

NAA BUMPER BUILD

Submitted by: George Small, Newfoundland, Canada

Safety First – At a minimum I would **suggest safety glasses, work gloves and safety boots**. Working with metal, grinders, drills and presses creates all sorts of hazards that at a minimum you should use the above three items to mitigate. If you will be using heat to help shape the metal then welders/forging gloves would be an asset.

Tools - Assuming you have a good comfortable place to work you will need a solidly mounted vice, a drill press, some method of turning the metal (I used a “Macguivered” Hydraulic press), hand and/or bench grinder, a couple different hammers and an anvil, and a welding machine if you will be doing this part of the work yourself.





Material – I ended up buying new metal at a local supplier but first I tried shopping around in the local scrap yard looking for some properly profiled bar stock, as the original bumper, based on some info I received, used a bar that had a slight round to it. Failing to find this I purchased the following based on dimensions provided from Vince on this site who has an original NAA bumper on his tractor

Top bar - 1/4" x 1 1/2" x 26 5/8"

Middle & bottom bar - 1/4" x 1 1/2" x 28 5/8"

Two uprights - 3/8" x 1 1/2" X 13 5/8"

Large support bar that bolts to axel - 1/2" x 3" x 43 1/2" for curved part, ears that bolt to axel are 2" long per side

There is also a 1/4" x 2" brace welded behind the large support bar, I would have to give you a drawing of that. It isn't shown in the picture you have

The front ball mount is made from 1/4" stock

Note: there is 2" of space between each cross bar and everything is welded except the rivets holding the 1 1/2" wide cross bars in place.



Main Bar Bend - I started by bending the main bar first....the width measurement I was looking for where the bumper bolts to the front axle was 22 inches and change....keep in mind that you need to have sufficient space to weld a mounting tab with a hole in it to the bumper main section which must line up with the holes in the front axle. I would suggest making up a cardboard template for the shape of the main bar. Center mark all your horizontal bars so you can line them up later. Then begin your bends on your main bar at the outer ends of the main bar...depending on what you have chosen for stick out from the tractor. I bent each end a little and kept tweaking them, placing my hydraulic pressure alternately at the same approximate location on each side so that I slowly built the bend on both sides simultaneously. When you have the main bar in the shape that you have chosen and matching your template you have the most difficult part done. **Tip#1**....remember that the bend you are creating takes up some of the ultimate width that you want to finish with.

Tip#2...there is a slight bend from the center of the bumper to the two front corners where the main bends are...it would be helpful for the sake of originality if you could get this dimension from someone with an original bumper...I just created this bend by eye. **TIP#3**...it is important all bending is done exactly perpendicular to the bar being bent...otherwise the bent piece, when finished, will not lie in one plane...ie. will not sit flat on the floor and therefore will not mate with the mounting tabs that will be fixed to the front axle.





Backer Bar - When you have the main bar shaped like you want it, cut the section of reinforcement metal that sits right behind the front of the bumper and if possible, tack it in place, or at least fix the main section of bumper so it cannot move. This way you have a fixed template to use as you shape the smaller sections.



Here is the shot of the original Bumper that Vince provided.





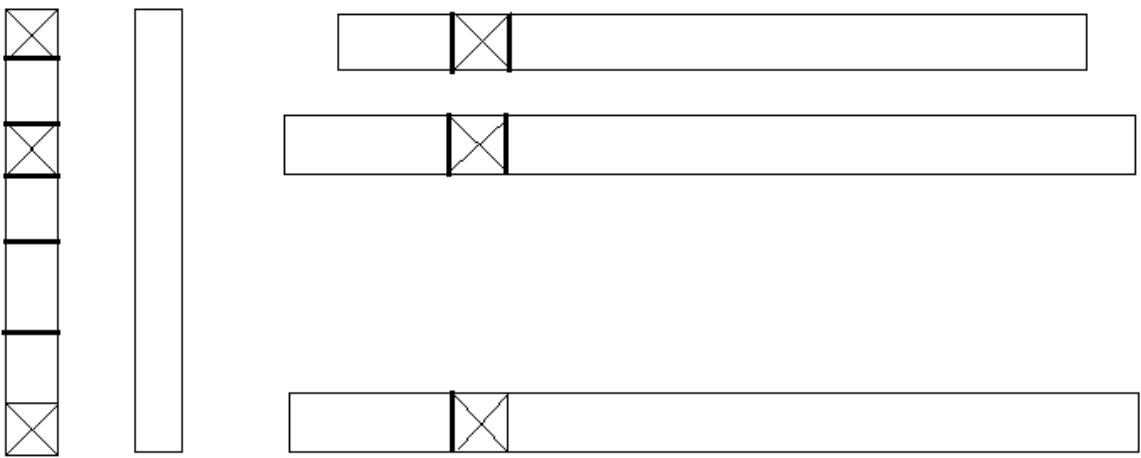
Smaller Bars - Shaping the remaining, smaller bars takes less energy. I did it the same way, a little on each side, repeatedly lining up the centre mark on the bar being formed with the center mark on the shaped main bar. You can use the same method for bending the smaller material as the main bumper section, however I discovered that you can use a well mounted vise, a couple of well mounted pins, even a piece of solidly mounted pipe works by sticking the end of the bar in the pipe and bending the desired amount. You can tweak it back and forth as you build each of the smaller pieces to match the main bar. **TIP#4**...always check the bar you are bending against the main bar....don't use the previously completed small bar.....use the main bar as your template and stack them to compare.



Round Ends - When each of the smaller bars was correctly shaped I ran the ends through a grinder....I discovered that simply running the corners down created a good looking round shape to the end of the bar.



Squaring - Next I placed my uprights in place and squared them up and marked either side of them on the horizontal bars with a marker. Then I laid the vertical bars flat and marked in my spacing/horizontal bar placement.

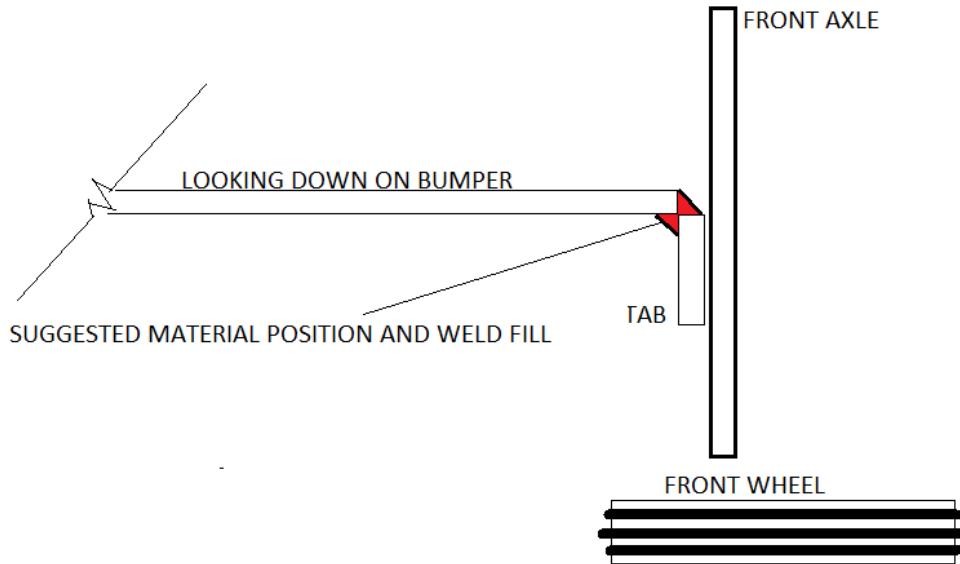


Drilling - Next I center punched (To find center I just marked an "X", corner to corner in each section of the vertical piece that was marked for a horizontal bar and drilled the vertical bars. (I used 3/8 carriage bolts...I tried ½ inch but thought the heads looked too big. The 3/8 looked good and when I got the smaller bars bolted up I was impressed with the strength.) Drill the holes specific for your fastener....rivets or bolts depending on what you are using....I have been told the original bumpers were hot riveted.

Drilling - I did the same thing for the horizontal bars. **TIP#5**....after the vertical bars are drilled and the horizontal bars are center punched check your center punch marks to ensure they line up...they should if the everything was square and marked correctly but now is the time to make a correction if something is not quite aligned perfectly.

Sub-Assembly - When everything is drilled you can go ahead and bolt/rivet it together to create a sub assembly of the smaller bars. I used lock washers and nuts...depending on what you have available

Sub to Main Bar – Square and clamp the sub assembly to the main bar and weld it together.



Tabs- I created the tabs out of the same material as the main bar...I made my tabs about 2 1/2 inches long...center punched and drilled them to accept the bolts that go through the front axle. Use the bolts to hold the tabs in place on the front axle and block the bumper assembly up so that it is level and centered and in the desired contact with the tabs. (At this point you will know if you followed Tip # 3....good spacing at this joint makes for a good looking and stronger weld.) Tack the tabs to the main bumper assembly so that they are secure and then remove the bumper and finish welding the bumper.



Paint- A bit of primer and paint and the bumper is complete.