

Slingshot

by South Coast Cruzers of International Surrey Company Ltd.

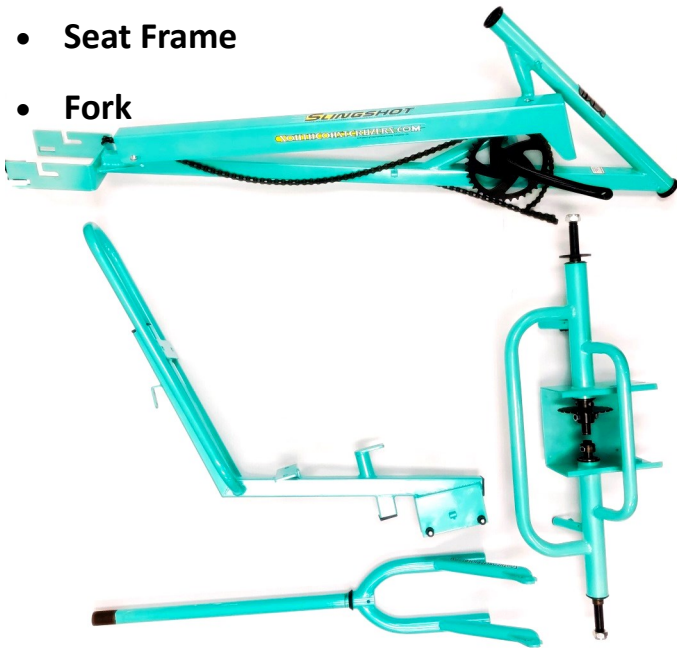
ASSEMBLY AND OPERATING MANUAL

Parts included in Two Slingshot Boxes

- ◇ **Frame Box**
- ◇ **Component Box**

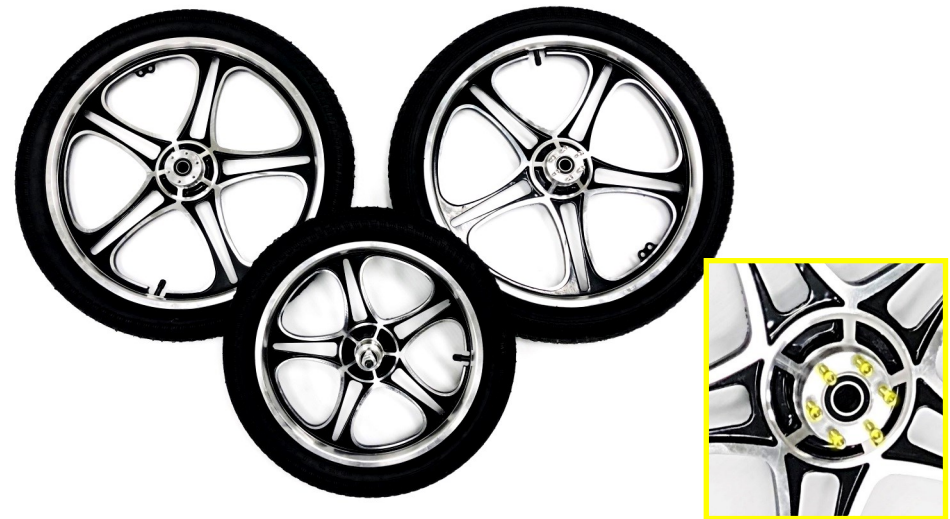
Frame Components

- **Front Frame Chassis**
- **Rear Frame Chassis**
- **Seat Frame**
- **Fork**



Wheels

- **Front Wheel**
- **Rear Drive Wheel** (*Has 6 bolts see below -right side install*)
- **Rear Freewheel Wheel** (*left side install*)



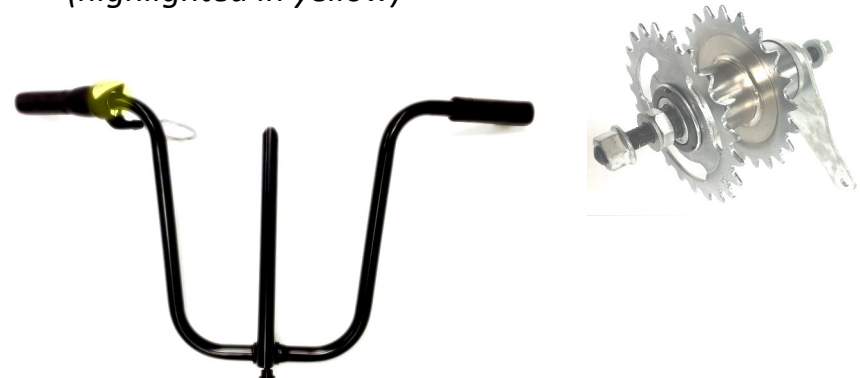
Seat Components

- Backrest Seat
- Bottom Seat
- Five bolts, flat washers and lock washers *(hardware will be in a plastic bag)*



Single Speed Option

- Single Speed Hub
- Handlebar and handlebar stem without twist shifter *(highlighted in yellow)*



Note: Only the 5 Speed model will have the twist shifter on the handlebar, highlighted in yellow

Assembly Components

- Pair of Pedals
- Reflector
- Rear chain with masterlink
- Two (2) chassis carriage bolts
- Flag pole receptor plug
- Flag pole receptor bolt
- Headset Parts *(2 bearings, top race, lock washer, lock nut)*



Optional Sturmey Archer Internal 5 Speed Gearing

- Handlebar and handlebar stem with twist shifter (*highlight in yellow*)
- Five Speed Hub
- 2 Nonturn lock washers
- 1 Dome nut
- 1 Axle nut
- 1 Fulcrum Lever
- 1 Cable connector with Binder Bolt
- Gear guide with pivot and jackscrew
- Gear guide cover
- Shifting wire (*installed in shifter on handlebar*)
- Shifting wire housing
- Indicator rod with chain



STEP 1

HEADSET AND FORK INSTALLATION



A. The set of headset bearings on the left are laying opposite of each other. On the left, it is bearing side up. On the right, the bearing side is down. How, they are installed in the headtube is very important.



B. After applying some type of grease in the black cups at the top and bottom of the head tube of the frame, slide a bearing over the fork with the bearing side up as shown on the left.



C. Make sure the bottom bearing is seeded properly in the bottom cup, next install the top bearing with the bearing side down. This means the bearing sides of the bearing set will face each other, both turning smoothly in the black bearing cups already installed in the headtube of the trike.



D. After both bearings are installed, install the top race by hand turning it clockwise on the threaded part of the fork until it is hand tight. Check to make sure the fork will not move up and down or left to right. The fork should only turn left and right freely.

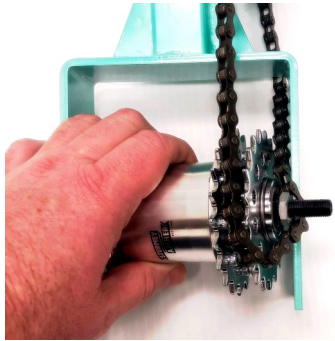
Next, locate the groove in the fork thread and slide the lock washer down the fork with the lock washer tongue inside the groove.

E. Lastly, after again insuring the top race is hand tight, install the lock nut on top of the lock washer. Use a large wrench to tighten the lock washer snugly. You will need to stop the fork from turning during this process.



STEP 2 HUB-TRANSMISSION / FRONT AND REAR CHASSIS INSTALLATION

These instructions will demonstrate installation of the 5 Speed hub, which include the same fundamental steps as the single speed model. The 5 Speed model will require some additional steps that will be details but can be skipped by owners of the single speed model.

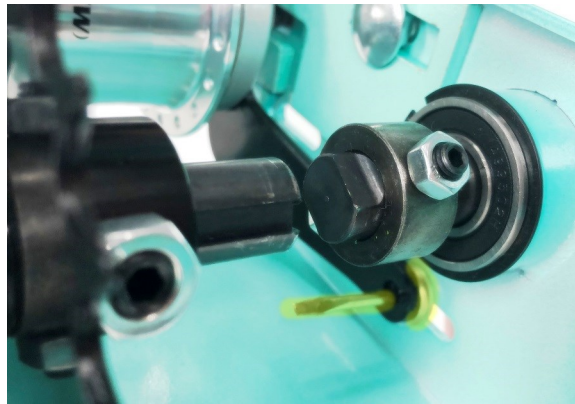
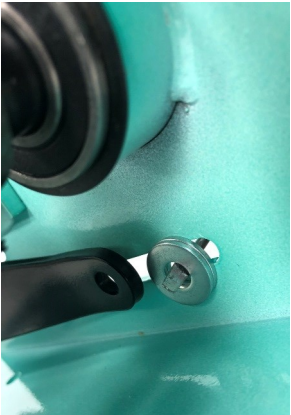
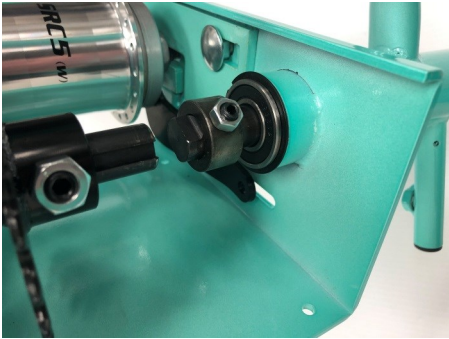


A. Place the front frame chassis in front of you. Loop the pre-installed chain over the axle. Slide the hub into the slotted part of the frame (with the flat areas of the axle on the 5 Speed on the top and bottom). With the hub as forward as possible, loop the chain over and around the sprocket on the right side.

B. Next, slide the front frame chassis into the rear frame chassis as shown the photos on the left. (Again on the 5 Speed, the flat areas on the top and bottom of the axle should slide the same way into the front and rear frame chassis).

C. With the front and rear frame chassis complete engaged into each other, use the two carriage bolts to secure the each chassis to the other. Slide the carriage bolts into the slots on each side of the rear chassis entering from inside with the threaded part of the bolt extending to the outside of the frame. Install the flat washer, lock washer and the nut. Leave the nut hand tight at this time.

STEP 2 CONTINUED

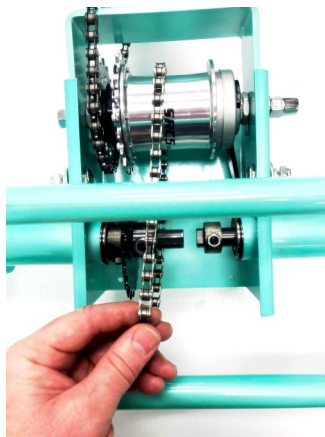


The next several procedures are accomplished while the trike is upside down in order to more easily access the bottom of the chassis.

D. The photo on the left shows the inside part of the underside of the rear chassis with the hub in place. Next, connect the brake stabilizer bar from the coaster brake to the rear chassis. This step is important because it affects brake function on the trike. Using 2-3 of supplied washers and a small screwdriver, slide the washers into place between the brake arm and the inside of the chassis wall. See the yellow highlighted area.

From the outside, replace the screwdriver with the bolt, holding the washers in place. You might press the stabilizer arm against the wall of the chassis to bind the washers in place as you slide the bolt through the wall of the chassis, the washers and the brake arm. Install the nut finger tight at this time.

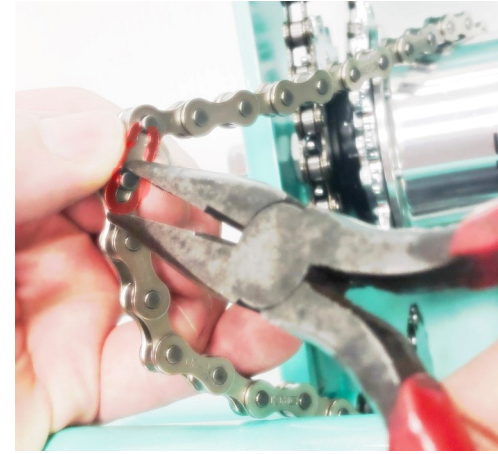
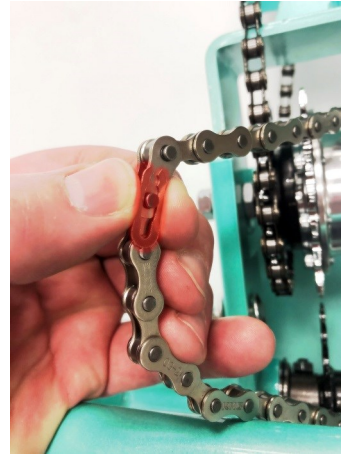
STEP 3 REAR CHAIN INSTALLATION



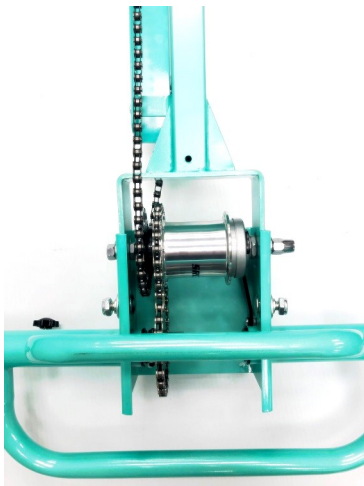
A. Locate the chain and masterlink. Loop the chain over the body of the installed hub and around the drive axle. Connect the two ends of the chain with the masterlink.

STEP 3 CONTINUED

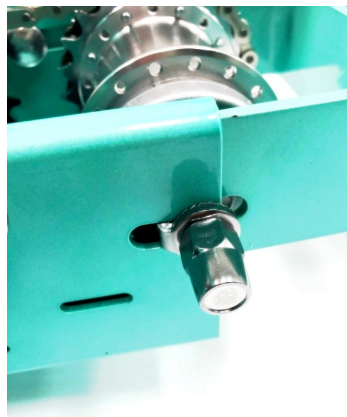
B. Look at the highlighted areas below. Insert the masterlink from the side that will pass the front chain. The bridge should be installed on the opposite side from the front chain. Finally, install the clip with the rounded end facing toward the side of the chain the will be in the front of the rotation when pedaled. Keep in mind the trike is upside down. The idea is that pedaling should not be able to unclip the masterlink by merely pedaling. Finally, secure the clip and masterlink with a pair of pliers securing the clip into place.



C. Loop the short chain over the right chainring on the hub (while upside down) and the chainring on the rear drive axle.



Bottom of Chassis

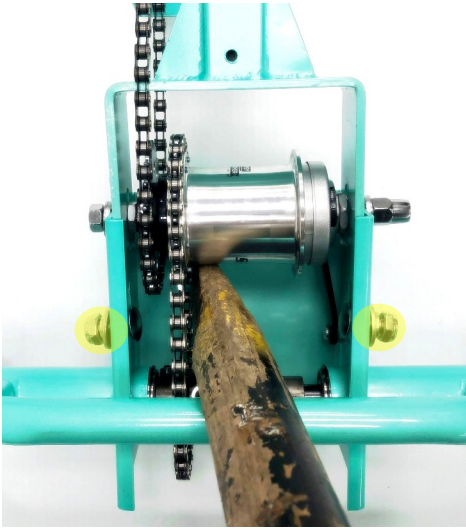


Right side of Chassis *while upside down*

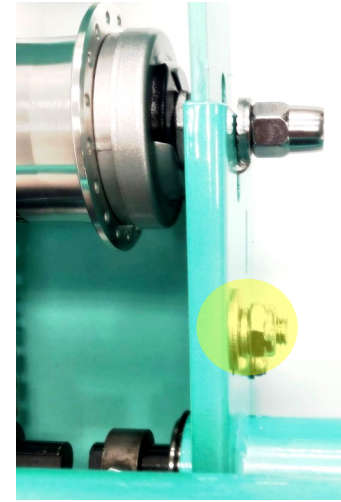


Left side of Chassis *while upside down*

STEP 4 CHAIN AND CHASSIS ADJUSTMENT



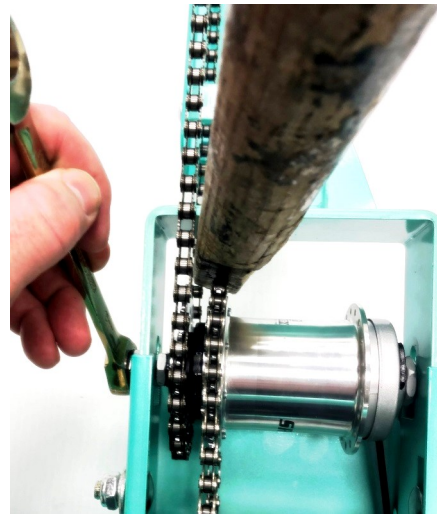
Using any stick as a lever, push the hub forward using the lever against the tube on the rear chasis. While holding pressure against the hub with the rear chain taugt, tighten each of the carriage bolts on the outside of the rear chasis. Tighten these two bolts as tightly as able by hand. These two bolts attach the two frame pieces together.



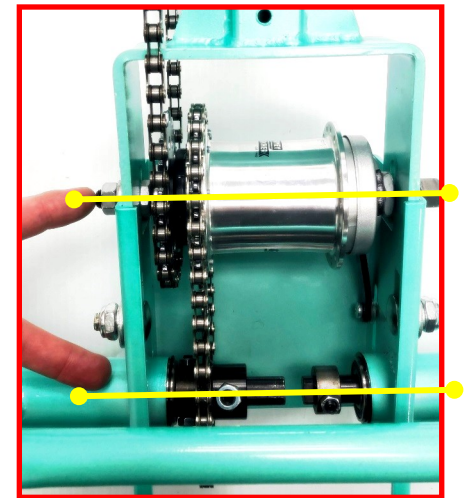
Confirm the front chain is looped over and around the front chainring on the cranks.



Confirm the front chain is looped over and around the left chainring on the hub.



While using the lever to pull the hub backwards, thus taking the slack out of the front chain, tighten the nuts on each end of the axle equally.



IMPORTANT!

Make certain the rear drive axle and hub axle are perfectly parallel. Otherwise, the chains will not align properly causing noise and derailment.

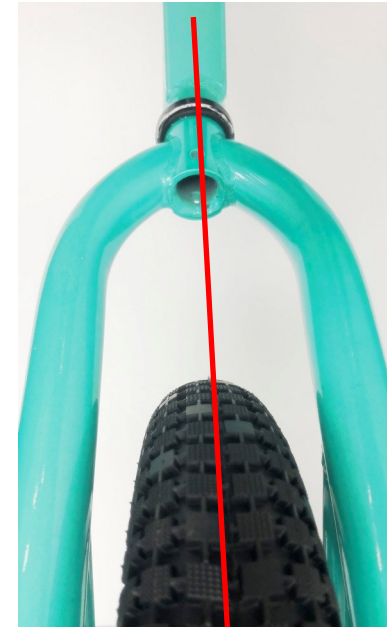
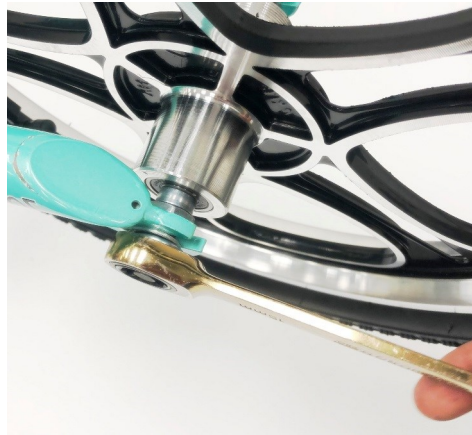
STEP 5 BRAKE INSTALLATION

In Step 2, the brake bolt was inserted through the wall of the rear chassis, through 2-3 washers for spacing and finally through the brake stabilizer arm on the coaster brake. While holding the nut from turning inside the rear chassis, use screwdriver to complete tighten the brake arm, the last of the bolts on the rear chassis.



STEP 6 WHEEL INSTALLATION

FRONT



Slide the front wheel into the dropouts of the fork. Note the rotation direction arrow on the side of the tire and install the wheel accordingly. The washers are to be installed on the outside of the dropouts as shown in the photo above. Tighten the front wheel with equal turns on the left and right axle nut until completely tight, while making certain the center of the tire follows the center of the front fork.

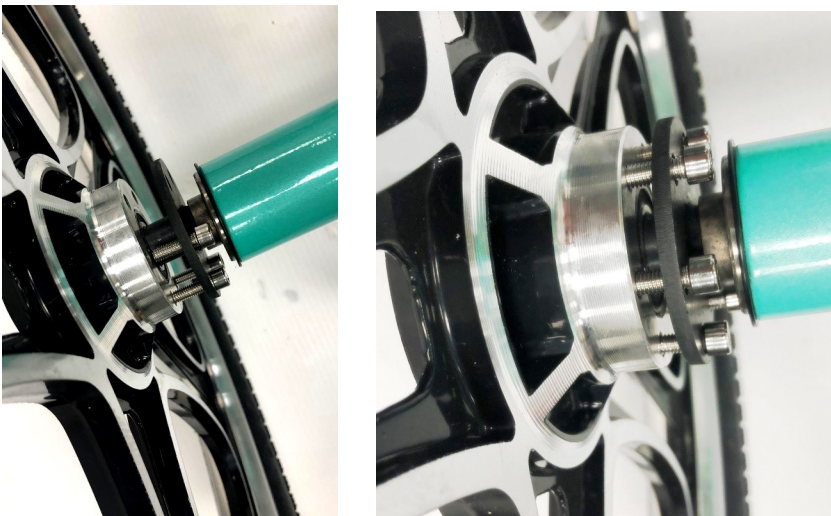
STEP 6 CONTINUED

REAR-LEFT NON-DRIVE WHEEL



As illustrated above, locate the rear wheel without the 6 Allen head bolts installed and slide it onto the left side axle, which freewheels (keeping in mind that the trike is upside down). Install the large washer and compression nut on the outside end of the axle. While holding the inside end of the axle from turning, tighten the compression nut until the axle is flush with the end of the axle. Confirm the wheel rotates easily but does not slide left to right. If it does, tighten it a little more.

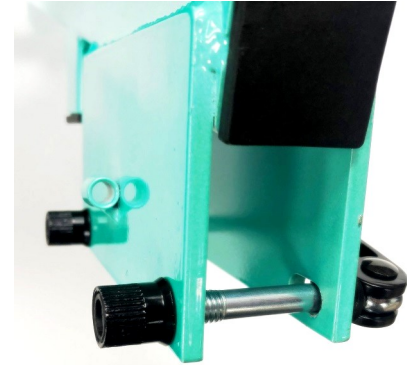
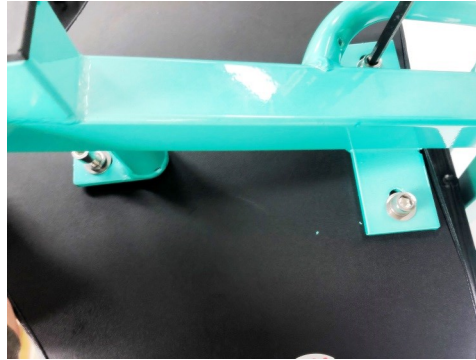
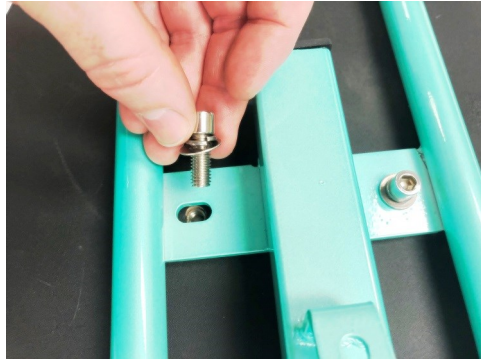
REAR-RIGHT DRIVE WHEEL



Next locate the rear wheel with the 6 Allen head bolts installed. Loosen and remove the bolts. Slide the wheel onto the outside end of the drive axle. Leaving approximately 1/4 inch between the mag and the drive disk on the axle, install all 6 bolts first finger tight by alternating to the bolt hole across from the last installed. After all 6 are installed finger tight, use an Allen wrench to completely tighten each of the 6 bolts again alternating across from each other. After all 6 are snugly tightened, finish the wheel installation following the instructions for the outside nut on the non-drive wheel above.

STEP 7

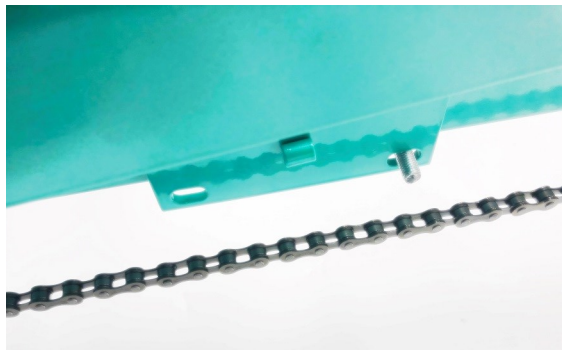
SEAT INSTALLATION



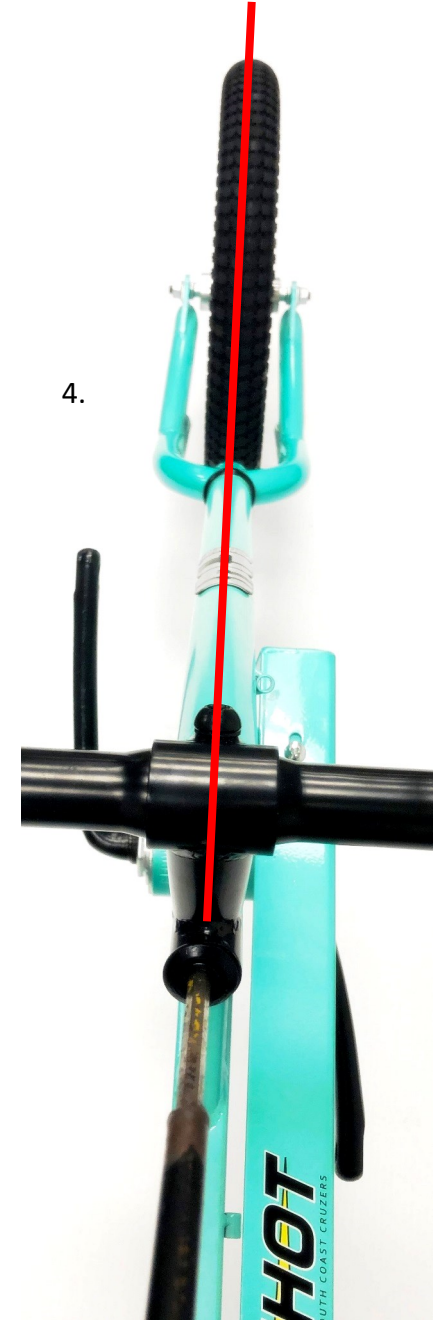
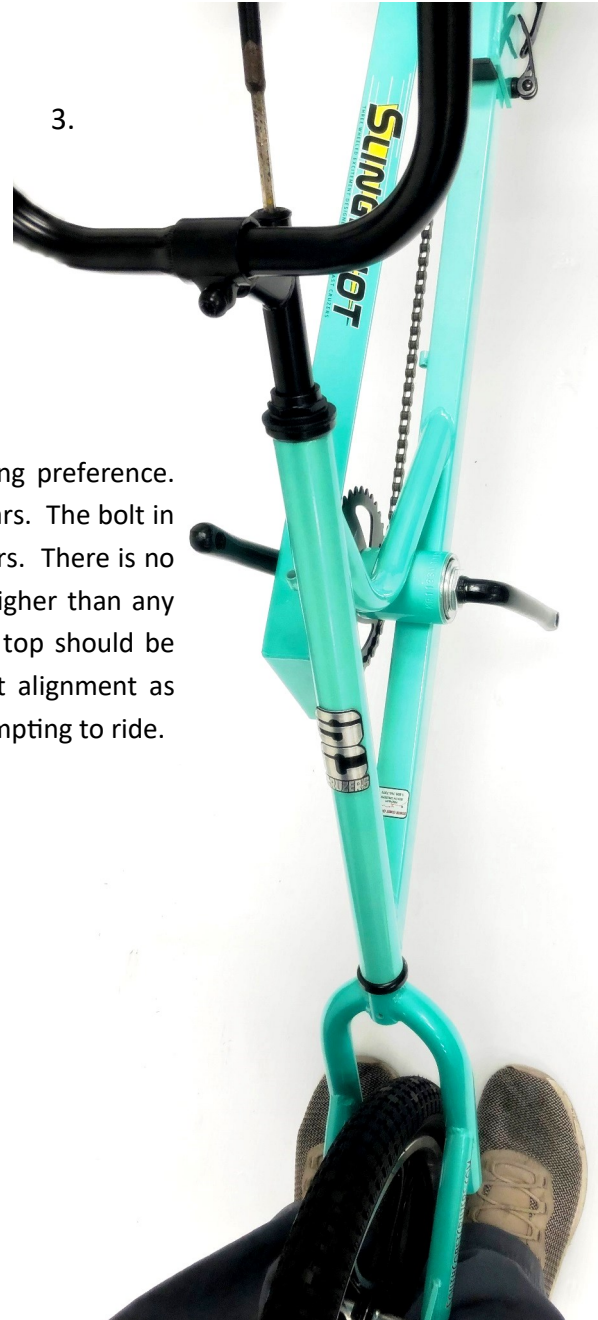
As illustrated above, locate the seat frame, the two seat pads and the 5 Allan bolts, flat washers and lock washers. First, install the pads to the frame by sliding a lock washer and next a flat washer on each bolt. Install 2 bolts on the backrest pad and 3 on the bottom. Carefully thread each of the 5 bolts in handtight first, the follow up with an Allan wrench to tighten them. **DO NOT OVERTIGHTEN.** OVERTIGHTENING will strip the seat and ruin the padding.

Next, turn over the trike onto its 3 wheels right side up, slide the seat bracket at the bottom over the top of the front chassis frame. Install the two quick release bolts as shown above with the handles on the left side of the trike. If you intend to adjust the seat for different leg length on a regular basis we strongly suggest you smear a generous amount of petroleum jelly (such as Vaseline) both on the square tube of the chassis and inside the bottom bracket of the seat show above on the right.

To secure the seat in a locked position, with the handle open, turn the nut on the other end until it is finger tight. Next, fold down the handle, which will completely tighten the bolt.



STEP 8 HANDLE BAR INSTALLATION

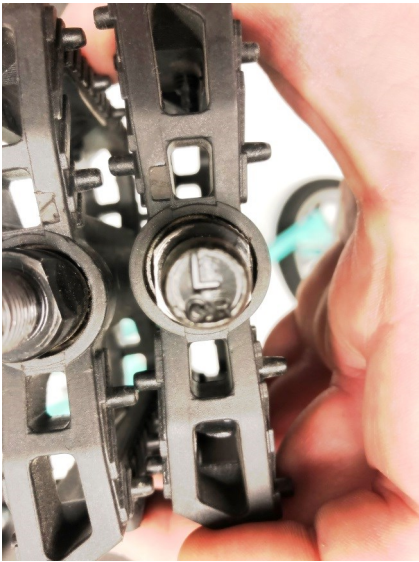


Handle bars should be installed and adjusted according to your riding preference. The bolt at the top of the handlebar stem controls the height of the bars. The bolt in the front of the stem (shown in #5) controls the angle of the handle bars. There is no right or wrong adjustment except, you should not adjust the stem higher than any "maximum" mark stamped into it. Also, the handlebar stem at the top should be completely and thoroughly tightened with the bar and fork in exact alignment as shown in #4. Be sure to tighten both Allen bolts thoroughly before attempting to ride.

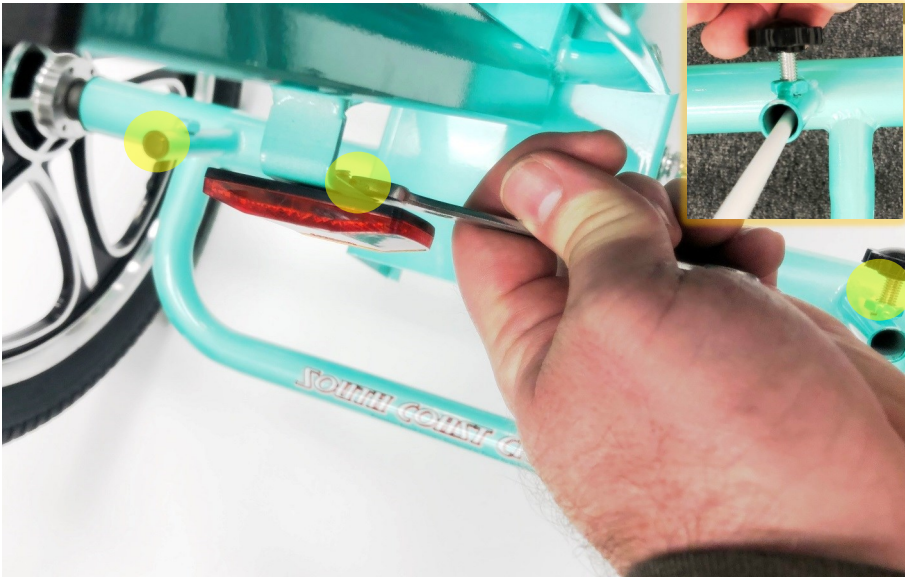


STEP 9

PEDAL AND REFLECTOR INSTALLATION



Identify the left and right pedals by the L and R stamped at the end of each axle. The L pedal should be install on the side without the chainring. Use a 15 mm wrench to completely tighten both pedals. Failure to do so will cause the pedals to strip.



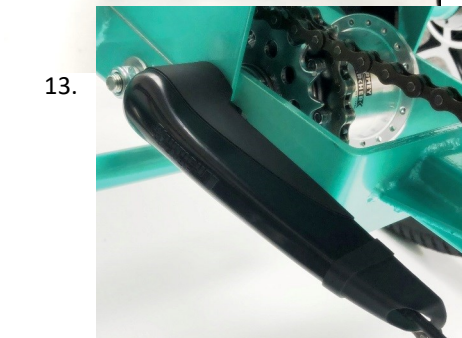
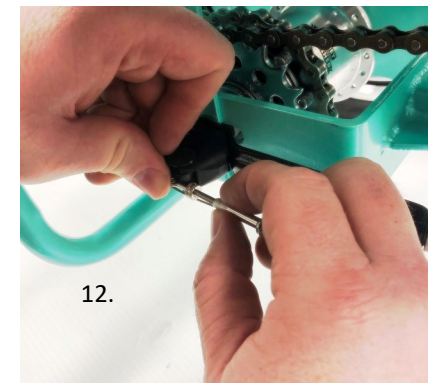
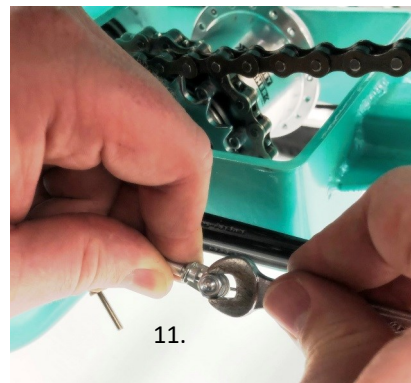
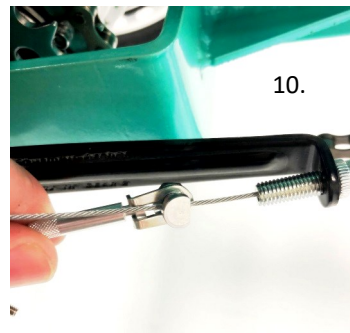
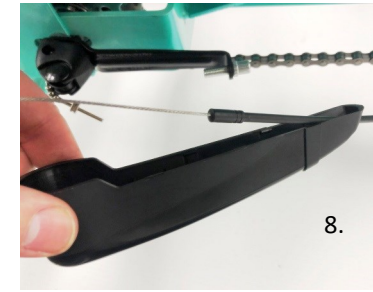
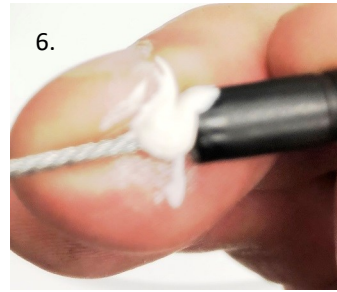
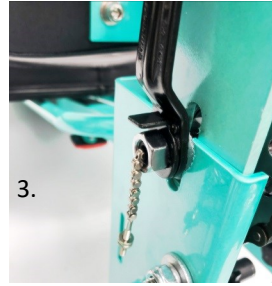
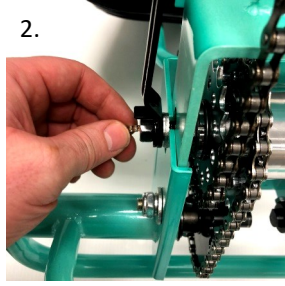
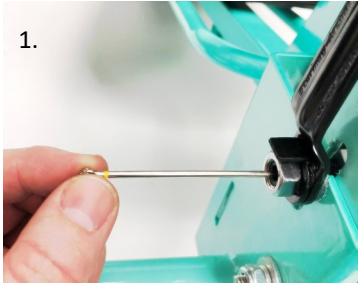
See the three yellow highlighted areas in the photo on the left.

1. Plug the flag pole hole you do not intend to use with the supplied black plug.
2. Install the red reflector on the rear of the seatback with an 8mm wrench.
3. Install the hand turn bolt in the flag pole holder you intend to use with the flag complete inserted into the holder. Tight the bolt against the flag pole into a bind.
4. Install the white reflector on the front handlebar using the black nylon mount provide also in the box.

Final Steps: 1. Make sure all nuts, bolts and set screws are secure and wrench tight. 2. Inflate tires to 35 lbs.

STEP 11

5 SPEED INSTALLATION AND ADJUSTMENT



STEP 11

CONTINUED

1. Install the indicator rod into the left side of the hub by inserting it as far as it goes and turning it clockwise until tight. Backoff 1/2 turn so that the chain hangs as shown in photo 3.
2. Pull the chain through the black pivot cap.
3. Set the shifter to 5th gear.
4. Insert the inner wire into the shifter housing with a little grease applied to the inner wire as it enters the housing.
5. Insert the housing through the cable guides as you choose en route to the rear hub as shown in photo 7.
6. Slide the wire and housing through the tip of the gear guide cover as shown in photo 8.
7. Slide the inner wire through the jackscrew at the end of the fulcrum lever and insert the end of the housing inside the jackscrew.
8. Slide the inner wire through the cable connector and binder bolt.
9. Adjust the cable connector on the inner wire so that when connected to the chain at the end of the indicator rod, the wire is taut in 5th gear.
10. Securely tighten the binder bolt at that position.
11. Connect the cable connector to the indicator rod by turning it with your finger tips. Tighten the small jam nut against the end of the cable connector to prevent it from loosening.
12. Install the black gear guide cover over the fulcrum lever as shown in photo 13.

Note: The following are instructions from the manufacturer of the 5 speed shifting system.

CAUTION—1. Make sure all nuts, bolts and set screws are secure and wrench tight. 2. Inflate tires to 35 lbs.

HAVE QUESTIONS? CALL 1-800-765-7370 EXT 3 FOR ASSISTANCE

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1. GENERAL INFORMATION

1.1 Scope of this leaflet

Congratulations on your purchase of a Sturmey-Archer internal gear hub. For the best performance, please follow the instructions in this manual. Please contact your dealer if any problems are experienced with these products.

Riding the gear hub out of correct adjustment may cause damage to the internal parts and possible malfunction!

This leaflet refers to the following 5-speed gear hub types :

- Gear Hubs with Drum Brake: AB5, X-RD5, X-RD5(W), XL-RD5(W)
- Gear Hubs: X-RF5, S5, X-RF5(W), SRF5(W)
- Gear Hubs with Coaster Brake: S5C(W), S-RC5(W), X-RC5(W)
- Gear Hubs for Disk Brake: X-RK5

1.2 Lubrication

No routine lubrication is required. During a major service, the hub greases should be replenished or replaced, especially for internal hub transmission parts. Please contact your Sturmey-Archer dealer who is equipped to carry this out.

Under no circumstances should any lubricant be applied to the hub drum brake and brake shoes, as this may prevent the brake from functioning!

1.3 Gear Changing

Continue pedaling but ease pressure on the pedals and select the gear required. If the bicycle is stationary simply select the gear required.

1.4 Gear Ratio

X-RD5, X-RF5, X-RK5 , AB5, S5		X-RC5(W), S-RC5(W), S5C(W), SRF5(W), X-RF5(W), XL-RD5(W), X-RD5(W)	
1 st . Gear	0.67	1 st . Gear	0.625
2 nd . Gear	0.79	2 nd . Gear	0.75
3 rd . Gear	1.0	3 rd . Gear	1.0
4 th . Gear	1.27	4 th . Gear	1.33
5 th . Gear	1.5	5 th . Gear	1.6

1.5 Brake Operation

1.5.1 AB5, XRD5, X-RF5(W), SRF5(W)

To activate the brake, pull the appropriate brake lever on the handlebar. If the wheel does not run free or cannot be locked by a full application of the brake, re-adjustment could be necessary.

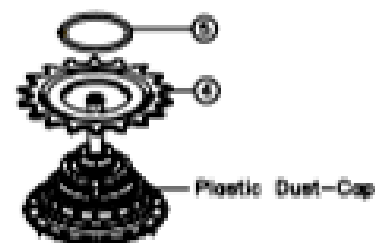
1.5.2 X-RC5(W), S-RC5(W), S5C(W)

The coaster brake is activated by back-pedaling. To apply maximum braking effort, begin brake application when the pedals are horizontal. When descending a long steep slope it is advisable to apply front and rear brakes alternately to prevent the coaster brake from overheating.

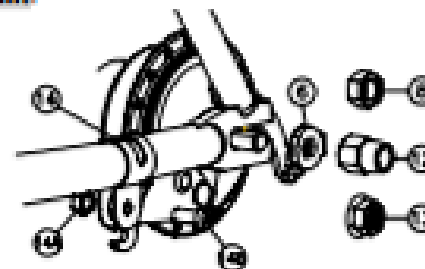
2. INSTALLATION

2.1 AB5, X-RD5, X-RD5(W), XL-RD5(W)

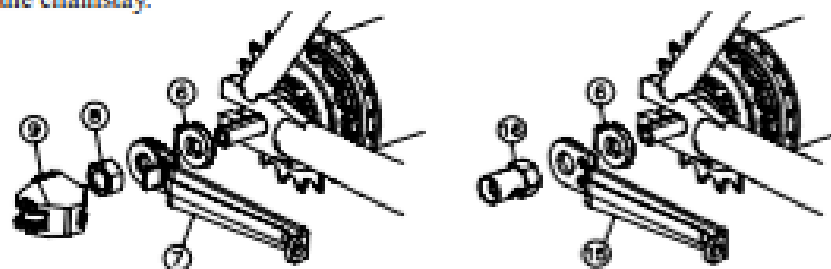
1. Build hub into complete wheel .
2. Fit the sprocket (4), circlip (5) onto the driver.



3. Put the hub axle into the rear fork end and place the chain around the sprocket (4).
4. Fit the lock-washers (6), domed nuts (12) or hex nuts (8) or flange nuts (13) on the axle. **Screw the nuts finger tight.**
5. Fit brake arm into brake arm clip (14) with nut (14A) and bolt (14B). **Do not tighten at this point.**

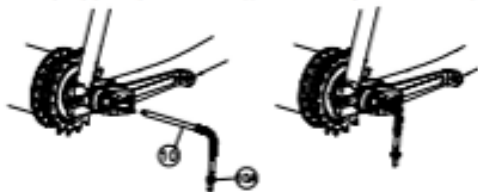


6. Locate the lock-washer (6), fulcrum lever (7)/(15) and guide nut (16) or hex nut (8) and guide pulley set (9). **Do not tighten nuts at this point.** Align the wheel, tension the chain and ensure the fulcrum lever (7)/(15) is parallel with the chainstay.



7. Tighten both axle nuts to **28Nm** and the brake arm clip (14) nut to **7Nm**.

8. Fit the indicator rod (10) into the axle and screw it finger tight. Fit the indicator cover (21)(22A) if necessary, but do not push on firmly at this point.



9. Ensure all components are fitted to the right side of axle. Unscrew the indicator rod by up to half a turn if necessary to ensure easy fitment over the guide unit. Connect the indicator (10) to the cable connector (19).



2.2 X-RF5, S5, X-RF5(W), SRF5(W)

See section 2.1. Step 5 does not apply.

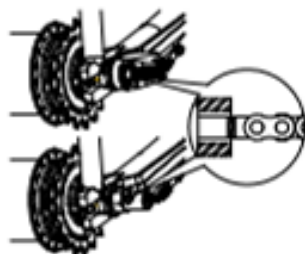
2.3 X-RC5(W), S-RC5(W), S5C(W)

See section 2.1. Step 5 is as shown in diagram.



3. GEAR ADJUSTMENT

1. Move the indicator protection cover (21)(22A) for easier gear adjustment.
2. Make sure that no more than **2.5mm** of axle protrudes from the axle hex nut.
3. Select **2nd** gear and turn the pedal crank forward to ensure the gear is engaged. Turn the cable adjuster (20) or cable connector (19) until the coloured mark of the indicator rod is level with the end of the axle, as show in diagram.
4. Tighten the cable-adjusting locknut (20-A) and indicator locknut (10-A), to lock in adjustment.
5. Select **5th** gear position, rotate the pedal cranks, change back to **2nd** gear and check adjustment. Repeat the stages described above when gear changing is incorrect.
6. If there is an indicator cover (21)(22A), fit it now firmly onto the guide nut (16) or the guide pulley set (9).



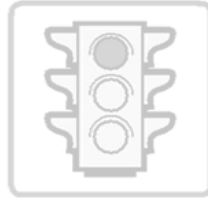
RIDING SAFETY

- When riding obey the same road laws as all other road vehicles, including giving way to pedestrians, and stopping at red lights and stop signs. For further information, contact the Road Traffic Authority in your State.
- Ride predictably and in a straight line. Never ride against traffic.
- Use correct hand signals to indicate turning or stopping.
- Ride defensively. To other road users, you may be hard to see.
- Concentrate on the path ahead. Avoid pot holes, gravel, wet road markings, oil, curbs, speed bumps, drain grates and other obstacles.
- Cross train tracks at a 90 degree angle or walk your cycle across.
- Expect the unexpected such as opening car doors or cars backing out of concealed driveways.
- Be extra careful at intersections and when preparing to pass other vehicles.
- Familiarize yourself with all the cycle's features. Practice gear shifts, braking, and the use of toe clips and straps, if installed.
- If you are wearing loose pants, use leg clips or elastic bands to prevent them from being caught in the chain.
- Wear proper riding attire and avoid open toe shoes.
- Don't carry packages or passengers that will interfere with your visibility or control of the cycle.
- Don't use items that may restrict your hearing.
- Do not lock up the brakes. When braking, always apply the rear brake first, then the front. The front brake is more powerful and if it is not correctly applied, you may lose control and fall.
- Maintain a comfortable stopping distance from all other riders, vehicles and objects.

RIDING SAFETY

General Rules

- When riding obey the same road laws as all other road vehicles, including giving way to pedestrians, and stopping at red lights and stop signs. For further information, contact the Road Traffic Authority in your State.
- Ride predictably and in a straight line. Never ride against traffic.
- Use correct hand signals to indicate turning or stopping.
- Ride defensively. To other road users, you may be hard to see.
- Concentrate on the path ahead. Avoid pot holes, gravel, wet road markings, oil, curbs, speed bumps, drain grates and other obstacles.
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- Do not lock up the brakes. When braking, always apply the rear brake first, then the front. The front brake is more powerful and if it is not correctly applied, you may lose control and fall.
- Maintain a comfortable stopping distance from all other riders, vehicles and objects.
- Safe braking distances and forces are subject to the prevailing weather conditions.



Be sure to understand the following common sense safeguards for operating your

Cycle, to reduce the risk of personal injury. Parents of minor riders have an obligation to be sure their children understand these safeguards.

- Be sure you understand all the operations of your Cycle.
- Be sure all equipment is properly adjusted, especially your wheels, steering and brakes.
- Obey traffic laws. Cyclists are subject to the same rules as motorists. Know and obey all motor-vehicle, cycle and traffic laws.
- Use common sense. Slow down for intersections. Do not erratically weave in and out of motor traffic. Watch for parked cars suddenly pulling out, or their doors opening.
- Avoid heavy motor traffic.
- Never carry more persons than your Cycle is designed to carry by the manufacturer.
- Make use of safety accessories and clothing. Wear bright or light colored clothing, or a vest with reflectors, especially at night. Wear shoes and a helmet.
- Always ride defensively. While you may be legally right, in a contest between an auto and your Cycle, the car will come out first.
- Be especially cautious with downhill braking. With very steep downgrades, it may be impossible to stop your Cycle in a necessary distance although the braking system meets the highest standards. To avoid possible injury, dismount and walk your Cycle (use the brakes) to the bottom of the grade, if you do not feel secure enough, especially on wet, muddy or gravel roads.
- Do not stunt ride. Do not use the Cycle for stunt or acrobatic riding, ramp jumping or similar activities.

Warning: Bad weather requires increased breaking distance.

On the road with wet, snowy or icy weather conditions, your brakes cannot stop you as quickly as in clement weather conditions. Special precautions must be taken to ensure safe stopping or slowing, and reduce the risk of personal injury. No matter how well your brake system functions, it is your responsibility to exercise special care in such adverse situations. Ride slowly. Be more alert. Apply your brakes sooner than you would under dry conditions.

Warning: Special precautions for night riding. Be sure your Cycle has reflectors or lights required by law on wheels, pedals, front and back. Be sure reflectors are properly adjusted and clean. State or local laws may require that you equip your Cycle with a light system in addition to the reflectors. Wear special reflective clothing or tapes. Reflective clothing as well as tapes for sleeves, backs and pants are available at cycle stores almost everywhere. Avoid cycling on dark, narrow roads. Never allow children to ride alone at night.

RULES FOR CHILDREN

To avoid accidents, teach children good riding skills with an emphasis on safety from an early age. Children should be supervised by an adult.

- Many states require that children wear a helmet while cycling. Always wear a properly fitted helmet.
- Do not play in driveways or the road.
- Do not ride on busy streets.
- Do not ride at night.
- Obey all the traffic laws, especially stop signs and red lights.
- Be aware of other road vehicles behind and nearby.
- Before entering a street: Stop, look left, right, and left again for traffic. If there's no traffic, proceed into the roadway.
- If riding downhill, be extra careful. Slow down using the brakes and maintain control of the steering.
- Never take your hands off the handlebars, or your feet off the pedals when riding downhill.
- The Consumer Protection Safety Commission advises that the riding of small wheel diameter cycles at excessive speeds can lead to instability and is not recommended.
- Children should be made aware of all possible riding hazards and correct riding behavior before they take to the streets.
- Do not leave it up to trial and error.



Safety is everything! Ride sensibly!

On the cycle the person steering bears direct responsibility for him/herself and all other passengers. Ride carefully, anticipating problems, and avoid sudden maneuvers such as unexpected fast turns and unnecessary sharp braking.

Wet Weather

- In wet weather you need to take extra care.
- Brake earlier, you will take a longer distance to stop.
- Decrease your riding speed, avoid sudden braking and take corners with additional caution.
- Be more visible on the road.
- Wear reflective clothing and use safety lights.
- Pot holes and slippery surfaces such as line markings and train tracks all become more hazardous when wet.

Night Riding



IT IS RECOMMENDED TO NOT RIDE AT NIGHT

Check your local laws regarding night riding; Many areas require the use of lights for night riding in addition to a full set of CPSC compatible reflectors. International Surrey Company recommends you do not ride at night. However, if you do:

- Ensure cycle is equipped with a full set of correctly positioned and clean reflectors.
- Use a properly functioning lighting set comprising of a white front lamp and a red rear lamp.
- If using battery powered lights, make sure batteries are well charged.
- Some rear lights available have a flashing mechanism which enhances visibility.
- Wear reflective and light colored clothing.
- Ride at night only if necessary. Slow down and use familiar roads with street lighting, if possible.