

Papa Pete's How To on Prius Rear Axle Beam Replacement

Introduction

What?

This is a pretty significant repair/maintenance project. It involves *at least* the following:

- Remove/replace rear hubs/bearings
- Disconnect/reconnect rear brake calipers and lines (and drain/refill brake fluid)
- Disconnect/reconnect and adjust parking brake
- Disconnect/reinstall rear springs, and lower end of struts
- Disconnect/reconnect rear ABS sensors (and recalibrate)
- Install new axle beam, and a pair of bearings to go with it
- Remove/replace several other parts

I've supplied excerpts from the service manual for all of this (thanks, Mendel 😊).

Why?

I learned the hard way that many modern small cars use a solid rear beam axle. It performs well, and is relatively low cost. *However*, there's one major challenge: **if you bump a curb a little too hard, you get to replace the entire axle.**

With this design, there are no adjustments of any kind. The rear wheels are completely non-alignable, other than using pretty wonky shims for small adjustments. (I tried that on mine; it never was close. AND, a mechanic friend pointed out that even a small bend in the axle weakens it, making it dangerous in a future accident.)

Needed Parts, Tools, And Sourcing

Lessons Learned

- Get *all* the parts (and tools?) you'll need ahead of time. It's very costly to get a crucial part in a hurry! (If you're considering this project, I suggest you start looking *now* for an appropriate "junk yard" car whose rear end is fully intact. There were none for me for the first few months. My spec: not from a "rust belt" region, and back end not damaged.)
- Toyota is *serious* about one-time-use parts. With a few exceptions, don't try to re-use those. (I *did* reuse the simple retainer clips that hold the brake lines in place... p/n 90468-A0007)
- A few good tools are important. AutoZone's loaner program is *incredibly* useful. I "borrowed" almost \$1,000 of tools for this project and one other while I was at it. You get 90 days to return. (Actually, 90 and then to the end of that month.)

- In 2024 the supply chain is *very* untrustworthy. This year alone, I ran into:
 - Supposedly in-stock parts actually backordered (Toyota OEM)
 - Guaranteed exact-fit parts, that don't fit.
 - A 30mm large socket... that was actually ~33mm (AutoZone was amazed 😊)
- You *will* need access to a very powerful impact wrench (almost 1000 ft-lb), and other specialized tools. Details below.

Parts

When all was said and done, I spent about US\$200 on the axle beam, bushings and related parts, plus replaced the two hub/bearings while I was at it. I also own about \$100 more in tools, and can do my own brake jobs 😊.

Obviously, you need an **axle** (p/n 42101-12171), and a couple of **bushings** (p/n 48725-47030). In 2024,

- OEM axles list at close to US\$2000, the bushings at \$117 each.
- Online, you can get the OEM axle for \$1300 and bushings at \$83 each plus shipping.
- Amayama in Japan is a wholesale distributor. If you have time, you can save several hundred dollars more. (Hint: ask for DHL shipping. MUCH cheaper for heavy/big items.)
- There are several Chinese knockoffs on eBay. They made me nervous, and didn't cost less than some other options.
- I attempted to buy a good used axle from an online parts source. That was a disaster: they didn't understand that Corolla and Gen 3 Prius are different 😞
- Ultimately, I was able to source a good used axle from a parts house (modern "Junk yard") an hour away. Only \$125 since I picked it up myself! (Central Auto Parts, Denver.) Had to wait a couple of months for an appropriate "parts car" to show up.
- **Bushings:** these are press-fit. The bushing will be up to ~1mm larger diameter than the ring it goes into. Any more and there's no way it can fit. The Delphi TD1978W bushing (\$17.64 plus shipping at RockAuto) works great! (MevoTech MS86405 does *not*. Too big, period.)

Other parts you may want or will certainly need:

- Rear **hub(s)** (OEM p/n 42450-47040). I replaced both hubs, using MOOG 512505, \$126.79 plus shipping at Rock Auto.
- One clip pair for rear floor side member RH. P/N's 90467-17026-A0 (base) and 90467-17027-C0 ("clip"). I did an entire PriusChat post on this weird "clip" (really a large plastic nut that can be pressed on but screws off.)
- 2+ pints **brake fluid** (DOT3 or DOT4 either one. Do NOT use DOT5)
- Anti-seize thread lubricant (I use copper anti-seize)
- M8x1.25 bolt to remove **disc rotors** if necessary
- A couple of fully threaded heavy bolts (1/2" or so x 4") and matching nuts plus small and large (fender) washers – to get hubs off the easy way. See Removal Step 26/27.

- Cleaning tools: wire brushes for drill. I also used Dremel-size brushes and a small sanding drum. (Hub hole, disc rotor, removing rust, etc)
- Anti-rust primer/paint to inhibit and/or protect axle. I used Rustoleum Rust Reformer and 2-in-1 Rust Reform & Seal (a new rubberized anti-rust coating spray.) I plan to apply this to more of the underbody soon, to avoid long term rust issues.
- Some mini-ziplocks are handy due to the number and variety of bolts/screws/etc coming off! I like the new GV “Rectangle Portion Snack Bags” – cheap and perfect for this.

Tools (no particular order)

- Jack, at least 2 jack stands, some 8-10 inch wood blocks if you don’t have multiple jacks (lifting the car, plus for releasing shocks, supporting axle beam, etc)
- Vacuum pump for brake drain/bleed (I am happy with the \$49 Mityvac 8000 from HF; it worked great. The \$10 vacuum at WalMart was useless.)
- Digital Caliper comes in *very* handy. Walmart has one for only \$10, does inside/outside and depth measurements, SAE and metric, up to 6 inches, to .01 in or mm.
- A plastic trim tool or two helps with gaining access to **parking brake adjustment** under dash
- 10mm (flex) flare nut wrench (flex is very helpful!) **brake tubes, parking brake adj**
 - I ended up buying a set of plain metric flare nut wrenches with 8, 10 and more from HF
 - AND purchased a 10/12mm flex flare nut wrench at AutoZone
- A *thin* 10mm wrench for adjusting **parking brake cable** (I have a weird pointy/large-jaw adjustable wrench I use for plumbing, air compressor pistons and more.)
- ½ in metric impact sockets: 10, 12, 14, 17, 19, 21mm; ½ in angled socket adapter also helps
- ½ in extension sockets (I used 3 of the 4 sizes in the HF set)
- 75+ in-lb torque wrench with 10mm socket.
- On loan from AutoZone (or O’Reilly Auto)
 - #57043 150 ft-lb ½ inch torque wrench
 - #57121 ½ in Breaker bar
 - #57023 Ball Joint Press Set (helpful w/ axle bushings)
 - #57111 Disc Brake Spreader Set aka Brake Caliper Tool (pushes piston in)
- If installing **bushings**
 - Access to: 2 ea 70mm x ~1 in rings for bushing removal/insertion
 - Access to: very powerful ½ in impact driver, well over 600 ft-lb. We used 1000+ ft lb
 - Access to: extra-long ball joint brace (U-shaped device. #57023 might have worked with our final set of 1 inch rings)
 - Ball Joint Press set
 - Heavy grease for threads in any high-pressure jig like this.
- If need to **remove bushings** (my used replacement axle had old bushings to be removed)
 - Everything from bushing installation above, plus...
 - Extra-deep 2 inch hole saw (I used Milwaukee 49-56-9667)
 - Metal Sawzall blade (and saw) (I used Diablo 8/14 tpi DS0614BGP)

- If you have a multitool and a long thin scraper blade, that's better than a Sawzall for removing bulk rubber from the bushings.
- Seriously consider using Toyota Techstream software and an appropriate connector. I purchased a VXdiag VCX Nano. It has served me well. There are plenty of PriusChat discussions on this topic.

Torque and Socket Summary

These torque specs can be found in the service manual component diagrams, detailed instructions, etc. Socket sizes were collected as I did the project 😊. A few items have no specified torque.

- Wheel Nuts 21mm, **76 ft-lb**
- (Inside) Lower Instrument Panel Finish Panel Assy screw, 10mm
- (Inside) Parking Brake Cable adjusting nuts 2x10mm. Need a *thin* wrench.
- Rear Floor Side Member Cover LH/RH bolts/nuts 10mm, large Phillips screw “clip”
- Rear Suspension Brace SubAssy bolts 14mm (**40 ft-lb**), plastic nut 12mm
- Rear Speed Sensor Wire mount nut 10mm, **75 in-lb**
- Parking Brake Cable Assy remove 3 mounts first (bolts 10mm, **53 in-lb**), then release w/ 14mm closed end wrench
- Disc Brake tubes: mount bolts/nut 10mm, **14 ft-lb**; tube connector 10mm flare nut (**11 ft-lb**)
- Disc Brake Caliper Assy bolts 14mm, **42 ft-lb** (**25 ft-lb** for caliper/slider bolts)
- Disc Rotor—if stuck, use M8x1.25 bolt in the built-in screw holes to force it off
- Axle Hub/Bearing bolts 14mm, **66 ft-lb**
- (Rear Wheel House Liner; Height Control Sensor) – I don't have these
- Rear Shock Absorber Assy, nut and bolt 17mm, **66 ft-lb** (threads/nuts toward outside)
- Rear Axle Beam Assy, bolt 19mm, **100 ft-lb**

ADDED NOTES ON SERVICE MANUAL STEPS

The following step numbers match the Service Manual steps.

- I *do not* always follow the sequence given 😊
- Install Step #35 (Brake Bleed) *requires* a second person.
- I assume you're taking a look at the PDF instructions accompanying this document. The PDF has both:
 - The primary axle beam component/removal/install instructions
 - An extra set of the service manual pages with detailed instructions, where the Axle Beam instructions don't include details.
- Note above the "Torque and Socket Summary" section! You will want that.

-1. AXLE PREP

- You are *not* ready to start this project until you've got the replacement axle beam ready to install! By far the most challenging part of the project was
 - Removing old bushings from the used axle I had purchased, and
 - Installing new bushings.

Removing old bushings

- To *push* a bushing out, you need a ring sized to fit *inside* the ring that holds the bushing, yet covers the diameter of the bushing edge.
- The other challenge: how to push on the bushing on the "inny" side, when there is no edge to grab on the "outy" side. Toyota and others make very costly jigs to get this done. I needed something simpler.
- At first I tried using the Ball Joint Press Set. (*All of this effort was for naught.*)
 1. I hacksawed the "outy" end of the old bushing to gain access to the axle ring.
 2. The press set includes caps that *do* fit the ends of the bushings/rings. But together with the ring that comes with the set (to hold the bushing as it slides out) there just wasn't enough room to get it done!
 - I worked around that by using a thick metal plate on one end
 - The plate was effective. I didn't care about ruining the old bushing so just used that and one of the two caps, and started pushing.
 - Result: yeah, the middle part of the bushing moved... but NOT the outer ring. Not even a little bit! *Complete Fail.*
- I then used a method that I've seen online in several YT videos. *This gets it done in ~15 min*
 1. Remove the bushing center with a hole saw
 - Use a deep socket hole saw (see tool list) to cut a circle in the bushing
 - Do that at both ends. The bulk of the bushing then slides out.
 - YES, it stinks! (Burning rubber smell.) Do it outside if you can 😊
 2. Cut away rubber to gain access to inside of outer bushing metal ring

- The goal: make it easy to accurately cut through the bushing metal ring in two parallel lines. You want the cuts on the part of the ring against the axle – the axle bushing ring is strongest there (lots of axle metal welded to it), so if you cut a little deep it won't matter.
 - This was quite simple using a multitool and a long thin flat cutting blade.
 - I removed rubber about ½ inch wide and the full length of the bushing.
 - You *could* do this with a Sawzall... just painfully slow and hard to see what is going on.
3. Cut the outer bushing cylinder, to release it from the axle bushing ring
- Remember, the bushing is press-fit under very high pressure. By cutting through the bushing cylinder, the pressure is released.
 - Using a Sawzall, carefully cut through the bushing cylinder, and do it again a fraction of an inch away
 - Peel back the slice you've created with pliers (don't even need to finish cutting all the way through)
 - Now the bushing will release from the axle ring



Clockwise from top-left:

- Deep socket hole saw used to remove center of bushing
- Multitool and flat blade used to remove rubber
- Chisel easily pushed bushing once released
- Now you see the two slots that released bushing

Installing New Bushings

- I don't know any way to get this done other than
 - Using a very costly custom jig (many hundreds of dollars)
 - Or: ball joint press rings, frame, and a very powerful impact wrench
 - (For smaller bushings, it's possible to use a strong threaded rod, some washers and nuts... but this needs SO much pressure, and there's SO much friction due to the larger size, that honestly we couldn't find materials that could handle the job.)
- We used the ball joint press, frame, end caps, 70mm rings and impact wrench. See photos.
 - With these tools, it was five minutes and done 😊
- (Note: I considered using a hydraulic press. But who has a press that can handle pushing in to an axle *sideways*? There's over a meter of axle hanging off that must be dealt with.)



From left to right:

- large screw (impact wrench off to left side), with heavy grease
- U shaped ball joint press (gray)
- left cap from AutoZone kit
- 70mm ring (protects protruding part of bushing)
- Bushing
- Axle Ring (axle going off to top of photo)
- 70mm ring (protects emerging part of bushing as it goes into ring)
- right cap from AutoZone kit
- far end of U shaped ball joint press

NOTE: DO pay attention to the angle of the bushing, as shown in the service manual instructions. I goofed and pointed it wrong. In my case not a serious issue, as the 3rd party bushing I used is solid rubber all around.

New Axle Prep



- To provide longer life, I wire-brushed off all rust from the used axle I'd bought, then used a can each of *Rustoleum Rust Reformer* and *Rustoleum 2-in-1 Rust Reform & Seal* (a new rubberized anti-rust coating spray.) Be careful to *keep paint out of screw holes, and the hub mounting surfaces.*
- Getting this done early on left plenty of time for the paint to dry before installation.

0. JOB PREP – Let's Get It done!

- The battery will be disconnected for much of this project. Make sure you have a pad to cover the tail hatch latch so it doesn't get stuck closed. (Don't disconnect quite yet...)
- Set parking brake, *slightly loosen lug nuts on rear wheels* while car is on the ground.
- Place blocks on the front end, open the hood, open the tail hatch, jack up the rear end and place jack stands.

1. DISABLE BRAKE CONTROL

- See PDF detail
- NOTE: when this is complete, the battery is disconnected, and a key connector to the master cylinder is also disconnected. *You must reconnect BOTH before final installation steps. That's NOT listed in the fine service manual.*



2. REMOVE REAR WHEELS

- If removing lug nuts with a ratchet, I hope you noticed above that it's way easier to get started while the car is on the ground. With an impact driver, it's not a big deal either way.

3. REMOVE FRONT DOOR SCUFF PLATE LH

- Pulls off by hand; just be gentle

4. REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH

- See PDF detail

5. REMOVE LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY

- See PDF detail
- A plastic trim tool is helpful; be gentle and you can do this w/o any damage

6. LOOSEN PARKING BRAKE CABLE

- See PDF detail



7. DRAIN BRAKE FLUID

- I did NOT fully drain. Just enough to release pressure so I didn't make a mess when temporarily disconnecting brake lines. The MightyVac makes this easy.

8. REMOVE REAR FLOOR SIDE MEMBER COVER LH (w/ Floor Under Cover)

- Illustrated in main

9. REMOVE REAR FLOOR SIDE MEMBER COVER RH (w/ Floor Under Cover)

- Illustrated in main
- Remember, the "clip" actually screws off.

10. REMOVE REAR SUSPENSION BRACE SUB-ASSEMBLY

- Illustrated in main
- Remove LH bolts first, then RH bolts. The clip keeps it from dropping to the ground. (For reinstall, I attached to the clip first, then bolted. Made it quick and easy.)

11. DISCONNECT REAR SPEED SENSOR WIRE (for LH Side) & 12 for RH

- This is tricky, until you understand how the connector works.
- A great YT video explains: [here's a link](#)

13. SEPARATE REAR SPEED SENSOR WIRE (for LH Side) & 14 for RH side

- See PDF detail
- You want this out of the way while replacing the axle. I hooked them up high looping around another wire nearby.

15. DISCONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY & No 2 for RH side

- See PDF detail
- NOTE: I found it MUCH nicer to remove *three* mounting bolts/nuts, not just one.
 - Save the one from the axle on the new axle, and the other two on the car where they came from
 - Doing this made it easy to gently bend the parking brake cable out of the way so I could work on the axle beam w/o that in the way
 - Got to think for a minute: parking brake cables run UNDER the axle, and you don't want them tangled up as you remove/reinstall the axle! For me it was handy to hook the cable under a nearby jack stand 😊
- [This video](#) nicely illustrates parking brake cable removal as well as disc caliper / hub removal (steps 15-17, 20-23, 26-27)

17. SEPARATE NO. 3 PARKING BRAKE CABLE ASSEMBLY & No 2 for RH side

- Illustrated in main

19. SEPARATE REAR BRAKE TUBE FLEXIBLE HOSE

- Illustrated in main
- Important: I found it MUCH nicer to modify the sequence for #19-24:
 - First I held the disc rotors on with a lug nut, and removed the caliper assemblies, temporarily hanging them up high
 - Then I removed the various brake tube mounts (some nuts, some retainer clips)
 - Then I used 10mm flare nut wrench to loosen the tubes, separate, remove from mounting holes on the axle, and reconnect.
 - After that, I was able to place the calipers on the ground nearby but out of the way of removing the axle. (Got to think for a minute: brake lines run on TOP of the axle, and you don't want them tangled up as you remove/reinstall the axle!)
 - Finally, I removed the rotors.
 - So the sequence was: (20, 21), 19, (24,25), (22, 23)

20. REMOVE REAR DISC BRAKE CALIPER ASSEMBLY LH & 21 for RH

- Illustrated in main

22. REMOVE REAR DISC (for LH Side) & 23. For RH side

- If it doesn't easily come off, screw an M8x1.25 bolt into one of the holes on the face of the rotor to force it off. Very easy.

24. REMOVE REAR NO. 4 BRAKE TUBE & 25. No 3. RH side

- Illustrated in main

26. REMOVE REAR AXLE HUB AND BEARING ASSEMBLY LH & 27. RH

- Easy way to remove hubs: <https://priuschat.com/threads/solved-rear-wheel-bearing-removal-easy-way.161283/>

28. SEPARATE REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner) & 29 RH

- See PDF detail. I don't have these.

30. SEPARATE REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor)

- See PDF detail. I don't have these.

31. REMOVE REAR COIL SPRING LH & 32. RH

- See PDF detail
- Before doing this, take note of the paint markers on the springs. They should face the rear of the car. And, notice where the top insulators are: they have a groove and stop that matches the top end of the spring.
- Also take note of which side the nut vs bolt is on the shock structs. Easy to reinstall backwards if not paying attention.
- *Steps 31-36 all happen together.* If anything, the hard part is keeping the springs from falling out and rolling around.
- It's actually pretty simple once you realize that jacking up the bottom of the spring pan (w/ a block of wood to protect) about an inch, removes the pressure from the bottom of the shock absorber, making it easy to remove the big bolt there.
- I did the pressure release on one side, then held that spring pan up with a spare jack stand (or vertical block of wood) while doing the same on the other side. Then lowered down the side I was jacking up and removed the stand, causing both ends of the axle beam to lower down.
- Since the beam is still tight, it doesn't just bonk to the ground etc. As noted in the instructions, you don't want to leave the axle beam with this tension for more than a few minutes, so just hustle in grabbing the two big springs, then push up the beam and temporarily re-insert the shock absorber bolt.

33. REMOVE REAR UPPER COIL SPRING INSULATOR LH & 34. RH

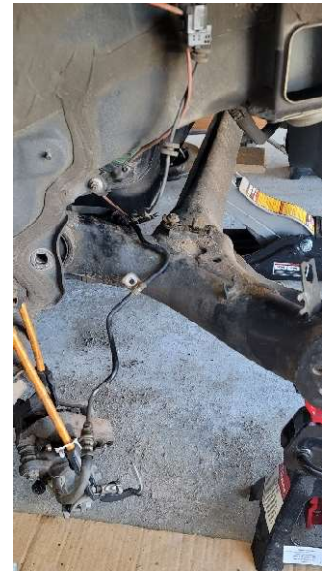
35. REMOVE REAR LOWER COIL SPRING INSULATOR LH & 36. RH

- WHEW! You have removed everything connected to the axle beam!
- Check your work. You should have a clear path to removing the axle beam. All other systems removed and out of the way:
 - Speed Sensors *above* the axle
 - Parking Brake Cables *below the axle*

- Brake Lines *above the axle* yet calipers off to the side so axle can be removed
- Time for the big switch!

37. REMOVE REAR AXLE BEAM ASSEMBLY

- Illustrated in main, but I didn't follow their instructions exactly.
- **BEFORE removing the axle beam, ensure the new one is ready to install:**
 - New bushings installed, see step -1 Axle Prep. (This is a bigger job than it seems, if you have never done it before and/or aren't often using the tools to get this kind of thing done. Even for my very experienced mechanic friend, there was quite a bit of head-scratching, and we ended up getting the bushing installation done over a period of a couple of days while working out the right jig for pushing them in.)
 - Any rust removal or priming/painting is complete
 - New beam is nearby, ready to slide in place
- Look at old and new axles, to notice a few important things:
 - The bushings that mount the axle are at an angle. The axle must drop *down* before being pulled *out*.
 - The axle is heavy (almost 50 lb) but certainly manageable by one person working carefully.
 - While you have plenty of working space to *remove* the bushing bolts, final tightening and torque-set will be done with car on the ground, tires mounted. *You will need a socket extension for that.*
- How I did it:
 - Put a jack in place under the center of the axle beam, with a block of wood on the jack, supporting both the front and back (it's an upside down V shaped bar. You want support on both!)
 - Ensure the shock absorber nuts are removed and bolts are loose but *not* removed. Or if feeling confident: support that end with jack stands, w/ shock absorber bolts removed.
 - Loosen both axle beam bolts but *not* removed. At this point it's still stable 😊
 - Now remove both axle beam bolts. Ensure the beam is supported ok.
 - Lower the beam until bushings are clear of the car/mounts (adjust jack if needed for balance)
 - If not already done, now remove shock absorber bolts while spring trays are supported by jack stands or wood blockd.
 - Finish lowering the beam, remove spring tray supports, and slide it out the back end
 - For me, it was easiest (given the various bits under the car) to turn the beam while pulling it out so one end emerged from the back first.



38. REMOVE REAR AXLE CARRIER BUSHING LH & 39. RH

- Illustrated in main
- I discuss this in step -1 Axle Prep

INSTALLATION

1. INSTALL REAR AXLE CARRIER BUSHING LH and 2. For RH

- I discussed in Step -1 Axle Prep
- Toyota jig method illustrated in main

3. TEMPORARILY TIGHTEN REAR AXLE BEAM ASSEMBLY

- Illustrated in main
- Basically this is the reverse of Removal Step 37 above.
- What I did:
 - Slide the new axle beam in place under the vehicle, balanced on a jack
 - Raise the jack enough so the bushings are approx. in place
 - They won't exactly fit yet because the angles are wrong!
 - Lift the axle by hand, to slide shock absorber bolts in place. Don't bother tightening yet.
 - Now finish raising the axle beam into position with both bushings in place
 - Insert bushing bolts, not cinched tight but not too loose. They need some flex for mounting the springs...

4. INSTALL REAR UPPER COIL SPRING INSULATOR LH and 5. For RH

- See PDF detail. These notes cover steps 4-9
- Once you have the insulators all set, now comes a minor juggling act 😊
- You're going to lower the spring base (attached to axle), place *both* springs and raise again without either spring falling out.
- It's actually not too bad: there's a protrusion on each side that can lightly hold the top of each spring, as long as the base is at the right height. (If not, change the jack height a bit)
- To lower the base:
 - Place jack under one side, lift about an inch to remove tension
 - Remove the shock mounting bolt
 - Support the spring base with a wood block or a jack if you have more than one
 - Now repeat to lower the other side
- Insert both springs
- Raise one side and insert shock mounting bolt (threads/nuts facing outside vehicle)
- Raise other side and insert shock mounting bolt

- Tighten shock mounting bolts (you can now tighten these to spec. Do NOT fully tighten axle bolts yet!

6. INSTALL REAR LOWER COIL SPRING INSULATOR LH and 7. For RH

8. INSTALL REAR COIL SPRING LH and 9. For RH

10. INSTALL REAR HEIGHT CONTROL SENSOR SUB-ASSEMBLY RH (w/ Height Control Sensor)

- See PDF detail. I don't have this.

11. INSTALL REAR AXLE HUB AND BEARING ASSEMBLY LH and 12 for RH

- Pretty simple. Hub/bearing and disc brake dust cover only go on one way.

13. INSTALL REAR NO. 4 BRAKE TUBE and 14. For RH #3 tube

- Illustrated in main. These notes cover steps 13-19
- As with removal, I didn't follow the service manual sequence. Instead:
 - Installed disc rotors, held in place with lug nuts
 - Loosely placed caliper assemblies in position, with one caliper slide bolt lightly attached
 - Ensured brake tubes were positioned
 - Starting with rearmost tube, used flare nut wrench to disconnect, position in mount, and reconnect
 - Once all brake tubes were correctly positioned, I installed permanently with the various mounting bolts and retainer clips
 - Then did final tightening of brake lines etc
 - Then final mount of caliper assembly
 - So my sequence is: (16, 17), (18, 19- loose), 13-15, (18, 19 tight)

15. CONNECT REAR BRAKE TUBE FLEXIBLE HOSE

- Illustrated in main

16. INSTALL REAR DISC (for LH Side) and 17 for RH side

18. INSTALL REAR DISC BRAKE CALIPER ASSEMBLY LH and 19 for RH side

- Illustrated in main

20. INSTALL NO. 3 PARKING BRAKE CABLE ASSEMBLY and 21 for #2 RH side

- Illustrated in main
- Remember my method involves reinstalling three mounting bolts/nuts, along with the final connection.

22. CONNECT NO. 3 PARKING BRAKE CABLE ASSEMBLY and 23 for #2 RH side

24. INSTALL REAR SPEED SENSOR WIRE (for LH Side) and 25 for RH side

- For 24-27: See PDF detail, and video linked in the removal step (11/12)

26. CONNECT REAR SPEED SENSOR WIRE (for LH Side) and 27 for RH side

28. INSTALL REAR SUSPENSION BRACE SUB-ASSEMBLY

- Illustrated in main
- I attached the RH clip first, and two RH bolts loosely, then LH bolts, then all torques

29. INSTALL REAR FLOOR SIDE MEMBER COVER LH (w/ Floor Under Cover)

- Illustrated in main

30. INSTALL REAR FLOOR SIDE MEMBER COVER RH (w/ Floor Under Cover)

- Illustrated in main
- This has the strange two-part “clip”. Easy to push the clip (big plastic nut) onto the stud.

31. ADJUST PARKING BRAKE

- See PDF detail

32. INSTALL LOWER INSTRUMENT PANEL FINISH PANEL ASSEMBLY

- For 32-34, See PDF detail

33. INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH

34. INSTALL FRONT DOOR SCUFF PLATE LH

35. BLEED BRAKE LINE

- Service manual says: **CAUTION: The Techstream must be used for air bleeding. If not used, the air bleeding will be incomplete, which is hazardous and may lead to an accident.**
- This step requires a helper.
- **Before doing this: reconnect the cable to the master cylinder. THEN attach 12v ground.**
- See PDF detail. It was pretty easy using TechStream.

36. PERFORM INITIALIZATION AND CALIBRATION OF LINEAR SOLENOID VALVE

- See PDF detail. Straightforward with TechStream. Fiddly OBD2 connector wires without.

37. INSTALL REAR WHEELS

38. STABILIZE SUSPENSION

- “Lower the vehicle; press down on the vehicle several times.”

39. FULLY TIGHTEN REAR AXLE BEAM ASSEMBLY

- See *Torque and Socket Summary* for Axle Bolts and Shock bolts.

40. INSTALL REAR WHEEL HOUSE LINER LH (w/ Wheel House Liner) & 41 RH side

- I don't have these.

42. INSPECT REAR WHEEL ALIGNMENT

- I obtained an alignment upon completion

43. PLACE FRONT WHEELS FACING STRAIGHT AHEAD

44. PERFORM YAW RATE AND ACCELERATION SENSOR CALIBRATION

- See second PDF (Yaw Rate and Acceleration Sensor Zero Point)
- Easier with TechStream, doable without.

45. CHECK FOR SPEED SENSOR SIGNAL

- AFAIK, there will be a DTC if any speed sensor isn't working.

46. PERFORM INITIALIZATION (w/ Height Control Sensor)

- I don't have this

Service Manual Excerpts PDF

Note: I no longer have Acrobat Pro, and have not yet found a tool that will let me add bookmarks AND retain the PDF content 😞 ... For now, here is a TOC for the PDF.

The PDF begins with 22 pages of Component / Removal / Installation instructions for the Axle Beam. Then, I've included detail pages for many of the Removal and Installation steps (that don't already have inline instructions.) Labels identify "R1" (Removal step 1)... "I4..." (Installation step 4) etc.

Page	Manual	What
1	4689	AXLE BEAM
1	4689	Components
6	4695	Removal
14	4703	Installation
23	.	DETAIL PAGES
23	1243	R1 (step 1 on this page)
24	6347	R4 (step 6 on this page)
25	6413	R5 (step 15 on this page)
26	901	R6 (step 7 on this page)
26	901-2	R15 (Step 8 on this page)
30	4607	R13 (Step 4 on this page)
30		R28-29 (Steps 7, 8 on this page)
30		R30 (Step 6 on this page)
31		R31-36 (Steps 9-14 on these pages)
35	4717-8	I4-9 (Steps 1-6 on these pages)
37	4719	I10 (Step 7 on this page)
37	4719	I24-27 (Steps 8-11 on this page)
38-9	4720-1	I39 (Step 14 on these pages)
41	1344	I31 (Steps 1-2 on this page)
42-44	6442-3, 6396	I32-34 (Steps 21, 45, 46 on these pages)
45-50	1273-8	I35 (All content on these pages)
51-55	942-6	I36 (All content on these pages)

(56 was a mistake 😊)

Then there's a second PDF for Install step 44.