HUB STANDS -- VERSION 5.4

Thanks for choosing our Alignment Hub Stands for your chassis setup needs. We hope you'll find them as handy, accurate, and easy to use as we do! Each stand has a max capacity of 1000 lbs, and fits both 4 and 5 lug vehicles with 12 or 14mm lugs, bolt patterns from 4x95.25 to 4x114.3, 5x100 to 5x130, and a hub center max diameter of 72.5mm. They will fit just about every vehicle under a 4000lb curb weight!

STOP!!!! SAFETY FIRST!!!

ALWAYS USE ON A LEVEL, SMOOTH AND HARD SURFACE LIKE CONCRETE!!! *ROLLER BALLS CAN LEAVE INDENTIONS IN SOFT ASPHALT AND CAN PREVENT MOVEMENT!* DO NOT USE ON ANY SORT OF HILL, GRADE, ETC... THE VEHICLE CAN ROLL AWAY, WHICH CAN RESULT IN VEHICLE AND/OR PROPERTY DAMAGE AND/OR INJURY!

DO NOT REMOVE ANY SUSPENSION COMPONENTS WHILE THE STANDS ARE INSTALLED, WITH THE WEIGHT OF THE VEHICLE ON THE STAND!!! IT IS OK TO LOOSEN CERTAIN SUSPENSION BOLTS TO ADJUST ALIGNMENT, BUT REMOVING THEM CAN CAUSE THE CAR TO FALL, JUST AS WITH A WHEEL/TIRE INSTALLED. WHEN USING HUB STANDS, ALWAYS SERVICE THE CAR AS IF THE WHEELS ARE STILL INSTALLED!!!

ALWAYS USE THE SUPPLIED WASHERS BETWEEN THE LUGS AND FRONT HUB PLATE SURFACE AND TIGHTEN SNUGLY, BUT NOT FULLY TIGHT. THE BACK OF THE HUB PLATE MUST SIT PERFECTLY FLAT ON THE HUB SURFACE. BE VERY CAREFUL AND GO SLOW WHEN LOWERING THE CAR TO THE GROUND AFTER INSTALLING THE STANDS. BE SURE THE HUBS ARE ROTATED IN SUCH A WAY THAT THE STAND TOUCHES THE GROUND EVENLY. BE SURE TO HAVE THE CAR IN NEUTRAL WITH THE PARKING BRAKE OFF WHEN JACKING UP AND LOWERING, AND AGAIN, ONLY ON A LEVEL, SMOOTH SURFACE!!! DO NOT ENGAGE GEARS OR ATTEMPT TO "DRIVE" THE CAR WITH HUB STANDS INSTALLED. THIS CAN RESULT IN VEHICLE DAMAGE AND POSSIBLE INJURY!

HUB STAND ASSEMBLY

Shown here are all the parts included for each hub stand. The main 3 parts are: Toe Bar, Hub Plate, and Base. Hardware listed in full kit quantities:

5/8" x 8" pivot bolt - 4x
5/8" split lock washer - 4x
5/8" hex nut - 4x
M12 lug washer - 20x
M14 lug washer - 20x
M12x1.5 Hex Nuts - 20x
M14x1.4 Hex Nuts - 20x
M8 flange bolt - 4x
Braided steel cables - 4x
Extension springs - 2x
3/8" hex nuts - 16x
3/8" split lock washers - 16x
3/8" flat washers - 16x
Roller balls with 3/8" stud - 16x
Roller Ball Spacers - 16x

NOTE: Some bases may be slightly warped from manufacturing process. This is not a defect. Bases are designed to flex under load to share the weight to all 4 rollers. This will not affect accuracy and will likely remain flat after the first use.

Install and securely fasten the four roller balls to the Base as shown, using the aluminum spacer between the base and the roller. On top, use a flat washer, lock washer, and secure with the nut.

Insert the Hub Plate into the center slot on the Base. Slide the pivot bolt through both pieces, add lock washer and secure with pivot nut. DO NOT OVERTIGHTEN.

HUB STAND ASSEMBLY (cont.)

Install the Toe Bar onto the Hub Plate using one of the M8 bolts in the threaded hole. TIGHTEN ONLY SNUGLY, making sure the left and right back edges of the Toe Bar sit perfectly flush with the front surface of the Hub Plate. **NOTE: The Toe Bars are designed to fit inside the small slots on the Hub Plate flanges to prevent them from rotating under cable tension, but are NOT designed to bottom out into the slots. The Toe Bar may tilt upward slightly when tightening the bolt. DO NOT apply enough torque on the bolt to bend the center tab into the Hub Plate. The center tab with the bolt should float above the Hub Plate surface with a small gap as shown. To ensure accurate toe measurements, the left and right tabs should be the only edges touching the front Hub Plate surface**

VEHICLE SETUP

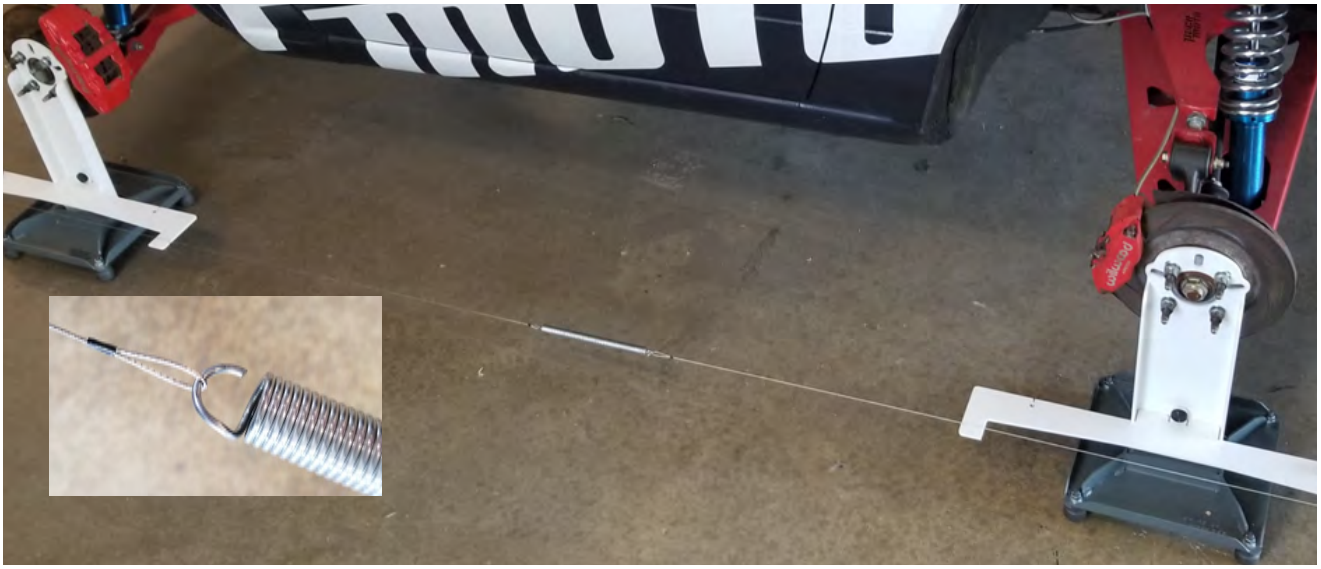
YOU'RE ON A FLAT, CLEAN, AND LEVEL SURFACE, RIGHT??

THE CAR CAN ROLL MOUNTED ON THESE HUB STANDS!!

Raise the car, remove the wheels, and install the Hub Stands as shown, being sure to use the included lug washers between your lug nuts/ bolts and the Hub Plate surface. **Always use the 14mm washers under the lugs, and if you have 12mm lugs, use the 12mm flat washers as well.** You will need to have the **car in neutral and the parking brake off** to orient the lugs such that the roller balls will contact the ground properly, and so the car's hub can rotate slightly when turning the steering wheel and making alignment adjustments. Use included 12mm or 14mm hex nuts in place of your standard lug nuts. Tighten lugs snugly, but **DO NOT OVERTIGHTEN**. **Full factory torque is not required or recommended.** NOTE: some cars have a different thread than 12mm or 14mm. In this case use care when using tapered lug nuts to secure the hub plate to your hubs, or acquire standard hex nuts in the matching thread to use instead, to prevent any damage to your "pretty" lug nuts.

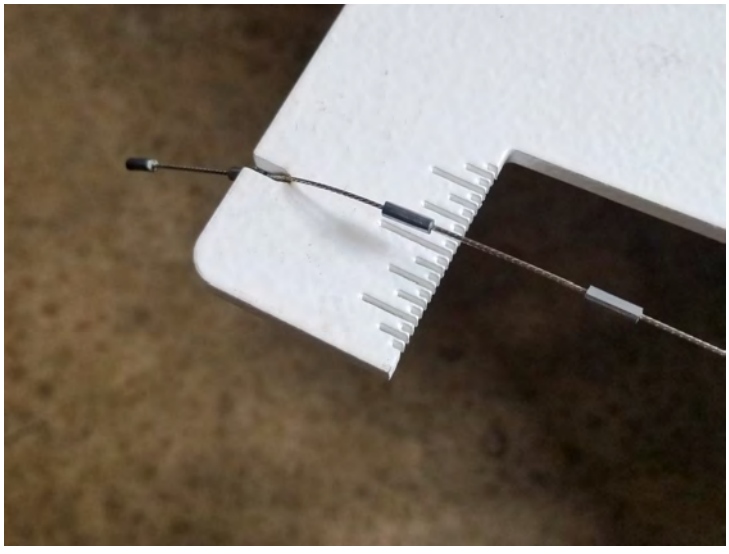
VEHICLE SETUP (cont.)

Take extra care when lowering the car to the ground, move slowly and ensure the spot where the Hub Stand will roll is free of gravel and debris that can prevent it from moving around freely during adjustments. Treat these stands like fine instruments and they will maintain their accuracy and repeatability. **NOTE: You may notice some flexing of the Base as weight is applied. This is intentional such that all four rollers are touching the ground and sharing the load evenly.**



Place the loop ends of two braided cables around the hooks at the end of a spring and position the spring in the middle between the stands on one side of the car.

At either end of the Toe Bars there are slots. At the non-loop end of each braided cable there is a series of crimped sleeves. Hook a sleeve into the end of one of the Toe Bars, pull a bit of tension on the spring and use the nearest sleeve in the other Toe Bar's slot to hold that tension. **Only use just enough tension to keep the cable straight and taut.** Repeat on the other side and you'll be ready to begin taking measurements and aligning your car!



ALIGNMENT MEASUREMENTS

We won't get into the details and science behind wheel alignments, or how to go about adjusting them on your particular vehicle. If you are venturing to do your own wheel alignment, we assume you already have a working knowledge and know what specific settings you're after, and how to make the appropriate adjustments on your vehicle. We will instruct how to take the four measurements you need to complete the job. They are: CAMBER, CASTER, TOE, and THRUST ANGLE.

CAMBER

To check the camber setting, you will need either a digital angle gauge or a smartphone with a level app installed. You can purchase the digital gauge at www.pacomotorsports.com. Simply place the angle gauge or smartphone against the vertical surface of the Hub Plate to get your camber reading. It's also easy to use the brake rotor surface if you choose.

NOTE: There may be a slight camber difference between measuring with hub stands installed versus with the wheel/tire combo installed. This is because some suspensions are loaded differently with hub stands installed. Every car is unique, but once you know the amount of difference between the two setups, if any, you can use that figure to compensate for when aligning with the Hub Stands.

CASTER

Start with the steering wheel pointing straight ahead. Check caster by SLOWLY turning the steering wheel left or right about 3/4 of a full turn (roughly 20 degrees), then take a camber reading. Then turn the opposite direction, another 3/4 of a full turn past the steering center. Add the two camber readings together and multiply by 1.5 to get your caster measurement.

TOE

Measurements are taken at each axle by using two tape measures. Place the end tab of a tape measure into the narrow slot on one end of the Toe Bar and pull the tape under the vehicle to the opposite side Toe Bar. Do the same thing with a second tape measure at the other end of the Toe Bar. You can use the taper in the narrow slots to help retain the tape ends while you're taking measurements. Take the measurement from the inside edge of the Toe Bar on both sides. Subtracting one measurement from the other will give you the toe measurement. Larger numbers at the front-most tape versus the rear-most tape on the same axle indicates a "toe out" condition, and vice versa for "toe in".

THRUST ANGLE

Thrust angle measurements are taken using the tensioned cables between stands, and the graduated scales at the ends of the Toe Bars. Unless you are running an odd setup for oval or circle track racing, you want the thrust angle to be zero, so the car tracks straight down the road and doesn't "pull" to one side. The adjustment is made with the rear wheel toe settings. To check this measurement, look at where the tensioned cable crosses the graduated scale on the front side of the rear stand, and compare that to the same reading on the opposite side rear stand. Adjust the rear toe settings until these measurements are the same on both sides. Keep in mind adjusting the thrust angle will affect rear toe settings and vice versa.