



DIY Motorcycle Jack Stands - By Kent Hartland

This is a plan for two motorcycle jack stands designed to fit a Yamaha V-Star but may work on other bikes with similar frame and fork widths. They made primarily of standard 2" x 6" lumber, glued and screwed with stiffeners to add rigidity. The stands can be hung on heavy wall pegs when not in use.

The design criteria: they had to be stable, strong, as compact as possible to not take up floor space, and to not interfere with access to the motorcycle.

With the motorcycle on the stands, both wheels can be spun or removed. A separate removable piece is provided to support the weight of the rear wheel while removing / replacing the wheel. The rear suspension can be worked on, too, although the fork cannot be serviced since it bears the weight of the front of the bike. Use your motorcycle jack for that. The bottom engine area, brakes, wheel bearings, exhaust system and transmission can all be worked on while on these stands.

The stands are very sturdy and stable. Although its not recommended, you can mount and dismount from the motorcycle while on the stands with no wiggling or movement at all. No straps or tie downs are needed although you could certainly add eye bolts for those if you desire.

To use the stands, raise the bike using a standard motorcycle jack such as a Craftsman or similar unit. Slide the stands in place, lower the jack and move it out of the way.



Caution: most motorcycle jacks do not raise and lower the bike straight up and down like an elevator. It swings it in an arc, like your forearm when you curl a dumbbell. So, as you lower the bike onto the jack stands, go slow and easy since you may have to scoot the stands under the bike as it comes down. Failure to watch this could result in the bike settling uneven or even falling.



The rear stand cradles the frame horns, supporting the weight and preventing the frame from sliding off the stand.



You may make the outer upright come up a little higher to secure the frame tube, but make sure your jack can raise the bike high enough to clear it. The stiffener panel - prevents the stand from flexing laterally.



The front fork is cradled in a V slot. The soft wood does not mar the finish of the fork.



The brake rotors just clear the uprights. The front uprights are 7.5" apart, just clearing the rotors and preventing lateral shifting. Stiffener panel adds rigidity.



The rear wheel support plate is removable. A hinged piece at the right end folds down to support that end of the plate up when in use.



The rear wheel support plate helps in aligning the axle bolt when installing the wheel and to support the weight of the wheel while removing it. You just lay it on the back of the rear jack stand and drop the hinged leg.

Please be aware, I have just finished this. It is a prototype. Please approach your implementation accordingly. My dimensions may be improved upon, maybe yours could be a little lower or wider, etc. Yes, you could make the same concept out of metal. I didn't because of the cost.

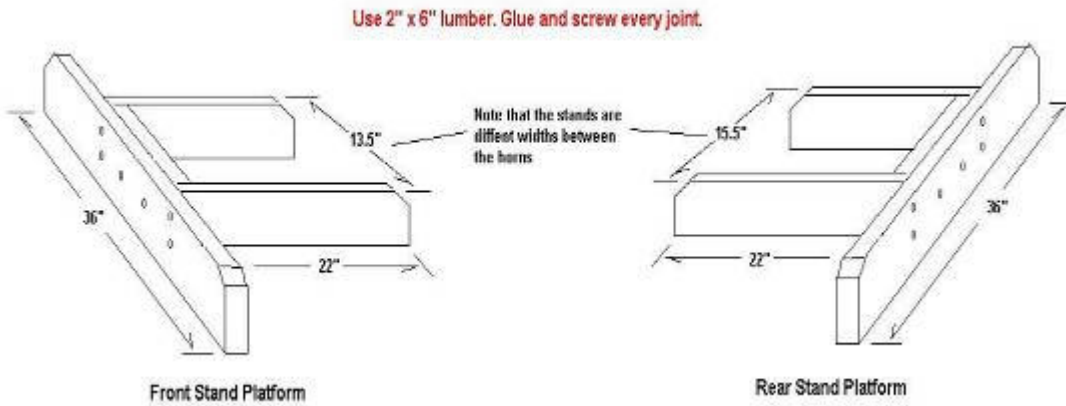
I considered putting the stands on casters so the bike could be moved around. I didn't for two reasons. If one of the casters breaks or the caster axle pulls from its stamped-steel boss, the bike could fall. Even if you use heavy-duty casters, there is an inherent strain on a caster due to the offset way the caster is made. If you look at a caster from the side, the wheel swivels around the center on an offset so that you can push the object in any direction and the caster will follow. However, that offset means that the weight is not transferred straight down, it imposes a strain that will try to twist the mounting screws out of the bottom of the jack stand. After a while it might, or might not, pull the screws out and fail, dropping your bike (it wouldn't be a problem on a metal design if you welded the casters in place).

Even if that doesn't happen, if you are rolling the bike across the shop and a caster encounters an object on the floor, like that flat washer you dropped last week and couldn't find, it may tend to cause that caster to screech to a halt and the momentum cause the bike to fall over.

Casters would be very cool in principal. If you use them, get the real sturdy ones (you'll need at least eight) and remember to deduct their cumulative height from the height of the jack stand uprights. And be careful. And sweep the floor before you start moving the bike around so they don't get hung up on foreign objects.

Whatever you do, double check yourself, get things square and plumb, you're going to support 700+ pounds of expensive motorcycle over your body, don't get sloppy or scrimp. Otherwise, go for it! It looks complicated but it really isn't, maybe a half-day to build if you have power tools.

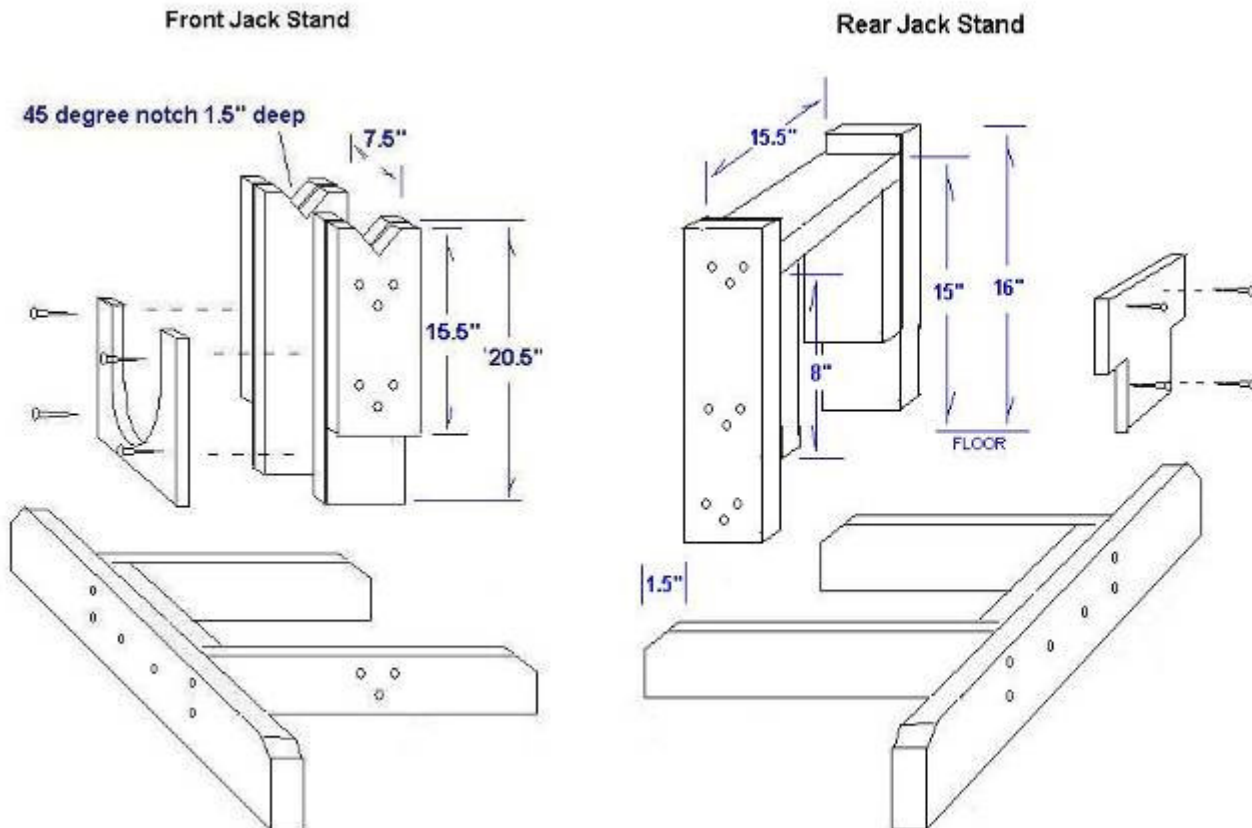
Plans:

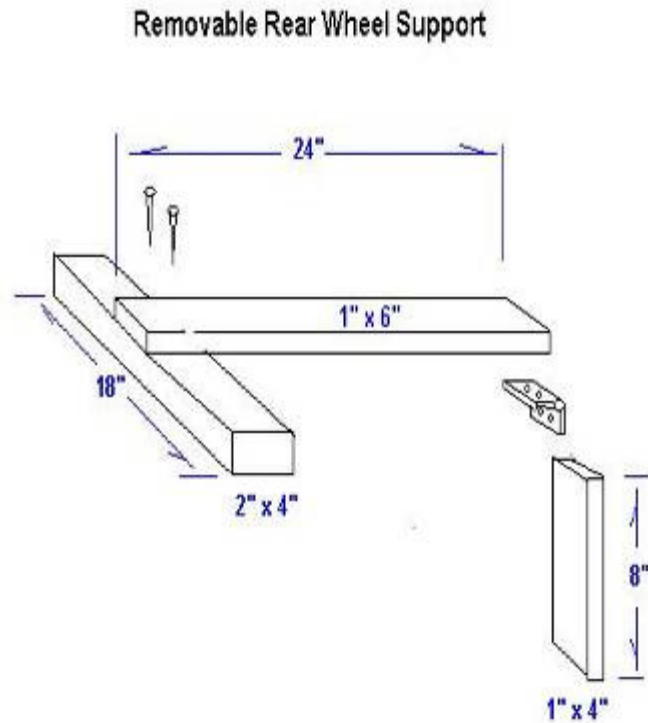
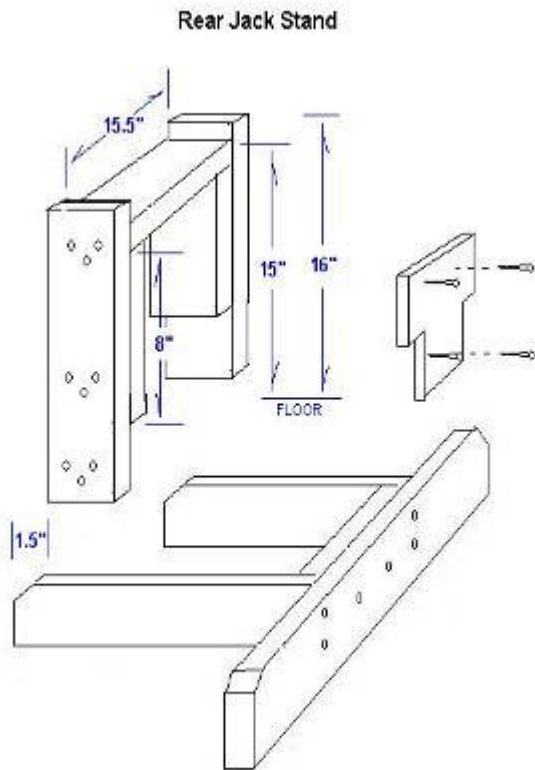


Drawing 1

Materials: You will need 4-5 eight or ten foot 2"x6" planks. I used scrap 1" x12"s for stiffeners and 1"x6" and 1"x4" scrap for the rear wheel support. You could substitute 1/2" or 5/8" plywood for the scrap in which case a 2'x4' piece of plywood should do it. Don't forget the hinge for the rear wheel support leg. Also, on the rear wheel support you could certainly substitute a 2"x6" for my 2"x4".

Note that the front and rear stands are different widths, shown in drawings below.





Final Notes: The critical dimensions are the distance between the bike's frame horns and the distance between the front brake rotors, as well as the maximum height your jack. Please verify those dimensions and adjust the plans accordingly if needed.

If your jack has a maximum lift height of 16.5", as the Craftsman does, the top edge of the rear support crosspiece needs to be about 15" from the floor and the bottom of the V notch in the front uprights needs to be about 19" from the floor.

Do not neglect the use of the stiffener pieces or to glue and screw all joints. Make sure you get everything square and plumb, you don't want the stands to wobble or lean at all when placed on a flat level surface. Only use the stands on a hard, level surface. Do not use the stands until the assembled units have set overnight so the glue can cure. Use good wood, wood glue and proper length screws. Before working on the motorcycle, verify that it is setting square and level on the stands and that it does not wobble. There are no warranties expressed or implied, use at your own risk, etc. etc.