



# Electric Handcycle User Manual



The Firefly™ from Rio Mobility transforms your wheelchair into a high performance machine that can increase your mobility.

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

**Dealer:** You must give this manual to the  
Firefly™ handcycle user

**User:** Before using the Firefly™ handcycle, read this  
manual and save it for future reference.

**Questions or concerns? Contact us:**

sales@riomobility.com

(888) 559-6225

(415) 278-9662

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San Francisco, CA 94105

*Rio Mobility, a Daedalus Wings, Inc. company, is a designer and retailer of innovative products that maximize options and increase mobility for wheelchair users.*

*We would like to acknowledge the National Science Foundation for their support of the development of the Firefly™ handcycle.*

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# 1. Safety Warnings

## **WARNING**

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

If you are unable to understand the warnings, cautions, or instructions, contact sales@riomobility.com, your health professional, dealer, or technical personnel before attempting to use this equipment, otherwise injury or damage may result.

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

The Firefly™ will increase the performance of your wheelchair. Follow the recommendations in your wheelchair manual. Additional information, recommendations, and warnings are included in this manual.

**As with any three-wheeled vehicle, side-to-side stability is decreased compare to a wheelchair alone, so use caution when turning at high speeds.**

### **YOUR ANTI-TIP DEVICES MUST BE INSTALLED ON YOUR WHEELCHAIR TO ENSURE A SAFE RIDE.**

The Firefly™ is not intended as an exclusive means of mobility. In most states, the use of wheelchairs on public roads is prohibited. Required operating conditions are on dry paved surfaces during daylight hours. The use of reflectors and a flag or tall marker is recommended for maximum visibility. Do not operate handcycle during low visibility conditions.

Operating in or around a handcycle involves a certain level of risk and inherent danger of serious bodily injury. These possible risks include, but are not limited to, permanent disability, neck and head trauma, limb dismemberment and in extreme cases, even death. It is recommended to wear a helmet during operation.

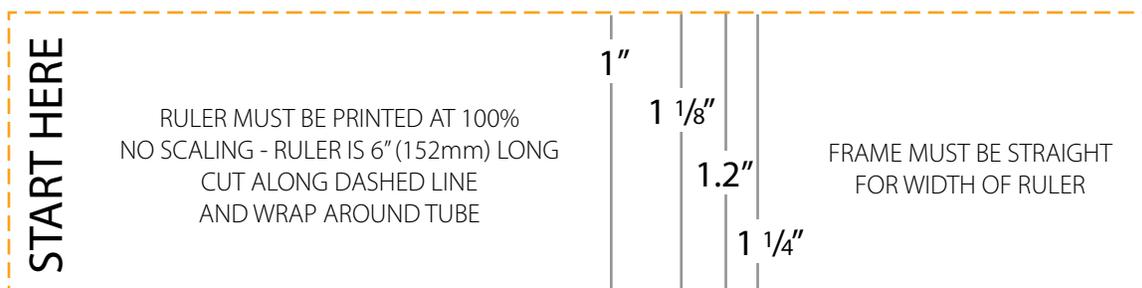
Users must ride the Firefly™ with the utmost care, caution, and safety. It is recommended that you inspect your chair and handcycle carefully before each ride.

**Rio Mobility is not responsible for any injuries resulting from misuse.**

## 2. Wheelchair Requirements

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

<p><b>Wheelchair Frame Configuration</b></p>	<p>The front tubes of your chair must be similar to one of the three shown on the next page, specifically where the Clamps are installed. For a complete listing of compatible wheelchairs, visit <a href="http://riomobility.com">riomobility.com</a>. If your wheelchair is not listed, please contact customer service at <a href="mailto:sales@riomobility.com">sales@riomobility.com</a>.</p> <p>The Firefly™ can accommodate chairs of seat width 14" to 20" (35.5cm to 50cm). If your chair is outside this range, contact customer service.</p>								
<p><b>Wheelchair Frame Tube Diameter</b></p>	<p>The frame tube diameter must be either:</p> <table style="margin-left: 20px;"> <tr> <td>1 inch</td> <td>(25.4mm)</td> </tr> <tr> <td>1 1/8 inch</td> <td>(28.6mm)</td> </tr> <tr> <td>1.2 inch</td> <td>(30.5mm)</td> </tr> <tr> <td>1 1/4 inch</td> <td>(31.8mm)</td> </tr> </table> <p>The Firefly™ ships with a set of 4 Clamps suitable for 1" (25.4mm) tubing. If your tubing is a different diameter, you may order a suitable set of Clamps on <a href="http://riomobility.com">riomobility.com</a></p> <p>If you do not know the diameter of your tubing, cut out the ruler printed below to measure. Wrap it around your tubing and note where the markings line up. The tube must be straight for the width of the ruler.</p>	1 inch	(25.4mm)	1 1/8 inch	(28.6mm)	1.2 inch	(30.5mm)	1 1/4 inch	(31.8mm)
1 inch	(25.4mm)								
1 1/8 inch	(28.6mm)								
1.2 inch	(30.5mm)								
1 1/4 inch	(31.8mm)								
<p><b>Anti-Tips and Seatbelts</b></p>	<p>If the chair is set up such that tipping backwards is easy, it may be unstable while attaching or detaching the handcycle. To ensure your safety, anti-tip devices <b>MUST</b> be installed on your wheelchair. A seat belt is also strongly recommended.</p>								
<p><b>Wheel Locks</b></p>	<p>Wheelchair must have Wheel Locks installed.</p>								
<p><b>Weight</b></p>	<p>Combined wheelchair and user weight must be less than 280lb (130kg).</p>								

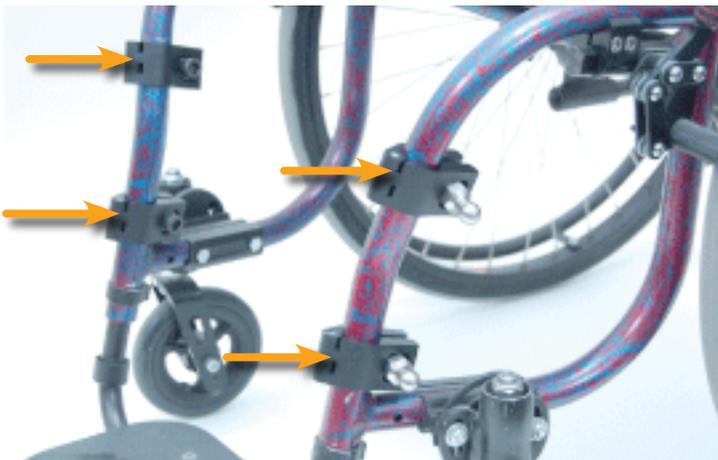




Frame with swing-away footrests  
(Pawns facing inward)



Frame with horizontal bottom tube available  
(Pawns facing outward)



Frame with no horizontal bottom tube available  
(Pawns facing outward)

## 3. The Firefly™ Components

### Required tools:

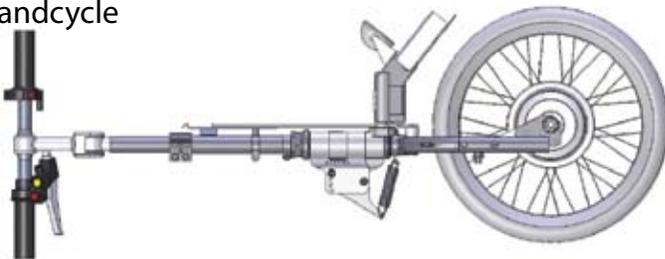
1. Adjustable Wrench
2. Pliers
3. Torque Wrench
4. Tire Pressure Gauge
5. Bicycle Pump

Remove the handcycle parts from the box and unpack the components. The contents include:

1. Handcycle Assembly
2. Left and Right Wings, including 4 Screws, Lock Washers, Flat Washers, and Nuts
3. Lithium Battery and Charger
4. 4 Clamps for 1" (25.4mm) tubing size, including 4 Screws, Lock Washers, Flat Washers, and Pawns
5. 5mm and 8mm Hex Wrench
6. 10/19mm Wrench
7. 2 Cable Ties to secure brake and shift cables, if necessary
8. 1 Reflector to attach to the spokes
9. 2 blocks to lift the front wheels during installation

If you are missing any of these items, please contact customer service at [sales@riomobility.com](mailto:sales@riomobility.com)

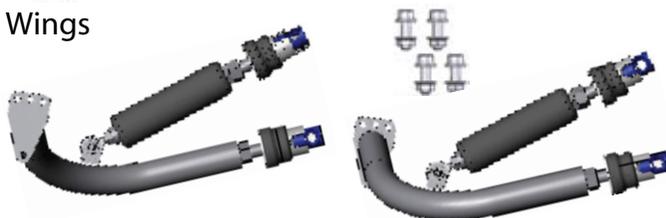
1 Handcycle



4 Clamps



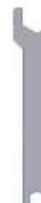
2 Wings



5



6



7



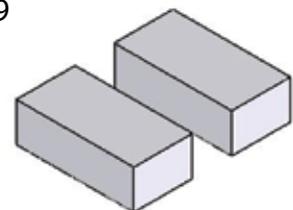
3 Battery & Charger

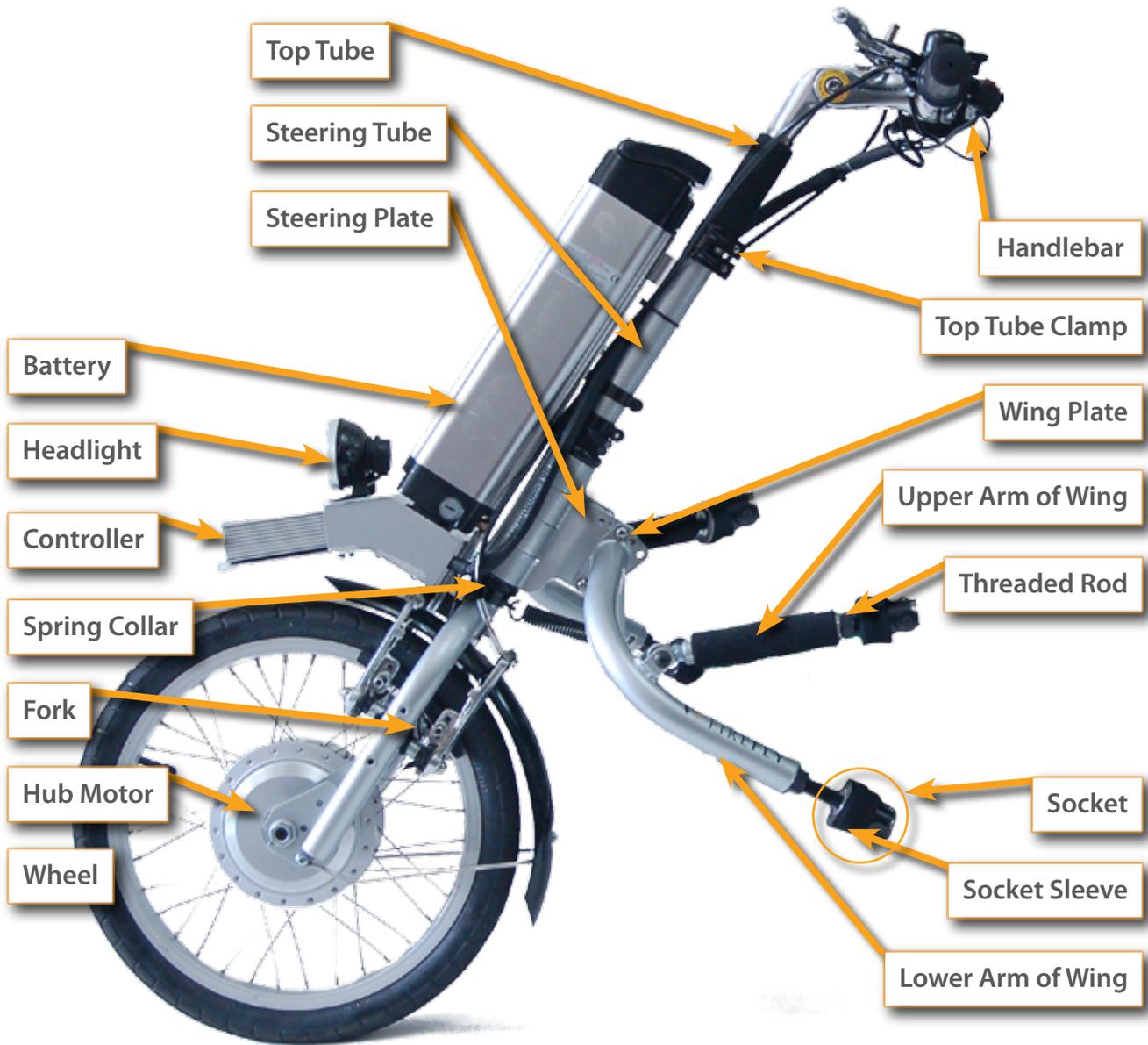


8



9





Detail for Handlebar :



## 4. Firefly™ Specifications

Gearbox	24V, 220W geared brushless hub motor
Battery	24V 10Ah Lithium Polymer battery, 5lbs (2.2kg)
Construction	All alloy steel construction for strength and reliability
Brakes	Dual Promax lockable V-brakes
Color	Silver metallic
Weight	Total weight is 33lb (15kg) with battery
Tire	16" x 1½" (40 x 305) KendaQuest all-tread tire

## 5. Installing Your Firefly™

### Notes on Installation

Since the Firefly™ is a highly customizable product, it is recommended that initial installation be performed by two people. Once it is configured for your wheelchair, no additional assistance is usually necessary.

If you are not comfortable adjusting your wheelchair, or with tasks such as assembly, tightening nuts and bolts, or gripping a wrench, it is recommended that a qualified technician perform the initial installation. A wheelchair or bicycle mechanic is suggested.

There are five installation steps:

- **Charge the Battery**
- **Install the Clamps**
- **Prepare the Firefly™**
- **Position the Wheel and Handlebar**
- **Adjust the Upper and Lower Arms**
- **Install the Battery**

Familiarize yourself with the component names in the previous section. During the installation you will need to locate and/or identify these components.

Contact customer service at [sales@riomobility.com](mailto:sales@riomobility.com) if you have any difficulty installing your Firefly™.

### Charge the Battery

The **Battery** may not arrive to you fully charged. Plug in the **Charger** and charge during the rest of this installation process, or until fully charged (up to five hours).

## Installing the Clamps

1. Measure the diameter of your tubing using the ruler printed on page 5 and ensure that you have the proper Clamps.
2. Determine the appropriate clamp placement for your frame using the figures on page 6. If you need assistance, please contact [sales@riomobility.com](mailto:sales@riomobility.com). Make sure that the **Washers** are between the Clamp and the head of the **Screw** as shown.



Requirements for clamp location include :

- Separate the Clamps as far as possible vertically, *at least 3" (80mm)*
  - Clamps **MUST** be installed on straight sections of tubing **ONLY**. They must be at least  $\frac{1}{8}$ " (3mm) away from any bend or weld in the tube
  - **DO NOT** install Clamps on removable or swing-away footrests
3. Tighten the Clamps using the 8mm Hex wrench to a tightness of 10ft-lbs (13.6Nm). This is a force of 20lbs 6" away from the screw (90N at 15cm away)

## Preparing the Firefly™

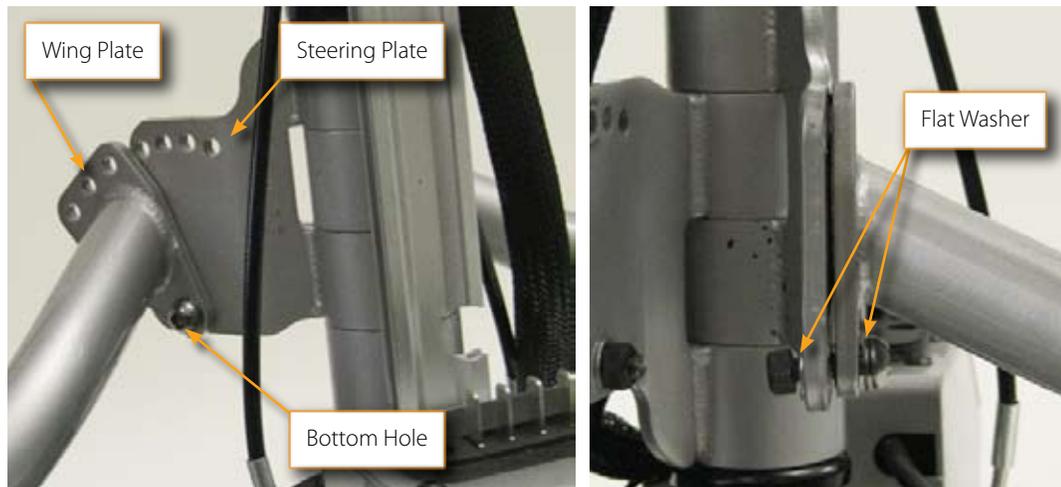
### *Install the Reflectors*

1. Your Firefly™ handcycle comes with one **Reflector** to be mounted to your spokes.



### *Attach the Wings*

1. Attach the right **Wing** to the handcycle using the supplied Screws, Washers and Nuts. Insert the Screw through the bottom holes of the **Wing Plate** and the **Steering Plate**, with the Washers inserted as shown below. Tighten the Nut then back off one turn so that the Wing may rotate. Do not install the Screw in the top hole yet.



2. Repeat for the left Wing.

### *Inflate your Tire*

1. Inflate the Tire according to the pressure range printed on the sidewall (40 - 65psi [2.8 - 4.6 Barr, 280 - 460 kPa]). A pressure on the lower end of that range will result in greater traction and a smoother ride.

## Positioning the Wheel and Handlebar

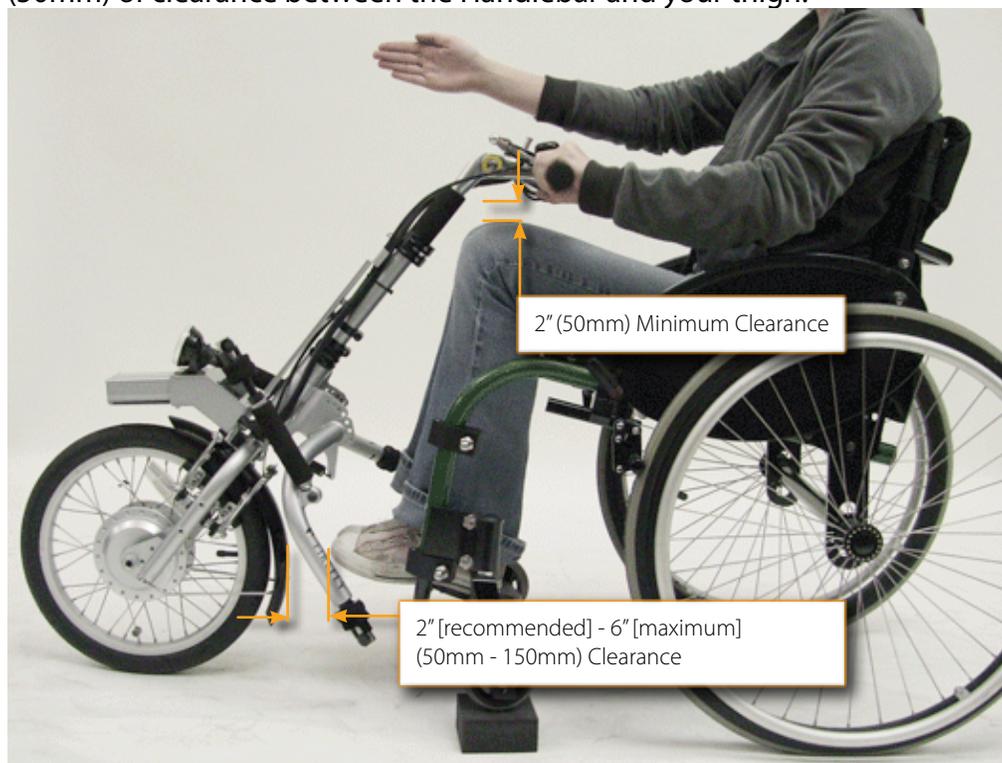
### *Position the Wheel*

1. Set the **Parking Brake** on the handcycle by grasping the Brake Lever and depressing the Brake Pin. You may set one or both brakes as needed.



2. SET YOUR WHEELCHAIR WHEEL LOCKS. Place the 2 ½" (64mm) Blocks under the front caster wheels as shown below. For added safety against tipping, install your anti-tips. You may also back your chair against a wall.
3. Each Arm has a **Socket** on the end - retract the **Socket Sleeves** on all four arms until they click and are latched in the open position. Rotate the **Upper Arms** away from you (toward the Wheel).
4. Seated in your wheelchair, pull the handcycle toward you with the **Wings** extended toward your legs. Center the Wheel in front of you.

5. Place the Wheel at least 2" (50mm) away from the front of your shoes or from the front edge of your footrest, whichever extends farthest.
6. Sit in your wheelchair in a comfortable position, with your back flat against the backrest. Keeping the Wheel in place, lift the Handlebar until there is at least 2" (50mm) of clearance between the Handlebar and your thigh.



### *Position the Handlebar*

1. If the Handlebar is too close, push it away until it lines up with your forearm.

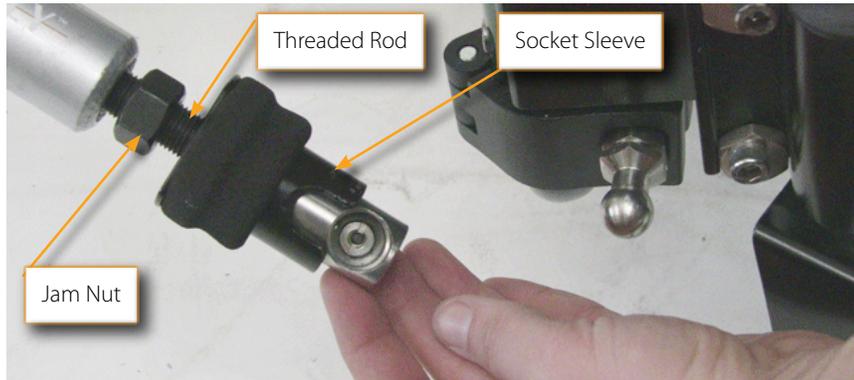
If you can't get the Handlebar in a comfortable position, loosen the Top Tube Clamp and slide the Top Tube further into or out of the Steering Tube. Re-tighten the Top Tube Clamp to a tightness of 8ft-lbs. (10.8Nm). This is approximately a force of 16lb at 6" away from the screw (70N at 15cm away).



## Adjusting the Upper and Lower Arms

### Attach the Lower Arms

1. Attach the **Lower Arms** to the lower set of **Pawns** installed on your chair. The Lower Arm can be lengthened or shortened using the **Threaded Rod**. Loosen the **Jam Nut** to do this. DO NOT unscrew the Threaded Rod beyond the red zone on the threads. Make sure both Arms are the same length so that your handcycle is centered.



- If the Threaded Rod is fully inserted and the Lower Arm is still too long, push the Wheel out until the Socket can attach to the Pawn.
  - If the Threaded Rod is fully extended and the Lower Arm Sockets can't reach the Pawns, even with the Wheel only 2" (50mm) away from your feet, move the **Clamps** forward. If this is not possible, please contact customer service.
2. Line up one of the lower **Sockets** with the **Pawn** and lock it into place. The Socket Sleeve will automatically slide to cover the Socket and you will hear a click.



3. Repeat for the other side.

### Position the Wing Plate

1. Rotate the handcycle back and forth slightly until one of the three holes at the top of the **Wing Plate** lines up with one of the four holes on the **Steering Plate**.



2. Insert the 6 mm Screws, with Washers on each side of the plates, and tighten the Nuts to 8ft-lbs (10.8Nm). Tighten the bottom Screws and Nuts to the same 8ft-lbs. (10.8Nm) tightness.

### Attach the Upper Arms

1. Bring the **Upper Arms** toward you and twist the **Threaded Rod** until the **Sockets** line up with the upper **Pawns**. You may have to loosen the **Jam Nuts** to do this, using two wrenches as shown on the next page. The Arms should be of equal length. DO NOT unscrew the Threaded Rod beyond the red zone on the threads.
  - If the Upper Arm has been shortened as much as possible, yet still extends past the pawn, then the Wheel has to be moved away from you by lengthening the Lower Arms.
2. If the Sockets are not already latched in the open position, pull back on the **Socket Sleeves** until you hear a click and they remain open. Press firmly over one of the upper Pawns. The Socket Sleeve will automatically slide into place and cover the Socket and you will hear a click. Line up the other Socket and Pawn, and click it into place.



3. Tighten the **Jam Nut** on each of the four Arms to a torque of 10ft-lbs. (13.5Nm) using the included wrenches, as shown below.



4. MAKE SURE THAT ALL NUTS HAVE BEEN TIGHTENED, including the Wings' Nuts and Screws, Upper and Lower Arm Jam Nuts, and all Clamp Screws. Remove the Blocks from under the front casters. Your handcycle is now installed, and the front casters should be approximately 2" (50mm) above the ground.
5. If the **Wheel** pulls to the left or right, loosen the screws in the **Spring Collar**. Center the Wheel, let the Spring Collar rotate into its neutral position, then re-tighten the screws.

#### *Install the Battery*

1. Once the Battery is fully charged, slide it down the rail until the electrical plugs are engaged. If desired, you may lock the battery in place with the included keys to prevent removal.
2. Turn on both Power switches.

You may wish to further adjust the Firefly™ after you've become accustomed to it, but be sure to check that all hardware have been tightened after any adjustment, and take your handcycle for a short test ride after each change.

**Your Firefly™ is ready to drive!**

## 6. Battery Care & Operation

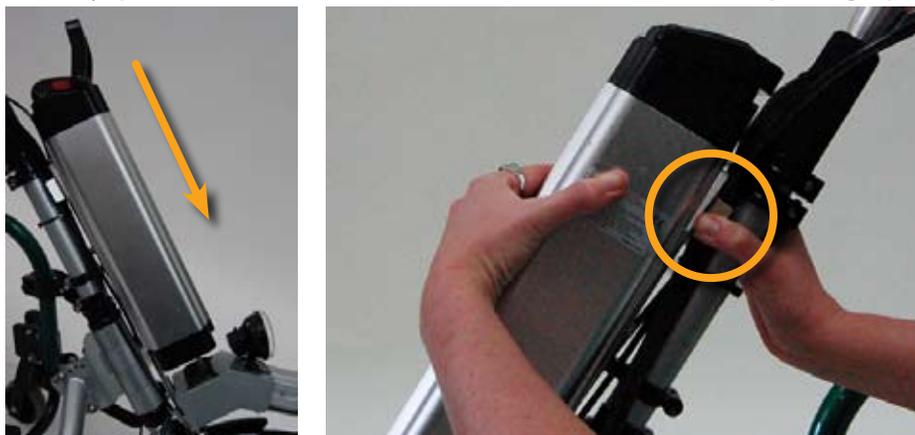
The Firefly™ is shipped with a custom hi-power lithium polymer battery for optimal performance. More efficient and lighter weight than traditional lead acid batteries, these Li-Ion units have an energy density five times greater than that of SLA batteries. They also have an average cycle life of over 500 charges, whereas lead acid batteries last fewer than 200 charges.

### Operation

#### *Installation and Removal*

To install the Battery on the Firefly™, slide the battery over the rail on the front of the frame. Press down to ensure that the electrical contacts are fully seated. You may lock the Battery in place to prevent unauthorized removal using the included keys. To lock, turn the key until the silver rod protrudes through the rail.

To remove the Battery, pull back on the two “ears” of the metal tab while pulling up on the Battery.



#### *Battery Level Indicator*

To see the current level of the Battery, press and hold the orange button on the top of the casing. A number of LEDs will light up, corresponding to the level of charge.

#### *Supplying Power to the Firefly™*

To power the Firefly™, there are **two** power switches to turn ON. The first is the red switch located on the Battery, which must be toggled so that the ‘I’ is depressed. The other switch is located on the Handlebar. Toggle that red switch up, toward the lightbulb symbol, to turn on.

### Safety & Maintenance

Only use the included smart charger when charging your Battery. If you need a replacement charger, contact customer service at [sales@riomobility.com](mailto:sales@riomobility.com).

You must recharge the Battery at least every two months if it is not being used or risk a permanent decrease in capacity. Charging time for an empty battery is up to five hours.

Operation temperatures must not exceed 0° - 100°F (-20° - 40°C). Exposure to temperatures above 120°F (50°C) will diminish the charging capacity permanently.

## 7. Attaching the Firefly™

### Attachment

1. Before attaching your handcycle, ALWAYS ENGAGE YOUR WHEEL LOCKS.
2. Pull back all four **Socket Sleeves** so that they click and hold in the open position. Swing the Upper Arms away from you (toward the Wheel).
3. Holding onto the **Top Tube**, pull one of the Lower Arms toward you and latch the **Socket** on to the lower **Pawn**. Repeat for the other side.
4. Lift the front casters off the ground by pushing the Top Tube away from your body using one hand. With the other hand, swing one of the **Upper Arms** toward you and click the Socket into place. Repeat for the other side.



### Detachment

1. Before removing your handcycle, ALWAYS ENGAGE YOUR WHEEL LOCKS.
2. Push the **Top Tube** away from your body to relieve the weight from the Upper Arms, and pull back the **Socket Sleeve** from one of the Upper Arms.
3. Move the Top Tube back and forth gently with one hand and pull the **Upper Arm** away until it releases the Pawn. Swing it forward toward the Wheel.
4. Repeat for the other Upper Arm. As soon as it releases, all the weight of the wheelchair is held up by your arm holding the Top Tube. Slowly lower the chair until the front casters contact the ground. Swing the second Upper Arm away.
5. Holding on to the Top Tube with one hand, pull back the Socket Sleeve on one of the Lower Arms and pull the Wing away from the Pawn. Repeat for the other side.
6. The handcycle is now completely detached from your wheelchair.

## 8. Firefly™ Controls

Refer to the diagram on page 5 for part names and locations.

### Power

To operate the Firefly™, the power must be turned on in two locations. The first is a red switch on the right side of the **Battery**. The other is a red switch on the indicator, next to the **Speedometer** on the **Handlebar**. Both switches must be in the ON position for the Firefly™ to function.



### Brakes

There are two lever **Brakes**, one on each side of the **Handlebar**. Each Brake acts both mechanically -- via bicycle-standard caliper brakes at the wheel -- and electrically -- by turning off the power to the Hub Motor. NOTE: when travelling uphill, you must fully release the Brakes to allow the Hub Motor to engage.

Each brake also offers the functionality of a Parking Brake to hold the Brake in the engaged position. This is operated as shown on page 8.

### Drive

To drive the Firefly™, place both hands on the **Handlebar**, fingers within easy reach of the Brakes. Twist the **Throttle** with your right hand. The amount of twist will control your speed. Steer by pushing left or right on the Handlebar according to the direction intended.

The Firefly™ includes a **Speedometer** display on the Handlebar to record speed and distance traveled. A separate user manual is included.

### Reverse

To enhance maneuverability, the Firefly™ may be driven in reverse. To engage, you MUST first come to a complete stop. Then press and hold the red **Reverse** button on the left side of the handle while twisting the **Throttle**. Use caution and ensure that there is a clear path before moving. To travel in the forward direction again, you MUST first come to a complete stop. If you do not stop first, the Firefly™ will continue to travel in the same direction, even though the button has been released.

### Headlight

It is recommended to use the **Headlight** in low-light conditions to improve your visibility, both of your environment and to others. To turn the Headlight on, press the yellow button next to the Reverse button. To turn it off, press the yellow button again.

## 9. Safety

### Safety Checklist

- **The handcycle transforms your chair into a highly maneuverable device, so ALWAYS WEAR A HELMET.**
- **Make sure reflectors are installed, oriented properly, and clean.**
- **The use of safety belts is recommended when operating your handcycle.**
- **ALWAYS engage the Wheel Locks on your wheelchair before attaching or detaching the handcycle.**
- **ALWAYS check to make sure that all FOUR Pawn sockets attachments 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, or you will void your warranty.**

### Before You Ride

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

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

### Outdoor Use

Always watch out for traffic and pedestrians when riding on the road and sidewalk – follow traffic regulations. Follow any and all local regulations for this vehicle.

### Turning

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 inherently unstable in turns, so be careful to keep all three wheels on the ground and moderate your speed when approaching curves.

Be very 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 normal wheelchair. Narrow wheelchairs are less stable, so be extra careful if your wheelchair is particularly narrow.

## Obstacles

Be very careful going over bumps and curbs over 2" (50mm) high. Your front casters may contact these surfaces, causing a loss of control. Use your pushrims to get over these bumps, NOT the handcycle. You should approach bumps and curbs straight on and at very low speeds to avoid damage to your wheelchair and injury to you – your return spring should keep the front Wheel straight, freeing up your hands for the pushrims. Be aware of road surfaces, especially on inclines or declines. Watch out for water, ice, and oil films.

## Hill Climbing

If you lose traction, lean toward the Handlebar, if possible, to move your center of gravity forward.

## Transferring

DO NOT attempt to transfer into or out of your chair with the Firefly™ 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 hand Handlebar operation.

Do not put weight on the Wings – this includes weight due to objects and people.

This handcycle is meant for everyday 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.

## 10. Firefly™ Customization

Rio Mobility can offer special adaptations tailored to each user. Some are described below. If you have additional requests, please discuss with your health care professional and contact customer service at [sales@riomobility.com](mailto:sales@riomobility.com).

### Speed Limiter

The Firefly™ is shipped with a speed limiter inside the Controller, which limits the top speed of the Hub Motor to 6mph (10kph). Once you are experienced with driving the Firefly™, and wish to travel faster, you may remove the limiter at your own risk. Consult with your health care professional before making this change.

1. The Controller is attached to the Controller Plate with velcro. Carefully pull it out.
2. Among the wires you will see a white wire with a black plastic connector, shown below.



Disconnect this connector. This disables the speed limiter and allows for a top speed of 10mph (16kph).

3. Place the wires back into the box and replace the Controller, pressing firmly to ensure secure attachment to the velcro.

Use extra caution as you become accustomed to the new performance abilities of your handcycle, especially when traveling around turns.

Visit [riomobility.com](http://riomobility.com) for more customization ideas.

# 11. Maintenance Instructions

## Inspection Checklist

In addition to the requirements specified in your wheelchair manual, the following inspection schedule is required.

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

## Basic Maintenance Guidelines

Inspect your handcycle frequently. Failure to inspect your handcycle and make necessary repairs or adjustments can result in injury to you or to others. Make sure all parts are correctly assembled and adjusted as indicated in this manual. Immediately replace any damaged, missing, or badly worn parts.

Make sure all fasteners are correctly tightened as described in this manual. Parts that are not tight enough can be lost or operate poorly. Over-tightened parts can be damaged or cause damage. Make sure any replacement fasteners are the correct size and strength. If you have any questions, please contact [sales@riomobility.com](mailto:sales@riomobility.com).

Have a qualified wheelchair or bicycle technician make any adjustments or repairs for which you do not have the correct tools, or if you have difficulty understanding or performing the instructions in this manual.

## Tires

Frequently check the **Tire** inflation pressure because all tires lose air slowly over time. For extended storage, keep the weight of the handcycle off the tire.

Use a hand or foot pump to inflate the inner tubes. The correct inflation pressure range is shown on the tire sidewall (40 - 65psi [2.8 - 4.6 Barr, 280 - 460 kPa]). A pressure on the lower end of that range will result in greater traction and a smoother ride.

Replace worn or defective tires and inner tubes. Follow the same procedure as for a bicycle tire, or visit a qualified wheelchair or bicycle mechanic.

## Lubrication

Using wax, synthetic, or Teflon lubricants (not non-synthetic oil such as WD-40 or Tri-Flo), follow these guidelines to lubricate the handcycle:

Brake Lever	Put one drop of oil on the pivot point of the brake lever
Brake	Put one drop of oil on the pivot point of the brake
Brake Cables	Put four drops of oil onto both ends of each cable. Allow oil to soak back along the line
Axles	Put one drop of oil on the axle and wipe across the surface

*Important Note: The Firefly™ is designed to require minimal maintenance. Lubrication of parts other than those indicated above can cause damage and void the warranty.*

DO NOT over-lubricate. If oil gets onto the Wheel rim, it will reduce performance of the v-brake. Longer stopping distances will be required in the event of an emergency stop. Injury to you or others may occur.

## Brake Pad Replacement

If your **Brake Pads** become worn, contact a bicycle shop for replacement pads and assistance, if needed.

## Cleaning

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

## Replacement Parts

Please contact [sales@riomobility.com](mailto:sales@riomobility.com) for information on replacement parts.

## Storage

Your Firefly™ should be stored in a cool and dry location to maintain lubrication and prevent corrosion. If you need to store the Firefly™ for an extended period of time, the **Battery** must be fully charged. See section 6 for more information on Battery maintenance.

You may want to retain the box that your Firefly™ was shipped in, as it makes a handy container for storage of your handcycle, your handcycle accessories, the included tools, and the manual. It can also be used for shipment to the factory in case of maintenance and warranty repairs.

## 12. Troubleshooting Guide

### **When climbing a hill, the front Wheel slips.**

The Front Wheel is too far forward of your center of gravity. Adjust the handcycle so that the Front Wheel is as close as possible to the footrest without interference while driving straight or turning. If possible, you may also want to move the rear axles further back. When climbing hills, sometimes leaning forward in your chair is necessary.

### **The Handlebar moves back and forth too much while driving.**

Some of the hardware may have become loose. Ensure that all nuts and bolts are tight, including on all Clamps and the Wings.

### **Steering is very stiff and difficult to make turns.**

The head bearing may be improperly adjusted. Contact a qualified wheelchair or bicycle mechanic.

### **The Firefly™ won't power on.**

Make sure that the battery is fully charged. Ensure that both power switches (on the Battery and on the Handlebar) are in the ON position.

## 13. Limited Warranty

Rio Mobility warrants the Firefly™ for two (2) years from the date of initial consumer purchase. This warranty covers any defects in materials and workmanship with the exclusions below:

### Warranty Exclusions (except for factory defects)

- **Tires, tubes, spokes, and wheel rims**
- **Brake pads and cables**
- **Handgrips**
- **Any other normal wear-and-tear item**
- **Battery (after 6 months)**

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

Rio Mobility is to perform all warranty work if deemed necessary. Shipping costs to Rio Mobility are the sole responsibility of the buyer. Return shipping costs to the customer will be the responsibility of Rio Mobility. Rio Mobility is not responsible for damages incurred to product during return shipping to Rio. All returns must be pre-approved and receive a Return Authorization number from Rio Mobility.

### Limitations

This warranty is VOID if:

- **Assembly and installation is not performed according to the instructions**
- **Preventative and routine maintenance as not been performed**
- **The serial number is removed or altered**
- **The hub gearbox seal is broken**
- **The handcycle is used in any competitive event**
- **The handcycle is used in stunt riding, jumping, or similar activity**
- **The handcycle is submersed or sprayed with water**
- **The handcycle is driven under a load greater than the maximum rating**
- **The handcycle is used in a manner contrary to the instructions in the Owner's Manual**

The warranty applies to U.S.A customers only. Please contact us for warranty information outside the U.S.A.



# 14. Product Registration / Warranty Form

Please complete and mail or fax this form to:

Rio Mobility  
56 Tehama Street  
San Francisco, CA 94105  
(415) 520-0567 (fax)  
sales@riomobility.com

Name : \_\_\_\_\_  
Address : \_\_\_\_\_  
City : \_\_\_\_\_  
State / Province : \_\_\_\_\_  
Zip / Postal Code : \_\_\_\_\_  
Email : \_\_\_\_\_  
Phone Number : \_\_\_\_\_  
Rio Mobility Model # : \_\_\_\_\_  
Serial # : \_\_\_\_\_  
Purchased From : \_\_\_\_\_  
Date of Purchase : \_\_\_\_\_



sales@riomobility.com  
(888) 559-6225  
(415) 278-9662