

## 3S Trailer Suspension

### Meeting # 8

**Start Date & Time:** Tuesday, 6/30/2020, 12:00pm

**Members Present:** Caitlin, Anson, Robert, Kirk

**End Time:** 1:00pm

#### **Last Meeting:**

- Schedule is good to go!
- PRD is fixed
- Fixed User installation time
- Updated FOS
- Fixed Overall Length
- Fixed Shipping weight
- Working on Mounting/interface requirements
- Fixed Surface Finish
- Fixed Durability requirements to hours
- Fixed Reliability requirements to 90%

#### **Today's Objectives:**

- Wiki-Pages
- Design concepts for a visual representation
- Start Calculations
- Send Swenson Design and links to purchase materials

#### **Notes:**

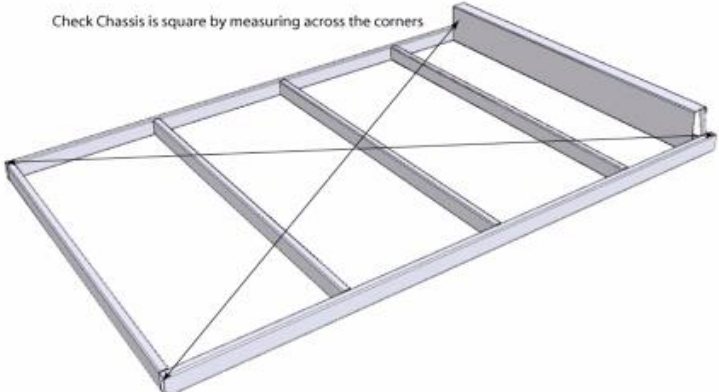
- Robert is the 'Wiki-Master'
- Aluminum is normally what they are made of - super hard to weld
- Angle iron - 'quick weld on' for an open
- "Build your own trailer"
- Assume square or rectangular tubing
- Basic model - for 3D printing - 60/30 split of where axle will go
- 3D printing out by tonight
- It's a big design and cost - from spring to shock absorber
- Email and contact Swenson to arrange meetings? If we need more

- Need to adjust budget because we aren't doing shock absorbers
- Need 3D visual and send budget email today to Swenson
- We kind of want our design to look kind of like this this general form

tone 2020 VLab Uldaho One Drive NCEES Quizlet doi:10.1016/j.comb... Video Conferencing... My

Tack weld all the components together with one or two welds and measure across the trailer frame diagonally for squareness. Both measurements need to be taken from the same point of the chassis as each other and the frame will be square once both measurements are exactly the same.

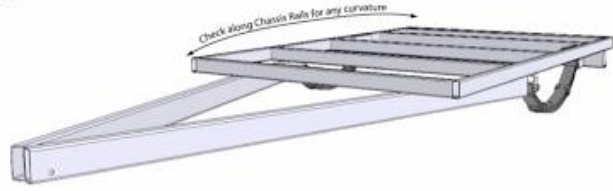
Check Chassis is square by measuring across the corners



Where one measurement is longer, divide the difference between the two measurements and gently knock the longest corner of the frame to match the shortest side plus the difference in measurement. > for example – if the shortest reading is 86 1/2" and the longest is 87", the difference between the two is 1/2".

Divide this in half- 1/4" - then knock the longest corner so your tape reads 86 1/2" plus 1/4" (86 3/4") Re-measure, divide and keep adjusting the frame until both measurements are exactly the same.

Once the frame is square, you will need to clamp or sandbag the frame to prevent any movement while the frame is being welded.



Work your way around the frame welding all the components together. If you have welded the frame on the floor of the workshop, lay a couple of good welds on all the components and lift the frame up onto your trestles or stands, recheck the frame squareness and finish welding of the frame.

- Focus on the mounting for this trailer
- Images will be sent to Swenson - pictures of the suspension
- Separate parts for scaling
- Go through stress calculations - to make sure scale can be found in parts
- Rob can't get the wiki-page to work - he emailed Ankit already
  - Rob will get on that ASAP
- Has anyone actually looked at the pre-designs?
  - Kirk has and it going to talk later
  - Caitlin is going to setup her remote access
- Concepts for designs – Get on it
- Calculations start today
- Small scale prototype is sized relative to itself appropriately
- We aren't just changing the concept - the lever arm can be more efficiently designed

- Send Swenson a link to our wiki-page when we finally get it set-up
- What's the best thing for solid works sharing? Rob is going to email Ankit
- Caitlin - needs access to senior design
- How are we going to mount just a spring?



## Speedway Basic Coil Spring Rear Suspension Kit, 3 Inch Axle Tube

Universal Fit, Rear Position, 100 - 199 lbs. Spring Rate Range, 175 lbs. Spring Rate, Painted

★★★★★ 5 Reviews | 5 Answered Questions

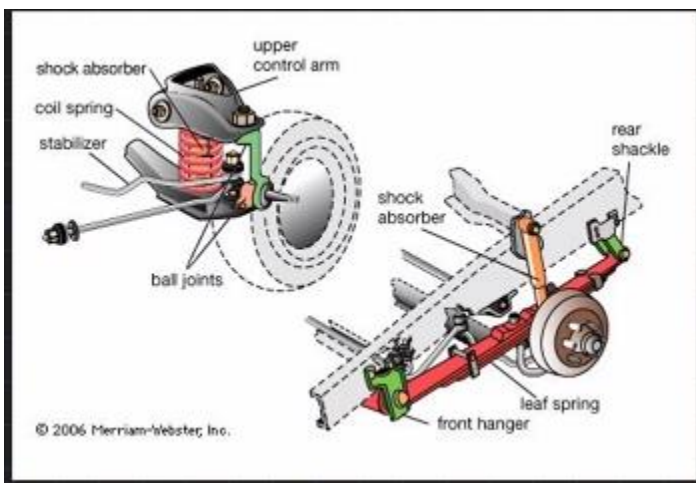
Select your vehicle to verify fitment. [Select Vehicle](#)



- These pictures are for mounting the springs
- Pinch point?? - cylinder around spring?
- Rubber plastic coverings?



- Bimetallic materials - if 2 materials are together one might corrode the other?
- We are actually going to do Steel all the way around for attachment points



- Caitlin and Anson start looking at springs and bearings for 2000lb
- Rob and Kirk start looking at 2000lb 3D model
- Break out rooms to work on our tasks separately

#### For Next Time:

- Fix Budget
- Send link to Swenson for Purchasing

- 3D visual representation – send to Swenson
- Calculations and Sizing for 2000lbs
- Send Swenson Wiki-page link

#### Comments/Concerns/Reflections from Today:

- Links for the Spring mounting sites we looked at
- <https://www.tmrcustoms.com/products/coil-spring-buckets-mounts-assembly?variant=29030823395405&currency=USD>
- [barnes4wd.com/Coil-Spring-Brackets\\_c\\_33.html](http://barnes4wd.com/Coil-Spring-Brackets_c_33.html)
- [https://www.speedwaymotors.com/Upper-Weld-On-Coil-Spring-Mounts-PR-4432.html?sku=91645100&utm\\_medium=CSEGoogle&utm\\_source=CSE&utm\\_campaign=CSEGOOGLE](https://www.speedwaymotors.com/Upper-Weld-On-Coil-Spring-Mounts-PR-4432.html?sku=91645100&utm_medium=CSEGoogle&utm_source=CSE&utm_campaign=CSEGOOGLE)

Next Meeting Time & Date: **Wednesday, 7/01/2020 @ 9:30am**