TRUCK CUSTOMS BY CHRIS

FRONT AXLE MOUNTING MANUAL

4×4 front axle conversion and rear leaf-spring leveling kit

Ford, International, and Freightliner medium-duty trucks

2004–present • Up to 14,000 lb front axle • Hydraulic or air brakes

Used with the HCF450 transfer case

Put the old U-bolts to the side. Do not reuse them. The new axle comes with new U-bolts.

Document	Front axle mounting and rear leaf-spring leveling kit
Application	Ford, International, and Freightliner. Stock 2×4 front axle to supplied 4×4 axle.
Oil	75W-90 full synthetic gear oil
Revision	1.1 — September 2026

1. Safety

WARNING

Support the truck on jack stands rated for the GVWR before working under it. Never work under a vehicle supported only by a jack. Relieve brake-system pressure before opening lines. Disconnect the battery negative cable before electrical work. After brake-line work, bleed the brakes per the truck service manual before the vehicle is driven.

- Wear eye protection. Brake fluid damages paint and skin.
- Unplug the wheel-speed sensors before the old axle comes out so the wires are not ripped. Reinstall the sensors on the new axle.
- Chock the rear wheels before raising the front.
- When the old U-bolts come off, put them to the side. Do not reuse them. The new axle comes with new U-bolts.
- Keep the old axle and other hardware until the new axle is in and torqued.
- Torque all U-bolts and spring-plate hardware to the axle / chassis specifications for that fastener size. Do not guess.

2. What this job is

These steps are the same on Ford, International, and Freightliner medium-duty trucks. The stock 2WD front axle comes out and the new 4×4 axle goes in. Remove the front shocks, brake lines and brackets, wheel-speed sensors, and drag link. Put the old U-bolts to the side — the new axle ships with new U-bolts. Driver’s side uses one U-bolt and two bolts. Passenger side uses two U-bolts.

Hydraulic-brake trucks: swap the front brake lines and the frame brackets right to left, then bleed the brakes per the truck service manual.

Air-brake trucks: you only disconnect the air hose from the brake chamber on the 2×4 axle and reconnect that hose to the brake chamber on the 4×4 axle. All other steps are the same as the hydraulic-brake axle.

3. Before — stock 2WD front axle

These photos are the stock 2×4 front axle on the truck before anything is removed. Use them to see shock mounts, calipers, brake-line brackets on the frame, and the drag link.



Figure 1 — Stock driver-side wheel end: caliper, brake hose, shock, and drag-link / steer arm.



Figure 2 — Frame brake-line bracket and lines running to the axle. Note the two-bolt bracket on the frame.



Figure 3 — Opposite side: shock, frame brake-line bracket, and axle-mounted line clip.



Figure 4 — Stock axle beam, shock lower mount, caliper, and inner tie-rod / drag-link connection.



Figure 5 — Stock axle beam and shock lower mount from the other side.

4. After — 4×4 front axle installed

These photos are the finished 4×4 axle under the same truck: new axle, U-bolts through the spring plates, shocks back on, and brake lines on the frame.



Figure 6 — New 4×4 axle in place. Differential, tie rods, and leaf spring.

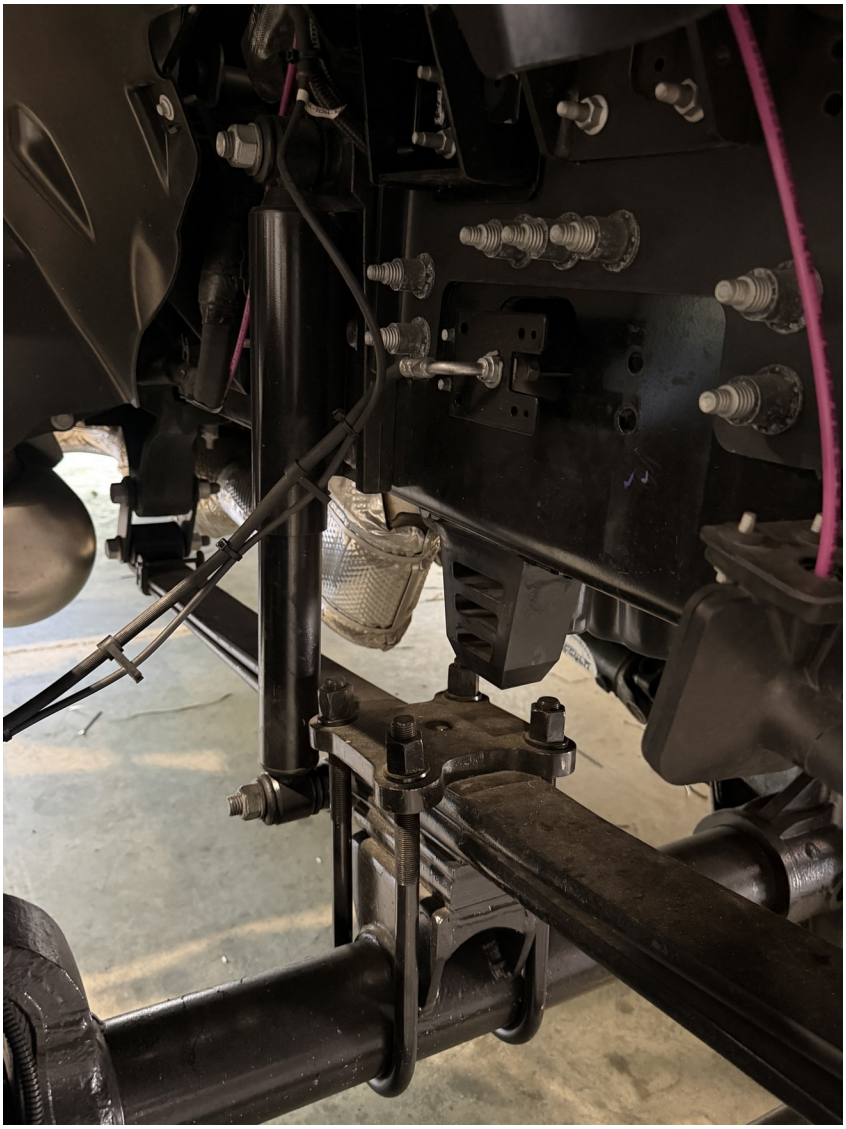


Figure 7 — U-bolts around the axle tube and through the mounting plates on top of the spring. Shock reinstalled.

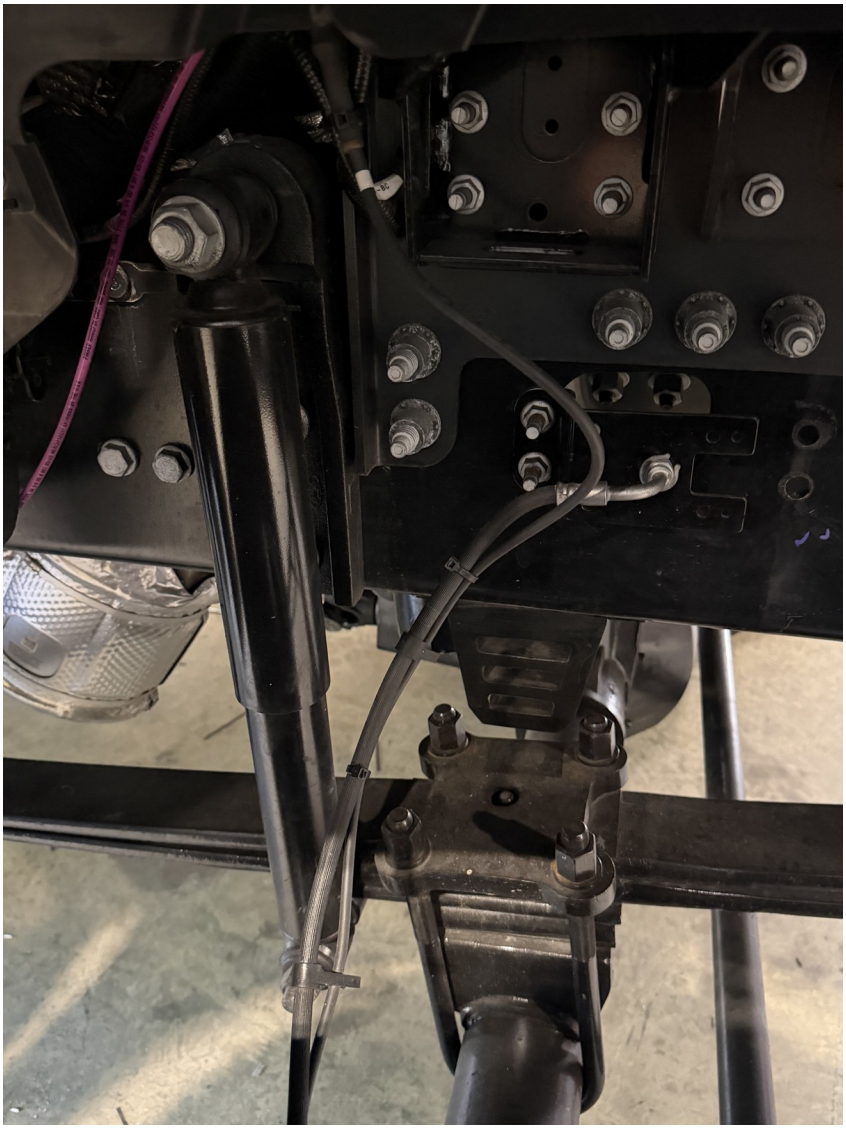


Figure 8 — Frame side after: shock, spring plate, and brake line at the frame bracket.



Figure 9 — Driver's side after: axle, shock, steer arm, and lines.

5. Tools and parts

On the truck / to remove	To install
Floor jack and GVWR-rated jack stands	New 4×4 front axle
Spring U-bolt sockets / wrenches	New U-bolts and mounting-plate hardware
Brake-line wrenches	New adjustable drag link
Wheel-speed sensor connectors	75W-90 full synthetic gear oil and new bump stops
Torque wrench	Brake fluid and bleed kit (per chassis manual)

6. Raise the truck and strip the old axle

1. Raise the front of the truck and remove both front tires.

2. Place jack stands behind the front springs, on the frame of the truck. Confirm the truck is stable before going under it.

3. Remove the front shocks. Set them aside for reinstallation.

4. Unplug and remove the wheel-speed sensors. Set them aside. They must be reinstalled on the new axle.

5. Hydraulic brakes: remove the front brake lines and the frame brackets. Set them aside. Cap or plug open fittings. Air brakes: disconnect the air hose from the brake chamber on the 2×4 axle only.

6. Remove the drag link.

7. Remove the old U-bolts and put them to the side. Do not reuse them. The new axle comes with new U-bolts. Take the stock 2WD front axle out from under the truck.

7. Set the new 4×4 axle

8. Place the new 4×4 axle under the truck in place of the 2×4 axle. Line the spring pads up with the springs.

9. Install the new U-bolts around the axle and through the mounting plates on top of the springs.

10. Driver’s side: one U-bolt and two bolts through the mounting plates. Passenger side: two U-bolts.

11. Torque the U-bolts and plate bolts to specification. Tighten in a crossing pattern so the plates sit flat.

12. Mount the new bump stops to the frame above the U-bolt plates, as shown.



Figure 12 — Bump stop on the frame, centered above the U-bolt plate.



Figure 13 — Bump stop and U-bolt plate from the side. The stop hangs off the frame over the plate.



Figure 14 — Bump stop above the spring pack and U-bolt.

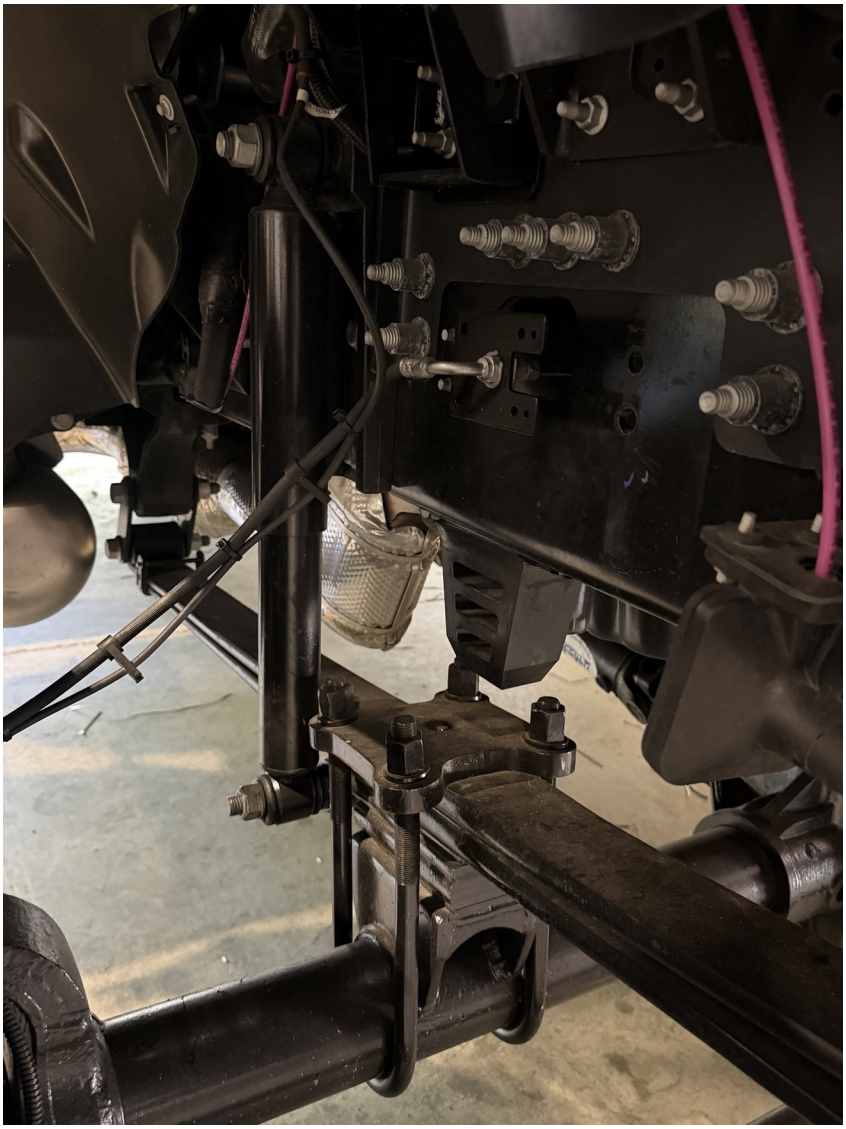


Figure 10 — U-bolts around the axle and through the top spring plates. Compare to the stock beam in Figure 5.

8. Sensors, brakes, drag link, and oil

13. Reinstall the wheel-speed sensors on the new axle and plug the connectors back in. Keep the wires clear of the driveshaft, steer arm, and U-bolts.

14. Hydraulic brakes: swap the front brake lines right to left. Swap the frame brackets for the brake lines the same way, right to left.

15. Air brakes: reconnect the air hose to the brake chamber on the 4×4 axle. No line swap and no bleed is required for the air-brake hook-up. All other axle steps stay the same as the hydraulic job.

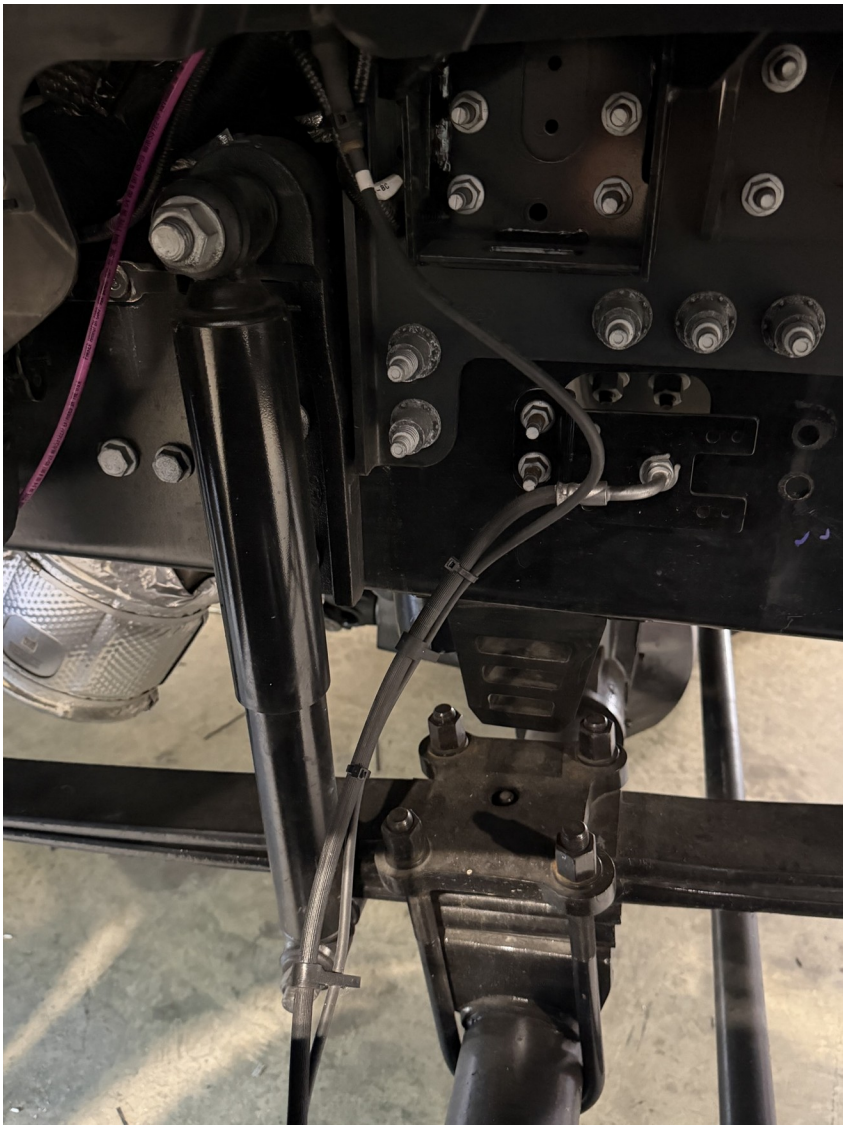


Figure 11 — After: brake line at the frame and shock back on. Compare to the stock bracket in Figures 2 and 3.

16. Hydraulic brakes only: bleed the brakes per the truck service manual. Confirm a firm pedal before the truck comes off the stands.

17. Install the new adjustable drag link. Adjust it to the length needed so the steering wheel and toe are close before a final alignment.

18. Fill the axle with 75W-90 full synthetic gear oil to the fill plug.

9. Before the truck leaves the shop

- Driver’s side: one U-bolt and two bolts, torqued. Passenger side: two U-bolts, torqued. Old U-bolts not reused.
- Wheel-speed sensors installed on the new axle and plugged in.
- Hydraulic: lines and frame brackets swapped right-to-left, brakes bled, no leaks.
- Air: chamber hose moved from the 2×4 chamber to the 4×4 chamber.
- New bump stops mounted to the frame above the U-bolt plates.

- Adjustable drag link installed and set to length.
- Axle filled with 75W-90 full synthetic gear oil.
- Tires on, truck on the ground, steering and brakes checked in the yard.
- Send the truck for a front-end alignment after the conversion.

This axle job is the front half of the 4×4 conversion. Transfer-case air and electrical hook-up is in the separate HCF450 Hook-Up & User Manual.

10. Rear leveling kit — leaf springs

Use this section when the conversion includes the rear leaf-spring leveling kit.

1. Support the truck by the frame rails with jack stands rated for the GVWR.
2. For easier access, remove the rear tires.
3. Place a jack under the rear axle and remove the factory U-bolts.
4. Lower the axle and place the leveling blocks between the axle and the springs.
5. Install the new U-bolts and torque them to factory specs per the truck service manual.
6. Check brake lines and sensor wires for clearance so nothing rubs after the axle sits higher.
7. Reinstall the wheels and tires.