

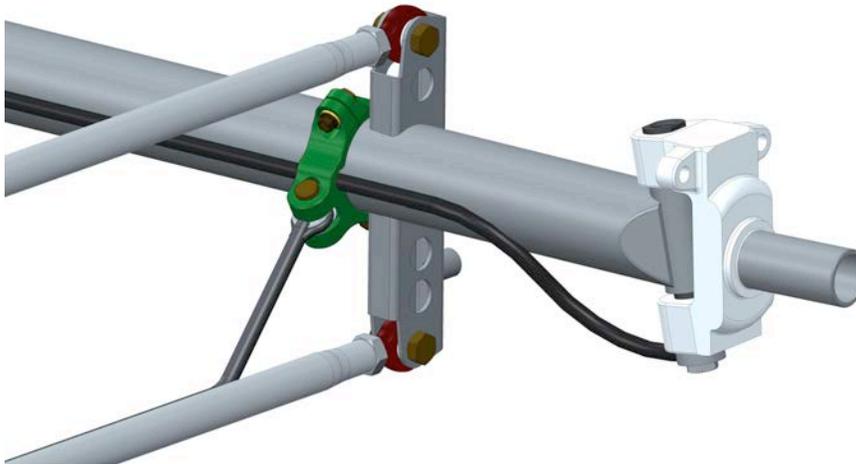
Technical Bulletin – 14002

Date: 8/13/14

RE: CRA-100-120 (2.25), CRA-100-121 (2.375), & CRA-100-122 (2.5) Tether Upgrade To Clamp System

After observing several sprint car crashes this year, the first year of mandated axle tethers in the World of Outlaws and at Knoxville Raceway, C&R Racing Inc. and Amick Racecar Restraints are suggesting the following upgrades and procedural changes.

The C&R/Amick front axle restraint system currently utilizes 2 designs. The most common application is to bolt the tether to the radius rod boss on the frame and onto the radius rod mount on the axle. The second application utilizes the C&R billet aluminum bolt on clamp, shown in green (see above for part #).



We have seen several failures with the “bolt to bolt” mounting procedure where the mount has broken off the axle with no damage to the tether. Without being able to control the weld, material integrity, or design of these mounts, **we are highly suggesting upgrading to the clamp system.** This billet clamp will utilize the same tether length as the axle bolt up design. The clamp has provisions to capture the most crucial component to the axle restraint system; the king pin tether.

We would like to qualify this suggestion with the fact that bolt on axle clamps have also failed in certain crashes. When the axle breaks, it distorts the round tubing, which can distort and loosen the aluminum clamp causing the clamp to be pulled off the axle. Utilizing the axle clamp does eliminate concern of the weld/material integrity on the radius rod axle mount. **Incorporating the king pin tether inside the billet axle clamp greatly reduces any chance of the complete axle or a tire, wheel, and axle assembly leaving the racecar. As of now, this is the most effective system available to restraint all front axle components.**

C&R/Amick offers a choke style front axle tether that will choke around the front radius rod upright of the frame.



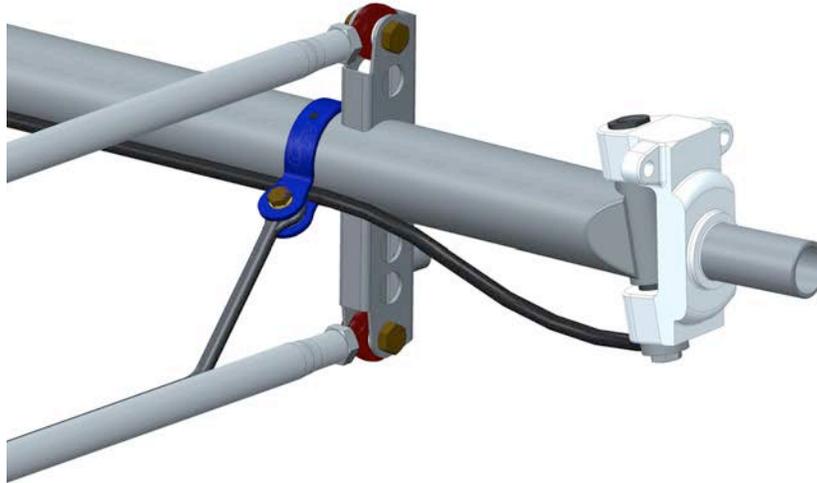
The choke style application hasn't proven to perform any different than the bolt on style of termination to the frame upright.

We do suggest that the tether spool be bolted between the rod end and the boss on the radius rod upright.



This is an update from the earlier schematic showing the tether spool on the outside of the rod end. Although we haven't seen any failures with the outside mounting procedure, we feel it will capture the tether spool better on the inside of the rod end. **We highly recommend the axle tether route to the inside of the furthest forward (radiator) upright then go to the axle. This eliminates the chance of the broken axle being able to reach the cockpit.**

Together, C&R and Amick have designed and tested the **4130 axle strap**; a new attachment system which will greatly reduce the chance of the tether failing to stay attached to the axle.



XX+0.1
XXX+0.01
XXXX+0.001
ANG +/-0.5

It utilizes a .125 thick 4130 strap that will rosette weld to the axle, shown in blue. **Our testing certifies this strap to withstand 15,000+ pounds of force.** It will stay attached when the axle breaks, even if the axle tubing distorts which can cause the billet clamps to potentially come off. The king pin tether will pass inside of the bolt that attaches the axle tether.

This strap system has been through several designs and pull-tests. We have submitted this design to the World of Outlaws and Knoxville Raceway officials for evaluation. We highly recommend this strap design become mandatory for 2015. Not only is it a more effective design; it's much less expensive than the billet clamps and can be built into the axle system at the time of manufacture. It greatly simplifies the axle restraint system.

Racing cars is a very dangerous sport and C&R is committed to keeping our customers as safe as possible when out on the track. We want to thank the World of Outlaws and Knoxville Raceway for leading the way in ensuring safety for all drivers. There are no 100% effective safety solutions.

We welcome any inquiries and are here to answer any questions. Please call sales @ 317-293-4100. All parts are also available through our distributors and dealers. More information will be on the C&R website: www.crracing.com.

Thank You
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C&R Racing, Inc.