Main Street Vehicle Owner's Manual

Table of Contents:

IMPORTANT: Check fork for cracks before each ride. Fork should be replaced at least once a season. If you carry Heavy loads (over 300 pounds) at any time, we recommend that you upgrade to a stronger triple fork. The electric assist system also puts added stress on your fork, and we recommend that you upgrade to a triple clamp heavy-duty front fork. Always use 1 1/8-inch chromoly mountain bike forks made for 26-inch wheels. Main Street Mobility sells both types of replacement forks at prices below the cost they can be obtained in most bicycle shops. Buying replacement forks directly from MSP insures that you are always getting a suitable fork. Not following these instructions may result in a catastrophic failure of your fork!

Section I: Frame

A. Brakes

1. Rear Hydraulic Brake Bleeding Instructions

Note: filling and bleeding of the brake system is not routine maintenance. This procedure is needed only when there is a loss of fluid (a leak in the system) or a line that has been damaged or recently removed. Only DOT 5 silicon brake fluid should be used in the system.

Tools and Supplies needed:
2mm allen key
5mm allen key
¼" straight wrench
At least 2 fl. Oz. DOT 5 brake fluid
30 cc Syringe with clear plastic tubing
1 new compression washer
Barb fitting with clear plastic tubing
Small bottle to catch drained brake fluid

In order to bleed or fill the system with fluid or to repair a broken line, follow these steps:

1. The service kit contains everything you will need to bleed the brake system. This procedure must be done with the vehicle with all three wheels on level ground or with the rear wheels jacked up only a few inches off the ground. A service kit can be ordered from Main Street Mobility.

2. Install a barbed fitting into a 6-inch segment of clear plastic tube by hand. Remove the 5mm set screw at the master cylinder lever (throw away the old compression washer, as this is no longer useful), then tighten on the barbed fitting with clear vent tube. Put the tube into the small bottle in order to catch the fluid when it is forced through. This bottle will need to be temporarily attached to the handlebar.

3. The master cylinder lever must be turned horizontal on the handlebar so that the bleed screw is at the highest position of the brake system. Next, the small 2mm allen adjustment bolt (located directly behind the lever – look in at the lever from the end of the handlebar) on the master cylinder must be fully loosened until it stops.

4. DO NOT squeeze the brake lever at anytime during this procedure. First, fill the syringe with DOT 5 brake fluid and clear it of all air bubbles. Attach the clear plastic tubing on the syringe to the bleeder valve on the rear active brake caliper (the bleeder

valve is a 1/4" brass screw), then loosen the 1/4" brass bleed screw at the caliper one full turn. Now force the fluid with the syringe through the system until fluid can be seen through the vent tube at the master cylinder lever. Air bubbles may be seen at the vent tube when filling. The bleeding is complete when there are no more air bubbles in the vent tube. At this point, tighten the 1/4" brass bleed screw. This procedure may need to be repeated two times to insure there is no air in the system.

Note: if the procedure is repeated, the 1/4"brass bleeder screw must be tightened before the syringe is removed.

5. Now remove the vent tube with the barb fitting from the master cylinder lever and replace the 5mm allen set screw, with a new compression washer behind it. These washers compress when you tighten them down, to seal off the fluid in the system. They can only be tightened down once, and then a new washer must be used. The system is correctly bled when the brake pads move immediately upon movement of the brake lever. If this does not happen, the system must be bled again.

6. Once all connections have been tightened, the master cylinder lever can be adjusted to provide a better brake feel by the 2mm adjustment screw that is directly behind the lever. Make sure not to tighten the adjustment screw too much as this will cause the brake pads to drag the disc.

7. Wipe down all surfaces with a rag and check the entire system for leaks and operation after bleeding the system.

8. The placement of the axle and brake disc within the brake calipers can also affect brake performance. The best place for the brake disc to be is as close to inactive caliper (on the right side of the bike) as possible, without rubbing. By doing this, the fine adjustment on the master cylinder can close the gap on the active caliper side of the brake disc to allow for the smallest distance between the pads and the disc, and therefore the best braking power. Large adjustments of the brake disc placement can be made by loosening both wheels and loosening the locking collars on the 4 bearings with a 3mm allen key. Once the collars are loose, knock the axle to the correct place with a mallet and tighten everything back down. Fine adjustments to brake disc placement can be made by over tightening the axle nuts on the outside of the rear wheels.

2. Adjusting Front Rim Brakes

The front brakes may need to be adjusted to account for cable stretching, brake pad wear and replacement, or if the brakes become weak or misaligned for any other reason.
Note: The primary braking power for the vehicle and the weight it carries is intended to come from the rear hydraulic brakes. Using only the front brake to stop a large load can

result in fork, frame, or wheel damage.

1. The small peg on the back side of the brake calipers is placed into the proper hole on the fork, where the brake pad has the right amount of tension, so that it is able to reach the rim, but will still spring back away from it if released. The tension on both sides of the brakes need to equalize each other, so it is likely that you will need to choose the same hole for both calipers. The factory setting is in the middle hole. Tighten down bolts that hold calipers onto fork with a #5 allen key.

2. The spacers that hold the brake pad onto the caliper go onto the brake pad bolt in this order (inside to outside of bike): brake pad, thin concave spacer, convex spacer, caliper, convex spacer, thick concave spacer, thin washer, #5 allen nut. The concave/convex sides fit together and the flat sides go against the caliper, brake pad, or thin washer, to allow the brake pad to be fully adjustable. The larger concave spacer has been placed on the outside of the caliper because these vehicles use wider rims than traditional bicycles.

3. Adjust the placement of the brake pad using a #5 allen key. With the wheel centered in the fork, push the caliper in against the rim while simultaneously loosening the allen nut on the brake pad bolt. Try to get the brake pad flush with the rim and have the brake pad bolt perpendicular to the rim, to get the most efficient braking power. Repeat this step for the opposite side.

4. Pull the cable through the tops of the calipers and set the cable tension with the #5 allen bolt on the top of the left caliper. Hold the calipers together while tightening down the allen bolt. Check the tension in the brake handle – you want the handle to pull tight before it hits the handlebar. Make finer adjustments as needed.

5. Adjust the left/right alignment of the calipers. When you squeeze the brake handle, does one side stop first or not move at all? Moving the peg behind the caliper, which was discussed in #1, can make very large adjustments. Smaller adjustments can be made one of two ways, or both. Pop the tension bar out from behind the caliper and simply bend it back for more tension on that side OR use a small Phillips or flathead screwdriver to adjust the small bolt coming out of the bottom outside corners of the calipers. Tightening will mean more tension on that side, loosening will mean less tension on that side. Adjust until brakes are centered and both calipers move an equal amount when the brake handle is pulled.

B. Gears and Shifters

1. Shifter and Derailleur Adjustment

The gearing will constantly need to be adjusted, first to account for initial cable stretching

with new shifters or cables (all cables stretch a little over the first month or so of use, so the cables often need to be tightened slightly after that has happened), and later as part of routine maintenance.

General rule for all limit screws: Tightening will move the derailleur in towards the center of the gears, loosening moves the derailleur out away from the center of the gears.

Front Derailleur

1. If the clamp for the front derailleur has been loosened or moved for any reason, it must be placed in the correct position for the derailleur to function properly. With the shifter cable disconnected, line up the derailleur so the it is parallel with the chainrings and just slightly above the largest chainring. Tighten the clamp down with a #5 allen key and be sure the derailleur pulls out away from bike and misses the large chainring by less than 2mm.

2. Adjust limit screws. These are the two small screws on the top of the derailleur. The high gear limit screw is on the inside (left), the low gear limit screw is on the outside (right). With the front chain removed, look at where the derailleur sits over the smallest chainring (low gear). Adjust the low gear limit screw to center the derailleur over the smallest chainring, by loosening the limit screw to move it in toward the bike or by tightening the limit screw to move it out away from the bike. Next, with you hand, pull the derailleur out as far as it will stretch away from the bike to see how it is positioned over the largest chainring (high gear). Adjust this placement with the high gear limit screw, by tightening to bring it in closer to the bike, or by loosening the limit screw to let it stretch out further from the bike.

3. Run the shifter cable from the handlebar, through two pieces of housing, and down to the derailleur where it can be connected behind the #5 allen bolt. With the shifter set to the lowest gear (1), pull the cable tight at the derailleur and connect the cable under the allen bolt. Shift up and see how the derailleur moves. It should shift right away, without having to take up slack and should be able to reach the top chainring.

4. Connect the chain and see how the derailleur actually shifts. If the shifter stops before getting to the outer cogs, adjust the limit screws. If the chain will not go to the largest chainring when the shifter is ratcheted all the way up (3), the cable needs more tension. If the chain will not go into the smallest chainring when the shifter is ratcheted all the way down (1), the cable needs less tension. Large cable tension adjustments can be made by adjusting the placement of the cable where it meets the derailleur, under the #5 allen bolt. Fine adjustments can be made with the barrel adjustment on the shifter handle. Where the cable housing comes out of the shifter, there is a barrel adjustment for cable tension. When looking at the

handle from the center of the bike looking out, turning the barrel adjustment clockwise will tighten the barrel and loosen the cable, resulting in less cable tension. Turning the barrel adjustment counterclockwise will loosen the barrel and tighten the cable, resulting in more cable tension.

5. When the adjustments are complete, the shifter should move to all three chainrings smoothly and not fall off the inside or the outside.

Rear Derailleur

1. Adjust the limit screws. Looking at the derailleur from the rear, the high gear limit screw is on the top, and the low gear limit screw is on the bottom. With the front chain removed, hold the derailleur arm down away from the frame with your hand and see where the derailleur stops at the inside and outside of the cassette. On the rear derailleur, the low gear is the large cog and the high gear is the small cog. Hold the derailleur arm over the large cog on the inside and tighten the low gear limit screw to move it in towards the center of the cassette or loosen the low gear limit screw to move it out away from the center of the cassette. Next, hold the derailleur arm over the small cog on the outside of the cassette and adjust the high gear limit screw by tightening to move it in towards the center of the cassette or loosening to move it out away from the center of the cassette.

2. Reattach the front chain.

3. Run the shifter cable from the shifter, through two pieces of housing, and clamp it under the #5 allen bolt on the outside of the derailleur, while pulling the cable tight with your hand. Be sure the shifter is in the highest gear (7) when connecting the cable.

4. While pedaling the bike, shift all the way up the cassette and back down. Be sure the derailleur shifts easily into each of the outer gears. Adjust the limits screws if necessary.

5. If shifting is not smooth, cable tension may need to be adjusted, and can be adjusted in 3 different places. As you ratchet the shifter towards lower gears (going from 7 to 1, or going up to larger cogs on the cassette), if the chain will not go up to the larger cogs right away, you need more cable tension. If the chain is jumping over cogs as it moves up the cassette, you need less cable tension. Major adjustments can be made by repositioning the cable under the #5 allen bolt that connects the cable to the derailleur (be sure the shifter is in the highest gear(7), when doing this adjustment). There is also a fine adjustment on the collar where the cable enters the derailleur. Looking from the back of the bike, turning clockwise will tighten the collar and give less cable tension. Turning the collar counterclockwise will loosen the collar and give more cable tension. There is also

the barrel adjustment on the shifter handle. When looking at the handle from the center of the bike looking out, turning the barrel adjustment clockwise will tighten the barrel and loosen the cable, resulting in less cable tension. Turning the barrel adjustment counterclockwise will loosen the barrel and tighten the cable, resulting in more cable tension.

Shifter cable replacement

If the cables are frayed, broken, or rusty, or if the cable housings need to be changed, follow these instructions:

1. Release the cable from the derailleur at the #5 allen bolt on the derailleur. Pull the cable back up through the housing to the shifter.

2. Remove the grip from the handlebar and loosen the shifter with the #3 allen key on the underside of the shifter. The start of the cable is on the outside of the grip shift, right next to where it wraps onto the handlebar. Pull this cable out through the shifter and reinsert new cable in this same place.

3. Pull the cable through the housing and attach to derailleur following front and rear derailleur adjustment instructions.

Pedal Removal/Replacement

To loosen the pedals, the wrench on the right pedal is turned counterclockwise, and the wrench on the left pedal is turned clockwise. To tighten on pedals, a wrench on the right pedal is turned clockwise and a wrench on the left pedal is turned counterclockwise. This can also be accomplished by holding the wrench and pedaling backwards (both sides) until it is tight.

Pedal Care

We often hear that the threads in the cranks have been stripped. What we've found is, for some reason, the original pedals have been removed and replaced, or another set of pedals has been installed. When this happens, the threads become "crossed" or the pedals are tightened too much by a wrench.

When putting in pedals, always:
Put them in by hand. They should thread into the crank arm easily by hand. Only when a pedal has gone in ALL THE WAY should you use a wrench to tighten it further by just half a turn.
There is a left and right pedal for each vehicle. These are NOT interchangeable.
The pedals will last a long time on the vehicle and stripped crank threads will not occur unless the pedals are installed incorrectly.

Crankset Removal

Remove the crank bolt with either a 9/16" socket wrench or a #8 allen key, depending on which type of bolt you have on your crank arms. Use a crank puller to remove the crank arms. The outside piece is first tightened onto the crank arm, and the inside piece is then tightened against the first piece (rotate clockwise).

Bottom Bracket Removal

First, remove the silver cap on the left side of the bottom bracket using leather gloves or a flathead screwdriver. To loosen the bottom bracket, both sides will turn over the top of the bottom bracket towards the front of the bike, so the right side will turn clockwise, the left side will turn counterclockwise. When a bottom bracket is installed, the right side (the bottom bracket) turns counterclockwise while the left side (stationary cup) turns clockwise.

2. Transfer Hub

Use the following instructions to disassemble and rebuild you transfer hub to replace any of its parts:

1. Remove the transfer hub from the vehicle by loosening the ¾" nuts on the outside of the axle, and lifting it out of the dropouts and off the chains.

2. Remove all of the ¾" nuts and spacers on the axle.

3. Remove the 15 tooth track cog for the rear chain by placing the center casing in a vice or large wrench and using a sprocket remover/chain whip (a wrench with a chain attached to the end) to turn the cog counterclockwise.

4. Remove the 7-speed cassette by holding the center casing in a vice or large wrench and using a Park Tool FR-1/Shimano universal freewheel remover and turning the freewheel remover counterclockwise to loosen the cassette.

5. This should leave only the center casing, the bearings, and the axle. Knock the axle out of the bearings with a mallet. The bearings can easily be pushed out of the casing and changed.

6. To reassemble, fit the bearings and axle into the casing, tighten on the cassette or freewheel with the freewheel remover turning clockwise, tighten on the cog for the rear chain turning the sprocket remover clockwise, and replace all of the ¾" axle nuts and spacers. (On the cassette side, there is the long nut on the inside,

two washers, and one medium nut on the outside. On the 15 tooth cog side, there is one thin nut on the inside, three 5mm spacers, and one thin nut on the outside.)

7. When you tighten the transfer hub back on to the frame, be sure that it sits perpendicular to the dropouts, to insure that it will not come loose. Checking the ¾" nuts on the outside of the transfer hub to be sure they are tight should be part of daily maintenance.

3. Chains

When replacing chains, the length of the rear chain should be determined by where the transfer hub sits within the dropouts. The transfer hub is the part which puts tension on the rear chain, and you want the transfer hub to be positioned about halfway down the dropouts. This allows the chain to be put on easily, but still have tension when it is pulled tight. The front chain length should be set so that when the chain is shifted to the smallest chainring (inside) on the front and the smallest cog (outside) on the back, the rear derailleur hangs as far back as it can go without touching any part of the frame.

If you have a chain that you hear rubbing against the bottom of the cab floorboard when you are pedaling, you may need a longer rear chain. Remove the chain with a chain tool or chain breaker and add one extra link. Reattach the chain onto the vehicle and pull the transfer hub down into the dropouts, to pull the rear chain tight.

It is also possible that the chain has become too loose and is whipping up and down while the cab is being pedaled, causing it to hit the floorboard. Remove a link of chain if it is too long, and then loosen the drive hub nuts and pull the drive hub down into the dropouts to put tension on the chain.

C. Wheels

The conditions under which the average vehicle operates put a great deal of stress on the wheels. It is important to do a daily inspection of the spokes to be sure that they all have tension in order to keep the rims straight and the wheels strong. When tightening a nipple with a spoke wrench and looking down on the rim and the nipple, turning counterclockwise will tighten the spoke and turning clockwise will loosen the spoke (this is a little counterintuitive). Have your wheels regularly trued by a professional bicycle mechanic, to help prevent broken rims and spokes.

The axle nuts which hold on the rear wheels should be checked on a daily basis to see that they are tight. Keep in mind that when these axle nuts are over tightened against the wheel, they will move the axle slightly and adjust the position of the brake disc. This is

one way to make fine tuned adjustments of the axle placement.

D. Axle/Differential

Use the following instructions to disassemble a differential:
The cab portion of the vehicle must be removed in order to remove and inspect the differential according to this method.

Remove the rear wheels using a large adjustable wrench to loosen the axle nut and sliding the wheels off the axle.

Use a 3mm allen key to loosen the small bolts on the black bearing collars. Twist the collars off of the bearing and they will then slide on the axle.

Remove the axle/differential by using a ½" socket wrench to remove the 8 nuts on the 4 bearing collars. Once the bearing collars are loose, pop them off the frame. The axle should lift out the top.

1. Loosen and remove the 6 bolts that hold the differential together. Two bolts go directly into the housing and four bolts go all the way through with nylock nuts on the sprocket side and springs and spacers on the brake disc side.

2. Lift off the brake disc and let the sprocket come off so that all that is left is the axle and differential.

3. Open the differential housings by pulling apart the two axles. On the inside, these are the pieces you should find: On each axle, starting from the inside: locking collar, axle sprocket, axle washer, differential housing, rubber seal (fits into housing). In the middle is the differential pin which has two sprockets with the gears facing in and a pin washer on the outside of each of the sprockets.

4. By removing the locking collar on the axle, all of the parts on the axle can be lifted off and the axle can then be replaced.

E. Electric Motor System

Proper Use of Electric Motor: The electric motor system is the most fragile component of your electric vehicle and care must be taken to always use it in the proper way: Always start pedaling before you engage the electric motor. It is important that the electric motor NEVER be used to start the vehicle. I can only be used to ASSIST the driver, when the driver is already pedaling. You can break the electric motor if you do

not pedal when starting. In addition to saving the motor, this will also save a great deal of electric power in your batteries.

Always continue to pedal once the motor is engaged. This will also save electricity and keep the motor from overheating.

Never operate you motor if it is straining. The motor should always be running at, or near it's optimum range. This is the speed at which the motor will turn on flat ground. There is a limit to how fast the motor will operate, sometimes it will shut off if it exceeds it optimum RPM's. The danger is in straining your motor, either by going up too steep of hill, or having too much weight in the cab. If your motor is straining, it may overheat. It will also wear out more quickly.

There are 7 basic parts in Main Street vehicles' electric motor system, including the batteries, battery cables, controller box, throttle cable, motor cable, front wheel hub motor, and battery recharger. If the motor stops working, use the following instructions to diagnose the problem.

The 2- 12 volt batteries in this system are wired in series to power a 24 volt motor. The battery wires should be connected as follows: a red wire goes from the controller box to the positive terminal of battery #1, a black wire connects the negative terminal of battery #1 to the positive terminal of battery #2, and a black wire connects the negative terminal of battery #2 to the controller box.

1. First, check to see if there is a fuse in the line for the battery recharger. If the line has a fuse, be sure it is still intact. If the recharger is operating properly it will show a constant red light when charging properly, and it will show a constant green light when the battery is charged. A flashing red light indicates a problem with the charger. Be sure that the batteries are fully charged before continuing with this process.

2. Test the batteries with an amp-meter to be sure they are still providing current to the system.

3. If the batteries and charger appear to be working, and the battery wires are installed properly, the problem is likely to be in one of the other four parts of the system, towards the front of the bike (controller box, throttle cable, motor cable, or front hub motor). These parts must be replaced one-by-one with a part that you know works, in order to diagnose the problem. If you own another Main Street Electric Vehicle that is functioning properly, you can sub-out with those parts, or call Main Street for some loaner parts to help you determine where the problem is.

4. Start with the throttle cable, because you can easily plug that into the existing

controller box and see if the motor works when you push on the other throttle lever. Next, try the motor cable, because it is easy to connect that to both the controller box and the motor. Check the controller box by cutting the battery wires and putting in a new controller box, connecting (temporarily, at least) the battery cables, the motor cable and the throttle cable. Check the motor by plugging in a new motor to see if that works. If nothing else has diagnosed the problem, try replacing the entire system with new parts that you know work, to see if multiple parts have broken. If the motor still does not work after replacing all of these four parts, it must be a battery/recharger problem.

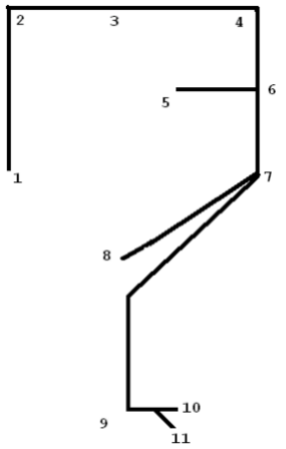
It is possible for the nut that holds the tension arm onto the motor to come loose(the nut on the left side of the motor, which is outside the silver piece which wraps around the front of the fork). If this comes loose, the tension arm lock on the inside of the motor can slip loose and cut the power/ground wires that come from the motor cable. The best way to prevent this is to keep this nut and the two axle nuts that hold the wheel onto the fork tight at all times. If you think this could be the source of your motor problem, remove the wheel from the fork and take off this nut using a 17mm wrench. If wire damage exists, it will be obvious when the two pieces separate.

II. Electrical Lighting System

A. Loose/Dead Bulbs

Initial lighting system problems can sometimes be associated bulbs that have simply loosened from their housing during shipping. This is the first issue to address before looking for other problems in the system. It may also be possible that you have a bad light bulb in one of the lights. Pop off the light covers with a flathead screwdriver and inspect the bulb. It may help to remove the bulb, push down on the rubber housing for a few seconds and then reinsert the bulb.

B. Checking the wiring harness



(Top view of Pedicab)

(Top view of Vehicle)
1 = right front lights
2 = right rear lights
3 = brake light
4 = left rear lights
5 = battery
6 = battery to harness connection
7 = six electric plug/ left front lights / turn signal flashers
8 = accessory (running lights) on/off switch
9 = headlight
10 = turn signal switch
11 = front brake electrical switch for rear brake light

White (+), Power

Connections @ 5, 6, 7, 8, 10,and 11

Power comes from the positive terminal of the battery (5), runs down red wire, through a fuse, and connects with T-tap connector at (6). At (7) white runs through the six-electric plug and also connects to a white wire which runs up to the on/off switch at (8). At (8), white wire connects to switch labeled "power". When this switch is off, there is no power going through the switch at all. When this switch is on, power is transferred to the red, or accessory wire, which sends power to the running lights. At (10), the turn signal, white is connected to the terminal in the upper-left corner of the switch, as seen as if the switch were sitting in place on the handlebar. This allows power to go to the turn signals once the switch is engaged. At (11), white goes to the front brake handle switch. When the brake handle is pulled, the switch is engaged, and power runs from white to blue, and back to the brake light.

Black (-), ground

Connections @ 1, 2, 3, 4, 5, 6, 7, 8, 9

This line connects at all lights, and completes the circuit back to the battery's negative terminal. At (5), a black wire connects to the battery's negative terminal and runs out to the cab wiring harness at (6). At (1), (2), (3), (4), and (7), the black wire on the harness connects to the ground wire on the lights. At (1), (2), (4), and (7) the ground wires of both the running lights and the turn signals are wired into a single connection with the black wire. At (3), the brake light's ground cable is wired directly to the black ground cable on the harness. At (7) the black wire runs through the six-electric plug with one connection for the left-front cab lights, and one connection that runs via a black wire to the on/off switch at (8). At (9), the headlight, the ground wire attaches to the black wire coming from the headlight.

Red, accessory, running lights

Connections @ 1, 2, 3, 4, 7, 8, 9
This wire gets all of its power from the on/off switch at (8). When the switch is off, none of the lights on the red system get power. At (1), (2), (4), and (7), the red wire connects to the power wire (black) of each of the lower lights (which are the running lights). At the brake light (3), red connects to the brown wire on the brake light to provide half power when the accessory switch is on. At (7), the red wire runs through the six-electric plug via the yellow wire, with two connections coming off, one for the left front running light, and one red wire that goes up to the power switch at (8) and connects to the "ACC" connection. At the headlight, (9), red connects to red to provide power for the headlight when the power switch is on.

Blue, direct line for rear brake light

Connections @ 3, 11
This wire is a direct line from the front brake switch (11) to the rear brake light (3), where it connects to the red wire from the brake light. When the brake is pulled, the switch is engaged and passes power from the white wire to the blue, which turns on the brake light.

Green, right turn signal

Connections @ 1, 2, 7, and 10
This wire gets all of it's power from the turn signal switch at (10). It terminates in this switch in the lower-center connection. When the turn signal is activated, it sends power

through the flasher (7) and out to lights (1) and (2), where it connects to the black power wire of each of the top lights.

Brown, left turn signal

Connections @ 4, 7, and 10

This wire gets all of it's power from the turn signal switch at (10). It terminates in the upper-center connection. When the turn signal is activated, it sends power through the flasher at (7) and to the lights at (4) and (7), where it connects to the black power wire of each of the top lights.

Inspecting Individual Points on the Wiring Harness

Using the numbers above, you can check that all of the connections are in the proper place. The first color on the left is the wiring harness, the wire listed on the right is the connection it makes to the cab light or other parts (switches, plugs, etc.)
On wiring harness: Connects to:
1.
Red ……Power wire for bottom light (black)
Black …..2 green ground wires
Green …….Power wire for top light (black)

2.
Red ……Power wire for bottom light (black)
Black ……2 green ground wires
Green …….Power wire for top light (black)

3.
Red…… Brown
Black …….Green ground wire
Blue ……..Red

4.
Red ……Power wire for bottom light (black)
Black …..2 green ground wires
Brown ……Power wire for top light (black)

5.
Red …… (+) terminal of the battery
Brown …….Negative(-) terminal of the battery

6.
White …….Red (to battery)
Black …….Brown (to battery)

7.
Red ……..Power wire for bottom light (black)
Black …….2 green ground wires
Brown ……..Power wire for top light (black)
(notice that the above part is the same as all of the other corner lights, there are just more wires here)

White ……White wire up to (8)
Yellow ……Red wire up to (8)
Black …….Black wire up to (8)
(all of the wires running through the six prong plug should line up with the same colors on both sides)

Green ……Gap in the wire connects through flasher
Brown …….Gap in the wire connects through flasher

8.
White …….Power (left)
Red …….ACC (middle)
Black…….. Ground (right)

9.
Red ……..Red
Black ……..Black

10.
(this is looking down on the turn signal switch from the top with the thumb switch on the left side)
White …….top left pin (connects on the bottom to the bottom left pin)
Green ……bottom center pin (these are the two that the thumb switch
Brown …….top center pin touches when engaged)

11.
White ……one prong
Blue ……other prong

C. Instructions for checking a wiring system with a blown fuse

1. Check all connections with the wiring schematic to make sure that all connections are done properly. Make sure that the colors of the wires on one side of the six electric plug match the colors of the wires on the other side of the plug. Follow the wires from the battery to the wiring harness (through the fuse) and be sure that the wire from the positive terminal of the battery is connected to the white wire on the harness, and the wire from the negative terminal of the battery is connected to the black wire on the harness.

2. Inspect the running light switch to be sure it is properly connected. At the switch, the wires should be connected left to right with white, red, and then

3. Disconnect the primary six-electric plug where the frame wiring harness plugs into the cab wiring harness. The cab lights contain the battery and the running light switch, so the cab lights should be able to turn on by themselves, with the six-electric plug disconnected. If the fuse continues to blow, the problem is contained somewhere in the cab wiring harness. If the cab lights turn on, the problem is contained in the frame wiring harness. Check the turn signal switch and headlight for any exposed/crossed wires. Check the bottom of the turn signal switch to be sure that none of the wires are making contact with the handlebar.

4. If the problem is contained in the cab wiring harness, start by disconnecting the three sets of rear lights. Disconnect all 9 connections going to the 5 rear lights and turn the power on with a working fuse. If the front running lights will turn on, the problem may be contained somewhere in the rear lights. One possibility is that the piece of aluminum bracing behind the running lights and the brake light may have stripped the coating from one of the positive wires (on wires coming from the lights, black is positive and green is the negative grounding wire). Contact with this piece of aluminum would short out the system. Remove the light covers and pull the wires out to inspect them for damage. If no wires are found to be damaged, inspect the wires on the turn signal (top) lights.

5. If the problem is determined to be in the cab wiring harness, and the fuse blows when only connected to the front lights, it is highly likely that a wire to one of these lights has been damaged. Remove the light covers and inspect the wires going to the lights.

6. Any pair of lights on the cab should be operable with only the battery, the on/off running light switch, and the three wires for those lights connected. If you can turn on one set of lights in any corner without having the fuse blow, you can eliminate that corner as a problem area.

III. Cab (for pedicabs only. Maintenance for delivery trikes and pedal trucks is varies depending on materials and structure of the back bed/box.)

A. Patching Fiberglass on Cabs

Holes can be filled using Bondo Auto Body Filler and finished over with the proper color gelcoat, which can be obtained from Main Street Mobility. Bondo requires cream hardener and should be done by taping the back of the hole, filling it with bondo, and depressing the bondo below the surface, so that the gelcoat layer can be even with the surrounding surface. Gelcoat is mixed with fiberglass resin in a 1:1 ratio and liquid hardener (more hardener means it will dry faster). The gelcoat will be rock hard when dry, so try to apply it so that it is as even with the surrounding surface as possible, so that you have less sanding to do. Once the gelcoat has dried, use sandpaper to smooth out this area. Start with a medium grit (100-200) to work down the excess gelcoat and move towards a fine grit (600-1200) so get a smooth finish. Use rub-on auto body polish to shine the surface.

Fiberglass Reinforcement

Fiberglass can be reinforced from the underside using fiberglass resin, liquid hardener, and fiberglass repair cloth, all available at large hardware stores. Be sure to use disposable gloves to protect you hands and a respirator rated to block solvents to protect yourself from harmful fumes. Mix the resin and hardener in a disposable container and use a disposable paintbrush to paint on this liquid. First, paint the surface you are going to reinforce, then lay down the cloth, then paint over the cloth until it is saturated and all the bubbles have been pushed out to the side. Wait for this layer to dry and repeat if more strength is desired.

B. Rivet Replacement

Several of the parts on the cab, including the lights, canopy mounts, and several of the aluminum supports have been affixed with 3/16" rivets. These can be removed by using a 3/16" drill bit and drilling down through the top of the rivet. It is important to keep the rivet from spinning with the drill bit by either pushing down hard with the drill or by holding the back side of the rivet with pliers.