



Main Street Pedicab Owner's Manual

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Section I: Pedicab Frame

A. Brakes

1. Rear Hydraulic Brake Bleeding *for Wilwood brake system*

Filling and bleeding of the brake system is routine maintenance. This procedure should be performed at least every three months, when brake fluid is noticeably dirty, when there is a loss of fluid (a leak in the system) or a line that has been damaged or recently removed. Only DOT 3 or DOT 5 silicone brake fluid should be used in the system.

Tools and Supplies needed:

1/4" straight wrench or line wrench
At least 2 fl. Oz. DOT 5 brake fluid
30-60 cc syringe with clear plastic tubing
Container to catch discarded fluid
Phillips screwdriver

The service kit available online in the MSP Parts Store contains 4oz of DOT 5 brake fluid and a 60cc syringe with clear plastic tubing.

This procedure must be done with the pedicab with all three wheels on level ground or with the rear wheels jacked up only a few inches off the ground.

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

1. Remove the two Phillips screws on the top of the master cylinder reservoir on the handlebars and remove the cap. (Fig. 1)

The bleeding process pushes fluid from the rear caliper up into the reservoir, so the reservoir will need to be empty enough to accept 2 oz of fluid without overflowing. The syringe can be used to remove fluid from the reservoir. *Discard this fluid.*

NOTE: When reservoir is low, DO NOT compress the brake lever. This will introduce air into the brake system.



Figure 1. Cap removed from master cylinder reservoir

2. Fill the syringe with new DOT 5 brake fluid and clear it of all air bubbles. The best way to achieve this is to set the syringe on the plunger end with the hose pointing upwards for 5-10 minutes until all of the air has collected at the top. Hold the syringe over a trash can or other suitable container and press on the plunger to expel the air bubble out of the hose.

3. Fit the plastic hose on the syringe onto the bleeder valve on the rear active brake caliper (Fig. 2), then loosen the 1/4" bleed screw at the caliper one full turn. Hold the hose on the bleeder valve by hand and press on the plunger to force the fluid through the system. The reservoir will start to fill up with fluid and should pass any air trapped in the system. Stop forcing fluid through before the reservoir overflows. Tighten the bleeder valve screw with the syringe and plastic hose still attached to the bleed screw, this will keep air from entering the system at the connection between the syringe hose and the bleeder valve. Do not over tighten the bleeder valve screw, as the threads can strip easily. *The bleeder screw only requires 3-9 ft-lbs of torque, 'hand-tight' or less.* 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.

4. Check the reservoir fluid level and adjust as needed using the syringe. Re-install the reservoir cap with the two Phillips screws.

5. Wipe down all surfaces with a rag and check the entire system for leaks and operation after bleeding the system. Use brake parts cleaner to wipe down the brake disk and/or pads to remove any oils or brake fluid.

2. Rear Hydraulic Brake Adjustment

Brake performance is dependent on the placement of the axle and brake disc within the brake calipers. The best placement for the brake disc to be is as close to the inactive caliper (on the right side of the bike, Fig. 3) as possible, without rubbing. With this placement, the fine adjustment on the master cylinder can close the gap on the active caliper side of the brake disc. This allows for the smallest distance between the pads and the disc



Figure 2. Syringe on bleeder valve

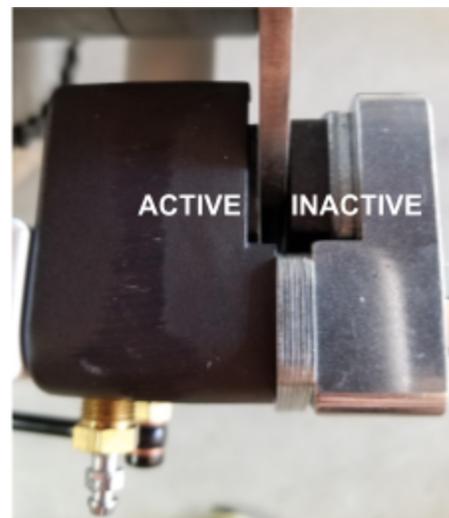


Figure 3. Active and Inactive sides of rear brake caliper, shims in between

without rubbing, and therefore provides the best braking power.

As the pads wear out, turn the adjustment screw on the back of the inactive pad to move the pad in towards the rotor.

Large adjustments of the brake disc placement can be made by loosening both wheel axle nuts and loosening the *two* locking collar setscrews (Fig. 4) on *all four* axle bearings with a $\frac{1}{8}$ " allen key. Once the collars are loose, knock the axle to the correct place with a mallet.

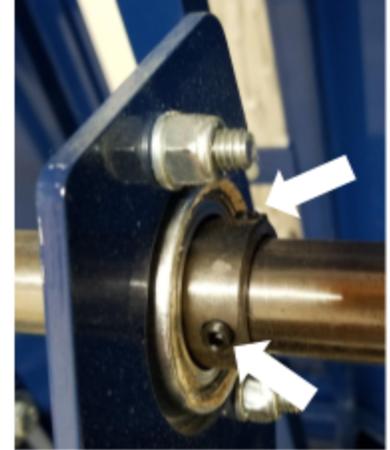


Figure 4. Locking collar setscrews (x3)

Fine adjustments to brake disc placement can be made by over tightening the axle nuts on the outside of the rear wheels. Tighten the locking collar setscrews to lock the axle back into place. Afterwards, make sure to loosen the axle nuts and set the correct pre-load (Section F) to avoid wearing out the outer axle bearings.

3. Front Rim Brake Adjustment

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 pedicab 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.

Check the tension in the brake lever - the cable should pull tight before the brake lever hits the handlebar. Make finer adjustments as needed with the barrel adjuster on the brake lever.

The small pin on the back side of the brake calipers is placed into one of three holes on the fork to achieve the correct amount of tension on the spring inside the caliper arm (Fig. 5,A). The tension on both sides needs to be equal, so it is likely that both arms will use the same hole position. The factory setting is in the middle hole. Tighten down the bolts that hold the calipers onto the fork with a 5mm allen key.

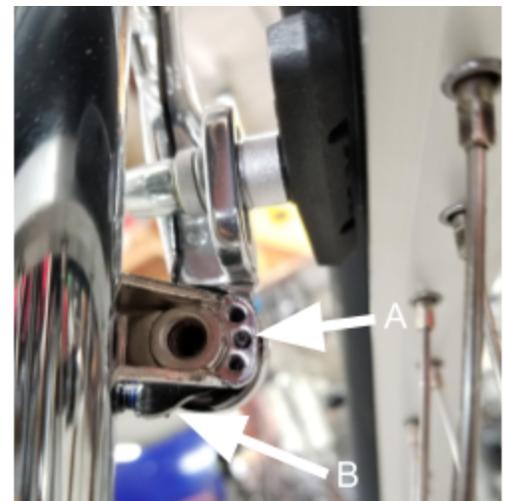


Figure 5. A) Brake caliper positioning pin
B) Tension adjustment screw

3. Adjust the left/right alignment of the calipers. Moving the pin behind the caliper (Fig. 5,A) can make very large adjustments. Smaller adjustments can be made by adjusting the small Phillips head screw coming out of the bottom outside corners of the caliper arms (Fig. 5,B). Tightening this screw will result in more tension (pulling the brake pad away from the rim) on that side. Adjust until brakes are centered. Both calipers should move an equal amount when the brake handle is pulled, and the pads should not rub on the rims when the handle is released.

The spacers that hold the brake pad onto the caliper go onto the brake pad stud typically include a thin concave spacer, convex spacer, thick concave spacer, and thin washer. The concave/convex sides fit together and the flat sides go against the caliper, on either side of the caliper arm, to allow the brake pad to be fully adjustable. Spacers should be chosen based on rim width so that the caliper arms are pointing as closely to vertical (Fig. 5a) and parallel with each other as possible, to maximize braking force.

To adjust front rim brakes:

1. Adjust the placement of the brake pad using a 5mm allen key. Make sure the wheel is centered between the fork stanchions. Rim brake pads should be positioned with a 'toe-in', where the leading edge of the brake pad hits the rim first. (Figure 6a) This does not need to be an exaggerated angle, with pressure the entire pad should contact the rim. Place a credit card or similar thickness spacer between the back edge of the brake pad and the rim. Hold both caliper arms in against the rim while simultaneously loosening the allen nut on one brake pad bolt. Try to get the brake pad centered between the tire and the inside edge of the rim, and have the brake pad bolt perpendicular to the rim surface to get the most efficient braking power (Fig. 6). Repeat this step for the opposite side.

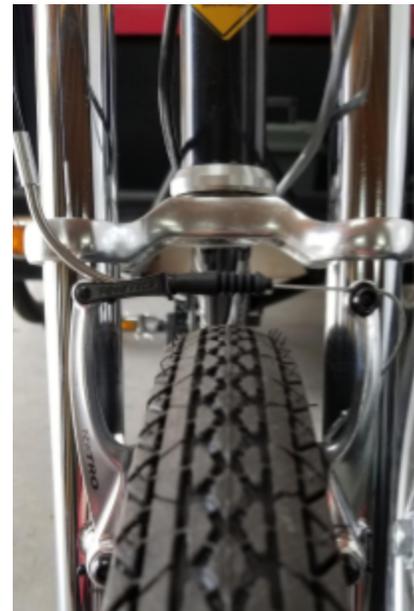


Figure 5a. Correct vertical caliper arm positioning



Figure 6. Correct brake pad positioning



Figure 6a. 'Toe-in' diagram



2. Pull the cable through the tops of the calipers and set the cable tension with the 5mm allen bolt on the top of the left caliper. Hold the calipers together while tightening down the allen bolt. Adjust to gain correct tension in the brake lever.

B. Gears and Shifters

1. Shifter and Derailleur Adjustment

The derailleur(s) will constantly need to be adjusted, for initial cable stretching with new shifters or cables (all cables stretch a little over the first month or so of use), and later as part of routine maintenance.

General rule for all limit screws: Tightening will move the derailleur inwards towards the middle gears and loosening will allow the derailleur to move outwards towards the high or low limit of the gears.

1.1 Front Derailleur

Watch Park Tool's video on Youtube for a comprehensive and visual demonstration on adjusting a front derailleur.



How to Adjust a Front Derailleur

Park Tool • 121K views • 1 month ago

The majority of **front** shifting problems can be solved with basic **adjustments** to the **limit screws** and **index setting** of the front ...

4K

<https://www.youtube.com/watch?v=ZNG7g83ll-s>

1. Check the positioning of the front derailleur. With the shifter cable disconnected or slack, the derailleur should be parallel with the chainrings and just slightly above the largest chainring. When the derailleur pulls out away from the bike the outer side of the cage should not contact the largest chainring. The inner side of the cage should just miss the middle chainring.

2. Adjust the limit screws. These are the two small screws on the top of the derailleur (Fig. 7, A). The high gear limit screw is marked with an 'H', and the low gear limit screw is marked with an 'L'. With the front chain removed,



Figure 7. Front derailleur positioning; A) limit screws



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, 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 until the inside surface of the derailleur will move over the center of the high gear and no further.

3. With the shifter set to the lowest gear (1), pull the cable tight at the derailleur and re-adjust the cable placement at the allen bolt. Shift up and check the movement of the derailleur. The derailleur should move right away, without having to take up slack in the cable and should be able to reach the top chainring.

4. Lift the rear tires off the ground and check the shifting while slowly turning the crankset. If the shifter stops before the derailleur can get the chain to the outer cogs, adjust the limit screws. If the chain will not go to the largest chainring when the shifter is in the highest gear (3), the cable needs more tension. If the chain will not go into the smallest chainring when the shifter is in the lowest gear (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. Turning the barrel adjustment clockwise will tighten the barrel, resulting in less cable tension. Turning the barrel adjustment counterclockwise will loosen the barrel, resulting in more cable tension.

5. When the adjustments are complete, the shifter should move to all three chainrings smoothly and not be able fall off the inside or the outside. Check this by moving the chain to the furthest limits of the front and rear derailleurs at the same time (smallest ring in front (1) with largest in rear (7), and largest ring in front (3) with smallest in rear (1).

1.2 Rear Derailleur

Watch Park Tool's video on YouTube for a comprehensive and visual demonstration on adjusting a rear derailleur.



How to Adjust a Rear Derailleur – Limit Screws & Indexing

Park Tool • 119K views • 1 month ago

The majority of rear shifting problems can be solved with basic adjustments to the limit screws and index setting of the rear ...

4K

<https://www.youtube.com/watch?v=UkZxPIZ1ngY&feature=youtu.be>

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 (Fig. 8, A,B). With the chain removed and shifter cable disconnected, hold the derailleur arm down away from the frame and check 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 and adjust the low gear limit screw to center it over the cog. Next, hold the derailleur arm over the small cog and adjust the high gear limit screw to center it over the cog.

2. Reattach the chain and shifter cable, with the shifter positioned in the highest gear (7). Clamp the cable under the #5 allen bolt on the outside of the derailleur (Fig. 8,D) while pulling the cable tight.

3. Lift the rear wheels off the ground and shift through the entire range of the rear derailleur while turning the crankset. If the shifter reaches the lowest position (1) before the chain reaches the largest cog (1), the cable needs more tension. If the shifting is not smooth, cable tension may need to be adjusted. As the shifter is moved 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). Minor adjustments can be made with the barrel adjuster where the cable enters the rear of the derailleur.

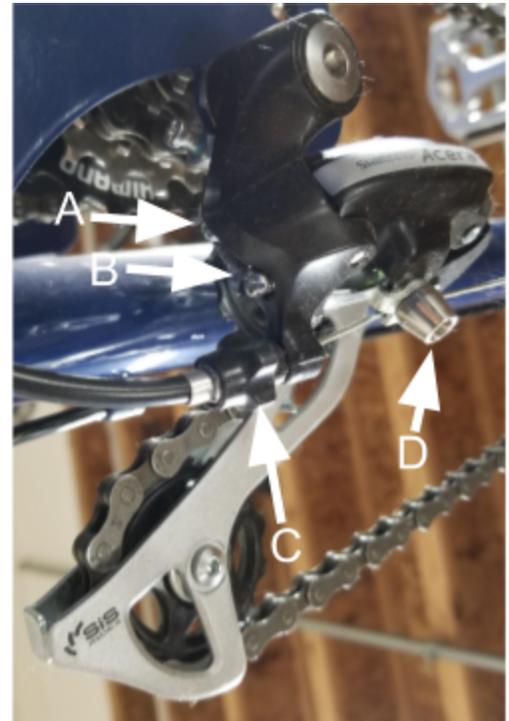


Figure 8. Rear derailleur. A) High limit screw; B) Low limit screw; C) Barrel Adjuster; D) 5 mm cable bolt

Turning clockwise will tighten the barrel and give less cable tension. Turning counterclockwise will loosen the barrel and give more cable tension. There is also the barrel adjustment on the shifter handle.

4. Check the limits of the rear derailleur at the extremes of the front and rear derailleurs. With the front derailleur on the small ring (1) and the rear derailleur on the largest cog (1), the chain should not be able to fall off the inside of either gear while turning the crankset and pulling either shifter as far as they reach. Adjust limit screws if necessary. Check also with the front derailleur on the large ring (3) and the rear derailleur on the small cog (7).

1.3 Shifter cable replacement

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

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 a new cable.

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

2. Transfer Hub

Use the following instructions to disassemble and rebuild your transfer hub to replace any of its parts.

Tools and Supplies needed:

$\frac{3}{4}$ " wrench or deep-well socket

$\frac{3}{4}$ " or 19mm flat/cone wrench

Vice or large adjustable wrench

Park Tool FR-1/Shimano Universal Freewheel Remover

Plastic-coated mallet or wood block/hammer



2.1 Removal/Disassembly

1. Remove the transfer hub from the pedicab by loosening the $\frac{3}{4}$ " nuts on the outside of the axle, and lifting it out of the dropouts and off the chains.



Figure 9. Transfer hub (Left to Right)- Axle nut, outer nut, long nut, casing, short nut, spacer, outer nut, axle nut

2. Remove the outer nuts, spacers, and inner nuts from the axle. (Fig. 9)

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 (Fig. 10) and turning the freewheel remover counterclockwise. If your freewheel remover tool does not fit over the axle this step can be swapped with Step 5.

5. With the casing in a vice, knock the axle out of the bearings and casing with a mallet, hitting the cassette side of the axle (shown in Fig 10). The other remaining bearing can easily be pushed out of the casing. The empty casing is shown in Fig. 11

2.2 Reassembly

1. Fit the bearings and axle into the casing with a mallet and wood block. The outside faces of the bearings should sit flush with the outer edge of the casing when fully seated.

2. Install the cassette or freewheel with the freewheel remover, turning clockwise.

3. Tighten on the threaded cog for the rear chain with the chain whip or sprocket remover, turning clockwise.

4. Replace all of the $\frac{3}{4}$ " axle nuts and spacers. On the cassette side, there is the long nut on the inside and one thin nut on the outside. On the 15 tooth threaded cog side, there is one thin nut on the inside, one spacer, and one thin nut on the outside. The inner nuts should only be tightened until they touch the bearings -- any more can put too much load on the bearing and cause it to wear prematurely. Hold inner nuts with a spanner wrench or vice-grip when tightening the outer nuts, otherwise turning the outer nuts will cause the inner nuts to turn and over-tighten.

5. Install the transfer hub back onto the frame. Be sure that it sits perpendicular to the dropouts.

Note: Checking the $\frac{3}{4}$ " nuts on the outside of the transfer hub to be sure they are tight should be part of daily maintenance.



Figure 10. Freewheel hub remover

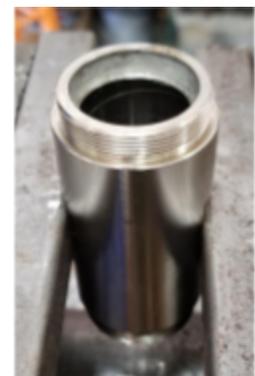


Figure 11. Empty casing



3. Chains

Main Street Pedicabs are equipped with a 1/8" bicycle chain in the rear (between the transfer hub and the final drive gear on the rear axle) and a 3/32" chain in the front (between the front chainring and the cassette on the transfer hub).

3.1 Rear Chain Replacement

The length of the rear chain should be determined by where the transfer hub sits within the dropouts. The transfer hub is used to tension the rear chain. The chain should be measured with the transfer hub closer to the open end of the dropout so that when the chain is tensioned the transfer hub ends up positioned about halfway down the dropouts. (Fig. 12)



Figure 12. Transfer hub positioned halfway down dropouts

Install the chain over the front transfer hub (15 tooth track cog) and the final drive gear on the rear axle. Use a long bar or socket extension as a lever between the frame and transfer hub to pull the transfer hub forward and put tension on the chain. Press down in the middle of the chain (between the two gears) to measure chain deflection. The correct amount of chain tension will allow a small amount of chain deflection, at least 1/2" with light pressure. (Fig. 13) The chain is too tight if binding noises can be heard when spinning the rear axle, and if the axle slows down noticeably just after being spun. The chain is too loose if it sags noticeably between the two gears, just with gravity.

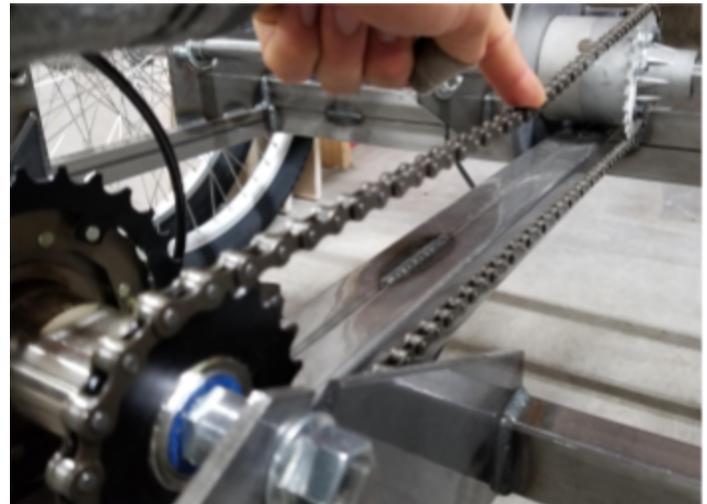


Figure 13. Simple rear chain deflection test

3.2 Front Chain Replacement

The front chain length should be set so that when the chain is shifted to the smallest chainring (1) on the front and the smallest cog (7) on the rear, the rear derailleur hangs as far back as it can go without touching any part of the frame. If your derailleur arm is extended forwards to it's limit when the chain is shifted to the largest gears, the chain may be too short. If you notice the front chain whipping up and down while the cab is being pedaled, the chain may be too long.

Measure the chain on the smallest chainring and the smallest cog, and check that it will also fit around the largest chainring and the largest cog without stretching the limit of the rear derailleur forward.



C. Pedals

1.1 Removal

To loosen the pedals, the wrench on the right pedal is turned counterclockwise, and the wrench on the left pedal is turned clockwise. The opposite direction will tighten the pedals. Any set of bicycle pedals includes one left and one right pedal. These are NOT interchangeable.

1.2 Replacement

When installing pedals, always thread in by hand before tightening with a wrench. Threads can easily become 'crossed', which will result in stripped threads and require crank arm replacement. Once the pedal is threaded in all the way by hand, use a wrench to tighten it 'hand tight'. Overtightening pedal threads can also result in stripped threads.

D. Bottom Bracket

1.1 Crankset removal

1. Remove the crank bolt with either a 9/16" socket wrench or a #8 allen key, depending on which type of bolt the crank arm is secured with. Both sides will turn counter-clockwise for removal.

2. Use a crank puller to remove the crank arms. Turn the puller nut (Fig. 14, A) into the crank arm until it stops, taking care not to cross-thread. This does not need to be tightened as long as all of the available threads are engaged.

3. Thread the spindle driver of the puller (Fig. 14, B) into the nut. Resistance will be felt when the driver meets the spindle. Continue turning the driver into the puller nut until the crank is removed.

4. Unthread the crank puller nut from the crank arm. Repeat process on the other side.



Figure 14. Crank puller installed.
A) Puller Nut; B) Spindle driver

1.2 Crankset replacement

1. Apply a thin layer of grease to the surfaces of the square taper spindle.
2. Press crank arms onto spindle. The right arm has the chainrings and the left is just an arm - these parts are specific to side and are NOT interchangeable. On mid-drive motors the crank arms are stamped with an "L" and "R". Make sure the arms are pointing opposite directions from each other.
3. Thread in either the 9/16" bolt or 8mm socket cap screw, depending on your crankset. Medium strength Loc-Tite (blue) may be used on these threads -- they have been known to come loose from normal riding. Make sure not to cross-thread these bolts. Tighten to **34 ft-lbs**.

NOTE: Crank arm bolts should be checked daily following initial installation and re-torqued after the first week of use.

2.1 Bottom Bracket Removal

For conventional bottom bracket (models not equipped with a mid-drive motor):

Tools Needed:

- Bottom bracket tool
- Corresponding wrench



Bottom Bracket Tool

1. Remove the silver cup on the left side of the bottom bracket **first** with the bottom bracket tool. *To loosen the bottom bracket, the left side will turn counterclockwise, the right (drive) side will turn clockwise (rule of thumb: both sides turn over the top of the bottom bracket, towards the front of the bike).*



Left side of bottom bracket - turn counterclockwise to remove



Right (drive) side of bottom bracket - turn clockwise to remove

2. Loosen and remove the right side of the bottom bracket, which will contain the spindle and bearings.



2.2 Bottom bracket replacement

To install a bottom bracket, the right (drive) side turns counterclockwise while the left side (stationary cup) turns clockwise.

1. Ensure the bottom bracket shell of the frame is properly faced, threads are chased and cleaned. Inspect the bottom bracket shell threading of the frame for any damage and ensure the threading in your frame is compatible with the threading on the new bottom bracket cups. Use a brush and a mild degreaser to clean the inside and outer edges of the bottom bracket shell. Let threads dry before continuing.
2. Apply two drops of blue thread retaining compound (Loc-Tite blue medium strength or similar) to the threads on each bottom bracket cup. Thread the right (drive) side into the shell and apply approximately **30 ft-lbs** (40 N-m) of torque.
3. Thread in the left (stationary cup) side into the bottom bracket shell. This side only needs to be tightened until 'snug'; over-torquing this part can result in cracking the cup if it is made of plastic.

Note: Once cups have been installed, the blue thread retaining compound should be left to cure for 12 hours before being used.

E. Fork

All current models of Main Street Pedicabs and Pedal Trucks are built with a heavy duty 'triple-clamp' style front fork. If your model is not equipped with this fork or you have replaced the original triple clamp fork, it is imperative that you check your fork before each ride for cracks. Mountain bike style forks should be replaced at least once a season. If you carry more than two people in your pedicab at any time, we recommend that you upgrade to a stronger triple-clamp style fork. If your vehicle is equipped with a front hub electric assist system it is strongly recommended that you upgrade to a heavy duty triple clamp front fork, as this puts added stress on your fork. Always use 1 1/8-inch chromoly mountain bike forks made for 26-inch wheels.



Left: "Triple-Clamp" style fork; Right: Solid "Mountain Bike" style fork

Main Street Pedicabs sells 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!



F. Wheels

The conditions under which the average pedicab 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. Have your wheels regularly trued by a professional bicycle mechanic to help prevent broken rims and spokes.

1.1 Axle Nut Adjustment

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 fine-tune brake disk position.

To properly set pre-load tension on the axle bearings, the axle nut (Fig. 15, A) should be backed off until the aluminum spacers (Fig. 15, B) between the nut and the wheel hub can be spun slightly by hand. With the wheel off the ground, grab the tire and try to rattle it on the axle. If excessive play is detected, tighten axle nuts. If the nuts are too tight the axle bearings will bind and the wheel will slow down quickly after spun by hand or pedals.



Figure 15. Rear wheel hub and axle nut assembly. A) Axle spacer; B) Axle nut

G. Axle/Differential

1.1 Axle Removal

The cab portion of the pedicab must be removed in order to remove and inspect the differential by this method.

1. Use a large adjustable wrench or 1 ¼" socket to loosen the axle nuts and slide the wheels off the axle.
2. Use a ½" socket wrench to remove the 8 nuts on the 4 bearing collars. Use a 3mm allen key to loosen the set screws on the black bearing collars. Slide the bearings away from their mounts on the axle to free the axle. Lift the axle out the top of the frame.

2.1 Differential Disassembly

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 (Fig. 16) 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 (Fig. 17, A), axle sprocket, axle washer, differential housing, rubber seal (fits into housing). In the middle is the differential pin (Fig. 17, C) which has two sprockets (Fig. 17, B) with the gears facing in and a pin washer on the outside of each of the sprockets.



Figure 16. Sprocket side of differential - showing two bolts going into housing and four nuts on bolts all the way through housing

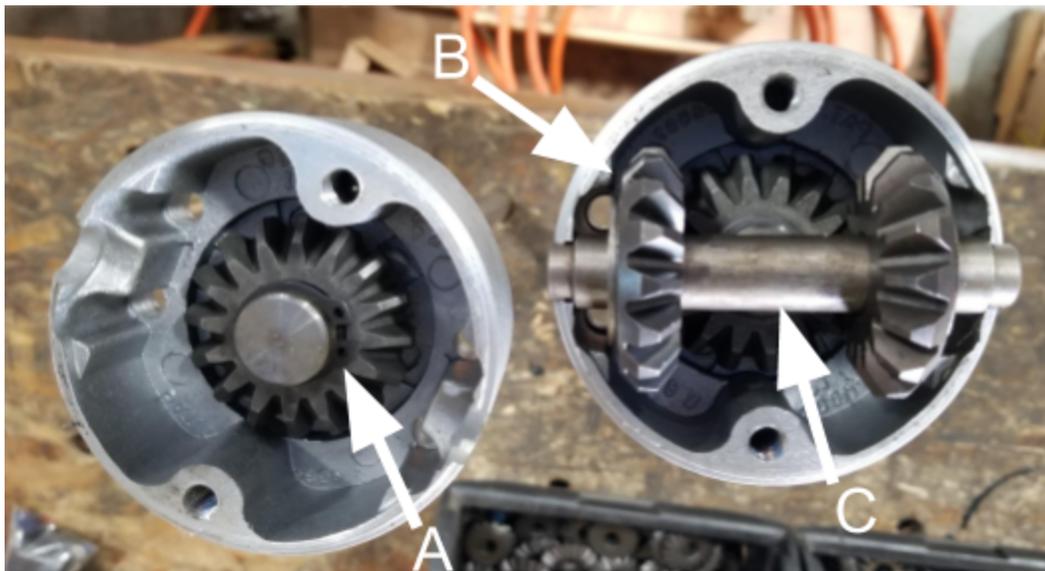


Figure 17. Axle halves. A) Locking collar; B) Sprocket; C) Differential pin

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.



Section II: Electronic Systems

A. Electric Motor System

1. Proper Usage of Electric Motor

Select models of Main Street Pedicabs and Pedal Trucks are equipped with a Bafang mid-drive electric motor. The electric motor system is the most fragile component of your pedicab 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 pedicab.* The motor system is intended to *assist* the driver, after the driver has started pedaling. Using the electric motor to start the pedicab will result in a burned out motor controller or primary reduction gear. Always continue to pedal once the motor is engaged.

If you are experiencing issues with your Bafang Mid-Drive motor system, many troubleshooting resources can be found online, or by speaking with a technician at Main Street Pedicabs. Main Street Pedicabs can provide motor repair services.

2. Lithium Battery

Bafang BBS01, BBS02, and BBS HD motors use a 48V Lithium Ion battery. Lithium batteries purchased from Main Street Pedicabs are shipped fully charged. To recharge your battery, connect it to the supplied charger in a safe charging location. The light on the charger will be red when charging and green when fully charged. A full charge can take up to 8 hours.

Lithium batteries are fragile and potentially dangerous. **Please read these safety instructions:**

Lithium batteries may explode and/or cause a fire, personal injury, or property damage if misused or defective. Lithium batteries should be stored and charged in areas where all other flammable materials have been removed. It is recommended that batteries be stored and charged in a fireproof container.

Do not charge lithium batteries unattended. When charging keep battery in a well-ventilated area. Do not recharge the battery while it is still in the vehicle. Do not charge the battery in your house or any structure where people could be injured or property damaged in the event of a fire. Only charge lithium batteries with chargers that were intended to be used, and supplied for that specific battery. Connect the charger to the electrical outlet before connecting it to the battery. Make sure of the polarity when connecting the battery - Red wire to red wire, black wire to black wire.

Keep lithium batteries away from children.



If a lithium battery is dropped or damaged, do not attempt to recharge it. Lithium batteries should be replaced or professionally inspected if dropped or damaged.

One sign of lithium battery failure is swelling, or 'ballooning' of one or more cells. This is a result of a chemical reaction inside the cells that produces Hydrogen or Hydrogen Fluoride gas, which are very dangerous and can cause fire, explosion, poisoning, and chemical burns. If you notice swelling, puffing, or 'ballooning' of any of your cells, have your battery professionally inspected or replaced immediately.

Dispose of old batteries in accordance with federal and local regulations.

B. 12 Volt Battery

Lighting systems on Main Street Pedicabs use a 12 volt battery. *The 12 volt battery and charger are NOT interchangeable with any electric drive motor batteries or chargers.*

Section III: Cab

1. Patching Fiberglass

Holes can be filled using Bondo Auto Body Filler and finished over with the proper color gelcoat, which can be obtained from Main Street Pedicabs. To fix a hole with Bondo, tape the back of the hole, fill with bondo, and depress the bondo below the surface, so that the gelcoat layer can be even with the surrounding surface. Bondo requires cream hardener.

Mix Gelcoat and fiberglass resin in a 1:1 ratio, then add liquid hardener (more hardener will dry faster). The gelcoat will be rock hard when dry, so apply it as evenly with the surrounding surface as possible to minimize sanding. Once the gelcoat has dried, use sandpaper to smooth out the 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.

2. Fiberglass Reinforcement

Fiberglass can be reinforced from the backside using fiberglass resin, liquid hardener, and fiberglass repair cloth, which are all available at large hardware stores. Be sure to use disposable gloves to protect your hands, and a respirator rated to filter solvents from harmful fumes.

Mix the resin and hardener in a disposable container and use a disposable paintbrush to paint onto desired area. After the surface has been painted, 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.

3. Rivet Replacement

Main Street Pedicabs use 3/16" rivets to affix the lights, canopy mounts, and several of the aluminum supports. These can be removed by using a 3/16" drill bit and drilling down through the top of the rivet. Keep the rivet from spinning by holding the back side of the rivet with pliers.

Insert the new rivet into the hole and install with a rivet gun or hand riveter.