

## Tank Car Part IV

### ASSEMBLING THE THE BASIC FRAME

#### BILL OF MATERIALS

QTY	DESCRIPTION
4	1/4" 20 x 1/2" COUNTERSUNK BOLTS
8	1/4" 20 x 1/2" HEX HEAD BOLTS
6	1/4" 20 x 1 1/2" HEX HEAD BOLTS
4	1" LONG 1/2" SQUARE STOCK

The time has come to assemble all the parts we have made up to now! But first, You will need to make some 1" threaded spacers to attach the deck that your built in part II to the Car frame from part I.

At this point you can do one of two things. You can go purchase 1/4" 20 x 1" threaded spacers at your hardware store and countersink one side of the spacer, thats the cheaters way out ,or you can be a mainiac and make your own out of 1/2" square stock. As you all know I fall into tha maniac catagory, so I will explain the spacers.

Make the spacers out of 1/2" square stock. Cut 4 pieces each 1" long. Now once they are cut you need to mark the center of the end face. This can be done simply with a ruler and a scribe. Take the ruler and scribe a line from one corner to the opposite corner, repeat the operation on the remaining pair of corners. At this point you will have an "X" on the end of the square stock. Where the two lines intersect is the center of the piece, punch this point to act as a guide for your drill bit. The next operation is really easy with a small drill press but if you have a steady hand you can do it with a hand drill. Center drill the stock all the way through with a #20 bit. Then bore the final hole with a #6 bit. I have found when you do this in two steps the final hole is more true to size and square than if I drill it in one pass. Next countersink one end of the hole, this will allow for the countersunk head that will be used to attach the deck to the frame later. Countersink the piece till the bore just reaches the outer edges of the piece. With the drill process complete tap the hole with a 1/4" 20 tap all the way through. You will need to make four of these pieces.

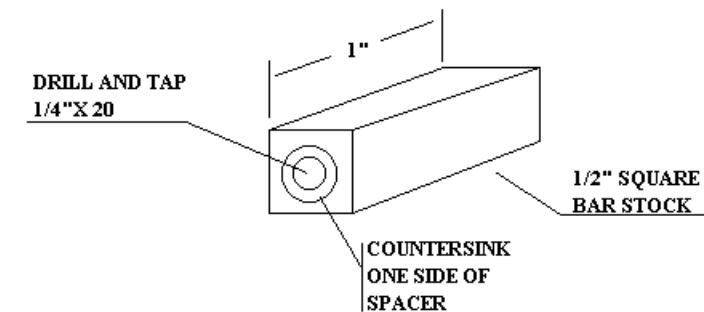
The next steps will involve direct drilling and tapping of the car itself, so do not be scared if dimensions are not refered to. Take the two tank cradles you have allready fabricated and place them on the basic car frame over the king pin bolt. You will notice the notch that was put in the cradle will sit over the head of the bolt and capture it to prevent its turning when attaching the nut on the bottom of the trucks. Now make shure that the cradle is at a right angle to the center sill. With the cradle in this position mark and drill two #6 holes in the bottom of the cradle one on each side of the kingpin so that you drill in the cars center sill. Remove the cradle and drill its holes out to be 1/4" clearance hole. Now tap the holes that are drilled into the center sill to 1/4" 20. Replace the cradle back on the center sill and bolt in place with two 1/4" 20 x 1/2" bolts. Repeat this process for the other end.

Now take that car deck from part II and place it over the car frame and cradle assembly. The inside edge of the deck should fit over the arms

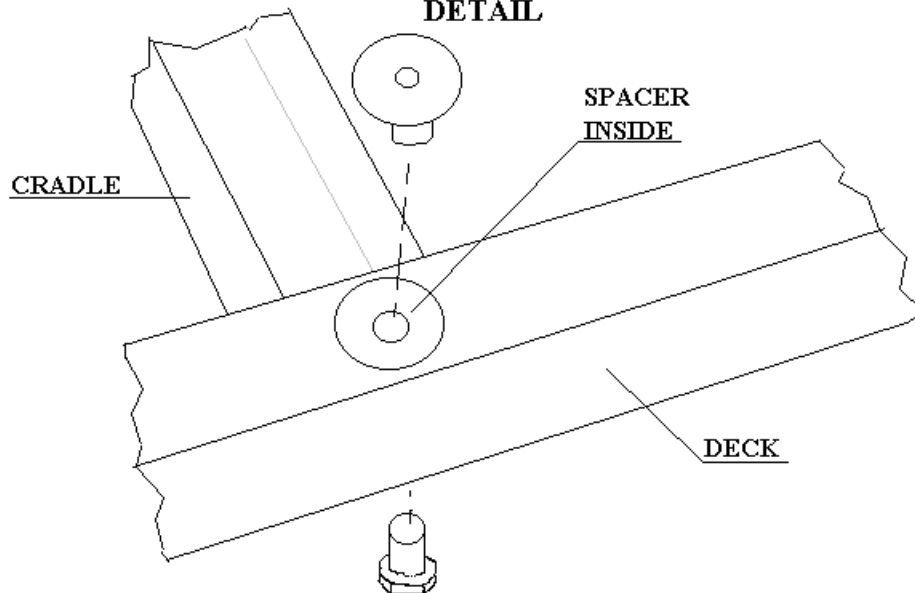
of the cradles. Position the deck so the ends of the deck are flush with open ends of the center sill. Take a couple of clamps and clamp it in place. Now take your drill and drill through the top of the car deck where it is over the extended arm of the cradle and drill through the cradle. Do this at all four points where the cradle meets the car deck. The hole in the deck needs to be countersunk. With the holes drilled place the threaded spacer inside the cradle under deck where you just drilled the holes. Make sure the countersunk side of the spacer is facing the countersunk hole in the deck. Attach the spacer to the cradle from the bottom with a 1/4" 20 x 1/2" bolt and attach the car deck to the spacer with a 1/4" 20 x 1/2" countersunk bolt. Do the same thing at each attach point.

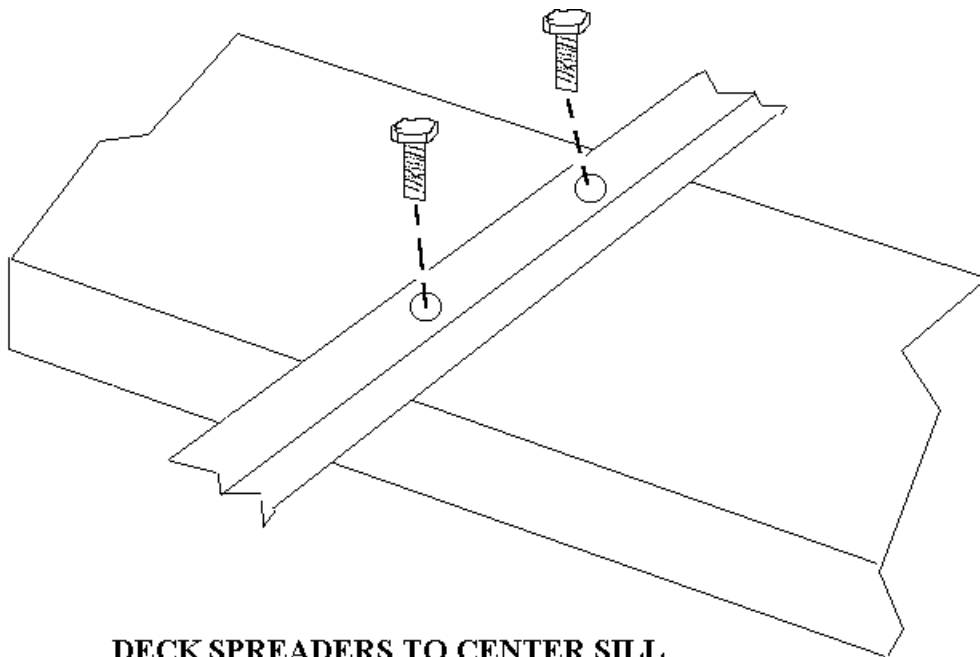
The last things that need to be done to further strengthen the deck to the car frame is to drill and tap each of the deck spreaders in the same manner you did the cradles. Except in this case attach with 1/4" 20 x 1 1/2" bolts.

**1/4x20 THREADED SPACER  
4 REQUIRED**



**CRADLE / DECK ATTACHMENT  
DETAIL**





**DECK SPREADERS TO CENTER SILL  
DETAIL**

**ASSEMBLY DETAIL**

