

## Radius Arm Instructions

**FIRCH**  
F A B W O R K S

Installation of these radius arms requires removal of factory control-arm mounts. This install should only be done by an experienced, confident metal fabricator. Read these instructions prior to starting. It is critical to plan the entire install process prior to dismantling your vehicle.

**Note:** Coil height must be within a specified range for the radius arms to function properly (0" - 4"). This radius platform is designed for stock coil height (0") or coil height up to 4" over stock height. These radius arms cannot be installed with a coil height greater than 4".

## Hanger Placement

Precise location of **the new control-arm mount** is critical (**especially on the frame side**). Exact install location effects axel location and final vehicle alignment

1. Remove the factory skid plate in order to install the hanger. (if vehicle is equipped with one)
2. Locate the front of the cab and identify the cab body mount. See images for the location.
3. Measure from the backside of this body mount toward the back of the truck (see images). Refer to Table 1 for the measurement (Eg. 21"). Mark this measurement concisely!
4. Orient the hangar:
  - Point the holes towards the front tires.
  - The face of the hanger should be continuous with the face of the frame. Notice a "crotch," where the frame meets the hanger. The "crotch" (see horizontal arrow in image) is where one leg (the frame's base/lowest edge) meets the other leg (the hanger's top-left corner of the hanger). Ultimately, the point of our initial measurement denotes the "crotch" (see horizontal arrow in images).
5. Hold the hanger in its location with the crotch of the hanger at the marked measurement.
6. Mark the hanger's footprint. The hanger's "crotch" is at the initial measurement. Continue to mark the length of the hanger towards the back of the truck.
7. Use a sanding disk to clean the frame coating where the hanger will sit (after the 21" marker). Refer to the images to see where the weld is placed.

**Tech note:** Some factory frames have extra weld buildup. The weld buildup does NOT allow the hanger to sit cleanly on the frame. Grind or sand this buildup so the hanger can sit flat on the frame. Be sure to clean the factory weld buildup before attempting the next step.

**Table 1:** Hanger Location measurements according to Model year and Generation

Generation	Measurement (inches) for Hanger Location
2 <sup>nd</sup> (1994-2002)	22"
3 <sup>rd</sup> (2003-2009)	22"
4 <sup>th</sup> (2010-2012)	22"

8. Prepare for welding.

## Weld Process

You can never measure too much. Location is critical to permanent axle location and final vehicle alignment.

1. Now, check your mark up: **Re-measure** and re-mark the location if needed. Double check that the hangers' crotch can sit flat on the bottom of the frame along the proper measurement and marks.
2. After seriously checking, tack weld the hanger on the frame.
3. Once you have ensured both hangers are in the **proper location** and are **identical** on both driver and passenger side, FULLY weld the hanger in. The bottom radius of the frame makes for a nice "single bevel" weld. Fully fill in the "single bevel" between the two pieces of metal so that your finish weld is slightly proud or completely flush to the factory's frame rail and the new hanger.

## Break Down

Perform the "Break Down" and "Install" process on the driver side before moving to the passenger side.

1. Unbolt both upper and lower factory control-arms on one side. Remove factory only on one side at a time.

**Tech note:** Removing and installing one side at a time prevents the need to wrestle the axle back into its location.

2. Locate the control-arm mounts on the driver's side: differentiate between the control-arm mounts on the **FRAME SIDE** VERSUS the control-arm mounts on the **AXLE SIDE**. Also note the neighboring wire harnesses and brake lines. Temporarily secure them with zip-ties or tie-wire in preparation for the next step.
3. Cut and remove only the **FRAME SIDE** control-arm mounts. Use a plasma cutter or Sawzall. Follow the base of the factory's frame rail as your guide. Apply even pressure throughout the cut, removing the FRAME SIDE control-arm mounts in one continuous motion.

**Tech note:** A plasma cutter works great if available, as it has a short, controlled arc. On the other hand, a *fresh* Sawzall blade can get the entire job done from start to finish.

**CAUTION: Be aware that there are wire harnesses and brake lines near your cutting path.**

4. The factory frame should be completely smooth along the length of the installation site.

**Tech note:** Use a grinding wheel and sanding disk to aggressively smooth out the frame. This step takes experience and confidence. If you're asking yourself if it is "Smooth enough," the answer is "Nope." Blend the remaining bits of factory FRAME SIDE control-arm mounts. You are done when it is smooth. The frame should appear bare, without any sign of the prior control-arm mount.

## Install

From the “Break Down” process to the “Install” process, continue with only the driver’s side installation until it has been completed. Only then, will you begin breaking down the passenger’s side.

1. Locate the control-arm mounts on the AXLE SIDE. Bolt the lower radius arm into the AXLE SIDE control-arm mounts.
2. Lift the lower radius arm into the new hanger. Bolt the back of the lower radius arm into the hanger.
3. Set the upper radius arm to length (see Table 2). Install the upper radius arm.

**Table 2:** Upper Arm Lengths according to Model year and Generation

Generation	Measurements (inches) for Upper Arm Lengths
2nd (1994-2002)	15.375”
3rd (2003-2009)	17.125”
4th (2010-2012)	17.125”

4. Repeat the “Break Down” and “Install” process for the passenger’s side of truck. Recall, this approach allows the axle to stay in place.

## Final Steps

Get road-ready: tighten and align your rig.

1. Torque all the hardware to spec. See references (below).
  - **Axle side Hardware**
    - 12mm upper (1994 - 1999): 120 ft. lbs.
    - 14mm upper (2000 – 2012): 150 ft. lbs.
    - 14 mm lower (1994-1999): 120 ft. lbs.
    - 16 mm lower (2000 – 2012): 250 ft. lbs.
  - **Radius arm upper bolt**
    - 9/16 Grade 8 bolt : 150 ft. lbs.
  - **Radius arm frame side bolt**
    - 5/8 Grade 8 bolt : 180 ft. lbs.

2. Take vehicle in for professional alignment. Recommended alignment specs (below):

**Table 3:** Alignment Specifications according to Model year and Generation

Generation	Toe (inches)	Camber: Driver and Passenger	
2nd (1994-2002)	0.000” - 0.005”	4.0 <sup>o</sup> – 5.0 <sup>o</sup>	3.1 <sup>o</sup> – 4.1 <sup>o</sup>
3rd (2003-2009)	0.000” - 0.005”	3.8 <sup>o</sup> – 5.0 <sup>o</sup>	2.8 <sup>o</sup> – 4.0 <sup>o</sup>
4th (2010-2012)	0.000” - 0.005”	3.8 <sup>o</sup> - 4.9 <sup>o</sup>	2.8 <sup>o</sup> – 3.9 <sup>o</sup>

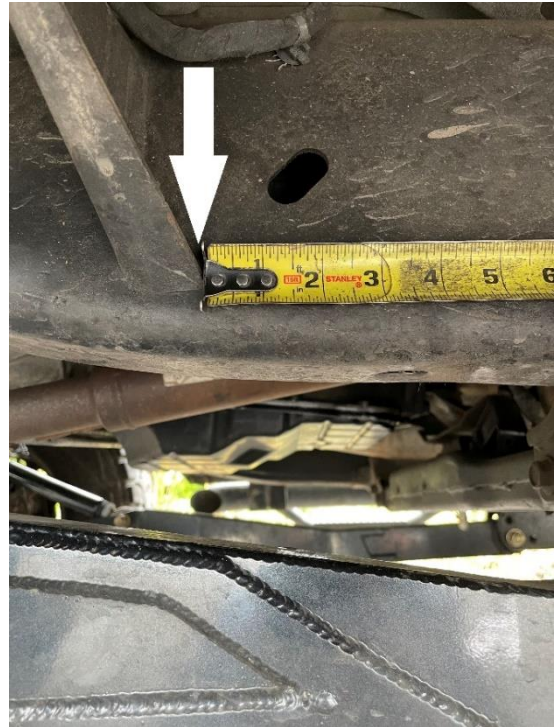
## Replacement Hardware

Disassembly and removal of factory hardware may require cutting bolts. See factory replacement hardware (below).

**Table 4:** DORMAN part numbers for hardware on AXLE SIDE control-arm mounts

<b>Generation</b>	<b>Hardware for AXLE SIDE control-arm mount (DORMAN part number)</b>
2nd (1994-2002)	upper control-arm bolt (14890) lower CAM bolt (AK811539PR)
3rd (2003-2009)	upper control-arm bolt (148841) lower CAM bolt (13993)
4th (2010-2012)	upper control-arm bolt (1484) lower CAM bolt (13993)

## Hanger Placement Images



Notice how the hanger is continuous with the frame, oriented with the holes towards the front tires.

**Vertical Arrow:** The end of the front cab's body mount is denoted by the vertical arrow. Start your measurement at the point of the vertical arrow.

**Horizontal Arrow:** Mark the frame with this initial measurement. The point of the arrow denotes the "crotch" of the hanger.

