

Building a Tank Car Part 1.

This construction article will come in installments as I get parts done. i.e. my plan which was to build this over the winter then write the article in monthly installments is shot. So this will come in irregular installments as I get a chance to work on the Car.

Part 1. Bill of Materials

Qty	Description
1	6' section of 1" X 3" 11 Gage rectangular steel tubing
2	7 1/2" X 4" piece of 1/2" thick plate steel
2	3/8" 16 X 1 1/2" bolts
2	3/8" 16 X 3 1/2" bolts
2	3/8" Washers
4	1/4" 20 X 3/4" countersunk allen head bolts
4	1/4" 20 shake proof nuts
4	3/8" 16 shake proof nuts
1 set	Mountain Car Company Standard Duty Trucks, Heavy Duty Trucks or equivalent
1 set	Mountain Car Company Couplers with draft gear or Equivalent

I must admit I steal a good idea when I see it. This Car frame is a simple and inexpensive starting point for a number of styles of rolling stock. Bob Sanford designed this car frame and has put a few in service around his home. These frames are very sturdy and have provided very good runners. I assembled one of these frames for my father's flat car and once all the parts for the car was fabricated the car went together in about 6 hours. I know the question will be asked, I use Mountain Car trucks because this frame setup has the correct coupler height when assembled. If the trucks you want to use have the same truck bolster profile I see no reason why another manufactures truck can be used.

The first step in the process of building this car frame is the fabrication of the two car bolsters. The car bolsters are made out of 1/2" X 4" plate stock. The stock is cut into 7 1/2" pieces, during the cutting cut the 3/4" bevel in the ends of the bolster.

The next step in the fab of the car bolster is to drill the holes for the mounting to the cars center rib and the hole that will accept the bolt that makes the king pin for the truck. The center hole in the car bolster is a 3/8" clearance hole, the other two holes are the mounting holes for the car bolster to the center rib. The mounting holes are drilled to be a 1/4" clearance hole then the holes are countersunk so the heads of the mounting bolts stay flush against the surface that the truck bolster slides on.

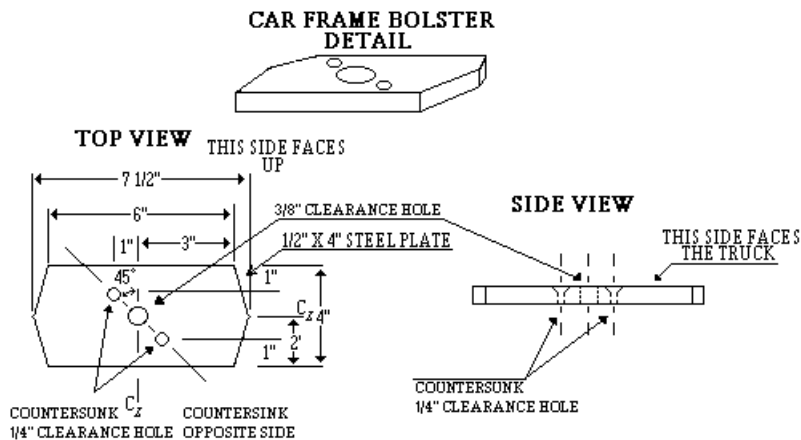
Once two car bolsters are fabricated the next item is to fabricate the center rib of the car. The 1" X 3" tubing is drilled to accept the two car bolsters the 3/8" hole is drilled through so that when the king pin is installed it drops all the way through the center rib and the car bolster. The two 1/4" holes are drilled through the center rib and the holes opposite of the mounting surface of the car bolster are drilled out to 3/8".

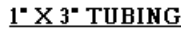
This drilling is done on both ends of the center rib. Once this is done the next operation is to drill 3/8" clearance holes to accept the bolts for the couplers. This is repeated for the other end of the center rib.

ASSEMBLY:

Once all the drilling has been completed assembly of the base frame will proceed quickly. Bolt the car bolster to the center rib with 1/4" 20 X 3/4" countersunk allen head bolts. Make sure the center hole for the truck king pin is aligned with the 3/8" hole drilled in the center rib. Secure the 1/4" 20 bolts with 1/4" 20 Shake proof nuts on the side of the center rib that was drilled with the 3/8" holes opposite of the 1/4" holes. Repeat for the other bolster. Next install the couplers into the ends of the center rib then mount them with a 3/8" X 1 1/2" though the 3/8" clearance holes drilled into the center rib. Secure the bolt with the 3/8" 16 shake proof nuts do not tighten to tight. We want to allow the coupler to pivot on the bolt inside the center rib. The last thing to do to the car at this point is to drop the trucks on it. Set the 3/8" washer on the top of the truck bolster to provide a thrust surface ,lubricate well with grease, align this with the center hole in the car bolster, then drop in the 3/8" X 3 1/2" bolt to act as the king pin for the truck. Secure the bolt with a 3/8" shake proof nut. Tighten the nut to where the nylon keeper on the nut just has the thread of the bolt through it. Repeat this process for the other truck.

At this point the frame itself is runnable, now the fun of detailing it into the tank car.





Exploded view diagram of a truck assembly. Components and dimensions shown include:

- 1/4" SHAKE PROOF NUT** (two locations)
- 3/8" X 3 1/2"** (rod dimension)
- 3/8" X 1 1/2"** (rod dimension)
- COUPLER** (two locations)
- 3/8" SHAKE PROOF NUT** (two locations)
- 1/4" X 3/4"** (rod dimension)
- 3/8" WASHER** (two locations)
- TRUCK** (two locations)