INTRODUCTION

This manual contains information on how to properly adjust and operate your Lightning bicycle for maximum comfort, safety, and performance.

The recumbent position and seat require alternate adjustment methods. The unconventional design and closeness of the front wheel to your feet require that new riding skills must be acquired.

Carefully follow the instructions, and after a short period of time, you will have the new habits needed to ride your Lightning successfully.

CONTENTS

1.0 THE P-38 ASSEMBLY

1.1 COMPLETE BIKE ASSEMBLY:

A) Remove all items from the box and unwrap. Be careful to support the handle bars so that the cables are not kinked
B) Install the stem riser onto fork.
C) Install the rear derailleur. Install the wheels I the dropouts, and check the tire pressure.
D) Loosely bolt the seat onto the frame using the included hardware, coat the screws with grease to prevent corrosion (see Fig. 1-1 and 1-2).
Adjust the seat stay inserts so that there is ½ to ¾ inch clearance between the forward seat cross tube, and the top tubes.
Tighten all seat bolts tight.
E) Slide the cranks and bottom bracket assembly into the forward frame tube, and install the pedals.

NOTE:

Do not apply any grease to the bottom bracket extension tube, Otherwise it might rotate under pedaling pressure.

F) Adjust the crank length and tighten. Adjust the handlebar height and tighten (See 2.0 ADJUSTMENTS BEFORE RIDING)
G) Front shifter connection/ adjustment:
Rotate lever until cable is fully released and thread cable to Derailleur. Figure 1-3 shows the cable installation for the front derailleur.
H) Rotate chain catcher to a vertical position (See Fig. 1-6). Remove tape backing and gently tighten screw to secure in place.
I) Install the chain according to figure 1-4 (see 2.0 Adjustments before riding for proper chain length).
J) Re-check the headset, breaks, and derailleurs for proper adjustment and operation.

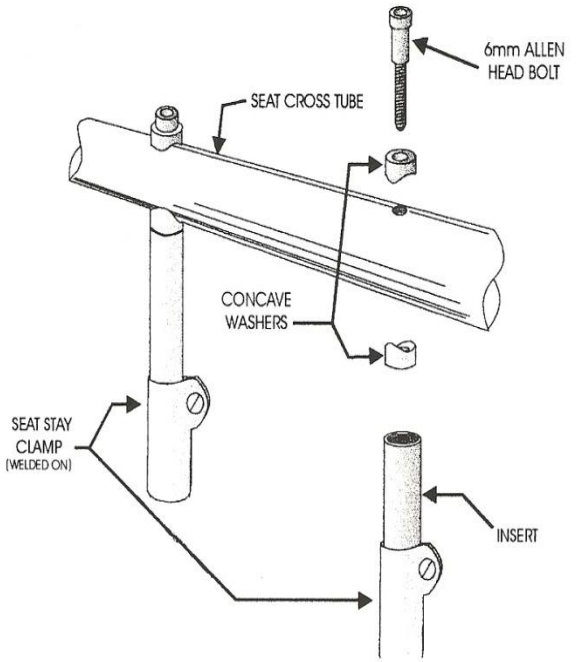

6mm ALLEN
HEAD BOLT
SEAT CROSS TUBE
CONCAVE
WASHERS
SEAT STAY
CLAMP
(WELDED ON)
INSERT

Fig. 1-1

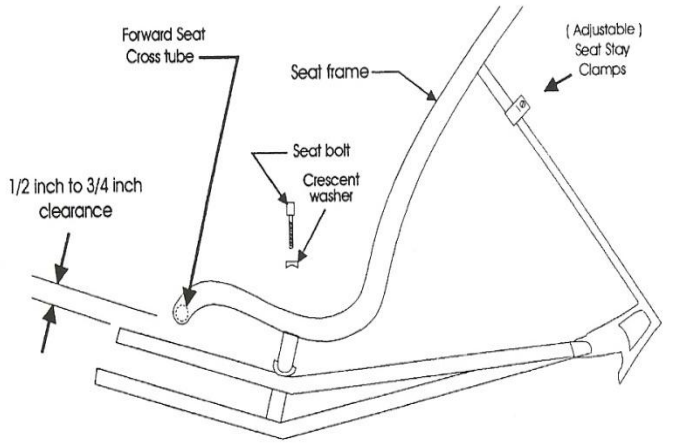

Forward Seat
Cross tube
Seat frame
(Adjustable)
Seat Stay
Clamps
Seat bolt
Crescent
washer
1/2 inch to 3/4 inch
clearance

Fig. 1-2

Fig. 1-2.1

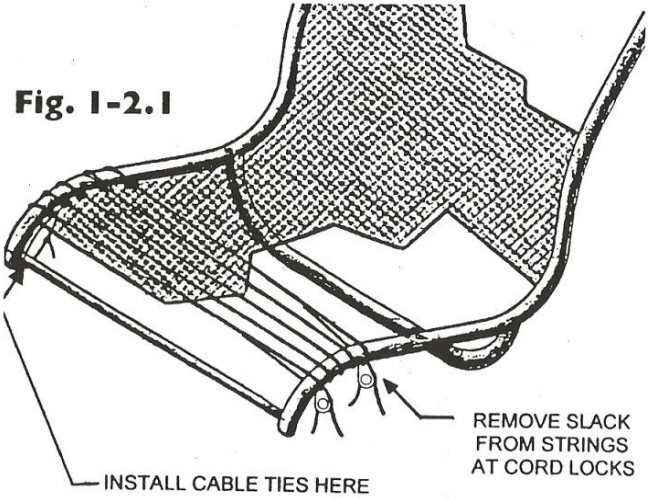
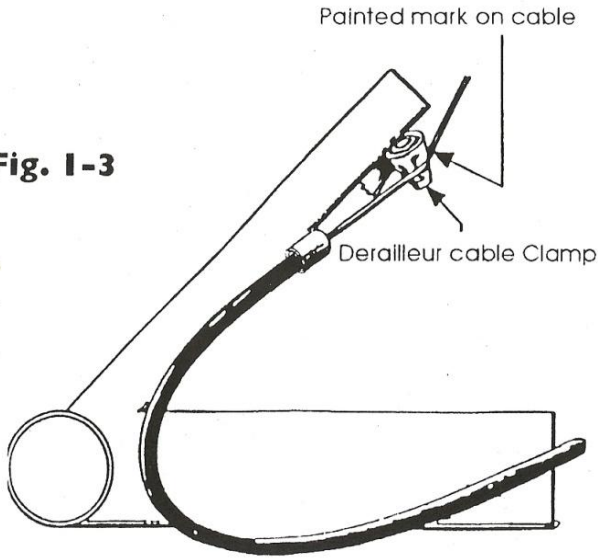
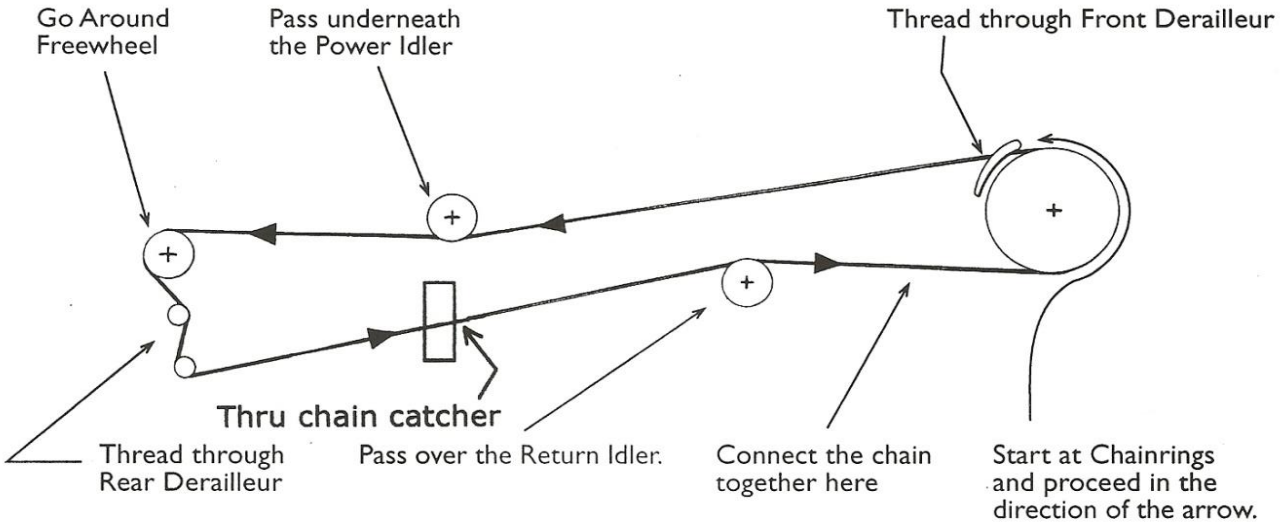


Fig. 1-3





CHAIN THREADING DIAGRAM

Fig. 1-4

1.2 FRAME SET INFORMATION

A) Bend the brake levers down as shown. The best way is to hold the upper part of the lever in the vise, heat the bent area with a propane torch, and hit the end with a rubber mallet. Remember, the right and left sides are opposite (See Fig. 1-5).

B) Refer to Fig. 1-6 when routing the rear derailleur cable.

C) Fork:

1. O-Ring:

The included O-ring can be installed inside the head tube, and presses against the fork steerer. This adds a small amount of steering damping, thereby increasing the stability. See section 5-7 for installation info.

2. Suspended Fork:

When pressing the headset race onto the suspended fork, it is important that the fit not be too tight. If the headset race is too tight a fit, it can actually squeeze the steerer tube small enough to that it locks up the sliding inner tube, thus preventing the fork from reacting to bumps.

When installing a caliper brake on the suspended fork, it is recommended locktite be used between the brake bolt and the hole in the fork crown. This will provide for a stonger and longer lasting assembly.

3. Caliper Brake:

Normally caliper brakes need to be mounted on the rear of the fork to avoid chain interference. If you are installing a caliper brake with recessed type mounting, the front mounting hole may need to be drilled larger for the mounting nut. It will not void the warranty nor make the fork too weak if this hole is made larger for the mounting nut. Also you may need to remove the cable adjuster for turning clearance, see Fig. 1-7

4. V-Brake:

See Fig. 1-8 for V-brake cable routing. Also the brake pads may need to be turned around for safe operation, please check your brakes closely.

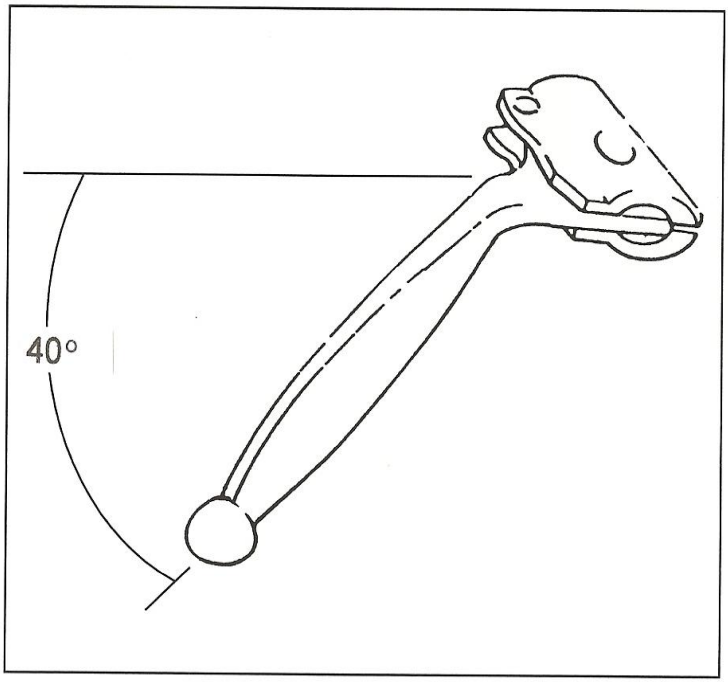


Fig. 1-5

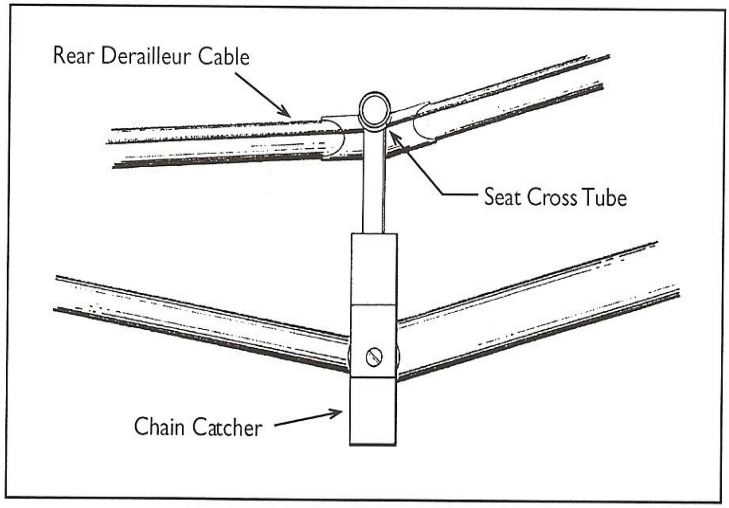


Fig. 1-6

Fig. 1-7

Fig. 1-8a

2.0 ADJUSTMENTS BEFORE RIDING

2.1 CRANK ADJUSTMENTS:

On Lightning Bicycles, The cranks are moved to accommodate differences in leg length. Adjust the cranks as follows:

A) Loosen the two Allen head bolts under the crank tube with a 5mm Allen wrench.
B) Slide the cranks in or out until your legs are slightly bent at their furthest extension (see Fig.2-1). It's better to have the cranks too close when making the initial adjustment that too far away.
C) Verify the chainrings are vertical by sighting along them to the handlebar stem, then tighten the two Allen head bolts.

2.2 HANDLEBAR ADJUSTMENT:

A) Slightly loosen the stem clam using a 6mm Allen wrench.
B) Adjust the handlebars up or down so that there is approximately ½ in of clearance between your knees and the handlebars (Fig.2.1).
C) Verify the handlebars are at right angles to the front wheel, then tighten the stem clamp.

<u>CAUTION!</u>
DO NOT TIGHTEN CLAMP ABOVE 50 IN-LBS

D) Slide the cable housing on the stem up or down to prevent any tight cables during turning.

2.3 CHAIN ADJUSTMENT:

After adjusting the cranks, check and adjust the chain length. The chain length should be long enough to permit shifting onto the large front chain-wheel large rear sprocket combination, and at the same time, not so long it goes slack when shifted onto small chain-wheel combinations.

This can be accomplished by adjusting the chain length so that the rear derailleur is in the position shown in fig. 2-2 with the chain on the large chainring- large rear sprocket combinations.

CAUTION!

If the chain is not long enough to shift onto the large Front chainwheel-large rear sprocket combination; The rear derailleur and chain will break

NOTE:

The derailleur does not normally have sufficient take-up Capacity to allow use of the small chainring- small rear sprockets.

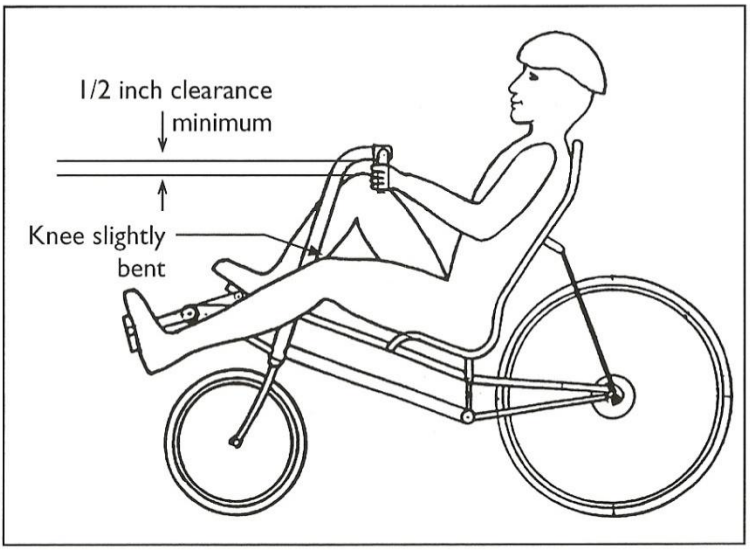


Fig. 2-1

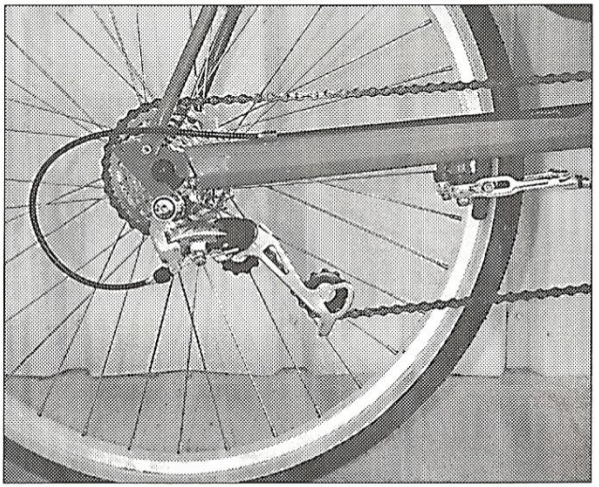


Fig. 2-2

3.0 RIDING

Find a straight, level road without much car traffic for learning how to ride. DO NOT attempt any U-turns or other sharp turns until you have mastered slow speed turning, explained in Step 3.3. Keep your speed at 10-15 mph, as this will prevent your feet from hitting the front wheel and is more stable than slower speeds. Finally, look into the distance, not at the front wheel.

3.1 PEDAL TYPE:

A) Toe clips: If your bike has standard pedals with toe clips, it helps to pedal on the back of the pedal while learning. Once you are ready to use the clips, hook the top of your shoe onto the end of the clip to rotate the pedal into position.

B) Clipless pedals: Don't engage when first learning how to ride. Also, practice unclipping a few times before engaging clipless pedals. It is best if you practice while leaning against a wall, or while someone is holding you up.

3.2 STARTING:

A) If this is your first experience with a recumbent bicycle, it is suggested that a friend holds onto the seat and gives a push to help in starting
B) For starting by yourself, the trick is to have one pedal in the straight up (power) position with one foot on the pedal and the other foot on the ground. Push hard against the one upright pedal to get moving, and then bring your other foot up and catch the other pedal.

3.3 SLOW SPEED TURNING:

WARNING!

During slow speed turns, the front wheel can be turned far enough so that your feet will hit it if you are pedaling. Practice the following carefully, and always pay attention to the front wheel when making U-turns into a driveway, etc.

A) The easiest solution is to coast through the turn, and keep your foot in the up position on the side you are turning. For example: for a right turn, keep your right foot up. (See Fig.

3-1) This method requires you to have sufficient speed to coast through the turn.

B) To make turns and apply power, have your feet as in (A) and make short 1/3 rotation, back and forth pedal strokes. This method must be used when you are starting out and turning at the same time, such as turning right after stopping at a stop sign.

Both methods take some practice to master, but it will eventually become second nature. The interference is a problem only at speeds below 6 mph. Above this, the wheel is not turned enough to be a problem.

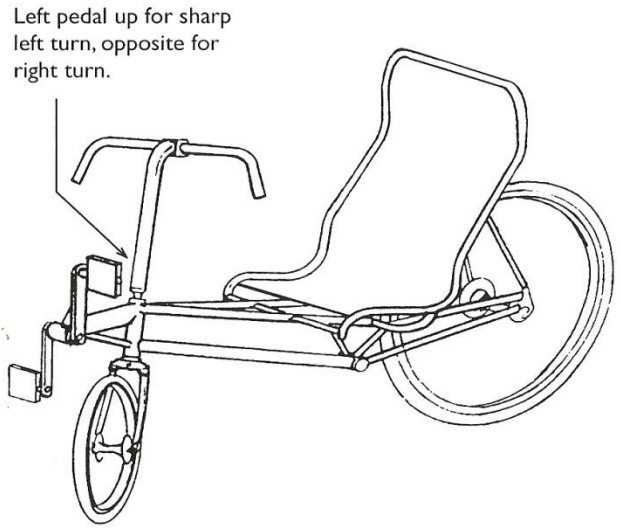


Fig. 3-1

3.4 HANDLING AND STABILITY:

A lightning bicycle has fair stability and responsive steering. It is not necessary to aggressively hold onto the handlebars. A relaxed grip is best for riding in a straight line. One hand on the bars is adequate for relaxed cruising. As speed increases, the stability actually improves if maximum power is not applied to the pedals.

WARNING!

DO NOT apply excessive force to the handlebars. There is no reason to pull extremely hard on them, as you will not go any faster. Large forces repeatedly applied to the handlebars may cause the stem to fail. If you want to lift your butt off the seat, do it by pushing down the seat frame with one hand, NOT by pulling on the handlebars!

3.5 BUMPS:

For going over bumps or railroad tracks, follow the hints: lean forward in the seat slighty so your back is not touching. This prevents the rear wheel impact from being transmitted to your back. A relaxed grip on the handlebars will allow the bike to move under you, thus transmit less force from the bump. For some wheel eating potholes, the only solution is to slow down, or avoid them if possible.

3.6 STOPPING:

Before you stop, shift down to a low gear. Being in a low gear makes it much easier to get started again. In emergencies, or just for fun f you want, the low center of gravity normally makes it possible to break as hard as you want without any fear of flipping the bike. However, be careful of applying full braking on wet r sandy roads, as this could cause the tires to slip out.

3.7 CLIMBING HILLS:

Use a lower gear and spin! If your pedaling speed drops below 60 rpm, then your power also drops off. Pulling on the handlebars does not help.

One trick to try on long and or steep hills for relief of extra power is this: Steer with one hand and push on your knee with your other hand as you pedal. As one arm gets tired, trade off and use the other one. This arm power can add 10 % more speed for short periods.

If you want to do extra training in order to climb hills better, then weight lifting (both upper and lower body), and one legged pedaling on the flats (to develop your backstroke muscles) help significantly.

3.8 MUSCLE CONDITIONING:

A) DO NOT immediately ride your bike for long distances as it takes some time for your muscles to become accustomed to the recumbent position. Ride 5-10 miles on the first day, then increase by 5-10 miles per day thereafter. Your quadriceps and rear end muscles may be mildly sore while you are getting used to the bike. This is normal; should disappear once the daily miles you ride stabilize.

B) If your Knees hurt constantly, this could be cause by improper crank adjustment. Try adjusting the cranks in or out slightly and see if the condition improves. Also, low rpm gear mashing can cause knees to hurt.

3.9 SAFE RIDING:

A) If for some reason you fall over while moving, **DO NOT PUT YOUR FOOT DOWN!** It can be drawn underneath the seat, causing severe injury to your leg and knee. Instead, keep your feet on the pedals and let the seat take the impact.

B) **WEAR A HELMT!** If your head is worth less than $50 (the price of a good helmet); you don't need one.

C) **WET WEATHER:** Your brakes do not work as good in this condition, so allow for more stopping distance on down hills. Also, ***BE CAREFUL*** when cornering!

D) BE CAREFUL when cornering fast on unfamiliar roads. Any gravel in the corner may cause a slide-out. Because of the low lighting seat position, it is possible to lead over more in a corner than a standard bike without realizing it.

E) Try to observe all traffic regulations. Cars like it when you are predictable, so don't make any sudden moves, and always signal your intentions.

F) If you ride in heavy traffic, brightly colored clothes are a big help. A warning flag may also be a god idea.

G) For night riding, buy a good lighting system. NightSun has the best light for dark roads at Lightning Speed.

H) BE CAREFUL on roads that have been repaved, leaving a lip where the new pavement drops off onto the old pavement at the shoulder. The small front wheel sometimes has problems negotiating this lip.

4.0 ACCESSORIES

4.1 *WATER BOTTLE:*

Two sets of water bottles braze-ons are standard under the seat. We recommend using heavy duty (6mm) aluminum cages, or the Specialized rib cage. A third water bottle can be mounted on the stem using cable ties.

4.2 REAR RACK:

The Lightning rack works best, it is made to attach to the seat stay adjusting bolts. However most other racks can be adapted to work.

4.3 PANNIERS:

The best panniers to use are the Lightning Zero Drag type. They give better weight distribution and do not increase dag like other panniers. However, any pannier that fits your rack will work.

4.4 SEAT BAG:

Bags with straps that normally loop around the handlebars can be used behind the seat. Carefully cut slots into the seat material so the bag straps can be wrapped around the top seat tube. Be sure to seal the edges of the seat materiel using a hot piece of metal, to prevent unraveling. Another option is the Lightning seat bag, which has large capacity, and can be simply slipped on over the seat back, without the need of cutting slots.

4.5 MIRROR

The Mirrycle mirror which mounts to the left brake lever works well.

4.6 FRAME PUMP:

The frame pump peg is a designed for a Zefal HP frame pump. Other pumps may also fit.

4.7 ZZIPPER FAIRING:

HARDWARE

I For fairing bubble installation (pre installed):
- 1small black plastic loop
- 4 large black plastic loops
- 5 black plastic screws
- 5 black plastic nuts

II For fairing mount installation upon the brake levers:
- 2 pivot bolts with brazed-on stud.
- 2 finger nuts
- 2 plastic washers

A) Slide the fairing mount through the large black plastic loop clamps. (see Fig. 4-1)
B) Slide both ends of the forward Support Hoop into the small holes of the fairing mount.
C) Secure the small plastic Loop Clamp around the forward support hoop.

NOTE:

If you purchased the fairing kit at the same time as the bicycle, StepD has aready been done for you:

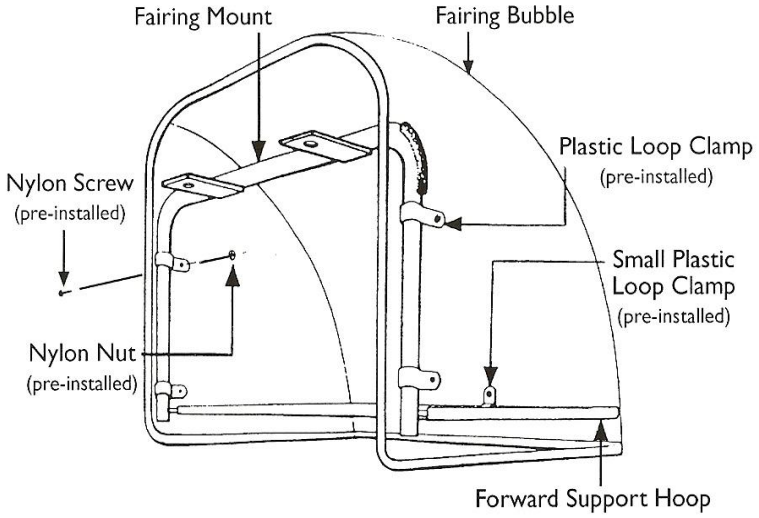


Fig. 4-1

D) Remove existing pivot bolt from the brake levers. Using the included Acorn nut, Install the new lever pivot bolts with brazed-on stud. (See fig 4-2). Next, space the brake levers so the studs match the fairing mount tabs.
E) Bolt the fairing mount onto the brake levers using the included washers and finger nuts. (see fig. 4-2).

F) If your legs hit the fairing, you should adjust the fairing by pushing forward on the bottom of it. This will bend the mounting tabs to the proper angle.

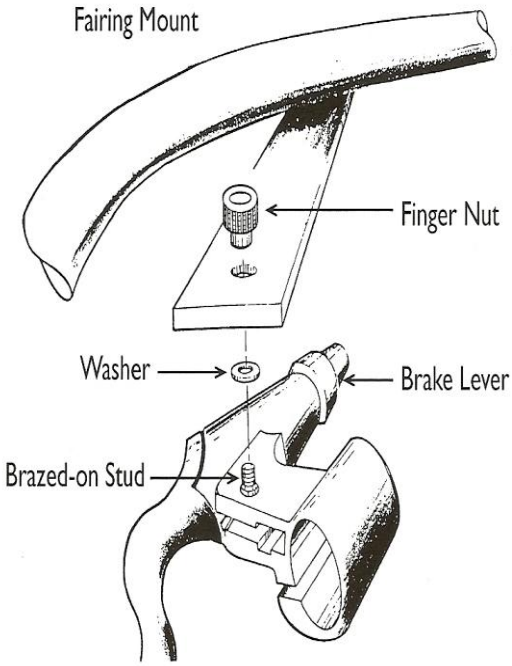


Fig. 4-2

4.8 SUSPENDED FORK INSTALLATION:

The lightning suspended fork is designed as a direct replacement for your current P-38 fork. However, there are a couple of things to be wary of. Be sure the brake of fender mounting bolt/nut does not interfere with the lower torque linkage when the fork is compressed. The bold or nut may have to be filed slightly to prevent interference.

WARNING!
Make sure a bolt is always installed in the fork crown hole. This is required to keep the slider tube pushing out of the fork crown.

5.0 MAINTENANCE

5.1 THE SEAT:

The seat as received on new Lightning Bicycles is fairly tight. After an initial break-in period of riding, the seat will loosen up due to stretching of the material. The seat back should be tightened by taking the slack out of the string that runs along the sides.

NOTE:
It is possible to wear a hole in the seat back, if it becomes loose enough to contact the rear tire.

The foam padding in the bottom of the seat can also be adjusted to better suit your riding style. We recommend the seat be kept more upright when you are first learning how to ride, as it is easier to balance. Later on, the seat can be reclined backward for less wind resistance, or perhaps improved comfort. However, be aware that visibility and controllability are reduced somewhat with the seat reclined.

To adjust the seat back angle, slightly loosen the four seat mounting bolts and seat stay clamp bolts. After adjustment, the cranks may have to be moved slightly, since adjusting the seat angle also moves your legs forward or backwards. Finally, BE

SURE THE SEAT MESH IS TIGHT, to prevent the seat mesh from contacting the rear tire while riding.

5.2 THE CHAIN IDLERS:

The Chain idlers have sealed bearings and do not normally require maintenance. The Idler under the seat develops a wear pattern to mat the chain after a few thousand miles.

This is normal and nothing to worry about. The upper and lower idlers are the same and can be interchanged if desired.

5.3 PAINT:

The paint on the frame is very tough urethane coating which is highly resistant to scratching. It also maintains its luster for a long time but can be waxed with ordinary auto type wax if desired.

5.4 BIKE PARTS:

All of the other parts are standard bicycle components, and can be easily serviced by your local bicycle shop. The chain should be periodically lubricated. The brakes and control cables should be monitored and adjusted when necessary. Once a year, the headset, bottom bracket, pedals and hubs should be checked for smooth operation, and adjusted if needed.

5.5 ZZIPER FAIRING:

Lexan is an extremely tough and crack resistant material. The Zzipper fairing will withstand a great adeal of abuse, even crashes, without breaking or cracking. However, it scratches easily. Thus, to preserve its appearance, these steps should be followed:

A) Clean the Zzipper fairing with Windex and mild detergent solution and a soft rag. Never use solvents of any kinds. Tooth paste is a good compound to smoothing out minor scratches.

B) Remove Zzipper Fairing when placing the bike on a bicycle carrier rack, unless the Zzipper fairing faces directly forward.

5.6 SUSPENDED FORK MAINTENANCE:

If the suspension begins to stick, the inner mechanism probably needs to be lubricated. Grease can be injected at the grease port using the supplied grease gun. If this does not correct the problem, the mechanism probably needs to be cleaned. Perform the following steps to disassemble and clean the mechanism. (Reference Figure 5-1):

A) Remove the bold holding the upper and lower torque linkages together, then pull the fork blades out from the steerer.

B) Wipe off any dirt with a rag, then put a thin coat of grease on the sliding parts. We recommend only using the grease supplied in the grease gun, as the use of other types may result in premature wear of the mechanism.

C) Reassemble the fork and install the bolt that holds the torque links together. Tighten the nut snug, then back it off ¼ turn. The linkage is properly adjusted when the washers can just barely be spun by hand.

D) The other linkage pivots can also be disassembled and cleaned if desired. After the reassembly, adjust as per step C above, then install and tighten the small jam nuts.

E) The dynamic parts of the suspended fork consist of coil spring, and O-ring for friction damping. Eventually, the O-ring may wear out and require replacement. The O-ring is right at the bottom of the steerer (see Figure 5-1). To change the O-ring , follow steps A through C above.

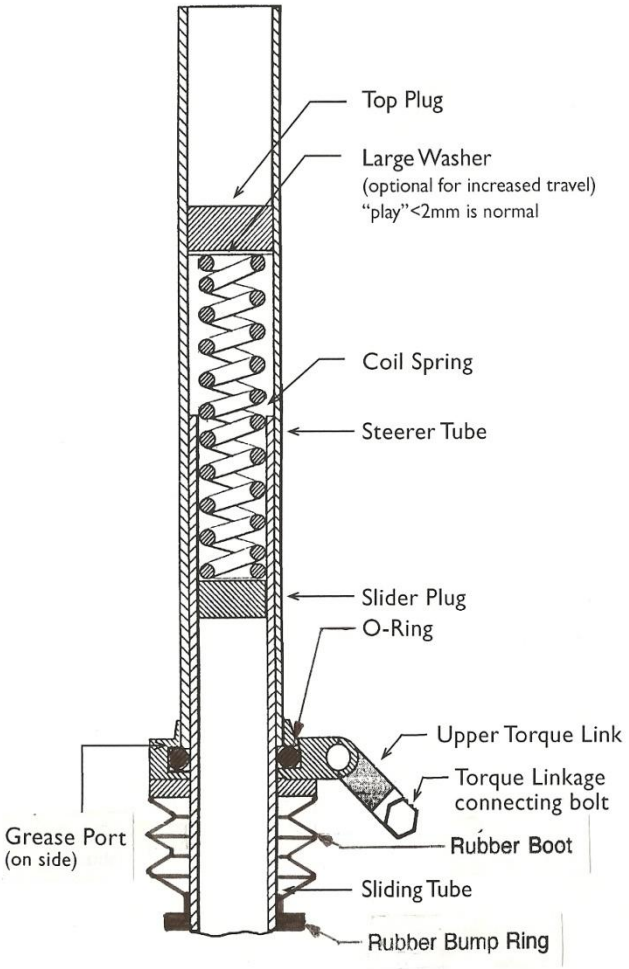

Top Plug
Large Washer
(optional for increased travel)
"play"<2mm is normal
Coil Spring
Steerer Tube
Slider Plug
O-Ring
Upper Torque Link
Torque Linkage
connecting bolt
Grease Port
(on side)
Rubber Boot
Sliding Tube
Rubber Bump Ring

Fig. 5-1

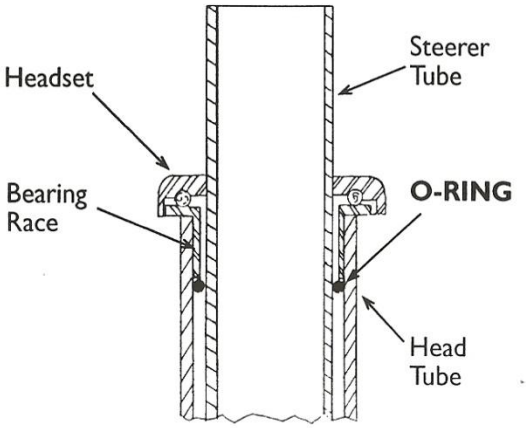


Fig. 5-2

5.7 FORK O-RING

An O-ring is installed between the fork and steerer tube, inside the frame (see fig.5-2). This O-ring slows down the steering response of the bike. If you want quicker steering, remove the O-ring. If you don't want quicker steering, reinstall the O-ring any time the fork is removed. Grease the O-ring and verify it is correctly positioned during re-assembly.

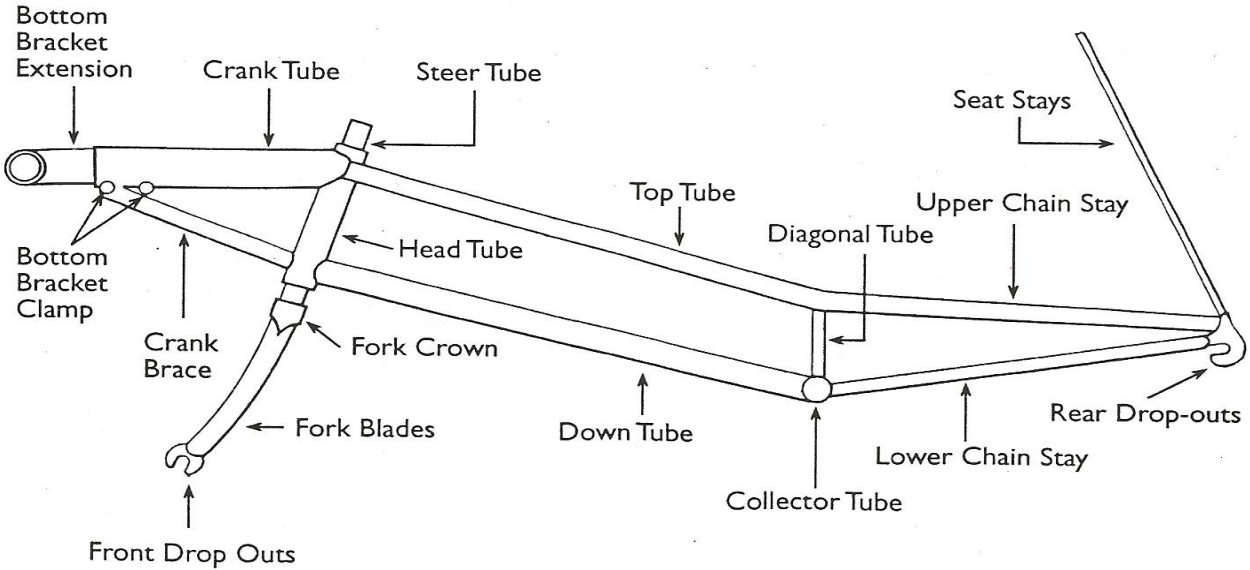

Bottom Bracket Extension
Crank Tube
Steer Tube
Seat Stays
Top Tube
Upper Chain Stay
Diagonal Tube
Head Tube
Bottom Bracket Clamp
Crank Brace
Fork Crown
Fork Blades
Down Tube
Rear Drop-outs
Lower Chain Stay
Collector Tube
Front Drop Outs

Figure 5-3

FOR YOUR RECORDS

FRAME S/N: _____

BOUGHT FROM: _____

DATE OF PURCHASE: _____

SERVICING:

DATE **ITEM**

LIGHTNING BICYCLE LIMITED WARRANTY

Lightning Cycle Dynamics (Lightning), a California Corporation, makes the following limited warranty concerning Lightning bicycles and framesets:

1) WARRANTEE: This limited warranty is effective ONLY:
* To the original purchaser of the bicycle or frameset, thus it **is not** transferable
* If the original purchaser weighs less than 160 lbs for Small, 200 lbs for Medium, 220 pounds for large, or 250 lbs for X-Large size bicycles and framesets.

2) All parts (including suspension parts, bushings, shock units, and fasteners), are warranted to be FREE from defects in materials and workmanship for **one year** from the date of purchase. The frame and seat frame are warranted to be FREE from defects in materials and workmanship for **five years** from the date of purchase. During the limited warranty period, all original parts determined by Lightning to be defective will be repaired or replaced, at the sole option of Lightning, free of charge. Lightning will additionally pay during these periods reasonable dealer labor charges arising solely due to replacement of defective parts /frames, and ground shipping of replacement parts/frames from Lightning.

3) All claims under this limited warranty must be made through a Lightning dealer or Lightning Cycle Dynamics during the warranty period.

4) **THIS LIMITED WARRANTY ONLY APPLIES** upon the bicycle being operated under normal conditions of use, and properly maintained. This limited warranty **DOES NOT APPLY** to normal wear and tear, and also **DOES NOT COVER** failure due to abuse, neglect, improper assembly, improper maintenance, alteration, collision, crash, misuse, or installation of unauthorized replacement parts. The installation of large motors, jumping, riding on severe terrain, severe climates, riding with heavy loads, commercial activities, or any similar activities, **WILL NEGATE** this limited warranty. Bending of frames, forks, handlebars, and rims is a sign of abuse or use inconsistent with the bicycles intended use, and **IS NOT COVERED BY THIS LIMITED WARRANTY.**

5) Lightning's liability under this limited warranty shall be no greater than the amount of the original purchase price of the bicycle or frameset, and in no event shall Lightning be liable for personal injuries, consequential, incidental, or special damages, nor for unauthorized transportation or incidental dealer labor.

6) Lightning does not authorize anyone, including its authorized dealers, to extend any other warranties, express or implied, for Lightning.

7) This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

June 2011