Kid-Back Installation Guide

The rewards of riding with your children are plentiful. If you are considering a setup for your child, Please remember us for sharing our experience with you when it comes time to purchase. The kids and their college funds certainly appreciate you!

Click Here for Child Stoker Parts Listing

Click Here for Ordering and Contact Info

SPECIAL SMALL CHILD ADD ON ADAPTER NOT AVAILABLE, NO NEED TO ASK

Be sure to order any needed tools with your child stoker kit. Typically having these on hand will suffice:

Shimano bottom bracket tool
Chain breaker tool
Metric Allen wrench assortment, 4mm, 5mm, 6mm, & 8mm
Optional: Crank arm puller

Very young children need to have the handlebar closer to them than a standard extension boom will provide. The photos below show various ways of attaining the correct reach. A narrow child sized road bar is imperative for proper fit.

Courtney, 2yrs 7mos, installed kit with child bar flipped to extend reach.
(This is representative of our first and short lived handlebar setup, one we don't recommend. Cleaner, neater and better ergonomic setups are pictured on units below.)

The crank assembly portion of your kit is inclusive of the following aside from any needed specialty considerations:

- **Nylon Sizing Shim**
- **Bolt on Alloy Child Bottom Bracket Shell**
- **Bottom Bracket and crank arm mounting bolts**
- **Child Crank Arms with Chainring**
- **Chain (to be cut to length)**
- **Accessory Chainring for stoker crank to fit your existing adult crank (specify bolt pattern: 94, 110, 130)**
- **Chainring spacers and double chainring bolts**

The remaining portion of the 'complete' child stoker kit includes these items.

- **Zero off-set seatpost, sizing shim, and youth saddle**
  (An absolute necessity to get saddle in proper position over the 1.5" forward displaced bottom bracket.)
- **Small Pedals with Clips and Straps**
- **Stoker extension boom, handlebar stem and any needed shims**
- **Child road bar tape and plugs**

Optional items may include

- **Safety Backrest**
  (Generally not needed for 4 years and older. Most do well at 3.5 years if the parents pay attention too!)

ASSEMBLY PROCEDURE

If you are unfamiliar with bicycle mechanics and there is any question about whether installation is proper and therefore safe, please involve a knowledgeable friend or qualified shop. No one wants to see anyone hurt, hence our concern. Improper assembly may result in frame and or component damage.

1) Setup the handlebar first. Install the child handlebar to the handlebar stem. Secure the handlebar stem to the end of the child stoker extension boom. Some stems may require a shim, included if needed. Depending on the boom supplied, remove or pad any exposed bolts that may face towards the child. A typical installation is pictured below or as an alternative, when greater reach is needed, flip the bar backwards as pictured above on the triplet.

Courtney, 2yrs 10mos. Installed kit with child bar in regular position at MTR 2000 in St. Charles, IL outside of Chicago

2) Assuming you have a current model tandem with the typical alloy adjustable stoker stem, replace the existing stoker handlebar and extension assembly with the now assembled child stoker bar and extension boom.

3) Adjust the height of the stoker stem on the captain's seatpost to its lowest position in an effort to get the child as low as possible on the bike. Snug all bolts and tape the handlebar.

4) Optional Safety Back Rest: The typical safety backrest slants rearward while the rider should sit leaning slightly forward. The backrest supporting steel pipe can be shaped if a large vice available or a typical large tubing bender available from your favorite Home Depot. The backrests supplied are over engineered so the commonly dimpling of the steel pipe resultant of changing its shape is not a concern. We usually increase the bend for you to

save you the hassle and often touch up the frame as most come nicked from our supplier anyway.

5) Install the youth saddle to the zero offset seatpost with the saddle slid as far forward as possible permitting the child to sit in the proper position above the forward displaced child pedal assembly. Install the seatpost sizing shim and seatpost/saddle assembly into the frame after coating all parts with grease.

6) Set the saddle height so that it is 3-4 inches below the handlebar if possible. We have found this height to work best for young children. Raise the bar if necessary to establish this relationship.

7) Measure your child's inseam via this method. http://www.precisiontandems.com/inseam.htm Multiply the number by 1.09 for a starting saddle height with the distance measured from the pedal to the top of the saddle.

8) In preparation of mounting the child bottom bracket shell, clean all surfaces associated with the shim with a grease cutting formula such as 409, i.e., the inside of the bottom bracket shell, the shim and the frame to prevent slippage of the shell. If using a shim, install it over the frame seat tube. *Rotate the shim so the split faces backwards*. The position of the shim is important to minimize the possibility of frame damage should over tightening occur. Grease the Allen bolts and install the shell on the shim with the bottom bracket in front of the seat mast. Tighten the shell in the approximate position enough to keep it from slipping down the mast.

9) Install the bottom bracket after coating the threads with grease. There is a right and left side to the bottom bracket shell. The right side (fixed cup on Shimano type cartridge bb's) threads into the shell by turning it CCW and the left side (free cup on Shimano type cartridge bb's) is turned CW to tighten. Using the Shimano bottom bracket tool, tighten the right side firmly followed by the left side. The bottom bracket does NOT need to be super-tight as these are generally lightweight kids generating little torque!

10) You may find it easier to remove the adult left stoker crank arm but either way, remove the chainring bolts on this crank.

If you have a Race Face crank you need to replace the standard 42T Race Face ring with a typical 42T ring then mount the accessory kid ring on the inside. Do not worry about the timing chain misalignment from the captain to the stoker ring given the distance ins miniscule compared to anything that goes on at the rear wheel with the final drive chainring and the distance is much longer making the chain deflection angle very small.

11) *Chainring position and associated chainline is determined by trial and error due to the host of variables between tandem manufacturers, models, years, components used, and the vintage. Various combinations of spacers and positions are sometimes needed to attain the best line and clearance between the two chains.*

Install the child stoker accessory timing ring and spacers on the inside and the standard adult ring on the outside. Apply grease to the crankarm bolt threads. Reinstall the crank arm and double ring assembly being watchful that there is clearance between the frame and chain. If you need an additional millimeter of clearance, disassemble and move the spacers to the outside of the spider.

If it is impossible to attain clearance for an additional chainring on the rear stoker crank, install the child stoker chainring on the captain crank and obtain a longer drive chain.



Driving the kid crank from another crank, typical installation & SoftRide setup.

12) Install the chainring to the child crank using the short bolts removed from the adult crank arm. Start with the chainring on the inside of the spider. The chainline will determine if an outboard placement is better or if additional spacers and longer bolts are needed.

13) Grease the crankarm bolt threads and install the child crank arms onto the bottom bracket with the chainring on the left side of the tandem.

14) Install the pedals after greasing the threads. The right pedal tightens by turning CW and the left pedal by turning CCW.

15) Measure from the top of the saddle, the distance previously determined via the inseam calculation, to the pedal with it in the down position. Lightly tighten the child stoker pedal assembly to the frame in this position and verify that the child stoker bottom bracket shell is in a workable position by checking for clearance with the front derailleur. Remember the adult crank and the child crank will run in phase and not interfere with each other. If the crank must be higher than our initial determination due to any clearance issues, raise it to the minimum level needed.

16) Loop the chain around the two child chainrings and cut to the closest length permitted by the child stoker pedal assembly position. Install the accessory child chain and set the cranks in phase. Adjust the chain tension by sliding the shell up and down the seat mast. Use a long ruler placed against the chainring to make sure the chainring is running parallel to the top tube thus verifying that the child stoker bottom bracket square with the frame.

17) Set the saddle height via the seatpost adjustment to the dimension previously calculated. The handlebars should be 2-4 inches above the saddle. Snug everything on the bike.

18) Tape a piece of plumbing pipe foam in the nose of each toe clip which will act to shorten it so the child's shoe will stop with the ball of the foot over the pedal axle.

19) Sit the child on the saddle. Check for proper leg length extension with the pedal in the down position followed by other general fit considerations. Once everything is properly set, tighten securely. Be sure to tighten the bottom bracket shell to the frame evenly with the Allen bolts.

Caution: DO NOT over tighten the child stoker shell as it is possible to damage the frame tube from the compressive forces attained from the four small Allen bolts. In the picture below it appears the shim may have been installed with the split facing towards the side where the gaps are between the two halves of the bottom bracket shell housing.

Ouch!

Damage to this extent is thankfully extremely rare with only one case reported in over a decade. This particular case was from over tightening a Santana shell and shim. Usually over tightening results in mild dimpling. Some paint compression may be expected depending on the finish.

20) The very young child stokers (2-3.5 years) will generally need to have their feet strapped to the pedals to prevent them from inadvertently coming out of the clips and straps. We use double sided Velcro to form a loop from the toe strap on the outside of the pedal, around the back of the child's foot and to the toe strap on the inside of the pedal. We also add another stabilizing strap to prevent the newly formed Velcro loop from riding up the back of the child's foot. It attaches to the loop behind the child's shoe and runs down under the shoe and pedal connecting once again to the toe strap. For all practical purposes, it is a three point attachment system. All one has to do is loosen the toe strap and re-cinch it after entry.

Top view
Loops connecting to the toe strap which is in the released position

Bottom view and the third attachment to the toe strap

21) Remove the adult pedals from the lower crank.

22) ***Go for a ride after reading the Safety section below!***

Courtney, 3yrs 10mos. Kit installed with child bar in regular position. MTR 2001 in Duluth, MN

The Precision Tandems Team
Courtney 4yrs 6mos and Natalie at 23 months at SWTR 2002 in Waco

The Precision Tandems Team
Courtney 4yrs 10mos and Natalie at 28 months at MTR 2002 in K.C.

Hilly Hundred 2003, Day 1
Courtney nearly 6 and Natalie well experienced at 3.5
A windshield was used to help keep the chill off of Natalie with the cool morning temperatures.

The final day of BAK 2004. Natalie age 4 and Courtney age 6.5.

With the right size frame and shorter 125mm/145mm crank arms, child stoker kits are no longer needed even at the age of 5 & 7.5 years. Photo of our Custom Co-Motion Quad taken just before BAK 2005.

Spring Break 2006, Fredericksburg, TX on one of our Precision Triplets!
Courtney 8.5 years.
(Click for Precision Triplet Gallery)

Spring Break 2006, Fredericksburg, TX on our 39 Pound Precision Triplet!
Natalie still 5 for another 6 weeks!

Biking Across Kansas 2009
(Mark, Julie, Natalie 9, Courtney 11)

September 4, 2011 Midwest Tandem Rally 2011
in Ann Arbor, MI
Courtney nearly 14 and Natalie 11.5

Interested in really long and really long bikes. Ask the experts.... us! CLICK HERE for a few of the recent ones we have setup.

Safety and Kids

Bicycling is not without risk (like being in an automobile or pursuing other life activities) and riding with our precious children deserves all of your attention to keep them out of harm's way. That said, riding with kids may not be for everyone as experience and skill levels vary greatly. We all know individuals that fall for a variety of reasons 1-3 times per year, sometimes more. It is advisable to look at and accept one's history as one element in determining whether to take your children along on rides.

Please ride safe and have fun.

Get out and Ride!!

Mark, Sue, Julie, Courtney, and Natalie (in order of height! ... which WILL change with time!)