

DRAGONFLY

Manual Handcycle

User Manual



Rio Mobility

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IMPORTANT!

Consult with your health care professional to determine if the Dragonfly™ is appropriate for you.

DO NOT OPERATE THIS EQUIPMENT WITHOUT FIRST READING AND UNDERSTANDING THIS MANUAL.

IT IS RECOMMENDED THAT INITIAL SETUP OF THIS HANDCYCLE BE PERFORMED BY A QUALIFIED TECHNICIAN, SUCH AS A WHEELCHAIR OR BICYCLE MECHANIC.

AS WITH ANY THREE-WHEELED VEHICLE, SIDE-TO-SIDE STABILITY IS DECREASED COMPARED TO A WHEELCHAIR ALONE, SO USE CAUTION WHEN TURNING AT HIGH SPEEDS.

Follow the recommendations in your wheelchair manual.

The Dragonfly™ is intended for use for mobility in sporting and/or recreational purposes only and is not intended as an exclusive means of mobility. Check local vehicle/wheelchair regulations.

The operation of a handcycle involves a certain level of risk and the potential for serious bodily injury.

1. Wheelchair Requirements

As part of our installation process, you will attach our mounting clamps onto your wheelchair.

Our wheelchair attachments fit most wheelchairs. However, a few wheelchairs will not fit our clamps. Use this guide to determine if our devices are right for you.

There are *five* points that must be considered in order to determine whether your wheelchair is compatible with our wheelchair attachments:

1) Seat width. Must be between 14 to 22 in -or- 35.5 to 55.8 cm (measured **end-to-end** on the width of your seat cushion).

2) Tube diameters. Currently supported tubing diameters are: (**printable tubing ruler on next page**).

- 7/8 in -or- 22.2 mm
- 1 in -or- 25.4 mm
- 1.125 in -or- 28.6 mm
- 1.2 in -or- 30.5 mm
- 1.25 in -or- 31.8 mm

If your tubing is a different shape or diameter contact sales@riomobility.com

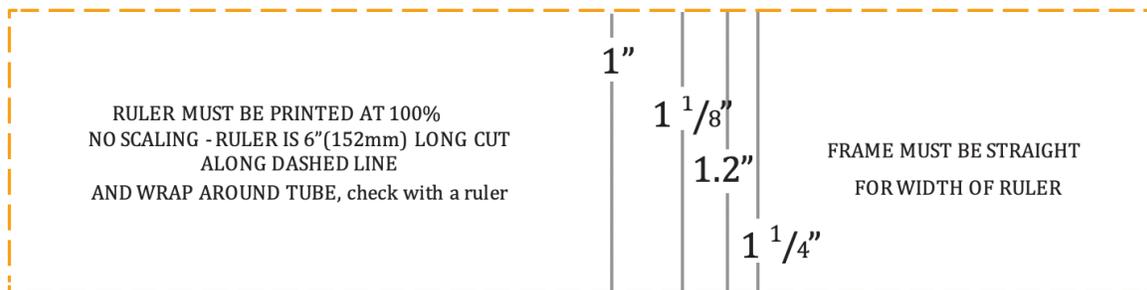
3) Tube clearance. To attach the clamps, 1.25 in -or- 32 mm clearance is required. Diagrams with examples of tube clearances are given in the following pages.

4) Tube angle. Ideally the tubes should be vertical or close to vertical. However, installation is possible with tubes that taper inwards with slight angles, the larger the taper angle the more challenging it is to use our “Quick Release Coupler” attachment. See the diagrams on the following pages where illustrations of wheelchair designs with tapering tube angles are shown.

5) Footrests on folding chairs. Removable footrests can pose challenges for our clamp installation, so please consult below where examples of wheelchair designs with removable footrests are given. Never mount our clamps directly onto removable footrests as they were not designed to take such riding forces.

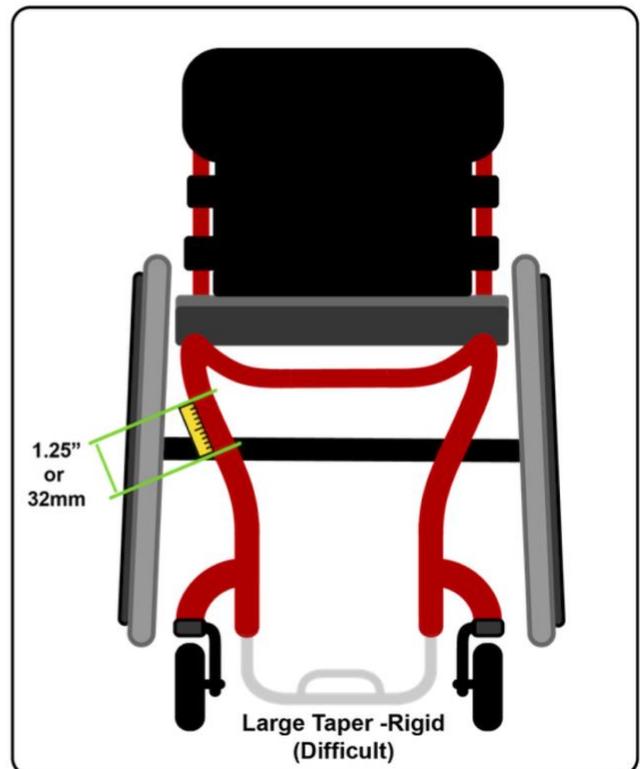
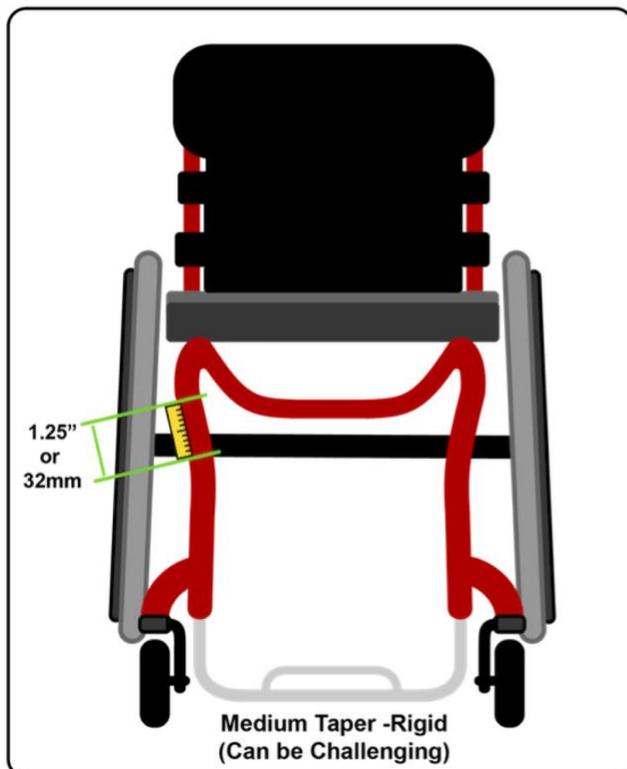
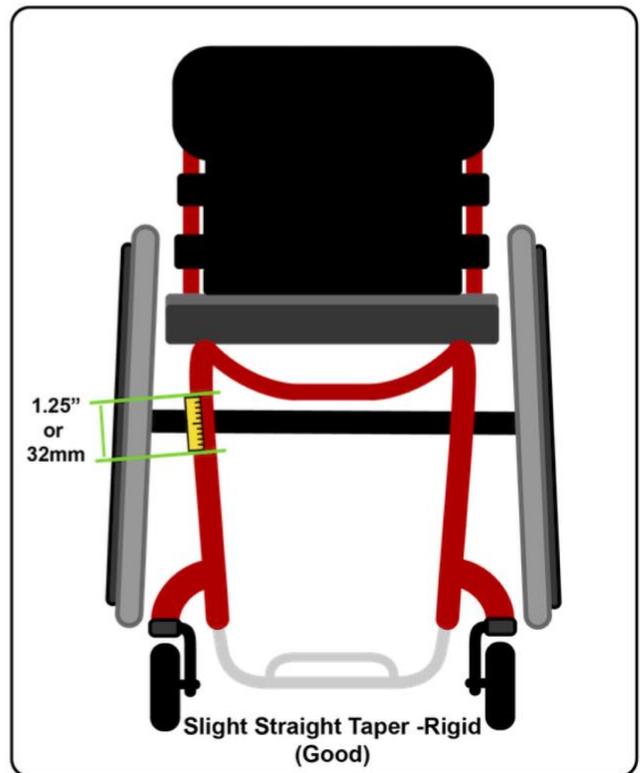
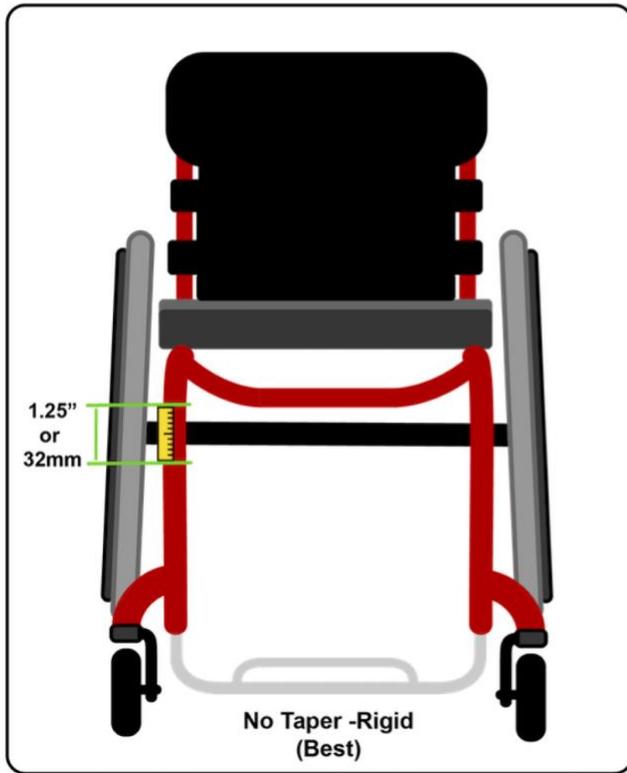
The Dragonfly™ is compatible with almost all wheelchairs without the need for any special adapters.

<p>Anti-Tips & Seatbelts</p>	<p>When seated in the wheelchair, your center of gravity must be far enough forward as to make “wheelies” or tipping backwards difficult. IMPORTANT: If the chair is set up such that “wheelies” are easy, it may be unstable while attaching or detaching the handcycle. Anti-tips MUST be installed on your wheelchair. A seat belt is also strongly recommended.</p>
<p>Wheel Locks</p>	<p>Wheelchairs must have Wheel Locks installed.</p>
<p>Weight</p>	<p>Combined wheelchair and user weight must be less than 130kg/280lb.</p>



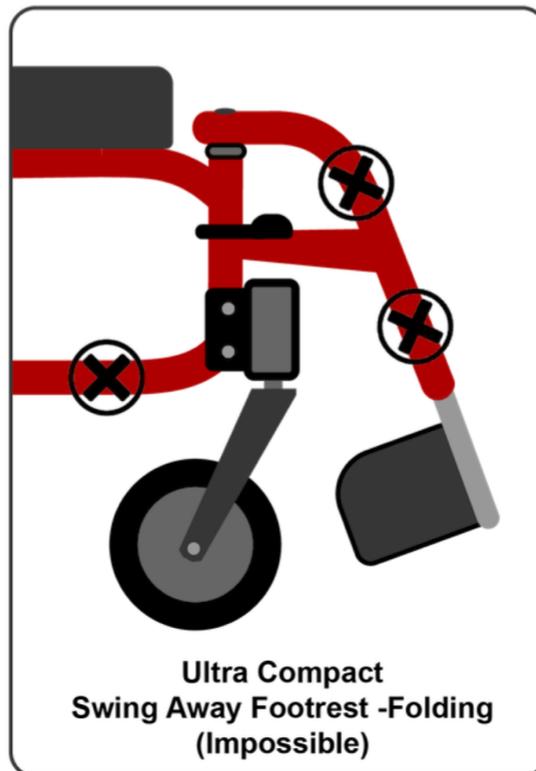
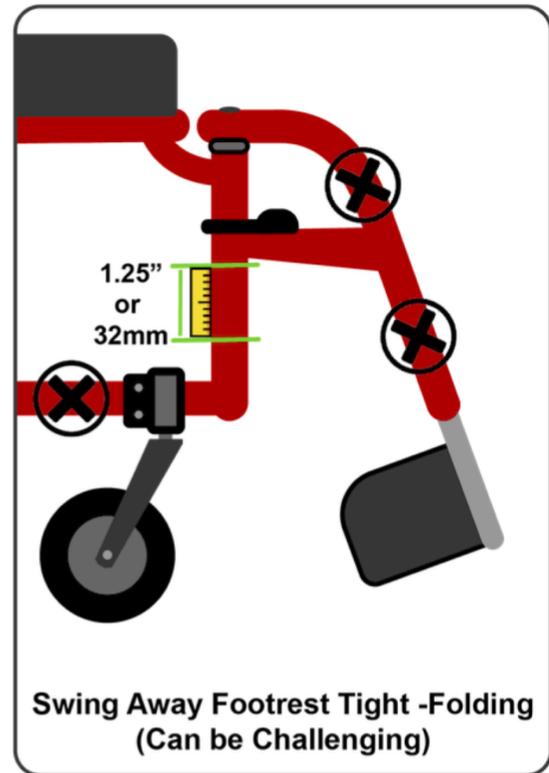
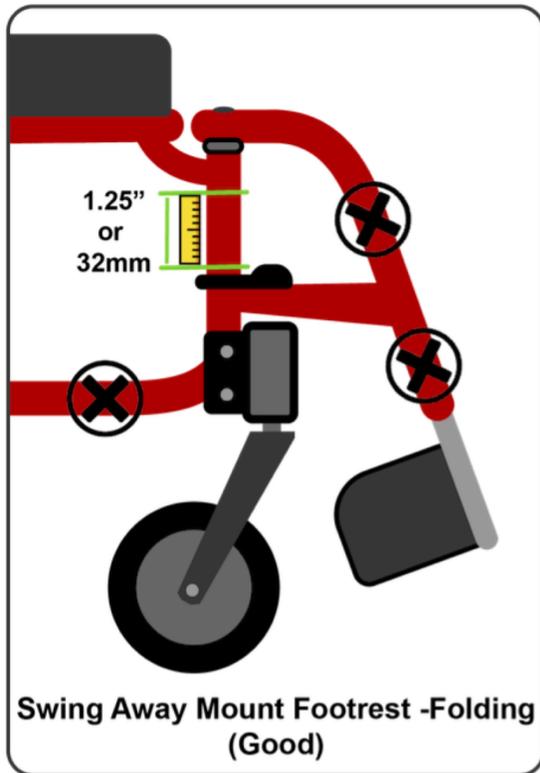
Compatibility Guide for Rigid Wheelchairs

All of our devices require about 1.25 in -or- 32 mm of clearance on the upper frame tubing.



Compatibility Guide for Folding Wheelchairs

All of our devices require about 1.25 in -or- 32 mm of clearance on the upper frame tubing. Ideally this clearance should be above the area where the removable footrests attach too.



2. Installing The Dragonfly™

Visit www.riomobility.com for the Dragonfly™ installation video:

The installation of the clamp and frame system for the Dragonfly™ is the same as the Firefly™.

Set handcranks so that your arms are slightly bent, not locked and it clears your legs on the downstroke.



The optimal installation angle for your handcycle attachment



Good:

- 1) The chair clamps mounted high on straight tubing
- 2) Tire is as close to the foot rest while still allowing ample foot clearance from the tire while steering
- 3) The handlebar is high enough to clear the knees and allow body torso clearance when steering

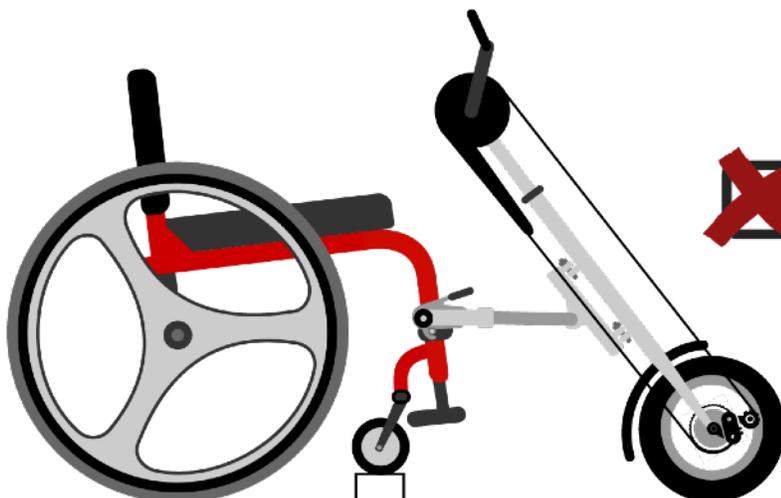
FIREFLY 



Good:

- 1) The chair clamps mounted high on straight tubing
- 2) Tire is as close to the foot rest while still allowing ample foot clearance from the tire while steering
- 3) The **angle is more upright than the Firefly**. You need to add some core weight on your pedal downstroke
- 4) The handlebar is high enough and out of the way to clear your knees

DRAGONFLY 



Bad:

- 1) The chair clamps are mounted too low
- 2) The tire is too far from the footrest
- 3) At this angle the pedals will be too close to the rider's knees.
- 4) There needs to be adequate clearance between the pedals and your knees
- 5) Lost traction from the chopper like angle

DRAGONFLY 

3. Controls

Pedal forward to move forward, pedal backwards to brake.

Shift the gears to change the speeds.



L-Bracket (brake handle and shifter) placement

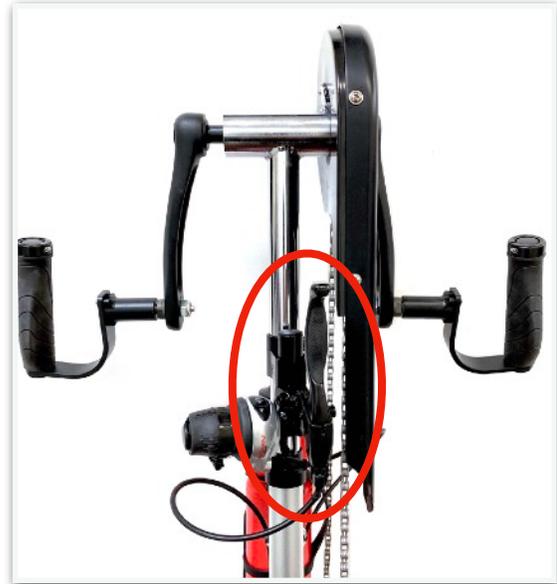
Use this guide as a reference to make sure you place the L-bracket mount with the shifter and brake lever at the best location, while maintaining clearance for the rotating hand cranks. Be sure to check that the wires coming out of the brake lever and shifter are not in the way of your rotating hand crank. Also make sure that the right pin quick release button does not run into the chain guard. If so, you can slightly bend the chain guard away from the right pin.

Best Placement



The bracket should be low and near the fork clamp. This gives 1" / 25mm clearance between the shifter and left crank arm. There is clearance to access the parking brake.

Angled Poorly



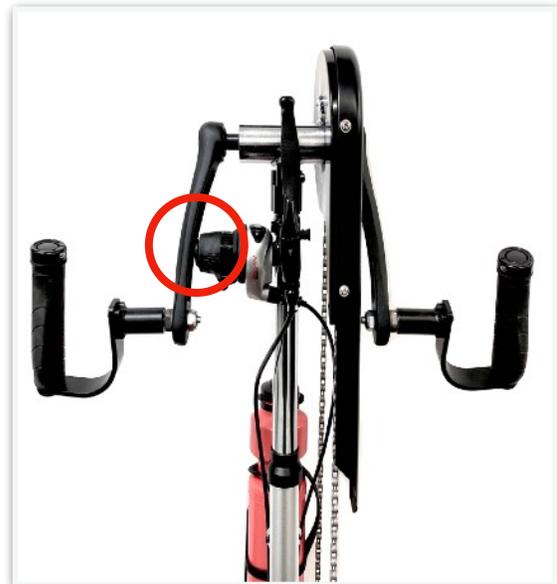
The location is good but the brake lever is too close to the chain. There should be at least 1/2" / 12mm minimum between the brake lever and the chain.

Incorrect Level



The shifter should not be level w/ the pedal QR pin.

Not Recommended



The shifter should not touch the inside of the left crank arm.

4. Maintenance

Inspection/ Maintenance Item	Initially	Weekly	6 Months
Check and Tighten Hardware	X	X	
Brake Pad Wear			X

All screws must be tightened using a torque limiter wrench (included in packaging).

Clean the handcycle with a damp cloth. Do not soak or spray with water or use detergent. Lubricate as necessary after cleaning.

Immediately replace any damaged, missing, or badly worn parts with manufacturer or approved parts. Please contact your dealer or sales@riomobility.com for information on replacement parts.

We recommend keeping the box your Dragonfly™ was shipped in; it makes a handy container

for storage of your handcycle, your handcycle accessories, the included tools, and the manual for storage and travel. It can also be used to ship the unit to the factory in case of maintenance or warranty repairs.

5. Troubleshooting

When climbing a hill, the front wheel slips.

The front wheel is too far forward of your center of gravity. Please adjust the handcycle so that the front wheel is as close as possible to the footrest without interfering while driving straight or turning. If possible, you may also want to move the rear axles further back. When climbing hills, leaning forward in your chair may be necessary.

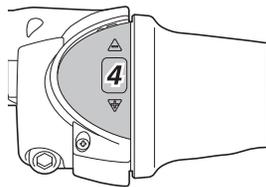
Check that the front caster wheels are at least 5 cm/ 2 inches off the ground when the handcycle is installed.

The chain keeps derailing or popping off the cog or chainring.

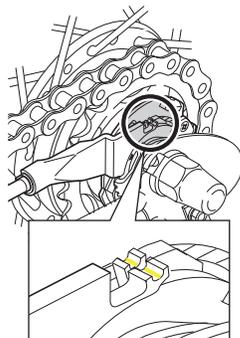
Check the chain is tight without any slack or play. Make sure the chain is aligned straight and is not twisted or offset. If the chain needs adjustment, have one person hold the front wheel, loosen the 2 screws on the fork clamp. Have a friend pull the cranks up with strong force, make sure the chain is straight and there is no slack in the chain, then tighten the 2 clamp screws.

The Shimano™ Nexus 8 hub is skipping or falling out of gear.

1) Rotate the shifter into gear #4.

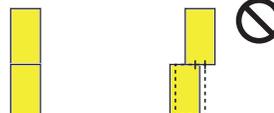


2) Look at the cassette joint bracket on Nexus Hub system to find the “two yellow lines.” Check that the yellow setting lines on the cassette joint bracket and pulley are aligned with each other. The yellow setting lines are located in two places. Use the one that is easiest to see.

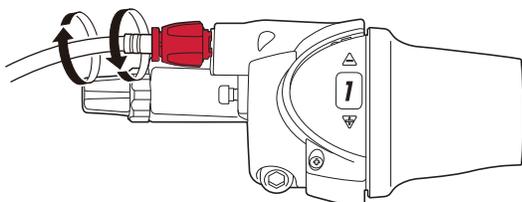


NOTE

If the overlapping area falls short of two thirds of each setting line, the gears may not be properly engaged during pedaling, resulting in abnormal noise or free spinning of the hand pedals.



3) Adjust the shifter barrel adjuster if necessary to realign the 2 yellow lines.



Turn the cable adjustment barrel of the REVOSHIFT lever to align the setting lines.

Again, move the REVOSHIFT lever from X to Y, then back to X, and confirm that the yellow setting lines are aligned.

	X	Y
8-speed	4	1

6. Safety

Safety Checklist

- A helmet and safety belt are recommended.
- **ALWAYS** engage the wheel locks on your wheelchair before attaching or detaching the handcycle.
- **ALWAYS** check to make sure that your latches are fully engaged before operating your handcycle.
- Check to make sure all nuts and bolts are tight and all latches are secured.
- Make sure the hand brakes work properly before riding your handcycle.
- Do not add any parts or accessories not authorized by Rio Mobility to your handcycle. Any addition could be unsafe and will void your warranty.

Before You Ride

Make sure that your Dragonfly™ is installed, adjusted, and maintained properly. Do not use the Dragonfly™ until you and your health care professional determine that you have the ability to use it safely in an uncontrolled environment.

Use your wheelchair as described in your wheelchair manual and use the Dragonfly™ in the same safe manner that you would a wheelchair with pushrims. Follow all additional warnings and instructions for the Dragonfly™ in this manual.

Outdoor Use

Always watch out for traffic and pedestrians when riding on the road and sidewalk and follow all traffic regulations. Follow any and all local regulations that apply to this device.

Turning Stability

Always mind your speed, especially when turning. You should have full control of your wheelchair at all times. Do not exceed the maximum allowable speed recommended by your wheelchair manufacturer.

Three-wheeled vehicles are less stable in turns compared to wheelchairs alone, so be careful to keep all three wheels on the ground and moderate your speed when approaching curves.

Be careful when reaching and leaning left or right from your wheelchair with your handcycle attached - the longer wheelbase makes it less stable in sideways leans than your regular wheelchair. Narrow wheelchairs are less stable in general, so be extra careful if your wheelchair is particularly narrow.

Auxiliary hand-brake for emergency stopping and parking

Your handcycle is equipped with 2 brakes:

- 1) the main coaster brake works by pedaling backwards
- 2) the V brake handle w/ locking parking brake button

Note: should your chain pop or derail “don’t panic” keep your dominant hand on the handle to steer and use your other hand to apply the hand brake to stop.

Obstacles

Be careful going over bumps and curbs over 2 inches (5cm) high. Your front casters may contact these surfaces, causing a loss of control. Use your pushrims to get over bumps, **NOT** the handcycle. You should approach bumps and curbs straight on and at low speed to avoid injury or damage to your wheelchair.

Note: Be aware of road surfaces, especially on inclines and declines. Watch out for water, ice, and oil film.

Transferring

DO NOT attempt to transfer into or out of your chair with the Dragonfly™ attached. You **MUST** detach the handcycle before transferring.

General Notes & Precautions

Mind your fingers and hands when using your handcycle.

Keep children away from your handcycle to avoid possible injury to both you and the child.

Do not carry anything that obstructs your view or interferes with the handlebar operation.

Do not put weight on the wings (objects or people).

This handcycle is meant for everyday recreational or general sporting use and is not intended for use in competition.

Rio Mobility is not responsible for any damage or injury due to misuse of your handcycle.

7. Limited Warranty

Rio Mobility warrants the Dragonfly for one **(1) year** from the date of initial consumer purchase. This warranty covers any defects in materials and workmanship.

THE WARRANTY DOES NOT COVER THE FOLLOWING; DAMAGE TO CABLES OR INNER WIRES, TIRES, TUBES, FABRICS AND CHAINS. PHYSICAL DAMAGE AFTER RECEIPT OF PRODUCT.

If you see or suspect any damage or defects report the problem upon receipt of the product.

This warranty is only available for the original owner or purchaser and is non-transferable.

Limitations

This warranty is **VOID** if:

- **Assembly and installation are not performed according to the instructions**
- **Preventive and routine maintenance has not been performed**
- **The serial number is removed or altered**
- **The gear hub was altered or disassembled**
- **The handcycle is used in any competitive event**
- **The handcycle is used in stunt riding, jumping, or similar activity**
- **The handcycle is submerged in or sprayed with water; includes accidental exposure such as rain**
- **The handcycle is used in a manner contrary to the instructions outlined in the Owner's Manual**
- **Any modifications are made to the device**
- **You accidentally run into objects and obstructions**

Please contact your dealer for installation, service, or warranty needs.