



## **Solo Motorsports Installation Guide Stage 1 kit (Front)**

- 1. Disconnect the battery ground cable**
- 2. Securely put vehicle up on jackstands**
  - 2.1. Refer to picture of pivot box location and do not put jackstands there.
- 3. Remove front wheels**
  - 3.1 Chalk the back wheels.
- 4. Remove the sway bar and sway bar links**
- 5. Remove brake calipers and brake pads and hang them off to the side**
  - 5.1. If you have ABS, unclip the ABS sensor wire from the brake line clips.
- 6. Remove front shocks**
  - 6.1. You may need to put a floor jack under each side and apply a little upwards pressure to take the load off of the shocks in order to remove.
- 7. Disconnect the front driveshaft**
  - 7.1. Disconnect the front driveshaft from the front differential and hang the driveshaft out of the way.
  - 7.2. Wrap the front driveshaft u-joint with electrical tape to keep the u-joint caps from falling off.
- 8. Remove coil springs**
  - 8.1. Put a floor jack under the TTB of the side you are working on and apply a little upwards pressure to support the TTB.
  - 8.2. Remove the upper spring retainer by removing the attaching bolt. This usually requires a 1/2" wrench.
  - 8.3. Remove the lower spring retainer and nut from inside the coil spring. This usually requires a 1 1/8" wrench.
  - 8.4. Slowly lower the floor jack to remove upward pressure and remove the coil spring.
  - 8.5. Remove the coilspring seat and isolator.
  - 8.6. Repeat this process for the other side.
- 9. Remove locking/autolocking hubs**
  - 9.1. Lay the locking/autolocking hub parts on a clean surface in the order that they are removed. You will reinstall them in the reverse order of how they came off.
- 10. Remove the hub nuts**
  - 10.1. Lay the hub nut parts on a clean surface in the order that they are removed. You will reinstall them in the reverse order of how they came off.
- 11. Remove the hub/rotor assemblies and wheel bearings**

- 11.1. Make sure that you keep the wheel bearing together with the hub/rotor assembly that they are from. Your used bearings should stay together with their matching used races that are inside of the hub/rotor assembly.
- 11.2. You have now exposed and gained access to the spindle.
- 12. Remove the spindle**
  - 12.1. If you have ABS you will first have to remove the ABS sensor hold-down bolt and ABS sensor support block. If you do not have ABS, then go to step 10.2.
    - 12.1.1. Remove the ABS sensor hold-down bolt. It will be found on the back side of the steering knuckle. This usually requires an 8mm or 5/16" socket.
    - 12.1.2. Remove the ABS sensor support block hold-down bolt. It will be found on the back side of the steering knuckle next to the ABS sensor hold-down bolt. This usually requires a ¼" drive, 12 point, 6mm socket.
    - 12.1.3. Remove the ABS sensor support block.
    - 12.1.4. Follow the ABS sensor wire up into the engine compartment and disconnect from the harness.
    - 12.1.5. DO NOT REMOVE THE ABS SENSOR FROM THE STEERING KNUCKLE. THEY ARE USUALLY RUSTED IN PLACE AND WILL GET DESTROYED WHEN TRYING TO REMOVE**
  - 12.2. Remove the 5 or 6 nuts that hold the spindle to the steering knuckle.
    - 12.2.1. If you have 5 nuts, you normally use a 11/16" socket
    - 12.2.2. If you have 6 nuts, you normally use a 9/16" socket
  - 12.3. Using a dead blow hammer or rubber mallet, hit the side of the spindle back and forth until you can get pry bars behind them to assist in getting them off. These can be very stubborn. If needed, a spindle puller can be purchased from various sources online.
- 13. Remove the passenger side axle**
  - 13.1. Remove the outer steel band from the rubber axle boot that is up close to the front differential.
  - 13.2. Pull out the outer part of the passenger axle out through the steering knuckle. It will separate from the rest of the axle at the rubber axle boot.
  - 13.3. DO NOT REMOVE DRIVER SIDE AXLE YET. IT WILL BE REMOVED LATER.**
- 14. Remove the steering**
  - 14.1. Remove the steering from the pitman arm and both steering knuckles.
    - 14.1.1. This usually requires removing cotter pins and using a 21mm wrench or socket to remove the castle nuts.
- 15. Remove the TTBs and radius arms**
  - 15.1. Remove the passenger TTB.
    - 15.1.1. Remove the two bolts that hold the radius arm to the passenger TTB. This usually requires a 1 1/8" wrench and/or socket.
    - 15.1.2. Loosen and almost completely remove the passenger radius arm nut up at the frame pivot. Leave the nut attached by a few threads. This usually requires a 1 1/8" wrench and/or socket.
    - 15.1.3. Remove the passenger TTB pivot bolt and remove the Passenger TTB. The TTB pivot bolts usually require 18mm and/or 21mm wrenches and

sockets. **AS SOON AS YOU REMOVE THE PASSENGER TTB PIVOT BOLT THE TTB WILL WANT TO DROP!**

- 15.1.4. If your vehicle has the bolt-on secondary shock mount on the front of the TTB, remove it now. This usually requires a 15mm socket.
- 15.2. Remove the passenger radius arm and pivot bushings from the frame pivot.
- 15.3. Remove the drivers TTB.
  - 15.3.1. Support the driver TTB with a floor jack placed directly under the front differential.
  - 15.3.2. Remove the driver side radius arm nut up at the frame pivot. This usually requires a 1 1/8" wrench and/or socket.
  - 15.3.3. Remove the driver TTB pivot bolt. The TTB pivot bolts usually require 18mm and/or 21mm wrenches and sockets. **AS SOON AS YOU REMOVE THE PASSENGER TTB PIVOT BOLT THE TTB WILL WANT TO DROP!**
  - 15.3.4. With the help of another person, slowly lower the driver TTB and radius arm as one unit. You will need to pull the assembly forward as it drops in order to pull the radius arm out of the radius arm frame pivot bushings. **AS SOON AS THE RADIUS ARM COMES OUT OF THE RADIUS ARM FRAME PIVOT BUSHINGS IT WILL WANT TO ROLL BACKWARDS. MAKE SURE THAT YOU AND YOUR HELPER ARE CLEAR OF ANYTHING THAT TRIES TO DROP!**
- 15.4. With this unit on the ground and out from under the truck, remove the two bolts that hold the radius arm to the driver TTB and remove the driver radius arm from the driver TTB. This usually requires a 1 1/8" wrench and/or socket.
- 15.5. If your vehicle has the bolt-on secondary shock mount on the front of the TTB, remove it now. This usually requires a 15mm socket.
- 16. Remove the front differential from the driver TTB**
  - 16.1. Remove the front gear oil fill plug from the driver TTB and drain the gear oil into an appropriate container. This usually requires a 5/8" wrench or a large adjustable wrench.
  - 16.2. Once the gear oil has drained, pull out the driver axle through the steering knuckle.
  - 16.3. Remove the two bolts that hold the Driver TTB to the side of the differential. This usually requires either a 19mm or 21mm socket and/or wrench.
  - 16.4. Remove the ten bolts that hold the driver TTB to the front of the differential. This usually requires a 9/16" socket.
  - 16.5. Place the Driver TTB on the ground with the drain plug facing down and the yoke of the differential facing up.
  - 16.6. Using two pry bars, put the in between the stub shaft coming out of the differential and the TTB to where they cross each other directly under the stub shaft...like a pair of scissors.
  - 16.7. Push down on both pry bars at the same time. This should break the silicone seal and allow you to separate the differential from the TTB.
  - 16.8. Wipe out any remaining gear oil from the TTB.

17. **Remove the steering knuckles from the TTBs**
  - 17.1. Remove the cotter pin and upper ball joint castle nut. This usually requires a 1-1/8" or 1-5/16" socket.
  - 17.2. Remove the lower ball joint nut. This usually requires a 1-1/8" socket.
  - 17.3. Remove the steering knuckles.
18. **Remove the existing alignment cams**
19. **Prepare your TTBs to return to Solo Motorsports for your core refund.**
  - 19.1. Place your driver TTB on the ground with the fill plug facing down.
  - 19.2. Place the bushing end of your passenger TTB into the back of the driver TTB with the front of the passenger TTB facing up(away from the driver TTB.)
  - 19.3. Take a few large zip-ties and secure the two TTBs together.
  - 19.4. Put the secured together TTBs in a large, black, lawn trash bag.
  - 19.5. Now that the TTBs are in the trash bag, securely wrap them with black duct tape. Duct tape must be black.
  - 19.6. Call Solo Motorsports and let us know that you're ready for your return shipping label.
20. **MAKE SURE STEPS 18.1 THRU 18.6 ARE COMPLETE**
21. **Remove the factory pitman arm from the steering box**
  - 21.1. Remove the pitman arm to sector shaft nut and split washer. This usually uses a 1-5/16" socket or large adjustable wrench.
  - 21.2. Using a two-jawed puller, remove the pitman arm from the sector shaft.
22. **Install the new pitman arm**
  - 22.1. Install the new pitman arm.
  - 22.2. Install the split washer and pitman arm to sector shaft nut and tighten to 170-230 ft. lbs.
23. **Install front differential onto driver TTB**
  - 23.1. Remove any silicone and grease from both mating surfaces of the front differential and driver TTB. Wipe both mating surfaces clean with acetone.
  - 23.2. Inspect driver side axle seal on differential for wear and replace if needed. *We highly recommend you replace this seal even if not needed.*
  - 23.3. Clamp the yoke of the differential in a vise with the mating surface facing up.
  - 23.4. Apply a 1/4" bead of RTV silicone around the entire differential mating surface. The bead should run inside of the bolts. When finished you should have created a complete circle of silicone with no breaks in it. The differential must be installed within five minutes of applying silicone.
  - 23.5. Gently lower the driver TTB onto the front differential while lining up the bolt holes. Be careful not to smear and ruin the bead of silicone. Install the ten smaller and the two larger bolts that hold the differential to the TTB. Lightly snug down the ten smaller bolts to the point where the silicone is starting to flatten out. Wait one hour and tighten the ten bolts in a circular pattern to 30-40 ft. lbs. Tighten the 2 larger bolts to 85-100 ft. lbs.
24. **Remove factory radius arm pivot brackets from frame**
  - 24.1. Remove the rivet heads with a grinder. Punch the rivets through the frame with an air hammer or hammer and punch.

- 24.2. Remove the bolts.
- 25. Install new radius arm pivot brackets**
  - 25.1. Refer to the dimensions on the supplied picture for the location of the pivot box.
  - 25.2. Check to make sure that no other bolts are in the way of the pivot box sitting flush on the frame. If there are any obstructions, you will need to address them.
  - 25.3. Using one of the supplied 1/2" x 1.25" long bolts, washers, and nuts, bolt up the pivot box to the existing hole in the frame that is referenced in the supplied picture and tighten to 80 ft. lbs.
  - 25.4. Drill the remaining holes of the pivot box. Install the rest of the 1/2" hardware and tighten to 80 ft. lbs.
- 26. Install heim joints into extended radius arms**
  - 26.1. threads and the inner hole of the heim joints
  - 26.2. Thread the large jam nuts onto the heim joints
  - 26.3. Thread the heim joints into the extended radius arms. Leave about three threads exposed after the jam nut makes contact with the radius arm.
  - 26.4. Insert the four misalignment spacers into the inner hole of the heim joint.
- 27. Install the TTBs, extended radius arms, and coilsprings**
  - 27.1. Position the driver TTB and differential onto a floor jack and raise into position for installation. Use a guide pin or a screwdriver to help line up the TTB pivot hole with the pivot hole in the frame.
  - 27.2. Install the pivot bolt. Do not apply final torque to the pivot bolt until the truck is back on the ground.
  - 27.3. Place the driver extended radius arm over the driver TTB. Use a guide pin or a screwdriver to help line up the holes.
  - 27.4. Place the large silver 3/4" washers in between the TTB and the extended radius arm and install the original two bolts that hold the radius arm to the TTB. Do not tighten yet. ***There should be one silver washer on top and one on the bottom of the TTB.***
  - 27.5. Lift the heim end of the radius arm up into the pivot box. Use a guide pin or a screwdriver to help line up the holes.
  - 27.6. Install the 3/4" bolts, washers, and stover nuts and tighten to 280 ft. lbs.
  - 27.7. Tighten the factory lower radius arm to TTB bolt to 330 ft. lbs.
  - 27.8. Tighten the factory upper stud-type radius arm to TTB bolt to 250 ft.lbs.
  - 27.9. Install the coilspring seat and isolator.
    - 27.9.1. If your coilspring seats are not the same height, then the taller one normally goes on the passenger side.
  - 27.10. Place the new coilspring into position and slowly raise the TTB with a floor jack. Make sure the springs are positioned correctly into the top of the coil bucket.
  - 27.11. Install the lower coilspring retainer nut and tighten to 100 ft. lbs.
  - 27.12. Position the upper coilspring retainer over the coilspring. Install and tighten the attaching bolt to 13-18 ft. lbs.
  - 27.13. Repeat steps 26.1 to 26.13 for the other side.
- 28. Install the steering knuckles and alignment cams**

- 28.1. Install the driver steering knuckle into the driver TTB by inserting the upper and lower ball joints up into and through the appropriate holes in the TTB. Install the nut onto the lower ball joint and finger tighten.
- 28.2. Apply anti-sieze to the inner and outer surfaces of the alignment cam and insert over the upper ball joint threads and into the TTB. Make sure the alignment cam is positioned to where they move the upper ball joint as far inward as possible.
- 28.3. Tighten lower ball joint nut to 110 ft. lbs.
- 28.4. Install and tighten the upper ball joint castle nut to about 90 ft. lbs. advancing the nut to line up the cotter pin hole. Never back off the nuts to line up the cotter pin hole.
- 28.5. Install a new cotter pin through the castle nut.
- 28.6. Repeat steps 27.1 to 27.4 for the other side.
- 29. Install driver axle**
  - 29.1. Slide driver axle through the steering knuckle and into the differential. Be mindful not to damage the seal on the differential that the axle passes through. Slowly rotate the axle as you slide it into the differential and make sure that you feel the splines engage.
- 30. Install passenger axle**
  - 30.1. Slide the passenger axle through the steering knuckle and back into the rubber axle boot up by the differential. Hold the passenger axle male splines and the matching female splined coupler that the rubber axle boot is attached to as parallel to each other as possible. Slowly rotate the passenger axle until the splines line up and you are able to push the two parts back together. Make sure that the u-joints on both ends are clocked in line with each other
- 31. Install spindles**
  - 31.1. Wipe clean the mating surfaces of both the steering knuckle and the spindle.
  - 31.2. Slide the spindle over the axle and onto the studs of the steering knuckle.
  - 31.3. Install and tighten the 5 or 6 (depending on the style you have) spindle nuts to 60 ft. lbs.
  - 31.4. If you have ABS, then follow steps 30.5 to 30.7. If you do not have ABS, then go directly to step 31.
  - 31.5. Install and tighten the ABS sensor support block and ABS sensor support block hold-down bolt.
  - 31.6. Install and tighten the ABS sensor hold-down bolt.
  - 31.7. Run the ABS sensor wire back into the engine compartment and reconnect to the harness.
  - 31.8. Repeat for the other side.
- 32. Install the hub/rotor assemblies and wheel bearings**
- 33. Install the hub nuts in the reverse order of how they came off and make sure the proper tension is set on the bearings**
- 34. Install the locking/autolocking hubs in the reverse order of how they came off**
- 35. Install the brake calipers and brake pads**
- 36. Install the new brake lines and bleed the brakes**

- 36.1. If you have ABS, then zip-tie the ABS wire to the new brake line. Turn the steering knuckles both directions and check to make sure that the ABS wire has enough play to keep from getting tight.
- 37. Install the new front shocks**
- 38. Install the steering**
  - 38.1. Insert the tie rods and drag link into their respective holes in the pitman arm and steering knuckles.
  - 38.2. Install and tighten the castle nuts to 50-75 ft. lbs. advancing the nut to line up the cotter pin hole. Never back off the nuts to line up the cotter pin hole.
  - 38.3. Install new cotter pins.
- 39. Reconnect the front driveshaft to the front differential**
- 40. Install wheels**
- 41. Safely take the vehicle off of the jack stands and lower onto the ground**
- 42. Tighten both passenger and driver TTB pivot to frame bolts to 120-150 ft. lbs**
- 43. Reconnect the battery ground cable**
- 44. Align your tires as best as possible before driving to an alignment shop for a professional alignment. Here are some tips to help with this;**
  - 44.1. **If you pull your vehicle forward and the front of your vehicle drops**, then your tires are toed out. Turn (adjust) your steering adjusters to where the front of your tires come closer together. Drive forward and check again.
  - 44.2. **If you pull your vehicle forward and the front of your vehicle lifts**, then your tires are toed in. Turn (adjust) your steering adjusters to where the front of your tires go further apart. Drive forward and check again.
  - 44.3. **Keep adjusting your steering adjusters until the front of your tires are toed in about 1/8" compared to the back of your tires and your vehicle neither drops nor lifts when pulling forward.**
  - 44.4. **Go take it for a professional alignment.**
  - 44.5. **DO NOT TAKE YOUR VEHICLE TO A 4- WHEEL LASER ALIGNMENT SHOP!!!**
    - 44.5.1. *In order to gain performance, most of our suspension parts have been modified from original factory dimensions and no longer fall within the recommended factory specifications for alignment. This does not mean that your vehicle is unalignable. This means that your vehicle must be professionally aligned by a human the old-fashioned way...using a set of turn-tables, a camber/caster gauge, tape measure, striping the tire, centering the steering wheel, and finally a road test.*