

# **EZ-1/EZ-CLASSIC QUADRIBENT™**

**By Blackbird Designs Inc.**



**Mark 5.2 June 2011**

## **Assembly Instructions And User Guide**

The Quadribent™ is 2-seat, side-by-side, human powered vehicle that enables almost anyone to enjoy cycling. The 4-wheeled design maximizes stability and the recumbent position maximizes your seating comfort. Heads-up design eliminates neck, shoulder and hand pain. Co-Captain steering allows either rider to pilot the vehicle and the dual-drive allows people with different physical abilities to ride together with either rider generating from 0 to 100 percent of the power. The Quadribent™ is great for combining an adult rider with a child and/or physically challenged rider. The Quadribent™ can be separated into two recumbent bikes for “solo” riding and easy transportation however it is not recommended to be done on a regular basis. Most people never separate it.

### **General Rules For Safe Riding**

1. **DO NOT ALLOW ANYONE TO STAND OR SIT ON THE CARGO PLATFORM OR ANY OF THE QUADRIBENT CONNECTING PARTS OR TO RIDE ANYWHERE EXCEPT SITTING ON THE SEAT.**
2. Adults should supervise children at all times.
3. Always wear a CPSC approved helmet and some form of eye protection.
4. Always ride with a rear view mirror attached to your helmet or mounted to your vehicle.
5. Obey all traffic rules and regulations, signs and signals.
6. Ride on the side of the road, going in the same direction as the traffic.
7. Use proper hand signals when turning or stopping.
8. Be alert at all times, especially watch for cars pulling out into traffic and for opening doors.
9. Please read EZ-1 SX/EZ-CLASSIC Owner’s Manual for additional information regarding “EZ-1 Riding Tips”, “Night Riding Tips”, “Wet Weather Riding Cautions”, “Fitting Your EZ-1” and “EZ-1 Riding Tips”.

### **General Rules For Riding Your EZ-1 SX/EZ-CLASSIC Quadribent™**

1. Inspect your EZ-1 SX/EZ-CLASSIC Quadribent™ before every ride. Make sure all nuts and bolts on the EZ-1 and accessory Quadribent™ frame are securely tightened. Check your brakes by applying them and pushing the Quadribent™ forward and backward to make sure they are engaging properly. Check your tires for proper air pressure as indicated on the sidewall of the tires. Make sure the quick release levers on the wheels and seat are properly closed and secure. Make sure all of the Quadribent™ mounting hardware is properly installed. Check to see that the quick release pins on the steering tie rod are properly inserted and locked. Stop vehicle and discontinue riding if any mechanical problems arise, including but not limited to any sudden changes in: vehicle stability, steering control, and / or pedaling difficulty.
2. Check and adjust your seat position/seat recline before mounting your Quadribent™. Never attempt to readjust the seat position while vehicle is in motion.
3. Always ride your Quadribent™ with a partner. Never ride the Quadribent™ “solo” for the vehicle may lose stability in turns and can tip over resulting in serious injury.
4. Always wear the factory supplied seat belts when riding the EZ-1 Quadribent™.
5. The Co-Captain Steering links the handlebars of both EZ-1 recumbents together allowing either rider to pilot the Quadribent™. Each rider should always keep both hands on the handlebars when the vehicle is in motion. Each rider is responsible for steering around people, vehicles and/or any obstructions to avoid collisions with any objects in your path.
6. Remove the factory supplied “parking brake” strap after mounting the vehicle and properly securing your seatbelt. Always reinstall the “parking brake” strap before exiting the vehicle.
7. As a courtesy to your riding partner and for the safe operation of the Quadribent™ both riders should communicate all non emergency turns, braking, starts and stops before they are executed.
8. For the safety of both riders, it is recommended the vehicle be slowed to less than 10 miles per hour (mph) before initiating any turns of 90 or more degrees.
9. The EZ-1 Quadribent™ is designed for use on streets and bike paths only. Off-road, off-trail, mountain trail and / or open field riding is not recommended and should not be attempted.
10. Do not modify, drill holes or mount accessories to Quadribent™ cross beams or frame.

## HELPFUL HINTS

- The EZ-1 SX/EZ-CLASSIC Quadribent™ Mark 5.1 Kit is made for late 2009 and later EZ-1 models. A custom Quadkit for the previous models of the EZ-1 can be ordered from Blackbird Designs. **Please be sure you have the compatible bikes and Quadribent™ Kit before starting.**
- The EZ-1 SX/EZ-CLASSIC Quadribent™ Kit is partially assembled, and is intended to be sold in a fully assembled and adjusted condition by your Dealer. If the kit is bought ‘factory direct’ by the customer, he is responsible for final assembly and adjustment.
- Completely assemble two EZ-1 SX/EZ-CLASSIC Recumbents per assembly instructions, but **DO NOT INSTALL SEATS** until after the Quadribent™ Kit is completely installed.
- The sequential assembly numbering system has been adjusted so that the text and pictures share the same number.
- Designate one bike as the “**LEFT BIKE**” (facing forward) and second bike as the “**RIGHT BIKE**”.
- The remaining portion of the Instruction Manual is pictorially based. Review instructions before starting to assemble Quadribent™ Kit. Simply follow the sequence of pictures displayed on the following pages. The average assembly time is approximately 30 minutes.
- The Quadribent™ Kit is manufactured to be assembled with basic hand tools. Tools recommended include: tape measure, wrenches, socket set, and metric allen wrenches.
- If questions arise or technical support is required during the assembly process, please contact Blackbird Designs Inc. for a prompt service. The contact information is listed on page 2.
- Blackbird Designs Inc. recommends when you replace worn O.E.M. tires supplied with the EZ-1’s with high pressure Maxxis Hookworm (110 psi 16” front and 110 psi 20” rear) tires. This is a very tuff tire with low rolling resistance. Check with your local bike shop for availability.

## FOR TECHNICAL SUPPORT CONTACT:

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# EZ-1 SX/EZ-CLASSIC QUADRIBENT™ PARTS LIST

1. □ **FRONT BEAM** ('U' shaped 1" x 1" square aluminum tube)
2. □ **LOWER BEAM** (1" x 1" square aluminum tube 30" long)
3. □ **TOP REAR BEAM** (1" x 1" square aluminum tube 29½" long)
4. □ **FRONT BRACKETS** (four aluminum plates 3" x 6½")
5. □ **TOP BRACKETS (behind seat)** (four aluminum plates 3" x 2 1/8")
6. □ **REAR AXLE BRACKETS** (two aluminum angles 3"x 3" x 1 ¾")
7. □ **REAR TRIANGLE BRACKETS** (two aluminum triangles 3"x 3")
8. □ **REAR VERTICAL BEAMS** (two 1" x 1" square aluminum tube 12½" long)
9. □ **CARGO PLATFORM** (30" X 18" aluminum sheet)
10. □ **STEERING LEVERS** (two pairs machined 1" x ¾" aluminum bars)
11. □ **STEERING TIEROD ASSEMBLY** (30" long (hole to hole) threaded rod with rod end bearings)
12. □ **EZ-1 SX HARDWARE KIT** (one parking brake – orange Velcro strap, two ¼" x 1" bolts, four ¼" x 1-3/4" bolts, twelve ¼" washers, six ¼" nylock nuts, two 5/16" x 2" bolts, two 5/16" nylock nuts, two plastic washers (to go between the steering arm and the rod end bearing), two 5mm x 15mm screw.
13. □ **2 SEATBELTS** (four 2" x 30" nylon straps, 2 plastic buckles and four plastic tri-glide binders)
14. □ **ASSEMBLY INSTRUCTIONS**
15. □ **EZ-CLASSIC TAPERED SHIMS** ( 2 rubber shims) see installation item 5A.

# ASSEMBLY INSTRUCTIONS WITH PICTURES

**FINGER TIGHTEN ALL NUTS/BOLTS OF AN ASSEMBLED PART THEN TIGHTEN NUTS/BOLTS EVENLY.**

## REAR AXLE BRACKET INSTALLATION

1) Find **angle brackets** - install on left side of right hand bike and on right side of left hand bike as shown in Figure 1. Install to bike dropout bracket with 5mm screws and rear wheel axle pin (**lever handle on the outside**).



Figure 1

**Caution** – on left hand bike add washers as required so that screws go through dropout but don't extend too far to interfere with chain in the smallest sprocket.

2) Find **front beam**, large 'U' shaped 1 x 1 aluminum square tube. Remove two outboard bolts/spacers on right side and attach to top tube of **right bike** frame just behind the head tube. Install spacers/bolts/nuts and tighten evenly, enough to hold in place. See figure 2.



Figure 2

3) Find **lower beam**, 1 x 1 x 30" square aluminum beam and steel bracket with rubber pad. Install to both bikes with 1/4-20 bolt as shown in figure 3. Rubber pad on beam goes between cable housing. Don't tighten until everything is installed.



Figure 3

4) Find the **rear beam assembly**. 1 x 1 x 29" square aluminum tube with attached **plates**. Remove two of the 1/4" x 1 3/4" bolts from each of the plates and install the assembly on the rear of the bike frame top tube. Reinstall two 1/4" x 1 3/4" bolts through plate/spacer/plate (tighten enough to hold in place) as shown in figure 4.



Figure 4

## CARGO PLATFORM INSTALLATION

5) Find the **cargo platform** (18 x 30" aluminum sheet). With the three flanges up and the flange down at the rear, slide the platform over the **rear axle angle brackets** forward to the **lower beam**. Install two 1/4" x 1 3/4" bolts through the **platform/lower beam** at the front and two 1/4" x 1" bolts through the **platform/rear axle angle brackets**. Install two 1/4" x 1 3/4" bolts through the **platform/vertical beam** as shown in **figure 5**. If all bolts can't be installed, as a last resort, you can 'chase' the hole with a 1/4" drill.

If you are connecting 2 EZ-CLASSIC models or 1 EZ-1 SX and 1 EZ-CLASSIC add the tapered shim between the **angle bracket** and the **platform** as shown in figure 5A.



Figure 5



Figure 5A

6) It is time to tighten bolts in the following order:

**Front beam**

**Rear Top beams**

**Cargo platform**

## STEERING ASSEMBLY

7) Find **steering levers** and attach to handle bar stem, about the same distance (on both bikes) up from the head tube, with two 8mm x 45mm machine screws & washers as shown in figure 12. The steering lever should be outboard - right side of right bike and left side of left bike (shown). The levers should be rotated about 15° outboard in relation to the front tire, but should be the same on each side. Tighten both 8mm screws evenly, enough to hold in place.



Figure 7

8) Find **steering tie rod** assembly (should measure 30" center to center) and attach to steering levers using 5/16" x 2" bolts, plastic washer to go between the steering arm and the rod end bearing see figure 8.



Figure 8

9) Find and install orange Velcro parking brake on either of the ‘drivers’ brake levers as shown in figure 10. The parking brake is intended to keep the Quadribent from rolling on relatively flat ground, when not in use. **Never park facing uphill or down hill.**



Figure 9

### FRONT END WHEEL ALIGNMENT

10) Check front-end wheel alignment by measuring the distance between the front rims of the two bikes as shown in figures 10, 11 & 12. Two measurements are required. The first is at **axle height** on the leading edge of the front rims. The second is at axle height on the trailing edge of the front rims. These measurements should be approximately equal. A difference of up to a 1/16” is acceptable if the leading edge measurement is smaller than the trailing edge. This is commonly called “toe-in”.



Figure 10



Figure 11



Figure 12

13) If the two measurements show the front wheels are out of alignment, loosen the two Allen screws of the steering lever and rotate it as needed. After adjusting the steering levers retighten the screws and visually check that they are about the same angle outboard, with the two front wheels straight.

**Wheel alignment should be checked regularly, before/after a long ride, after riding on rough roads.**

14) Please check all nuts and bolts to ensure they are fastened properly.

When all hardware is tight and secure, mount the seats to both bikes per the EZ-1 owner’s manual.

Check proper operation of the brakes, front and rear shifters after Quadribent is fully assembled. Test ride to verify adjustments.

**DO NOT ALLOW ANYONE TO STAND OR SIT ON ANY OF THE QUADRIBENT CONNECTING PARTS OR TO RIDE ANYWHERE EXCEPT ON THE SEAT.**

15) The final assembly step is the installation of the seatbelts. Unclip or open the lower two seat back mounting clips from the EZ-1 koolback seat. Thread the end of the seatbelt through the tri-glide fastener and then around the exposed seat frame as shown in figure 15.



Figure 15

16) Insert the end of nylon strap back through the tri-glide as shown in figure 16.



Figure 16

17) Insert the end of nylon strap back through the tri-glide as shown in figure 17. Reconnect the middle two seat back mounting buckles on the EZ-1 seat. Repeat this process on both the right and left side of each seat on each bike.



Figure 17

18) Install the other end of the nylon straps through the buckle as shown in figure 18. The buckle is equipped with a quick release. Simply squeeze the center of the buckle and it will open. Seat belt length is adjustable by pulling on the ends of the nylon straps. If the strap end becomes frayed it can be sealed with a flame from a candle.



Figure 18

## SPECIAL NEEDS CUSTOMIZATION

A second seat belt, at chest height, can be added to better secure “Special needs” kids and adults. Toe clips and straps can be added to the pedals to secure feet to the pedals. Also extra straps can be added to the pedals to go around the heel. Call Blackbird Designs for the latest developments in accessories for people with “special needs”.