



## Bill and Ted Trailer Assembly Instructions

Thanks for buying a Surly trailer. We took care in designing your trailer to work with many different kinds of bikes, haul a lot, and last a long time. But it won't do all these things to its full potential if it isn't properly assembled. **Read these instructions and gather tools and supplies before attempting the assembly of your Surly trailer.**

⚠ **WARNING:** Improper assembly will limit its life expectancy and may result in property damage, personal injury or death. If you lack appropriate tools and/or mechanical aptitude, take the trailer to your local bike shop and get served.

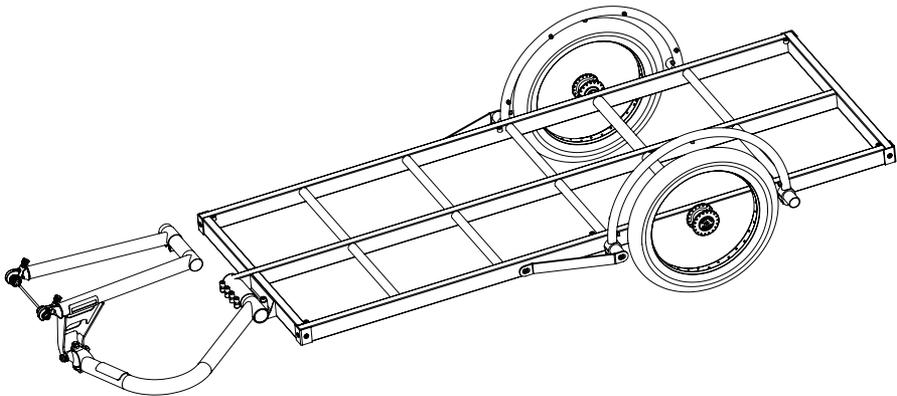
⚠ **WARNING:** This trailer was not designed for carrying live animals or people. Doing so may result in injury to you and/or your passengers, and that would make us feel bad.

## What You's Need

- Metric hex keys
- 14mm and 15mm open-end wrench or adjustable wrench
- Tire pump
- Grease

## Assembly Setup

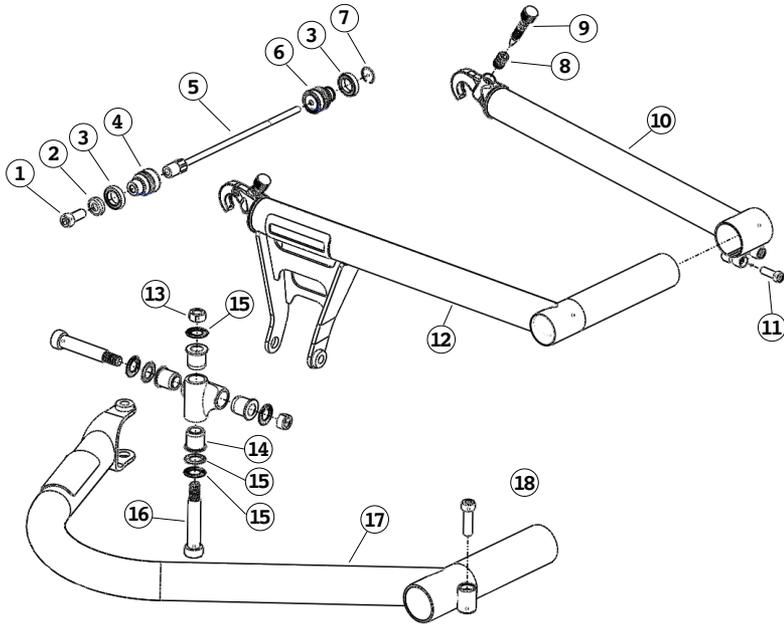
- Remove all the parts from the box and make sure everything is present
- Collapse box on floor, blast some tunes, get your break'n on, and properly dispose of packaging
- Read and understand the instructions
- We recommend you apply a moisture barrier to inside of frame tubes to prevent corrosion (J.P.Weigle's Framesaver, linseed oil, etc); this will extend the life of your trailer
- **During assembly, apply grease to all fastener threads unless otherwise noted**



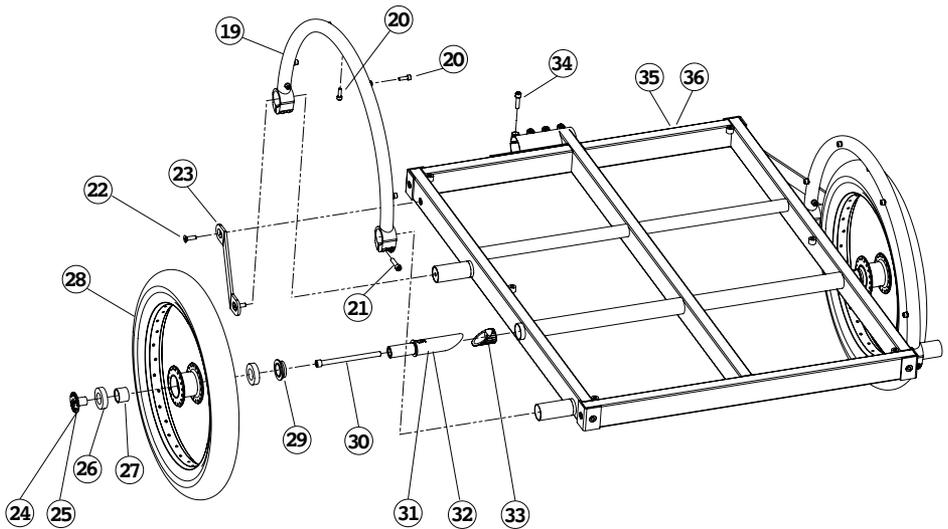
## Trailer Parts List

Part#	Description	Quantity
1	QR Axle Screw (M8 x 20mm)	1
2	Bearing Cap Washer	1
3	Hitch Axle Bearing	2
4	Non-Drive Side Skewer Nut	1
5	QR Skewer Rod	1
6	Drive Side Skewer Nut	1
7	Bearing Retaining Ring	1
8	Axle Hook Spring	2
9	Axle Hook Thumbscrew	2
10	Drive Side Yoke	1
11	Yoke Clamp Screw (M6 x 20mm)	2
12	Non-Drive Side Yoke	1
13	Hammer Joint Lock Nut (M10 x 1)	2
14	Hammer Joint Brass Bearing	4
15	Hammer Joint Serrated Washer	4
16	Hammer Joint Pivot Bolt	2
17	Boom	1
18	Safety Bolt Screw (M8 x 30mm)	1
19	Wheel Cover	2
20	Spoke Guard/Fender Screw (M5 x 16mm)	14
21	Wheel Cover Clamp Screw (M6 x 25mm)	8
22	Deflector Shield Flat-Head Screw (M6 x 20mm)	4
23	Deflector Shield	2
24	Wheel Retaining Bolt (Non-Drive Side)	1
25	Wheel Retaining Bolt (Drive Side)	1
26	Wheel Bearing	4
27	Wheel Bearing Spacer	2
28	Wheel	2
29	Axle Washer	2
30	Stub Axle Bolt	2
31	Stub Axle (Non-Drive Side)	1
32	Stub Axle (Drive Side)	1
33	Stub Axle Wedge	2
34	Boom Clamp Screw (M6 x 20mm)	4
35	Trailer Bed (Short)	1
36	Trailer Bed (Long)	1
Not Shown	Reflectors	2

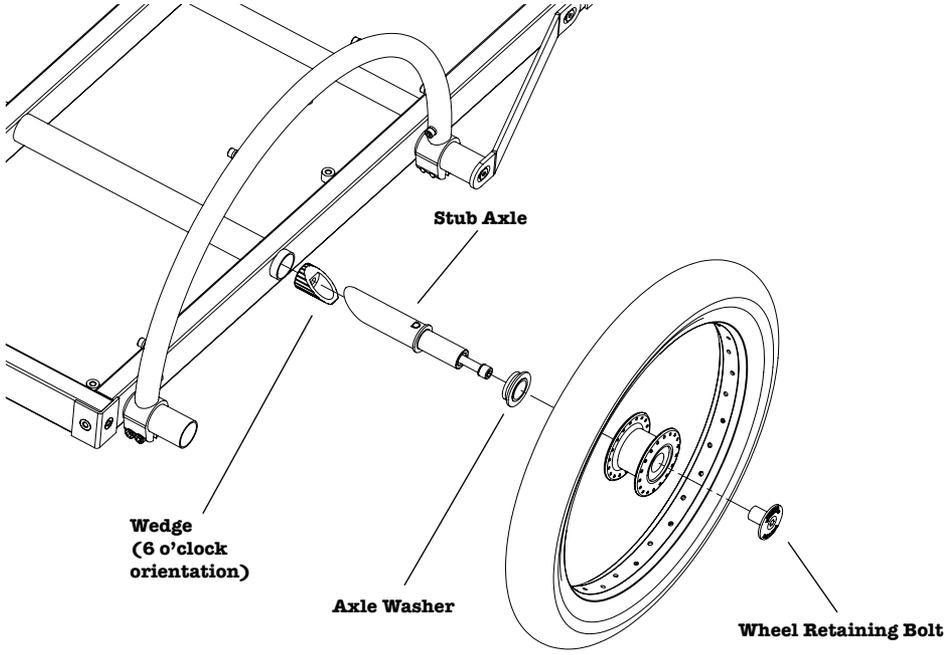
## Trailer Hitch



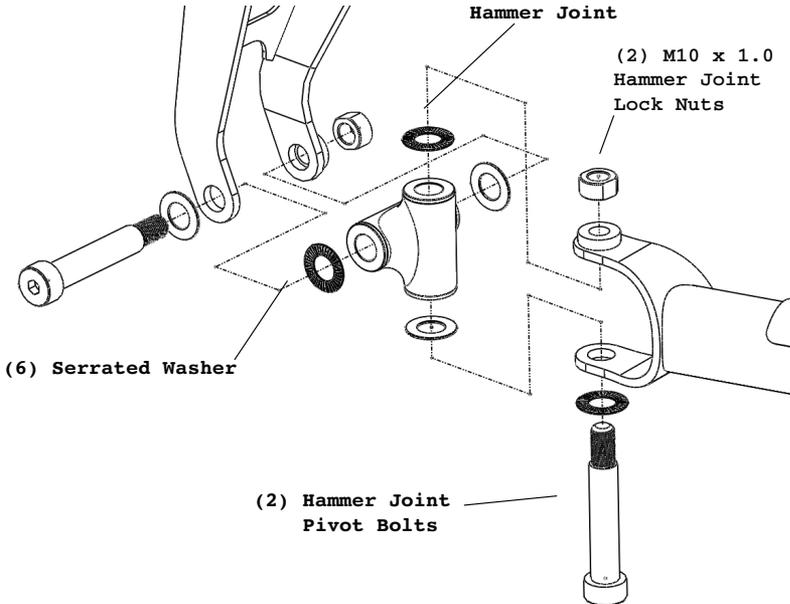
## Trailer Bed



## Wheel and Axle Assembly



## Hammer Joint and Pivot Assembly



## Bed Assembly

1. Apply a light coating of grease to the entire outside of the stub axles and fully insert the axles into the trailer bed axle tube. **NOTE: The stub axles for each side of your trailer are different!** The stub axle marked 'D' goes into the right side of the trailer bed (bicycle drive side) and the stub axle marked 'ND' goes into the left side of the trailer bed (bicycle non-drive side). During installation, rotate the stub axles so that the wedges are orientated in the 6 o'clock position. Finally, tighten the wedge bolts (torque = 20 Nm) to hold the stub axles in the trailer bed.
2. To install the wheels, slide an axle washer onto the stub axle followed by a wheel and then secure the assembly with the proper wheel retaining bolt (torque = 30 Nm). **NOTE: The wheel retaining bolts for each side of your trailer are different! The drive side bolt has left-hand threads and the non-drive side has right-hand threads.** Markings on the bolt head will tell you which bolt to use on which side of the trailer.
3. Install the M5 x 16mm (qty 14) socket head cap screws into the bosses located on the curved wheel cover tube and snug tight (torque max = 7 Nm). The fasteners are included for mounting fenders and spoke guards to your trailer. Visit [surlybikes.com](http://surlybikes.com) to see what we offer.
4. Thread the M6 x 25mm (qty 8) machine screws (2 per clamp) into the clamps of the wheel covers. Slide the wheel covers on to the wheel cover stubs with the spoke guard bosses facing inboard toward the trailer bed. Ensure that the wheel cover is positioned flush against the trailer bed and tighten clamp hardware (torque = 8 Nm). Install the deflector shields by using the M6 x 20mm (qty 4) flat-head machine screws (torque = 6 Nm).
5. Install reflectors on the rear wheel cover stubs on the outside of the wheel cover clamps.
6. Thread the M6 x 20mm (qty 4) machine screws into the boom clamp at the front of the trailer bed. Do not tighten yet.

## Hitch Assembly

7. Install one spring onto each hitch thumbscrew and thread thumbscrews into the hitch hooks.
8. Slide the non-drive side yoke into the clamp of the drive side yoke and install the M6 x 20mm (qty 4) machine screws into the clamp. You'll adjust the hitch width later.
9. Attach the boom to the yoke with the appropriate hardware (part# 3-16) through the hammer joint. **NOTE: The washers are serrated on one side only and must be installed correctly!** The smooth side of each washer should face the brass, the rough side toward the paint. You'll adjust the tightness of both pivots later. Be sure to thoroughly grease all friction surfaces in the joint! Grease is the word.

## Connecting Hitch to Bed

10. Insert the hitch into the clamp at the front of the trailer bed and tighten the clamp bolts until they are snug. You'll adjust orientation of the hitch later.  
**NOTE: The hitch assembly will need to swing down to allow the threaded safety bolt boss to clear the gusset on the trailer bed.**
11. Thread the M8 x 30mm (qty 1) machine screw into the safety bolt boss on the boom.
12. Have you been making sure all your hardware is greased?

## Connecting Trailer to Bike

13. Prep rear wheel.
  - A. If you have a QR Axle**
    - i. Remove the skewer from your hub.
    - ii. Assemble the non-drive side of your skewer assembly and insert it into your hub. **NOTE: Ensure that the M8 x 20mm (qty 1) machine screw is not fully threaded into the skewer rod. Only a few threads are necessary at this point.**
    - iii. Thread the drive side skewer nut on to the skewer rod with your fingers and tighten until the skewer rod head is flush against the outside face of your non-drive side dropout.  
**NOTE: It is very important that the skewer rod head is flush against the dropout face. The M8 x 20mm (qty 1) machine screw may need to be loosened to achieve proper setup.**
    - iv. Align rear wheel and tighten the M8 x 20mm (qty 1) machine screw to fully secure your rear wheel in the frame (torque =16 Nm).
  - B. If you have a 10 x 1 Threaded Axle**
    - i. Remove your axle nuts and replace them with trailer axle nuts and serrated washers (available separately).
    - ii. Reinstall wheel on frame and tighten as usual with a 15mm wrench.

## Adjustments

1. Loosen the yoke clamp bolts and adjust the width of the yoke to the width of the hitch bearings. Place a small amount of grease in the axle hook pockets. Attach the trailer to the bike by engaging the hitch hooks on the hitch bearings. This will typically require a few attempts before you have the hitch perfectly adjusted for the width of the bearings. Make sure both bearings are fully seated into hook pockets. Once you've dialed-in the yoke width and aligned the yoke arms to each other, tighten the yoke clamp bolts (torque = 9 Nm). Keep the trailer attached to the bike.
2. Position the bike vertically and loosen the boom clamp bolts to make adjustments. At this point, you will need to adjust the lateral and vertical orientation of the trailer at the same time. Laterally align the trailer's center line with the rear wheel of the bike so that the trailer will follow directly behind the bike. Move the clamp vertically to tilt the trailer bed until it is flat, parallel with the ground. When the trailer is oriented properly, secure the setup by tightening the clamp bolts (torque = 9 Nm).

3. Thread in the M8 x 30mm (qty 1) safety screw until it stops snug against the angle plate. This screw will prevent the front of the trailer from dropping to the ground in an unlikely scenario where the boom clamp slips. Think of it as simple, cheap insurance.
4. Loosen both lock nuts on the main pivot. Adjust the main pivot tension by tightening or loosening the two pivot bolts. There should be no slop in the joint and some resistance is actually good. If the pivots are tightened correctly, the joint should have just enough resistance to hold a bike vertically when attached to the trailer. Secure your adjustment by tightening the lock nuts on the pivot bolts. **NOTE: The brass pivot bearings will wear out quickly if the pivot hardware is not properly adjusted, greased and locked into place.**

## Extras

### CONNECTING AND DISCONNECTING THE TRAILER TO YOUR BIKE

After the trailer has been adjusted to your bike, it is very quick and easy to hook-up your cargo-hauling machine. Simply loosen the thumbscrews on the axle hooks until the thumbscrew ends are no longer protruding into the axle hook pockets. Lift the trailer hitch and place the axle hooks over your hitch bearings on your rear axle. Once the bearings are fully engaged in the axle hook pockets, tighten the thumbscrews snug against the back face of the hitch bearings.

**⚠ WARNING! Failure to tighten the thumbscrews WILL result in a “bad situation” when you try to stop your trailer and it detaches from your bike. Nobody wants a 300 lb trailer roaming free.**

### COMPATABILITY

Surly Bill and Ted trailers are designed to be used with most bicycles with wheels ranging from 20 to 29". We strongly recommend that any bicycle used to tow a Surly trailer—or any trailer for that matter—be equipped with properly operating gears and brakes. Trailers can get heavy; use a bike that can tow and stop the trailer effectively.

### LOADING THE TRAILER

Your trailer will perform best when the weight of the cargo is centered over the trailer axle. The trailer is rated for 300 lb (136kg) of cargo and a maximum tongue weight of 50 lb (23kg). **⚠ WARNING: Exceeding the weight limits and/or poorly distributing the weight may result in damage to you, your bicycle and/or the trailer.** If nothing else, your trailering experience will be less than enjoyable.

It is easiest to mount the trailer to your bike and then load it. For this reason, always make sure that your bike is secure when you start applying load to the trailer. Since adding or removing load on the trailer can cause the bike to fall over, we recommend laying the bike on its left (non-drive side) when loading the trailer.

You can easily check the tongue weight of your trailer with a standard bathroom scale. After you have loaded everything and the bike is attached to the trailer, place the scale under the rear wheel of your bike (without you on the bike) and ensure that the scale does not read over 50 lb.

### RIDING WITH THE TRAILER

**⚠ WARNING!** A loaded trailer can be heavy and may be difficult to control if care is not taken. Plan for corners and swing wider than usual. Balance the cargo weight over the trailer's axle and secure the load to ensure the safest, most predictable handling. Test the braking and turning characteristics of your bike with an empty trailer before riding with a full load. Your bike may handle differently with a trailer attached. Practice first in a parking lot or low traffic area. For more information see [surlybikes.com/safety](http://surlybikes.com/safety). Always center your trailer's load over its axle. Your Surly trailer is rated for 300 lb (136kg) of cargo and a maximum drawbar weight (aka 'tongue weight') of 50 lb (23kg) and a minimum drawbar weight (again the tongue) that is above zero lb (0kg).

This minimum weight cannot be a negative number, which would be achieved by placing all the load weight on the rear of the trailer. Improperly balanced loads, especially those that place the weight extremely fore or aft of the axle, can result in compromised, 'squirrely' handling and may result in crashes, injuries and all sorts of other bad things. **So again, center your load over the axle and secure it so it cannot shift around. Evenly distribute the cargo between all sides of the trailer.** Your cargo must be well-secured to the trailer. Use Surly Junk Straps, ropes, bungees, etc. to hold things in place. Make sure to secure your straps so that they do not catch in the trailer or bike wheels.

### **TIRE PRESSURE**

Tire pressure will play a large role in the performance of your trailer. After your trailer has been loaded, adjust the tire pressure to best work with your load (35 psi is a good place to start). Tire pressure too high will cause the trailer to bounce, while extremely low tire pressure will lead to sloppy handling, more rolling resistance and possibly a tire failure or tube pinch flat. It will take some trial and error before you develop ninja-like trailer tire inflation skills.

### **SAFETY**

Be sure to position the reflectors and lamps so they are not obscured by anything you carry or strap to the trailer. Frequently check to see that fasteners are secured properly and tightly. **Do not modify the trailer.**

For more product safety information checkout [surlybikes.com/safety](http://surlybikes.com/safety)

## **Accessories & Attachments**

The Surly trailer is designed to be a DIY-friendly platform for all your crazy ideas. The corners of the trailer bed feature threaded M6 bosses for attaching corner stakes, trailer sides and anything else you can think up. Get creative.

The trailer also includes six threaded M6 bosses on the top of the bed which are intended for mounting decking materials of your liking... wood, plastic, metal, fabric, etc... Again, get creative.

Check [surlybikes.com](http://surlybikes.com) for Bill and Ted trailer accessories.

## **Limited Warranty**

Surly trailers 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 use other than "normal" use, and the inevitable wear and tear resulting from "normal" use. **Never carry live people or animals on your Surly trailer!** 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 use one of our products. We're hip to the "just riding along" phenomenon and frankly, we're just not having it. Sorry, the paint-job 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.

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