



## Big Dummy™ Frameset



We've believed in the Xtracycle cargo bike system for quite a few years. We even thought about building ourselves custom complete long tail frames to house the Xtracycle modular components. So when the fine folks at Xtracycle asked if we wanted to design a complete frameset based around this platform, it was an easy decision.

Welcome to the wonderful world of hauling stuff on your bike. We're guessing you've probably managed to pile stuff into your panniers, strap something large onto your courier bag or have already ridden an Xtracycle. With the Big Dummy/Xtracycle system, we have enough experience to know some tricks and tips that will help you select the components and tools to set up your cargo bike to haul some serious crap.

**Riding a long bike-** Many people ask what the Big Dummy rides like. Basically, it rides just like a normal bike. The geometry is similar to a standard mountain bike, but with a slightly higher bottom bracket and longer wheelbase. The high bottom bracket is necessary with any long wheelbase bike to keep the cranks/pedals away from the ground.

- On road- Other than timing the corners a little differently to make sure the longer rear end clears obstacles and unweighting the bike carefully to get up and over curbs, it's really no different than a normal bike.
- Off Road- The Dummy is built for on or off-road use, so it's durable enough to handle off-road touring or serious urban hauling. One thing you'll notice is that your weight is almost even on both wheels, so the traction/friction through loose corners is about the same per wheel. So, imagine screaming down a gravel road around a tight corner. With equal weight on the wheels combined with a long wheelbase, it makes for an incredibly stable and predictable off-road ride. You'll be two-wheel drifting through corners like Mert Lawwill in no time.

Of course, once you load the rear end with stuff, the rear end traction gets better. Just make sure that you can get up and over obstacles, since it'll be harder to unweight the bike and bunnyhop over things.

**Loading the bike-** The basic rules of hauling stuff is to keep the load low, balanced from side-to-side, and securely tight. Remember to load the kickstand side of the bike first and unload the non-kickstand side first, so the bike doesn't tip over. Read that last sentence two more times.

- Long loads- Xtracycle makes an attachment called the Long Loader for items like surfboards, kayaks, lumber and ladders. It allows you to move the items forward so it doesn't stick out so far off the back and also moves it outward so it doesn't interfere with pedaling. Go to: <http://www.xtracycle.com/longloader-p-18.html>
- Tall loads are not going to be as stable as a low load and you'll get more torsional flex in the frame. Just remember that you might have to dismount the bike with your leg through the front over the top tube rather than back over the seat. This is part of the reason we gave it the curved top tube. Also, being seated instead of standing while riding will stabilize the entire bike.
- Heavy loads
  - Use Xtracycle's H-racks to help support the load
  - If H-racks are not used, try buckling the Freeloader bag straps from the left side into the straps from the right side (over the Snapdeck), to prevent the V-racks from loosening up the Snapdeck tension
  - Do your best to balance the load from side-to-side
  - The Dummy will handle 200 lbs (90 kg) of weight, in addition to a 200 lb (90 kg) rider weight
  - Assume a longer braking distance before you come to a stop
- Wide loads
  - Be careful, you might not be able to squeeze through gaps that you normally can on other bikes
  - Load sharp objects inwards and pointing backwards to keep them from sticking out and catching on an adjacent fence, car, tree or me

**Wheels-** The Big Dummy was designed around 26" wheels due to the durability, availability, variety and ride quality of this size. The frame geometry was designed around 2.1" tires (676mm diameter) since they are what we consider an average tire size

for a cargo bike. You will have the best ride quality with wheels and tires close to this size range. If you plan to use cantilever or linear rim brakes, 26" wheels are your only option here. Since we're curious people, we've tried all of the following options with varying results:

- 26" x 2.2-2.5" tires- The largest tire size designed to fit inside the Dummy frame is a 2.5" (think Schwalbe Big Apple/Fat Frank 2.35" or Maxxis Hookworm 2.5")

**Pros:**

- More cushion for the pushin' gives you a comfy ride
- Pinch flat resistance
- Extra traction
- More chainring and pedal clearance from ground obstacles
- Off-road capability

**Cons:**

- Less tire selection in the super fat sizes
- There is more potential for the chain to hit your rear tire when in the low gears. Select a square taper crank and bottom bracket so you can get a longer bottom bracket spindle to accommodate for this
- It might be a little more difficult to get the rear wheel in and out of the frame if you have fenders. Use a lower profile panhead-style bolt on the fender where it mounts to the front bridge
- The larger tires lengthen the trail measurement\*, which will make it steer a tiny bit slower. Not a big deal, really
- Slightly more rolling resistance and weight
- Higher standover height

- 26" x 1.5-2.0"- Smaller tires offer less rolling resistance and there is a good selection of tires in this range. Here are a few other characteristics:

**Pros:**

- Higher pressure, less rolling resistance, faster tire
- Lowered standover height
- Slightly quicker steering characteristics due to shortened trail measurement\*

**Cons:**

- Less cushion, harsher ride
- Higher chance of pinch flats
- Less traction
- Less off-road capability
- Chain rings and pedals closer to ground obstacles

Other wheel sizes for the sake of comparison to 26" wheels

- 24" wheels- We offer a strong word of warning about using 24" wheels on the Big Dummy. Going from 26" x 2.0" tires to 24" x 2.2" tires lowers the bottom bracket about 21mm (almost an inch). This brings your chainrings closer to curbs/logs and your cranks/pedals much closer to the ground. Hitting your pedal on the ground while moving can be seriously harmful to body and machine. If you plan to ride off-road, 24" wheels are definitely not recommended.

**Pros:**

- Slightly quicker steering due to shortened trail measurement\*
- More compact wheel has better lateral stiffness
- Lowered standover height. This might be an option for anybody that feels our smallest 16" frame size is too big for them, as long as they use shorter cranks and realize the downsides to the smaller wheels mentioned here

**Cons:**

- Strong potential for hitting your pedals on the ground when turning
- Strong potential for hitting your chainrings on curbs or logs
- Less variety of rims and tires to choose from
- Requirement to use high volume tires (24" x 2.2+) to maintain some ground clearance
- Requirement to use disc brakes only
- Possible requirement to use shorter cranks
- Possible requirement to use low side-profile pedals for better ground clearance while cornering
- Shorter tire contact patch offers less overall traction
- Not good for off-road use

- 26" front/24" rear- We set up a 26" x 2.0" on the front with a 24" x 2.2" on the rear as an experiment. It rode slightly better than the 24" x 2.2" front/rear combo since it raised the bottom bracket up just slightly, giving a little more pedal and chainring clearance with the ground. The ride quality wasn't bad either, although the steering was changed just enough to make it a little harder to steer into a tight corner than the 24" x 2.2" front/rear combo.

- 700c/29" wheels- The largest 700c tire that fits in the rear end of the Big Dummy is approximately 28mm (with fenders). In our opinion, this size does not have enough volume to spread the loads and protect the rim over bumps and curbs. If you want to run a 29" tire on the front (with 26" rear), you're likely to have toe overlap problems and very slow, awkward geometry. That's why we didn't bother trying it.

Wheel Strength- don't skimp and try to save weight or money when selecting your wheels

- Use a beefy rim, not something intended for XC racing
- Use a wide enough rim to accommodate the size of your tires
- Use more spokes and of the heavy duty variety (2.34mm butted, 2.0mm or 2.0/1.8mm butted)
- Use brass nipples for long-term durability and corrosion resistance

## Brakes

### • Discs

#### Pros:

- Excellent stopping power, even when wet
- Good for anywhere with long/steeep hills and/or frequent hauling of heavy loads
- Doesn't wear your rim sidewalls

#### Cons:

- Most discs we've used squeal or make noise to a certain extent, depending on wet or dry conditions
- Generally more expensive than cantilevers/linears. In our experiences, you get what you pay for with cheap disc brakes
- Harder to maintain for average person
- Small parts not often readily available
- Rear disc calipers often protrude outwards and wear a hole in your Xtracycle Freeloader bag

#### Other:

- Due to the length of brake housing running to the rear brake, we've had better performance with hydraulic disc brakes than with mechanical/cable disc brakes since there is less fluid compression in a hydraulic than there is cable stretch in a mechanical. Also, upgrading to a high quality hydraulic rear brake hose will even out the feel of the front and rear brakes.
- Rotor size- We've had no problems or inadequacies using standard 160mm rotors. However, the Big Dummy accepts 180mm and 203mm rotor sizes if you feel the need.

### • Cantilever and Linear rim brakes

#### Pros:

- Good stopping power if properly set up and maintained
- Generally less expensive than discs
- Easier to maintain for the average person

#### Cons:

- If you live in an area with long/steeep hills, frequently carry big loads and wet conditions, these might not have adequate braking power for your needs
- Rim sidewalls get worn down
- Rear brake will feel a little mushier since there is a much longer cable stretching than the front brake cable

**! It should be noted that using the front brake only could cause the fork or frame to fail under heavy load conditions. Use both brakes and keep your speed under control !**

**Gearing/Drivetrain-** Standard mountain bike gearing with adequate low gears is the best all-around option. You'll have to run full-length rear derailleur housing, so selecting a low-friction extruded stainless cable should help you shift better. Check out the W.L.Gore (Gore-Tex) Ride-On cable system. These have a significantly lower amount of friction than other cables and are a sealed system. Also, you'll need roughly 1½ times the length of chain than a standard-length bike.

**Internal Hubs- tensioners-** Most single-speed hubs and internal-gear hubs, with 135mm O.L.D. spacing, will work on the Big Dummy, but a chain tensioner is required. Single-pulley tensioners, like the Surly Singleator, will only work in the "push-down" position due to the configuration of the chainstays. In some cases...when using a small cog or a worn drivetrain, there may not be enough chain wrap to prevent the chain from slipping over the teeth of the cog under high torque. A double-pulley tensioner (Pauls Melvin, Rohloff tensioner, or short-cage rear derailleur locked into place with its high-gear limiting screw) may provide more chain wrap.

We designed the Big Dummy with the Rohloff Speedhub in mind. A tab for the Rohloff OEM2 axle plate is incorporated into the left-side rear dropout plate. This configuration eliminates the need for the long torque arm and facilitates easier installation and removal of the Rohloff hub. A M6 x 1 cap head machine screw (6-8mm long) is required for this set-up. The OEM2 axle plate indexes on the head of the screw, so the screw should be installed with the head facing the hub. Please refer to the Rohloff Speedhub manual for more information regarding the OEM2 axle plate configuration.

**Suspension forks-** The Big Dummy stock fork measures 425mm from axle to crown, which puts it in the compatibility range of suspension forks with 80-100mm travel. One thing you need to consider before putting a suspension fork on your long bike is that your body weight is more centered between the front and rear wheels than on a standard-length bike. This effectively takes some weight off the rear wheel and puts it onto the front wheel. So if you weigh 180 lbs (82kg), a suspension fork on a standard bike registers approximately 56 lbs (25kg) of your total weight. Meanwhile, a suspension fork on a Big Dummy would register approximately 90 lbs (41kg), or half your total body weight. So you'll need a suspension fork on which you can significantly increase the spring compression to compensate for the effective weight addition. Otherwise you'll probably be bottoming out the fork and/or it'll feel like you're riding something very saggy.

**Extras-** One of the first things you'll be learning with the Dummy is how to load different things onto the bike. Do yourself a favor and go invest in the following:

- Bungee cords- get a variety of lengths, just make sure the hook diameter is big enough for the frame tubes
- Bungee nets- motorcycle helmet nets seem to work best. Again, make sure the hook diameter is big enough for the frame tubes
- Heavy duty tie down straps with ratcheting buckles work well for big and heavy loads
- Toe straps- now you know why you saved those old relics
- Velcro- go nuts

## Accessories

- Fenders- While the Snapdeck itself acts as a good splash guard for your body, having fenders will help keep your feet, the drivetrain and the Xtracycle Freeloader bags much drier. Not to mention, the person riding behind you will appreciate not getting sprayed
- Snow and rain will penetrate the Freeloader bags, so investing in some waterproof dry bags is a good idea. This also makes it easier to unload your belongings when you arrive at your destination and keeps smaller items from accidentally falling out.

## Frame protection

- Inside- rust inhibitors such as J.P Weigle's Framesaver, boiled linseed oil, engine fogging spray or any other inhibitor is always a good idea to do when first building your bike and periodically thereafter.

### • Outside

- Rubber boots over the V-rack tubes help to keep water from going inside where it can collect and rust. Cut 4" long sections of a used road inner tube, roll them up on the Xtracycle V-racks, insert V-racks into frame, then roll the tube down and over the frame as seen here:



1. Taping over hot spots, like fender stay areas and where the Freeloader bags strap down can help prevent frictional paint wear.



FRONT

BACK

2. Put a chain guard, like electrical tape or a zip-tied chunk of inner tube around the front bridge tube:



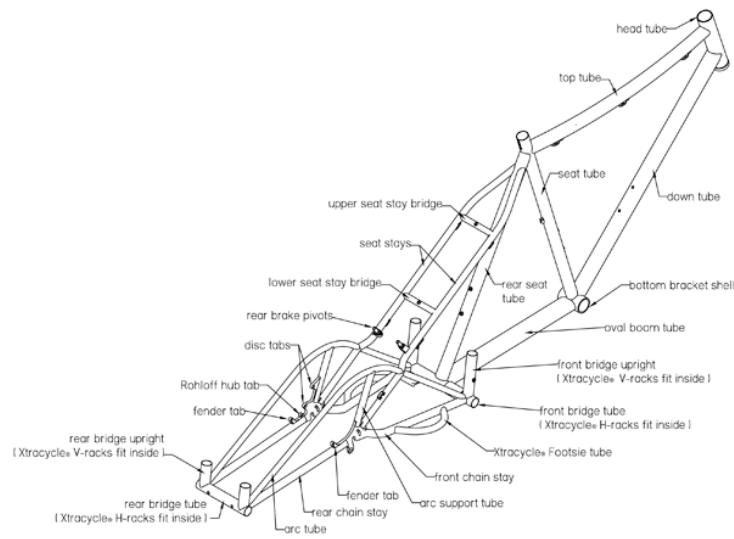
- Xtracycle Snapdeck

1. Take a nice look at your new Snapdeck. Ain't she pretty? Well, this is as good as it's ever going to look. To preserve it a bit, you can apply a few extra coats of polyurethane or something similar when new. Or get funky by adding a seat cushion, solar panel or upside-down skateboard.

2. Use a cinch strap to hold the V-rack tubes together and tension the Snapdeck. This will help make sure it doesn't self-eject if you hit a bump with heavy loads in the Freeloader bags.



**Frame Tubing Description Diagram**

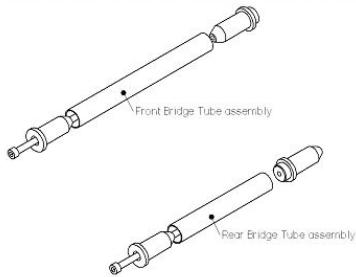


**Big Dummy Frame Protection Inserts**



We designed this assembly mainly to prevent damage to the front bridge tube while it's being shipped. It also doubles as a tool to help round out any damaged bridge tubes or upright tubes during your use of the bike. Notice the tapered end of each plug, if you dent the end of a tube, you can tap it into the tube with a soft hammer to round the tube out. The diameter of the plug is designed to round it out to the correct diameter so that it receives accessories properly.

**Hamfist warning:** Tightening down the insert bolt with excessive torque will cause damage to the tubes. Don't do it.



**Trailer attachments-** Burley brand and Bikes-At-Work brand frame attachments fit on the rear end of the Big Dummy frame if you need to haul the mega load.

- Balance the trailer contents evenly over the trailer wheels for neutral tongue weight so you don't excessively load or unload the rear end of the Big Dummy frame.

- Keep in mind that sharp cornering may cause the Big Dummy frame to interfere with the trailer arm, so check this out before riding it and use a trailer at your own risk.

- Quick braking with a heavy trailer load may cause the bike to jack knife and become out-of-control, use caution and keep speeds under control.

**Motorizing with Stokemonkey-** A U.S.-based company called Clever Cycles offers a battery-powered assist motor that fits onto Big Dummy and Xtracycle bikes. When you engage the motor throttle, it engages the pedals like a tandem stoker does. Since it requires you to pedal when using the motor, it's basically a hybrid human-electric system. Some of us have used this motor extensively and find it great for certain applications where your own personal human motor is inadequate or you simply want to get across town faster/easier. Link here: <http://clevercycles.com/>

Please note we will not accept warranty claims due to failure of the tube on which the Stokemonkey motor was clamped. So use your torque wrench and assume that any damage is your own responsibility.

#### More Links:

##### ***Big Dummy Spew***

A more complete and more frequently updated version of this document can be found here:  
<http://www.surlybikes.com/spew19.html>

##### ***Trail measurement***

This is a well-written and concise explanation of what "trail" measurement is and how it affects the way a bike handles. It's of particular interest regarding the Big Dummy, since a longer bike has different ride characteristics that requires deliberate design work. FYI, a 26" x 2.0" tire puts the trail measurement at approximately 60mm.  
Link here: <http://www.dclxvi.org/chunk/tech/trail/>

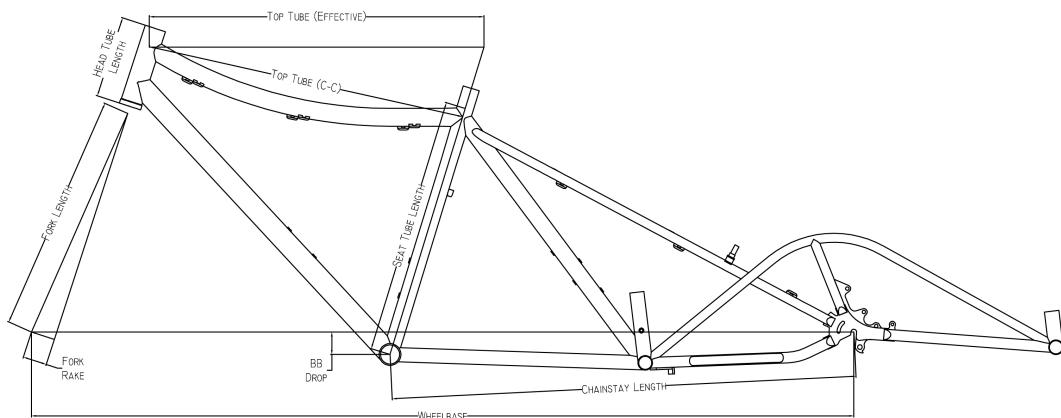
##### ***Handlebar shimmy***

If you've ever experienced this, here is a great explanation as to why it happens and how to go about preventing it. Since it can be more prevalent in long bikes, we thought it was worth mentioning here.  
Link here: <http://www.sheldonbrown.com/brandt/shimmy.html>

##### ***Xtracycle***

We're fortunate to be able to collaborate with the fine folks at Xtracycle on this project. Their website is the mother lode of all things longtail and you should spend some time browsing it. Also, their owner's manual is found here: <http://www.xtracycle.com/media/manual.pdf>

#### Dummy Frame:



	ST (C-T of top tube)		TT(C-C)		TT (Horizontal)		HT Angle	ST Angle	BB Drop		CS Length		Front - Center		Wheel Base		S. O. Height**		HT Length		FK Length		FK Rake	
Size	inches	mm	inches	mm	inches	mm	degrees	degrees	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm	inches	mm
small	16.0	406.4	21.6	548.6	22.6	573.4	72.0	73.0	1.6	40.0	32.6	827.0	24.3	617.2	56.8	1441.9	28.4	720.8	5.1	130.2	16.7	425.0	1.7	43.0
medium	18.0	457.2	22.6	573.3	23.5	596.0	72.0	73.0	1.6	40.0	32.6	827.0	25.2	640.0	57.7	1464.8	29.6	751.0	5.7	145.9	16.7	425.0	1.7	43.0
large	20.0	508.0	23.5	596.1	24.2	614.0	72.0	73.0	1.6	40.0	32.6	827.0	25.9	658.2	58.4	1483.0	31.0	787.9	6.3	160.8	16.7	425.0	1.7	43.0
x-large	22.0	558.8	24.3	616.4	24.9	631.6	72.0	73.0	1.6	40.0	32.6	827.0	26.6	676.1	59.1	1500.9	32.8	832.7	7.0	178.8	16.7	425.0	1.7	43.0

**SERIAL NUMBER:** \_\_\_\_\_

Get a pen and write down the serial number of your Surly immediately. The number is stamped into the bottom of the bottom bracket shell. Having this number is imperative if your bike ever gets stolen or if you ever have questions about your frame... we are constantly improving our products and sometimes the serial number is the only way to tell one generation of product from another.

**LIMITED WARRANTY:**

Surly frames and forks are guaranteed to be free from manufacturing defects for three years from the original date of purchase. What this means is that if we screwed up something in the manufacturing process that resulted in the premature failure of the product, we'll fix or replace it at our discretion. This warranty is for the original buyer of the product and is not transferable. It should go without saying that we won't even consider your warranty problem without a dated proof-of-purchase. What this warranty doesn't cover is damage resulting from any sort of riding other than "normal" riding, and the inevitable wear and tear resulting from "normal" use. Surly products are built to be used vigorously and we wouldn't expect you to treat them gently, but we can't be responsible for the inherent danger to body and property you face each time you throw your leg over the top tube. We're hip to the "just riding along" phenomenon - and frankly, we're just not having it.

Sorry, the paintjob isn't covered, nor is any damage that happens to you or your other components as a result of any failure of one of our products. Lastly, if you modify or neglect our products we can't be responsible for them or what might happen to you while you're using them. We hate to spell it out, but hey, it's the 21st Century. We're known to back up our products, but we've seen too many peoples' parts come back to us that were not defective and did not meet our warranty guidelines. Save yourself some time and shipping money by reading this and making a decision for yourself. If you and your shop think your Surly product is indeed worthy of a warranty inspection, please return the product to the original place of purchase, accompanied by a sales receipt. In the unlikely event that this is not possible, call or email us and we'll do our best to get you riding again.

**OTHER PRODUCTS:**

Give us a call for a free catalog or visit our website to check out all our stuff, you won't be disappointed.

**CONTACT US:**

By all means, give us your feedback!

**SURLY**

**Phone:** 877.743.3191

**Web:** [www.surlybikes.com](http://www.surlybikes.com)

**E-mail:** [derby@surlybikes.com](mailto:derby@surlybikes.com)

**Where We Is:** 6400 W. 105th St., Bloomington, MN 55438 USA

## Yippee!

We congratulate and thank you for joining the growing ranks of Xtracycle owners—people around the world figuring out happier, hipper, friendlier, richer, cooler, more soulful ways to get around and live and have fun. For us, this company and our products are about making the world a better place; by, among other things, minimizing pressure on the environment and giving people satisfying transportation choices. We're confident that in some way the Xtracycle sport utility bicycle will change your world and leave you inspired. We appreciate your business. Ride on!

Welcome to the fold,  
The Xtracycle Team

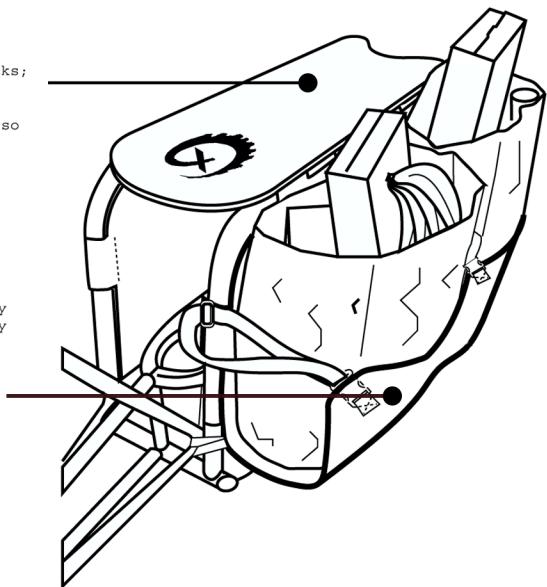
## Contents of The Longtail Kit

### (1) Snap deck

The **SnapDeck** serves three purposes  
(1) foremost, it's a loading platform and passenger seat; (2) it tensions the V-racks; and, (3) acts as a fender (though you'll want the Xtracycle Fender accessory for maximum fendage). To make all this groove, you need to position the SnapDeck as described in the assembly instructions (pg 15). Oh yeah, an upside-down SnapDeck also makes a great cutting board. Don't forget the vin et fromage!

### (2) v-racks+freeloaders

**FreeLoaders** serve three purposes: (1) they keep your load away from the wheel; (2) they add rigidity to the entire load-hauling assembly; and, (3) they carry a dizzying array of cargoes their open ends and expandable girth enable you to carry big things that would never fit in a bag. To maximize their utility, it's essential that you cinch them, tightly, to the bike exactly as shown in step 11 of the assembly instructions (pg 14). Adjust the load straps like little seatbelts, and hook the Slackers (the c-shaped plastic pieces on the end of the straps) back to the straps to minimize dangle. SideWinders, the horizontal straps on either end of each FreeLoader (on some models), can be used to wrap around your load to keep small things from falling out. **CAUTION** The SideWinders MUST LOOP AROUND THE V-RACKS BEFORE THE BUCKLE IS FASTENED! Otherwise the tension can rip the FreeLoader.



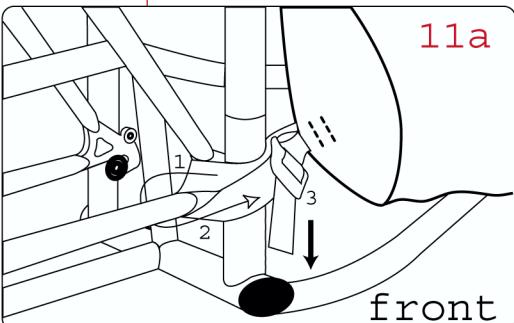
### Installing the V-racks/FreeLoaders

Excellent FreeRadical performance

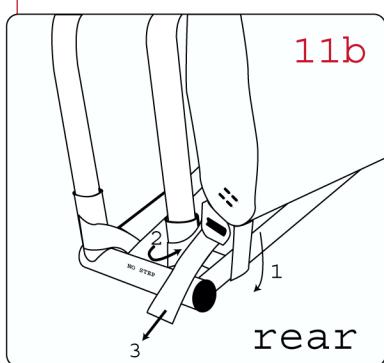
DEPENDS on proper strapping and tensioning of the FreeLoaders!

{1} Make sure that the FreeLoader is taut on the V-rack. Squeeze the rack sides together (stand the V-rack on the floor oriented like a "C" while pushing down on the top) and stretch the FreeLoader flaps tight, i.e. towards the V-rack ends.

{2} Place the right V-rack in the right-side Uprights, making sure both ends seat all the way. This takes practice, and is often best achieved by guiding the front and rear simultaneously, with each hand grabbing an Upright while feeding in the V-rack ends.



11a



11b

front

rear

#### continued

{3} Tension the bottom of the FreeLoaders by tightening the straps equally. The front strap goes to the outside of the Front Upright, passes behind the chainstay, then returns to the outside of the Front Upright and into the ladder-lock buckle (diagram 10a). The rear strap goes to the outside of the Long Stay, goes under, then comes around behind the Rear Upright to the ladder-lock buckle (diagram 10b). It DOES NOT go around the Rear Bridge. The FreeLoader should be completely taut, i.e. no wrinkles! If the straps are completely tight and the FreeLoader isn't completely taut, remove the assembly from the FreeRadical frame and go back to step 1 to re-tension the FreeLoader on the V-rack.

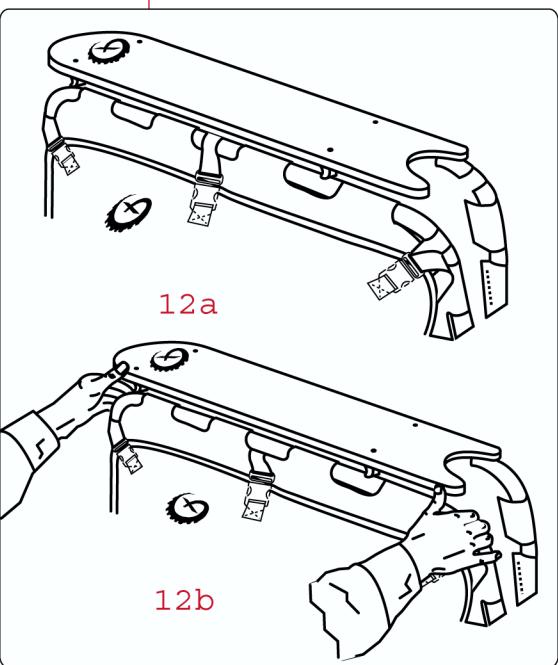
{4} Repeat steps 1–3 for the left V-rack.

#### {MORE THAN JUST A BIKE}

#### THE XTRACYCLE PLATFORM



This little seal shows that you're rolling with the **Xtracycle™ longtail platform**, compatible with all Xtracycle Bicycle Lifestyle accessories.  
[just in case you were wondering]



12a

12b

#### Installing the SnapDeck

{1} Position the SnapDeck so the snap pieces on one side are placed against the inside of the V-rack. The front snap piece should be just in front of the front flap of the FreeLoader, nesting in the V-rack's indentation (not all models), and the rear snap piece should be just in front of the rear flap of the FreeLoader (figure 12a). When installed correctly, the SnapDeck's nose should be even with the plane of the V-racks' nearly vertical front legs.

{2} With one side seated, simply press down on the top of the deck until it snaps into place. **DANGER** Keep your thumbs and fingers from getting between the SnapDeck and the V-racks while installing to avoid pinching.

#### Removal

To remove, use your thumbs to push in and up on the SnapDeck edge while your fingers pull on the V-rack (figure 12b).