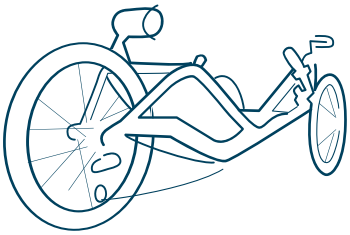
Owner´s Manual 2004

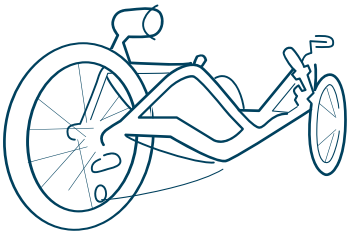
Big Cat HPV. LLC
720 Business Park Blvd Ste 22
Winter Garden, Fl 34787

OwnerManual2004 /Road and Speed

v.6, revised 03/17/06



Contents



Introduction

Thank you for purchasing a Catrike!

Please take a moment to read through this document, especially the sections on safety and riding tips. You may find that the most comfortable place to be while you're doing this is sitting (stationary) on your trike!

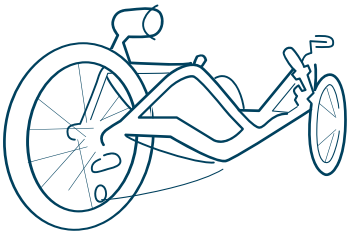
Big Cat HPV was founded in 1999, when founder Paulo Camasmie emigrated from Brazil and worked with Steve Delaire of Rotator Recumbents to create a new tricycle design. This design lives on (in a somewhat altered form) as the Rotator Comfort 3.

In 2000, Paulo moved to Florida and started building the original Catrike Road. It shared a number of characteristics with the current Catrikes, such as light weight and a narrow track. Then, in 2001 the idea for what was to become the original Speed started to take shape. The production prototype was ready in time for Interbike 2002, and the first units started to ship in early 2003. The Speed represented something unusual in the recumbent industry: A high quality, high performance, aesthetically pleasing product that was also priced very reasonably.

The combination proved to be a great success and was well received by both the press and customers. Total Catrike production prior to the introduction of the Speed was approximately 80 units – typical for a small recumbent builder. In the first year of the Speed's availability, almost 200 were built.

Building on the success of the Speed, a new Road was developed in 2003 and started shipping in early 2004. The Speed and the Road are actually very similar physically, and share many parts, but they have a different character. The Speed is sporty and very responsive, and is designed to appeal to performance-oriented riders. The Road has a more neutral handling feel and is designed to appeal more to recreational and touring riders.

We hope you enjoy owning and riding your Catrike!



Safety and riding tips

Safety tips

Riding safely depends on many things, from proper equipment to alertness to your attitude on the road. Above all, use common sense.

The ideal place to ride your Catrike is bicycle trails & paths. The Catrikes are probably the best choice in that setting. You will enjoy the view, relax and socialize. You will have the most comfort, piece of mind and fun. If you elect, however, to ride on streets, you will have to do it at your own risk and know that whether it is a regular bicycle, a recumbent or a tricycle you have to be very careful. Because a trike is so low to the ground you have to be extra careful with cars and trucks. Therefore you have to take a great care to make yourself visible. In part, you do this with equipment such as brightly colored clothing and helmets, use of the safety flag that comes with every Catrike, and also with blinking lights and reflective stickers. But you also have to ride in such a way that you engage the attention of motorists, making eye contact, signaling your intentions, being courteous, smiling and waving. You use your voice to get attention. You also pay a lot of attention when riding in traffic and you obey all traffic laws and rules of the road. The positive side is that recumbent tricycles are very much a novelty, and once you make sure that you are being seen, you generally find that motorists leave you more room and respect when you're on our Catrikes than they do when you're on upright bicycles. Nevertheless, always assume that they don't see you.

Reflective and high-visibility gear is great (and we use it all the time), but it's no substitute for lights when riding at night or in low-light conditions. The new super-high-output LED rear lights are very effective. Any small headlight (those that look like flashlights) may be enough to help oncoming motorists see you, but it's not sufficient to actually light your way. If you're going to ride at night, spend the money and get a good headlight.

While it may seem silly to wear a helmet on a low-slung tricycle, you should always do so. It's very hard to tip the trike over, but it can happen. Also, if you have a close encounter of the worst kind with a car or stationary object, chances are you won't stay on the trike. Always wear a CPSC-approved cycling helmet when riding your Catrike. A brightly colored helmet also helps motorists see you.

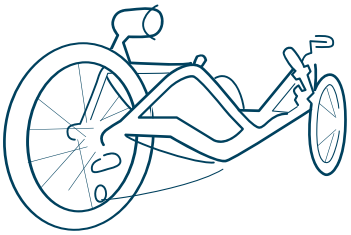
You're very low, and it's possible for road grit to get whipped up by the wind or kicked up by passing cars and hit you in the face. This is especially true in the spring in areas where sand is used on the roads in winter. It's a good idea to wear sunglasses to protect your eyes. You may also want to wear gloves. It's easy to reach the ground on your Catrike, and getting a palm full of sand and ground glass is no fun.

We strongly recommend the use of a mirror. Don't rely entirely on it. Turn and look before changing lanes or turning across the line of traffic.

Riding along a line of parked cars presents a particular danger for those on low-slung bikes and trikes. Motorists have a habit of opening their doors suddenly without looking behind them... and even if they do look, they're concentrating on looking for oncoming cars, not a low trike. When riding along a line of parked cars, look for occupants inside as you approach. If you see someone sitting in the car, give them a bit of extra room.

Pedestrians, too, often aren't looking where you are. Use caution when approaching crosswalks and use your bell, horn or your voice to alert those who may be stepping into the street.

Your Catrike has a fixed seat for several good reasons, and one of these is that it keeps the center of gravity where it should be for good handling. If you carry loaded panniers, avoid putting the weight too high and too far aft, or it can cause poor, even unsafe, handling.



Riding tips

If you don't have experience with recumbent tricycles, you may find that for the first few rides you experience noticeable pedal steer (pushing hard on the pedals makes the trike swerve) and brake steer (grabbing one brake harder than the other causes the trike to swerve). These two phenomena become much less noticeable as you gain experience. Pedal steer is minimized or eliminated by pedaling smoothly at a fairly high cadence, rather than mashing hard. Brake steer is minimized by braking smoothly and evenly... if the trike lurches under braking you're overdoing it (it's like driving your car... you don't stand on the brakes every time you slow the car; rather, you learn to modulate the pressure so that the car does not lurch).

The smoothest, most enjoyable ride comes when you learn not to over control the trike. The steering is very responsive, and does not require much input at all to make the trike change direction. The less you try to steer, the smoother the ride will be.

It's possible to get the trike up onto two wheels, but this should be avoided. It puts a lot of stress on the components and can cause loss of control. Bicycle wheels, hubs and tires are not designed for heavy lateral loads, and if you go up on two wheels you're asking them to do something they were never meant for. Your Catrike is wonderfully responsive and handles very well, but it's possible to overdo it. Use common sense. You'll find that the trike stays more firmly planted when going around a corner at speed if you lean to the inside of the turn.

⚠ CAUTION

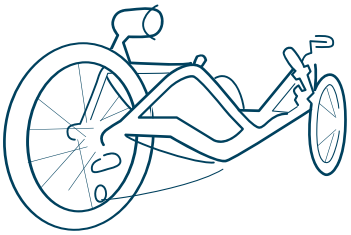
The brakes on your Catrike are very powerful. It is quite possible to do a "stoppie" on the Catrike (lock the front wheels and lift the rear wheel off the ground by jamming on the brakes). In extreme cases, you can hit the chain rings on the ground and damage them. Use common sense. Don't use maximum braking unless you really need to. (At high enough speeds, the trike won't lift the rear wheel.. it will just skid. And at very low speeds, there isn't enough momentum to hit the chain rings on the ground.)

⚠ CAUTION

Brake Steering: Our frames are designed for a diminished brake steer effect. However keep in mind that the trike is not a heavy vehicle such as a car. It does not have hydraulic, electronics or self correcting mechanisms either. It is instead, a very light recreational vehicle with a mechanical steering linkage that carries a rider sometimes over 8 times its weight. Therefore the weight & dynamics of the driver can exert total control over the capabilities of the vehicle. It does demand that the rider develops proper riding skills, such as smooth pedaling, smooth steering and smooth breaking and that it is always conscious when riding. The Catrike has front brakes only, since in a breaking situation 90% of the weight is transferred to the front of the trike. The front brakes are also independent, meaning that you can break the right wheel only, or the left wheel only. Therefore, especially in high speed or down hill situations, it is mandatory that you pull both brakes at the same time and with the same intensity. If you elect however, to brake only with one brake, this could cause the trike to steer out of your path and cause serious injury or death.

⚠ CAUTION

Make sure the boom clamp is tight enough, so the boom will not twist while you pedal. Just like a bicycle seat post clamp, it is the rider responsibility to check for the boom clamp tightness. The boom clamp is designed for a high pressure clamp action. It also included a plastic shim to be installed between the boom and the main frame for zero gap and increased clamping action. Make sure the plastic shim is correctly placed and that the boom clamp is tight enough to avoid the boom to spin inside the frame. If for any reason, you are unable to install or tight the boom clamp enough, please don't ride and contact your Catrike dealer or Big Cat HPV, LLC. Failure to do so might cause the boom to twist and cause serious injury.



Maintenance tips

Make it a habit to inspect your trike from time to time, especially when new. Fasteners have a habit of working loose at first and this can cause a safety hazard. Also, you'll find that the right front wheel tends to pick up debris from the edge of the road faster than the left front wheel, because it's running closer to the curb. The Catrike comes with Kevlar-belted tires for puncture resistance, but this does not mean they're immune to flats.

Keeping your trike clean will maximize its life. Wash it from time to time, but avoid the use of pressure washers. They do a great job of getting dirt out of tight spaces, but they do an equally good job of driving lubricant out of where it needs to be. It's better to use a bucket of water, mild detergent and a soft brush.

We recommend fitting fenders to the trike. This goes a long way towards keeping it from getting dirty in the first place.

Many new owners tend to over-lube the chain. It should not be dripping with lube. A properly lubricated chain looks dry and clean, and while it may leave a bit of a mark on your hand if you grab it, it should not be a gloppy mess. Use your favorite lube and follow the instructions.

Always keep your tires filled to the recommended pressure (printed on the tire sidewall). The tubes are not entirely airtight, and the tire will lose pressure over time. Trikes by nature will scrub the tires a bit, so they may not last as long as they would on a bicycle. Overly aggressive riding will shorten tire life.

Your seat mesh will stretch a bit and settle in over time. It's not meant to be drum-tight... it's meant to support you comfortably. Pull the straps tight from time to time when the trike is new... eventually the mesh and straps will settle into a stable configuration that you'll find is quite comfortable.

If you've purchased the optional headrest, we recommend placing the pad so that it's behind your neck, just under the lower edge of the helmet, and in a position that lets you rest your head on it if you need to but which doesn't force you to have your head on it all the time. The headrest is nice and soft, but it does transmit road vibration. On the Speed, we find that we can ride all day without using the headrest as long as the road is flat, but as soon as we start climbing hills it's nice to have that support available. On the Road, many people find that the headrest is not necessary at all.

If you're adjusting the trike to fit another rider, make absolutely certain that the chain is of the right length. In order to get the maximum possible gear range, the Catrike drivetrain pushes the derailleurs close to their maximum capacity. The chain must be long enough to handle the big chainring/big cog combination... if it's too short, it's possible to severely damage the drivetrain by shifting into this gear combination and applying power. You can get away with a slack chain, but NEVER ride with a chain that's too short.

The most critical maintenance item on your trike is wheel alignment, or toe-in. Improper toe setting is common, especially if a mechanic unfamiliar with trikes has assembled your Catrike. It can cause extremely rapid tire wear. Toe is adjusted by loosening the tie rod jam nuts and rotating the rod. Toe is checked by measuring the distance between the front tires at approximately axle height ahead of the axle, then comparing this measurement with the distance between the tires behind the axle. The difference should be no more than 1/16 inch.

Important Notice for Fender Installation

Before beginning trike assembly please note: The bar ends which are used to mount the fenders need to be installed before the grips or shifters. The text for mounting the fenders follows. You can find pictures of the process the Catrike website at . Click on the link "Fender Set Mount Instructions"

Rear Fender:

2003 Speeds, mount front of fender to boss on rear cap of mainframe, using M5x25 bolt and one M5 washer.

2004 Speed & Road, use M5x35 bolt, two 5MM flat washers (one on either side of fender) and the ¾" aluminum spacer.

For all models, the fender is also supported by the 4 wire braces which are attached to the M5 holes provided in the dropouts, using 2 M5x16 bolts & washers. The wires will need to be cut to length and then attached to the fenders according to the manufacturer's instructions.

Front Fenders:

To mount the front fenders, the bar ends need to be installed just above the brake levers on the handlebars. If you are retrofitting fenders, the bar end shifters & grips will need to be removed first (to make reinstalling the shifters easier, shift both levers all the way forward before removing them.)

Install the bar ends with the clamp bolts toward the front of the trike and the stubs pointing slightly up. Set the angle so the bar ends point straight out on both sides. Install grips and bar end shifters.

**Those with 2003 Speeds may need only one bar end as some handlebars have a welded stub from the factory.

Next, install the clamps on the bar end. You will need to use one short shim and one long shim in each clamp. Slip the clamps/shims over the bar end with the tapped hole facing forward. Leave loose for now.

2003 Speed, remove the M6x25 bolt from the front axle cap. Using the provided M6x30 and M6 washer will allow you to mount two fender mounting wires to each axle. Be sure you get the axle cap and any spacers back on.

2004 Speed & Road, insert one ¼" well nut into each axle nut. Attach two mounting wires to these using ¼" x 1½" button head screws and two washers (one on each side of the 2 wires.) Attach fenders to clamp on bar end using M5x16 bolt and M5 washers. Cut wires to length and attach to fenders according to manufacturer's instructions. Wires used to support fender can be bent by hand to adjust position of fender. After fender is centered over front wheels, tighten clamp bolt.

Assembly instructions

NOTE: We are constantly working to improve our products, and changes may be introduced in the middle of a model year. Therefore, some photos and descriptions may not precisely match the actual product. The trike shown in these instructions is an early 2004 Speed.

Your Catrike comes disassembled, but don't worry; putting it together is quite simple. A rudimentary knowledge of bicycle mechanics helps, but is not essential. If you really don't feel qualified to tackle the job, take it to your local bike shop. They'll have no trouble putting it together (but please make sure they read these instructions, especially the section on setting the toe-in).

If you're already familiar with working on bicycles and are reasonably adept with tools, it should take you one or possibly two hours to fully assemble and adjust your trike.

When you open the box, your first reaction is likely to be that something must be missing. Worry not! The Speed is such a simple design that it often catches people off-guard.

Inside the box you'll find five separate items:

- The frame assemblage, which is zip-tied to the boom, tie rod and all three wheels.
- A pair of boxes containing all other parts
- A safety flag.

The first step is to inventory the parts. You should have:

- Main frame with all four polymer kingpin bushings in place. The idler and chain tube also are preassembled and installed on the frame. The quick-release boom clamp is also installed.
- Boom with bottom bracket (BB) and crankset installed.
- Two front wheels with tubes, tires and brake discs installed.
- One rear wheel with cassette installed.
- One tie rod with polymer rod-end bearings and jam nuts installed.
- One crankset with chainrings installed.
- Seat mesh.
- Front and rear derailleurs.
- Rear derailleur hanger with bolt installed.
- Brake cables and two lengths of brake cable housing.
- Cable ferrules and cable ends.
- Three chains with PowerLink master links.
- Two kingpin/axle assemblies with brake calipers, tie rod bolts with spacers and hollow axles with retaining rings installed.
- Two handlebar assemblies with shifters, shift cables, shift cable housings, grips and brake levers installed.
- Grey plastic boom shim (6"x5.5"x.031" thick)
- Quick-release wheel skewer.
- Safety flag.

Other optional accessories such as a mirror, headrest or fenders may also be in the box.

Tools required

To put your Catrike together, you'll need:

- A set of metric Allen wrenches.
- A small adjustable wrench. We strongly recommend against the use of pliers to hold and turn nuts. It only serves to frustrate you and destroy the nut.
- The axle bolt installation tools included with your Catrike. Should you lose or misplace these tools, any piece of metal about 1/8" thick will do... the back of the blade of a table knife will work, or even a house key, for example. All that's important is that it fit in BOTH slots in the bolt and be large enough to grip with your hand.
- A bicycle chain tool.
- A small screwdriver (to adjust the derailleurs).
- A bicycle cable and housing cutter (ordinary wire snips tend to flatten and mangle the end of the cable; you can get by with a good sharp pair, but it's much better to buy the cable and housing cutter: you'll use it often in the future).

Also very good to have but not absolutely mandatory are:

- Anti-seize compound (available at any automotive store).
- RTV or silicon sealant is recommended instead of thread-lock compound as the strong bond of thread-lock can easily damage aluminum threads.
- Electrician's tape (use a name brand).
- Zip ties.
- Bicycle pedal wrench (you can use your adjustable wrench, but a proper pedal wrench is a good thing to have).
- "Fourth hand" tool (a cable stretcher... handy for holding the cable while you make derailleur and brake adjustments).

- A good bicycle maintenance book. There are many excellent ones out there... pick your favorite.
- Sharpie indelible marker (to mark the location of the boom once it's adjusted to fit you).

!IMPORTANT NOTE!
The frame and many other parts of your Catrike are made of aluminum. It is VERY easy to strip aluminum threads, especially if steel fasteners are going into them. BE CAREFUL not to cross-thread or overtighten any fastener!

TIP: An easy (albeit rough) way to estimate the proper tightness for aluminum fasteners is to use two or three fingers on the wrench, no more. This limits the amount of force you can apply to the tool before your fingers slip off. Use two fingers for small fasteners, or three for larger ones.

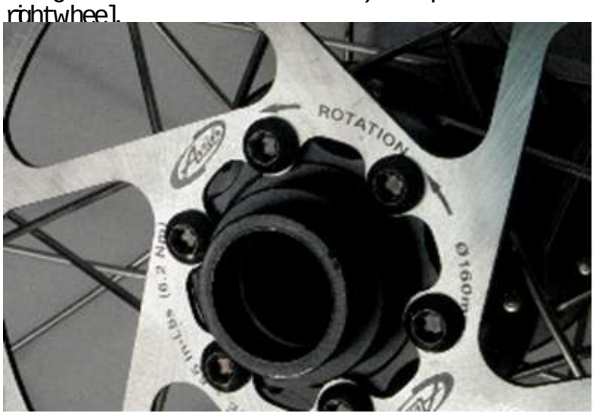
Because we have no control over how tightly you assemble your Catrike it is extremely important for you to re-check all of the threaded fasteners (pedals, axle bolts, and all other nuts and bolts) on the trike after you've ridden it for a couple of hours, just to make sure everything is still tight. Periodic checks during the riding season also are a good idea. Virtually all of the trouble reports we receive are nothing more than fasteners that have worked loose.

- Insert the derailleur hanger into its recess on the right dropout and tighten the bolt.

- Insert the quick release into the rear wheel, put the wheel into the dropouts, tighten and close the quick release.

- Attach the front wheels to their respective kingpin/steering arm assemblies. First you need to identify the left and right kingpin assemblies and the left and right wheels.

Look at the writing on the brake discs. At least one of them will have a marking that says "DIRECTION OF ROTATION." This will tell you which wheel it is (just remember that the brake disc goes on the inside of the wheel). This photo shows the right wheel.



The kingpin assemblies can be identified by looking at the brake calipers. The left-hand assembly has the brake caliper on top, and the right hand has the brake caliper underneath. All axles have right hand threads so there is no difference between a right or left axle. (Note: Early versions had right & left hand thread axles & nuts)

Both axles have Right Hand Thread (Early versions of the Catrike had right and left hand thread axles & nuts).

Unscrew the axle bolts, remove them and the retaining washer from the end of the axle tube, and slide the axle tube out the back of the kingpin assembly.

Loosen the brake caliper adjustment bolts. This will let the caliper float free while you're mounting the wheel.

Now you can place the wheel in position, sliding the disc in between the brake pads. Place the wheel hub opening directly over the axle, then slide the axle through the hub from behind the kingpin assembly (the bolt and its retaining ring go on wheel. make sure you don't slide the axle in backwards).

Place the cone-shaped retaining ring (flat side in) against the hub, thread the axle bolt in and snugly hand-tighten it using an appropriately sized piece of metal (a chainring bolt tool fits perfectly... the back of the blade of a table knife also works well).

!IMPORTANT SAFETY NOTE !
These bolts hold the wheels on, so it's VERY important that they be kept secure. Check them from time to time. We recommend using a small amount of RTV or silicone sealant on the last few threads to keep the axle nut from vibrating loose. As the RTV will resist vibration nuts installed in this manner will not need to be tightened excessively to keep them in place. Sufficient torque can be applied using the provided axle tool.

- Next adjust the calipers. One of the nice things about the Avid disc brakes on your Catrike is that they are very easy to adjust:

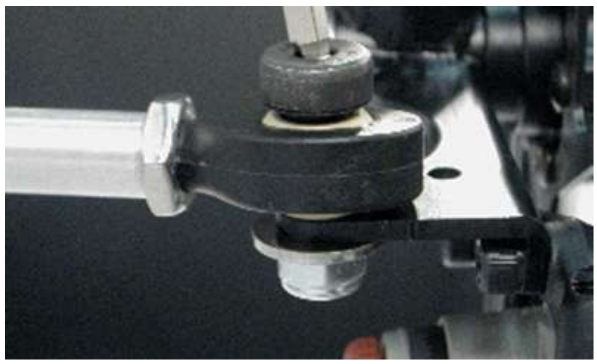
  - If the caliper mounting bolts have been tightened, loosen them.
  - Adjust the brake pads, use the knurled plastic adjuster knobs on either side of the caliper until the pads are firmly contacting the rotor. First screw the larger knob (the one closest to the wheel hub) in until the disc is offset slightly away from the wheel hub. Then screw the smaller knob in until the rotor is held tightly.
  - Tighten the caliper mounting bolts.
  - Back off the pad adjuster knobs until the disc spins freely and without noise... about 1/2 turn each.

The wheel should now spin freely. If you hear any noise, back off the adjusting knobs a bit more until it goes away.

- Now you can install the kingpin assemblies on the trike. Simply slide them up into the polymer bushings from below. The kingpins are held in place by the handlebars, which clamp around the top end of the kingpins.

Before you attach the handlebars, set the trike on its wheels to make sure the kingpins are fully seated. Loosen the pinch bolts on each handlebar, slide each handlebar onto its corresponding kingpin and tighten. The handgrips should be behind the kingpins and outboard of them, between the kingpin and the tire. You'll know you have it right if the shifters point forward and the brake levers are in line with the centerline of the trike. The position of the grips can be adjusted in or out if you wish, but make sure you realign the shifters and brake levers.

- Next comes the tie rod. The rod goes under the seat side rails and over the main frame tube, and bolts in place on top of the small plates on the kingpin assemblies. Note that one of the bearings is reverse-threaded... this is important if you disassemble the tie rod, since using the wrong jam nut or attempting to thread the wrong bearing into the rod will strip the threads.



Take the tie rod and turn the jam nuts all the way out towards the rod-end bearings if they aren't already, then screw the rod-end bearings in as far as they'll go. Locate the tie rod bolt on each kingpin assembly. Hold the locknut with an adjustable wrench and remove the bolt, spacer and washer.

Bolt each rod end bearing to its kingpin assembly, placing the ball of the rod-end bearing on top of the kingpin plate. The washer goes between the nut and the steering arm. The bolt goes in from the top, and the nut goes on underneath the plate. Tighten everything snugly.

TIP: This is one of the few places on the Catrike where a steel bolt is threaded into a steel nut. The caution about the ease of stripping threads does not apply here.

!IMPORTANT SAFETY NOTE !
The tie rod bolts should be kept tightened securely. If they get loose, the steering will get sloppy and the wheels may shimmy under certain circumstances. If the bolts fall out, loss of control could result. Check them from time to time!

- Install the brake cables. This is done by threading the cable through the brake lever and fitting the small metal cylinder on the end into the recess in the lever. Screw the barrel adjusters on the bottom of the levers almost all of the way in (they'll be used later to take up slack during brake adjustment).

The procedure for the left and right brake is the same. Slide the brake cable housing on (the shorter one is for the right brake). You should have eight cable ferrules. Four are for the brake cable housings. Thread the cable through a ferrule, then through the housing, then through another ferrule.

The right brake cable goes straight from the lever to the brake. The left cable goes in front of the tie rod, then loops around it before going to the brake caliper.

Thread the end of the cable through the fittings in the brake actuating arm. The ferrule fits under the rubber boot. Loosen the cable clamp bolt, put the cable under the clamp plate, pull it taut and retighten the bolt. Using a bicycle cable cutter (preferred) or a SHARP pair of wire cutters, cut the brake cable so that a few inches (enough to grab with your hand) extends beyond the clamp bolt.

!IMPORTANT SAFETY NOTE!
The end of the cut cable MUST be sealed, or it will fray and cause a serious safety hazard. Those wires are sharp! Crimp on one of the included cable ends.

TIP: If you run out of cable ends, and can't get to a bike shop for more, you can use a drop of cyanoacrylate glue (Krazy Glue), some epoxy or a blob of solder to seal the cable ends.

- Adjust the brakes by first pulling hard on both brake levers to seat the cables. Turn the barrel adjusters out until the levers do not bottom out when the brakes are applied fully. If you cannot set the brakes using the barrel adjusters, you'll have to take up more slack in the cable by loosening the clamp bolt and pulling the cable tighter. Screw in the lock nuts on the adjusters.

If the brake makes noise or drags, adjust the caliper position and/or the brake pad relief using the caliper mounting bolts and pad adjusting knobs.

- Install the boom on the main frame tube. Be sure to place the plastic sleeve between the main frame tube and the boom. The plastic sleeve referred to is 6" x 5-1/2" polymer sheet. It is installed with the 6" dimension (the long side) running forward and backward along the boom. If you install it with the long side around the boom it will cause to boom to be much too tight assuming you manage to force it into the frame.

Note that 2003 and early 2004 Catrikes (like the one pictured in these instructions) have a boom that slides over the main frame, held in place by two pinch bolts. Newer models have a boom that slides inside the main frame tube, with a collar with a quick-release.

When you install the boom, make sure the plastic sleeve is properly placed, flush with the end of the frame under the collar (newer trikes) or flush with the end of the boom tube (older trikes).

Once the boom is in place, tighten the quick release (or pinch bolts) only enough to keep it from sliding: you'll be adjusting it later.

!IMPORTANT SAFETY NOTE!
Never lubricate or wax the part of the boom that sits inside the frame. This can cause it to slip. Once it's adjusted, make sure it's tightened enough to avoid slipping under power.

- Install the front derailleur on the derailleur post. Line up the cage with the chainrings and position the curve of the derailleur cage so that it clears the big chainring by about 2mm (1/8"). There should be a small plastic guide taped to the cage to assist you in this.
- Install the rear derailleur by bolting it in place.
- Run the shifter cables. Cable guides have been provided on the boom and rear chain stay. The actual routing is not important, as long as sharp bends are avoided. The recommended routing for the left side (front derailleur cable) is to run the cable between the seat brace and the seat mesh (not yet installed) from behind before running it forward. Likewise, run the rear derailleur cable between the seat brace and the mesh from the front.

- Installation of the cables at the derailleurs is similar to the installation on the brakes. Put a ferrule on the end of each cable housing. Thread the cables into the derailleurs, pull them taut, clamp them down, trim and seal the ends. Before you clamp the rear derailleur cable in place, screw the barrel adjuster on the derailleur in as far as it will go, then back it off 1 to 1-1/2 full turns. Note that there is no adjuster on the front derailleur.
- Install your preferred pedals. We recommend that you use clipless pedals. They're not only safer, they're far more convenient and comfortable than using plain pedals.

!IMPORTANT NOTE!
The left pedal is reverse threaded. Make sure you don't try to install the pedals backwards, or you might strip the crank threads. Your pedals will be clearly marked so you can tell which is which.

TIP: Using anti-seize compound on the pedal threads will make future disassembly much easier and will help prevent damage to the threads in the crank arms.

- Install the seat mesh. Lay the mesh out to get your bearings. The upper edge of the seat has two straps and buckles. The sewn-in sleeve for the flag goes on the left side of the seat. Place the seat mesh over the frame and thread the straps into the buckles. Note that there's a right way and a wrong way to thread the straps into the buckles. It's easy to tell if you've done it wrong: it won't hold tension.

First thread the straps on loosely and position the seat mesh so that it's square on the frame, with the cutouts for the lower seat support tubes positioned properly. Tighten all of the buckles as tight as you can with your hands. You will find that when you sit on the seat, the mesh will loosen a bit and buckles will slip or the mesh will shift a bit.

This is normal. Adjust the position and re-tighten as needed. The seat mesh will stretch a bit at first, requiring re-tightening, but will soon break in and stop moving. The comfort of the Catrike seat comes from the mesh cradling and supporting your body, so it's okay if the buckles slip a bit as they find their preferred tension. Trying to keep them drum-tight is not only futile (because of the way the buckles work under load), it's not as comfortable as letting them support your body fully.

It is normal to have a small wrinkle on the seat tubes at the base of the seatback.

- Sit on the trike, wearing shoes like those you'll have on when riding, and adjust the boom length. This is done by loosening the boom release enough to allow the boom to move, then putting your instep on one pedal and extending your leg fully (the boom will rotate... just move it back to vertical with your hand). You should be able to lock your knee, but not have to lock your knee. You can fine-tune the position later. Re-tighten the boom release (or pinch bolts) enough to keep the boom from slipping.

Humans are capable of producing some incredible power for very short periods of time when accelerating from a dead stop. If your boom is not clamped tightly enough, it will rotate and slip forward.

- Using a chain tool, assemble the three separate lengths of chain and install it. The power side (upper run) goes under the idler, between the main cross member and the tie rod, and over the top of the chainrings. The return side (lower run) goes through the chain tube.

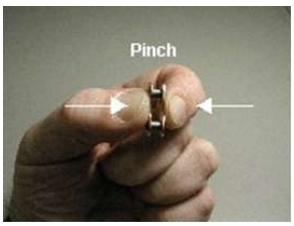
TIPS: It's easier to thread the chain if you immobilize the crank. This can get messy! Protect your work surface and keep paper towels handy. It's easy to thread the chain through the rear derailleur cage incorrectly. Make sure the chain runs cleanly through it, and not over the retaining tabs.

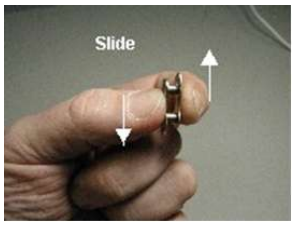
Adjust the chain length. To do this, shift onto the largest cog on the rear and the largest chainring in the front. Pull the chain taut, so that the rear derailleur cage is fully extended. Then add two links. That will be close to the ideal length for the chain. Use the included PowerLink to hold the chain together.

If your Catrike will be used by more than one person, feel free to use two PowerLinks so that the chain can be easily adjusted for other riders: simply set the trike up for the shorter rider, then insert a piece of chain long enough to accommodate the taller rider. If this short piece of chain is between two PowerLinks, adjusting the trike should take only a couple of minutes. It's a good idea to mark the boom for both length and orientation for each rider using a Sharpie marker, so that the setting can be repeated easily.

Just to be clear on what we mean by "two links," check the photo. Don't forget that the PowerLink counts as one link.

There's a trick to opening a PowerLink that seems to elude many people. First hold the link between your thumb and forefinger, and push the plates together (towards one another). Then slide them in opposite directions, as if you were snapping your fingers. Opening a PowerLink should be easy... if you find yourself reaching for a pair of pliers, you're not doing it correctly.



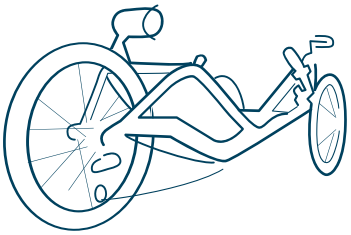


TIP: It's easier to work on a chain under tension if you create a loop of slack and hold it in place with a stiff, bent wire, made from an old spoke or wire coathanger.

- Now you can adjust the derailleurs. Your Catrike should have shipped with information sheets for both the front and rear derailleurs that describe this process. It will also be described in any bicycle maintenance book.

- Fill the tires to the recommended pressure (you can find this on the sidewall of the tire).

You're almost ready to ride! Only one more thing to do, and it's a very, very important adjustment: Toe-in.



• Any vehicle with left and right wheels has a setting called "toe." This refers to the extent to which the front wheels point towards one another. Toe in means that the front edges of the wheels point inward slightly. Toe out means they point outward slightly.

The purpose of toe is to keep the steering nice and tight. All bearings and linkages inevitably have a little slop in them. By applying a bit of force to the entire system, it's possible to remove that slop. But too much toe and you cause the tires to scrub because they're pointing far off the line of travel. This causes premature tire wear and increased rolling resistance. What you're looking for is just a little bit of toe.

Toe is set by measuring the distance between the front wheels at axle height ahead of the axles, then comparing it to the distance between the wheels at axle height behind the axles. The difference should be only 1/16". It can be measured with a tape measure, with a simple dowel or by using a telescopic curtain rod as a sort of caliper (trammel). The method used is not important: just be sure to measure between the same points (e.g. inner surfaces of the front tires, centerline of tires, etc.) on both front and back.

The simplest method we've found is to take a locking steel tape measure, hold the tape just above the boom, place the tape measure housing firmly against the wheel rim and extend the tape until the end is firmly against the opposite rim. Take careful note of the measurement.

Now do the same for the back of the wheel, running the tape just above the seat. The rear measurement should be no more than 1/16" greater than the front measurement. It's very important to get this right.. if you have a quarter inch of toe your tires will wear out VERY quickly and your trike will handle oddly.

Sharp-eyed readers will note that if you use this method you won't actually be measuring points on the wheel that are 180 degrees apart. This is true... the boom and seat tubes get in the way of taking measurements that are actually at axle height. However, the difference between the measurement you get and the true measurement is very small. If absolute accuracy is important to you, you should make a trammel that has the ability to bridge the boom and seat tubes.

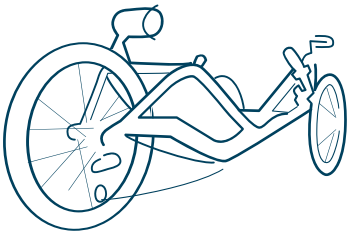
TIP: We hear a lot of reports from the field of improperly set toe, with resulting excessive tire wear. Don't assume it's been done right! Check it yourself.

To adjust the toe, simply loosen the rod end jam nuts rotate the tie rod by rolling it between your fingers. The rod end bearings are threaded in opposite directions, so rolling it one way will make the rod longer (more toe in) and rolling it the other way will make the rod shorter (toe out). The direction in which the rod rotates depends on which way it was installed, and is not important. The adjustment is sensitive: a quarter-turn is about all that's needed to get from zero toe to correct toe. When you have the toe set correctly, use an adjustable wrench to tighten the jam nuts against the ends of the aluminum tie rod tube. We recommend the use of thread-lock compound on the tie rod end threads to keep the jam nuts from vibrating loose.

• Attach the flag. The seat mesh is fitted with a sleeve that you can use to hold the flag. Some riders prefer not to use this, however, because the flag is not held vertically. If you prefer, you can use the steel bracket that comes with the flag. The best way to fit this is inside the left rear dropout, with the flanges facing the centerline of the wheel. You may wish to remove any rough edges from the bracket with emery cloth or a file to prevent scratching the frame's finish.

• You're done! Put on your helmet and go have some fun!

!IMPORTANT NOTE!
It is normal for cables and assembled parts to settle and "bed in" during the first several days of riding. It is important to go over the trike carefully during this break-in period and adjust anything that's loosened up. That means all fasteners, especially the axle bolts and the tie rod nuts and bolts.



Specifications

Specifications – 2004 Catrike Speed
Weight: 28 lbs. (w/o pedals or optional headrest)
Footprint: 31"x70" (approx.)
Frame: Aluminum 6061-T6
Wheelbase: 940mm (37")
Wheel Track: 685mm (27")
Total Width: 787mm (31")
Seat Height: 190mm (7")
Seat Angle: 37 Degrees From Horizontal
Bottom Bracket Height (ave.): 355mm (14")
Wheels: Front 16" (349), 20mm Disc Hub With Hollow Alloy Axle
Rear 20" (406)
Turning Circle: 13 Feet (Outside Axle to Outside Axle)
Turning Radius: 78 Inches
Gear Inch Range: 17" To 98"

Fit & Ergonomics
Rider Weight Limit: 275 lbs.
Seat Width: 15-1/4"
Boom Options / X-Seam: Standard 39-46", Long up to 53"

Components
Truvativ Elita Triple Crankset 165mm Black 30-42-55T chainrings
Truvativ Isis Drive Hollow Bottom Bracket
Shimano Tiagra Front Derailleur
Dura Ace Bar End Shifters
Avid Ball Bearing Disc Brakes w/ Avid Brake Levers
Sram 7.0 11-34 9sp. Cassette
Deore Rear Derailleur
Sram PC-59 Chain
Primo Comet tires w/ Kevlar Belt

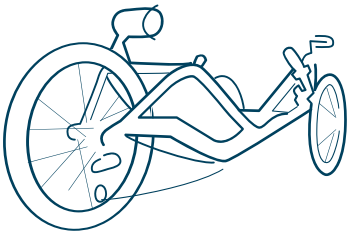
Finish
Powder Coated Silver With Clear Coat
Seat Color: Blue

Specifications – 2004 Catrike Road
Weight: 31 lbs. (w/o pedals or optional headrest)
Footprint: 31"x70" (approx.)
Frame: Aluminum 6061-T6
Wheelbase: 940mm (37")
Wheel Track: 685mm (27")
Total Width: 787mm (31")
Seat Height: 254mm (10")
Seat Angle: 43 Degrees From Horizontal
Bottom Bracket Height (ave.): 355mm (14")
Wheels: Front 20" (406), 20mm Disc Hub With Hollow Alloy Axle
Rear 20" (406)
Turning Circle: 14 Feet (Outside Axle to Outside Axle)
Turning Radius: 84 Inches
Gear Inch Range: 17" To 98"

Fit & Ergonomics
Rider Weight Limit: 275 lbs.
Seat Width: 15-1/4"
Boom Options / X-Seam: Standard 39-46", Long up to 53"

Components
Truvativ Elita Triple Crankset 165mm Black 30-42-55T chainrings
Truvativ Isis Drive Hollow Bottom Bracket
Shimano Tiagra Front Derailleur
Dura Ace Bar End Shifters
Avid Ball Bearing Disc Brakes w/ Avid Brake Levers
Sram 7.0 11-34 9sp. Cassette
Deore Rear Derailleur
Sram PC-59 Chain
Primo Comet tires w/ Kevlar Belt

Finish
Powder Coated Cobalt Blue
Seat Color: Black



Catrike Limited Warranty

Big Cat HPV, LLC warrants Catrike tricycle frames and steering components against defects in materials or manufacturing for the life of the tricycle, while owned by the original retail purchaser. The limited lifetime warranty on the frame and steering components does not apply to the paint/finish; this is covered under the limited 1-year warranty. Warranty coverage on Catrike proprietary components (excluding tires, tubes and cables) extends for one year while owned by the original retail purchaser. Warranty coverage of non-proprietary components will be covered by the warranty stated by their original manufacturers.

Warranty coverage is conditioned upon the tricycle being assembled and adjusted correctly, being operated under normal conditions and use, and being properly maintained. Proof of purchase is required for any claims made under this warranty. The warranty is valid for the original purchaser only and is non-transferable.

This warranty does not cover
Normal wear and tear.

Any damage, failure or loss caused by accident, misuse, neglect, abuse, theft, or failure to follow instructions or warnings in the owner's manual.

Any damage, failure or loss caused by use of tricycles for stunt riding, ramp jumping, acrobatics or other similar activities, or in any other manner for which they were not designed. Bending of frames, forks, handlebars, seat posts or wheel rims can be a sign of misuse or abuse.

Any damage, failure or loss caused by the use of tricycles, not intended for such use as, power driven vehicles.

The original owner shall pay all labor charges connected with the repair or replacement of all parts. Under no circumstances does this limited warranty include the cost of shipment or transportation to or from an authorized Catrike dealer or Big Cat HPV.

Useful product life cycle
Every Catrike tricycle and frame set has a useful life cycle. This useful life cycle is not the same as the warranty period. The warranty identifies the period of time that Big Cat HPV will replace the product if this becomes necessary. When Big Cat HPV provides a lifetime warranty, this does not guarantee that the product will last forever. The length of the useful life cycle will vary depending on the riding conditions and care the trike receives. Competition, jumping, downhill racing, trick riding (e.g. riding on two wheels, wheelstands), trail riding, riding in severe conditions or climates, riding with extremely heavy loads or any other non-standard use can substantially shorten the useful product life cycle of a Catrike tricycle or frame set. Any one or a combination of these conditions may result in an unpredictable failure of a Catrike tricycle or frame set that would not be covered by this warranty. All Catrike tricycles and frame sets should be periodically checked by an authorized Catrike dealer for indications of potential failures including cracks, corrosion, dents, deformation, paint peeling and any other indications of potential problems, inappropriate use or abuse. These are important safety checks and very important to help prevent accidents, bodily injury to the rider and shortened useful product life cycle of a Catrike tricycle frame set.

Crash Replacement Program
If your Catrike tricycle or frame set ever fails in such a manner that the warranty is denied, you are still eligible for Catrike's crash replacement program. This program is intended to provide for a low cost frame replacement when a frame failure is determined to be caused by accident, crash, abuse or any other non-standard use. Please see your Catrike dealer for details. This crash replacement program is available to the original owner for the lifetime of the tricycle or frame set. Your proof of purchase will be required.

Limitations
Big Cat HPV reserves the right to make sole determination of whether any failure or damage claimed under warranty was caused by material or manufacturing defect. Proof of purchase from an authorized Catrike dealer is required for any limited warranty replacement/repair or crash replacement program.

The foregoing warranties are in lieu of and exclude all other warranties not expressly set forth herein, whether express or implied by operation of law or otherwise, including but not limited to any warranties of merchantability for a particular purpose.

Big Cat HPV shall in no event be liable for incidental or consequential losses, damages or expenses in connection with its tricycle products. Big Cat HPV's liability hereunder is expressly limited to the replacement of goods not complying with this warranty or, at Big Cat HPV's election, to the repayment of an amount equal to the purchase price of the product in question.

Some states do not permit the exclusion or limitation of implied warranties or consequential damages, so the preceding limitations and exclusions may not apply to you.

Procedures
Warranty service will be performed by Big Cat HPV or a authorized Catrike dealer. Proof of purchase must be provided. Transportation to and from the authorized Catrike dealer is the responsibility of the purchaser.

Big Cat HPV will have the option of either repair or replacement at no charge for any defective product, or repayment of an amount equal to the purchase price of the product.

In the event Big Cat HPV elects to replace a defective frame, a new frame of equal or greater value will be provided. The new frame may not be the exact model purchased. Big Cat HPV is not responsible for dealer labor charges for component changeovers when a frame is replaced after one year from the date of original retail purchase.

If you elect to repair a defective product yourself or use the services of someone other than a Catrike authorized dealer, or if you use a replacement part not supplied by Big Cat HPV, Big Cat HPV will not be liable for any damage, failure or loss caused by the use of such unauthorized service or parts.

IF YOU HAVE A PROBLEM
Contact your Authorized Catrike Dealer. Proof of purchase required.
Or contact Big Cat HPV at:

Big Cat HPV, LLC
720 Business Park Blvd, Suite 22
Winter Garden, FL 34787
USA

Phone: (407) 905-0626
Fax: (407) 905-0820

http://www.catrike.com

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Big Cat HPV. LLC
720 Business Park Blvd Ste 22
Winter Garden, Fl 34787