PimpStar Wheels
Installation Instructions

Overview

The wheels are installed on a vehicle in three steps: **Electrical Wiring; Mechanical Installation**; and **Programming**. While the PimpStar wheels are highly sophisticated, the installation procedure is quite straightforward and requires only basic automotive skills and tools. Please read through the instructions in their entirety before attempting to perform an installation in order to familiarize yourself with all of the steps and procedures.

WARNING!

Make certain that the vehicle is supported securely before removing wheels or getting under the vehicle.

Do not probe or disconnect any of the vehicle's OEM wiring if you do not know what its function is.

When routing wires, be sure to keep them clear of sharp edges, heat sources, and moving parts; and leave sufficient length for service loops. Secure all wires with cable ties at regular intervals to prevent them from dislodging or becoming tangled in moving components. It is recommended that all wires be run in wire loom to protect them.

Be sure to torque the lug nuts to the manufacturer's recommended specifications.

You will be working in the vicinity of the vehicle's brakes and suspension. Never loosen or remove any fasteners relating to either of these systems; and use caution not to route any wiring or mounting brackets in such a manner that they could interfere with these systems.

The mounting brackets which secure the Trolley Assembly to the vehicle will be in close proximity to the brake components. Make sure the mounting brackets do not interfere with the braking function. The brackets must be kept clear of the brake drums/rotors and must not interfere with the clamping or sliding action of the brake calipers.

Remember that PimpStar wheels are heavier than OEM wheels and may adversely affect vehicle performance, handling, braking and or ride comfort.

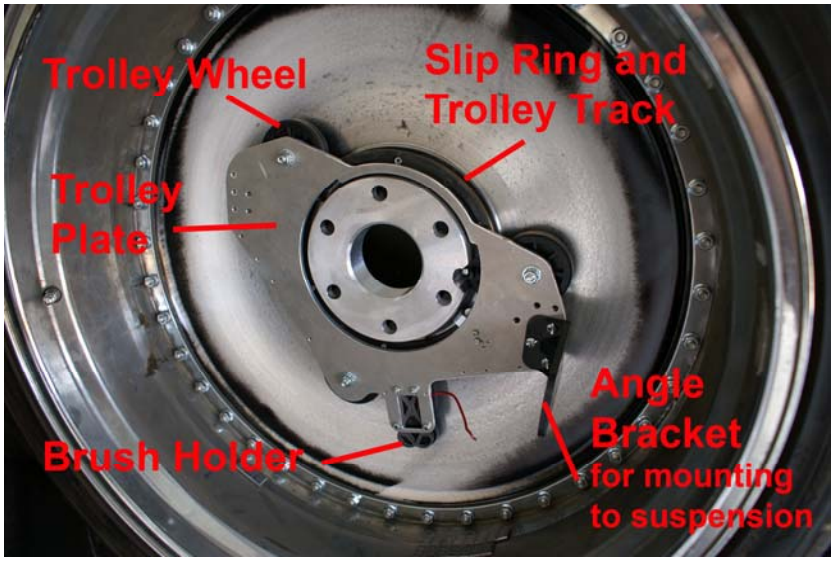
When changing a flat tire, it is necessary to disconnect both the power connection to that wheel as well as the mounting bracket which secures the trolley plate to the anchor point.

PimpStar wheels may be distracting to other drivers and are intended only for off highway or show use.

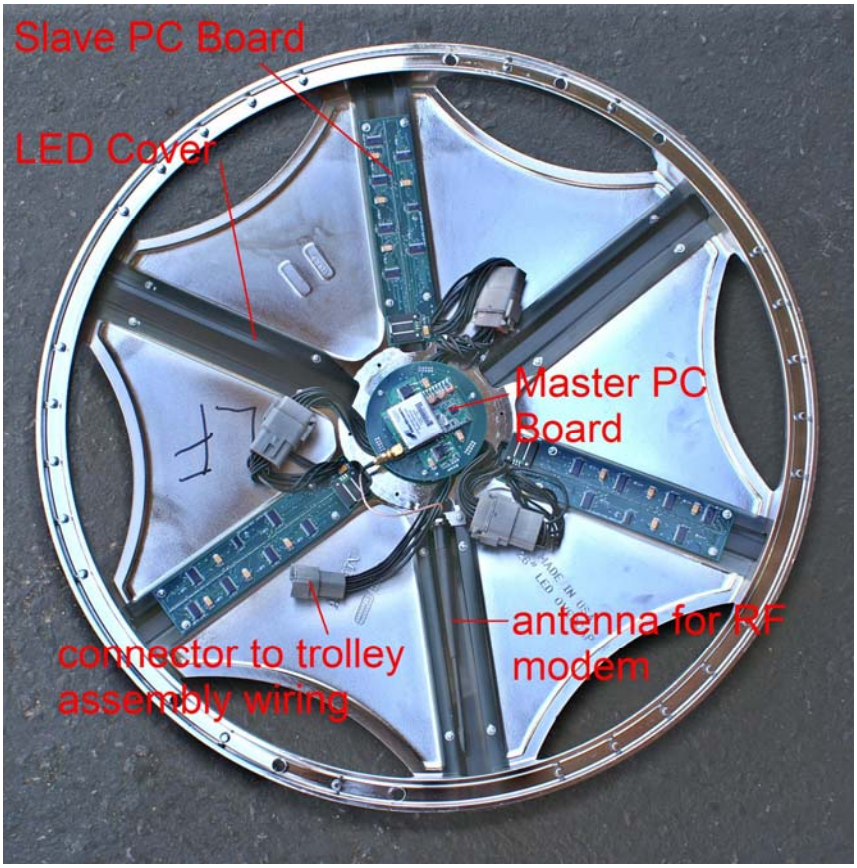
Tools Required

Wire cutters/strippers
Solderless connector crimp tool
Phillips head screwdriver
Allen key (provided)
Test light or multi-meter

Component Overview




Overcap
Center Cap
LED Covers
overcap mounting
holes (6 total)


Slave PC Board
LED Cover
Master PC
Board
antenna for RF
modem
connector to trolley
assembly wiring

Electrical Wiring

Begin by raising the vehicle off the ground, supporting it securely and removing all four wheels. If a lift is available, this makes the job much easier.

Raise the hood and locate the following:

- the battery (or a +12VDC power bus tied directly to the battery)
- the fuse block (or an ignition switched +12VDC wire or power source)
- a suitable mounting location for the power block

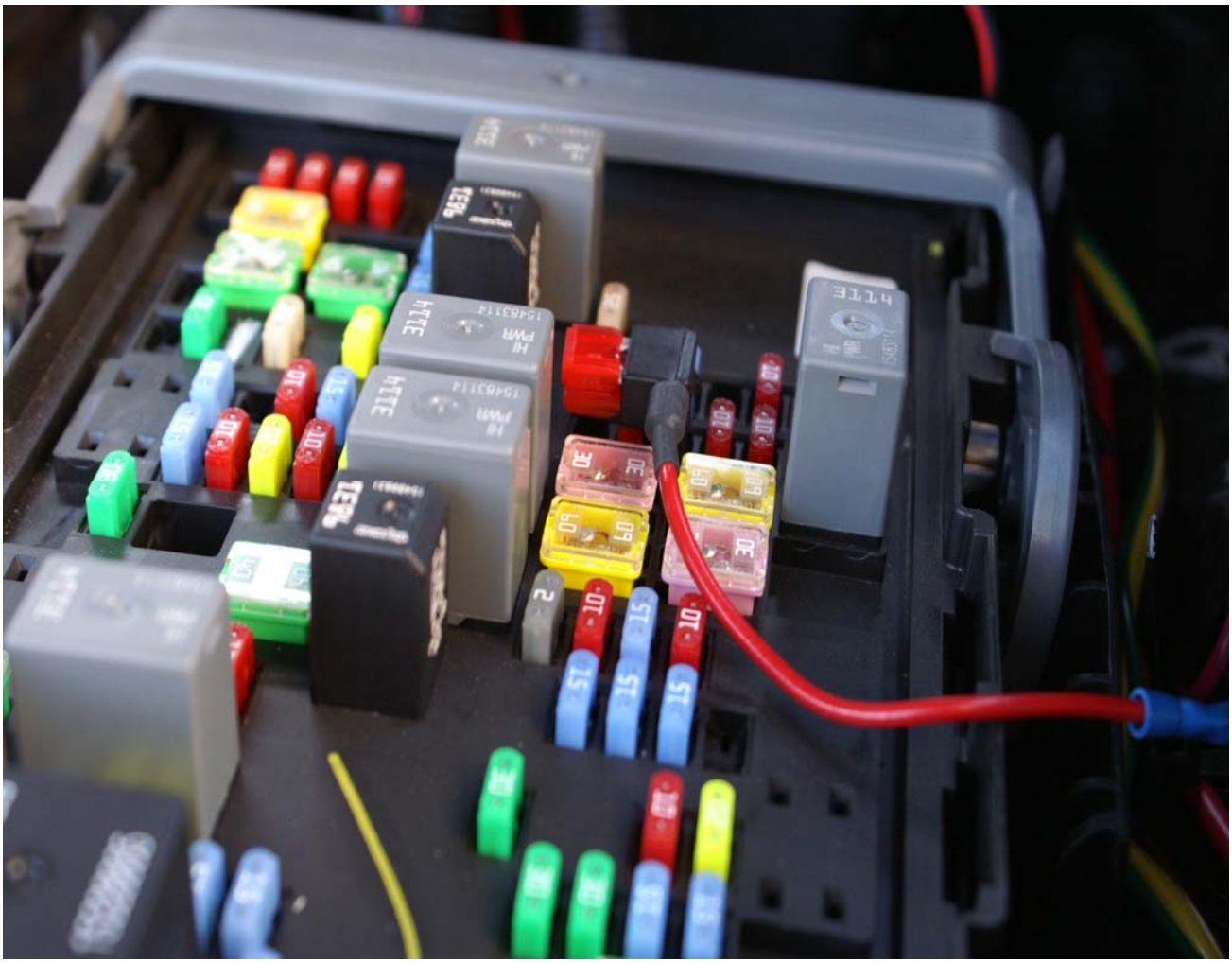
Identify a suitable mounting location for the power block. Ideally this location is close to the battery, the ignition switched power, a chassis ground, and away from any extreme heat sources (e.g. the exhaust), solvents, water, or moving parts. Do not mount the power block at this time, but keep it in the selected mounting location to determine proper wire lengths and routing.

First identify a chassis ground. This is usually any point connected to the chassis or metal body panels. Try to find a fastener which is a ground point and which may be removed or loosened to accept a ring terminal.

Plug the heavy power cable into the power block. You will notice that there is a black ground wire which is attached to this cable. There is also a short black ground wire which is attached to the power block. Both of these wires will need to be connected to a chassis ground. Identify a suitable ground point and secure the two ground wires to chassis ground.

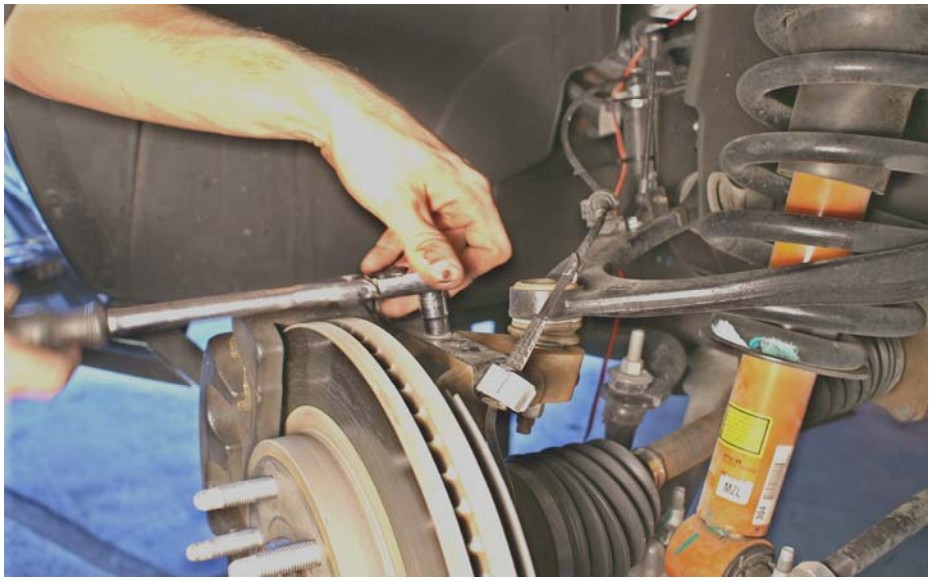
Next, route the heavy gauge red wire to the positive terminal of the battery, or any suitable +12VDC bus. Cut to length, then strip the wire and crimp a ring terminal onto the wire, but do not attach to the battery at this time.

Next, rout the three conductor cable from the power block, through the firewall into the passenger compartment. This cable goes to the supplied rocker switch which is used to turn the electrical power to the wheels on and off from inside the vehicle. Identify a suitable location for the switch, mount the bracket, and run the cable to this location. When passing through the firewall, it is recommended that you use an existing grommeted wire pass through rather than drilling a hole. The green wire in the three conductor cable (at the power block end) must be connected to an ignition switched +12VDC source. It is recommended that you use the supplied fuse tap in order to connect to an appropriate circuit in the fuse block. When wired in this way, the PimpStar wheels will be powered on and off with the ignition key, but may also be turned off when the ignition is on by simply flipping the rocker switch to the off position.



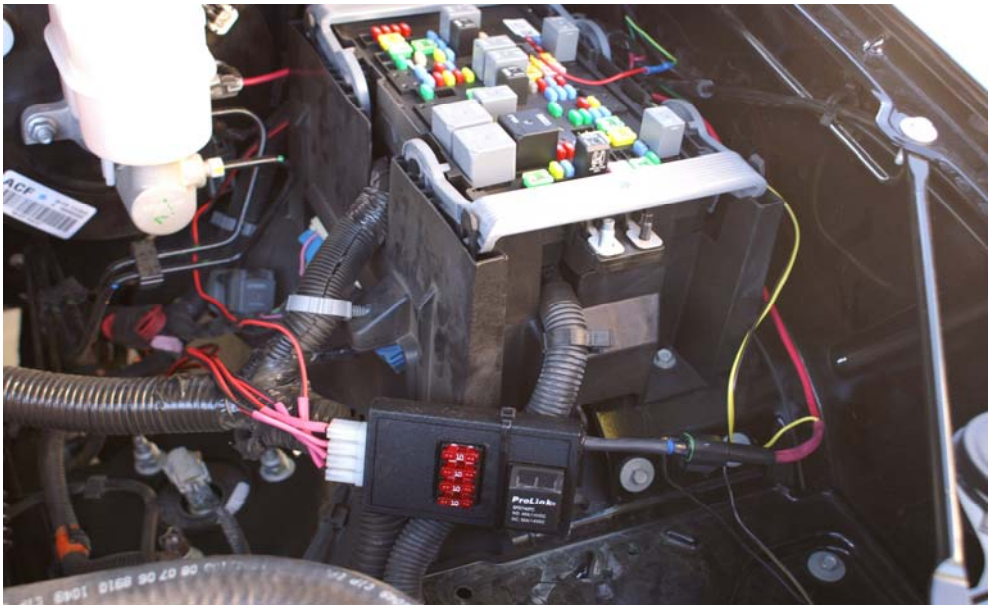
Now, plug in the four red/black two conductor cables into the power block and route each cable to one of the four wheels of the vehicle. These are the wires which carry power and ground to each wheel and they must be routed in such a way as to be protected from heat, road hazards, and moving components. It is recommended that you follow existing wire harness routing. Secure all wires with cable ties.

The black wire is the ground and it must be attached to a solid ground point as close to each wheel's hub or spindle as practicable. Generally, it is possible to find some non-critical fastener (such as a mounting bracket bolt) which may be loosened to accommodate the ground wire termination. Never loosen, remove, or attach to any hardware relating to the vehicle's brake system or suspension.



The red wire will be connected to the red wire attached to the brush holder on the trolley plate when the wheels are mounted. Crimp an insulated spade connector onto the red wire, then secure it out of the way until it is time to mount the wheels.

Finally, connect the ring terminal on the heavy gauge red wire to the battery, plug the supplied relay into the power block, and insert the four fuses into the power block as well. Mount the power block using cable ties. If you have removed any panels or covers to access the battery, fuses, etc. replace them now. Make sure the red wires with spade terminals at each wheel are not shorted to ground.



Test the system to make sure the wiring has been completed correctly. To test, turn the vehicle's ignition to 'on' (make sure you do not start the engine), flip the rocker switch to the 'on' position (it should illuminate) and use a test light or multi-meter to verify that +12VDC is present at each wheel's red wire (spade connector) and the black wires are properly grounded. Flip the switch to 'off' and turn off the vehicle ignition.

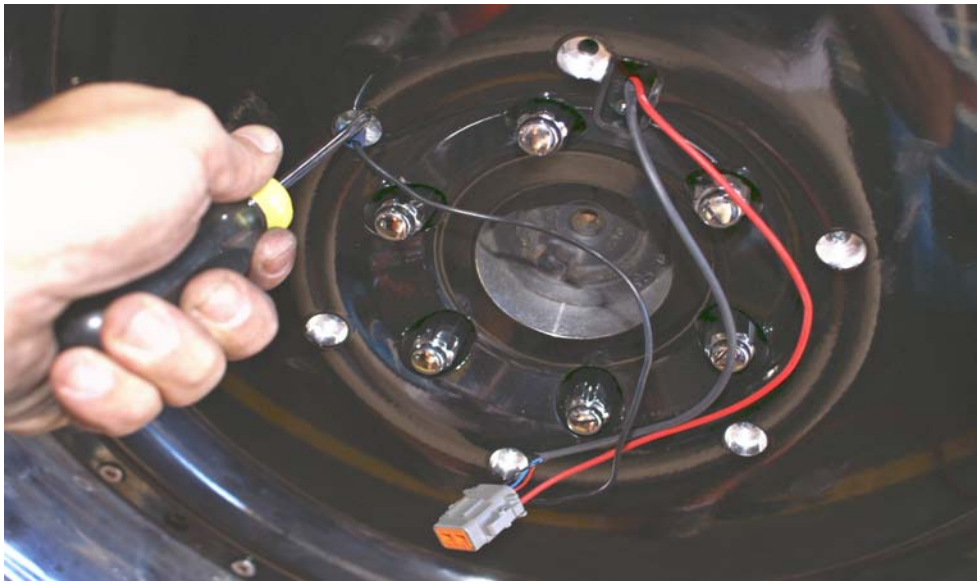
You are now ready to mount the wheels.

Mechanical Installation

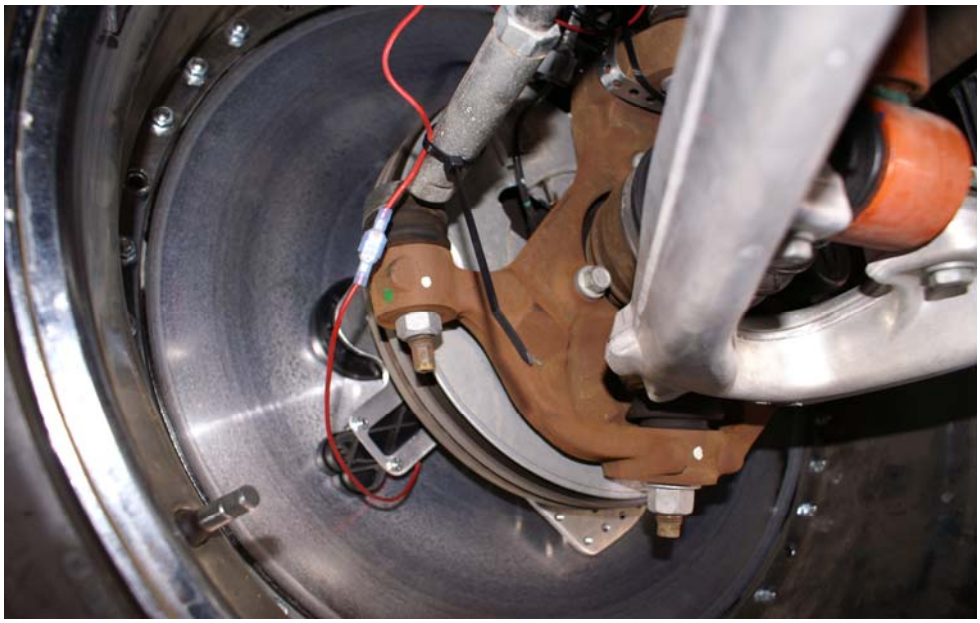
PimpStar wheels are shipped with the trolley plate assemblies pre-mounted to protect them from damage in transit. It will be necessary to remove these assemblies before mounting or balancing tires.

Important note: when balancing the wheels/tires, be sure to install the six long machine screws/nuts which are used to secure the 'Overcap' to the wheel assembly. If these bolts are left out during balancing, an imbalance may result after final assembly.

The trolley plate assembly is held onto the wheel center by six machine screws which can be accessed through countersunk holes on the front of the wheel center. Remove these 6 fasteners and carefully take the trolley plate assembly out of the wheel. Do not pry on the aluminum plate or the rubber wheels to remove the assembly. Take note of the location of the rectangular ‘key’ which registers in the hole in the wheel center through which the wiring connector passes. Mount and balance tires, then replace the trolley plate assemblies, being careful not to over tighten the mounting hardware. These screws are secured in threaded inserts which have been pressed into the plastic material of the trolley track. Over-tightening can cause the inserts to strip or pull out of the track. It is suggested that you use some sort of non-permanent thread locking compound to insure that the hardware does not back out accidentally. Make absolutely certain that you replace the ground wire connection under the head of one trolley track mounting screw near the connector pass-through hole in the wheel center.



Now hold the PimpStar wheels in position on the hub of the vehicle, as though preparing to mount them. Visually inspect the location and orientation of the trolley plate, particularly as it relates to the brake caliper, to insure that there is clearance between the trolley plate and the caliper or any other brake, suspension, or chassis components. You will notice that one section of the trolley plate has been relieved to provide clearance for the caliper. Make sure that the trolley plate is aligned so the caliper resides in this area. It is much easier to do this with a helper. One person holds the wheel in place, while the other is under the vehicle making sure the trolley plate remains properly aligned. In some vehicle applications, the caliper does not protrude into the area occupied by the trolley plate, so trolley plate orientation is not critical (this is also true for drum brake applications).



Once you have identified the proper orientation for the trolley plate, it is time to identify the best means of mounting it to the vehicle. There are two choices: A. Angle Brackets; or B. Mounting Bracket. Choice A is generally preferred because it insures that no unfavorable pre-loads will be placed on the trolley assembly which may cause premature wear of the trolley track, trolley wheels, or sensors. A further advantage of approach A is that it does not require any mechanical removal of the mounting bracket when the wheels are removed from the vehicle (only the power wire needs to be unplugged). But approach A requires very careful installation to avoid interfering with the action of the brakes. Do not use this approach if there is any possibility that the angle brackets will interfere with or get caught in the brakes.

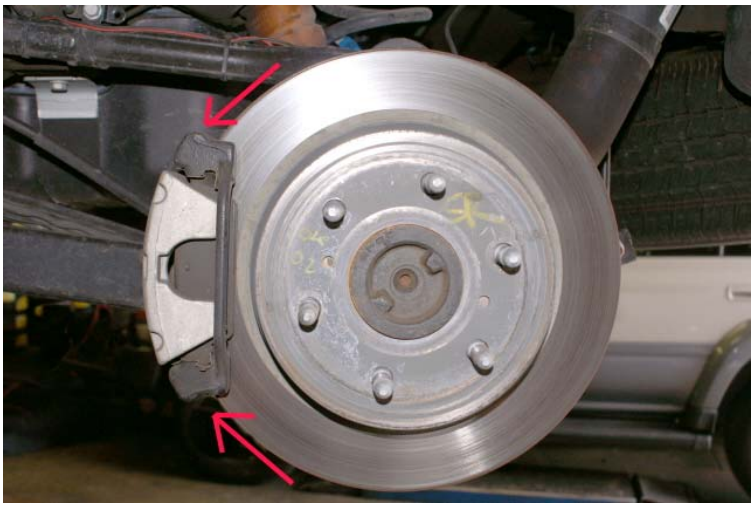
Now install the lug nuts and tighten, securing the PimpStar wheels to the vehicle. Double check to make sure the trolley plate and all PimpStar components remain free and are not pinched by or trapped behind any vehicle components, especially the brake caliper. Use one of the following methods to secure the trolley assembly to the vehicle:

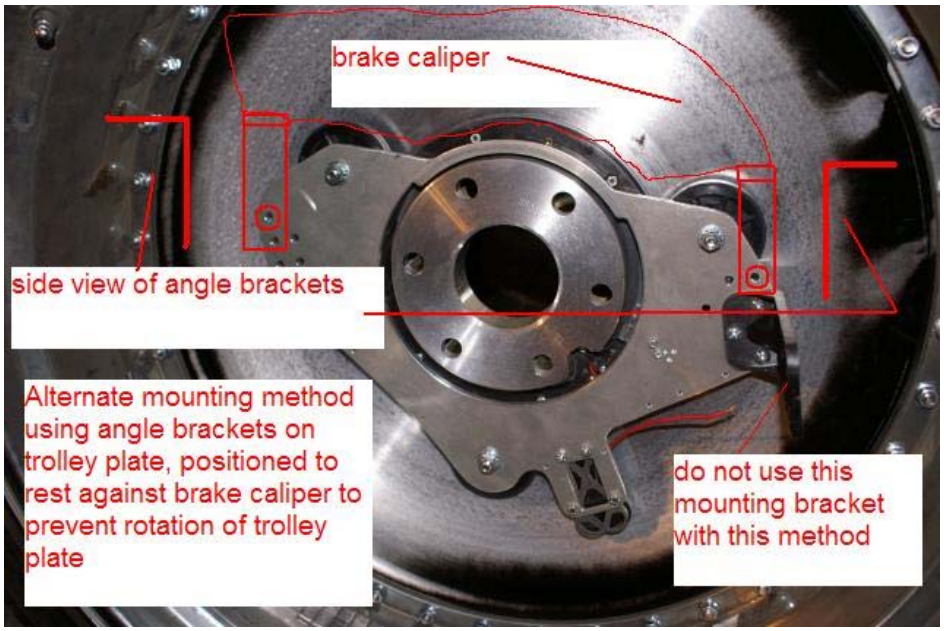
A. Using Angle Brackets to Secure the Trolley Assembly

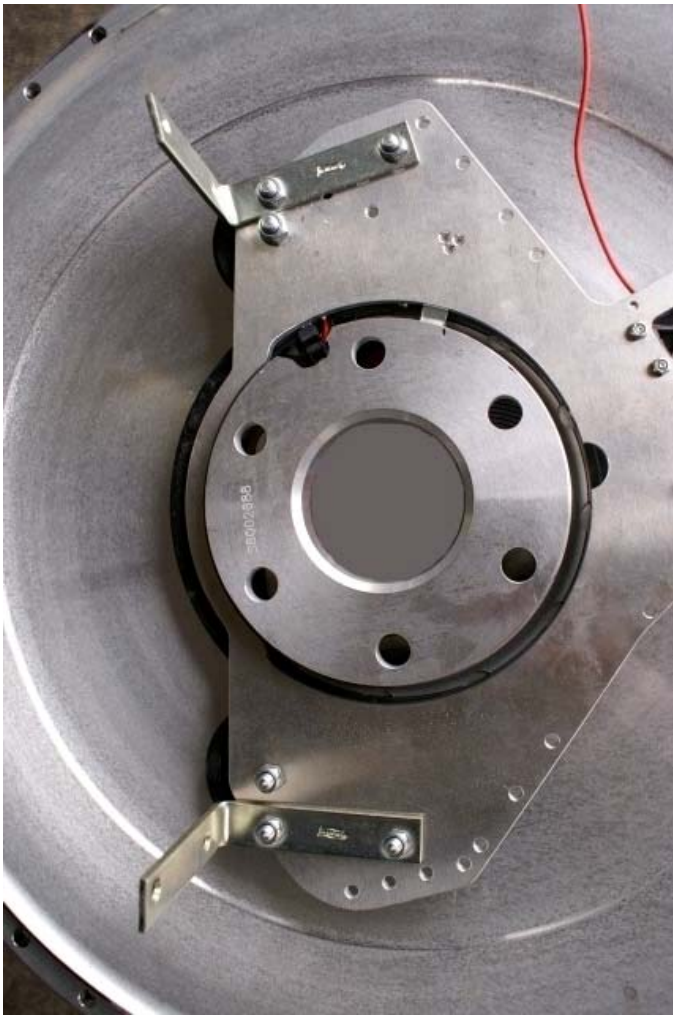
The point of securing the trolley assembly to the vehicle is to prevent it from rotating as the vehicle wheel rotates. The reason the trolley assembly cannot rotate is because it is attached to the vehicle electrical system and if it rotated, it would yank out the power wire. The trolley assembly also houses the wheel speed and position sensors, so it must remain stationary in order to accurately monitor and report wheel speed and position.

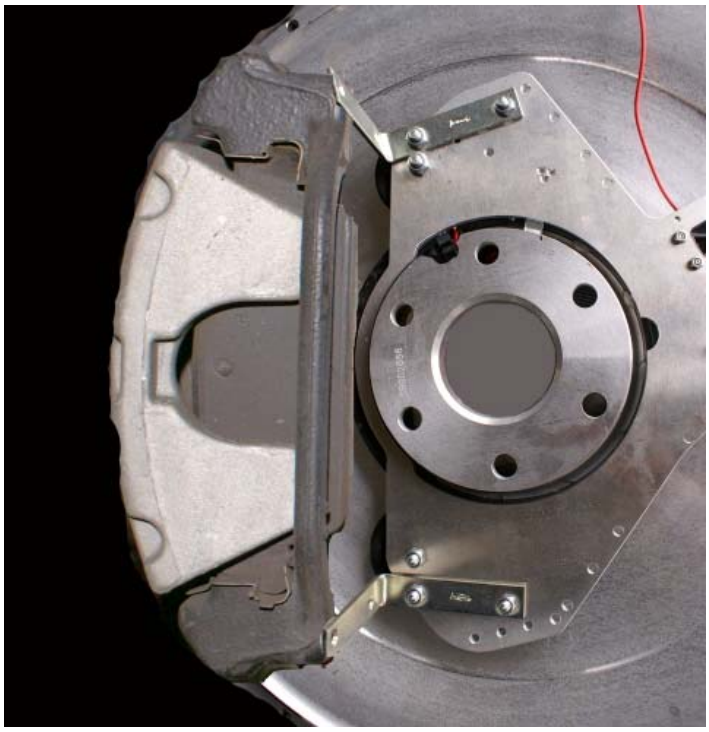
The Angle Bracket attachment method uses 2 angle brackets which are bolted to the trolley plate and which butt up against a stationary object on the vehicle. In most cases, the most readily available stationary object is the brake caliper. Again, it is critical that if the angle brackets are butted up against the brake caliper, they do not interfere with the calipers braking action or movement.

Following are illustrations showing the proper location of the two angle brackets mounted on the trolley assembly butting up against the brake caliper.




brake caliper
side view of angle brackets
Alternate mounting method using angle brackets on trolley plate, positioned to rest against brake caliper to prevent rotation of trolley plate
do not use this mounting bracket with this method





Here is a photo of one angle bracket mounted in position. Note the cable tie securing the bracket against the caliper body.

You may find it useful to use standard angle brackets, or you may bend your own brackets using flat bar stock, or heavy duty perforated flat stock. Note that you may have to drill additional holes in the trolley plate to secure the angle bracket.

B. Using the Mounting Bracket to Secure the Trolley Assembly

If you decide that the mounting bracket is the best way to mount the trolley assembly, first test fit the mounting bracket and look for a suitable anchor point on the vehicle's suspension to attach the mounting bracket to. A suitable anchor point is one which moves up and down with the suspension, does not rotate with the wheel, is not part of or connected to the brakes, and which is within reach of the mounting bracket. The anchor point should not move relative to the mounting bracket regardless of suspension deflection, brake application, or any other variable condition.

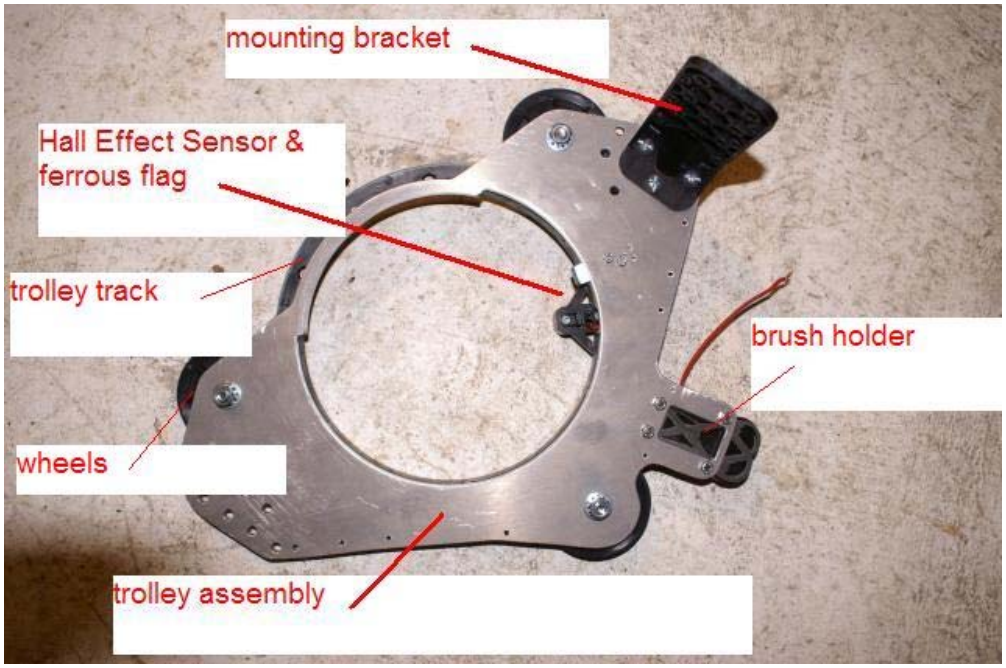
Once a suitable location has been identified, mount the angle bracket to the trolley plate using the bolts and locking nuts provided, but do not secure it to the anchor point at this time-- wait until the wheels have been securely mounted to the vehicle.

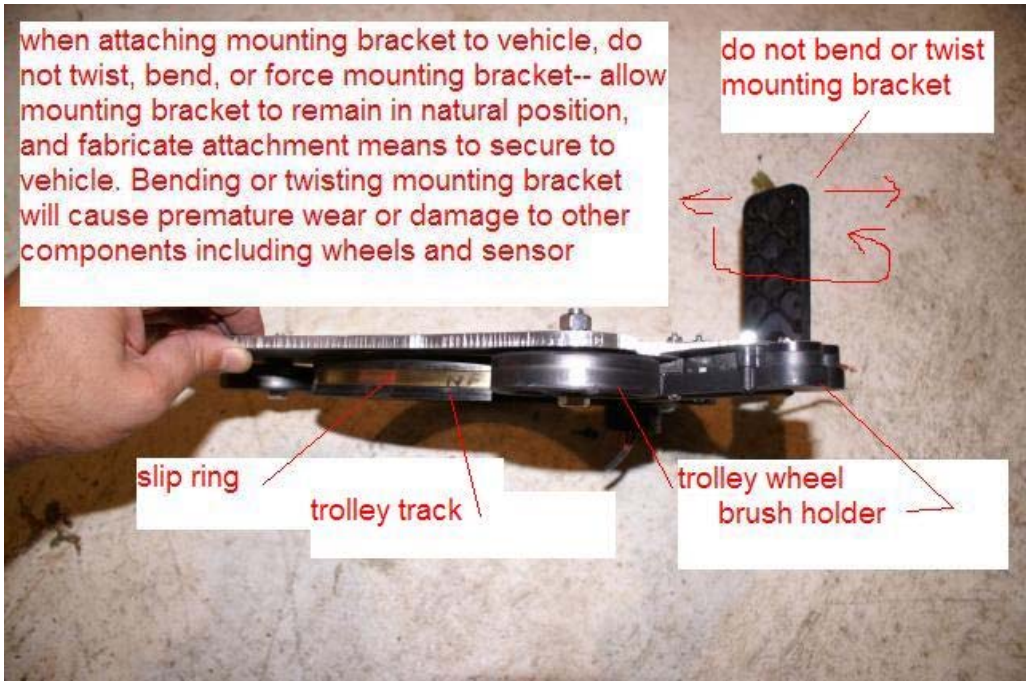
It is now time to secure the mounting bracket to the anchor point identified earlier. You may use threaded fasteners, cable ties, plumber's tape, fabricated brackets, or any means at your disposal to accomplish this with the following caveats:

- It is critical that no pre-load be placed on the angle bracket. This means that you must avoid twisting, bending, torquing, or in any way biasing the position of the bracket away from the position where it naturally falls. If you place a pre-load stress on the bracket, it will cause the trolley wheels to machine themselves to destruction against the trolley track or other components. This will drastically reduce the life of the PimpStar wheel components.
- Bear in mind that whatever means are used to secure the angle bracket to the anchor point must be both secure and easily detachable because the angle bracket will need to be separated from the anchor point whenever the wheel is removed

from the vehicle. This means that if you get a flat tire, you will need to be able to quickly and easily detach the angle bracket (preferably without special tools) to permit removal of the PimpStar wheel in order to put your spare on. Use of a clevis pin or some other positively secured, yet easily removed fastener is recommended.

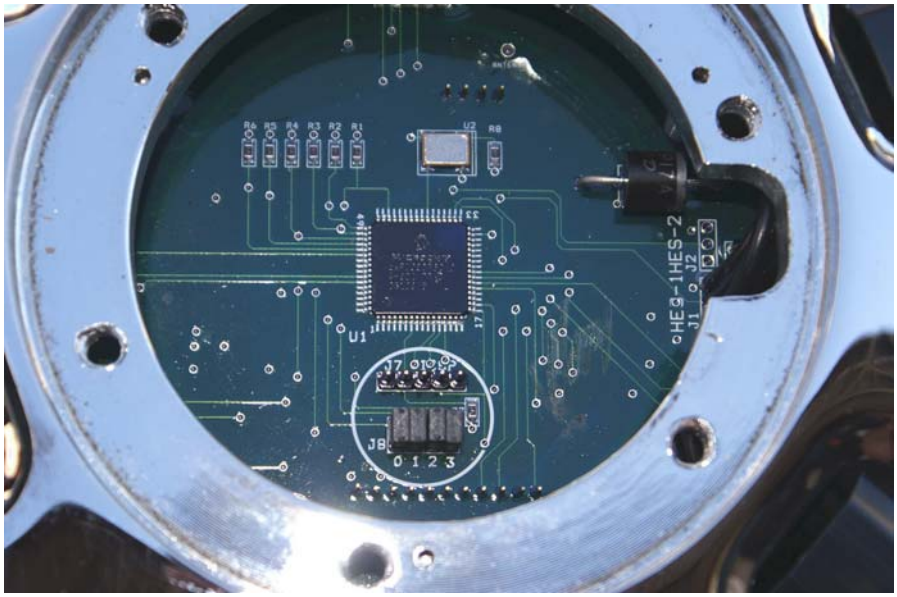
- The mounting bracket must be secured against movement forwards and backwards because the direction of force will change depending on whether the vehicle is moving forwards or in reverse.





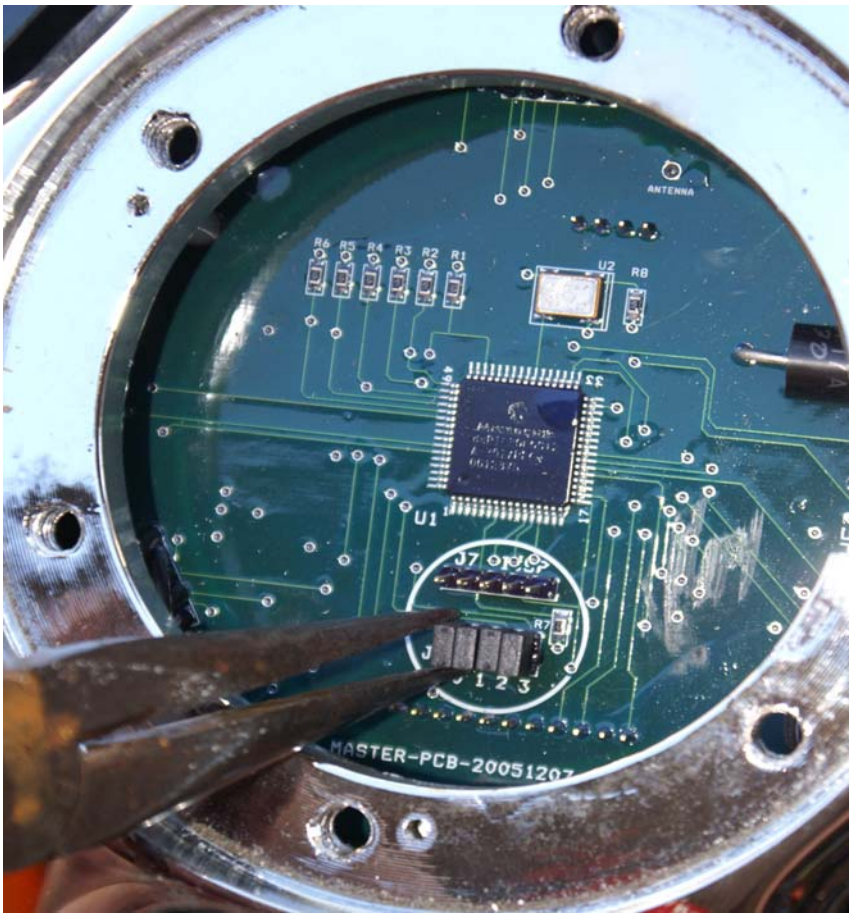
Now, strip and crimp a mating insulated spade connector to the red wire attached to the trolley plate brush holder. Plug this wire into the connector on the red wire run earlier from the power block. You will notice that there is a series of holes in the trolley plate along the edge where the red wire originates. These holes are provided to facilitate securing the wire with cable ties to insure that it is routed away from moving parts, brake components, etc. Make sure the entire power cable (the red wire from the vehicle to the trolley assembly) is securely and safely routed, and adequate service loops have been included to accommodate suspension travel. Fasten as necessary with cable ties.

It is now time to set up the overcaps. When you send images to the wheels, you may specify which wheel each image goes to. In order for the wheels to understand where they are located (e.g. Left Rear, Right Front), the electronics in each wheel (located in the overcap) must be configured for its respective position. Begin by removing the center cap to access jumper rail J8 on the Master PC Board.



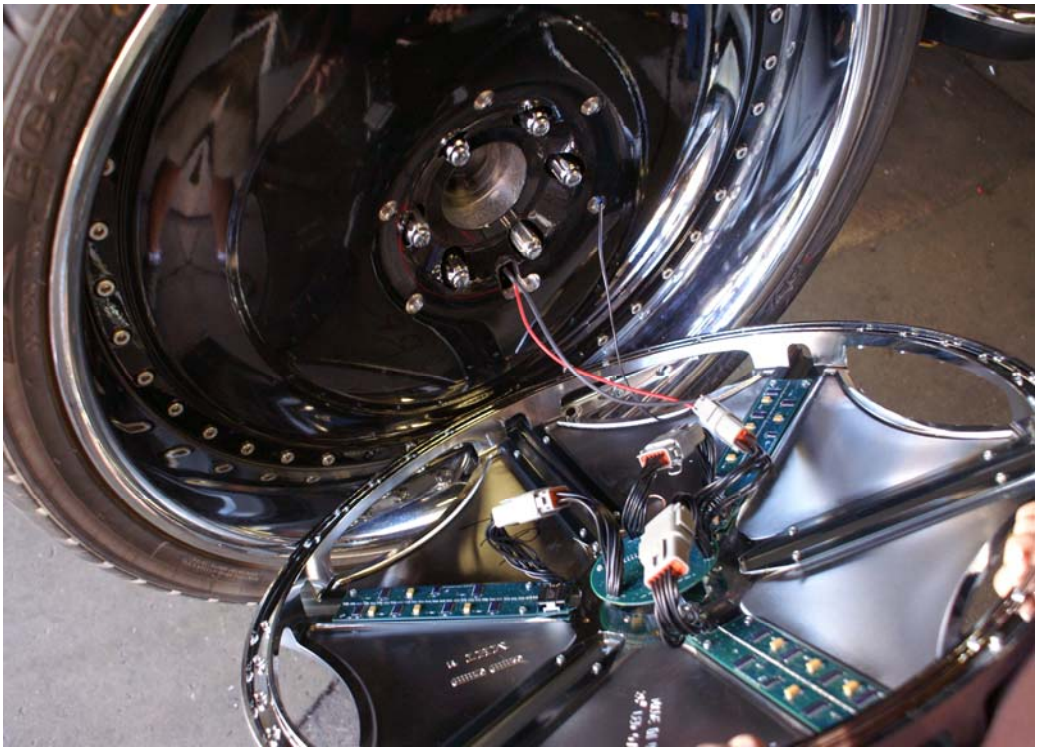
J8 configures each overcap to its position on the vehicle. There are 4 jumper positions: 0, 1, 2 and 3 labeled from left to right. The jumpers in positions 2 and 3 are used for customization and diagnostic purposes and should be left in place at this time. Jumpers in positions 0 and 1 are used to configure the overcap for its position on the vehicle. The following chart may be used to properly set the jumpers for each wheel position. An "X" indicates that a jumper is present, a "0" indicates that the jumper has been removed. The photo illustrates the setup for the Left Front wheel, as jumpers are present in both positions 0 and 1 (as well as 2 and 3). The jumpers may be difficult to remove because the pc board is coated with a clear material to aid in weather and solvent resistance. This material tends to 'glue' the parts to the pc board, so the jumpers may require a modest effort to remove.

	Jmpr 0	Jmpr 1
Right Front	0	0
Left Front	X	X
Right Rear	0	X
Left Rear	X	0



Once configured, you may mount the overcaps to the wheels. First, plug the connector

from the master board inside the overcap into the mating connector hanging through the wheel center. Align the mounting holes in the overcap with the six missing bolts in the bolt circle which fastens the wheel center to the rim, and secure with the supplied nuts and bolts. Firmly tighten.



Test the electrical connections by turning on the vehicle ignition (make sure you do not

start the engine), flipping the PimpStar power switch (mounted inside the vehicle) to ‘on’ and observing each overcap. The LEDs should illuminate and cycle through the stationary patterns of alternating colors and chaser lights.

You are now ready to program the wheels.

Programming

The first step in programming is installing the software on your computer. There are two programs which need to be installed, both of which come on CD ROMs. First, insert the Maxstream modem CD into your computer’s CD drive and follow the onscreen instructions to install. Next, insert the PimpStar CD and install this program. You will also need to plug the modem into a USB port on your computer.

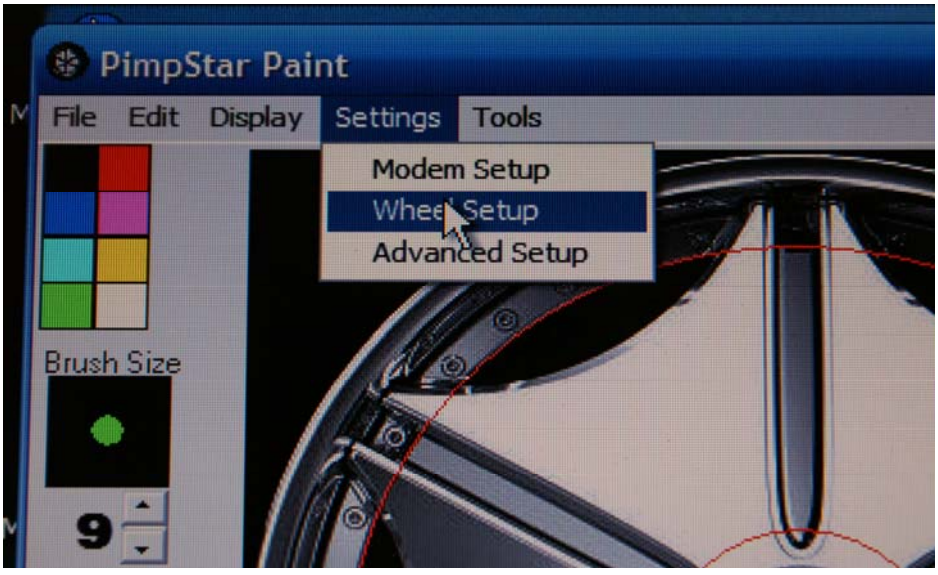
The first step in programming the wheels is setting ‘top dead center’ so the images will be upright on the wheels. In order to do this, the wheels must be spinning. If the vehicle is on a lift, and if it can be done safely, it may be possible to start the engine and put the

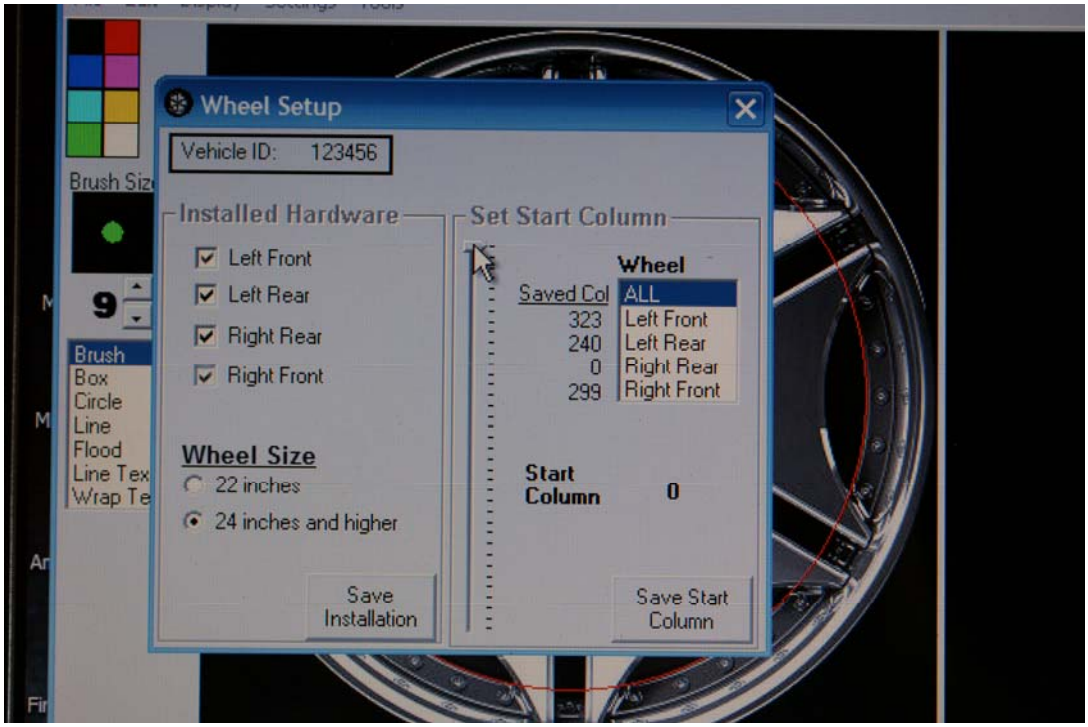
vehicle in gear and allow the wheels to spin (not touching the ground) so the programming may be performed without actually driving the vehicle. If this approach is used and the vehicle is all wheel drive, it may be possible to program all four wheels in this manner.

If no lift is available, or if it is not safe to operate the drive train while the vehicle is on the lift, or if the vehicle is only two wheel drive, a suitable alternative method is to use two vehicles, where the PimpStar equipped vehicle drives slowly in a straight line in a safe controlled area such as a large parking lot, and another vehicle drives along side, with a portable computer, such that programming may be accomplished while both vehicles are in motion. Speeds no faster than 15 to 20 mph should be used during this operation, and all caution must be exercised to prevent a collision. If this approach is used, the drivers of both vehicles must be responsible only for the safe operation of the vehicles and a passenger must perform all programming and observation tasks.

In order to establish ‘top dead center’ for a wheel, first send an image to the wheel which has a clear and easily perceived orientation. It may be desirable to send a word such as ‘TEST’ or a series of characters so the proper orientation is easy to see. An image may be sent from the image library by pulling down the “File” menu, selecting “open” and clicking on any of the images. Use the "new" menu selection to create your own image . The selected image will appear on the ‘palette’ area of the computer screen. Now check the boxes for all four wheels and press “send image to wheels.” The status bar will confirm that the message has been sent to and received by each of the wheels.

Once the image is displayed, it will very likely not be properly oriented. Go to ‘wheel setup’ under 'Settings' in the PimpStar program, highlight the wheel in question and use either the slide control or enter numeric values between 0 and 360 to rotate the image to the proper position. Do this for each of the wheels one at a time and save your values. It’s a good idea to write these values down for safekeeping, although once set, you will never have to do this again unless a wheel is replaced.





There is one final bit of programming you may wish to perform immediately after the installation is completed and full functionality of the wheels has been verified-- setting a unique vehicle identification number. The purpose of the vehicle identification number is to insure the security of communications between the computer used to send images to the wheels and the wheels receiving the message. All units come pre-set from the factory with the vehicle ID 123456. If you do not change this ID number, it may be possible for another person with the PimpStar program and RF modem to send messages to your wheels. You don't want to be driving down the road with a message that reads "I'm an idiot" on your wheels and have no idea it's there.

To change the vehicle ID, you enter the Advanced Setup pull down menu under the Settings menu. A window will appear with a blank area for you to enter a word. Type "installer" in this window and hit the enter key. A new, random vehicle ID number will be generated in the PimpStar program, but you will still need to assign this vehicle ID number to the wheels themselves. This is done by removing the overcap from the wheel (but leaving the connector plugged in so power is still provided to the wheel, pulling jumper #2 (third jumper from the left) on jumper rail J8, then performing the above operation to generate a new vehicle ID number. Once the number has been sent to the wheels and a confirmation message indicates that the message has been received by all wheels, replace the jumper and remount the overcap. It is important to write down the vehicle ID number generated and assigned in this operation for future reference.

If you'd like to assign your own custom number (or reassign an existing number to a new (replaced) wheel, proceed as follows: Go to Advanced Setup under the Settings menu and type in "define." You will need to have internet access to perform this operation. When the box appears, type in the desired wheel ID, then submit. Note that jumper 2 on jumper

rail J8 must be removed on the target wheel in order for the ID information to be updated on that wheel.

The PimpStar Paint software is periodically updated. In order to check for updates, make sure you have internet access, then once again go to Advanced Setup and click the 'Web Update' button. The system will automatically check for the latest updates.

If you need technical assistance with PimpStar Paint, or you'd like to purchase custom artwork, you can contact the software support department directly through the Help menu.

Once initialized, the PimpStar wheels are ready for use. You can use the pre-made image library, create your own artwork using the PimpStar Paint program functions, import and manipulate digital photos or any jpeg or .bmp image from virtually any source.

The images can be sent to one, two, three, or all four of the wheels, and you can also use the sequence builder to send multiple images to selected wheels which will then display them in the sequence you have defined (including user selectable delay times between image changes.

The PimpStar Paint program is very powerful and flexible. Play with it to become familiar with all of its features and you will be amazed at the variety of images and effects you can create, including simple animations.