

Chop Source Motorcycle Frame Jig Assembly Instructions

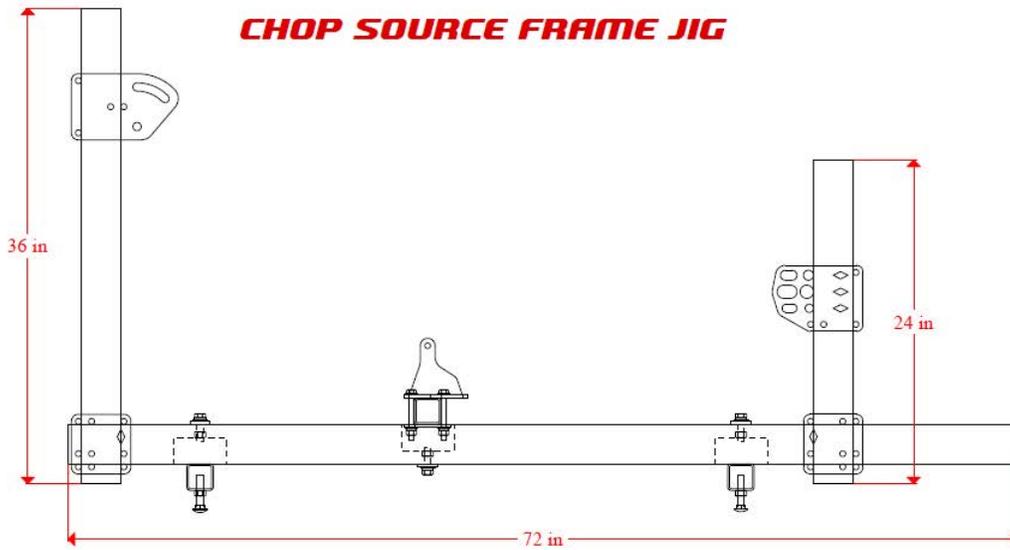


The following instructions explain the process to assemble the Chop Source Motorcycle Frame Jig Kit. If you ordered the Basic Kit, some parts of these instructions will not apply.

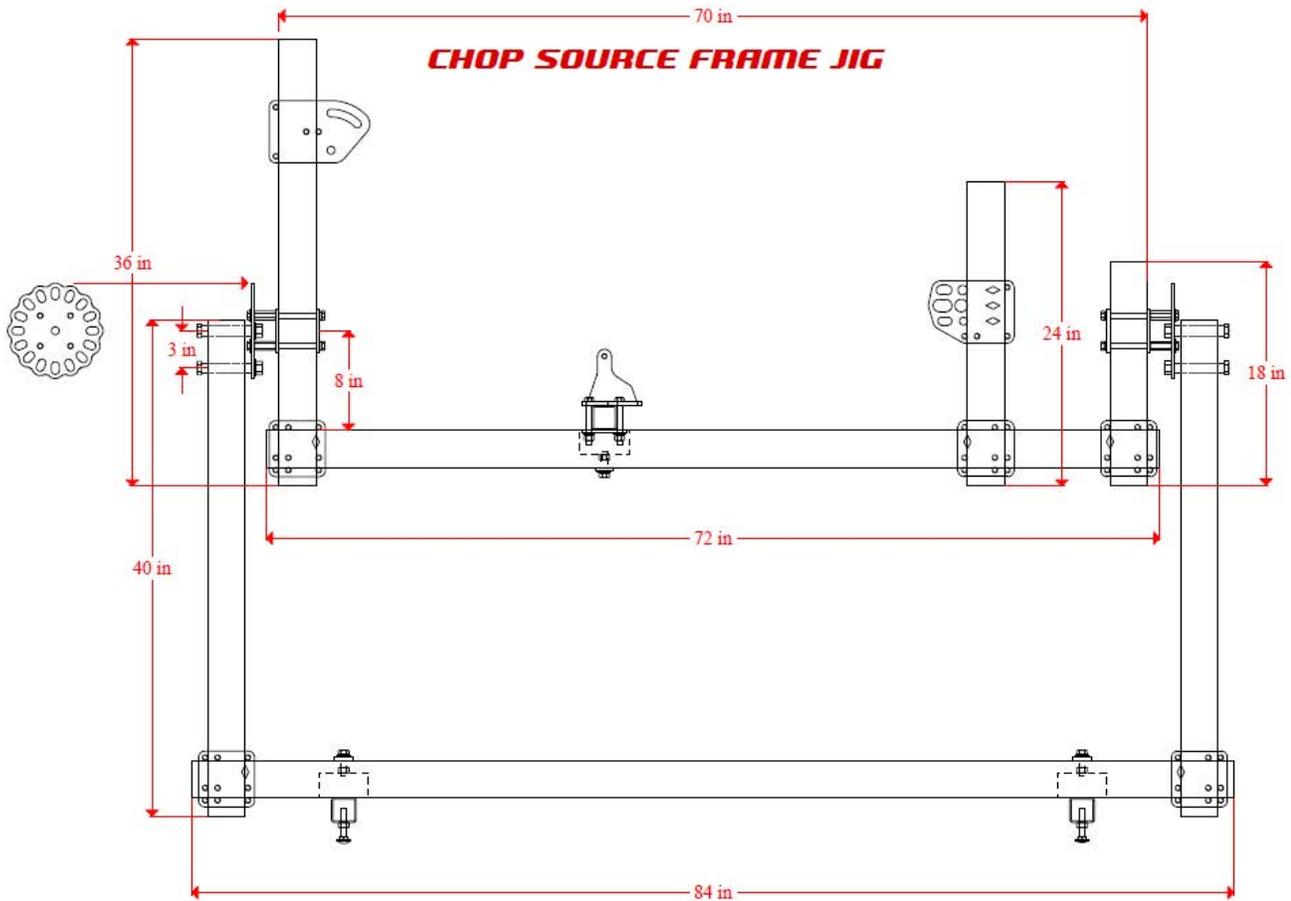
If you have any questions regarding any part of the assembly process after reading these instructions, please email sales@chopsource.com or call/text (651) 300-9575.

See page 8 for the lengths of structural tubing required to complete the jig.

Page	Contents
2	CAD Drawings
3	Completed Images
5-7	Step 1: Assemble Fixtures (to ensure you have all necessary hardware)
8	Step 2: Cut Structural Tubing to Length (cut list)
9-13	Step 3: Assemble Main Part of Frame Jig
14	Frequently Asked Questions



Frame Jig with Rotisserie Stand (sold separately)



Full Motorcycle Frame Jig Kit (shown with adjustable width fixture, standard feet, and 3/4" threaded rods and spacer material)



Motorcycle Frame Jig with Rotisserie Stand (sold separately). Notice feet move from the jig to the stand.



General Guidelines

Hand-tighten all fasteners during assembly (until the lock washers just start to compress) and torque fasteners when instructed.

Stamped washers typically have a sharp edge on one side and a smooth rounded edge on the other side. The sharp edge can scratch the powder coating on the plates. Install all washers with the smoother side touching the powder coating. The washer won't look as good, but scratched powder coating looks worse. This is most important for the bolts in slots like on the neck fixture and adjustable width fixture.

Step 1: Assemble Fixtures

Assemble each fixture as shown in the following photos to make sure you have received everything. If anything is missing, email sales@chopsource.com or call/text (651) 300-9575 and the missing parts will be sent to you right away. Please wait until all fixtures are assembled before contacting us, especially with international orders shipped in multiple boxes.

Base Clamps

Each base clamp uses two square plates and four 7/16" x 7-1/2" bolts (each with two washers, a lock washer, and a nut). For 2"x3" tubing, use the outer most holes. The full motorcycle frame jig kit comes with two base clamps.



Neck Fixture

The neck tube fixture consists of two side plates, a welded box, an aluminum threaded spacer, and a threaded rod that holds the neck cones.

Spin the aluminum threaded spacer about 5" onto the 3/4" x 16.25" threaded rod and insert it through the top of the welded box. Spin a 3/4" nut onto the bottom of the rod and slide it up into the box so that the nut recesses into the box. The nut is held from turning by two sides of the box. Spin the threaded spacer down to the box and hand tighten. Look through the lower 5/8" pivot hole to make sure the threaded rod will not block the lower pivot bolt.

Use two 5/8" x 4" bolts (each with two washers, a lock washer, and a nut) to mount the box between the side plates. Use three 7/16" x 3-1/2" bolts (each with two washers, a lock washer, and a nut) through the side plates. The center bolt has two locations (one for 2"x2" tubing, and another for 2"x3" tubing). Keep things very loose so that you can slide the fixture onto the upright.



Axle Plate Fixture

Assemble the axle plate fixture using three $\frac{7}{16}$ " x 3- $\frac{1}{2}$ " bolts (each with two washers, a lock washer, and a nut). The fixture can face forward or backward. *Face the holes toward the neck fixture to make welding near the axle plates easier. Face the holes away from neck fixture if you need more length for a stretched-out frame.*



Adjustable Width Fixture

Assemble the adjustable width fixture brackets using four $\frac{7}{16}$ " x 3- $\frac{1}{2}$ " bolts (each with two washers, a lock washer, and a nut). Insert one $\frac{1}{2}$ " x 1- $\frac{3}{4}$ " bolt (with a lock washer and washer) through the hole in the 1- $\frac{1}{2}$ "x5" rectangle plate. Temporarily install a $\frac{1}{2}$ " plain nut on back. The plain nut is not zinc plated because it will be welded to the spacer tubing later.



Feet

Insert one 1/2" x 1-3/4" bolt (with a lock washer and washer) through the hole in each 1-1/2"x5" rectangle plate. Temporarily install a 1/2" plain nut on each bolt. The plain nuts are not zinc plated because they will be welded to the spacer tubing later. If you bought the standard feet kit, ensure you have four 1/2" x 2-1/2" carriage bolts with one zinc nut and one plain nut for each. If you bought the heavy-duty swivel leveling feet, each foot should have one 1/2" jam nut and one 1/2" plain nut on it. The 1/2" plain nut from each foot will be welded to the tubing for the feet.



Threaded Rods and Spacer Material

Each threaded rod and spacer kit includes two 14" threaded rods, four nuts, one 2" spacer, and additional spacer material. The additional spacer material will be cut later to make four spacers. The following picture shows all three sizes of threaded rods and spacer material. The full frame jig kit comes with one size and the other sizes are available for purchase separately.



Step 2: Cut Structural Tubing to Length

Several lengths of 2"x3" and 2"x2" tubing (1/8" or 11ga wall) are required to complete the jig. This should be available locally at a metal supply store or welding/fabrication shop. Many times, the store/shop will cut them to size for a small fee per cut. The lengths provided below are a guideline that should work for many different styles of frames and can be adjusted to suit your needs. See the FAQ at the end of the instructions for more details on main-rail lengths.

Some parts of the cut list will not apply depending on which bundle or individual fixtures you have purchased.

Tubing Required for Part:	Size (all 1/8" or 11ga wall)	Qty.	Length
Full Frame Jig Kit			
Basic Kit			
Main rails for jig	2"x3"	2	72"
Upright for neck fixture	2"x3"	1	36"
Upright for axle plate fixture	2"x3"	1	24"
Adjustable Width Fixture			
Adjustable width fixture	2"x2"	1	18"
Spacer for adjustable width fixture	2"x2"	1	4"
Legs			
Legs	2"x2"	2	24"
Spacer for legs	2"x2"	2	4"

Using all 2"x2" tubing: All fixtures work with 2"x2" tubing, so you can use 2"x2" tubing instead of 2"x3" tubing in the list above. However, if you're using 2"x2" tubing for the main rails of the jig, the 4" spacers in the list above should be made from 1"x2" tubing (to allow room for the nut welded to the spacer; see photos in step 3 under build and install feet).

Metric Tubing: 50x50mm tubing will work for all fixtures and main rails. If you're using 50x50mm tubing for the main rails of the jig, the 4" spacers in the list above should be made from 25x50mm (or 20x50mm) tubing (to allow room for the nut welded to the spacer; see photos in step 3 under build and install feet).

Step 3: Assemble Main Part of Frame Jig

Assemble the basic structure for the jig using two main rails (72"), the upright for the neck fixture (36"), the upright for the axle plate fixture (24"), and two base clamps.

The uprights should extend below the main rails by 1-1/2". The upright for the neck fixture should be spaced inward 1" from the end of the main rails. An easy way to assemble these parts is to set the lower rails on two short scrap pieces of 2x4 lumber. Place the 2x4s about four feet apart and set the main rails on the 2x4s with about a 2" gap between them. Slide one base clamp over the left end of the main rails and insert the 36" upright for the neck fixture. Slide another base clamp over the right side (about 16" inward) and insert the upright for the axle plate fixture. Tighten the nuts until the lock washers just start to compress.

Build and Install Feet

FIRST IMAGE: Drill a 1/2" hole (centered) on one side of both 4" spacer tubes. Drill a 1/2" hole 1" from each end of both 24" tubes (centered width wise).

SECOND IMAGE: Thread a plain nut onto one of the 1/2" bolts and insert it into the hole to help center the nut while you tack weld it. Remove the bolt and fully weld around the nut. Repeat for the three remaining holes. **Do not weld a nut over the holes in the 4" spacers yet.**

THIRD IMAGE: Center one 24" tube on top of a 4" spacer, with the hole in the spacer facing down and the nuts facing up, and tack weld one side (top of third image). Flip it over and check that it is square (bottom of third image).

FOURTH IMAGE: Flip it back over, place two or three tack welds on each side then weld the two corner seams. **Do not weld all four seams or the weld could contact the main rails of the jig and not fit.** Weld a plain nut over the hole in each 4" spacer in the same manner as before.



Attach the feet (carriage bolts or swivel feet) to the four nuts on the ends of the 24" tubes and install under the lower rails of the jig. Secure using two 1-1/2"x5" rectangle plates on top of the rails with 1/2" x 1-3/4" bolts (each with a lock washer and washer). If you also purchased the rotisserie stand, the feet from the main part of the jig will be installed on the stand instead. If you are using the jig on a table or lift, level the jig by adjusting the feet, and **torque the two bolts to 15 ft-lbs. Do not over-tighten or you will bend the clamp bars.**



Install Neck Fixture

Install the neck fixture on the 36" upright. Tighten the nuts just until the lock washers start to compress. Square the upright for the neck fixture relative to the main rails (magnetic digital angle cubes work great for this) and **torque the nuts on the base clamp to 15 ft-lbs.**

Slide one centering cone down the threaded rod. Once the frame is in the jig, you'll add the top cone and a 3/4" nut. Don't torque the nuts on the neck fixture until you install a frame or neck in the jig. **Do not overtighten the top 3/4" nut.** It just needs to be tight enough to make sure the neck doesn't move. *The 7/16" nuts will be torqued to 15 ft-lbs and the 5/8" nuts to 55 ft-lbs.*



Install Axle Plate Fixture

Install the axle plate fixture on the rear 24" 2"x3" upright. The lower 7/16" bolt can be moved for a 2"x2" upright. The fixture can face forward or backward. Face the slots toward the neck fixture to make welding near the axle plates easier. Face away from the neck fixture if you need more length for a stretched-out frame.

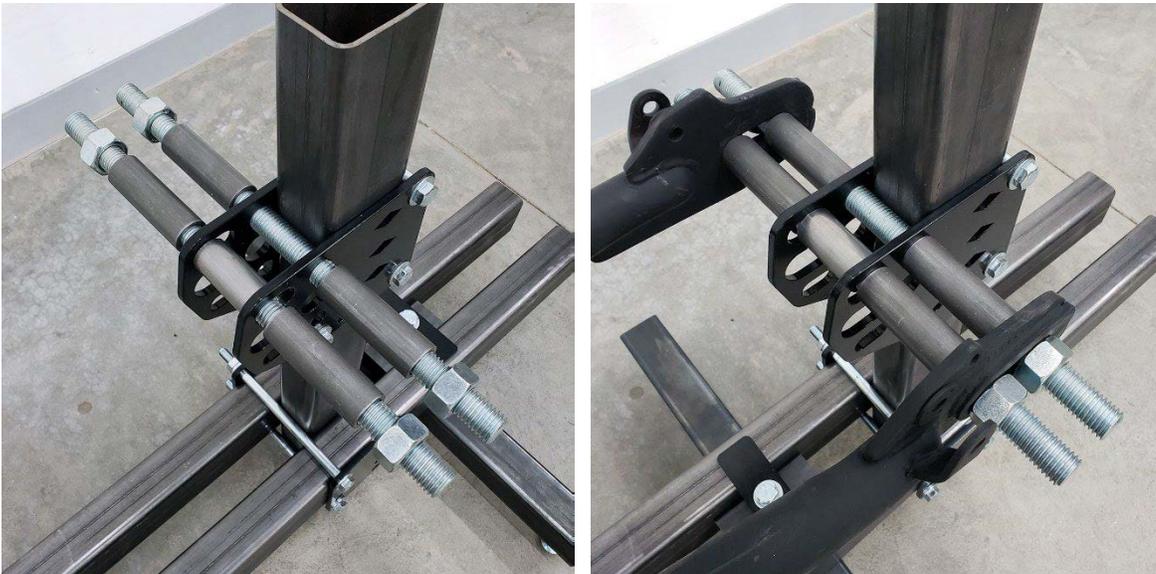
The fixture has holes and slots for 3/4", 1", and 5/8" threaded rods (in that order from top to bottom). If you purchased a threaded rod and spacer kit, you will have two 14" threaded rods, four nuts, one 2" spacer, and spacer material to be cut into four spacers. The 2" spacer goes between the fixture plates on the threaded rod furthest from the upright. The rod closest to the upright does not have a spacer between the plates.

Cut Spacers to Complete the Axle Plate Fixture:

To support a set of axle plates, cut four spacers from the two pieces of 8-1/4" spacer material. The spacers go on the outside of the fixture plates as shown in the first image below.

If the axle plates are an equal distance away from the centerline of the frame, cut four equal spacers. To determine the length of the four spacers, take the distance needed between the axle plates, subtract 2-1/2" (outside width of plates), and divide by two. Cut four spacers to that length. For example, if you want your axle plates to be 8-1/2" apart, you would cut four 3" spacers... $8.5 - 2.5 = 6$ and $6 / 2 = 3$. The spacer material provided allows for axle plate spacing up to 10-1/2".

Don't torque the nuts on the rear axle fixture or the base clamp under it until you install a frame in the jig or have the fixture in the final position. *The 7/16" nuts will be torqued to 15 ft-lbs.*



Build and Install Adjustable Width Fixture

The support for the adjustable width fixture is made in a similar fashion to the feet, except that it is installed on the top of the main rails and bolts from the bottom, and you only need to drill one hole. See the section for installing the feet for details. **Pay attention to where the welds are placed so they don't contact the main rails of the frame jig.**



Secure the welded assembly to the main rails of the frame jig using one 1-1/2"x5" rectangle plate (clamp bar) with one 1/2" x 1-3/4" bolt (with a lock washer and washer). When the fixture is in its final position torque the bolt to 15 ft-lbs. Do not over-tighten or you will bend the clamp bar.



Finish the assembly by installing the fixture on the 2x2" tube as shown below. When bolting the fixture to your frame, if needed, drill out the hole at the top of each bracket to fit your bolts. Since every frame is different, you will need to supply these bolts.



Torque Fasteners

Once you have a frame (or frame pieces) mounted in the jig and the fixtures in their final positions, ensure all 7/16" and 1/2" nuts are torqued to 15 ft-lbs. Torque the 5/8" nuts on the neck fixture to 55 ft-lbs.

Frequently Asked Questions:

Question: Do you have a list of the tubing required to complete the jig?

Answer: See page 8 for the cut list.

Question: Where do I buy the 2"x3" and 2x2" tubing?

Answer: Structural tubing should be available locally at a metal supply store or welding/fabrication shop. Many times, the store/shop will cut them to length for a small fee. Google 'metal supply near me' or 'steel supply near me'.

Question: Can I use Metric tubing?

Answer: Yes, see page 8 for more details.

Question: How long should I make the main rails for the jig?

Answer: It depends on the type of frame you want to put in the jig or what type of frame you want to build. Obviously, if you're building a drag bike, you're going to need a longer jig than someone who is putting a hardtail on an old Triumph. These instructions are based on a jig with 6' main rails. That will work for many different frames. The frame in the pictures on page 3 is a Yamaha XS650 frame and 6' rails will accommodate up to an 11" stretch with the axle plate fixture pointed to the rear. You'll get over 17" of stretch if using the jig without a stand since the rear upright for the rotisserie bracket won't be in the way. If you want a longer jig, you can make the rails for jig and stand longer. You could build the jig for the projects you have in mind and purchase new longer rails later if needed. One of the nice things about a bolt together jig is that you can easily make the jig longer. You won't have to cut it apart and then weld it back together.

Tips:

When drilling holes, use a center punch so your bit doesn't wander, then drill a small pilot hole. Use a step drill bit to enlarge the hole to the required size. Use cutting oil to keep the drill bit cool. For larger holes, a step bit or good hole saw will work. A drill press makes the job easier.

Level the jig before starting your project. Digital angle finders (available on our site) work well for this.

Keep the neck, axle plate, and adjustable width fixtures somewhat loose when putting a frame into the jig. A dead blow hammer works well for moving the axle plate upright back and forth. Before loosening the base clamp for the axle plate upright, put a C clamp or welding clamp on the upright directly above the base clamp plates to prevent the upright from dropping down.

Since the adjustable width fixture is a fixed height, to lower a bike in the rear, you will raise the axle plate fixture.

If you have a complete bike and you want to modify the frame in the jig, take measurements from the bike before you take it apart. With a rider sitting on the bike, measure the rake of the neck, the distance from the neck to the ground, the distance from the lower frame rails to the ground, and the distance from the rear axle to the ground. There may be other measure measurements you may want to take like the angle of the backbone and the distance of the swingarm pivot to the ground. You might want those measurements later and they are easier to get with the bike together.