



Thank you for purchasing a  
Yamaha XS 650 Weld-On Hardtail from TC Bros. Choppers, LLC!

Please realize that this procedure may exceed your technical abilities. Try to plan ahead by having someone to call upon for assistance, like a proficient welder, or an extra set of hands to support the frame once it has been cut.

***USE AT YOUR OWN RISK!***  
***TC Bros. Choppers, LLC. will not be held liable for ANYTHING!***

Every effort has been made to ensure a top-of-the-line product, as well as instructions that are concise and easy to follow however, we are only human, and if you notice something that should be noted or added, please feel free to contact us with your suggestions or comments.

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**Some notes to be aware of:**

1. The lower framerails of the hardtail do not continue at the same angle as the stock Yamaha frame rails. This is because the stock Yamaha framerails angle slightly downward. Once it has been installed, it will look as if the hardtail is angled upward however, once you replace the wheels and set it on the ground, the hardtail lower rails will be level with the ground.
2. The seat cross tube and the lower-rear cross brace are only tack welded in place. This is to allow you to decide the final placement of the seat & rear fender.  
**THEY MUST BE COMPLETELY WELDED BEFORE USE!** Be sure to place something in between the rear axle plates (such as rear wheel) when welding crosstubes to prevent warping inward. The spacing between axle plates should be 8.5".
3. Model year 1975 and later axles are too long to use without shims. We recommend you use standard 3/4" washers. This is because while we offer the thickest axle plates of any kits available, they are thinner than the two layer welded plates Yamaha used. Rest assured, the inside dimension is correct. The stock chain adjusters must be shimmed for the same reason. Some earlier models (1970-1974) the axles are too short. If your stock swingarm was 8" wide inside the axle plates you will need a longer axle and will probably have to shim your spacers to get your chain lined up with your stock wheel. Luckily, axles can readily be found on eBay.

**PLEASE READ THE INSTALLATION INSTRUCTIONS COMPLETELY BEFORE YOU BEGIN.**

Make sure your bike is secured in a manner that allows you to complete this project before you start.

Begin by stripping your XS down. Remove the swingarm, and be sure that all electrical pieces (wires included) are out of your working area. It is recommended that you remove everything but the engine, or at a minimum leave only the engine cases in place to ensure the motor mount alignment.

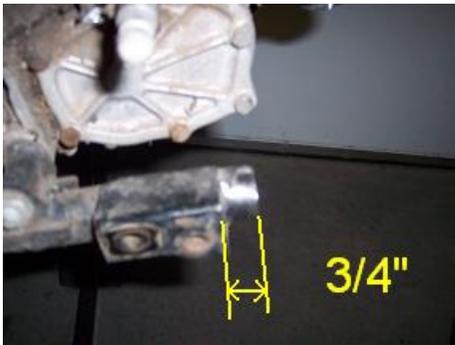
**1.** Establish the proper locations to make your cuts.

For model year 1974 & on, cut the lower frame rails  $\frac{3}{4}$ " after the stock exhaust mounts. (towards the rear)

For model year 1973 and earlier, you must cut the lower frame rails to where the seatpost is in line with the front-lower cross brace of the "Weld On Hardtail".

**To do this:** On the hardtail, measure the distance from the front of the front-lower cross brace to the forward end of the lower rails, (**not** the slug that has been welded in) transfer that dimension to the lower rails of your frame, measuring forward from the seatpost cross member along the lower rails, and make your cuts.

**BE SURE OF YOUR MEASUREMENTS BEFORE YOU CUT!**



**Note:** The seatpost referenced, is the pipe that that travels from the steering neck, under the gas tank, and bends to run vertically behind the engine.

The front-lower cross brace is the only cross brace on the hardtail that has been fully welded.

**2.** Cut the seatpost as low as possible. The closer to the crossmember, the better.



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**3.** Cut the “mid-seatpost-height” supports completely off.



**4.** Cut the upper seatrails completely off, leaving the stamped “wrap-around” support in place.



**Note:** Now is a good time to grind off all remnants of the old rear section of the stock frame.  
Also, remove the paint within an inch of the exposed ends on your stock frame to promote a better weld.

**5.** Set the hardtail in place by inserting the slugs of the lower rails, into the open ends of your frame and insert the solid barstock into the bottom of the seatpost with the coped end facing down towards the hardtail. If the coped end of the solid barstock piece nests completely on the front-lower cross brace, you have cut your frame at the proper location.



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6. Align the seatrails of the hardtail with the seatpost of your frame so the ends of the seatrails make contact with the stamped “wrap-around” support of the seatpost, just forward of the bend. Correct placement is achieved when (looking from the top, downward) the rear half of the seatrail’s cut edge is in contact the stamped “wrap-around” support, and the forward half of the seatrail’s cut edge is in contact with the actual seatpost. Looking at the frame from the side, the seatrails should be vertically centered to the seatpost.



**ALL WELDING SHOULD BE DONE BY A QUALIFIED WELDER!!**

7. Create a 1/16” gap on each of the lower rails at the slugs to promote proper weld penetration, and check, then double-check for squareness! We recommend measuring from a rear motor mount bolt to the front of the axle plate on both sides. If your measurements differ, you must take action to correct it.

8. Tack weld the hardtail in place.

9. Verify squareness.

10. Finish ALL welds.

