

Kub Kars Tips

(A Series of Articles from Trailways – Scouting News: SCOUTNB)

Week of Jan 30, 2006

Today we begin a series of articles on how to build a Kub Kar for more exciting competition during the upcoming racing season. As Cub Leaders, let's 'Do Our Best' in preparing the Kars equally so that as many Cubs as possible have as much fun as possible.

Some of the things I've learned while helping to build Kars are included here for your information. Anyone willing to share his or her 'secret' technique is encouraged to do so.

Many packs use some of their meetings to carve, paint and attach wheels to the Kars, using the resources and expertise of leaders and parents to help all the cubs build their racers. This results in the Kars being more evenly matched, making the event much more fun for the Cubs. This is **STRONGLY RECOMMENDED!**

Installing the wheels securely and carefully aligning the wheels and axles goes a long way towards having all the Kars run about the same speed, giving every cub a chance to win at least a few races.

Minimizing friction is one way to get the Kar to run at least reasonably fast. Friction between the wheels (hubs) and body can be reduced by not painting where the hub rubs on the wood. Always paint the Kar before installing the wheels, leaving the contact area unpainted. A coat or two of a good paste wax on the contact area will help reduce friction; remember that bushings are not allowed! Dry graphite is a traditional lubricant, but may get contaminated from Kars using oil and may wear out during extensive racing. Applying more lubricant after racing begins is not allowed. Some people use Teflon powder while others use light oil such as sewing machine or watch oil. Others use a silicon spray, such as Slick & Shine from Home Hardware, to lubricate the axles and wheels. Care must be taken not to over apply the silicon spray to avoid damaging the plastic or contaminating the track.

Modification of the tread area of the wheel is not allowed, although fine sanding is permitted. The hub area may also be lightly sanded and slightly modified; extensive changes may result in the Kar being excluded from racing. Modifying the body at the contact area is permitted (hint: cut away some of the contact area, leaving only a minimal contact).

Smoothing the axle will also help reduce friction. Methods vary, but the first step is to file off the small burr often found under the head of the axle (nail) using a fine file and sandpaper. A slight bevelling of the underside of the head of the nail is permitted. Sanding the axle with very fine sandpaper while spinning the nail in a drill will help; some people use rubbing compound as a final step. More on friction reduction next week.

Week of Feb 6, 2006

Last week we discussed the importance of having smooth axles to reduce friction; the next step is installation and alignment of the wheels. Installing the wheels securely and making wheels and axles identical for all the kars goes a long way towards having all the kars run about the same speed, giving every Cub a chance to win at least a few races. Leaders are encouraged to make the activity as much fun as possible!

The wheels are fitted into the existing grooves in the kit block and aligned as accurately as possible. Allow about a 3mm gap between the hub and the body of the kar for freer movement of the wheel on the axle. Care should be taken to have all four wheels touching the track to distribute the weight better, although some maintain that three on the ground seems to work equally well! After the axles have been inserted into the groove, placing a piece of metal or other material in the groove and tapping them firmly in place will ensure a better alignment.

Generally, the grooves in the bottom of the block are sufficiently accurate for correct alignment of the wheels. If not, or if damage occurs to the grooves, substitute grooves may be necessary. Two hacksaw blades together are about the right width. The new grooves must be the same distance apart as the originals and in the same position in relation to the end of the kar.

A straight-running kar will not rub excessively against the track's centre ridge during its run, hence increasing speed. A simple test is to push the kar across a level surface and see if it runs in a straight or nearly straight line. A kar pulling to the left may be adjusted by pushing the left wheel forward slightly and if pulling to the right, forward adjustment of the right wheel may solve the problem.

Attention should also be given to whether or not the wheels are outboard (touching the head of the nail) or inboard (touching the body of the kar) after a short run across a level surface. Realigning the wheels so they travel mostly in the middle of the centre of the axle will improve performance. This may be done by pushing a wheel downward if running on the outside and pushing upward if the wheel is touching the body of the kar.

Following alignment, some method of firmly securing the axles is recommended. This will preserve the alignment and especially avoid the disappointment of a wheel falling off during racing. The simplest way is to mix white glue and some of the sanding dust and press it into the groove, being careful not to touch the wheel. This also allows removal and replacement of the wheel without changing the alignment. Other methods, such as hot glue, may also be used. Next week we will discuss lubrication.

Week of Feb 13, 2006

Today in our series of kub kar building hints, the importance of lubrication of the hubs and axles and the weight of the kar will be discussed. Dry graphite is a traditional lubricant, but may get contaminated from kars using oil and may wear out during extensive racing. Some people use Teflon powder, others use light oil such as sewing machine or watch oil while some kar builders tout 'Skin so Soft' as an excellent lubricant! Others use a silicon spray, such as Slick & Shine from Home Hardware, to lubricate the axles and wheels. Care must be taken not to apply too much silicon spray to avoid

damaging the plastic or contaminating the track. Another thing to keep in mind is that most rallies do not permit lubrication of the kar after racing begins, so a single lubrication has to last through all the races. Adding weight to the maximum permitted 142 gms is another way to increase the kar's speed down the ramp. Weight provides more momentum on the flat part of the track. While most kars cover the length of the track faster if they are close to the weight limit, there have been notable exceptions.

Various theories exist concerning weight distribution, but generally an even distribution provides equal weight on each wheel. Experience with the weight concentrated at the back of the kar shows that the kar tends to bounce off the track if it encounters a bump during the run. If the flat weight available at the Scout shop is placed on the bottom of the kar and not countersunk, it may catch on the rundown part of the lane after the finish line, throwing the kar off the track! Placing the weight on the bottom or top of the kar seems to make little difference. More on weight next week.

Week of Feb 20, 2006

Today we finish the series on kub kar building by describing how to add weight to the kar to bring it close to the maximum allowable 142 grams. Zinc weights in the form of a half cylinder or a flat wedge are available at the Scout Shop and have breakaway portions to adjust the overall weight of the kar. The flat weight may be attached to the bottom of the kar by countersinking it into the body or it may simply be fastened on top. If it is not countersunk when placed on the bottom, it will drag on the rundown lane after the finish line and the kar is likely to bounce off the track! While considerably more expensive than the traditional lead weight, it is considered non-toxic because melting and pouring the substance is not involved, as sometimes happens with lead weight. If lead is used by melting and pouring into holes in the kar, care must be taken to have adequate ventilation and avoid the fumes. The procedure must be performed away from children at one's own risk. Another source of weight is a strip with an adhesive backing and breakaway portions used in balancing aluminum rims and available at auto supply stores. These strips weight 84 gms with portions of 7 gms.

Finally, producing a kar weighing close to the limit often leads to frustration and delays on the day of the rally. The scales used on rally day are official and kars deemed to be too heavy must have the excess weight removed. If you must push the limit, build the kar so that a small portion of the weight can be easily removed.

Most important of all, building and racing kub kars should involve sportsmanship, fair play and fun!