

Installation of camber adjusting parts to E24 rear subframe

I have done this on several E24s and am doing it again on my M6 V8 conversion. Just finished most of it last night and haven't had time to write it all up, so I will attach some pictures that i took after I got started. Some of the initial work wasn't captured because I have a tendency to get started and put my head down and not look up until I finish, this time I caught myself a bit earlier and started taking pictures after I welded on some ear but i will show that later.

I have seen some posts on the board asking about if it can be done without taking the subframe out, I can assure if it is done right, it must be out and measured carefully. I take extreme care to insure that the subframe is level and the slots are perfectly vertical, if not, the toe will change a bit while adjusting camber. At this time I do not plan to add toe adjustment.

step one:

I had to add small triangular ears to the top of the bracket so the slot will have strength at the top of the adjustment range. (note, it appears that the kit I have, Dinan old kit NLA, has more adjustment then IE kit) this picture shows the piece already attached and welds ground smooth but I have added a line to show when the piece was added



Step two:

I then put the adjustment plate against the brackets and marked where the slot should be cut, I used a square off the table to insure that the marks were vertical and then scribed the entire slot using the piece that will be added later for a reference.

After the slot was ground in, using a carbide rotary cutter in my die grinder, I verified that the slot was vertical before attaching the adjusting piece. This is VERY important to insure that the slot is vertical, as mentioned before, toe will change if the slot isn't vertical. This is also why it is important to do the procedure with the subframe out of the vehicle.



Step three:

Placed two centering punches the same diameter of the slot in the slot and wedged them so that the adjustment piece could be aligned with the previously milled slot in the bracket for welding. This will insure that the main bolt will have free travel the entire slot length and no binding will occur.



Step four:

Welded the adjustment pieces to the brackets, I welded on three sides but not the back of the adjusting bracket because I didn't want to have to smooth down the welds there as the adjusting washer would go over this area. I did add some weld to the main bracket as can be seen here on the inside bracket.



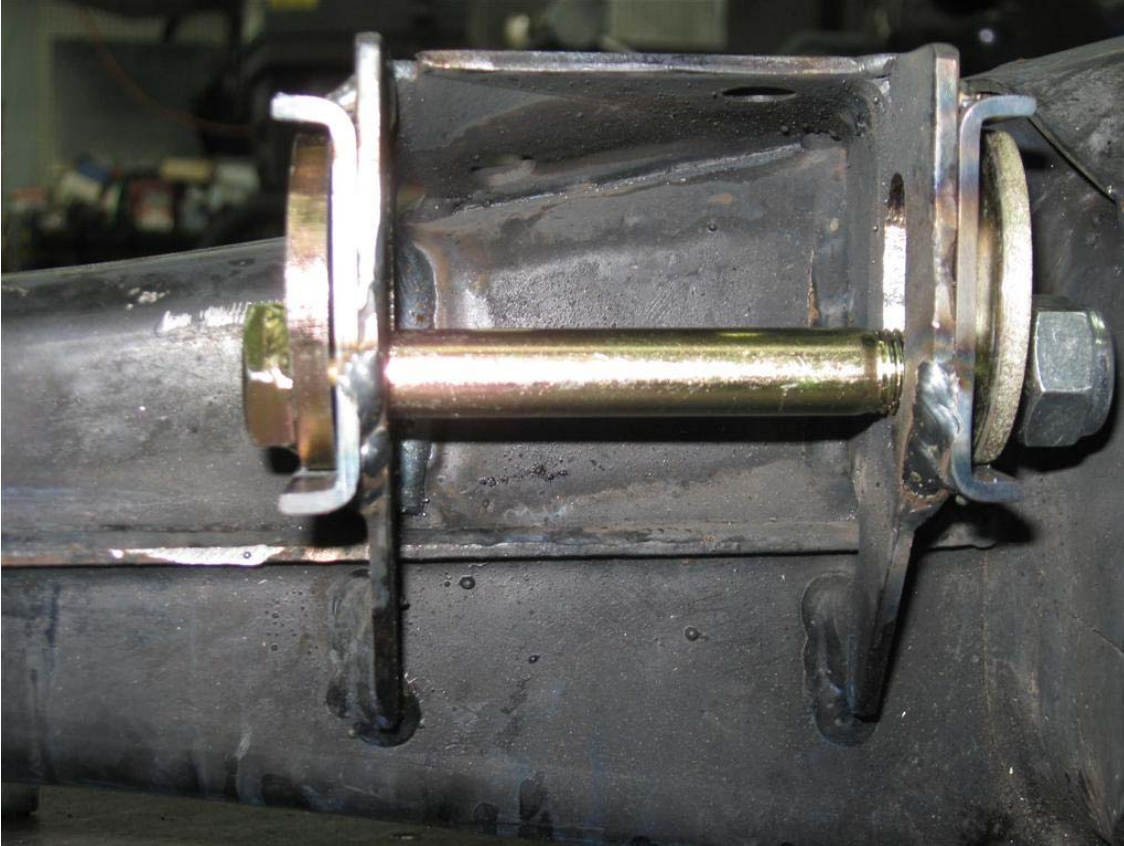
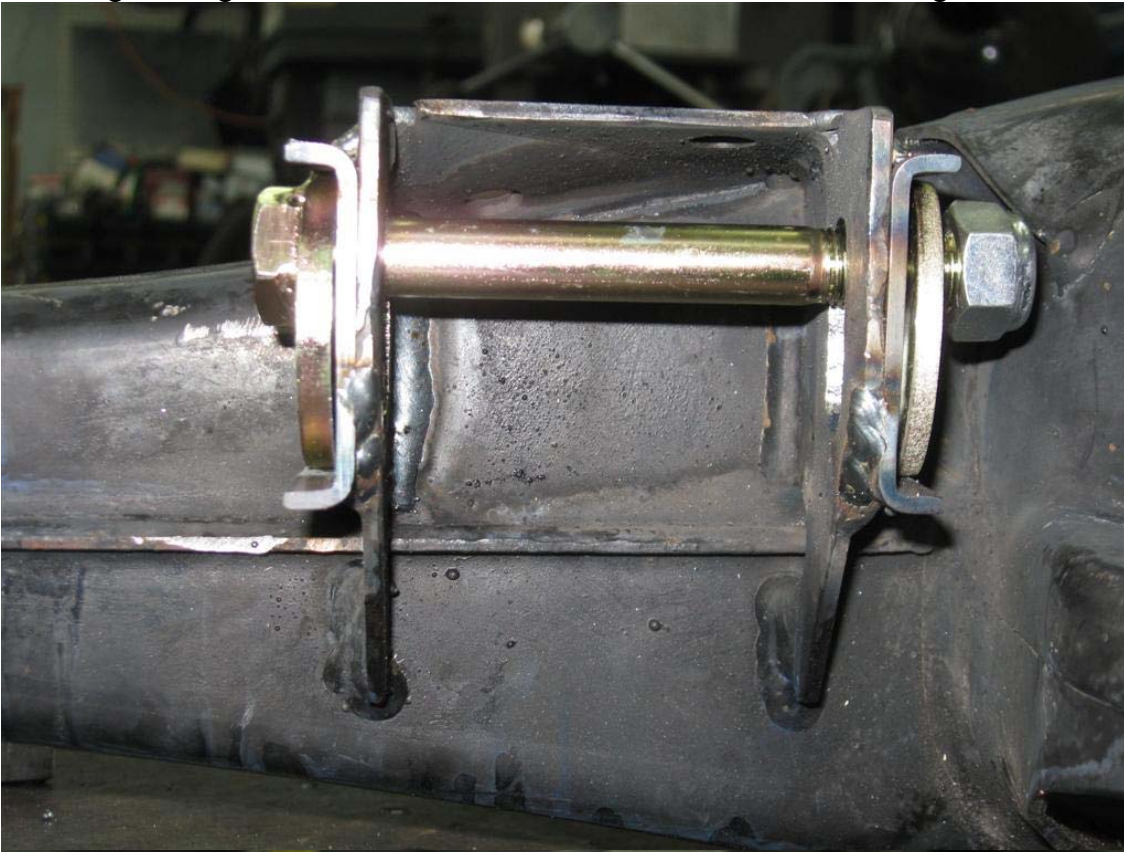
Step five:

Using a small belt sander, I cleaned up the mounting surfaces and test fitted the bolt with the eccentric washers for freedom of movement. The Dinan kit allows quite a bit of movement, although their kit calls for centering the slot with the previous hole, I moved the slot up just a bit because E24 always have to much negative camber even at normal ride height, so mine being lowered and will have the largest tires that will fit, decided to favor adjusting out more negative camber. On my last installation I did center the slot and found that I had it at the top of the slot for acceptable camber when lowered 1.5 inches, so I have a bit more to take out with this installation.



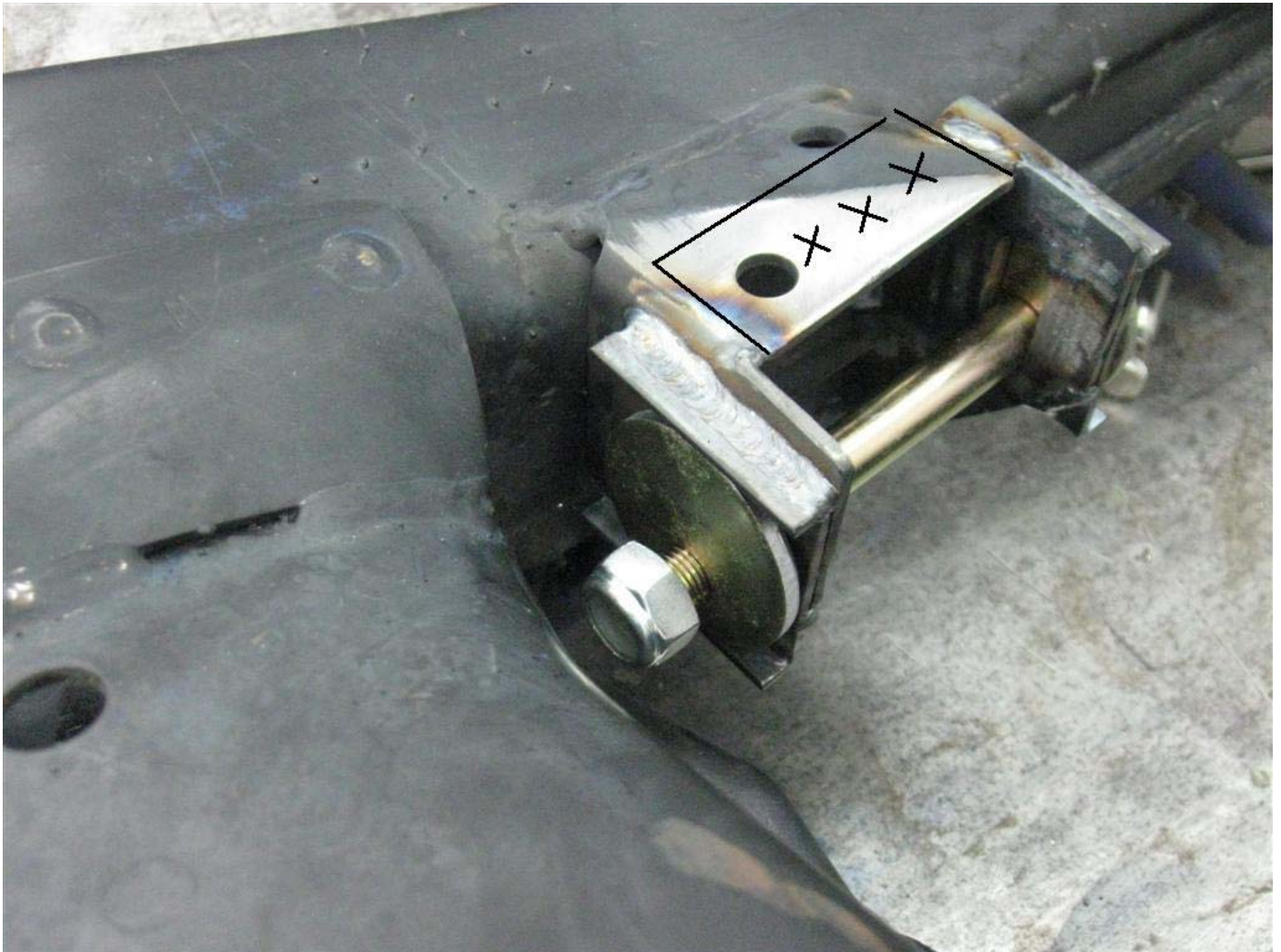
Step six:

Checking for range of motion and freedom of motion to insure no binding.



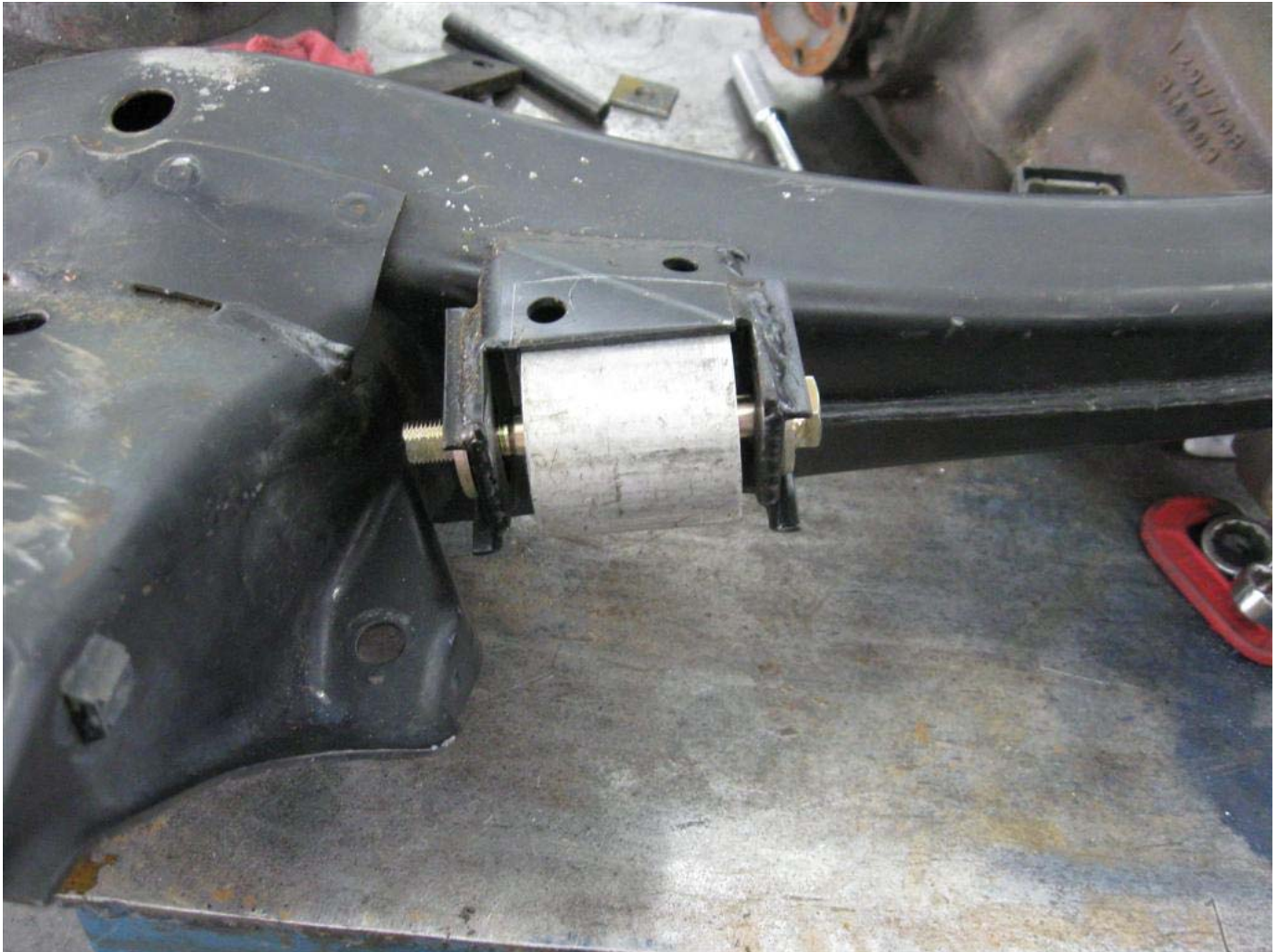
Step seven:

The last thing to do is to remove the metal from the bracket at the top so that when the trailing arm is adjusted to the top of the slot, it will have clearance. I haven't done this yet, but showing what needs to be removed in this picture. This is a lot of material and I am studying to insure no strength is lost. I may add a piece over the top with proper clearance to strengthen the bracket. With the added material of the adjustment bracket and properly welded, it may be OK but why risk it. After the material is removed I will re-evaluate.



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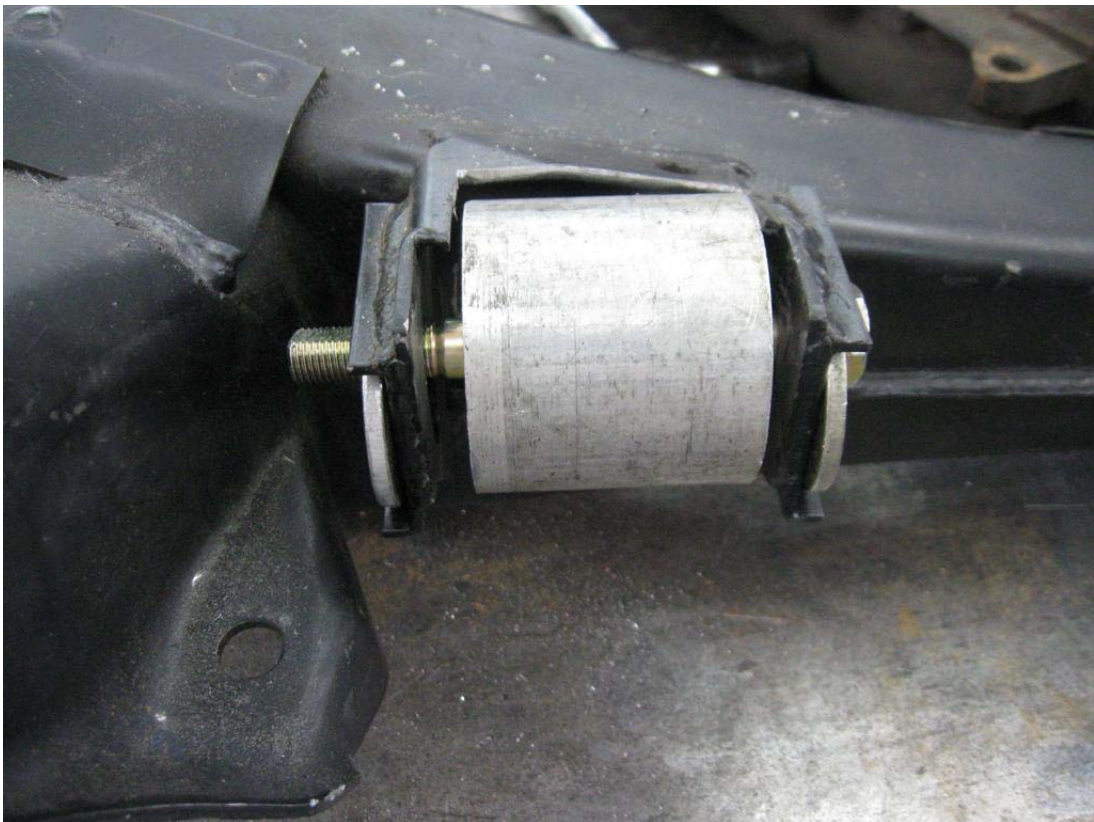
I made an aluminum cylinder to simulate the diameter and length of the trailing arm bushing, this way I could evaluate how much material needed to be removed at the top of the bracket when the camber was adjusted to the minimum negative setting. This camber kit is from Dinan as mentioned and allows more adjustment range than the Ireland kit, however if the Ireland kit is installed with the minimum or lowest setting (bottom of the slot) at the original hole position, and the range of adjustment goes up from there, the top of the bracket will have to be modified as shown here or interference will prevent full adjustment and probably introduce noise.



It is obvious that the top must be cut away, to allow full adjustment, this picture shows the eccentric set about where it would be if it was slightly above the original position. No way could full adjustment be accomplished without major surgery of the bracket.



After cutting the the top of the bracket:



Showing full range of movement from the side:



Showing full range of movement from the front:



After careful evaluation, it has been determined that the bracket will be strong enough even with the removal of material at the top. When the trailing arms are in and the eccentric bolts are tightened the brackets must be allowed to compress to the end of the bushings, if material were added to the top this may interfere with proper tension on the bushings. There is no twisting motion going on so even though the material has been removed the brackets will not see any strain or permit any movement greater than before the mod. The added material of the adjusting slots will further stiffen the brackets. These have been welded all around and ground smooth. I will do some further testing of bracket movement and later determine if further re-enforcement is needed.

In addition to this mod, I will be using E34 trailing “bearings” instead of the rubber bushing used here. This should remove any fore/aft compliance or movement of the trailing arms. Additional NVH may be introduced but any effort and gains made to eliminate compliance and unwanted movement of the subframe will be a plus. Part number for the “bearings are:

33 32 1 135 808

Rear Diff cover:

I am now engaged in changing the E24 rear diff cover to the E31 rear diff cover. The E31 diff cover has two mounting ears that extend past the diff and will provide much better control of the diff position. This has a direct control of the subframe movement as well. This is proving to be not as simple a task as first thought but is doable. Fabrication is under way and I hope to have this completed next week.

More later during and after installation.

Ed
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6-20-2009