# AL LACKI'S ENGINE CART ASSEMBLY NOTES

**FOR 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.

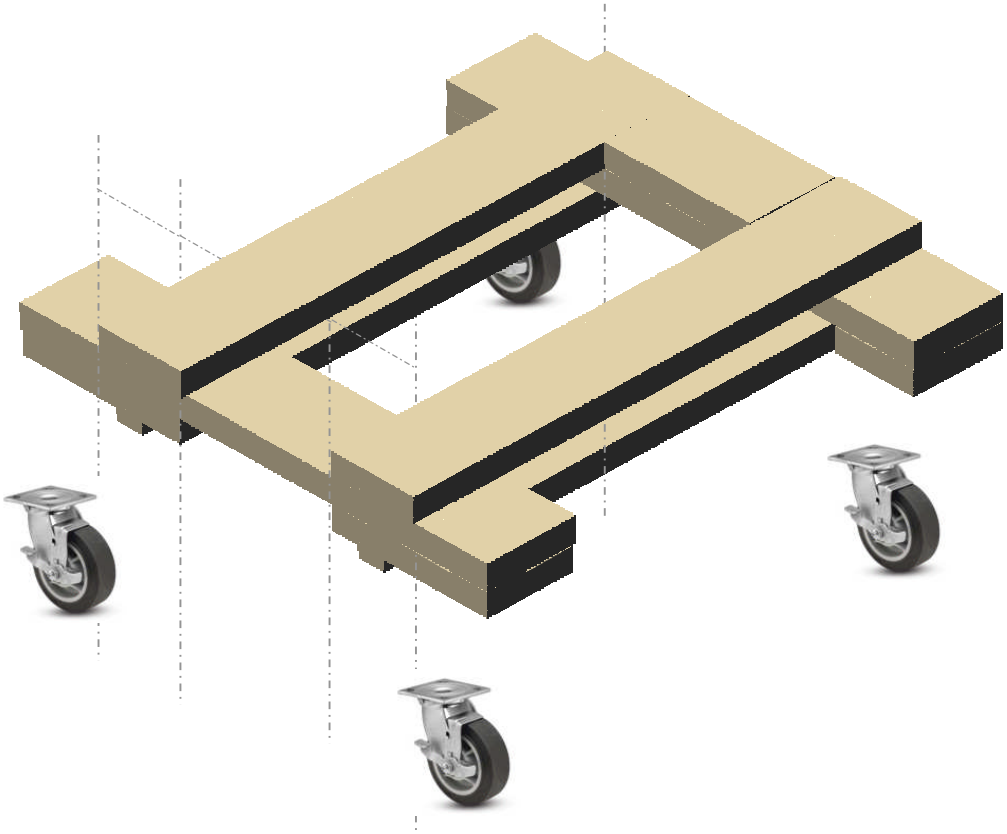
http://www.spax.us/en/multi-material-construction-screws/t-star-plus-flat-head.html#.U6QWafldVDQ

**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.

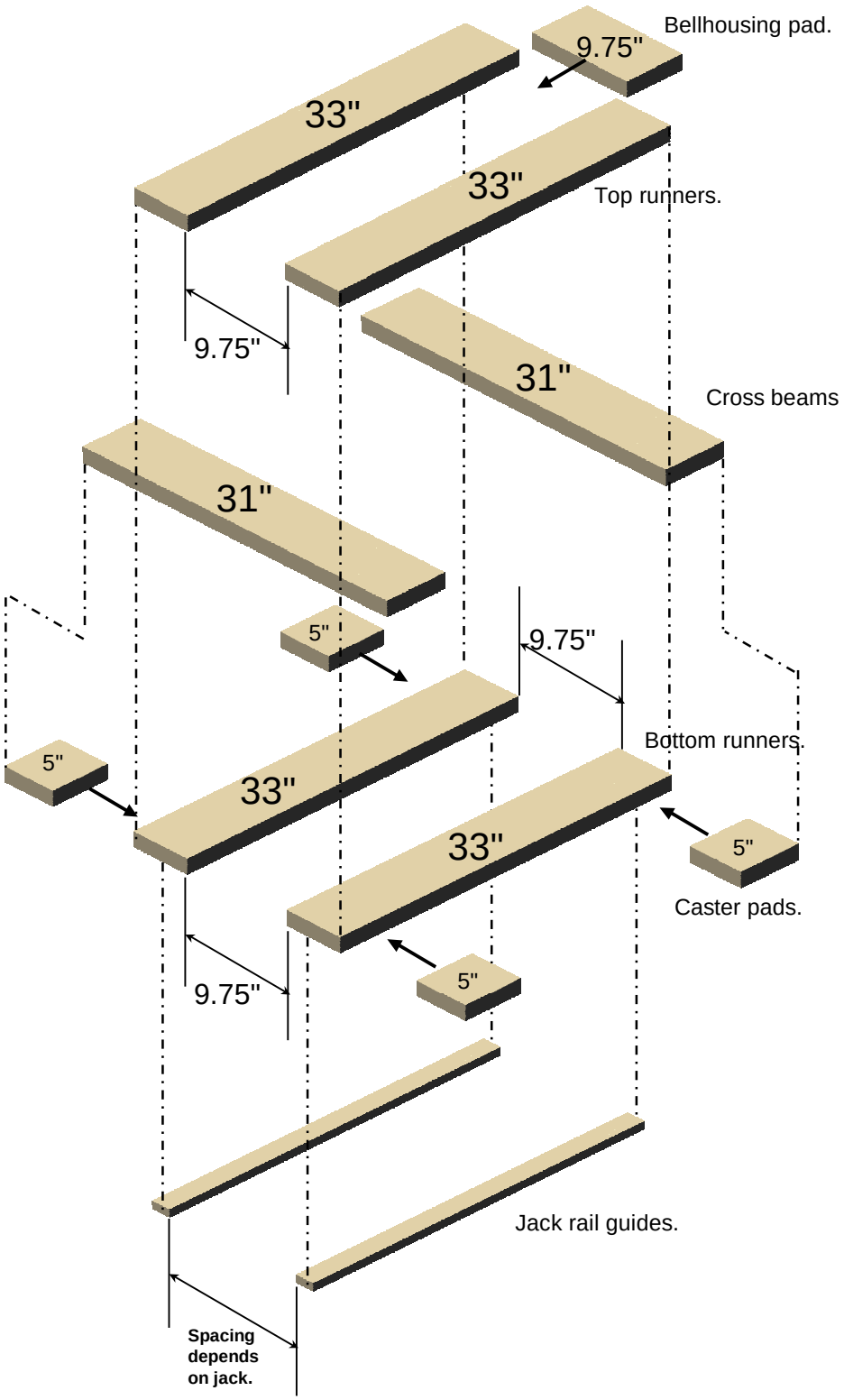
The casters are positioned outboard so that the ATV jack can be pulled out from beneath the cart once it's lowered to the ground. Those little casters on the rear of the jack have a narrow track, but the casters on the front of the jack have a much wider track; I spaced the big casters on the cart to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

# AL LACKI'S ENGINE CART
# ISOMETRIC DRAWING



# AL LACKI'S ENGINE CART
# EXPLOSION DRAWING



# HOW TO DRAW OBJECTS IN ISOMETRIC USING PAINT.NET

## FOR PAINT.NET

To draw in 3D, follow this path from the Paint.Net toolbar:

Effects - Render - Shape3D

To draw a standard Isometric drawing in Shape3D, use these settings:

To draw a box, simply open a new file, open Shape3D, and proceed to set the scale, dimensions and the following settings:

| | |
|---|---|
| Camera Angle = 1 | |
| Object Rotation: | |
| Axis 1 = x axis = | 45 |
| Axis 2 = y axis = | 323.4 |
| Axis 3 = z axis = | 330 |

Do your drawing in Shape3D, save it as a GIF with full transparency.

## FOR EXCEL DRAWING TABS

After you save your isometric object drawings in Paint.Net, you can import them as pictures in Excel and work with them. Here are some tips:

Scale: 0.182424

| Real Inches | Scaled Inches | |
|---|---|---|
| 1.5 | 0.273636 | true dimension 2x6 lumber |
| 5.5 | 1.003333 | true dimension 2x6 lumber |
| 5 | 0.912121 | |
| 9.75 | 1.778636 | |
| 30.5 | 5.563939 | |
| 33 | 6.02 | |