **Start** setting).

About the Conveyor Relay



The conveyor is energized via a separately configured conveyor relay. The Input Board is used to feed voltage to the designated conveyor relay.

Details include the following:

- During a panic stop, the circuit is guaranteed to break power to the relays and thus **not** depend on a computer to stop.
- During a staggered restart, the computer initiates a wash start, which energizes the relays. Then—only at the end of the wash start—is the conveyor relay turned on.
- Wetdown process turns on the conveyor relay.

📖 *For more information, see the Tunnel Master® wbc Installation Guide.*

WBC INPUT BOARD DETAIL

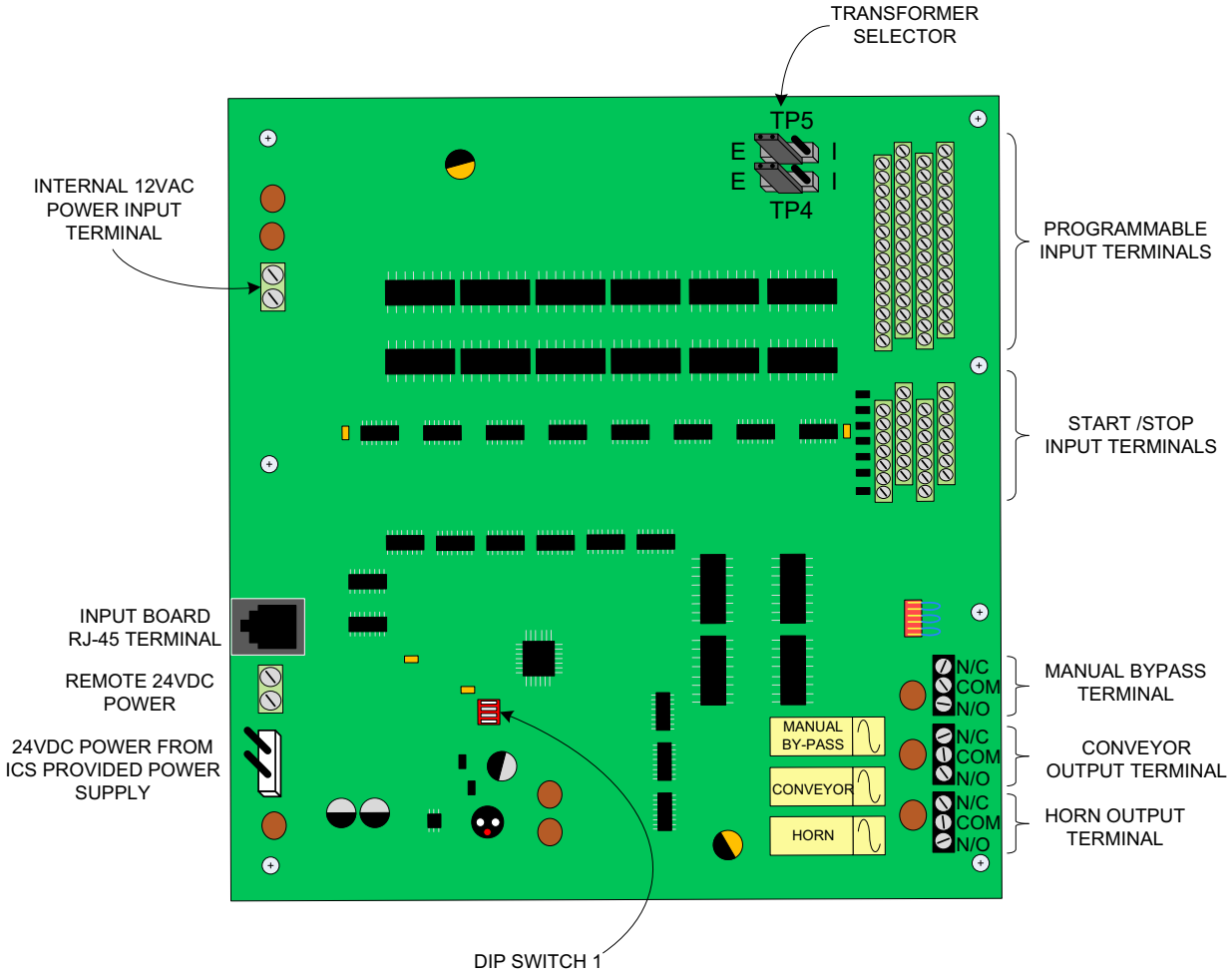


Figure 30. WBC Input Board Detail

Conveyor Relay DIP Switch Settings

The conveyor horn and delay control is handled via the DIP switch settings.

The DIP switches on the Input Board follow the silk-screen reference on the board (0 and 1) to determine the desired switch positions.

NOTE: See the Tunnel Master® *wbc* Installation Guide for DIP switch settings.

Wi-Fi Connection

iPhone® and iPad® users with Wi-Fi connection can access the WBC Relay Configuration screen. This ability is an industry first and makes it possible for the manager to make changes to the timing of the relays using an iPhone®, iPad® with a Wi-Fi connection while inside the tunnel or away from the wash site.

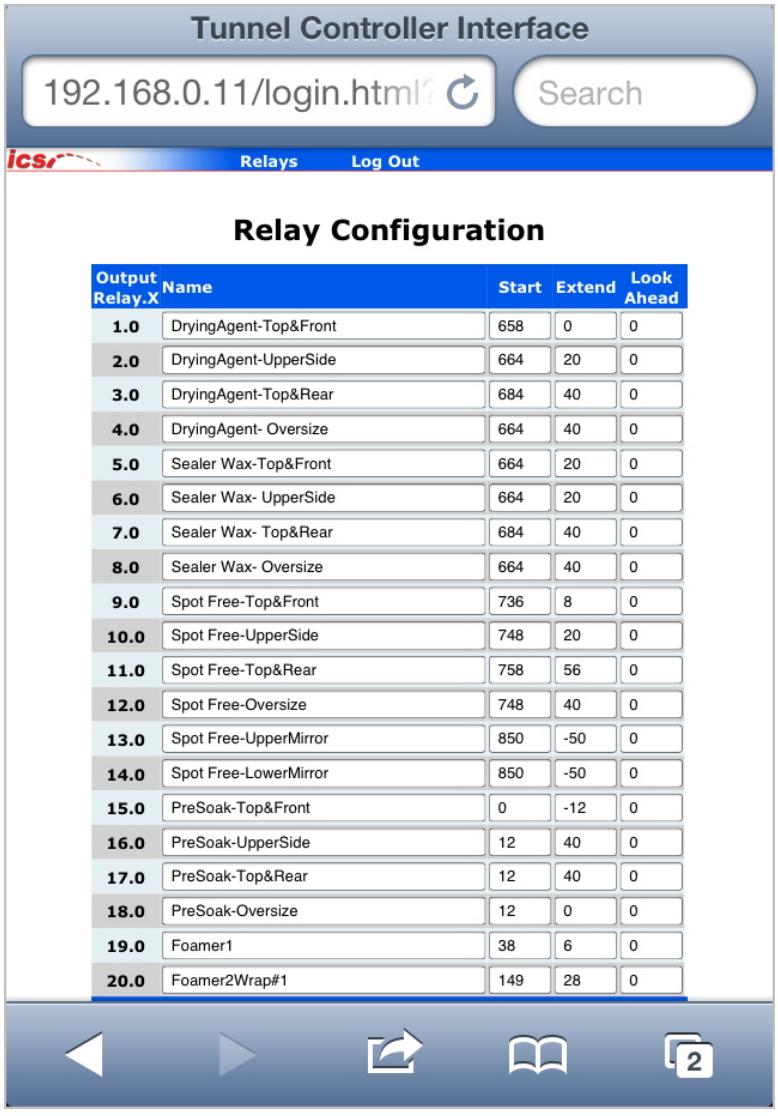


Figure 31. Relay Configuration screen from iPhone

For more information, see "Wireless Network Setup Log In" on page 17.

CHAPTER 5:
Advanced Settings

Advanced Settings includes two sections: Power Management and VFD.

The ICS patent pending Power Management settings can improve tunnel efficiency by reducing the peak power usage on select equipment. These advanced settings are **Inrush Time** and **Start Priority**. Together the settings are collectively known as the Power Management system for the WBC.

You do not need to set power management requirements for every piece of tunnel equipment, but only for those that consume the most power or frequently overlap their motor start up times.

NOTE: Equipment that is 208/480 VAC or 3-phase may be considered for power management.

This section also includes settings for a VFD control panel. The ICS VFD control panels are purchased separately and are used to improve performance and reduce costs at your wash by adjusting the settings for your pumps, hydraulics, vacuums and blowers.

Power Management

Inrush Time (in Seconds) - The amount of time the motor needs to start up and obtain full operational power.

Start Priority - a selection between 1 (fixed) and 4. Designates which relay to start up in order of priority to improve power efficiency by preventing overlapping of motors starting up.

- **Priority 1** (if relay Type is not External) relay keeps its assigned Start Time that is fixed and will not vary. Example: High Pressure Pumps.

- **Priority 2** (if relay Type is not External) fires on or before its assigned Start Time. Start time is calculated by the system and will vary. Example: Blowers
- **Priority 3** or **Priority 4** (if relay Type is External) Start time will vary, but only if all Priority 1 and 2 relays have been scheduled. Examples: Vacuums, Air Compressor.

See "Start Priority" on page 72.

Setup Power Management Settings

Power Management can be setup from the WBC interface.

1 From the **Configuration** menu, and select **Relays**.
The Relay Configuration screen appears.

2 Click to mark the **Show Advanced Settings** box.

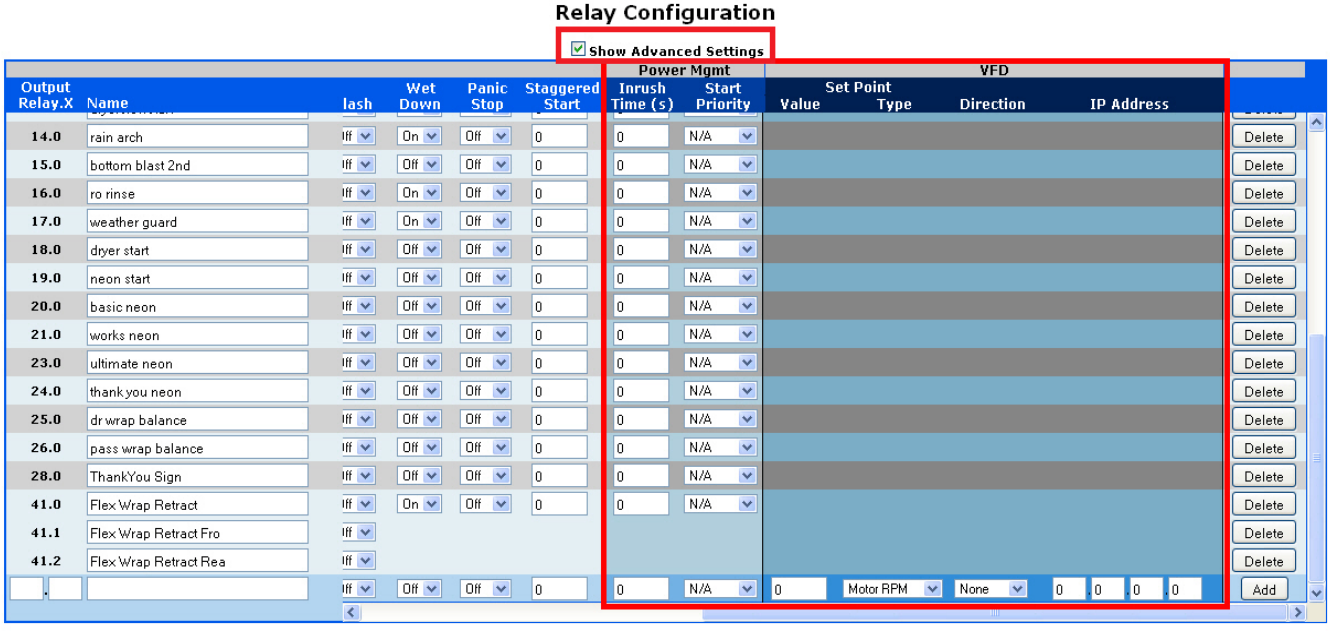


Figure 32. Relay Configuration Advanced Settings

3 At the bottom of the list, add a new relay in the row with empty boxes.

See "Add a Main Output" on page 56.

4 In the **Inrush Time** box, type the power up time in seconds. This is the amount of time (in seconds) the motor needs to start up and obtain full power. For example, a high pressure pump motor might require 1 second, a hydraulic motor might require 2 seconds and a blower motor might require 10 seconds.

5 In the **Start Priority** box, select an item:
Select **Priority 1** or **Priority 2**, if the relay **Type** is **not External**,
- **Start Priority 1** means the relay will keep its assigned **Start Time**. It will become a power management relay. But its **Start Time** is fixed and will not vary.
- **Start Priority 2** means the relay will fire on or before its assigned **Start Time**. Its **Start Time** will vary. The exact **Start Time** is calculated by the system.

6 Select **Priority 3** or **Priority 4**, if the relay **Type** is **External**.
- **Start Priority 3** or **4** means the relay is an external relay. Its **Start Time** will vary, but only if all **Priority 1** and **2** relays have been scheduled.

NOTE: Advanced Settings: **Inrush Time** and **Start Priority** are not available for the alternate outputs but are established by the main relay and do not change for each additional alternate output.

Table 19: Relay Configuration Advanced Settings Field Description

Field	Parameters	Description
Inrush Times	Numeric Seconds	The amount of time in seconds that the motor needs to start up and obtain full operational power.
Start Priority	Numeric (1–4)	A selection between 1 (fixed) and 4. Designates which relay to start up in order of priority to improve power efficiency by preventing overlapping of motors starting up.
VFD		
Set Point Value	Numeric	This number is the amount of PSI, RPM or inches of Lift. Type would define this is PSI or RPM. e.g. 500 PSI.
Set Point Type	Motor RPM, Wash RPM, PSI or Inches of Lift	Type defines the value as Motor RPM, Wash RPM (Revolutions Per Minute), PSI (Pounds per Square Inch), or Inches of Lift.
Direction	Forward or Reverse	This sets the direction you would want your hydraulic motor to run: None, Forward or Reverse.
IP Address	Numeric	IP Address of the VFD.

Power Management Settings Example

Output Relay.X	Name	Type	Part of Car	Flash	Wet Down	Panic Stop	Staggered Start	Inrush Time (s)	Start Priority
4.0	Vac #1	External	All of Car	Off	Off	N/A	0	10	Priority 3
6.0	Vac #2	External	All of Car	Off	Off	N/A	0	0	N/A
21.0	Macneil Dryer Start	Mandatory	All of Car	Off	Off	Off	5	10	Priority 2
23.0	Dryer Start	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
54.0	Wheel/Rocker Pump	Mandatory	All of Car	Off	Off	Off	0	2	Priority 1

Figure 33. Inrush Time and Start Priority Settings

In the figure above, the **Inrush Time** and **Start Priority** settings have been applied to five relays.

Editing Power Management Settings

To edit a relay so it includes power management settings:

1 From the **Configuration** menu, select **Relays**.
The **Relay Configuration** screen appears.

2 Locate the relay.

3 In the **Inrush Time** box, type the power up time in seconds. This is the amount of time (in seconds) the motor needs to start up and obtain full power. For example, a high pressure pump motor might require 1 second, a hydraulic motor might require 2 seconds and a blower motor might require 10 seconds.

4 In the **Start Priority** box, select an item:
Select **Priority 1** or **Priority 2**, if the relay **Type** is **not External**,
- **Start Priority 1** means the relay will keep its assigned **Start Time**. It will become a power management relay. But its **Start Time** is fixed and will not vary.
- **Start Priority 2** means the relay will fire on or before its assigned **Start Time**. Its **Start Time** will vary. The exact **Start Time** is calculated by the system.

5 Select **Priority 3** or **Priority 4**, if the relay **Type** is **External**.
- **Start Priority 3** or **4** means the relay is an external relay. Its **Start Time** will vary, but only if all **Priority 1** and **2** relays have been scheduled.

NOTE: An error message appears if you select a **Start Priority** before you type an **Inrush** time. Type in **Inrush** time first, and then select a **Start Priority**.

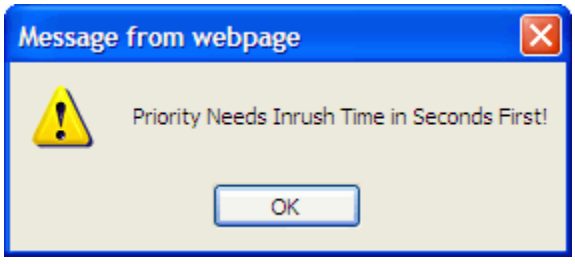


Figure 34. Priority Needs Inrush Time Error Message

For more information, See "Start Priority" on page 72.

Power Management Theory of Operations

Often times, tunnel equipment requires a certain power up time to come to full operational power. For safety reasons, the equipment must be fully operational by the time a vehicle arrives at the equipment location.

Start Time

Start Time is actually a measurement in inches to determine when the equipment should begin to power up. For example, the first criteria needed the measurement of the point in the tunnel where the equipment must be fully powered up and operational when the vehicle reaches it. Secondly, how much power up time is needed for the piece of equipment to be fully powered up. And finally, what is the chain speed of the tunnel.

Those three criteria are needed to adjust the **Start Time** and include the power up requirements. This is all done by the management system.

For Example,

- Chain speed of 10 inches per second
- A tire brush located at 400 inches
- Tire brush power up time is six seconds

Result: **Start Time** of 340 inches = 400 inches – (6 seconds × 10 inches per second)

Table 20: Start Time Equation

Equipment Power Up in Seconds	X	Tunnel Chain Speed in inches	-	Equipment Tunnel location point in inches

If the conveyor speed changes, the **Start Time** must also be changed. This makes it difficult to increase the conveyor speed to handle high-volume days.

Peek Power Usage Dilemma: When multiple vehicles are running through the tunnel, two or more start times may overlap to consume a lot of power, driving up peak demand. For example, suppose the mitter starts at 100 inches, the tire brush starts at 400 inches, and the dryers start at 640 inches. If three vehicles simultaneously arrive at each position, all the equipment will start at once.

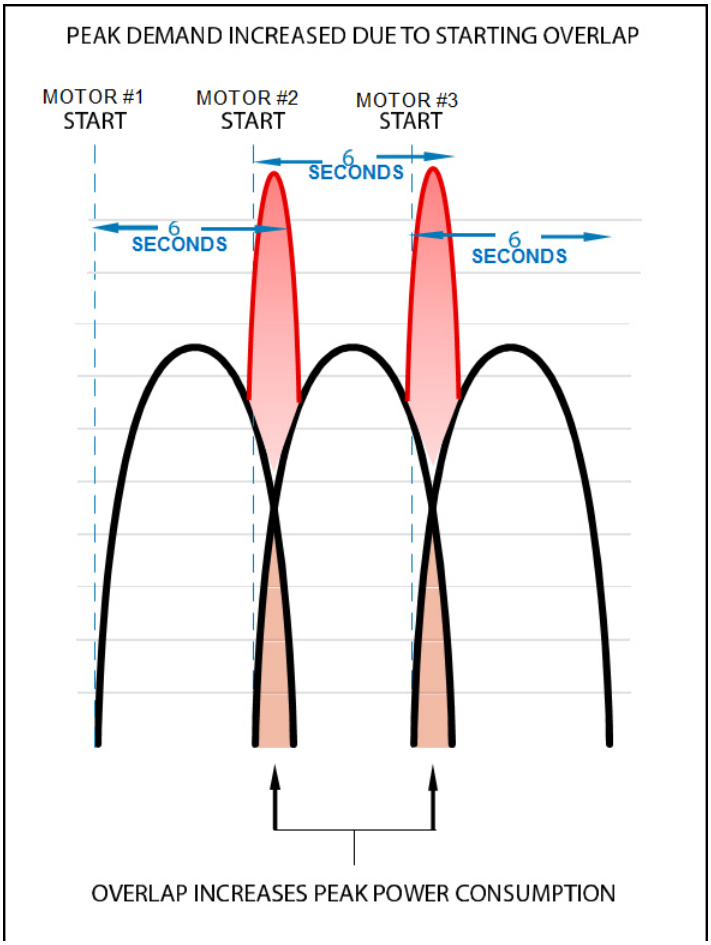


Figure 35. Peak Power Demand

Peek Power Usage Solution: The power management feature can help you fine-tune the motor start process in the car wash tunnel to avoid power up overlaps.

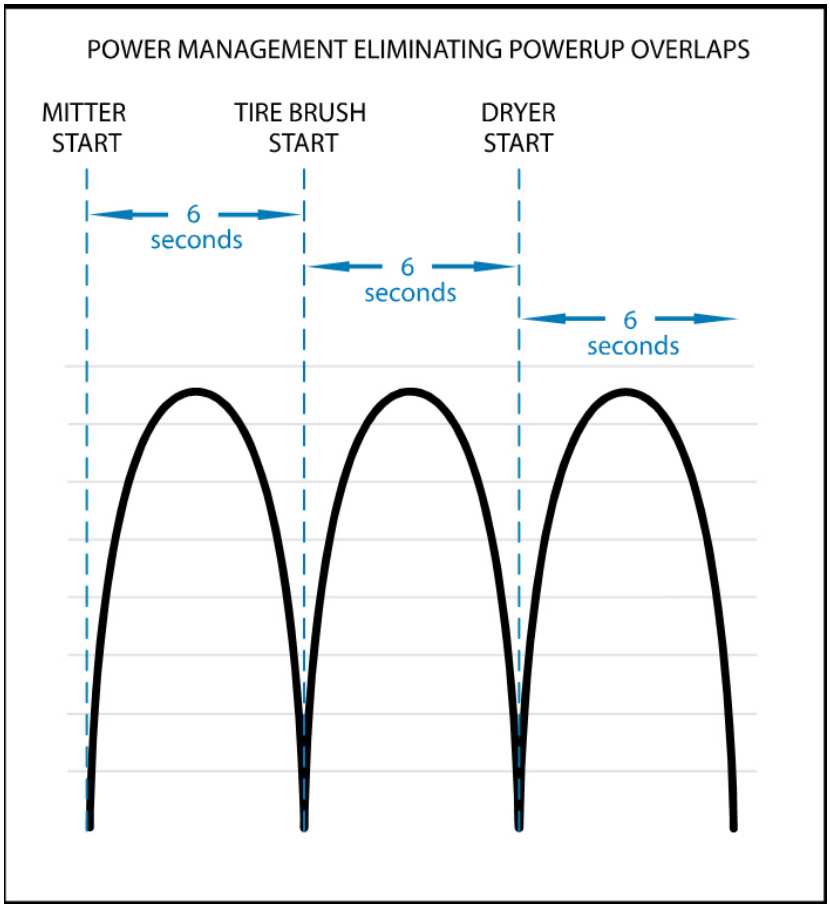


Figure 36. Optimized Power Demand

Instead of adjusting the **Start Time**, you can let the WBC Power Management system optimize the **Start Time** of each piece of equipment based on the **Inrush** and **Start Priority** settings. The system will ensure that the equipment is fully powered up and running by the time a vehicle arrives at the equipment.

About Inrush Time and Start Priority

This section includes technical details about the **Inrush Time** and **Start Priority** settings.

- The system evaluates **Inrush Time** and **Start Priority** relays separate from other relays that do not have **Inrush Time** and **Start Priority** settings. For example, suppose you have 50 relays configured for your tunnel, but only ten have **Inrush Time** and **Start Priority** settings. The system will consider those ten relays separately when calculating their optimized start times. The other 40 relays will start according to their assigned **Start Time** settings.

- When calculating optimized start times, the system will ensure that none of the power management relays will start **after** its assigned **Start Time**. Calculated start times will always be equal to or less than the assigned **Start Time**. For example, if a relay **Start Time** is 400 inches, the power management system will calculate a time equal to or less than 400 inches.
- **Inrush Time** is the same as the power up time. It represents the amount of time (in seconds) the motor needs to start up and obtain full power. Often times the motor itself contains a tag indicating the startup and run demands. Motors may also be wired for one of three different voltages. Typical voltages include 110 V and 240 V. A qualified electrician can help identify these important specifications for your equipment. You can measure the **Inrush** time for a piece of equipment with an amp probe directly on the motor lead for line-started motors.

NOTE: This method will not work for variable speed (e.g., electronic) drives, because they may provide derived AC waveforms. Therefore, an amp probe may not provide an accurate reading. Only use amp probes for line-started motors. All electrical voltage and current measurements should be made by a qualified electrician or trained service technician.

Start Priority

Start priority is a selection between 1 (fixed) and 4.

- **Start Priority 1** is fixed. The relay will fire at its assigned **Start Time**.
- **Start Priority 2** is variable. The relay will fire on or before its assigned **Start Time**.
- **Start Priority 3** and **4** are also variable. But they are used **only** for external equipment.

- Relays assigned to **Start Priority 2**, **3**, and **4** will fire at an optimized time. The times are calculated by the system. The system considers the conveyor speed, vehicle volume, other **Start Priority** and **Inrush** settings to determine each non-overlapped start time.
- Overlapping startups may be unavoidable for multiple **Start Priority 1** relays. For example, if two or more pieces of equipment are assigned to **Start Priority 1**, and the system determines that they both need to start simultaneously, then the start times will overlap.
- Start Priority settings are **not** interdependent. For example, you do not need to create a **Start Priority 1** relay before you create a **Start Priority 2** relay, etc.

- You can create any combination of **Start Priority** relays. For example, you can create **Start Priority 2** and **3** relays without a **Start Priority 1** relay.
- Relays with **Start Priority 3** and **4** are assigned an output type of **External**. The relay can be assigned to any of the 48 auxiliary inputs.
- If the system is in **panic mode**, then **Start Priority 3** and **4** relays (external equipment) will be started without overlapping the **Inrush Time** of those relays that have already started.
- If the system is in **restart mode** (staggered restart), then **Start Priority 3** and **4** relays will not be started until the system comes out of restart mode. During a staggered restart, the system will use the **Inrush Time** of the relay, if present, as the time count in seconds to do the restart process.

Understanding External Equipment and Auxiliary Inputs

The WBC can include up to 48 auxiliary inputs. When an input receives a signal, it can fire a relay. That relay can control external equipment, such as a vacuum or an air pump. If so, the relay **Type** is set to **External** in the **Relay Configuration** screen.

An **External** relay can be given power management settings. However, since it is an External relay, its **Start Priority** is either **3** or **4**. These start priorities are reserved for **External** relays.

An error message appears if you try to assign **Start Priority 3** or **4** to a relay that is not **External**.

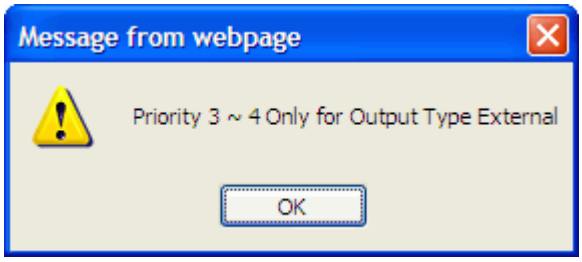


Figure 37. Priority 3 and 4 Error Message

About Start Priority 3 and 4 Equipment Scheduling

The power management system will evaluate the equipment queue for gaps between inrush times.

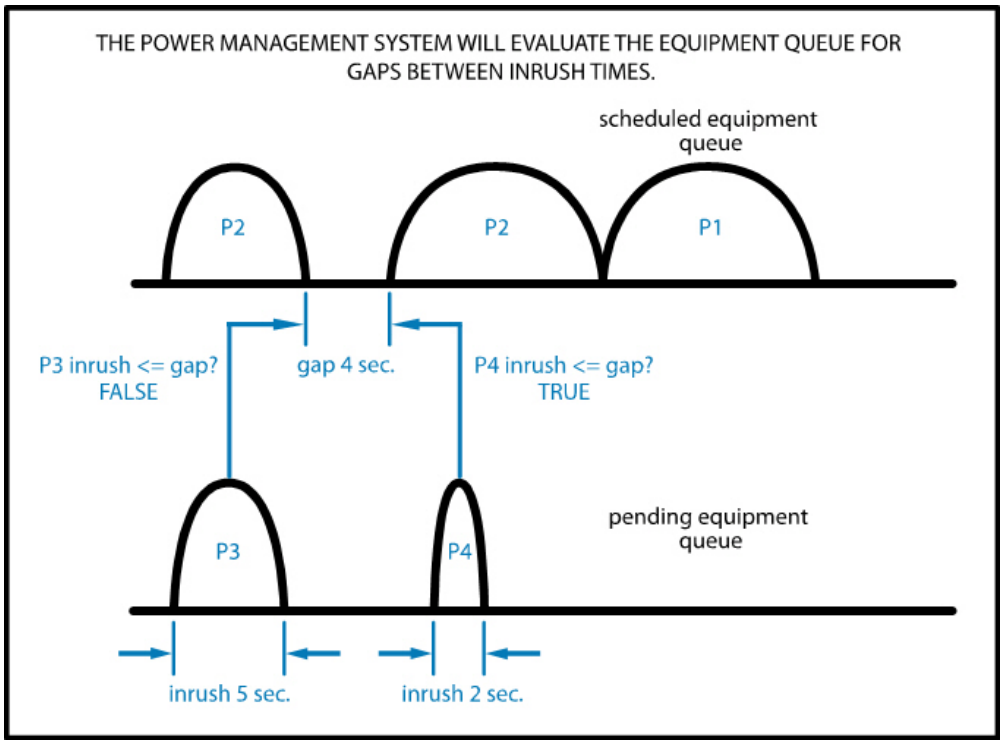


Figure 38. Automatic Power Management Equipment Scheduling, Partially Complete

Each arc in the drawing represents an **Inrush** time for a piece of equipment. P1 means the equipment is a **Start Priority 1**, P2 means **Start Priority 2**, etc.

The P1 and both P2 equipment has been scheduled. The P3 and P4 equipment is pending. The system finds a four second gap between the **Inrush** times of the first P2 and the second P2 equipment. It then looks for any P3 equipment with an **Inrush** time less than or equal to that gap. The P3 equipment has an **Inrush** time of 5 seconds. Therefore, it is not scheduled to start within the gap.

Next, the system looks for any other P3 equipment. It finds none. So it looks for P4 equipment. It finds one with an **Inrush** time of two seconds. Since two that is seconds less than the gap between **Inrush** times, the P4 equipment is scheduled into that gap.

Finally, the remaining P3 equipment is scheduled to start before its start time in order to avoid overlapping startups. The equipment queue is complete, as shown in Figure 39, “Automatic Power Management Scheduling of Equipment, Complete,”.

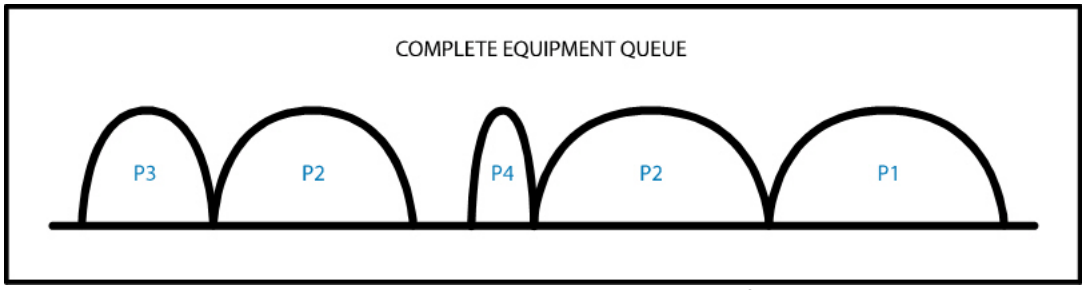


Figure 39. Automatic Power Management Scheduling of Equipment, Complete

Power Management Equipment Recommendations

You do not need to set power management requirements for every piece of tunnel equipment, but only for those that consume the most power or frequently overlap their start times.

NOTE: Equipment that is 208/480 VAC or 3-phase may be considered for power management.

The following table provides guidelines for the type of equipment that might be controlled with power management, and offers **Start Priority** recommendations.

Table 21: Power Management Equipment Recommendations

Equipment Type	Start Priority	Notes
High Pressure Pumps for Chemicals and Water	1	Since chemicals and liquids should not be wasted, they must be started at their exact start position.
Reclaim Pump	1	Reclaim pumps are typically configured with a **Start Time** of zero inches and an **Extend** setting equal to the length of the tunnel. If the **Start Time** is 0, then the reclaim pump must be **Start Priority** 1.
Hydraulic Motor Power Packs for Wraps and Mitters	2	Wraps and mitters that are controlled by hydraulic motor power packs can vary their start times to reduce the peak load.
Blowers	2	Blowers are good candidates for start priority 2. Blowers may draw a lot of power and require longer **Inrush** times.
External Air Compressors	3 or 4	External equipment is assigned start priority 3 or 4.
External Free Vacuums	3 or 4	

Inrush Time and Start Priority Examples

Inrush Time and Start Priority Examples illustrate a before and after example of how you might set up power management relays with **Inrush** and **Start Priority** settings.

ICS VFD Control Panel

When partnering your WBC with our ICS VFD (Variable Frequency Drive) Control Panel, you will have the enhanced ability of connecting the two via an Ethernet connection over MODBUS. You will experience real-time control and monitoring of all your tunnel equipment. When you partner your Tunnel Master® *wbc* with an ICS VFD Control Panel, you can improve performance and reduce cost with individualized settings.

NOTE: The ability for the Tunnel Master® *wbc* to communicate with the ICS VFD Control Panel via Ethernet connection is proprietary to the ICS VFD. However, the WBC will connect to third party VFD Panel via hard-wired methods.

Add a Relay with ICS VFD Control Panel Settings

To add a relay so it includes ICS VFD settings, follow these steps:

1 On the **Configuration** menu, click **Relays**.
The **Relay Configuration** screen appears.

2 Scroll to the bottom, and **Add** a relay that requires ICS VFD Control Panel settings.

NOTE: VFD settings need to be added when adding a new Relay. If you need to edit a relay, then delete the relay and add the relay settings again along with the VFD settings.

📖 *See "Add a Main Output" on page 56.*

3 In **Set Point Value**, type a value for the type of setting. i.e., 800.

4 In **Set Point Type**, select a type for the value from the following:
- Motor RPM
- Wash RPM
- PSI

- Inches of Lift

5 In **Direction**, select one of the following:
- None
- Forward
- Reverse

6 In **IP Address**, type in the IP address of the VFD.

7 Click the **Add** button.
The relay settings are saved.

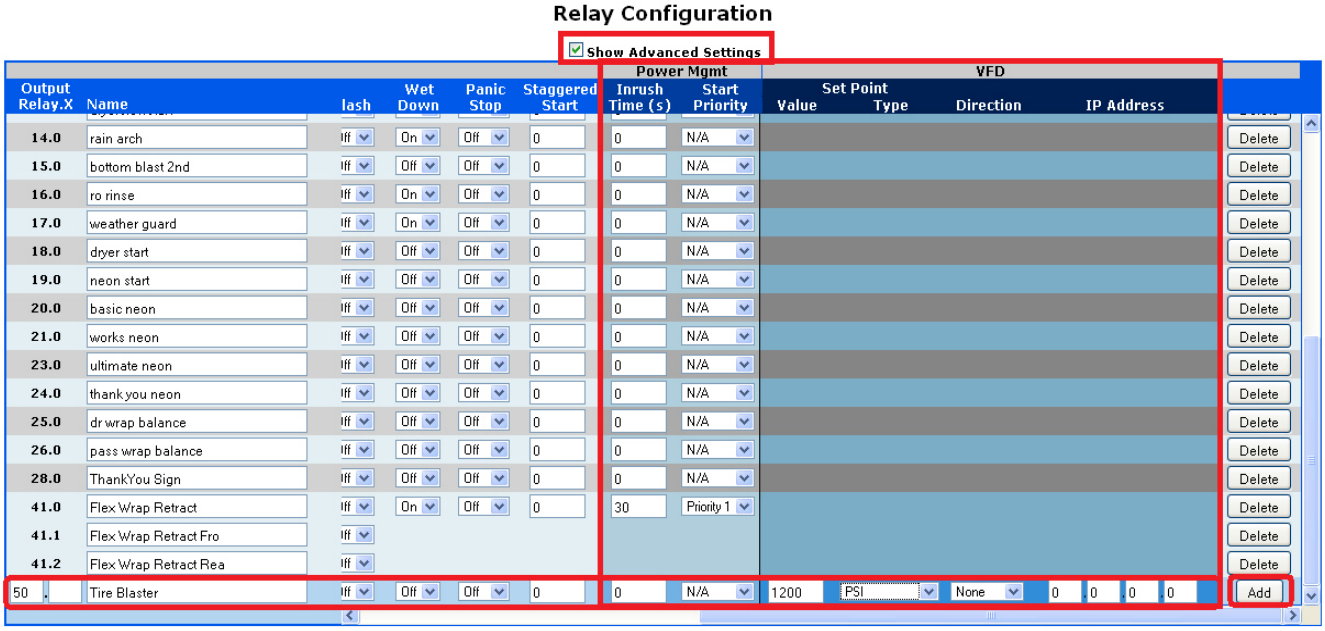


Figure 40. VFD Control Panel Relay Configuration example

The following table describes the Advanced Settings fields.

Field	Parameters	Description
Inrush Time(s)	Numeric Seconds	The amount of time in seconds that the motor needs to start up and obtain full operational power.
Start Priority	Numeric (1–4)	A selection between 1 (fixed) and 4. Designates which relay to start up in order of priority to improve power efficiency by preventing overlapping of motors starting up.
VFD		
Set Point Value	Numeric	This number is the amount of PSI, RPM or inches of Lift. Type would define this is PSI or RPM. e.g. 500 PSI.

Field	Parameters	Description
Set Point Type	Motor RPM, Wash RPM, PSI or Inches of Lift	Type defines the value as Motor RPM, Wash RPM (Revolutions Per Minute), PSI (Pounds per Square Inch), or Inches of Lift.
Direction	Forward or Reverse	This sets the direction you would want your hydraulic motor to run: None, Forward or Reverse.
IP Address	Numeric	IP Address of the VFD.

Table 22: Advanced Settings Field Descriptions

Figure 41. Relay Configuration Before Power Management

Output Relay.X	Name	Start	Extend	Look Ahead	Type	Part of Car	Flash	Wet Down	Panic Stop	Staggered Start
2.0	PRESOAK	10	-10	0	Deselective	All of Car	Off	Off	Off	0
2.2	PRESOAK	50	20	0	Mandatory	Tire All	Off			
5.0	WHEEL BLASTER/ ROCKER	24	104	0	Mandatory	All of Car	Off	Off	Off	0
7.0	SOAP FOAMER	20	9	0	Mandatory	All of Car	Off	Off	Off	0
8.0	CTA	16	18	0	Mandatory	Tire All	Off	Off	Off	0
9.0	WRAP MOTOR	95	192	0	Mandatory	All of Car	Off	On	Off	0
10.0	BUG SPRAY	30	25	0	Selective	Front Bumper	Off	Off	Off	0
11.0	UNDERCARRIAGE	36	0	0	Selective	All of Car	Off	Off	Off	0
12.0	WRAP 1 DS	50	90	0	Deselective	All of Car	Off	On	Off	0
13.0	WRAP 1 PS	60	90	0	Deselective	All of Car	Off	On	Off	0
14.0	WRAP 1 H2O	50	100	0	Mandatory	All of Car	Off	On	Off	0
15.0	WRAP 1 FOAMER	50	100	0	Mandatory	All of Car	Off	Off	Off	0
16.0	MITTER 1	75	120	0	Mandatory	All of Car	Off	On	Off	0
17.0	MITTER 1 H2O	75	120	0	Mandatory	All of Car	Off	On	Off	0
18.0	TIRE BRUSH AIR	80	100	0	Deselective	All of Car	Off	Off	Off	0
19.0	TIRE BRUSH H2O	80	100	0	Mandatory	All of Car	Off	On	Off	0
20.0	SIDE BRUSH W/H2O	100	36	0	Mandatory	Upper Side	Off	On	Off	0
21.0	TOP Brush	120	60	0	Deselective	All of Car	Off	Off	Off	0
21.1	TOP Brush Front half	120	60	0	Deselective	Front Half of Car	Off			
22.0	TOP BRUSH FOAM	120	60	0	Mandatory	All of Car	Off	Off	Off	0
23.0	OMNI H2O	190	115	0	Mandatory	All of Car	Off	Off	Off	0
24.0	OMNI HYD	193	115	0	Mandatory	All of Car	Off	Off	Off	0
25.0	WRAP 2 DS	200	90	0	Deselective	All of Car	Off	On	Off	0
26.0	WRAP 2 PS	210	90	0	Deselective	All of Car	Off	On	Off	0
27.0	WRAP 2 H2O	200	100	0	Mandatory	All of Car	Off	On	Off	0
28.0	WRAP 2 FOAMER	200	100	0	Mandatory	All of Car	Off	Off	Off	0
29.0	SIDE TO SIDE MITTERS	260	165	0	Mandatory	All of Car	Off	On	Off	0
30.0	MITTER 2 H2O	260	120	0	Mandatory	All of Car	Off	On	Off	0
31.0	TRI FOAM	275	0	0	Selective	All of Car	Off	Off	Off	0
32.0	RAIN X	300	0	0	Selective	All of Car	Off	Off	Off	0
33.0	FINAL RINSE	330	0	0	Mandatory	All of Car	Off	Off	Off	0
34.0	CLEAR COAT	338	0	0	Selective	All of Car	Off	Off	Off	0
35.0	DRYING AGENT	340	0	0	Mandatory	All of Car	Off	Off	Off	0
36.0	DRYER 1 DS	345	300	200	Deselective	All of Car	Off	Off	N/A	0
37.0	DRYER 2 PS	350	300	200	Deselective	All of Car	Off	Off	N/A	0
38.0	DRYER 3 DS	360	300	200	Deselective	All of Car	Off	Off	N/A	0
39.0	DRYER 4 TOP	365	300	200	Deselective	All of Car	Off	Off	N/A	0
40.0	DRYER 5 TOP	370	300	200	Deselective	All of Car	Off	Off	N/A	0
41.0	DRYER 6 PS	375	300	200	Deselective	All of Car	Off	Off	N/A	0
42.0	DRYER 7 DS	385	300	200	Deselective	All of Car	Off	Off	N/A	0
43.0	DRYER 8 PS	390	300	200	Deselective	All of Car	Off	Off	N/A	0
44.0	TIRE SHINE	364	100	200	Deselective	All of Car	Off	Off	Off	0
44.1	RETRACT	0	0	0	Deselective	All of Car	Off			
45.0	WAIT GO	30	25	0	Mandatory	Rear Bumper	Off	Off	Off	0
51.0	GROUP 1 HIGH	740	145	0	Deselective	All of Car	Off	Off	Off	0
52.0	GROUP 1 MED.	812	25	0	Deselective	All of Car	Off	Off	Off	0
53.0	GROUP 1 LOW	812	25	0	Selective	All of Car	Off	Off	Off	0
54.0	GROUP 2 HIGH	824	145	0	Deselective	All of Car	Off	Off	Off	0
78.0	BLOWER 1	800	110	180	Mandatory	All of Car	Off	Off	Off	0
79.0	BLOWER 2	876	110	180	Mandatory	All of Car	Off	Off	Off	0
80.0	BLOWER 3	894	110	180	Mandatory	All of Car	Off	Off	Off	0
81.0	BLOWER 4	912	110	180	Mandatory	All of Car	Off	Off	Off	0
83.0	BLOWER 5	930	110	180	Mandatory	All of Car	Off	Off	Off	0
84.0	BLOWER 6	945	110	180	Mandatory	All of Car	Off	Off	Off	0
92.0	RECLAIM	0	900	0	Mandatory	All of Car	Off	On	Off	0
96.0	VACUUM	0	0	0	External	All of Car	Off	Off	Off	0
98.0	AIR COMPRESSOR	0	0	0	External	All of Car	Off	Off	Off	0
124.0	LAVA	0	0	0	Deselective	All of Car	Off	Off	Off	0
124.1	LAVA PICKUP	0	0	0	Selective	Pickup Bed	Off			
.					Mandatory	All of Car	Off	Off	Off	0

In Figure 41, the example shows the **Relay Configuration** screen for a tunnel approximately 75-feet long with 50 relays. None of the relays has been assigned an **Inrush Time** or **Start Priority**.

Output Relay.X	Name	Type	Part of Car	Flash	Wet Down	Panic Stop	Staggered Start	Power Mgmt: Inrush Time (s)	Power Mgmt: Start Priority
2.0	PRESOAK	Deselective	All of Car	Off	Off	Off	0	0	N/A
2.2	PRESOAK	Mandatory	Tire All	Off					
5.0	WHEEL BLASTER/ ROCKER	Mandatory	All of Car	Off	Off	Off	0	1	Priority 2
7.0	SOAP FOAMER	Mandatory	All of Car	Off	Off	Off	0	8	Priority 1
8.0	CTA	Mandatory	Tire All	Off	Off	Off	0	0	N/A
9.0	WRAP MOTOR	Mandatory	All of Car	Off	On	Off	0	3	Priority 2
10.0	BUG SPRAY	Selective	Front Bumper	Off	Off	Off	0	0	N/A
11.0	UNDERCARRIAGE	Selective	All of Car	Off	Off	Off	0	0	N/A
12.0	WRAP 1 DS	Deselective	All of Car	Off	On	Off	0	0	N/A
13.0	WRAP 1 PS	Deselective	All of Car	Off	On	Off	0	0	N/A
14.0	WRAP 1 H2O	Mandatory	All of Car	Off	On	Off	0	0	N/A
15.0	WRAP 1 FOAMER	Mandatory	All of Car	Off	Off	Off	0	0	N/A
16.0	MITTER 1	Mandatory	All of Car	Off	On	Off	0	0	N/A
17.0	MITTER 1 H2O	Mandatory	All of Car	Off	On	Off	0	0	N/A
18.0	TIRE BRUSH AIR	Deselective	All of Car	Off	Off	Off	0	0	N/A
19.0	TIRE BRUSH H2O	Mandatory	All of Car	Off	On	Off	0	0	N/A
20.0	SIDE BRUSH W/H2O	Mandatory	Upper Side	Off	On	Off	0	0	N/A
21.0	TOP Brush	Deselective	All of Car	Off	Off	Off	0	10	Priority 2
21.1	TOP Brush Front half	Deselective	Front Half of Car	Off					
22.0	TOP BRUSH FOAM	Mandatory	All of Car	Off	Off	Off	0	0	N/A
23.0	OMNI H2O	Mandatory	All of Car	Off	Off	Off	0	2	Priority 1
24.0	OMNI HYD	Mandatory	All of Car	Off	Off	Off	0	2	Priority 2
25.0	WRAP 2 DS	Deselective	All of Car	Off	On	Off	0	0	N/A
26.0	WRAP 2 PS	Deselective	All of Car	Off	On	Off	0	0	N/A
27.0	WRAP 2 H2O	Mandatory	All of Car	Off	On	Off	0	0	N/A
28.0	WRAP 2 FOAMER	Mandatory	All of Car	Off	Off	Off	0	0	N/A
29.0	SIDE TO SIDE MITTERS	Mandatory	All of Car	Off	On	Off	0	1	Priority 2
30.0	MITTER 2 H2O	Mandatory	All of Car	Off	On	Off	0	0	N/A
31.0	TRI FOAM	Selective	All of Car	Off	Off	Off	0	0	N/A
32.0	RAIN X	Selective	All of Car	Off	Off	Off	0	0	N/A
33.0	FINAL RINSE	Mandatory	All of Car	Off	Off	Off	0	0	N/A
34.0	CLEAR COAT	Selective	All of Car	Off	Off	Off	0	0	N/A
35.0	DRYING AGENT	Mandatory	All of Car	Off	Off	Off	0	0	N/A
36.0	DRYER 1 DS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
37.0	DRYER 2 PS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
38.0	DRYER 3 DS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
39.0	DRYER 4 TOP	Deselective	All of Car	Off	Off	N/A	0	0	N/A
40.0	DRYER 5 TOP	Deselective	All of Car	Off	Off	N/A	0	0	N/A
41.0	DRYER 6 PS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
42.0	DRYER 7 DS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
43.0	DRYER 8 PS	Deselective	All of Car	Off	Off	N/A	0	0	N/A
44.0	TIRE SHINE	Deselective	All of Car	Off	Off	Off	0	0	N/A
44.1	RETRACT	Deselective	All of Car	Off					
45.0	WAIT GO	Mandatory	Rear Bumper	Off	Off	Off	0	0	N/A
51.0	GROUP 1 HIGH	Deselective	All of Car	Off	Off	Off	0	0	N/A
52.0	GROUP 1 MED.	Deselective	All of Car	Off	Off	Off	0	0	N/A
53.0	GROUP 1 LOW	Selective	All of Car	Off	Off	Off	0	0	N/A
54.0	GROUP 2 HIGH	Deselective	All of Car	Off	Off	Off	0	2	Priority 1
78.0	BLOWER 1	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
79.0	BLOWER 2	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
80.0	BLOWER 3	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
81.0	BLOWER 4	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
83.0	BLOWER 5	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
84.0	BLOWER 6	Mandatory	All of Car	Off	Off	Off	0	10	Priority 2
92.0	RECLAIM	Mandatory	All of Car	Off	On	Off	0	5	Priority 1
96.0	VACUUM	External	All of Car	Off	Off	Off	0	5	Priority 3
98.0	AIR COMPRESSOR	External	All of Car	Off	Off	Off	0	5	Priority 4
124.0	LAVA	Deselective	All of Car	Off	Off	Off	0	0	N/A
124.1	LAVA PICKUP	Selective	Pickup Bed	Off					
.		Mandatory	All of Car	Off	Off	Off	0	0	N/A

In the prior figure, the example shows the same **Relay Configuration** screen with **Inrush Time** and **Start Priority** settings. Power management settings were applied to the following equipment:

- Wheel Blaster (relay 5)
- Wraps (relay 9)
- OMNI Arch (relays 23–24)
- Side to Side Mitters (relay 29)
- Blowers (relays 78–81, 83–84)
- Reclaim system (relay 92)
- Free vacuum (relay 96)
- Air compressor (relay 98)

The equipment chosen consumes the most power; therefore, it was selected for power management.

Table 23: Power Management Equipment Examples

Equipment	Relays	Name	In rush	Priority	Description
Wheel Blaster	5	ROCKERS	1	2	Relay 5 is wired to the high-pressure pump for the wheel blaster. Example specifications for such a pump are as follows: 5 HP, 1,500 RPM, 208 VAC, three phase.
Wraps	9	WRAP MOTOR	1	2	Relay 9 is wired to the hydraulic motor power pack for the wraps.
OMNI Arch	23	OMNI H2O	2	1	Relay 23 is wired to the high-pressure pump for the OMNI arch.
	24	OMNI HYD	2	2	Relay 24 is wired to the hydraulic motor power pack for the OMNI arch.
Side to Side Mitters	29	SIDE/SIDE	1	2	Relay 29 is wired to the hydraulic motor power pack for the mitter.
Blowers	78–81, 83–84	BLOWER 1–5	10	2	Relays 78–81, 83–84 and 1.2 B51 wired to the blower motors.
Reclaim System	92	RECLAIM	5	1	Relay 92 is wired to reclaim system.
Free Vacuum	96	VACUUM	5	3	Relay 96 is wired to the external free vacuum.
Air Compressor	98	AIR COMPRESSOR	5	4	Rely 98 is wired to the external air compressor for the tire pump.

CHAPTER 6:
Timed Outputs

This chapter includes descriptions for the **Timed Outputs** menu item.

A timed output is a relay that works as "timed," meaning it can be automatically turned on and off based on a defined day-and-time profile.

NOTE: For timed outputs to function correctly, it is important that your date and time settings are properly configured on the WBC web interface. See "Relay Configuration from iPhone® with Wi-Fi Connection" on page 18 and "Administrative Settings" on page 107 for more information.

A popular use of timed outputs includes lighting controls for both inside and outside the tunnel. For example, you might set up a relay to automatically illuminate the tunnel entrance during evening business hours. Or you might use timed outputs to control lighting for added security during non-business hours.

Available timed output selections include the following: each day (e.g., **Sunday**, **Monday**, **Tuesday**, etc.); **Monday through Friday**; **Saturday and Sunday**; and **All Days**. This creates a total of 10 different "**Day**" selections—seven weekdays plus three multi-day selections.

Each **Day** selection can have up to six (6) unique timed output profiles. Therefore, the 10 different **Day** selections multiplied by the six unique timed output profiles will allow you to create up to 60 different timed output profiles.

NOTE: Do not confuse a WBC timed output profile with a profile in **Tunnel Master®** or **WashConnect®** software. A WBC timed output profile is used to control relays on the board. Tunnel Master® and WashConnect profiles control the wash choices displayed on an *Auto Sentry*. The two are completely separate and do not interact.

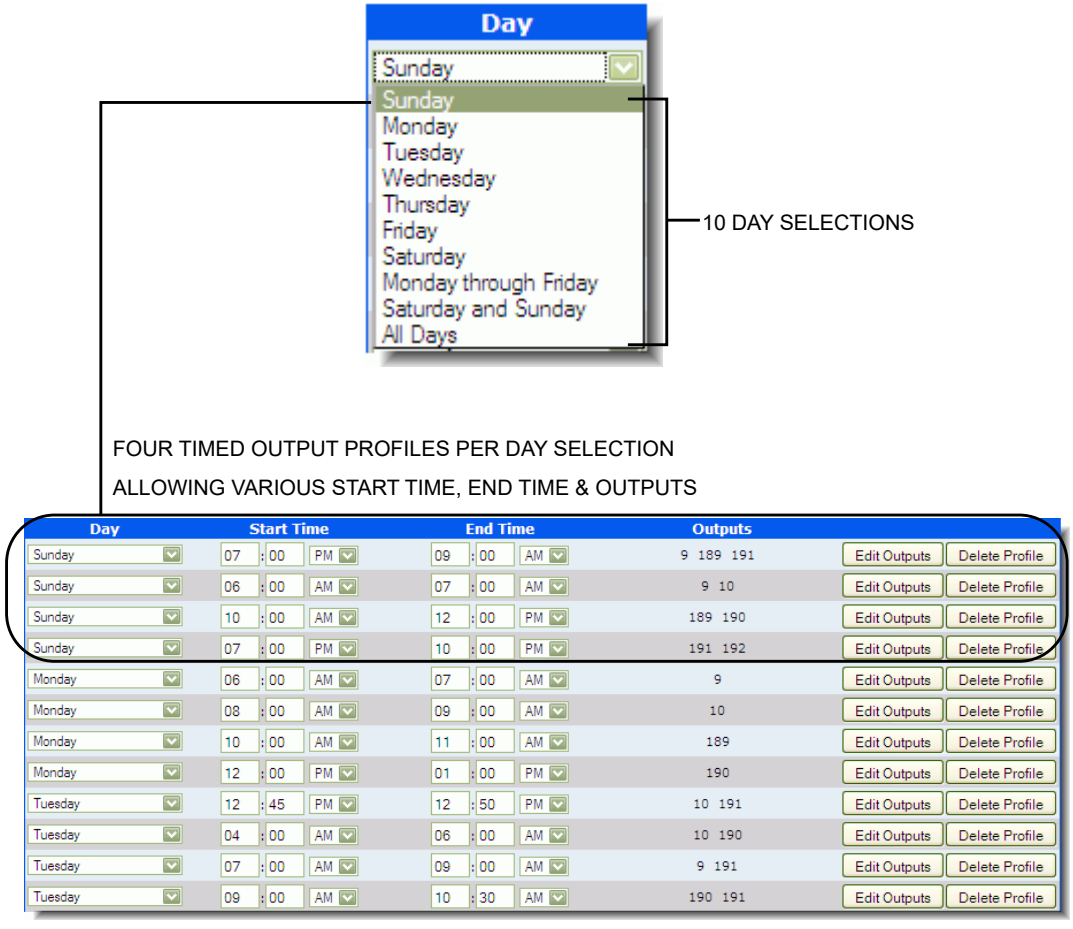


Figure 42. Timed Outputs Screen

Timed Outputs Screen Descriptions

The following table describes each field available on the **Timed Outputs** screen.

Table 24: Timed Outputs

Column Heading	Parameters	Description
Day	Predefined list.	The **Day** selection is used to assign a specific day or day range for the timed output profile. Selections include the following: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday; Monday through Friday; Saturday and Sunday; and All Days

Table 24: Timed Outputs (Continued)

Column Heading	Parameters	Description
Start Time	Numeric	The Time that the profile will become active on the assigned **Day** selection.
End Time	Numeric	The Time that the profile will become inactive on the assigned **Day** selection.
Outputs	List	Lists the outputs (i.e., relays) assigned to the profile. These are the relays that will fire when the profile is active. They must be selected from the available relays that have not already been set up as standard (i.e., non-timed) relays in the **Relay Configuration** (**Configuration > Relays**) screen or **Tunnel Settings** (**Configuration > Tunnel Settings**) screen. You can assign up to 12 relays per profile.

Adding a Timed Output Profile

You can add a timed output profile to the WBC. When you add or change the timed output profiles through the web interface, they are immediately effective on the WBC relays and equipment.

To add a timed output profile

1 Select the **Configuration** menu, and then select **Timed Outputs**.
The **Timed Outputs** screen appears.

2 Scroll to the bottom of the screen until you see the last row where the **Add Profile** button is visible.

Figure 43. Add Profile

3 In the **Add Profile** row, do the following (see "Timed Outputs Screen Descriptions" on page 84 for an explanation of each selection):
•In the **Day** column, select a day.
•In the **Start Time** column, type a start time.
•In the **End Time** column, type an end time.

4 Click **Add Profile**.
The timed output profile is added to the list. At this time, no relays have been assigned to the new Timed Outputs profile.

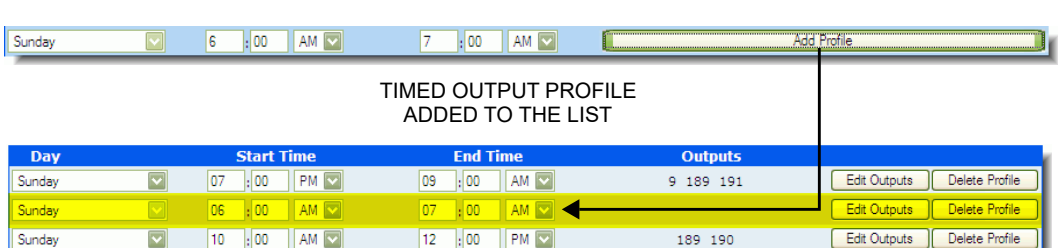


Figure 44. New Timed Output Profile

NOTE: If you exceeded six profiles per selection, the following error message appears.

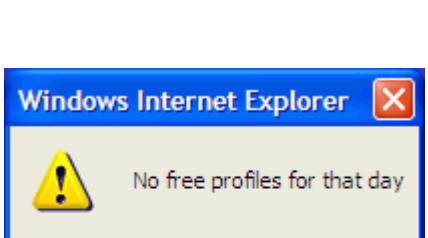


Figure 45. No Free Profiles

Next, you can edit the timed output profile to select specific relays. See the next procedure, Edit Timed Output Profiles, for more information.

Edit Timed Output Profiles

You can edit a timed output profile to add and remove numbers that appear in its **Outputs** column. These numbers represent the relays that are assigned to the timed output profile.

NOTE: You can assign up to 12 outputs per profile.

To edit a timed output profile, follow these steps:

1 Click **Edit Outputs** next to the timed output you want to change.
The relay selection screen appears.

2 Select or clear the check boxes the timed outputs for the available relays that you want to change.

3 Click **Update Profile**.
The **Timed Outputs** screen appears and the **Outputs** column is immediately updated for the profile.

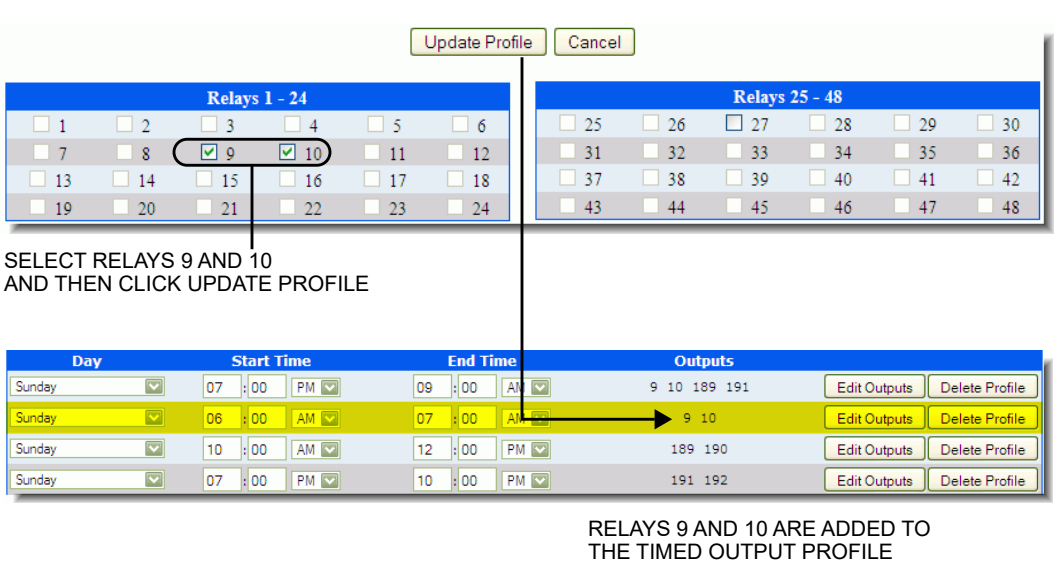


Figure 46. Relays (Outputs) Added to Timed Output Profile

Relay Selection Screen for Timed Output Profiles

On the relay selection screen, relays are grouped together as if they were laid out on relay boards. You will see eight groups of 24 per group because the WBC can handle up to 192 relays on eight separate boards. If you do **not** have eight relay boards wired at your site, then remember to select outputs only for the boards and relays you know are available (e.g., groups 1-24, 25-48, 49-72, and 73-96 are available if you only have four separate boards).

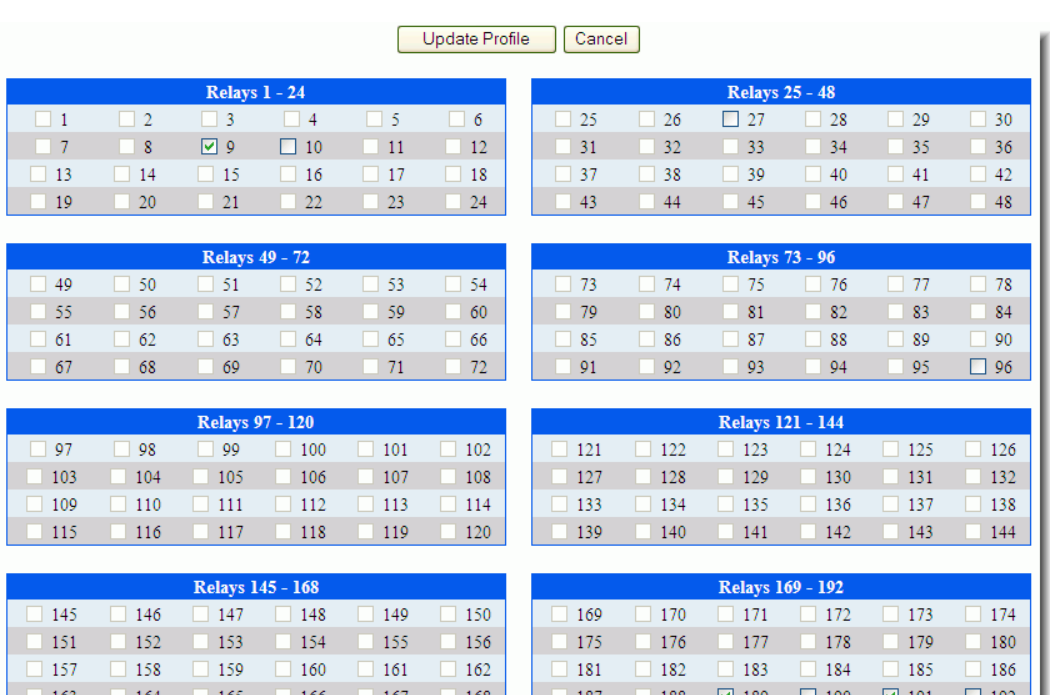


Figure 47. Edit Timed Outputs Screen

Any relays that are currently unassigned for your car wash are available for assignment to a timed output profile. You cannot select relays if they are currently assigned as standard relays. Standard relays are assigned on the **Relay Configuration** screen and in certain sections on the **Tunnel Settings** screen (e.g., **Entrance Management**, **Roller Settings**, etc.).

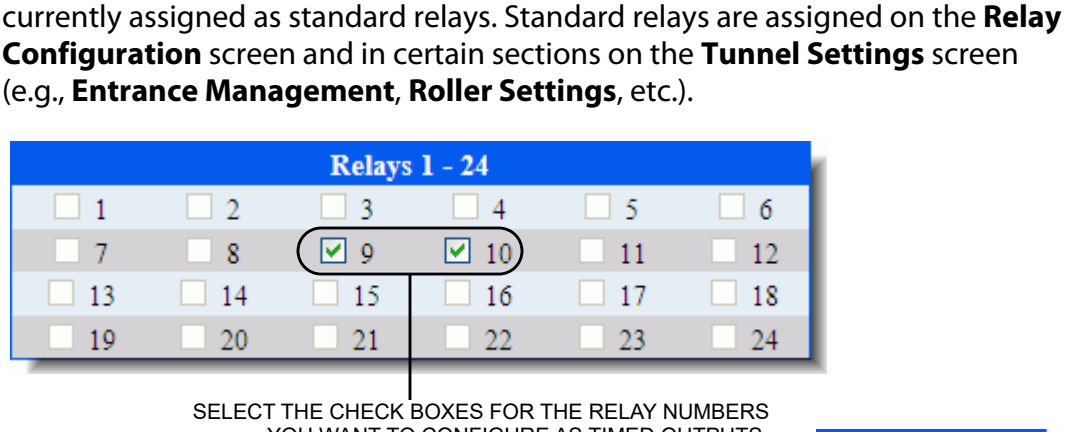
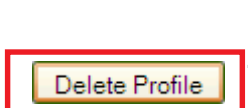


Figure 48. Available Relays for Timed Outputs

Delete a Timed Output Profile

To delete a timed output profile, follow these steps:

1 Select the **Configuration** menu, and then select **Timed Outputs**. The **Timed Outputs** screen appears.



2 Click **Delete Profile** in the row that corresponds to the timed output profile. A confirmation message appears.

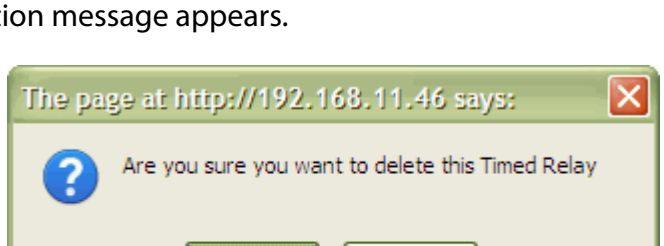


Figure 49. Delete Timed Relay Confirmation Message

3 Click **OK**. The profile is deleted on the **Timed Outputs** page.

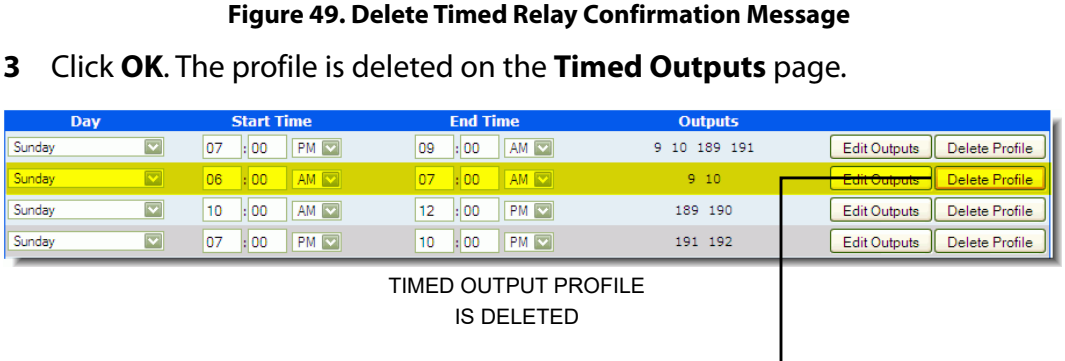


Figure 50. Timed Output Profile Deleted

Active Timed Output Profiles

The WBC processes all timed output profiles at once. Outputs from multiple profiles can be active depending on the time and day.

For example, consider the following scenario, illustrated is in the following figure:

- **Monday** includes two profiles.
- **All Days** includes three profiles.

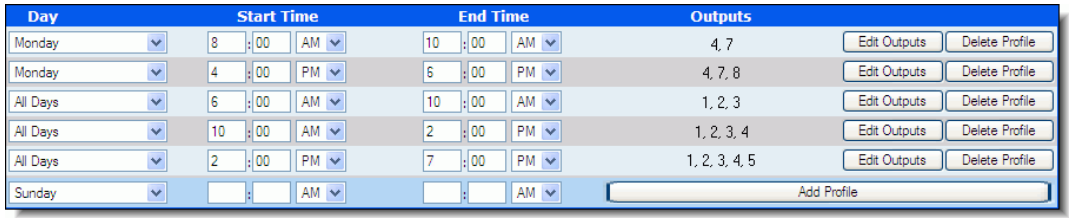


Figure 51. Multiple Timed Output Profiles for Monday and All Days

In Figure 51, two timed output profiles are defined for the **Monday** selection. Additionally, three timed output profiles are defined for the **All Days** selection.

The following table shows a summary of when each output is on according to the example timed output profiles above.

Table 25: Active Outputs for Multiple Profiles

	PROFILES												
	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM
			MONDAY 8—10								MONDAY 4—6		
	ALL DAYS, 6—10				ALL DAYS, 10—2				ALL DAYS, 2—7				
OUTPUTS													
1	X	X	X	X	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X	X	X	X	X
3	X	X	X	X	X	X	X	X	X	X	X	X	X
4	—	—	X	X	X	X	X	X	X	X	X	X	X
5	—	—	—	—	—	—	—	—	X	X	X	X	X
7	—	—	X	X	—	—	—	—	—	—	X	X	—
8	—	—	—	—	—	—	—	—	—	—	X	X	—

In Table 25, “Active Outputs for Multiple Profiles,” on page 90, you can see when each output is on (X) or off (—) according to the example timed output profiles. On a Monday at 4:00 PM, for example, a total of seven outputs are active. Notice how the **Monday** profile will **not** override the **All Days** profile at that time. The outputs are collectively evaluated, and then turned on for both profiles.

CHAPTER 7:
Services

This chapter includes descriptions for the **Services** menu item.

Configured Services

On the **Configuration** menu, and click **Services.** The **Configured Services** screen appears.

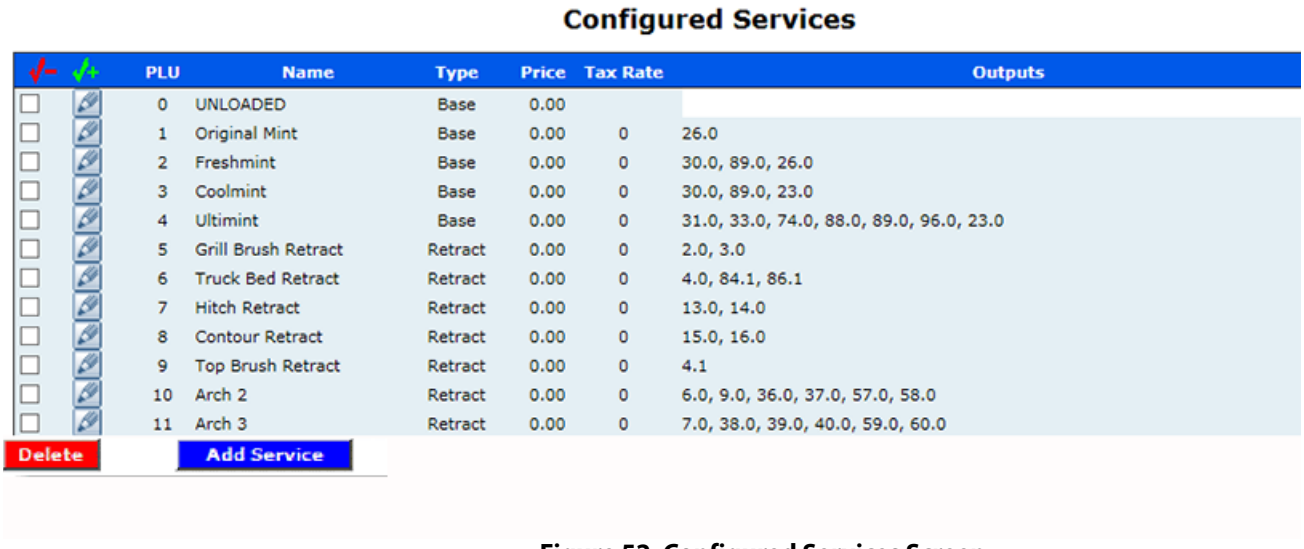


Figure 52. Configured Services Screen

Table 26: Configured Services

Column Heading	Parameters	Description
Clear All 	—	Clear all check boxes.
Select All 	—	Select all check boxes.
PLU	Positive integer values 0—32	Unique numbers used by the ICS system to identify a type of wash service. Referred to as PLUs (Price Look-Up). Price Look-Up (PLU) code 0 is named UNLOADED by default. This provides a safety measure for unrecognized vehicles (e.g., vehicles passing through the tunnel with an indeterminate PLU). It defines a default base wash service so equipment can operate without the potential for damage. Without an UNLOADED PLU, a vehicle passing through the tunnel could potentially damage the equipment. PLU 0 is always assigned to the UNLOADED service. This PLU number is factory default setting and cannot be altered. When the **Roller Interlock** parameter (**Configuration > Tunnel Settings > Roller**) is set to **N**, then any car that is not programmed by the keypad or the ICS Tunnel Master® tunnel controller will go as UNLOADED. If **Roller Interlock** is set to **Y**, then the gate sensor will not recognize the car, and therefore no output will be turned on.
Name	Alphanumeric	The name for the service or product.
Type	List	**Base**. Base wash service. **Extra**. Extra wash service. **Retract**. Retract wash service.
Price	Numeric Six digits max. Rounded to two decimals	Price of service. Zero-dollar services can be used for retracts, etc.
Tax Rate	List.	**No Tax**. Service is not taxed. **Tax 1**. Service is taxed at rate 1. **Tax 2**. Service is taxed at rate 2. **Tax 1 and 2**. Service is taxed at rate 1 and rate 2.
Outputs	Numeric	List of outputs selected for service. All **Mandatory** outputs are already included, but not shown in the list. This list shows the **Selective** or **Deselective** outputs that will be fired as part of the service.

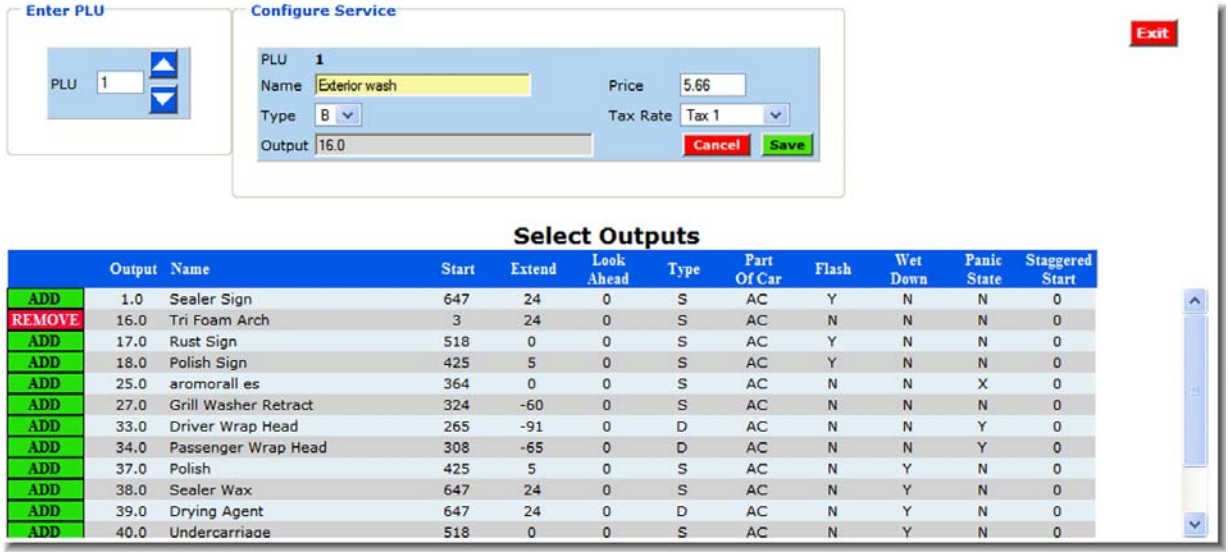
Edit

You cannot edit any service when a shift is open and has sold at least one service. When attempting to edit a service in this condition, the error message **Error Saving Service X** will appear when the **Save** button is selected. A service can be edited by stopping tunnel activity and bumping the shift. All changes need to be completed before selling any services.

To edit a service, follow these steps:

1 Click **Edit** next to the service you want to change.
The **Configure Service** screen appears for that PLU.

- **Selective** and **Deselective** outputs appear in the list (for example, **Mandatory** outputs are already included and are not available).
- **Remove** means you can remove the output because it is already selected.
- **Add** means you can add the output because it is not yet selected.



	Output	Name	Start	Extend	Look Ahead	Type	Part Of Car	Flash	Wet Down	Panic State	Staggered Start
ADD	1.0	Sealer Sign	647	24	0	S	AC	Y	N	N	0
REMOVE	16.0	Tri Foam Arch	3	24	0	S	AC	N	N	N	0
ADD	17.0	Rust Sign	518	0	0	S	AC	Y	N	N	0
ADD	18.0	Polish Sign	425	5	0	S	AC	Y	N	N	0
ADD	25.0	aromorall es	364	0	0	S	AC	N	N	X	0
ADD	27.0	Grill Washer Retract	324	-60	0	S	AC	N	N	N	0
ADD	33.0	Driver Wrap Head	265	-91	0	D	AC	N	N	Y	0
ADD	34.0	Passenger Wrap Head	308	-65	0	D	AC	N	N	Y	0
ADD	37.0	Polish	425	5	0	S	AC	N	Y	N	0
ADD	38.0	Sealer Wax	647	24	0	S	AC	N	Y	N	0
ADD	39.0	Drying Agent	647	24	0	D	AC	N	Y	N	0
ADD	40.0	Undercarriage	518	0	0	S	AC	N	Y	N	0

Figure 53. Edit Service

2 In the **Configure Service** section, do any of the following:

- Edit the **Name**.
- Edit the **Type**. Select Base, Extra, or Retract.
- Edit the **Price**.
- Edit the **Tax Rate** selection.

3 In the **Select Outputs** area, do the following:

- Click **Add** to add an output.
  The **Output** list is updated.
  -or-
- Click **Remove** to remove an output.
  The **Output** list is updated.

Save

4 Click **Save** when you are finished.
The service saved message appears.

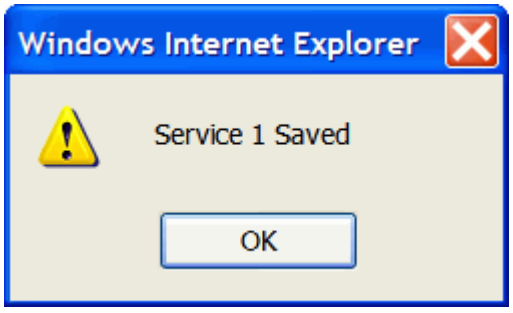


Figure 54. Service Saved Message

5 Click **OK**.
The **Configure Service** screen appears.

Exit

6 Click **Exit** (in the upper-right corner of the screen) when you are finished.
The **Configured Services** screen appears.

Editing the Unloaded Service

You cannot add an output to the Unloaded PLU 0. PLU 0 is assigned to the Unloaded PLU by default. You cannot change this number. And you cannot add selective/deselective services to PLU 0. If you attempt to add an output to the unloaded PLU, an error message appears. The only editable fields for the Unloaded PLU are **Price** and **Tax Rate**.

Add

Add Service

To add a service, follow these steps:

1 Click **Add Service**.
The **Configure Service** screen appears.

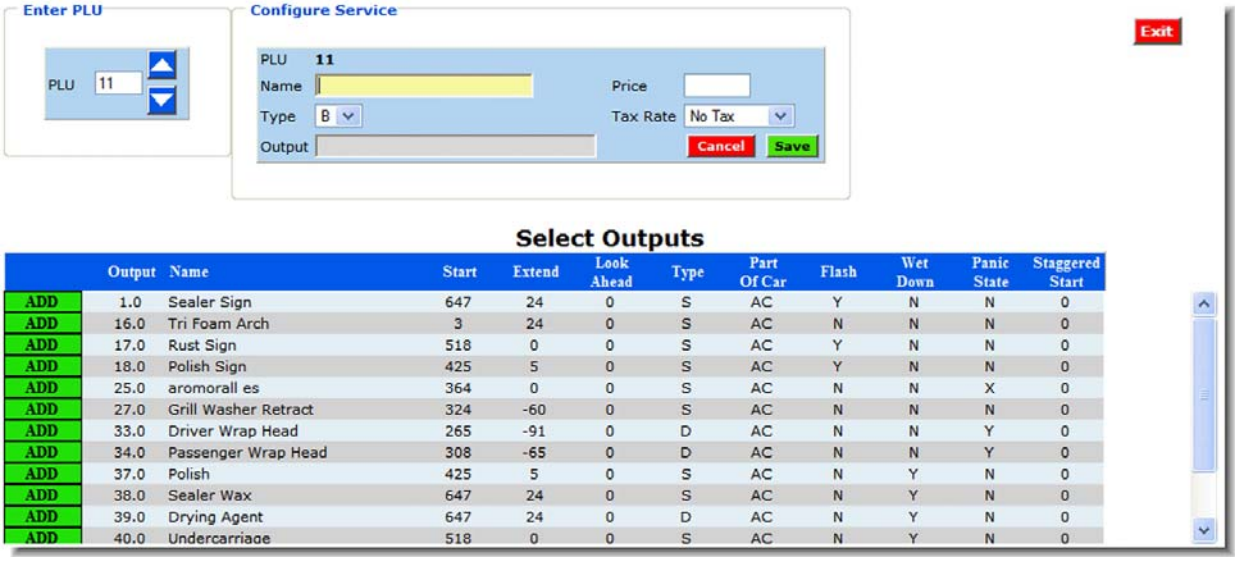


Figure 55. Add Service

2 In the **PLU** box, type or select a PLU for the service.
The first available PLU appears in the box by default. Maximum value is 32.

3 From the **Configure Service** area, do all of the following:

- Type a **Name**.
- Select a **Type**.
- Type a **Price**.
- Select a **Tax Rate**.

4 From the **Select Outputs** area, do one of the following:

- Click **Add** to add an output. The **Output** list is updated.
- Click **Remove** to remove an output. The **Output** list is updated.

5 Click the **Save** button when you are finished.
The service saved message appears.

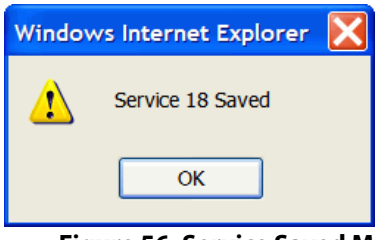


Figure 56. Service Saved Message

6 Click **OK**.
The **Configure Service** screen appears.

Exit

7 Click **Exit** (in the upper-right corner of the screen) when you are finished. The **Configured Services** screen appears.

Delete a Service

To delete services, follow these steps:

1 Check one or more service(s) in the **Configured Services** list (i.e., select the check box next to the service you want to delete).

Delete

2 Click **Delete**.

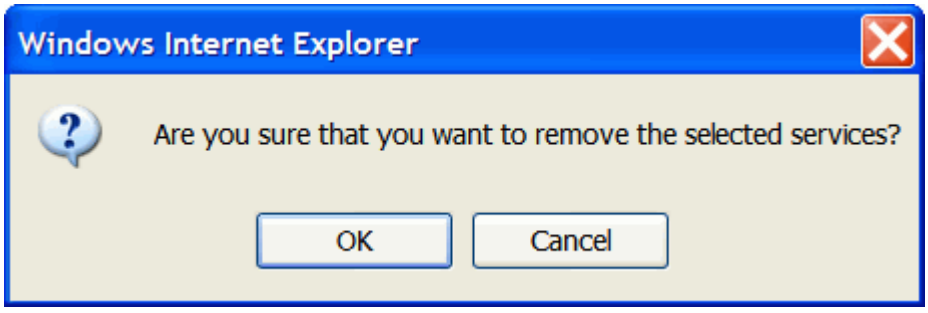


Figure 57. Remove Services Message

3 Click **OK**.
The **Services Removed** message appears.

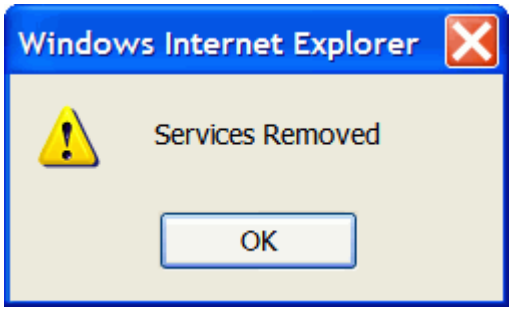


Figure 58. Services Removed Message

4 Click **OK**.
The **Configured Services** list appears.

Zero-Dollar Services

You can program zero-dollar services in the Services screen. These services can be applied to the car being sensed with the following rules and restraints:

- This feature is for a WBC controller with **Stacking** set to **Y** and the **Control Device** set to **WBC**.
- The F5 key on the Input Terminal is the indicator for accepting zero dollar services. Pressing the F5 key is required before adding any zero dollar service to the programmed wash service.
- You can add a zero-dollar service by selecting the service number, and then enter from Input Terminal keypad. Or you can use a hot key to add the retract service.
- WBC adds the zero-dollar service or until Auto Sentry is reached. F5 Key retract is added to the car being sensed (measured). Once End of car is reached, F5 hot key retract is not added to car.
- WBC adds zero-dollar services as long as the car has not reached that piece of equipment in the tunnel. This is applicable to StackNControl only.

CHAPTER 8:
Auxiliary Inputs

This chapter includes descriptions for the **48 Auxiliary Inputs** menu item.

Auxiliary inputs help report the state of the tunnel. If an error condition or event occurs, you can use the inputs as monitors to receive alerts or set the tunnel into a panic stop mode.

48 Auxiliary Inputs Configuration

The **48 Auxiliary Inputs Configuration** screen allows you to enable or disable monitoring and error reporting of all 48 inputs wired to the inputs terminal block on the Input Board.

- On the **Configuration** menu, and click **48 Auxiliary Inputs.**

The **48 Auxiliary Inputs Configuration** screen appears.

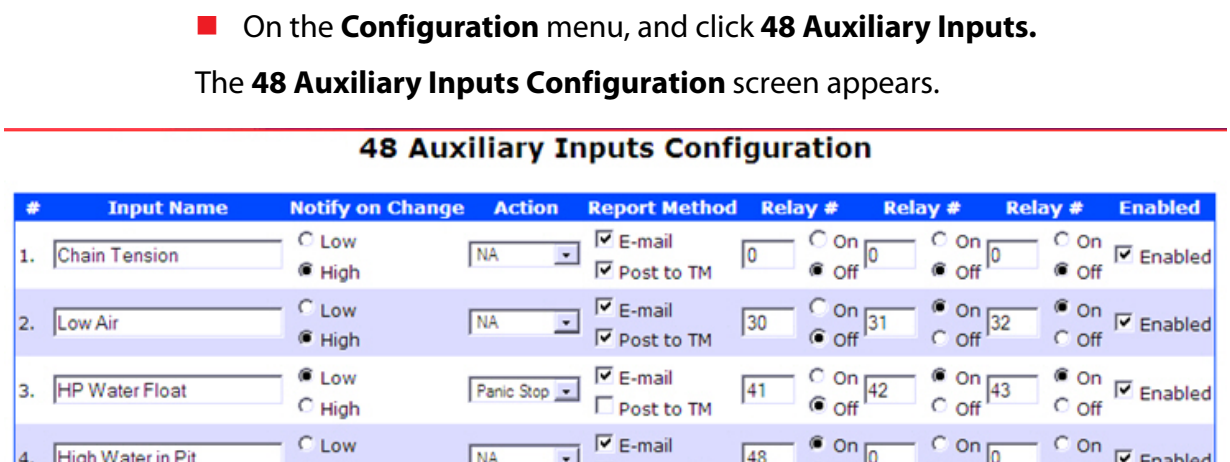


Figure 59. 48 Auxiliary Inputs Configuration Screen

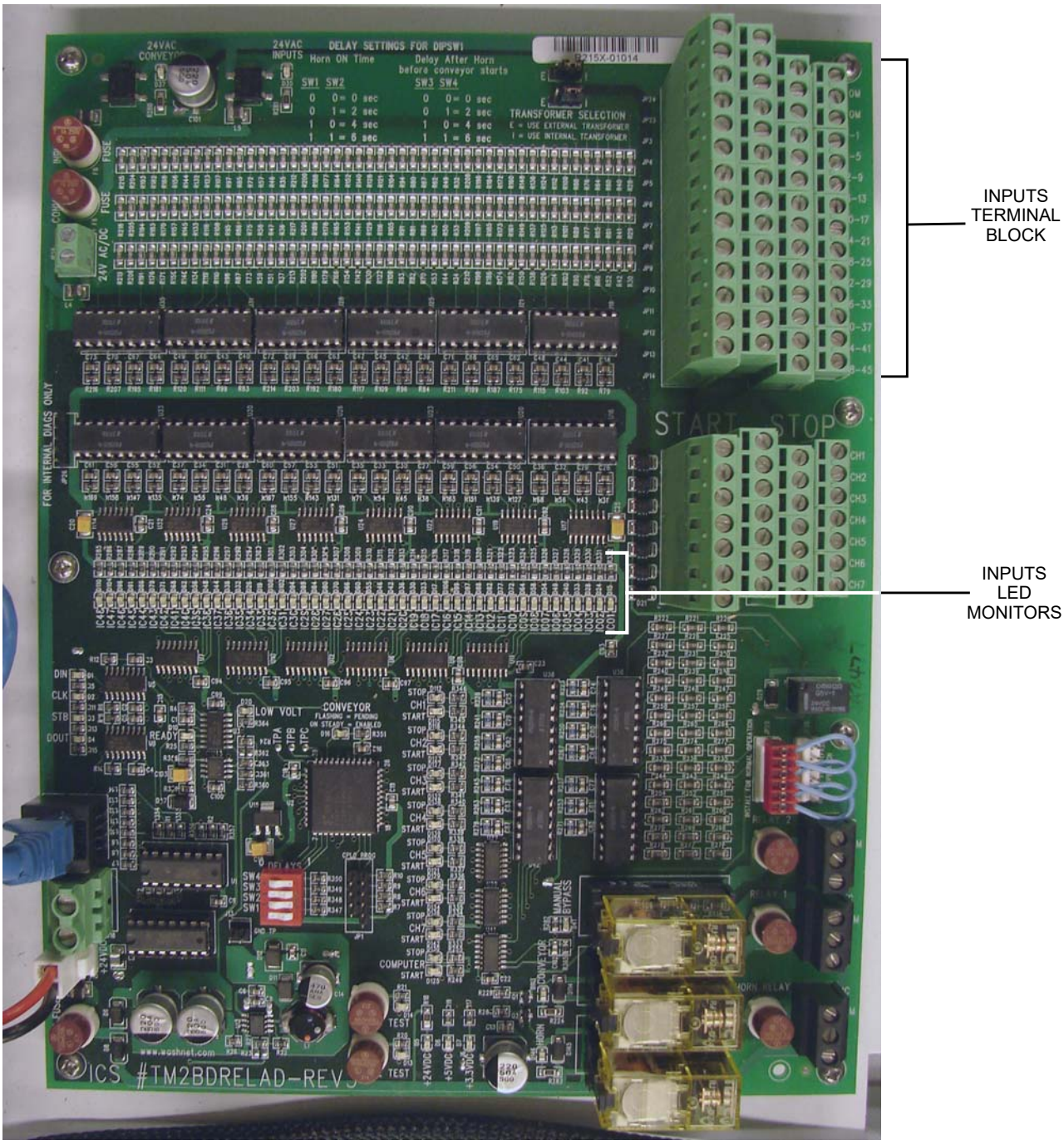


Figure 60. Inputs Block on Conveyor Board

Commonly wired inputs might include hydraulic fluid levels, air pressure for pneumatic controls, chemical pressures, and excessive current from motor controllers. There are 48 inputs available for monitoring wash events like follows:

- Low Oil Pressure Shutoff Switch
- Low Air Pressure Shutoff Switch
- Thermal Overload Protectors
- Vehicle Location in Tunnel
- Chain Tension
- Float Valves

NOTE: The technician who installed the ICS tunnel controller at your site can provide a complete list of inputs since each site is wired differently.

The table below describes the **48 Auxiliary Inputs Configuration** screen.

Table 27: 48 Auxiliary Inputs Configuration Settings

Column Heading	Parameters	Description
#	1—48.	The input number. The Input Board also contains four common inputs, which are not shown on this screen.
Input Name	Alphanumeric Max. Twenty characters	Input name (For example, Float Valve, Air Pressure, and more)
Notify on Change	Low High	Select **Low** to monitor input for low signal (i.e., if signal is normally high). Select **High** to monitor input for high signal (i.e., if signal is normally low).
Action	N/A Panic Stop	Select **NA** for no action. If notification (Low or High) is received, no action is taken. The tunnel will continue to operate as normal. Select **Panic Stop** to enable a panic stop state in the tunnel. If notification (Low or High) is received, controller enters panic stop mode.
Report Method	E-mail Post to TM	Select **E-mail** to send an email message to the configured address. **Post to TM** feature is not available. In Tunnel Master, the address is configured in the **To Address** field of the **Error Alert Email Settings** form (**Configuration > Tunnel Settings > Email Settings**). The email will contain the name of the input.
Relay #	On/Off Numeric	This is the relay that will be turned on/off whenever the input on change high/low takes effect.
Enabled	—	Check to activate the monitoring. Clear to deactivate monitoring.

Configure an Input for Monitoring

To configure an input for monitoring, follow these steps:

1 If the input is not already enabled, first check **Enabled**. The input is available to edit.

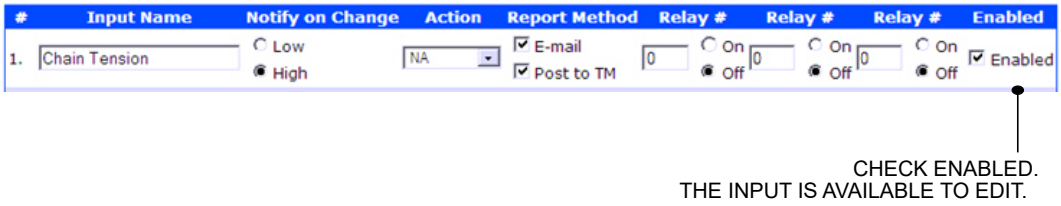


Figure 61. Input Configuration

2 In **Input Name,** type a name.

3 In the **Notify on Change** box, select **Low** or **High**.

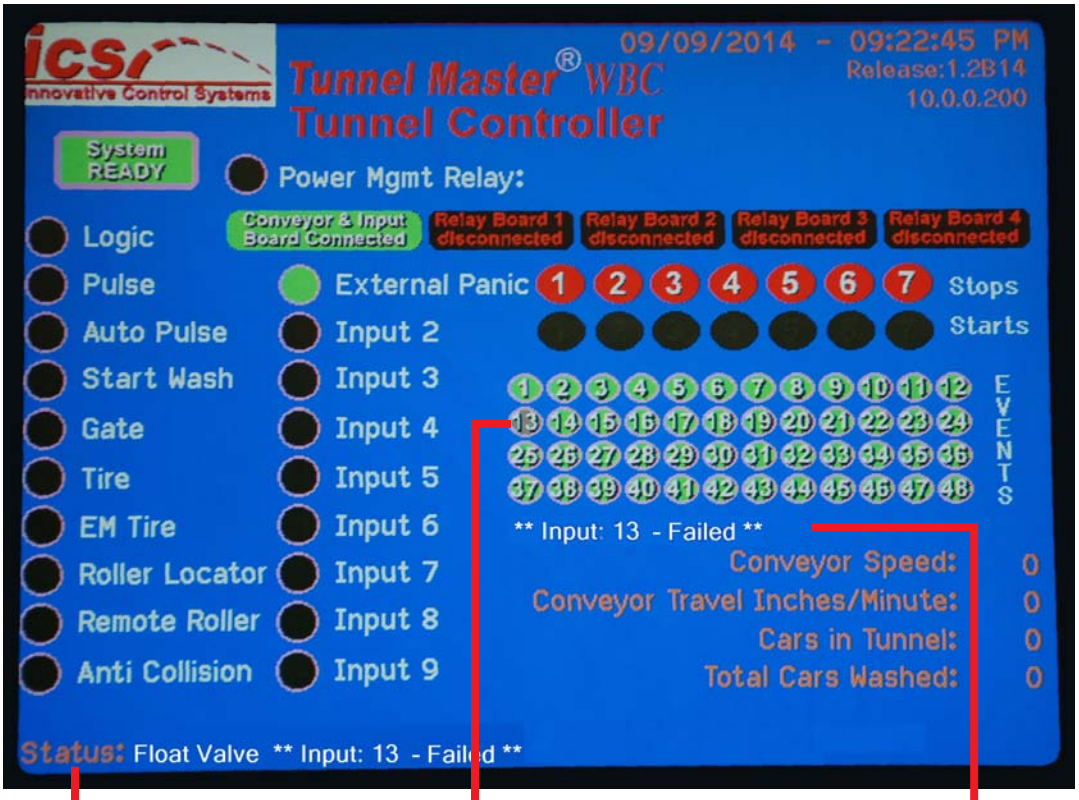
4 In the **Action** box, select **NA** or **Panic Stop**.

5 In the **Report Method** area, click to check or clear **E-mail**. **Post to TM** feature is not available.

6 In the **Relay** box, type in the relay number.

7 Select or clear the **Enabled** box. If you configure an input for monitoring, and then clear the **Enabled** check box, nothing is reported and no action is taken. The **Enabled** check box must be checked if you want the input monitored.

Configuring and enabling an input on the **48 Auxiliary Inputs Configuration** screen also enables feedback to appear on the monitor.



STATUS MESSAGE.

EXAMPLE: IF MONITORING IS ENABLED FOR INPUT 13, AND A NOTIFICATION EVENT OCCURS ON THAT INPUT, THEN INPUT 13 APPEARS GRAY.

FAILURE MESSAGE.

Figure 62. Controller Monitor with Input Event Detected

Panic Stop

If one of the 48 auxiliary inputs on the WBC is configured to do a panic stop when its input is triggered, then you cannot press a Start button to restart the conveyor until the initial auxiliary input has been corrected and returned to its base state input.

The system does not allow the conveyor to be restarted out of panic stop until the auxiliary input state that caused the panic is reset.

Push Button Inputs

Auxiliary inputs 33—48 can be used for accepting wash input services from a push button device.

Table 28: Auxiliary Inputs for a Push Button Device

Auxiliary Input Wash	Input Service
33	1
34	2
35	3
36	4
37	5
38	6
39	7
40	8
41	9
42	10
43	11
44	12
45	13
46	14
47	Roller
48	Clear

CHAPTER 9:
Backup or Restore Controller

This chapter instructs how to backup the current Controller settings to a file. You can also restore the current Controller settings from a backup file.

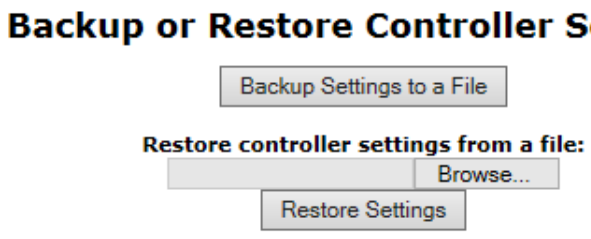


Figure 63. Backup or Restore Settings

Creating a Backup File

To back up the current settings to a file, follow these steps:

1. On the **Configuration** menu, click **Backup** or **Restore Database**. The **Backup or Restore Controller Settings** screen appears.
2. Click **Backup Settings to a File**. The **File Download** dialog box appears.
3. Click **Open** or **Save**. The default file name is **backup.bin**. It is a text formatted ASCII file.

NOTE: You can use **Notepad** to open the file. On the **Start menu, click Accessories > Notepad**. You can also change the name of the file. A good practice is to name the file with the current date so you can quickly see when the backup settings were created.

Restore Controller Settings from a file:

To restore the current settings from a backup file, follow these steps:

1 Click **Browse**, and then select a backup file. The file path and name appears in the box.

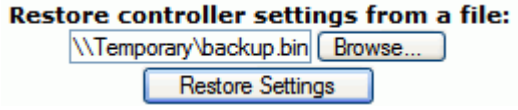


Figure 64. Restore Settings from File

2 Click **Restore Settings**. This may take a few seconds. The settings are applied, and then the **Restore Complete** message appears.

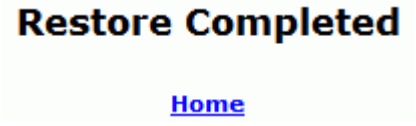


Figure 65. Restore Complete

3 Click **Home** to return to the start page.
The WBC Welcome start page appears.

Reading a Backup File

The following table includes example information found in a backup file. The seven example lines show settings, services and outputs. A typical backup file might include more than 150 lines.

Table 29: Backup File Example Lines

Line	Description
SET PULSELENGTH 5.59	Pulse length.
SET MINCARLENGTH 36	Minimum car length.
SET MAXCARLENGTH 400	Maximum car length.
ADD SERVICE 0, UNLOADED, 0.00, 1, B	Settings for service 0.
ADD SERVICE 1, Exterior wash, 5.66, 1, B	Settings for service 1.
ADD OUTPUT 4.0, Blower #1 Passenger, 780, 120, 500, M, AC, N, N, N, 1	Settings for output 4.0.
ADD OUTPUT 37.0, Polish, 425, 5, 0, S, AC, N, Y, N, 0	Settings for output 37.0.

CHAPTER 10:
Administrative Settings

This chapter includes the Administrative Settings menu item descriptions, and how to create a new User.

Administrative Settings

1 On the **Configuration** menu, click **Administrative Settings.** The **Administrative Settings** screen appears.

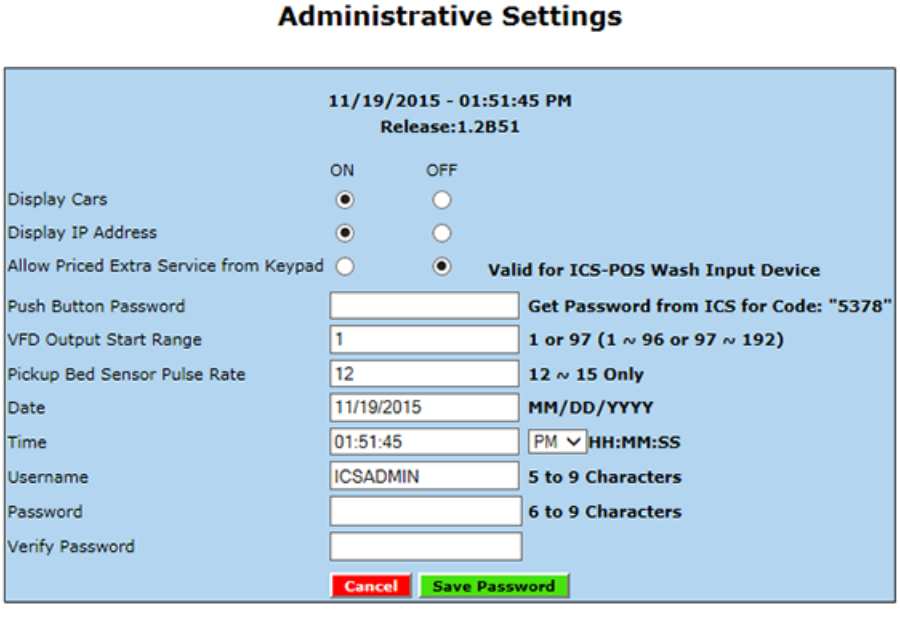


Figure 66. Administrative Settings Screen

NOTE: The current software version of the controller (e.g., Release 1.2 B51) is shown at the top of the **Administrative Settings** screen, along with the WBC date and time settings.

Table 30: Administrative Settings

Column Heading	Parameters	Description
Display Cars	ON OFF	Select **ON** to display the, “Total Cars Washed” message at the monitor.
Display IP Address	ON OFF	Select **ON** to display the controller IP address at the monitor.
Allow Priced Extra Service from Keypad	ON OFF	This selection is only active when the Wash Input Device type has been entered as ICS-POS. Set to ON to accept priced services, set to OFF to deny priced services. NOTE-Zero dollar services are always accepted, regardless of this selection option.
Push Button Password	Alphanumeric	During initial setup, you can get a password from the **wbcpassword** generation tool, available on the ICS web site. Contact ICS directly and provide the code shown. Once you have created a password, the system will allow you to change the Wash Input Device to **Push Button** (**Configuration > Tunnel Settings > General Settings**).
VFD Output Start Range	Square-D	
VFD Make Change Password		
VFD Output Start Range	Numeric 97 (97-192) 1 (1-96)	By default, this value is 97; meaning 96 relay outputs in WBC are used and VFD outputs start from 97. It can be changed to specify start of 1, meaning 1 - 96 are VFD outputs and 97 - 192 are relay outputs. **NOTE**: Set up VFD configurations from Relay Configuration page.
Pickup Bed Sensor Pulse Rate		Pickup Bed Sensor Pulse Rate (12 ~ 15) to be configurable for sites which already mounted sensor very high. Increasing the pulse rate of sensor to make it read longer distance.
Date	MM/DD/YYYY	Current date. Must be properly configured for timed outputs to work correctly.
Time	HH:MM:SS	Current time. Must be properly configured for timed outputs to work correctly.

Table 30: Administrative Settings (Continued)

Column Heading	Parameters	Description
Username	Alphanumeric	User name of current user. Type a new user name to create a new account. The new account will inherit security settings from the current account. Minimum length = 5 characters. Maximum length = 9 characters.
Password	Alphanumeric	Password for the current Username. Password is case sensitive. Minimum length = 6 characters. Maximum length = 9 characters.
Verify Password	Alphanumeric	Verification box for password when creating a new user account.

Create a New User

To create a new user, follow these steps:

1. In the **Username** box, type a user name.
2. In the **Password** box, type a password.
3. In the **Verify Password** box, retype the password.
4. Click **Save Password**.
   The new user is created and logged in. Security settings are inherited from the previously logged in user.

NOTE: Password Settings:

- The minimum length of the user name is 5 characters.
- The minimum length of the password is 6 characters.
- The maximum length for both is 9 characters.

Therefore, your user name and password must be no more than nine characters long. If you type a user name or password with more than nine characters, it will be truncated (i.e., cut off) at nine characters.

CHAPTER 11:
Reports

This chapter includes descriptions for the **Reports** menu: Daily Shift Detail, Monthly Summary, and Yearly Summary.

Daily Shift Detail Report

To view a daily detail report, follow these steps:

1. Select **Reports** menu, and then select **Shift**, and then **Daily Detail**. The **Daily Shift Detail Report** screen appears.
2. Select an item in the **Daily Shift Detail Report** list. The report appears.

NOTE: You may need to scroll down to locate the report. Use the scroll bar.

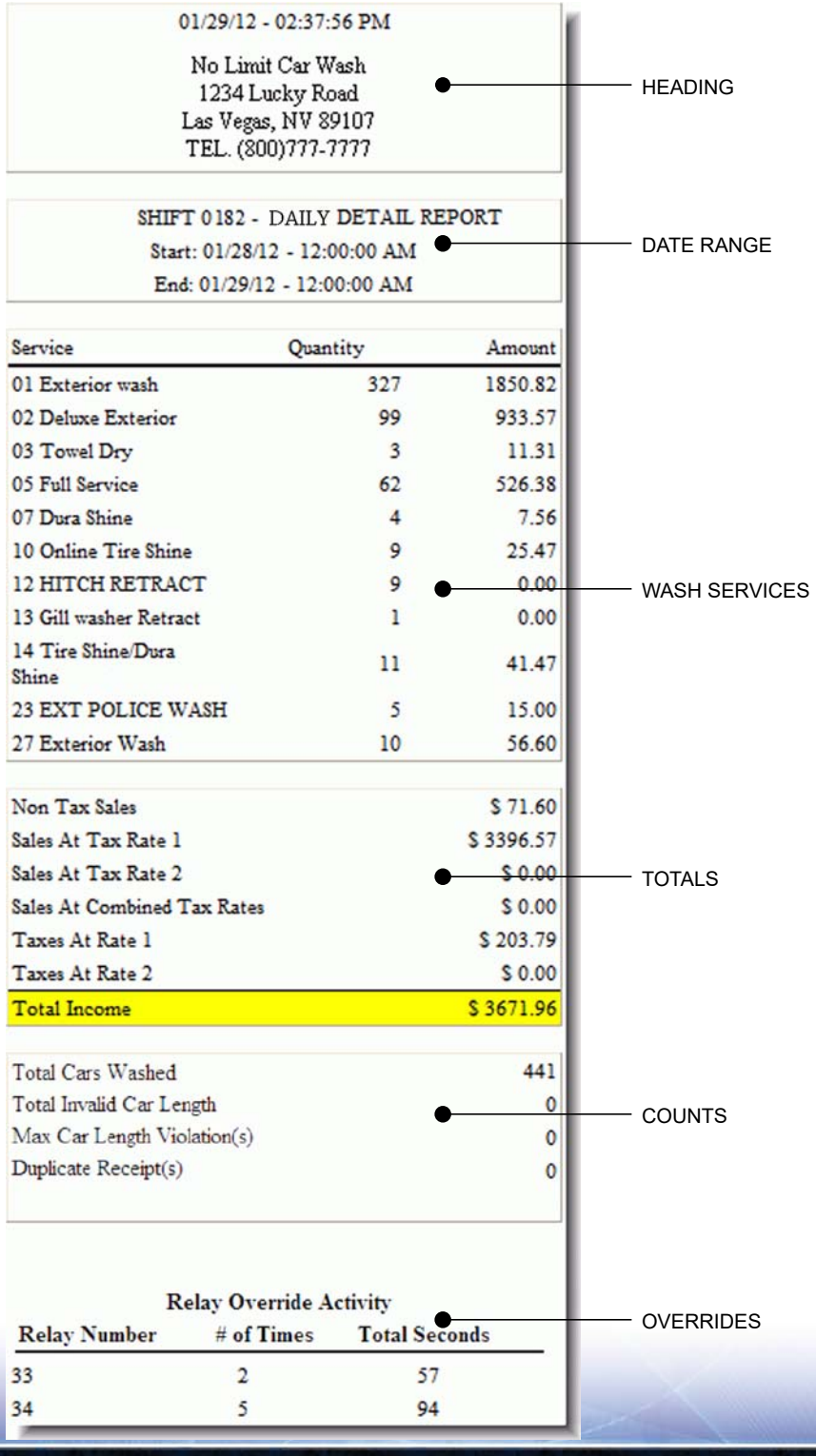
Figure 67. Daily Shift Detail Report List

Printing a Daily Shift Detail Report

Print

To print a daily detail report, view the report and then click **Print**.

NOTE: Default report printers must use standard 8½ × 11-inch paper.



01/29/12 - 02:37:56 PM

No Limit Car Wash
1234 Lucky Road
Las Vegas, NV 89107
TEL. (800)777-7777

HEADING

SHIFT 0182 - DAILY DETAIL REPORT
Start: 01/28/12 - 12:00:00 AM
End: 01/29/12 - 12:00:00 AM

DATE RANGE

Service	Quantity	Amount
01 Exterior wash	327	1850.82
02 Deluxe Exterior	99	933.57
03 Towel Dry	3	11.31
05 Full Service	62	526.38
07 Dura Shine	4	7.56
10 Online Tire Shine	9	25.47
12 HITCH RETRACT	9	0.00
13 Gill washer Retract	1	0.00
14 Tire Shine/Dura Shine	11	41.47
23 EXT POLICE WASH	5	15.00
27 Exterior Wash	10	56.60

WASH SERVICES

Non Tax Sales	$ 71.60
Sales At Tax Rate 1	$ 3396.57
Sales At Tax Rate 2	$ 0.00
Sales At Combined Tax Rates	$ 0.00
Taxes At Rate 1	$ 203.79
Taxes At Rate 2	$ 0.00
Total Income	$ 3671.96

TOTALS

Total Cars Washed	441
Total Invalid Car Length	0
Max Car Length Violation(s)	0
Duplicate Receipt(s)	0

COUNTS

Relay Override Activity

Relay Number	# of Times	Total Seconds
33	2	57
34	5	94

OVERRIDES

Multiple Shifts per Day

You can see multiple daily shift reports that occurred within a single day. This happens each time a shift is bumped manually during a day. If so, a new shift entry is created.

If you have multiple shifts within a single day and want to see the totals for a single day, you will need to manually add the totals of the separate daily shift reports.

Monthly Summary Report

To view a monthly summary report, follow these steps:

1. Select the **Reports** menu, and then select **Shift**, and then **Monthly Summary**.
   The **Monthly Summary Report** screen appears.
2. Select an item in the **Monthly Summary Report** list.
   The report appears.

Below is an example monthly summary report.

08/11/2012 - 03:54:53 PM
Sparkle Car Wash
Congdon Ave
STROUDSBURG, PA 18360
TEL. (610)881-8000

MONTHLY SUMMARY REPORT - JULY 2012
Start: 07/01/2012 - 12:00:00 AM
End: 07/30/2012 - 12:00:00 AM

Service	Quantity	Amount
01 Ultimate	2683	30371.56
02 PROTECT and Shine	2723	25677.89
03 WHEEL Deal	2670	21360.00
04 WASH and Wax	2321	11605.00
06 Retract Test	123	0.00
07 DOUBLE Bond	97	0.00
08 TIRE Shine	85	0.00
09 Triple Foam	105	630.00
18 SPECIAL Club Wash	2	14.00
16 Retract 16	70	0.00
20 WRAP 1 Driver Retract	93	0.00
00 UNLOADED Base PLU	3	21.00

Non Tax Sales	$ 33609.00
Sales At Tax Rate 1	$ 56049.45
Sales At Tax Rate 2	$ 0.00
Sales At Combined Tax Rates	$ 0.00
Taxes At Rate 1	$ 3362.96
Taxes At Rate 2	$ 0.00
Total Income	**$ 93021.41**

Total Cars Washed	10402
Total Invalid Car Length	4
Max Car Length Violation(s)	34
Duplicate Receipt(s)	0

Relay Override Activity

Relay Number	# of Times	Total Seconds
No Override Activity		

Figure 68. Monthly Summary Report

Yearly Summary Report

To view a yearly summary report, follow these steps:

- Select the **Reports** menu, select **Shift**, and then select **Yearly Summary**. The **Yearly Summary Report** screen appears.

CHAPTER 12:
Tunnel Controller Actions

This chapter includes instructions on accessing the Tunnel Controller Actions, and the item descriptions for Bump Shift, Test Pickup Bed Sensor, and Get Distance to Tunnel Floor.

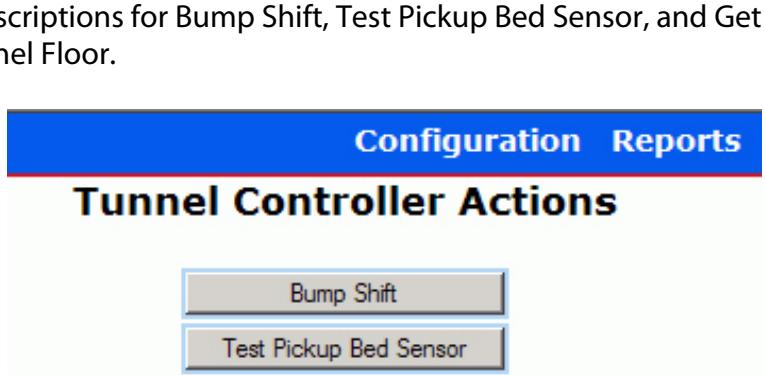


Figure 69. Actions Menu

Bump Shift

The **Actions** menu is available to bump a shift from the WBC web application.

Click **Bump Shift** to create a new shift for the Web-Based Controller. You can see a list of shift reports in the **Reports** menu, and then select **Shift**, and then select **Daily Detail**.

Test Pickup Bed Sensor

Pepperl+Fuchs Ultrasonic Sensor

From the Actions menu, you can click the **Test Pickup Bed Sensor** button to test the *Pepperl+Fuchs* ultrasonic sensor.

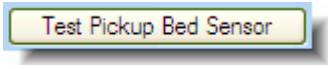


Figure 70. Test Pickup Bed Sensor

The sensor will read several times. Results are written to the CentralLogServer.exe application log file as follows:

```
## Reading distance: 36 inches ##
```

This can be used to determine that the sensor is operational and calibrated before proceeding with the sensor setup. Also, this can be used for diagnosis through support.

APG IRU-2XX4/2XX4 Series Ultrasonic Sensor

From the Actions menu, you can click the **Test Pickup Bed Sensor** button to test the *APG*® IRU-2xx4/3xx4 series ultrasonic sensor.

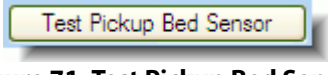


Figure 71. Test Pickup Bed Sensor

The sensor will read five times. Results are written to the CentralLogServer.exe application log file as follows:

See the WBC Installation Guide Communications Wiring chapter for more information on wiring the sensor.

Get Distance to Tunnel Floor

After you have installed and tested the pickup bed sensor, you can use the command, Get Distance to Tunnel Floor, to calculate the distance from the sensor position to the floor.

Every time you move or replace the sensor, you need to calibrate it each time by clicking the Get Distance to Tunnel Floor button.

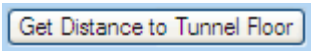


Figure 72. Get Distance to Tunnel Floor button

Calibrate Pickup Bed Sensor

1. From the Actions menu, select the **Distance to Tunnel Floor** button.
2. You don't see anything happen but click of the button. The results would appear if you opened the CentralLogServer.log.

Results are written to the CentralLogServer.exe application log file as follows:

```
[06/30/2010 12:11:54 pm] { ## Reading Distance: 75
inches ## }

[06/30/2010 12:11:54 pm] { ## Reading Distance: 75
inches ## }

[06/30/2010 12:11:55 pm] { ## Reading Distance: 75
inches ## }

[06/30/2010 12:11:55 pm] { ## Reading Distance: 75
inches ## }

[06/30/2010 12:11:56 pm] { ## Reading Distance: 75
inches ## }

[06/30/2010 12:11:57 pm] { ## Distance to Floor Recorded
as: 75 inches - OK? ## }
```

The system uses this measurement for relays with the **Part of Car** set to **Upper Side**. This is typically used with foam applications.

CHAPTER 13:
WBC Keyboard and Monitor

This chapter provides information on the WBC on-board keyboard and monitor available for basic administrative actions and viewing Reports.

Logging In

You can log in with your user name and password:

1 Press the Enter key on the keyboard.
The login screen appears.

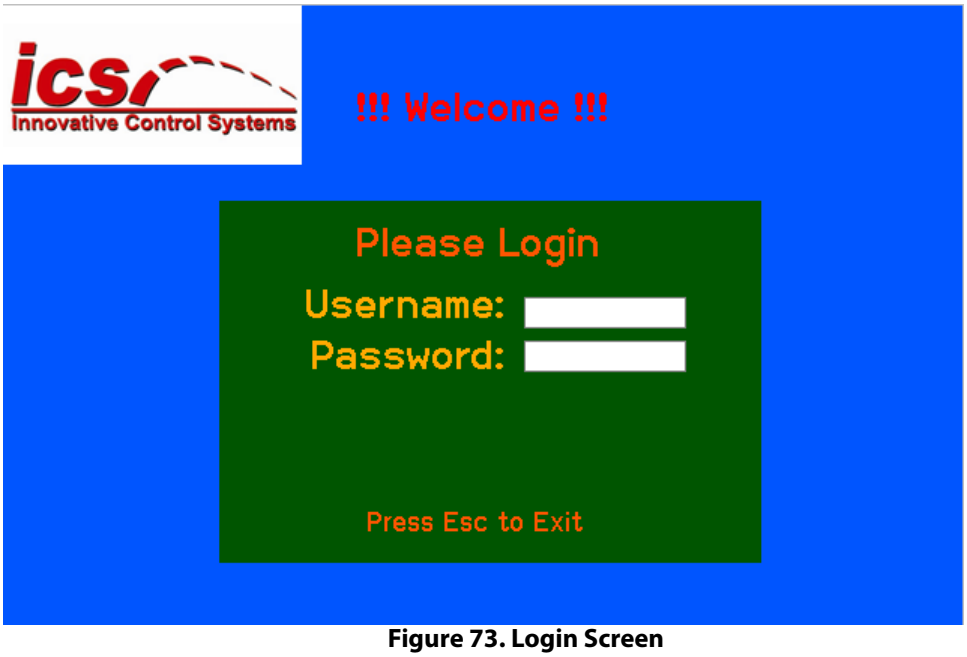


Figure 73. Login Screen

2 In the **Username** box, type your user name and then press tab. User names must be between five and nine characters.

3 In the **Password** box, type your password. Passwords must be between six and nine characters.

4 Press enter to submit your user name and password.
The main menu screen appears.

Main Menu

The main menu is available for basic administrative tasks.

NOTE: In previous releases, the Bump Shift command was available on the main menu screen. Bump Shift is now available on the **Actions** menu on the main menu screen as well as in the WBC web interface.

Figure 74. Main Menu

To select commands on the WBC main menu:

1 Use the arrow keys on the keyboard to navigate to a command.

2 Press the **Enter** key to select the command.

NOTE: After 60 seconds of inactivity, the main menu will reset back to the WBC status screen. This security time-out period is pre-configured by ICS and cannot be altered.

Table 31: Main Menu Actions

Command	Description
Start Wetdown	Select Start Wetdown to start the conveyor. The tunnel will go through the normal start process, sounding the horn first, delaying the selected amount of time, and then actually starting the conveyor and equipment. Start Wetdown will make tunnel equipment begin operating. This could result in serious injury or death if a person is inside the tunnel at the time the equipment starts operating. Before you start a wetdown, make sure nobody is inside the tunnel or near the equipment.
Stop Wetdown	If you select Stop Wetdown after the wetdown has begun, then the tunnel equipment and conveyor will stop.
Actions	1. Select Bump Shift to create a new shift for the Web-Based Controller. You can see a list of shift reports in the **Reports > Shift** menu. 2. Test Pickup Bed Sensor. 3. Get Distance to Tunnel Floor.
Stop Conveyor	Stops the conveyor. Equipment remains active.

Table 31: Main Menu Actions

Command	Description
Configurations	From the Configurations menu, select Tunnel Settings, and then General to Change **Wash Input Device** to toggle between the ICS POS (e.g. Auto Sentry) and keypad mode. This is helpful if, for example, your site includes an Auto Sentry communicating with the WBC. If the Auto Sentry were to go down, you could change to keypad mode so you would not be down. Once the Auto Sentry is brought back up online you can switch back to the Auto Sentry. If your site has a server or management computer communicating with the WBC, **Change Input Device** is a once-and-done command. It will switch to keypad mode. But after that, to get back to the ICS-POS mode, you must login to the WBC web interface software, and then select **Configuration > Tunnel Settings > General Settings**. In the **Wash Input Device** field, select **ICS-POS**.
Calibrate Autopulse	Sets the autopulse duration. The conveyor must be running for this calibration to take place. The actual pulse is sampled for a period of 30 seconds before setting the value. Once the autopulse is calibrated, the actual value is set in the **Auto-Pulse Period** field of the **Pulse Settings** menu (**Configuration > Tunnel Settings > Pulse**). The value also appears on the built in monitor status line. The units for the **Auto-Pulse Period** are $1/10^{th}$ seconds. This means the system generates a pulse for every configured/calibrated **Auto-Pulse Period**. **NOTE**: Added password protection requires first-time users to contact ICS support for a password. Once this password is obtained, the user can change it to one of his own choosing.
Reports	Shift detail reports are available in three different formats: Daily Shift, Monthly or Annual reports. **NOTE**: To retrieve daily totals for Multiple shifts on a given day, manually add together the daily shift report totals for that day.

CHAPTER 14:
Configure and Start Wetdown

This chapter instructs how to configure the Wetdown Period in the WBC interface, and how to use the Touch IT (Input Terminal), Touch EMS, or the WBC display to select a Wetdown command.

Configure a Wet Down

The Wetdown function is available at the Touch IT only if the Wash Input Device field is set Stack and Control from the General Settings of the WBC interface.

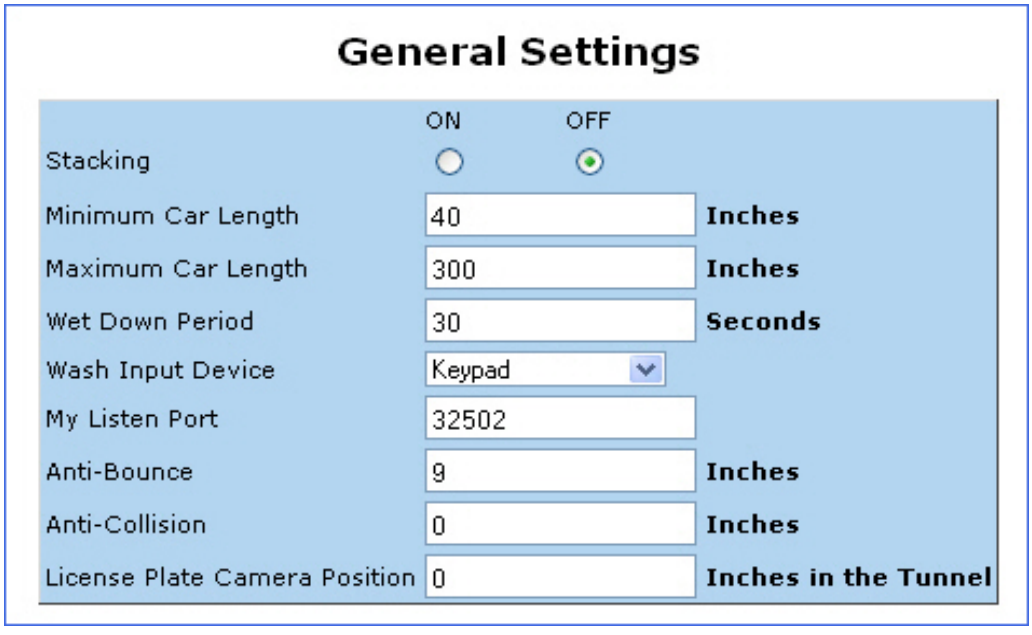


Figure 75. General Settings

Set a Wet Down Period

It is the **Wet Down Period** setting in the Tunnel Master® *wbc* interface that controls the actual wet down time when you issue a Start Wetdown command at the Touch IT (input terminal). When the countdown timer on the Touch IT (input terminal) reaches zero, then the wetdown stops regardless of where the timer is on the WBC display.

1 In the WBC interface **Configuration** menu, select **Tunnel Settings**.

2 Select **General**.

3 In **Wet Down Period**, type in an amount of seconds.
The Wet Down Period is automatically saved.

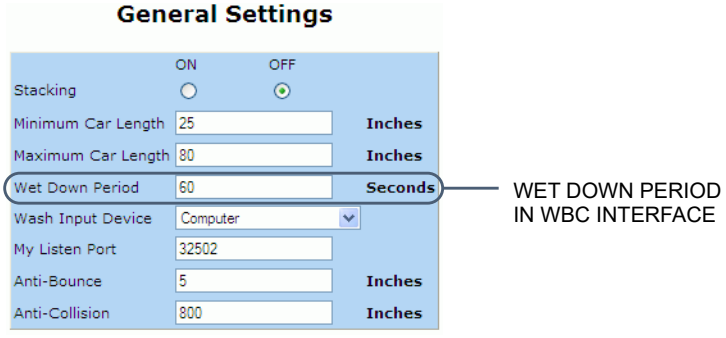


Figure 76. Wet Down Period in WBC Interface

The **Wet Down Period** setting is used only if the Wetdown command is issued

Countdown Times

You may notice that the Tunnel Master® *wbc* interface, Touch EMS, and the Touch IT displays do not exactly match countdown times for a Wet Down command. This is because the Tunnel Master® *wbc* display starts counting down based on when the actual wet down relay turn on.

On the other hand, the Touch IT starts counting down as soon as the Wet Down command is issued. For example, if your tunnel requires 10 seconds to sound the horn, this 10 seconds will be counted as part of the wet down on the input terminal display, even though the horn relay is not a wet down relay.

Set the **Wet Down Period** in the WBC interface to the exact wet down time (e.g., 100). This is the amount of time you want the actual wet down relays to fire and apply water to the equipment.

For example, the **Wet Down Period** in the WBC interface is set to 100, the equipment may only get 90 seconds of water (100 seconds minus the 10 seconds required to sound the horn). The wet down will end when the Touch IT counts down to zero.

Wetdown

You can start a wetdown at the Touch IT, Touch EMS, and the WBC display.

Touch IT Wetdown

You can use the **Wetdown** function through the Stack N Control menu of the Touch IT.

Figure 77. Start Wetdown Function on Touch IT (Input Terminal)

To initiate a Wetdown command at the Touch IT (input terminal), follow these steps:

1 Open **Stack Management**.

2 Press the **Start Wetdown** button on the touch screen.
The Gate Management Screen will appear.

3 Press the **Start Wetdown** button on the touch screen.
The Input Terminal LCD will display a countdown. The wet down will complete when the countdown reaches zero.

NOTE: To cancel a wet down, press the **Stop Wetdown** button.

Touch EMS Wetdown

The Touch EMS (Entrance Management Sign) is an optional piece of equipment you can purchase for your car wash. If you have purchased the Touch EMS, you can use the Wetdown function through the Stack N Control menu of the Touch EMS.

Figure 78. Entrance Management System - Start Wetdown

1 The operator of the Touch EMS can touch the screen.
The Stack Management tab appears.

2 Select the **Start Wetdown** button.
The Gate Management tab appears.

3 Select the **Start Wetdown** button.
The wetdown process begins.

NOTE: To Cancel the Wetdown, select the **Stop Wetdown** button.

Start Wetdown at the WBC Display

You can issue a **Start Wetdown** command via the WBC monitor and keyboard.

1 From the WBC display keyboard, press the Enter key.
The login screen appears.

2 Type your Username and Password, and then press the **Enter** key.
The Main Menu appears.

3 Select **Start Wetdown**.

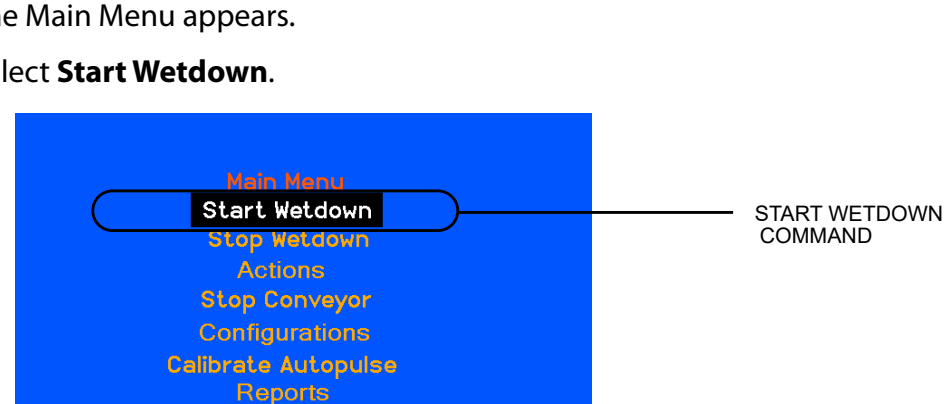


Figure 79. Start Wetdown Command on WBC Built-in Monitor

After selecting the **Start Wetdown** command, the **Wet Down Period** field in the WBC interface is used to determine the count down time.

For safety reasons, ICS recommends that you issue a Wet Down command from a location where you can also view the tunnel to ensure it is clear of obstructions and people. Issuing a Wet Down command if you cannot see inside the tunnel can be dangerous. You can set the warning horn must to allow warning for safe clearance of the tunnel before the process begins. The Wet Down command turns on the conveyor relay.

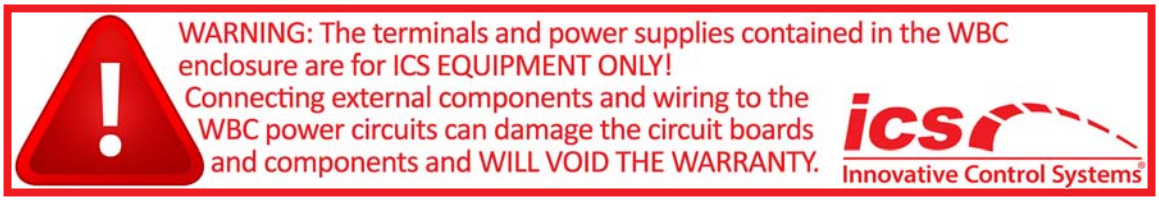
CHAPTER 15:
Entrance Keypad

This chapter discusses the Entrance Keypad which is the service / output station at the tunnel entrance of the car wash.

- Services sold to the customer are entered into the Entrance Keypad
- Vehicles are processed at the front of the wash with Entrance Keypad.
- Stack N Control can be managed at the Entrance Keypad.
- Some equipment diagnostics occur at the Entrance Keypad.

Entrance Keypad Functions

NOTE: In order to utilize the full functionality of the Entrance Keypad, it is very important that the electrician adhere to the wiring instructions provided with the Relay Box or WBC. For more installation instructions, see the WBC Installation Guide.



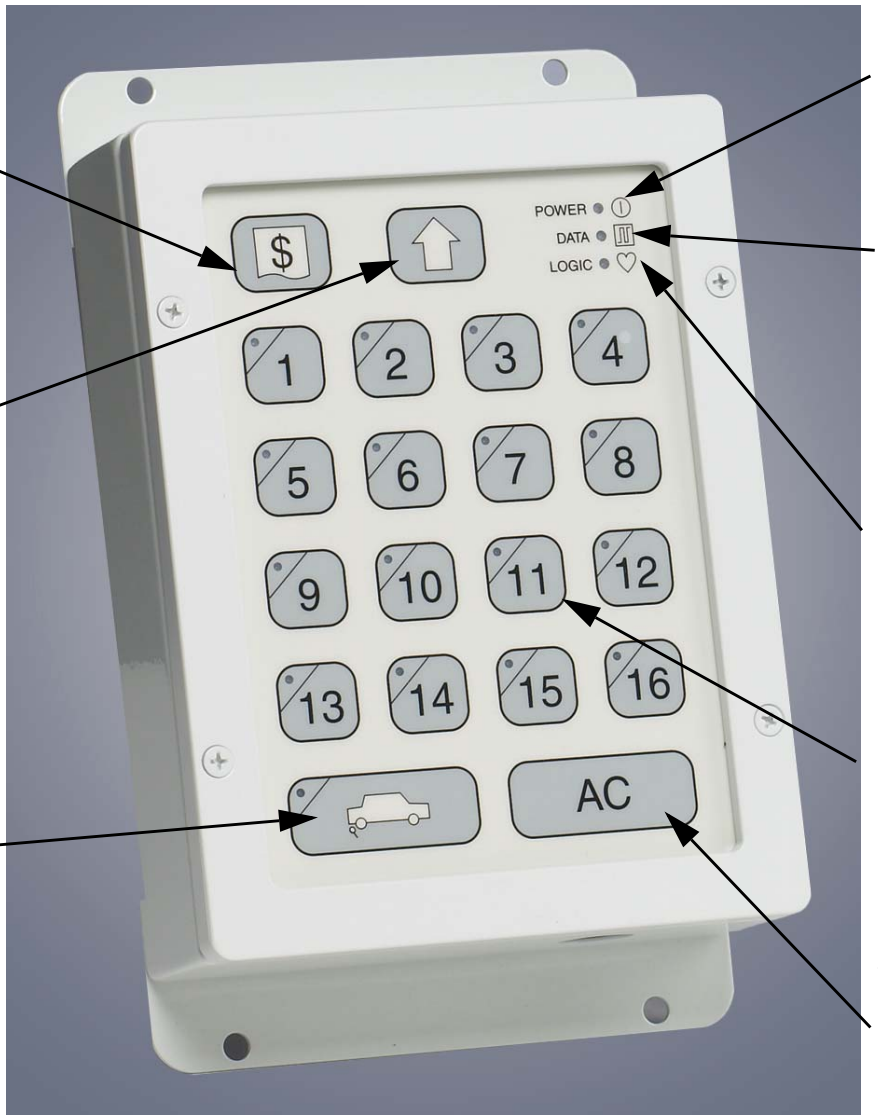


Figure 80. Entrance Keypad

The following buttons are the functions for the Entrance Keypad:

Table 32: Entrance Keypad Buttons

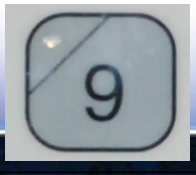
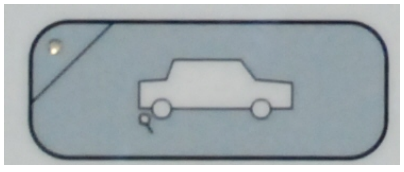
Button	Function
	This button is an accept service button used like an enter key. When the **$** dollar button is selected, a receipt will print (printer is optional).
	Numeric buttons (1-16) are used to program services or retracts into system prior to processing vehicle.

Table 32: Entrance Keypad Buttons

Button	Function
	Roller button when selected will activate the roller relay.
	In ICS-POS mode, when the AC button is selected, the stack displays in blinking Led lights on the numeric buttons. Number one is the closest to the tunnel entrance. The stack blinks for 5 seconds.

NOTE: All buttons, with the exceptions of the **AC**, **$**, and **Roller** buttons, have red indicator lights in the upper left-hand corner of the button. These red indicators will light after the button is selected and stay lit until the vehicle has started through the gate switch and reached Minimum Car Length.

Stack with Entrance Keypad

NOTE: To clear a button selected in error, simply press the button again, and the LED light will go out.

You can add services, remove services, select retracts, and remove a car from the stack with the Entrance Keypad. First, setup your WBC to Keypad for stacking.

Stack with Keypad Only

1. In Tunnel Master® *wbc*, from the **Configuration** menu, select **Tunnel Settings**, and then select **General**.
2. In Stacking, click to select **ON**.
3. In Wash Input Device, select **Keypad**.
4. On the Keypad, press the **AC** key.
   The blinking lights represent the cars on stack. Lights flash for 5 seconds.

Change Service and/or add Retract on Keypad

To modify a car's service in the stack, follow these instructions:

1 On the keypad, press the **AC** button.
The flashing lights indicate how many cars are in the stack. The lights flash for 5 seconds. Number 1 being closest to the tunnel entrance.

2 Press to select the numeric button that represents the car in the stack you would like to modify.
The service that is selected for that car will light up on the keypad.

3 To clear, press to select the numeric button of the service you wish to clear.

4 Press to select the numeric button of the wash service or retract.

5 Press the **$** dollar button to confirm the wash selection.
The lights will flash again displaying the cars on stack.

NOTE: Setup for Retracts is on the WBC services page.

Add a Car to Stack

To add a new car to the end of the stack, follow these steps:

1 On the keypad, press a numeric button to select a service.

2 Press the dollar **$** button.
LED lights blink for five seconds displaying the cars currently in the stack. The newly added car with the service is added to the end of the stack.

Remove Car from Stack

Select the car in the stack, remove the service, and then confirm. At that point, the car will no longer be in the stack.

1 On the keypad, press the **AC** button.

2 Select the lit up buttons or services to clear.
The buttons lights will go out.

3 Press to select the dollar **$** button.
The stack will blink and you will no longer see the car you removed light up and the cars move up in the stack. (For example, if you had three cars on stack in position 1, 2 and 3 shown on the numeric keypad, and you removed the 2nd car then only lights 1 and 2 will be lit.)

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Document Version History

Table 1: Document Version History

Document Version	Dates	Reviewer Initials	Description
1.0	04/07/2008	JL-S, RH, SD	First release.
2.0	09/24/2008	JL-S, RH, SD, NS, MR	Updates based on SRN-0048. Added Getting Started chapter. Added Using the Built-In Keyboard and Monitor chapter. Added Using the Input Keypad chapter. Full document review by listed contributors.
3.0	12/22/2008	BB, JD, SD, RH, TH, JJ, BM, JP, MR, NS, RW	Updates based on SRN-0053. Added **Timed Outputs Menu** chapter. Added new section for RS-485 settings. Added new section and new drawing for **Pickup Bed Retract** settings. Updated most screen shots and various text descriptions in **Tunnel Settings Menu** chapter. Reorganized sections in **Tunnel Settings Menu** chapter to match menu layout on GUI. Added Test Pickup Bed Sensor section in **Actions Menu** chapter. Switched FRONT HALF OF CAR and REAR HALF OF CAR in figure titled Front Bumper Start and Extend per Jason Miller's request. Removed references to Touch.exe and DeviceINT.exe in **Introduction** chapter per Sham's request. Clarified Roller Control ON/OFF settings per Nicks' request.

Table 1: Document Version History

Document Version	Dates	Reviewer Initials	Description
4.0	7/8/2009—9/23/2009	SD, RH, JM, JL-S	Updates based on BSRN-0011, BSRN-0015. • Replaced Administrative Settings screen shot. • "Zero-dollar services can be used for retracts." • New section "About Zero-Dollar Services". • Replaced Inputs screen shot. • Added "About Panic Stop" in Inputs chapter. • Added description of Conveyor Relay. • Added "About the Conveyor Relay." • Added new description for Roller Handling. • Added new sections for shift reports. • Updated splash screen in Configuring an Input for Monitoring section. Screen now shows Start Wash instead of Conveyor. • Removed note about needing to bump a shift before deleting a service. • Added POS Gate Control Settings section in Tunnel Settings chapter. • Updated Relay Configuration screen to show Output Relay.X in first column header. • Added Pickup Bed to Part of Car description in Relay Configuration table. • Updated Timed Output Profiles chapter and added new section, "Determining Which Timed Output Profiles are Active." • Added, "About Wash Valet Setups" and "Configuring Wash Valet Setups" in the Tunnel Settings chapter.

Table 1: Document Version History

Document Version	Dates	Reviewer Initials	Description
5.0	06/14/2010— 07/06/2010	SD, RH, JM, GG, BM, RW, JL-S	Updates based on Mod-SRN-00XX - WBC Controller V1.08B18.doc and WBCPowerManagementSRS.doc. • Removed PushButtonRow and PushButtonColumns definitions in General Settings table. • Added Vehicle Upper/Lower Output Settings. • Deleted reference to needing a hard-wired input in Auto-Stop Period definition. • Added External to Relay Configuration table. • Added Upper Side to Relay Configuration table. • Added Inrush Time and Start Priority to Relay Configuration table. • Added new section: About Power Management for the WBC. • Changed references from "Inputs" to "48 Auxiliary Inputs." • Added Pushbutton Password to Administrative Settings table. • Added "Push Button" and "Keypad and Push Button" definitions in General Settings table. • Updated screen shots for reports. • Total Cars Washed, Total Invalid Car Length, Max Car Length Violation, clarified in Reports chapter. • Cleared Count, Void Count removed in Reports chapter. • Duplicate Receipt added in Reports chapter. • Added Get Distance to Tunnel Floor in Actions chapter. • Added Change Wash Input Device description in the Keyboard and Monitor chapter. • Added About Push Button Inputs in the 48 Auxiliary Inputs chapter.
6.0	10/3/2012 - 10/22/2013	RH, JM, BM, SD, AD, WS	Updated based on V1.11 B28 • Wetdown turns on conveyor relay.
7.0	11/18/2015	WS, BM	Added WashConnect. Updated with new style.
8.0	11/20/2015	WS, BM	Updated based on V1.2.B28.
9.0	5/12/2016	WS	Updated with new look.
10.0	1/6/2017	WS, TR	Added new features: Idle Conveyor. Pickup Bed Sensor.

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