

EZ-1 QUADRIBENT™



By Blackbird Designs Inc. and Blackbird Sales

Mark 4.0 - June 2005

Assembly Instructions

FOR TECHNICAL SUPPORT CONTACT:



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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 recumbents bikes for “solo” riding and easy transportation however it is not recommended to be done on a regular basis. Most people never

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 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 Quadribent™

1. Inspect your EZ-1 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 Quadribent™ Kit comes in three slightly different models. Quadkit J&B part # 67458 is designed for the EZ-1 SC or SX (steel frame), the Quadkit Lite J&B part # 67459 is designed for the EZ-1 SC Lite (aluminum frame) and the Quadkit J&B part # 67460 is designed for the EZ-1 AX (aluminum frame). Please be sure you have the compatible bikes and Quadribent™ Kit before starting.
- The EZ-1 Quadribent™ Kit is partially assembled, and is intended to be sold in a fully assembled and fully adjusted condition. Final assembly and adjustment are to be performed by your Dealer.
- Completely assemble two EZ-1 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 and label one bike as the “**LEFT BIKE**” 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 allen wrenches (5mm included in kit).
- If questions arise or technical support is required during the assembly process, please contact Blackbird Designs / Sales for a prompt service. The contact information is listed on page 2.
- Blackbird Designs / Sales recommend the replacement of the O.E.M. tires supplied with the EZ-1 SC or SX recumbent bikes (EZ-1 Lite and EZ-1 AX come standard with 100 psi tires). We suggest installation of high pressure Maxxis Hookworm (110 psi front and 110 psi rear) tires to reduce the rolling resistance and improve performance of the Quadribent. Check with your local bike shop for availability. These tires are also available from BlackBird Sales to dealers at special prices.

EZ-1 QUADRIBENT™ PARTS LIST

1. **FRONT BEAM** ('U' shaped 1" x 1" square aluminum tube)
2. **LOWER TUBE** (1-1/4" x 1-1/4" square aluminum tube 28" long)
3. **REAR AXLE BEAM** (1" x 1" square aluminum tube 20" long)
4. **TOP BEAM** (1" x 1" square aluminum tube 29" long)
5. **FRONT BRACKETS** (four aluminum plates 3-1/2" x 6")
6. **TOP BRACKETS** (two 2-1/2" x 1" x 3/4" aluminum bars)
7. **REAR BRACKET** (two aluminum angles - left hand and right hand)
8. **CARGO PLATFORM** (30" X 18" aluminum sheet)
9. **CARGO PLATFORM SUPPORT** (18" x 7" aluminum sheet)
10. **STEERING LEVERS** (two pairs machined 1" x 3/4" aluminum bars)
11. **STEERING TIEROD ASSEMBLY** (28" long threaded rod with rod end bearings)
12. **EZ-1 SX/SC HARDWARE KIT** (one parking brake - Velcro strap, three 1/4" x 3/4" bolts, twenty-one 1/4" x 1-3/4" bolts, fifty-six 1/4" washers, twenty-four 1/4" nylock nuts, two 5/16" x 3" bolts, four 5/16" x 2-3/4" bolts, twelve 5/16" washers, two 5/16" plastic washers, six 5/16-18 nylock nuts, four 8mm x 45mm machine screws, two 6mm x 20mm screws, two small plastic washers, one 5mm allen wrench, two quick release pin clips, and rubber strips with adhesive back.
13. **EZ-1 AX/Lite HARDWARE KIT** (one parking brake - Velcro strap, three 1/4" x 3/4" bolts, nine 1/4" x 1-3/4" bolts, twelve 1/4" x 2" bolts, fifty-six 1/4" washers, twenty-four 1/4" nylock nuts, two 5/16" x 3-1/2" bolts, four 5/16" x 3" bolts, twelve 5/16" washers, two 5/16" plastic washers, six 5/16-18 nylock nuts, four 8mm x 45mm machine screws, two 5mm x 15mm screws, two small plastic washers, one 5mm allen wrench, two quick release pin clips, and rubber strips with adhesive back.
14. **SEATBELTS** (two 2" x 30" nylon straps with a lexan buckle and four tri-glide binders)
15. **ASSEMBLY INSTRUCTIONS**

ASSEMBLY INSTRUCTIONS WITH PICTURES

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

REAR BRACKET & BEAM INSTALLATION

1) Find **angle brackets** - 'R' goes on left side of right hand bike as shown in Figure 1 and 'L' goes on right side of left hand bike as shown in figure 2. Install to bike dropout bracket with 6mm screws (5mm for EZ-1AX)



and rear wheel axle pin.

Figure 1

2) **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.



Figure 2

3) 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 3.

Figure 3

4) Find **lower beam**, 1 ¼ x 1 ¼ x 27" square aluminum tube (1 x 1 x 27" with spacers for EZ-1 AX). Install to **right bike** at the kickstand hole in the lower tube of the frame with 5/16 x 3" bolt (5/16 x 3- ½" for AX) as shown in figure 4. Tighten bolt.

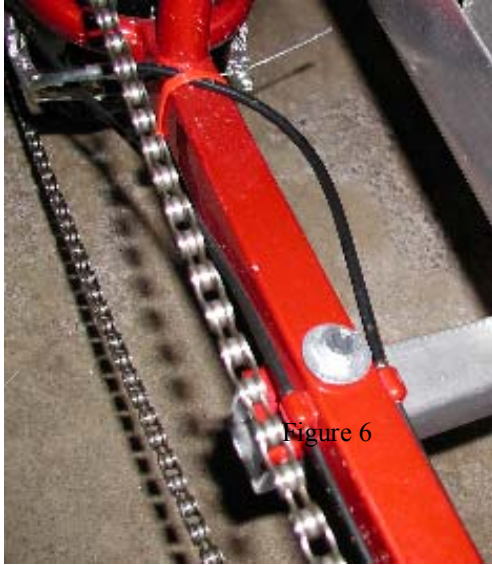


Figure 6

Figure 4

5) Bring the **left bike** parallel to the right bike and connect at the **front beam** and the **lower beam**. Tighten the bolts enough to hold in place.

6) Find the **rear beam** 1 x 1 x 20" square aluminum tube. Attach it to the **angle brackets** at both rear axles. Install the two outboard 1/4" bolts (tighten enough to hold in

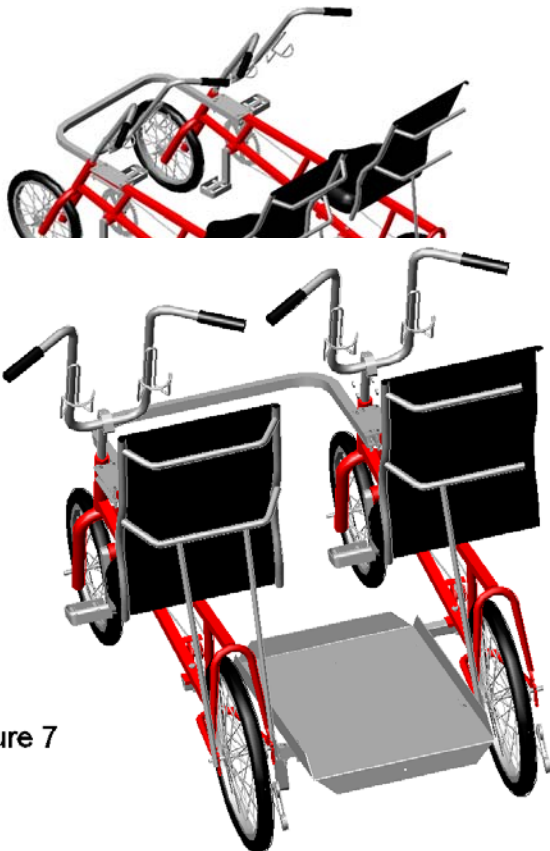


Figure 7

place).

CARGO PLATFORM INSTALLATION

7) 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 beam** forward to the **lower beam**. Install two 1/4" bolts through the **platform/lower beam** at the front and two 1/4" bolts through the **platform/rear beam**.

Rear beam should still be loosely bolted. If all four bolts can not be installed, as a last resort, you can 'chase' the hole with a 1/4" drill.

8) Find the **cargo platform support** (8" x 18" aluminum sheet). Place the **support** on the **platform**, bent flange down, and attach with three 1/4" x 3/4" bolts. Tighten when all 3 bolts are in place.



9) Find the **top beam** (1" x 1" x 27" square aluminum tube). With the rubber pads to the rear, against the seat post, attach it to the **support** with three 1/4" bolts. Tighten bolts.

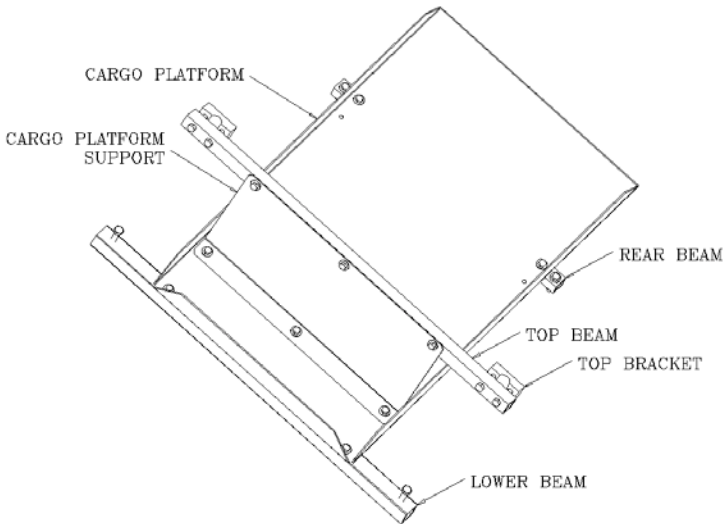


Figure 9

10) Find the two **top brackets** (2 1/2" x 1" x 3/4" aluminum bar). Place behind the seat tube and attach to the **top beam** with two 5/16" bolts.

Figure 10

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

Lower beam

Front beam

Rear beam to angle brackets

Cargo platform to rear beam and lower beam

Support to cargo platform (if not already tight)

Top beam to support and then to **top brackets**

STEERING ASSEMBLY

12) Find **steering levers** and attach to handle bar stem, as far up as possible, with two 8mm x 45mm machine screws & washers as shown in figure 12. The labels on the steering lever should face 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. Tighten both 8mm screws evenly, enough to hold in place.

Figure 12

13) Find **steering tie rod** and attach to steering levers using quick release clip pins, see figure 13.



Figure 13

14) Find and install parking brake on any of the four brake levers as shown in figure 14. 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 14

15) Check front-end wheel alignment by measuring the distance between the front rims of the two bikes as shown in figures 15, 16 & 17. 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 15



Figure 16

FRONT END WHEEL ALIGNMENT



Figure 17

18) If the two measurements show the front wheels are out of alignment, remove one end of the steering tie rod and shorten or lengthen it as needed. Shortening the steering tie rod will increase the “toe-in” of the front wheels.

Two wrenches are needed to release the lock or “jam” nuts at the rod end bearing. (The rod end bearings are both right hand thread so you can’t adjust by turning the center rod like the turnbuckles). After adjusting the steering tie rod length and confirming the measurement, the lock or “jam” nuts must be secured against the rod end bearings. If the bearings bottom out (so you can’t shorten anymore) turn back 3 turns each, loosen the steering levers and rotate each one farther outboard.

After moving the steering levers, visually check that they are about the same angle outboard, with the two front wheels straight. (rough adjustment). Repeat steps 15 – 17 (fine adjustment).

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

19) 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.

20) 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 20.



Figure 20

21) Insert the end of nylon strap back through the tri-glide as shown in figure 21.



Figure 21

22) Insert the end of nylon strap back through the tri-glide as shown in figure 22. 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 22

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. Extra seats, seat belts, toe clips, straps and other accessories may be purchased from your dealer or Blackbird Sales. Call Blackbird Designs for the latest developments in accessories for people with “special needs”.

23) Install the other end of the nylon straps through the buckle as shown in figure 22. 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 23

EZ-1 QUADRIBENT ASSEMBLY AND USER GUIDE

Please include a copy of the Quadribent™ Assembly Instructions and User Guide with the storage box when delivering the Quadribent™ to the customer.

QUADRIBENT DISASSEMBLY FOR SINGLE RIDING AND TRANSPORT

1. Lower kickstands on each bike or find a second person to hold bike while completing this process.
2. Remove quick release pins from steering tie rod and remove tie rod.
3. Remove bolts from the left hand bike at the front beam, top beam/brackets, lower beam and rear axle beam (both bolts).
4. Store bracket and all bolts, washers, nuts.
5. Carefully separate left hand EZ-1. It can be ridden solo. The front beam and cargo platform assembly can be removed from the right hand bike and ridden solo or transported. Store all loose pieces.
6. Reverse the list of procedures when reassembling your Quadribent for sociable tandem riding.

Caution – if lock nuts can be finger tightened all the way on, they need to be replaced. The Mark 4.0 Quadribent is not designed to be disassembled on a regular basis. Contact Blackbird Designs for a Quick Release Kit.

QUADRIBENT REGISTRATION CARD

Please mail, email or fax this information to Blackbird Sales so your information you can be placed in our database and alerted if necessary regarding service advisories and special offers or upgrades that become available.

Name _____

Address _____

–

Phone _____ Email _____

–

Date _____ Purchased _____ Dealer
Name _____

Dealer _____ Address _____ Dealer
Phone _____

Mail to: Blackbird Sales, 5 Cooper Ave, Edina, MN 55436

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