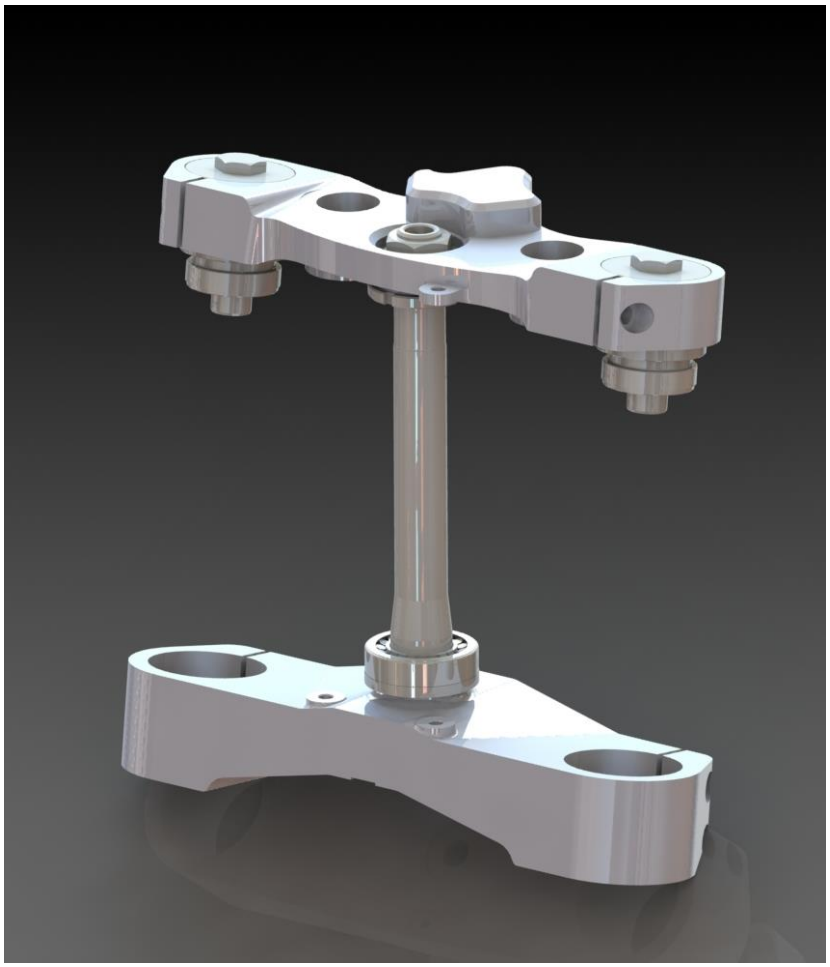
MOTOR TRIKE®
INCORPORATED



# INSTALLATION INSTRUCTIONS:
# INDIAN 6.5° RAKE KIT
## FOR INDIAN CHALLENGER MOTORCYCLES
**LAST UPDATED: FEBRUARY 2022**

Thank you for choosing the Motor Trike *Indian Challenger* rake kit. We ask that you read the directions before you start working and follow them very closely. Doing so will save you time and ensure that the customer's experience with their new rake kit is a positive one.

The *Indian Challenger Rake Kit* is designed for 2020 and newer Indian Challenger Motorcycles. The kit also fits (and compliments nicely) the Motor Trike Indian Trike Conversion for the same model bikes. This rake kit will **not** fit the Indian Chief, Chieftain, or Roadmaster family. Please look for our alternate rake kit that we sell for these models.

Having a safe and clean environment and using the proper tools is essential for a successful installation. You must have the ability to secure the motorcycle to prevent the bike from moving or falling during the rake kit installation. We strongly recommend the use of a motorcycle lift capable of holding a trike. It allows you to lift the bike to a comfortable work level while maintaining a safe and stable environment. In addition to a lift, we recommend using a front tire clamp and center stand to support the bike.

**It is critical that proper eye wear, ear protection, and protective clothing is worn throughout this rake kit installation.**

**Failure to secure this vehicle during installation could result in injury up to and including death.**

**If you do not have the proper tools to do this installation, DO NOT ATTEMPT TO PERFORM THE INSTALLATION.**

When placing your order, please remember to provide the bike year and specific model. This information is necessary for you to receive the correct parts. (Ex. 2021 INDIAN CHALLENGER)

When you receive your kit, please check to ensure that all parts and hardware are included and/or assembled correctly. If there are any parts missing or if you have any questions concerning the kit at this time call Motor Trike at 1-800-90TRIKE (800-908-7453 Mon-Thur. 8am-5pm CST. Or you can email us at **INFO@MOTORTRIKE.COM**

Motor Trike Inc. reserves the right to change specifications, equipment, or designs at any time without notice and without incurring obligation.

# SECTION 1 – *Bike Preparation*

1. Place the motorcycle on a lift. Support the motorcycle across the bottom of the frame with a block of wood, and strap the bike down to the lift. If still a two wheel motorcycle, use one strap on either side of the bike and one on the rear of the bike. If it is a trike, strap at the rear as needed to fully secure the bike. See Figure 1.


**Figure 1: Support the front of the motorcycle.**

2. Cover the fuel tank and the front fender with a soft clean towel to protect the paint through the remainder of the procedure.

3. Remove the front headlight bezel by carefully prying down at the top center bezel edge. It is best to use a soft plastic tool to protect the finishes. The bezel is snapped into two panel clips on each side. See Figure 2.

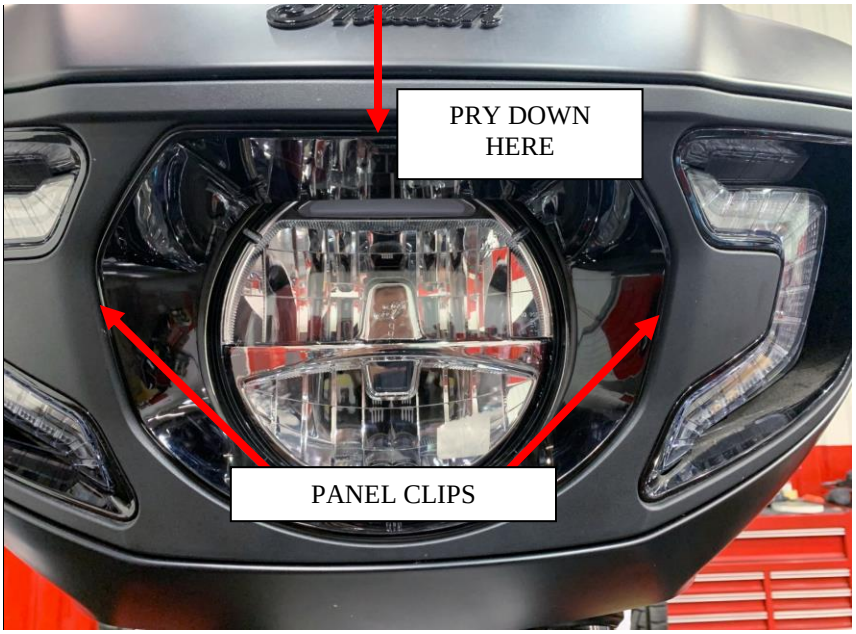



**Figure 2: Pull the bezel off the front headlight.**

4. Remove the 3 torx bolts from under the headlight bezel used to secure the outer fairing to the inner fairing. See Figure 3.

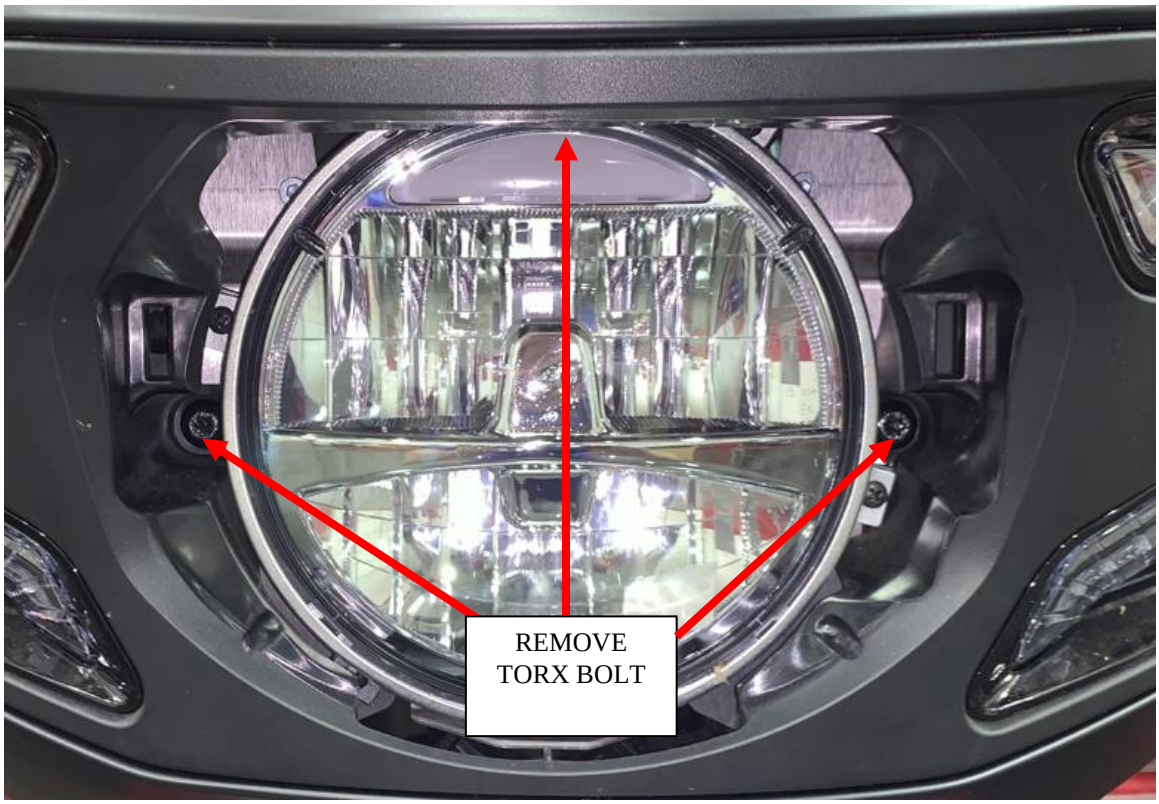



**Figure 3: Remove the torx fasteners under the headlight bezel.**

5. Open left and right side pocket doors and pull out rubber pocket liner to expose more fairing fasteners. See Figure 4.


**Figure 4: Remove the rubber pocket liners (left side shown, right side similar).**

6. Remove the torx fastener from the outside upper corner of the left and right pocket. See Figure 5.

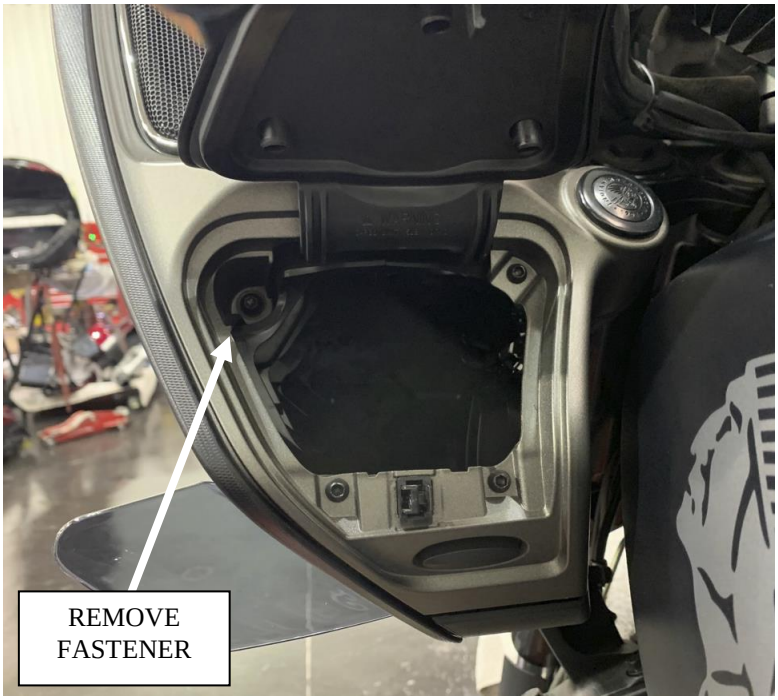



**Figure 5: Remove torx fastener from upper outside corner (left side shown, right side similar).**

7. Pry the left and right speaker grills from the fairing. They are held in place with 4 panel clips each. It is best to use a soft plastic tool to protect the finishes. Remove the torx screw exposed near the top of the grill. See Figure 6.

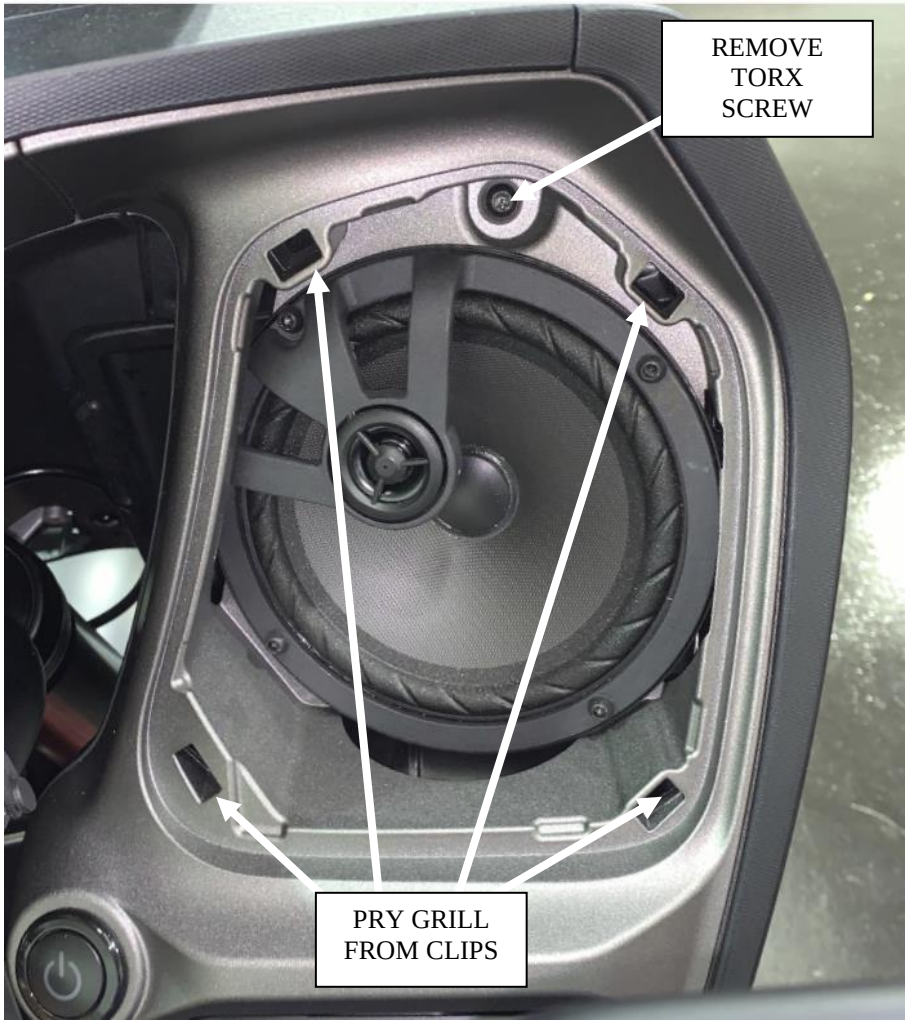



**Figure 6: Remove the speaker grills and torx fastener (right side shown, left side similar).**

8. Remove the torx screw from the underside of the fairing on the left and right sides. See Figure 7.


**Figure 7: Remove torx fastener under fairing (right side shown, left side similar).**

9. Carefully pull the outer fairing from the inner fairing. Unplug the headlight and turn signal connectors. Set the fairing aside on a soft towel or blanket.

10. Unplug the chassis harness to inner fairing connectors. It is helpful to use a marker to code the connectors to make it easy to plug them back in later. Pull the chassis side through the inner fairing opening so the connectors are under the fuel tank. See Figure 8.

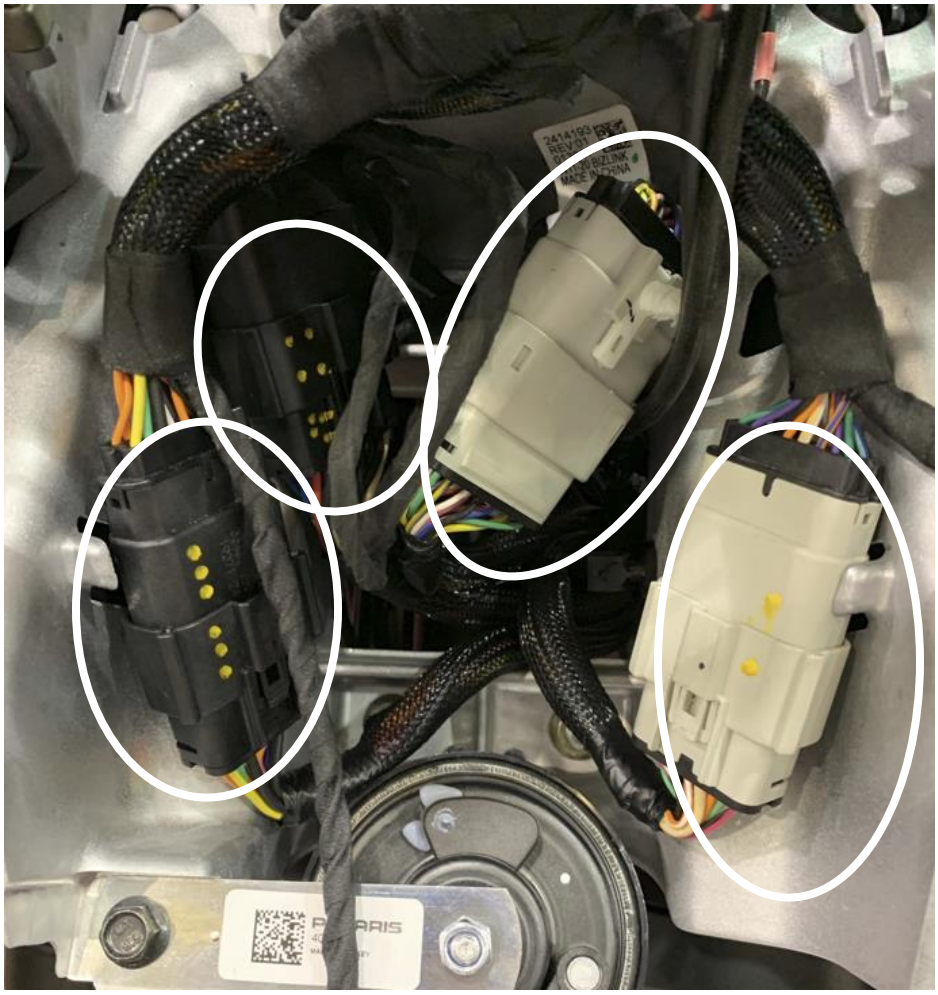


**Figure 8: Unplug the chassis harness to inner fairing connectors.**

11. Unbolt the clutch cable clamp from the inner fairing frame. See Figure 9.


**Figure 9: Remove the clutch cable clamp.**

12. Under the seat, unplug the radio antenna connector. Pull the antenna wire from under the tank and into the inner fairing. See Figure 10.

**Figure 10: Unplug the antenna connector.**

13. Unplug the two connectors near the windshield and pull the wires out of the inner fairing. The front ABS sensor connector can be wrapped around the front fork and remain with the fork / wheel assembly once removed. See Figure 11.

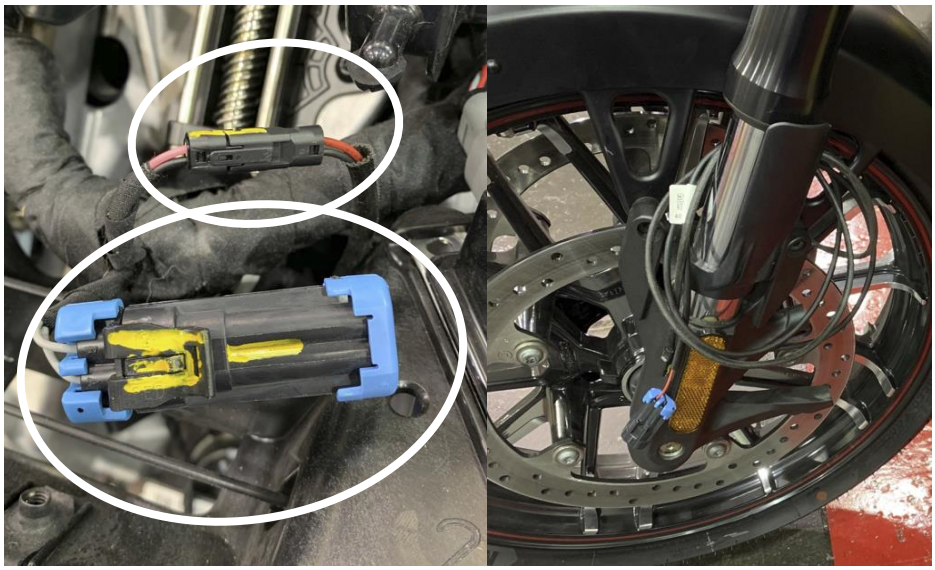


**Figure 11: Unplug connectors near windshield.**

14. Unbolt the inner fairing frame from the motorcycle on the left and right sides. There are two bolts to remove per side. See Figure 12.

**Figure 12: Remove the inner fairing frame fasteners (right side shown, left side similar).**

15. Remove the fasteners securing the inner fairing frame from the steering neck of the motorcycle frame. The four nuts should be removed leaving the studs screwed into the frame. See Figure 13.

**Figure 13: Remove the inner fairing nuts.**

16. Slide the inner fairing assembly off the steering neck studs and set the fairing aside on a soft towel or blanket.

17. Remove the three brake line clamp bolts from the lower triple tree, and allow the brake lines to hang free. See Figure 14.

**Figure 14: Remove the brake line clamp bolts.**

18. Remove the front brake calipers from the suspension forks by unscrewing the allen head mounting bolts. Do NOT remove the brake line from the caliper. Once the caliper is removed, wrap it in a rag or towel and zip tie it back to the motorcycle frame while allowing it to hang from the brake lines. **WARNING: Do not squeeze the front brake lever once the calipers are removed**. This will push the pistons out of the calipers making it difficult to re-fit over the rotor or cause leaks, brake bleeding, and possible caliper rebuild. See Figure 15.

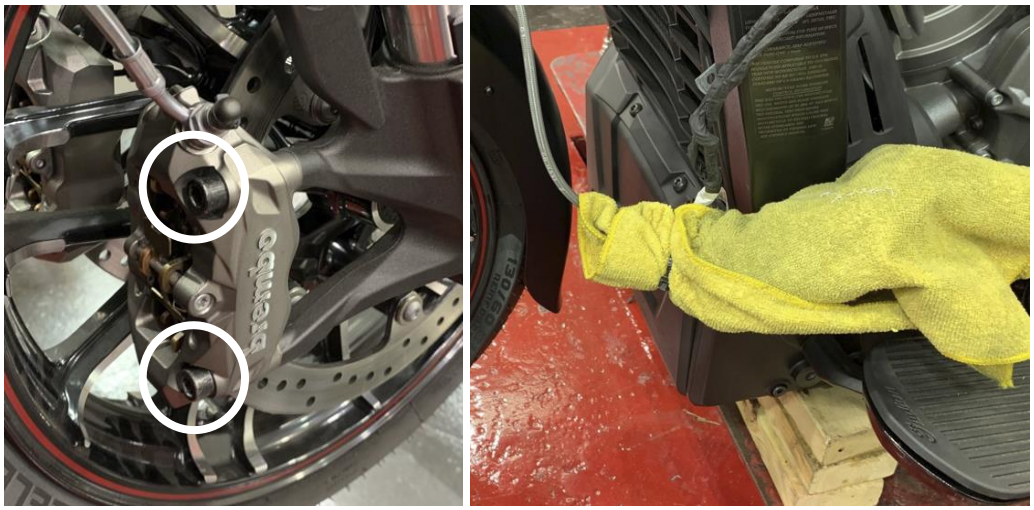



**Figure 15: Remove the brake calipers.**

19. Unbolt the handlebars from the top triple clamp. Leave the bars clamped in the risers, but instead remove bushing bolt from under the top tree. Gently lift the riser out of the triple clamp and lay the handlebars down onto the fuel tank. Be sure you have a towel in place to protect the paint. See Figure 16.


**Figure 16: Lay down the handle bars.**

20. Loosen the down tube clamp bolts on the top and bottom triple trees. There are 4 total on the lower and 2 on the top. See Figure 17.

**Figure 17: Loosen the down tube clamp bolts (left side shown, right side similar).**

21. Slide the down tubes out of the triple tree clamps with the front wheel attached. Clamp the front wheel / down tube assembly in a tire vise. Place a screw driver through a hole in the brake rotor to prevent the assembly from falling over.

22. Remove the retaining nut on the upper triple tree, then remove the upper triple tree. Remove the adjustment nut from under the upper triple tree and slide the lower tree and stem out the bottom. The adjustment nut is a spanner wrench style nut, but should have very little torque on it. You should be able to remove it with a screw driver and a tap from a hammer if you do not have the proper wrench. See Figure 18.

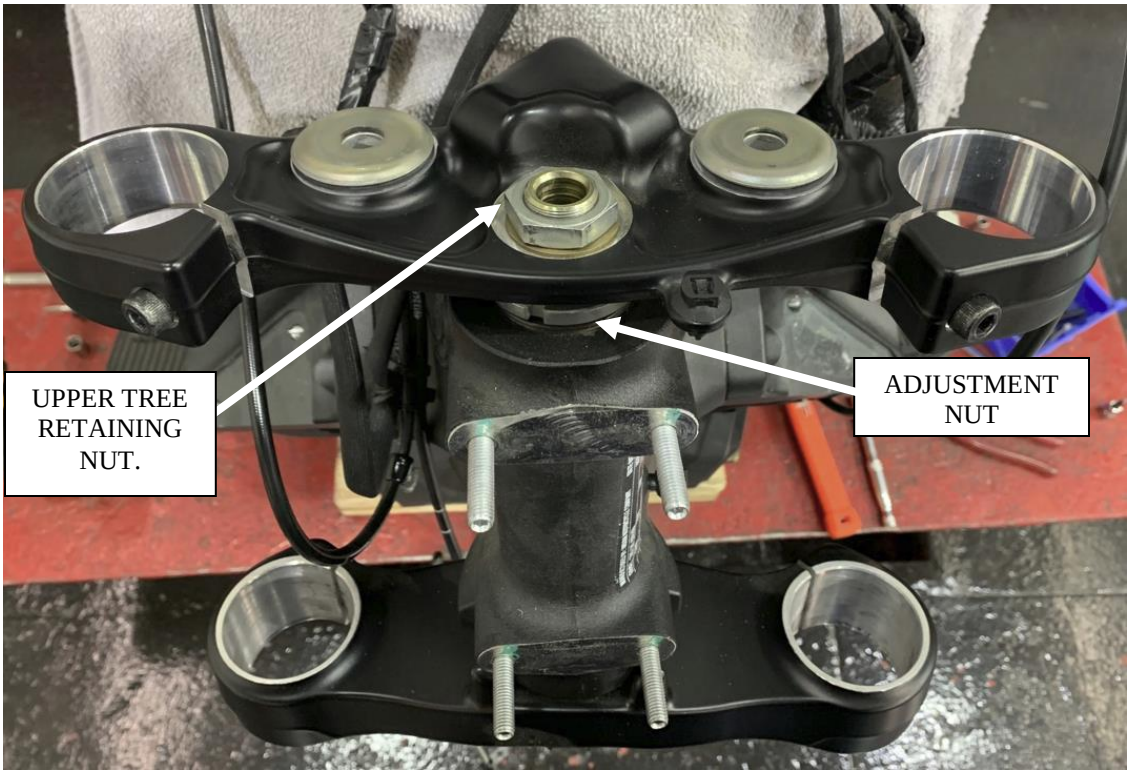



**Figure 18: Remove the triple tree clamps.**

23. Drive out the lower bearing race from the frame. Use a long drift punch and a hammer. Work your way around the race to drive out the race evenly. The upper bearing will be reused and can remain in the frame.

## SECTION 2 – *Rake Kit Installation*

1. Remove the handlebar bushings from the OEM top triple tree and install them in the new top triple tree. These can be pried out of the old tree and pressed in the new tree by hand. Remove the OEM fork lock and install it in the raked tree. See Figure 19.

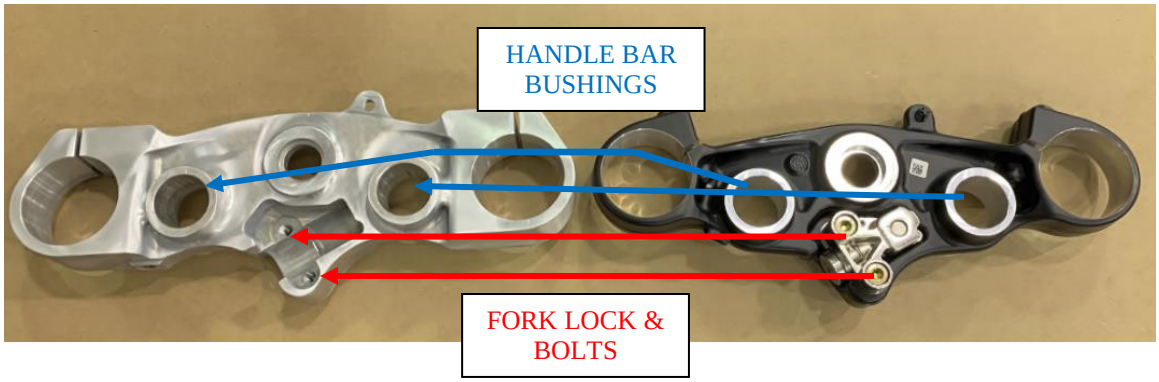



**Figure 19: Install the handlebar bushings, fork lock, and the clutch cable guide in the raked top tree.**

2. The lower triple tree and steering stem will come assembled with the bearing and seal installed. Grease the bearing on the lower triple tree. Spin the bearing several times and reapply grease. Every roller must be completely coated with grease. See Figure 20.

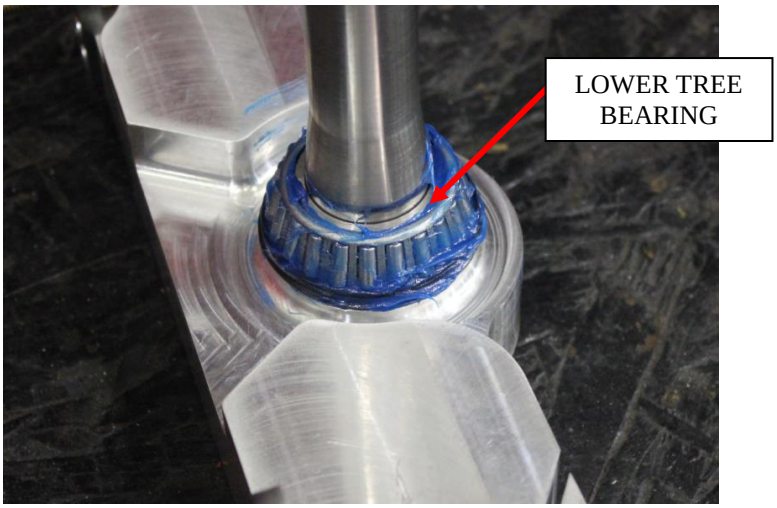



**Figure 20: Grease the lower tree bearing.**

3. Install the provided bearing race in the frame with the cone facing out. Use a bearing / seal driver or a brass drift or other soft material to tap the race in place. Do not dent or scratch the race. Work your way around the race to drive it in evenly. Make sure the race is fully seated in the frame before proceeding. See Figure 21.

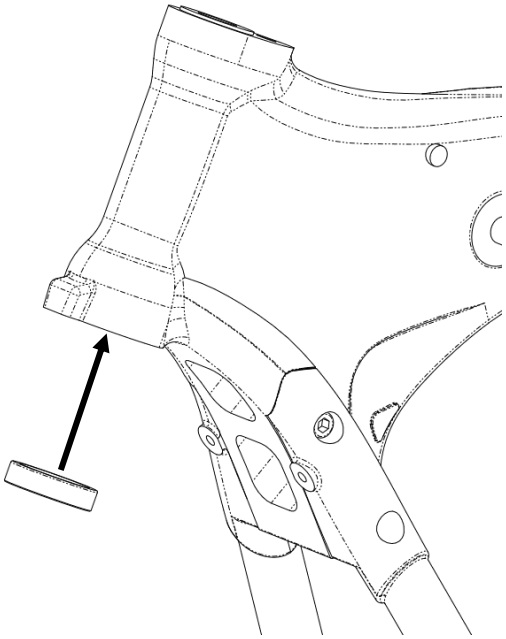


**Figure 21: Install the bearing race in the frame.**

4. Slide the new lower tree assembly into the frame neck and slide the upper bearing and seal onto the steering stem. Loosely thread the steering adjustment nut (shoulder down) onto the steering stem. See Figure 22.

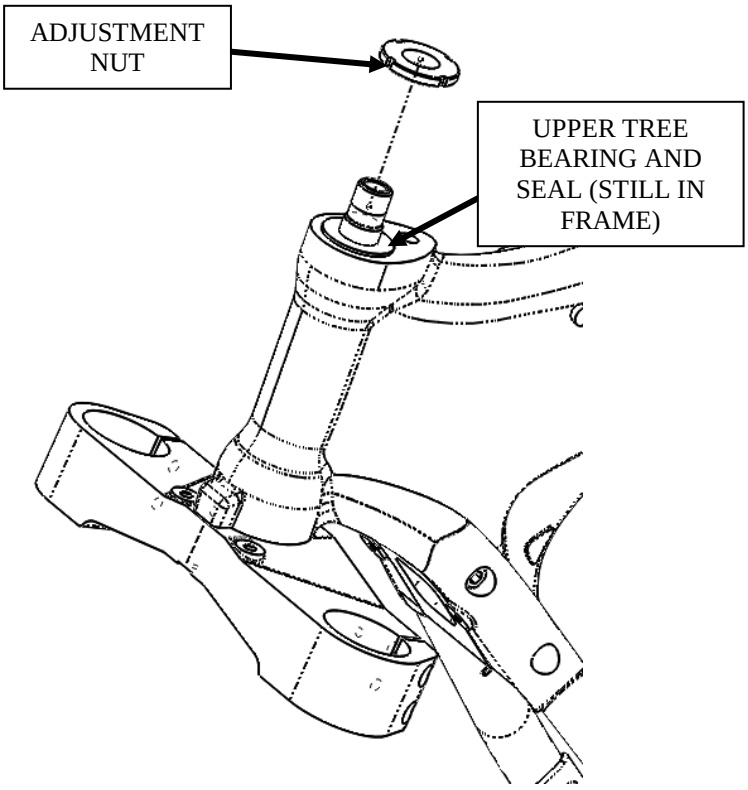



**Figure 22: Install the lower tree assembly.**

5. Torque the bearing adjustment nut using the following procedure.
    - Turn the lower tree all the way to the right and torque the adjuster nut to 29 ft-lbs.
    - Make a reference mark on the frame in alignment with one of the slots in the adjustment nut.
    - Turn the lower tree from lock to lock five times and return it to the full right position.
    - Loosen the adjuster nut 90 degrees (1/4 turn) so the reference mark on the frame is aligned with the next slot on the nut. This completes the procedure for tightening the bearing adjuster nut.

6. Install the new top triple tree clamp, retaining nut, and washer. Do not torque the retaining nut at this time. See Figure 23

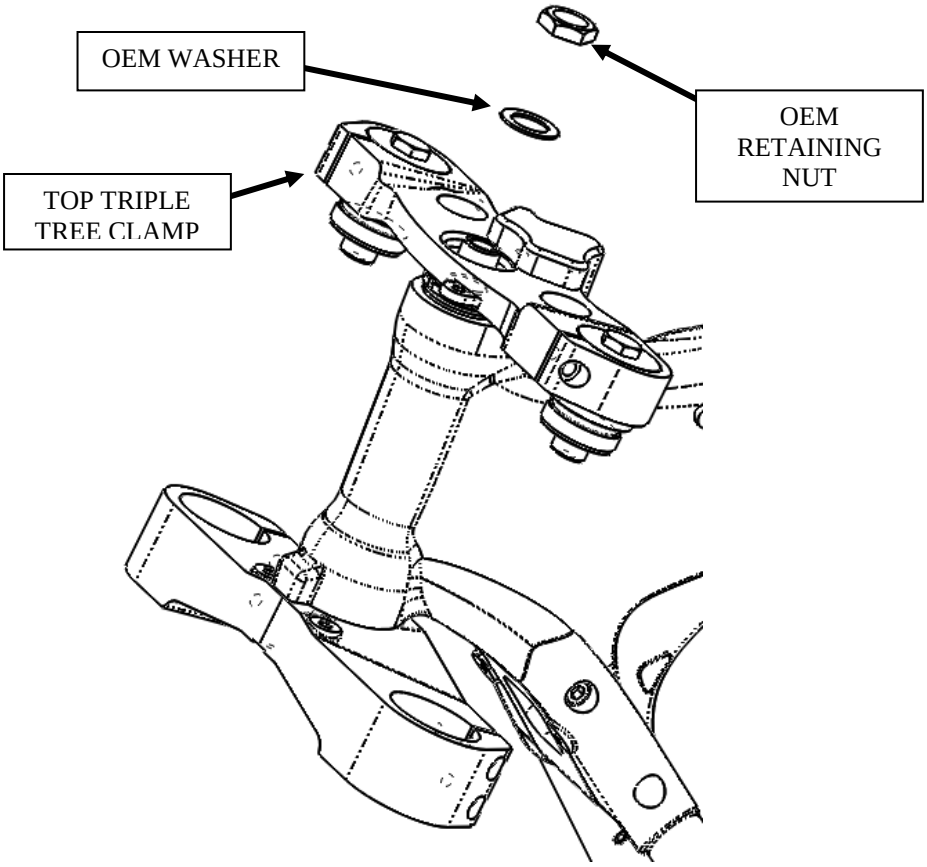



**Figure 23: Install the top triple tree clamp, retaining nut, and washer.**

7. Reinstall the brake line bracket on the lower tree. Apply blue Loctite 242 and torque to 8-10 ft-lbs. See Figure 24.

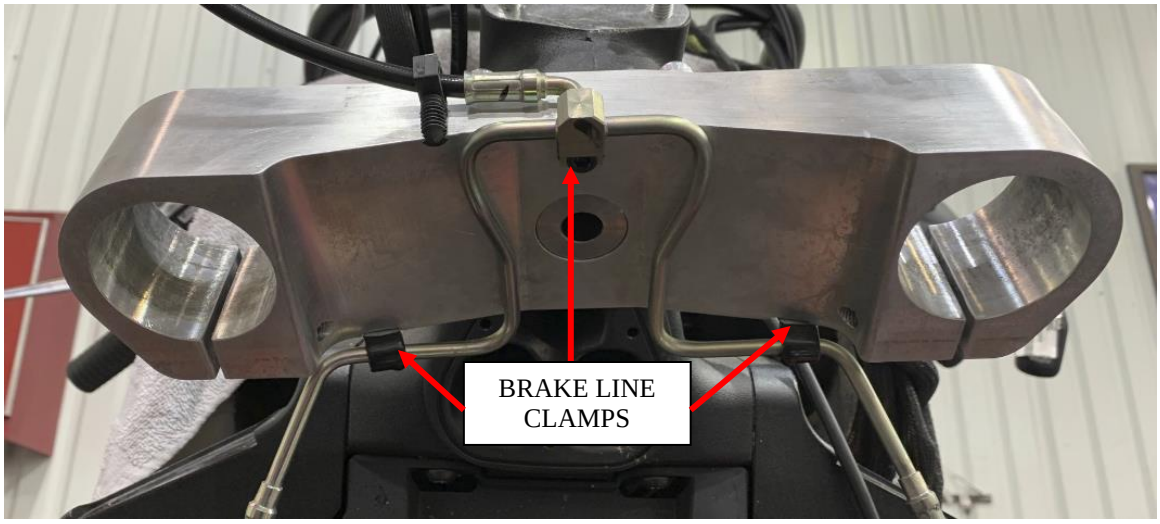



**Figure 24: Install brake line clamps.**

8. Install one of the OEM triple trees onto the down tubes and tighten the clamp bolts. Unscrew each fork cap from the down tubes. The damping rod will still be attached to the fork cap when you remove it. Slide the down tube toward the wheel to gain further access. See Figure 25.

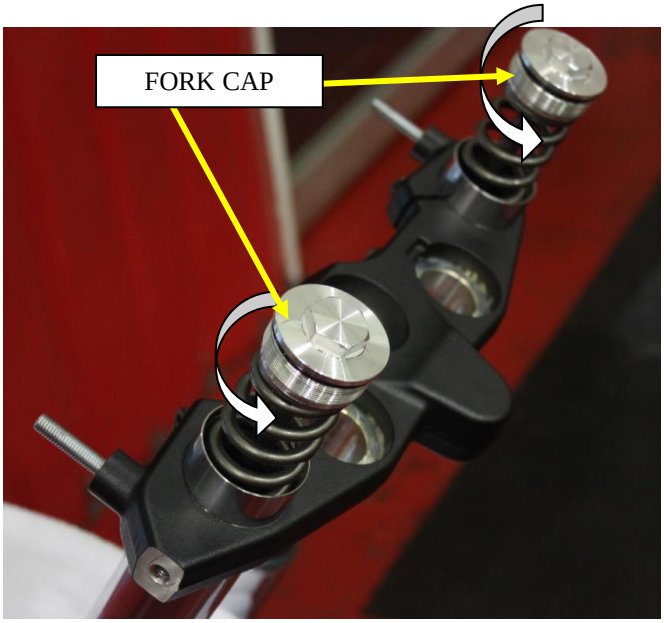



**Figure 25: Unscrew the fork caps.**

9. To release the fork cap from the damping rod, the spring must be compressed. The Indian spring compressor tool (PV-49464) or a universal fork spring compressor tool is recommended for use. Compress the spring enough to get a wrench on the jam nut. See Figure 26.

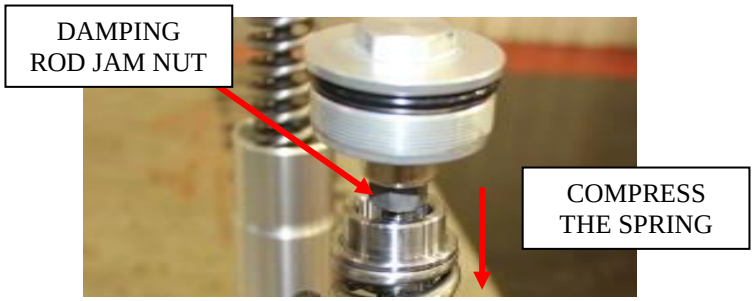



**Figure 26: Compress the spring to access the damping rod jam nut.**

10. Hold the jam nut stationary, and loosen the fork cap to remove it from the damping rod.

11. Remove the O-ring from the OEM fork cap and reinstall it on the new extended fork cap supplied with the rake kit. Inspect the O-ring for damage and replace it if necessary. See Figure 27.

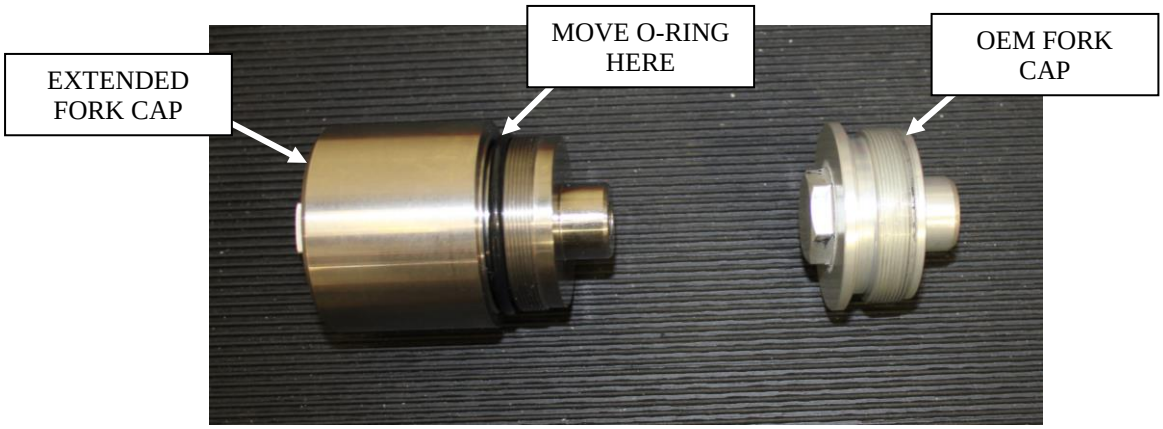



**Figure 27: Swap the O-ring from the OEM cap to the extended cap.**

12. Install the new fork cap on the damping rod. Bottom out the cap on the damping rod before tightening the jam nut. Hold the jam nut and torque the extended fork cap to 12 ft-lbs. Carefully, release the tension on the spring, and make sure the spring is properly seated against the cap. Lift the down tube up to the cap, then torque the cap to the down tube at 17 ft.-lbs.

13. Slide the down tube / wheel assembly into the triple trees. The top of each fork extension should be flush with the top triple tree surface. Apply blue Loctite 243 to the threads and torque the lower triple tree clamp bolts to 18 ft-lbs.

14. Torque the retaining nut on the upper triple tree to 72 ft.-lbs. See Figure 23.

15. Reinstall the handlebars to the upper tree. Apply blue Loctite 242 and torque the riser bolts to 60 ft.-lbs. See Figure 16.

16. Apply blue Loctite 243 to the threads and torque the clamp bolts on the top tree to 18ft-lbs.

17. Reinstall the brake calipers. Apply blue Loctite 243 and torque the caliper bolts to 35 ft.-lbs. See Figure 15.

18. Slide the inner fairing assembly onto the 4 mounting studs on the steering neck. Route all loose wiring through the fairing access hole. Loosely install the inner fairing to chassis bolts. Slowly tighten all 8 fasteners in an alternating pattern. Torque the stud nuts to 18 ft.*lbs. Torque the fairing to chassis bolts to 18 ft.*lbs. See Figure 12 and Figure 13 .

19. Plug in all connections between the chassis and inner fairing and reattach any wire strain relief that you removed during disassembly. Don't forget to run the ABS sensor wire back up the down tubes and into the inner fairing and the antenna wire back under the seat. Re-attach the clutch cable clamp to the inner fairing frame. See **Error! Reference source not found.**, Figure 8, Figure 9, Figure 10, and Figure 11

20. Install the outer fairing assembly. See Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7, and **Error! Reference source not found.**.

21. Test all of the buttons on the instrument cluster and handlebars for proper function. Make sure that the radio, ignition, grip heaters, turn signals, cruise control, high beam, and low beam all work before test driving. Any missed connections can be fixed by removing the outer fairing again.

    Slowly turn the handle bars all the way left and all the way right while inspecting for clearance. Make sure there are not any wires being pinched around the triple trees. Make sure the handlebars and fairing do not collide with the gas tank.

22. Test drive the bike first at parking lot speeds. Feel for any looseness in the steering when using the front brakes. Make sure the steering effort is not being affected by over tightened steering bearings. Once the bike has been thoroughly checked in the parking lot, take it for a test drive at highway speeds.

If you have any questions or concerns about the installation, please call Motor Trike at 1-800-90-TRIKE, Mon-Thurs 8am-5pm CST, or email at tech@motortrike.com. Otherwise, wipe down the motorcycle, return it to your customer, and tell them to enjoy the ride.

Thank you for choosing the Motor Trike rake kit for your Indian Challenger motorcycle.