

# AL LACKI'S ENGINE CART ASSEMBLY NOTES

## **BEFORE STARTING.**

Please refer to the drawings and photos at the end of this document.  
FOR MORE PHOTOS, LOG ON TO FACEBOOK USING THIS ADDRESS.  
<https://www.facebook.com/media/set/?set=oa.10152545415424017&type=1>

## **DESIGN BASIS.**

This engine cart is designed for usage with Craftsman aluminum ATV jack. It should be possible to use this design with other ATV jacks, too.

## **ENGINE SHROUDS: YES or NO?**

This engine cart is designed for removing and installing Corvair engines that have the lower shrouds installed. The shrouds support the weight of the engine without any problem. If your Corvair engine has no lower shrouds, then replace the 2x6 Upper Runners with 2x4s. Be sure to space the 2x4 upper runners so that the shroud mounting lugs, (which extend outward from the crankcase on each side of the oil pan), fully rest on the tops of 2x4 runners. I have built and used another copy of this engine cart for an engine with headers, using 2x4s for the upper runners, and it works fine.

## **MAIN BEAMS.**

Main beams are constructed of 2x6 douglas fir. Lengthwise runners are 33 inches long. Cross members are 30.5 inches long. It may be possible to construct this cart with white pine, but douglas fir is significantly stronger. All wood and hardware purchased at Home Depot. The friendly folks at Home Depot sawed most of the wood pieces to length for me, saving me lots of time fussing with my Skill saw.

## **JACK RAIL GUIDES.**

The runners on the ATV jack slip between 1x2 wooden guide rails on the bottom of the cart to ensure the load is centered, left-to-right.

These jack rail guides are made of cheap 1x2 white pine. They bear no load.

## **FASTENERS.**

Screwed together with self-piloting SPAX wood screws. SPAX makes a wide variety of screws. I used their #9X 2.5 inch TStar-headed multi-material construction screws. No pre-drilling is required. After you try them, you'll never go back to conventional phillips-head screws.

<http://www.spax.us/en/multi-material-construction-screws/t-star-plus-flat-head.html#.U6QWafldVDQ>

## **CASTER WHEELS.**

Casters are 5 inch diameter, enabling the ATV jack to be pulled out from underneath the cart when the cart is lowered to the ground.

The casters are positioned outboard so that the ATV jack can be pulled out from beneath the cart once it's lowered to the ground. Those little casters on the rear of the jack have a narrow track, but the casters on the front of the jack have a much wider track; I spaced the big casters on the cart to clear the wide-track casters on the front of the jack.

### **COST OF MATERIALS.**

The cost of materials for the cart is nearly \$80. The wood is cheap. The money is in the casters, bolts, nuts, and washers. You really don't need the casters, but they make it so easy to roll the assembly around, once it's lowered down to the floor. I should also mention that I used four swivel casters instead of just two, which makes it even easier to roll it around with the powertrain on top. At night, I'd simply roll the whole thing behind my Corvair in the garage, freeing up the other garage bays for my other cars to park.

### **INSTRUCTIONS FOR USE.**

The engine cart should be positioned under the power train so that the bolt lugs on the bell housing rest on the front cross-member of the cart. This position provides a good balance (center of gravity) with and without the transaxle attached to the engine.

### **OPTIONAL TRANSAXLE CRADLE.**

The transaxle cradle shown in the photos is designed for use with 1966-69 Corvair manual "Saginaw" transmission. Most likely, it will NOT work with Powerglides and earlier Corvair transmissions, although it could be modified to do so.

To use the transaxle cradle, it is necessary to remove the top brace, place it on the ATV jack, and jack it up until the cradle nestles the transaxle. Then, re-install the top brace. It is screwed to the uprights with SPAX screws.

The uprights and a top brace which keep the transaxle from rolling onto its side after it has been detached from the bell housing. This aids in aligning the bolt holes when re-installing the transaxle to the bell housing.

In the photos, you'll see that the transmission mount cross-member is still attached to the front of the transmission and that the cross-member rests on the transaxle cradle. But I believe you can still use the transaxle cradle, even if the cross-member isn't present. If not, it should be easy to add a wooden brace to keep the front of the transmission from dipping down.

### **ALIGNMENT PINS.**

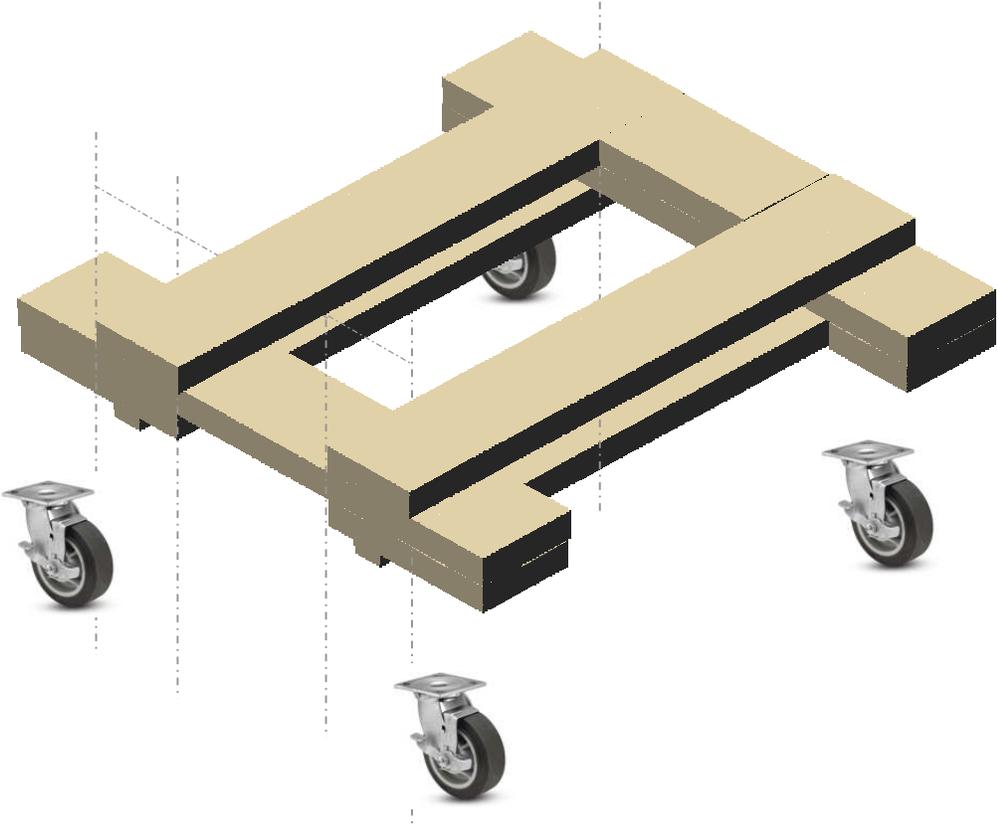
Another trick for separating the differential from the bellhousing, and joining them back together again, especially for manual transmission power trains: Use alignment pins.

Corvair experts, Matt Nall & Dave "Motohead" Watson, have advocated the use of "guide pins" for splitting the transaxle from the engine. I took their advice and that saved me from any concerns about cracking the differential snout. In addition, when you reassemble the diff to the bellhousing, the pins make it infinitely easier to get the input shaft seated back through the clutch splines and into the pilot bushing. I have used the engine cart (pictured above) and alignment pins on a number of Corvairs for me and my friends.

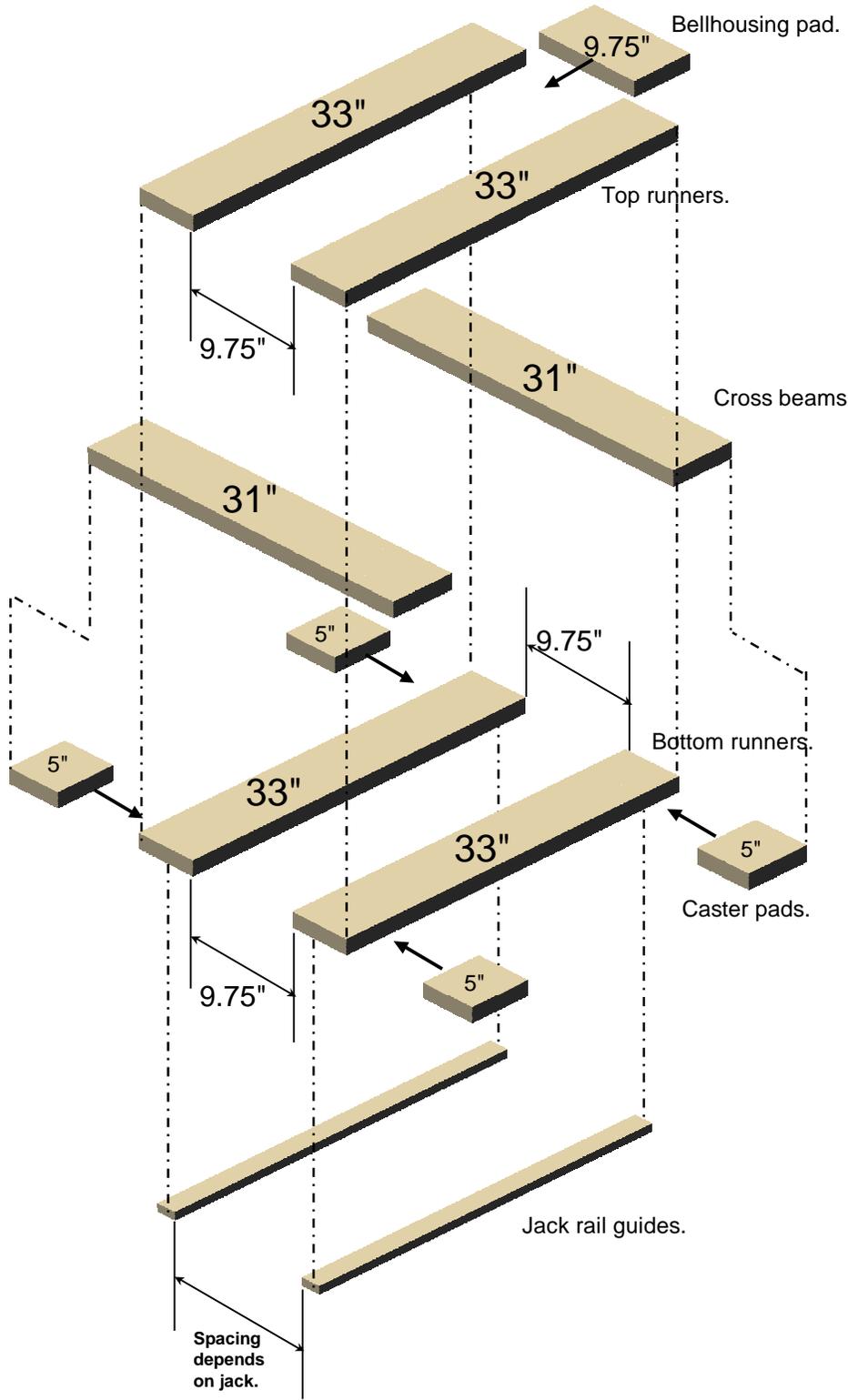
To make the pins, simply buy four (or more) cheap 6" x 3/8 coarse-thread bolts (16 pitch). Four pins is the minimum. Chop off the heads and slot both ends of each so you can screw them in with a screw driver. The photos below were posted by one of the guys on the Corvair Center Forum.

A little prep work like this can save you hours of agony later on.

# ENGINE CART ISOMETRIC DRAWING



# ENGINE CART EXPLOSION DRAWING



# ENGINE CART & TRANSMISSION CRADLE PHOTOS



# ALIGNMENT PINS FOR SEPARATING TRANSAXLE

