



HAMMERHEAD DIFFERENTIAL TO C5 CORVETTE CRADLES

These instructions were specifically written for the installation of a Fifth-Generation Camaro 'Hammerhead' Differential into a full-width C5 Corvette Rear Suspension Cradle.

This kit can also be used with C5 Corvette rear suspension cradles that have been narrowed between 1" and 10" with some modifications, discussed later in these instructions.

PLEASE NOTE:

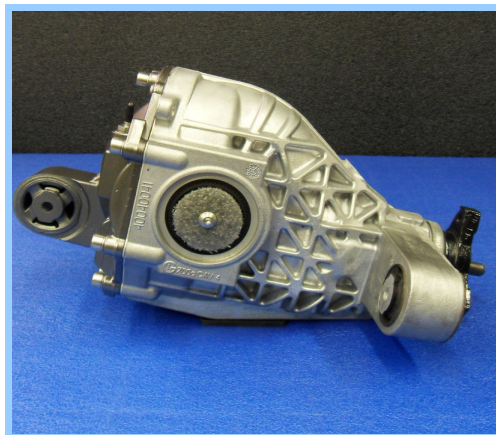
- Only a few holes are pre-drilled in the kit's components because some of the parts in the kit will need to be trimmed for installations that require the cradle to be narrowed.
- Once a cradle is narrowed, it throws the relative placement of the cradle's underside bracing off, so the component's holes will need to be carefully placed in order to miss the bracing.
- Most trim-to-fit areas need to be performed by the fabricator, because no two castings are exactly alike, and therefore will need trimming in different areas.



This is a top view of a stock C5 Corvette rear cradle – built from 1997 – 2004.

The rear of the cradle is pictured on the bottom and the recess in the center is for the transaxle mount.

To the right are a couple photos of the 5th Gen Camaro's aluminum-cased 'Hammerhead' differential – built from 2010 to 2015

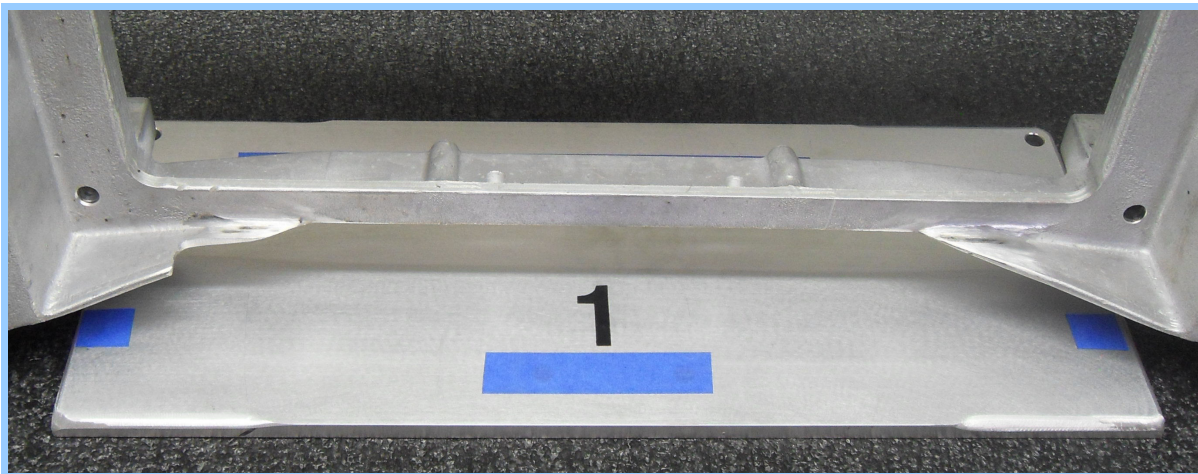


Let's Get Going...

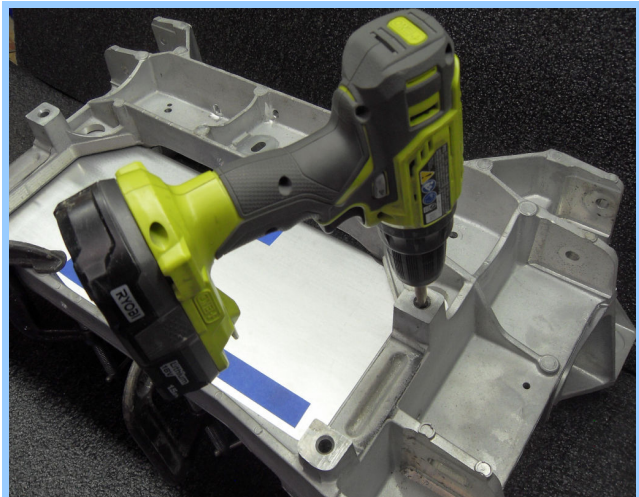
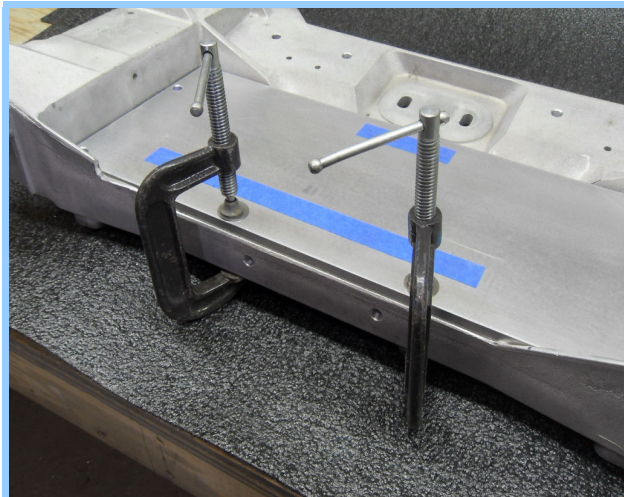
1. Turn the cradle upside down and drill the four transverse spring mounting holes all the way through the casting – 3/8" diameter.



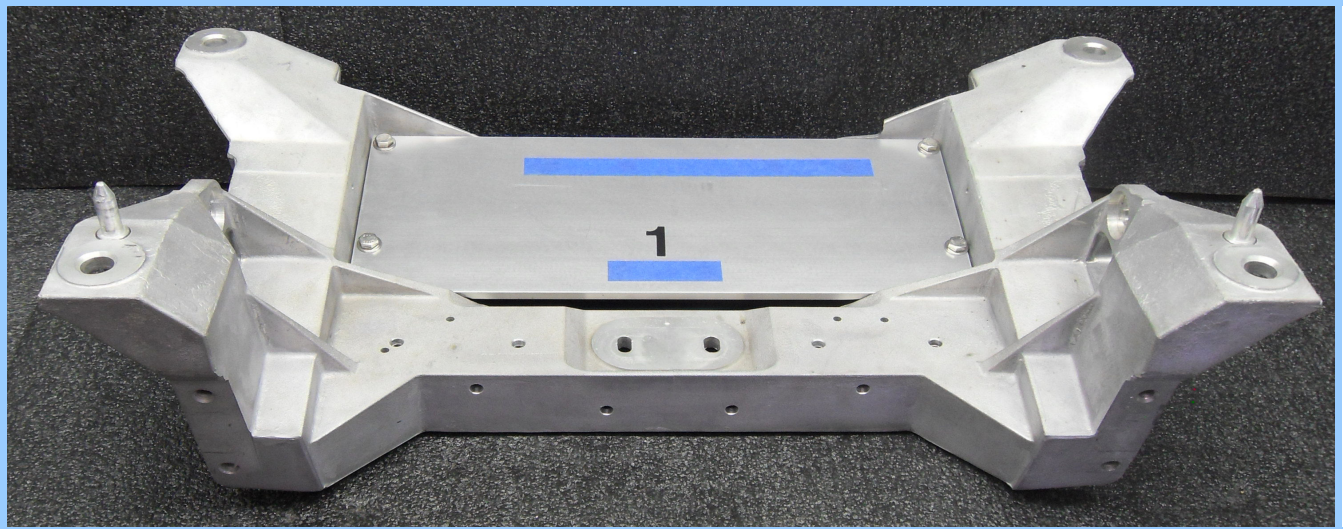
2. Turn the cradle right-side up and trim [1] and the Casting wherever there is interference that prevents [1] from laying flat against the casting. The photos below show the typical areas that must be trimmed for clearance. Round the corners and edges on the bottom.



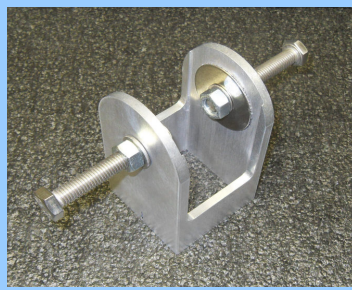
3. Once [1] is trimmed and fits flush to the cradle, C-Clamp it to the cradle – then drill four 3/8" holes through the cradle and [1]. Disregard the blue tape.



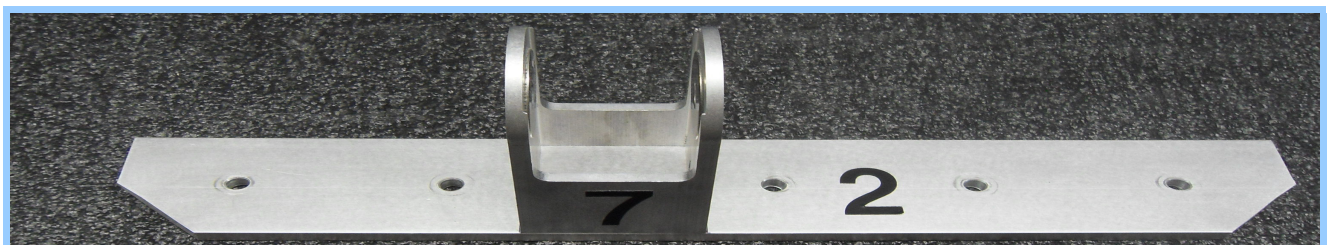
4. Turn cradle around, so the rear of the cradle is closest to the edge of the workbench. Use four of the 3/8" x 3-1/2" bolts, eight flat washers and four of the **non-locking nuts** for mounting **[1]**. This is because it might be taken apart later. **If you use the ESNs, (Elastic Stop Nuts) make sure that you use Anti-Seize on the bolts or you will never get them apart.**



5. Mount the six 2" x 1/2" fender washers inside 3" x 3" uprights **[7], [8] and [9]**. I use JD Kwik Epoxy for this, because it dries in about fifteen minutes. Identifying the uprights is easy: **[7]** is cut straight on the bottom, while uprights **[8] and [9]** are cut at a 10-degree angle on the bottom and **[9]** also has a recess cut into it on one side, for mounting clearance.

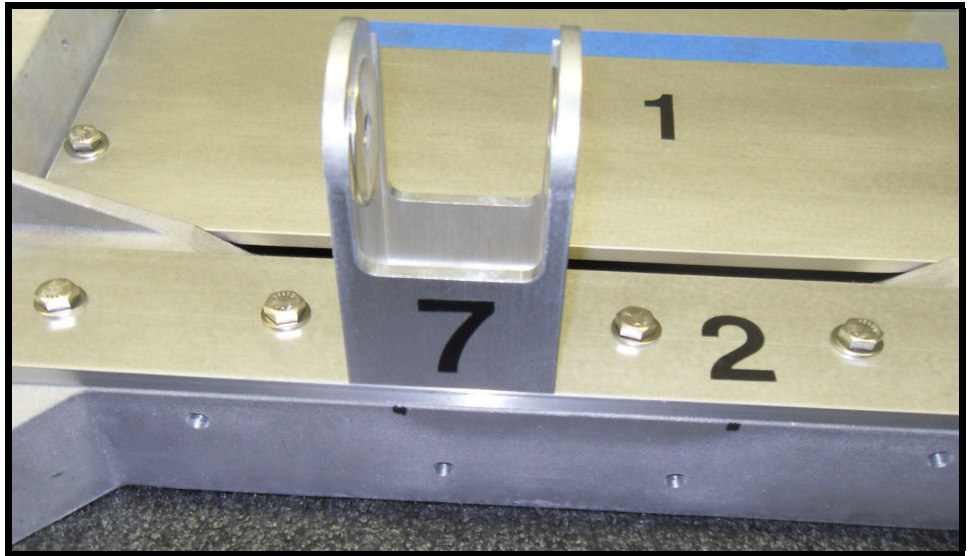


6. Mark **[2]** 10-1/8" from the right end and 6-3/4" from the left end. (This should leave you with three inches between the lines.) **This measurement is very important, because it locates the Hammerhead Differential in the proper position front-to-back, top to bottom, and right-to-left. It also allows you to use two rear axles that are the same length.**
7. Lightly tack or epoxy **[7] to [2]** between the lines. (Make sure that the deeper recess on the 3" x 3" **[7]** upright is facing the front of the cradle.) **PLEASE NOTE: If you use epoxy here, make sure all of it is removed before permanently welding the parts together.)**



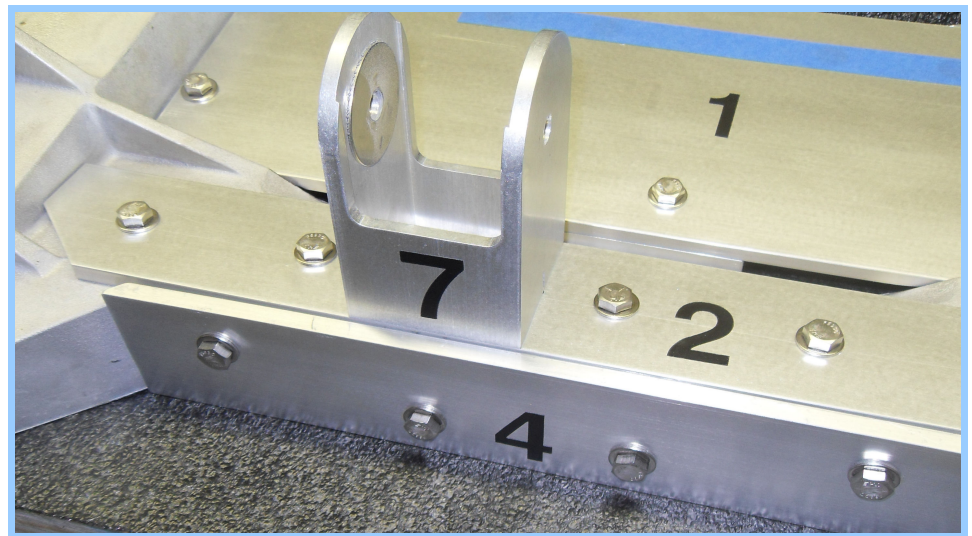
8. Align the back edge of [2] with the rear of the cradle and drill four to five mounting holes.

Before the holes are drilled, check under the cradle to make sure that the cradle braces don't interfere with your mounting holes.

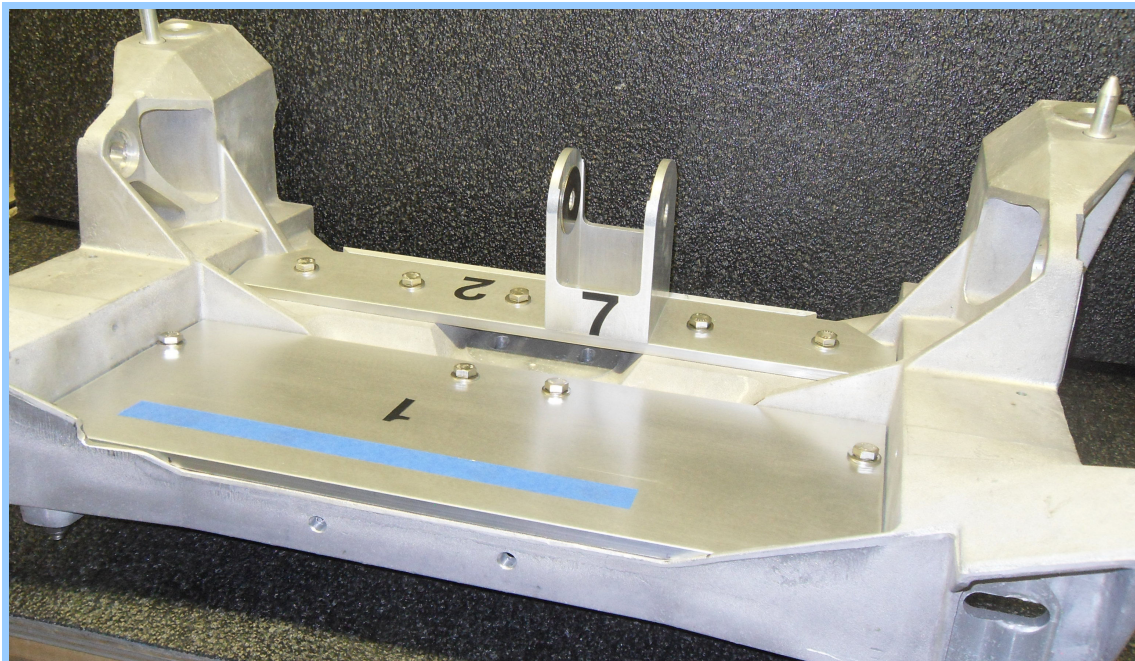


9. Align [4] with the top of [2] and drill four mounting holes.

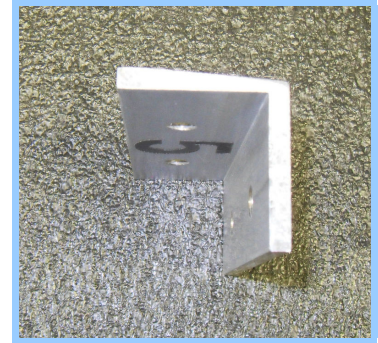
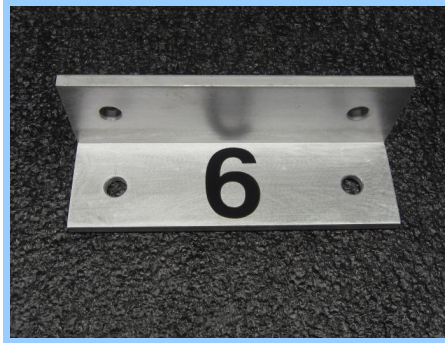
Before the holes are drilled, check under the cradle to make sure that the cradle braces don't interfere with your mounting holes.



10. Turn the cradle around, so the front of the cradle is closest to the edge of the workbench.



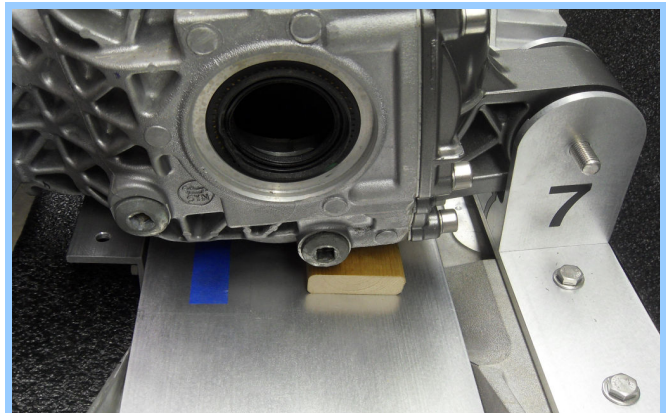
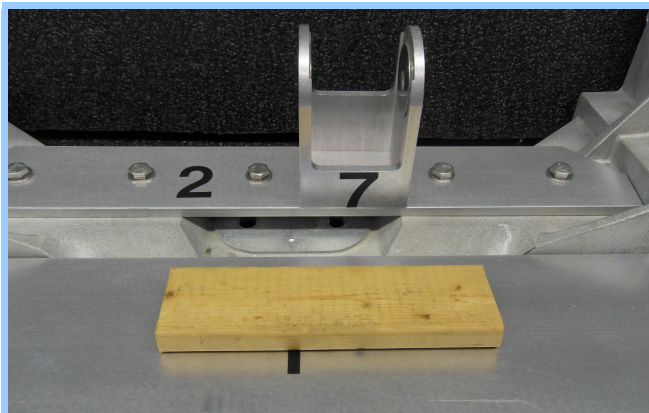
11. Look over [5] and [6]. Notice how both of these parts have been machined on one side. The ten-degree angle cut is there to match the ten-degree angle of the cradle and [1].



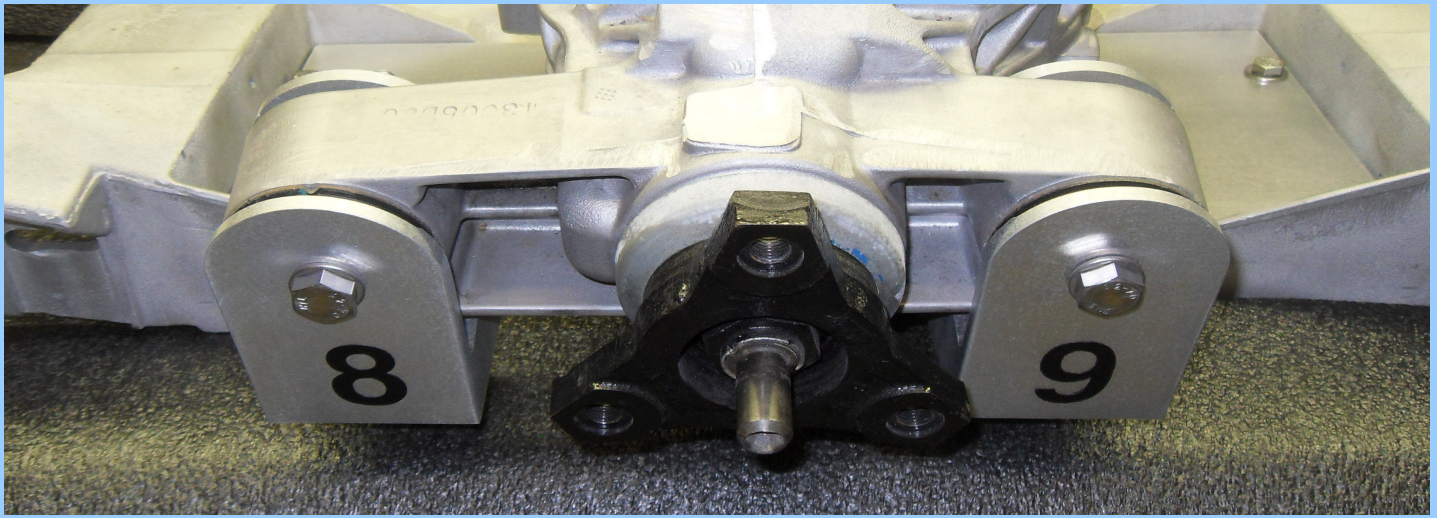
12. Align the **TOP** of [5] with the **BOTTOM** of [1] in the center of the cradle's **REAR** crossmember and drill two mounting holes into the cradle. **Before the holes are drilled, check under the cradle to make sure that the cradle braces don't interfere with your mounting holes.**
13. Temporarily overhang [3] on the **TOP** of [1] then slide [6] up to the underside of [3] in the center of the cradle's **FRONT** crossmember and drill two mounting holes into the cradle. **Before the holes are drilled, check under the cradle to make sure that the cradle braces don't interfere with your mounting holes.**



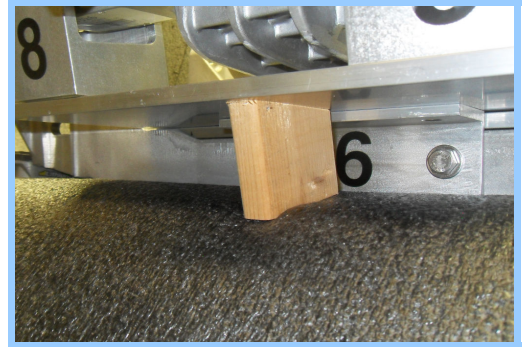
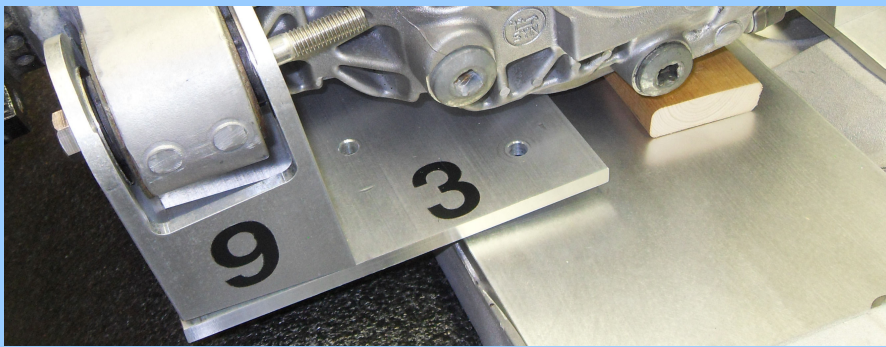
14. Put a 3/4" wood spacer on [1], then slide the rear differential mount into [7] and install a 12mm x 100mm bolt. Do not install the nut at this time.



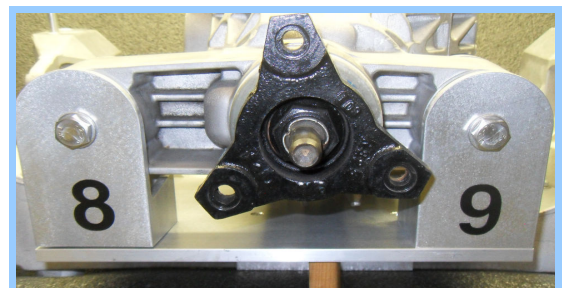
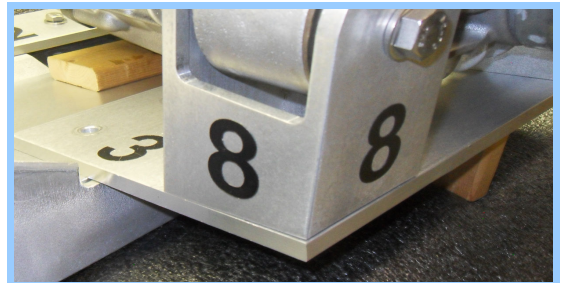
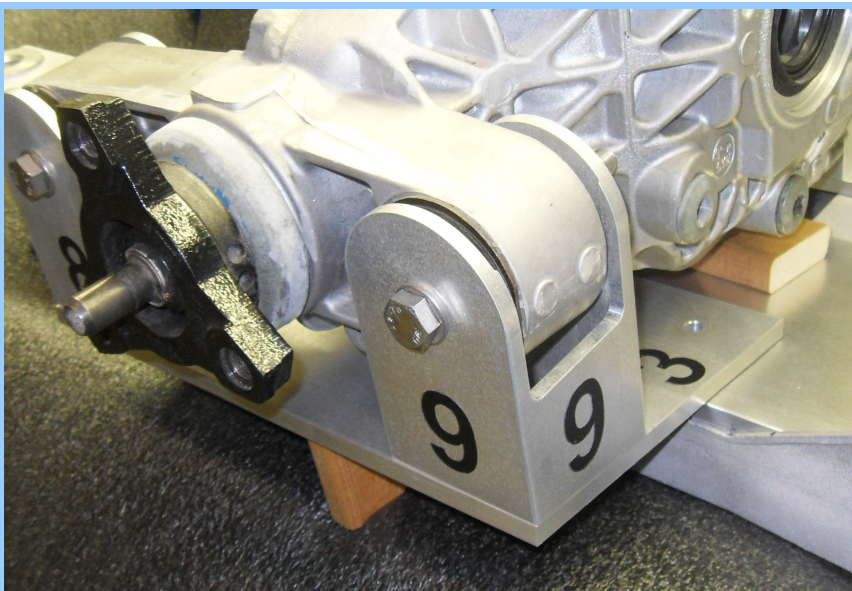
15. Raise the differential and install [8] and [9] onto the differential's front mounts with two 12mm x 120mm bolts. Please Note: [9] has a recess cut into it for differential clearance and [8] does not. Do not install the nuts at this time. To aid in lifting the differential, I stick a loosely fitting 3/8" x 12" bolt in the top driveshaft mounting hole, for leverage.



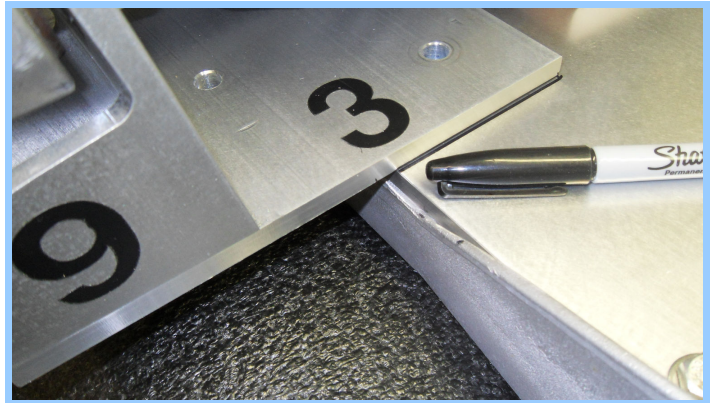
16. Raise the front of the differential just enough to slide [3] OVER [1], and UNDER [8] and [9]. Please Note: The back edge of [3] has five holes already drilled into it. The holes are positioned to miss the fins on the underside of the differential.



17. Cut a small wedge of 3/4" thick wood to slide under the front of [3]. This will push the rear of Part #3 down, tightly against [1]. This will also push front of [3] up, tightly against [8] and [9].



18. Also, make sure that [3] sets flush on [1]. Once you find the 'sweet-spot' mark both sides and the back of [3] where it sits on [1].
19. Shift the differential and [3] front to back and side to side until [8] and [9] uprights align with the front and sides of [3].



20. Remove the differential, [1] and [3]. Align [3] with the marks on [1] and clamp them together.
21. Drill the five 3/8" holes in [3] through [1], then bolt the two parts together..
22. Remember, the five holes in [3] have been spaced so that they won't interfere with the ribs on the bottom of the differential.
23. Before you continue, it's always a good idea to check the final fit – so replace [1] and [2] along with the differential and check all of your edges for proper placement – one more time.
24. Please Note – if there is a problem with differential alignment, you may enlarge the five holes in [1] to 1/2" or even 5/8" and it won't matter in final assembly, because they will be welded.
25. Remove the differential, then remove [8] and [9] from the front differential mounts.
26. Also remove [7] from [2]. (If you used an epoxy as a temporary 'weld', be sure and remove any traces of that before you weld the parts together.)

ADJUSTABLE LINKS

27. To assemble the **Upper Links**, put a 1/2" AN washer on a 1/2" x 2-1/2" bolt. Then put the bolt through one side of the clevis and add a 3/8" tall spacer. **Next is the RH Rod End (with the Silver-Colored jam nut)** and the welding bung already installed) then another 3/8" tall spacer, the other side of the clevis, and another AN washer, with a lock nut. Repeat for the other side.



28. To assemble the **Lower Links**, put a 1/2" AN washer on the 12mm x 120mm bolt. Then push the bolt through [8] and the differential mounting ear, then add a 3/8" spacer. **Next is the LH Rod End (with the Brass-Colored jam nut)** and the welding bung already installed. then another 1/2" AN washer and a 12mm ESN.



Please note: The third bolt in the photo is for the rear differential mount.

29. To cut the tubing to the proper length, back off the weld bungs on both sides 1/8" from the ball ends. Then hold up both rod end assemblies and measure the distance between the weld bungs where they are machined to fit inside the tubing. This will allow your final adjustments 1/8" either way. **This example yields a tubing length of 4-3/4".**



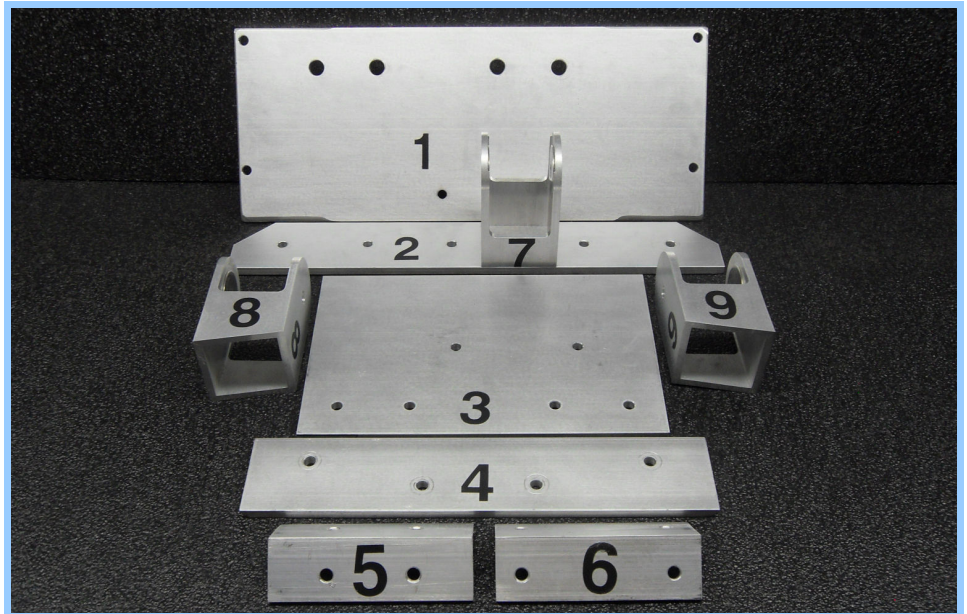
WELDING

30. If you're not experienced with welding aluminum, find a competent welding shop that is. All of the parts are 6051 – T6 aluminum, which is pretty common – and the tubing is mild steel.
31. Grind recesses where required for good weld penetration, then weld [7] to [2] all the way around the outside with a TIG Welder. **It is also acceptable to weld all the way around the inside with a MIG Welder and a spool gun – if you can find a real expert with a spool gun – which may give a more finished appearance.**
32. Weld [8] and [9] to [3] all the way around the outside with a TIG Welder. **It is also acceptable to weld all the way around the inside with a MIG Welder and a spool gun – if you can find a real expert with a spool gun, which may give a more finished appearance.**
33. Other areas to weld for additional strength include:
 - [1] to [3] along the back edge of [3] where the five bolts are.
 - [5] to [1] along the bottom and to the cradle.
 - [6] to [3] along the bottom and to the cradle.

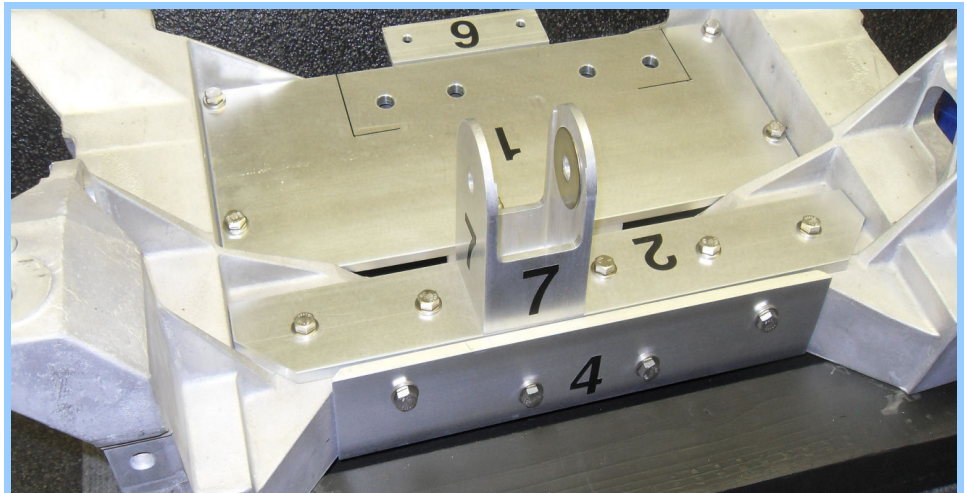
COMPONENTS

6061 Aluminum

- 1 – 8" x 3/8" x 19-3/4"
- 2 – 3" x 3/8" x 19-7/8"
- 3 – 8" x 3/8" x 12-5/8"
- 4 – 3" x 3/8" x 15-1/8"
- 5 – 2" x 2" x 1/4" Angle
- 6 – 2" x 2" x 1/4" Angle
- 7 – 3" x 3" x 1/4" Square
- 8 – 3" x 3" x 1/4" Square
- 9 – 3" x 3" x 1/4" Square

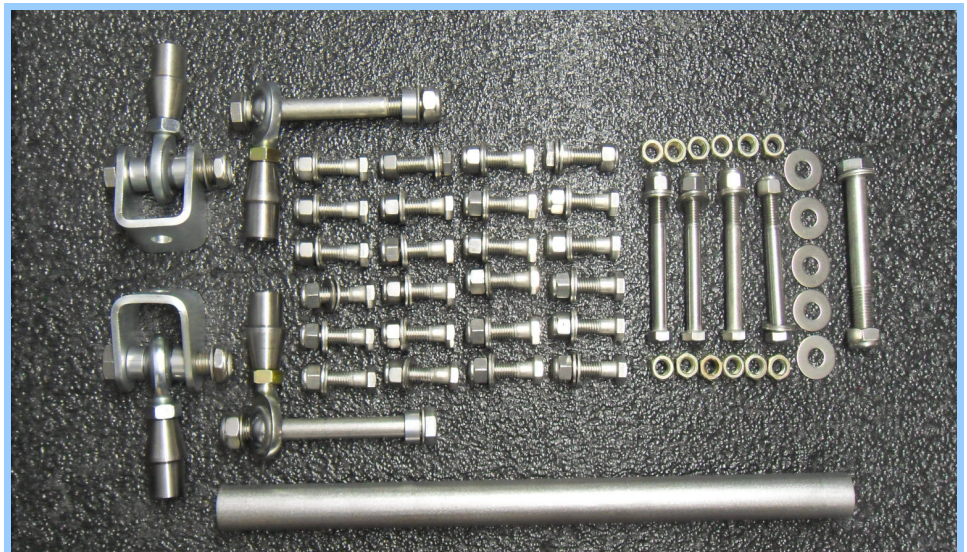


This photo shows the cradle and mounts from a rear angle. It also shows Part number four, which can only be seen from the rear.



Stainless Hardware

- 24 – 3/8" x 1-1/2" Hex Bolts
 - 4 – 3/8" x 3-1/2" Hex Bolts
 - 2 – 12mm x 120mm Bolts
 - 1 – 12mm x 100mm Bolts
 - 28 – 3/8" ESNs
 - 3 – 12mm ESNs
 - 56 – 3/8" Flat Washers
 - 10 – 1/2" AN Flat Washers
 - 5 – 3/8" USS Flat Washers
- ### Steel Hardware
- 2 – 1/2" RH Jam Nuts
 - 2 – 1/2" LH Jam Nuts
 - 2 – 1/2" RH Welding Bungs
 - 2 – 1/2" LH Welding Bungs
 - 2 – 1/2" RH Rod Ends
 - 2 – 1/2" LH Rod Ends
 - 1 – 1" x .083 x 15" Tubing
 - 12 – Standard 3/8" Nuts.



Thank you for selecting our Differential Adapter Kit!