The following is a short description of replacing the suspension on a 80 Series Land Cruiser. Care has been taken to point out steps that will make it easier and some "gotcha's" that you have to look out for. Although this was done in the works shop with the aid of a vehicle lift, the same procedure will work for diy installations.

Notes:

1. If you live in the rust belt, or you suspect that the underside of your vehicle has seen some corrosion, apply a penetrating fluid to all the bolts and fasteners that will be loosened during the install. Do this daily for the week leading up to the install. This will save your knuckles and sanity by avoiding broken bolts. Read the instructions to familiarize yourself with the location of the bolts.

2. Round up a friend to help with the install.

3. Make sure you have decent jack stands to support the vehicle. They need to be sturdy, have a big footprint and extend high enough. The $20 cheapo variety is not going to help.

4. You need an assortment of metric sockets, large wrenches, breaker bar, pipe wrench and possibly a nut splitter.

5. Make sure you have all the items as ordered. You should have two front springs, two rear springs, two front shocks (with pin mount on each side) and two rear shocks (with pin mount on the top and eye mount on the bottom).

6. The springs have white tabs on them with the spring identification, for example OME850 DS. Make sure that you have the both DS and PS springs for both the front and the rear.

7. IMPORTANT. In the US, with left hand drive vehicles, if the springs are labeled DS and PS, we install the DS (Driver Side) springs on the PS (Passenger Side) and visa versa. The springs are labeled for the right hand drive vehicles. If you can not locate the labels, or you have used springs, make sure you mark the springs that you remove from your vehicle and match long with the long and the short with the short springs.

Lately some springs are labeled A and B. A is for Australian driver side, so in the US this should go on

the passenger side and B should go on the driver side.

Spring Markings

8. Some steps might not be needed and if you are experienced in doing the swap, however we have tried to make this fool proof and help the beginner avoid problems.

9. If the suspension is done on a lift, then it is not needed to remove the tires. We also acknowledge that there is ways to do this with a hi-lift jack, or other lifting mechanisms, however for the beginner the jack stand approach with the wheels removed is the best, although it takes longer, it should be safer and easier.

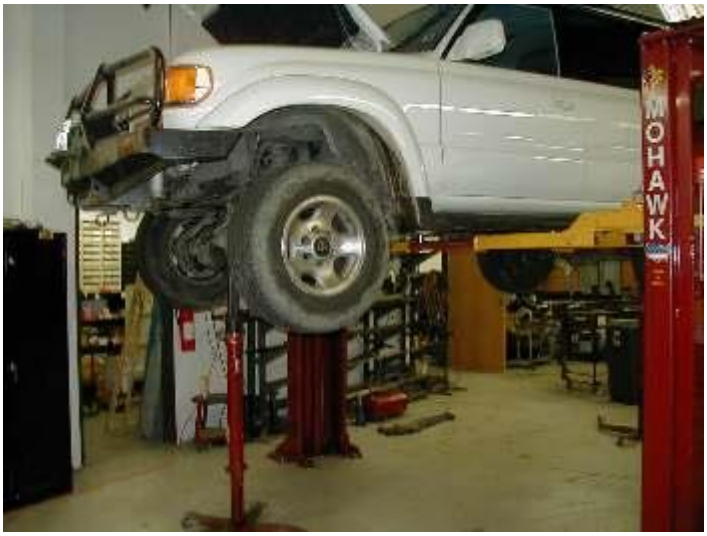
10. Where we re-install bolts into the frame, re-attach brackets etc. we always use anti-seize. This helps in the future when the bolts have to be removed again.

11. As always, suggestions and additions are welcome.

FRONT SPRINGS AND SHOCKS.

Step 1:
Make sure the vehicle is parked on a flat paved area. If doing the front suspension first, block the rear wheels. Jack the truck up using a floor jack placed under the front axle. Now insert the jack stands to support the frame on each side, right behind the front control arm mounting point. Do the driver side (DS) then the passenger side (PS).

Do not remove the wheels at this point. Unless you have really big jack stands the wheels will settle back on the ground.



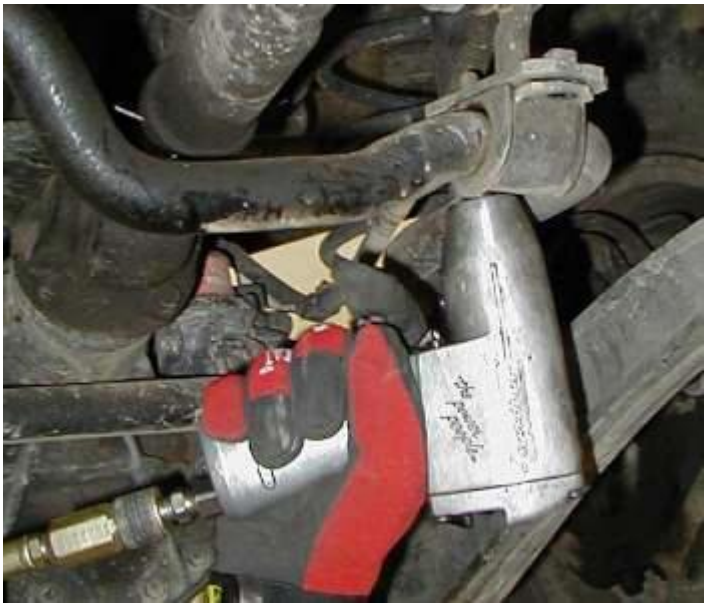
80 Series supported on 2 poster lift with post jack under front axle.

Step 2:
Now place the floor jack under the PS side of the front axle. Jack the axle just enough to get the wheel off the ground but not so much as to unload the frame from the jack stands. Remove the PS wheel. After removing the wheel lower the axle down slowly. Make sure you have enough clearance between the rotor and the floor so that you can push the axle down all the way to unseat the spring.

If you have enough clearance. repeat the above procedure for the DS. Once you have both wheels removed, reposition the jack to the center of the axle

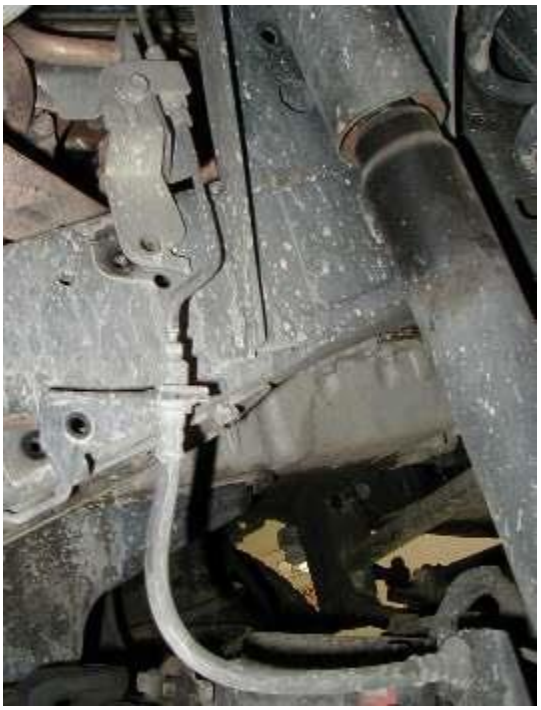
and raise the axle just enough to start compressing the shocks.

Step 3:
Remove the bolts holding the swaybar to the brackets just behind the axle. This will stop the driveshaft from pressing into the swaybar when the axle is lowered. The swaybar can be left loose at the back.


Removing the swaybar bracket bolts.

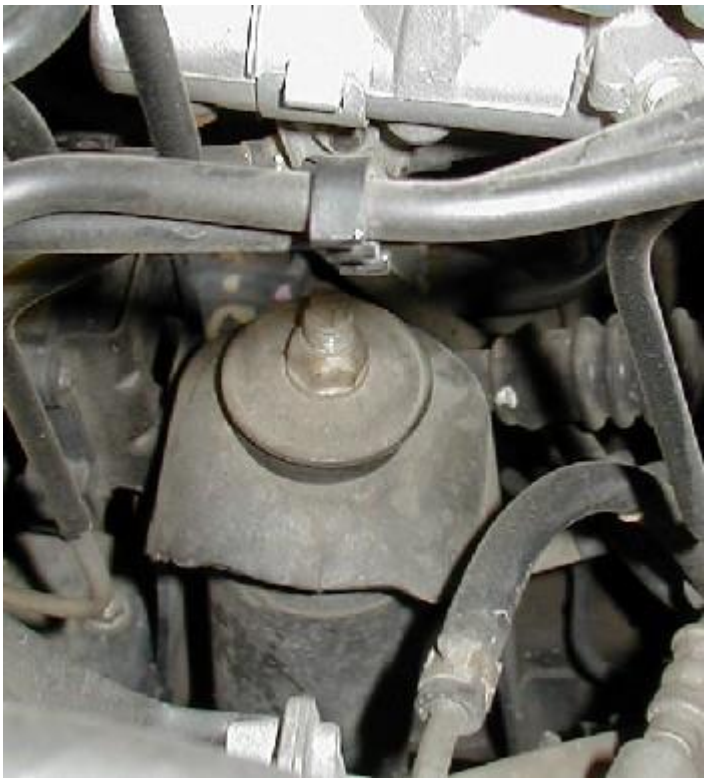
Step 4:
Remove the two 8 mm bolts (12 mm heads) holding the PS brake line to the frame. This will allow the brake line to move and you will not overstretch the

line when the axle is pushed down to install the springs.



Passenger side brake line bolts removed.

Step 5:
We are now going to remove the top shocks nuts. These are 17mm nuts and the DS one, located under the brake master cylinder is by far the most difficult to remove.



Driver Side Top Shock Nut

Snap-On Socket

In the shop, we use a Snap On Flexi socket that is a flex joint and semi-deep socket it one. This fits under the master cylinder and allows us to use the

impact wrench. If you do not have one of these sockets, the alternative is to use a 17mm box wrench and slip it over the nut. Then use the pipe wrench to rotate the shock body (by gaining access to it from the wheel well). If the nut is frozen solid, the simplest and fastest way is to split the nut with a nut splitter. The nuts will not be re-used.

If you placed the jack properly, the axle should not drop at this stage.

Remove the PS top shock nut. This one is easily accessible with a deep socket. Hold the shock body (or get the friend to do it) and remove the nut.

Step 6:
Now remove the bottom shock nuts.


Removing the bottom shock nuts with an air impact.

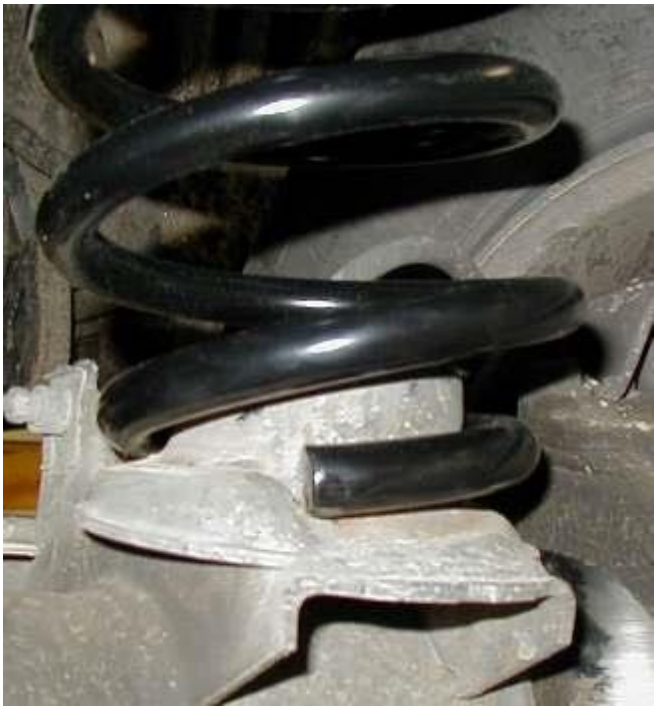
Step 7:
Now that the shock nuts are removed, you can remove the shocks by compressing them.

Step 8:
Now it is time to remove the springs. Lower the floor jack supporting the center of the axle slowly until the axle does not move any further. Now have the friend push down on the DS hub. This will unload the spring and you can remove it. Do the same with the passenger side spring.
NOTE: When doing this, keep an eye on the brake line in the center of the axle and be sure not to

overstretch this hose.

If you are installing the suspension alone, and it is not possible to push the axle down enough, use a bottle jack between the frame and the axle housing. Be careful not to crush hoses, brake lines or electrical connectors. Also make sure it is properly positioned and does not slip out when under pressure.

Driver side spring unloaded. Not the position of the end of the coil. Make sure the new springs are installed with the end of the coils in the proper location.



New spring installed and seated.

Step 9:
The next step is to install the new shocks. Remove the shocks from the packaging and locate the plastic bags with the bushings, washers and nuts. The plastic bag has a drawing on it, showing the order of the bushings and washers. Remove the wire retainer that keeps the shocks compressed.

Below is a photo of how we install it. We follow the same order as the factory shocks. We leave out one of the washers that is used between the bushings. The open gap is where the mount on the truck will be positioned.

Bushings and washers installed on shock stem. The order is important. Note the indexing washer that is installed in the middle. This is the washer with the lip on it. This lip is to locate the stem in the shock mount hole. Note: the bushings are installed on the pin for illustration purposes only. The nut, first washer and first bushing will not be in position when the shock is installed.

Install both front shocks. Push the shocks upwards and install the bushing, washer and nut from the top. Tighten the nut by hand at this point.

Now raise the axle using the floor jack, to the point where the shocks just start compressing. Make sure not to lift the truck from the jack stands. Now install the bottom bushings, washers and nuts.

After all the bushings are installed, the shock nuts can be tightened to speck. This should be done until the bushings start to bulge but do not over tighten.

When tightening the nuts, be sure the washer with the index lip is properly located in the holes. If not, back off the nut and move it until it is properly seated.

Step 10:

Re-attach the brake line brackets and swaybar at this point. You should be done with the front axle now. Re-install the front wheels, and remove the jack stands. Torque wheels to spec. Also make sure your breather lines are still attached.

If you purchased swaybar drop blocks for the front, install the blocks between the swaybar plate and the extension plate.

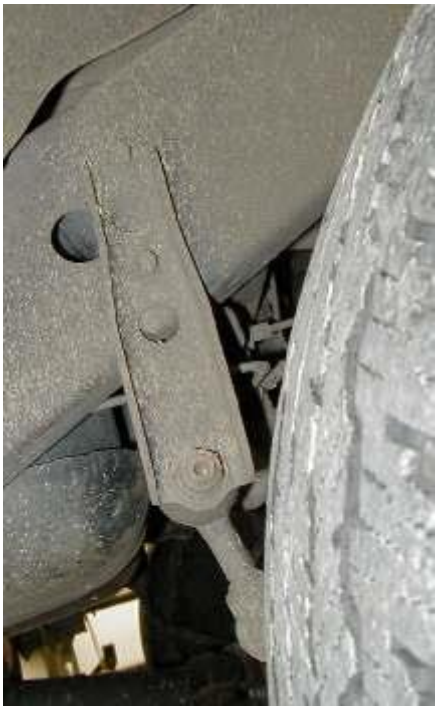
Swaybar block installed on front swaybar.

REAR SPRINGS AND SHOCKS.

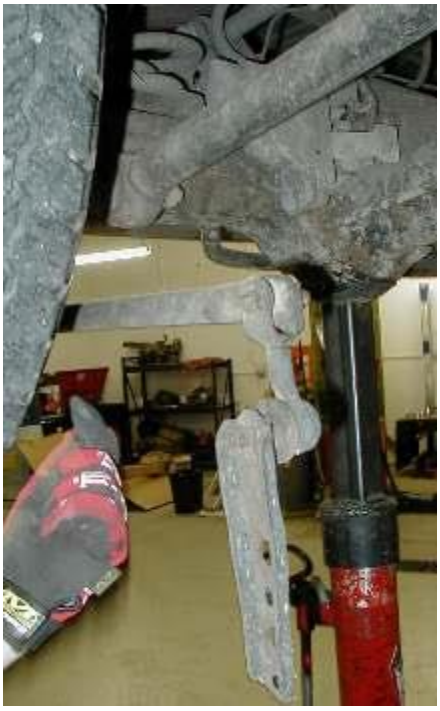
Step 1:
Repeat the same procedure as in step 1 &2 for the front axle by jacking the vehicle up and supporting the frame on jack stands. In this case the jack stands can be used on the frame, right in front of the rear control arm mounts or on the rear cross member. The same safety issues apply.

Step 2:

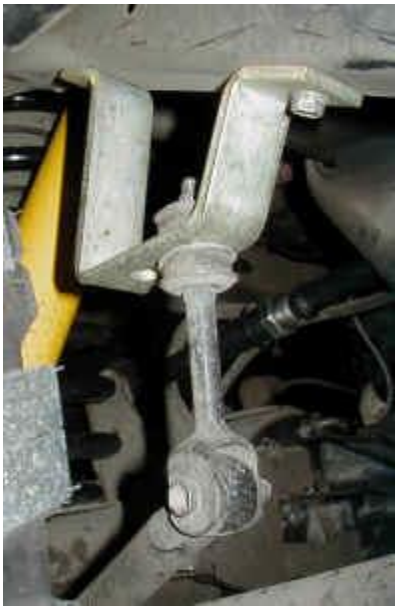
Remove the swaybar to frame bolt on both sides of the frame. Let the swaybar hang loose.



Rear swaybar bracket



Rear swaybar disconnected



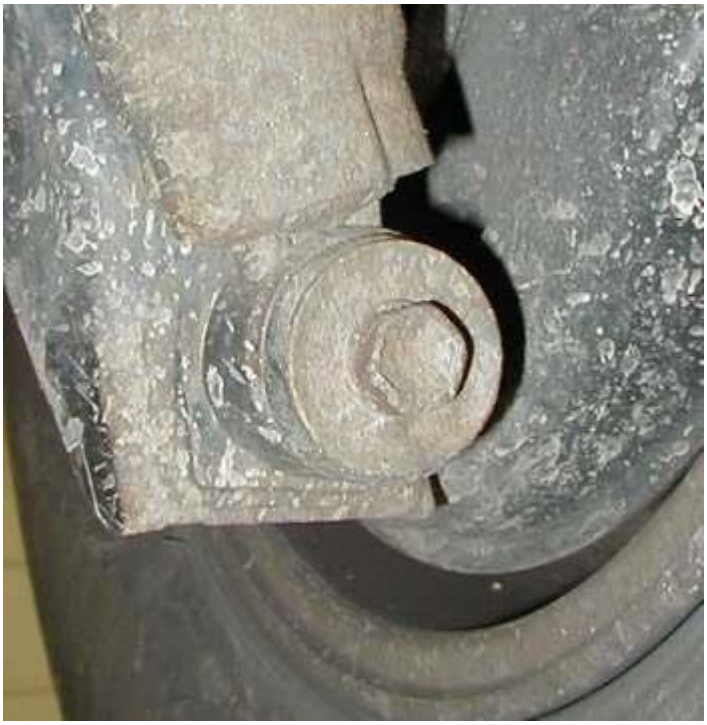
Swaybar bracket that bolts to the bottom of the frame. On some years this was replaced with brackets that bolt to the side of the frame.

Step 3:
Remove the 8mm bolt (12mm head) that holds the rear brake line to the frame.

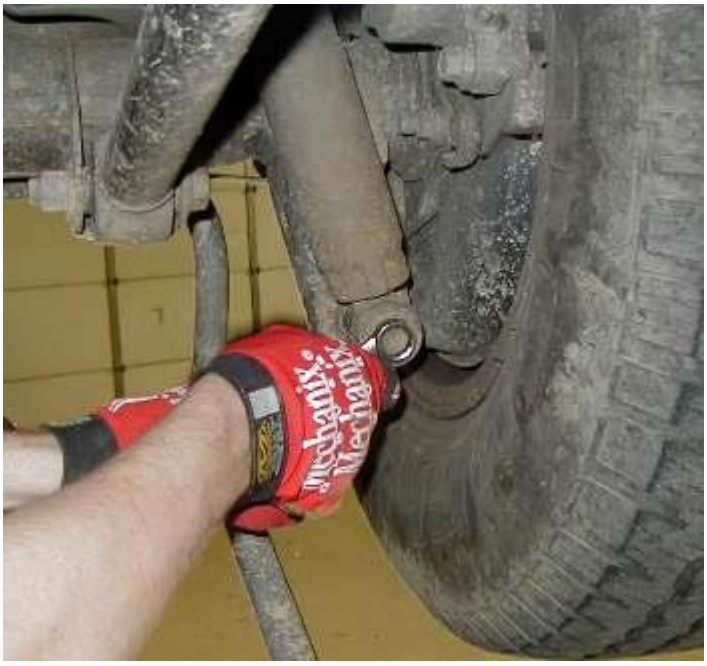
Rear brake line bracket still attached to the frame.

Step 4:
Now remove the bottom shock mount bolts.

Be extremely careful with this bolt. If it does not come out easily, re-apply penetrating fluid or heat the mount with a gas torch. This bolt breaks very easily and is most often rusted. If this bolt breaks, you are in for a long day of drilling and tapping. Resist the temptation to turn up the air impact. This might just snap it off. Most often it is best to use a long extension pipe on a breaker bar and put gentle pressure on the bolt until it loosens up.



Rear bottom shock mount bolt.

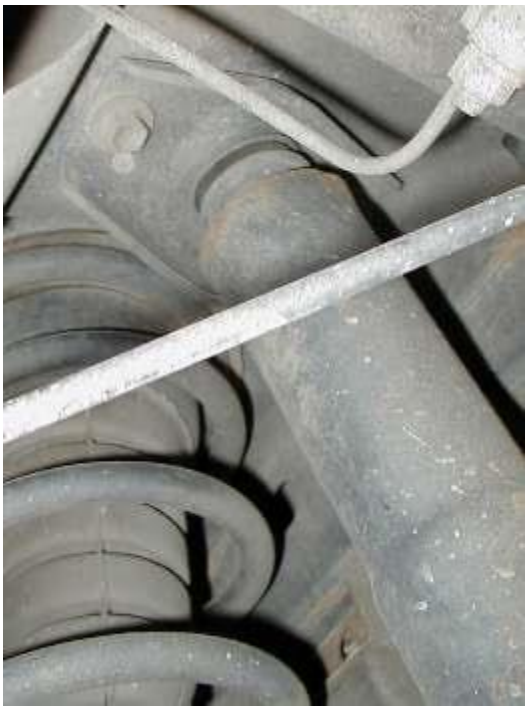


Removing rear shock mount bolt.

Once the bolt is removed the bottom of the shock can be released from the pin. You might need to use a screwdriver or pry-bar to push the shock off the mount.

After removing the bolt, it is good practice to run a 12mm x1.25mm tap into the shock mount hole to clean the taps. Make sure to use anti-seize on this bolt when it is re-installed.

Step 5:
Once the bottom shock mounts are removed, remove the plates that hold the top of the shocks to the frame. Again be careful not to break these bolts. If they are rusted, re-apply penetrating fluid or heat.



Top shock mount plate showing one bolt. There are two bolts. One each side. The heads are 14mm. These bolts are removed and then the shock is removed with the plate still attached. Do not mix the PS and DS plates. They are side specific.

After the plate with shock is removed, remove the shock nut and separate the plate and shock.

Removing shock from mounting plate

Step 6:
Before installing the shocks on the plates, use a vice or C clamp to push the bushing into the eyelet on the

shock. Use a little lithium grease or silicone to make it install easier.

Pressing the bushing into the eye on the rear shocks.

Step 7:
Now install the shocks on the plates. use the same order of the bushings and washers as on the front shocks. Do not remove the wire retainer that keeps the shocks compressed. But do make sure it does not get pinched when you tighten the shock nuts. Tighten the nuts to achieve a good compression on the bushings but do not over tighten. Also make sure the index washer is located properly in the hole of the mounting plate.

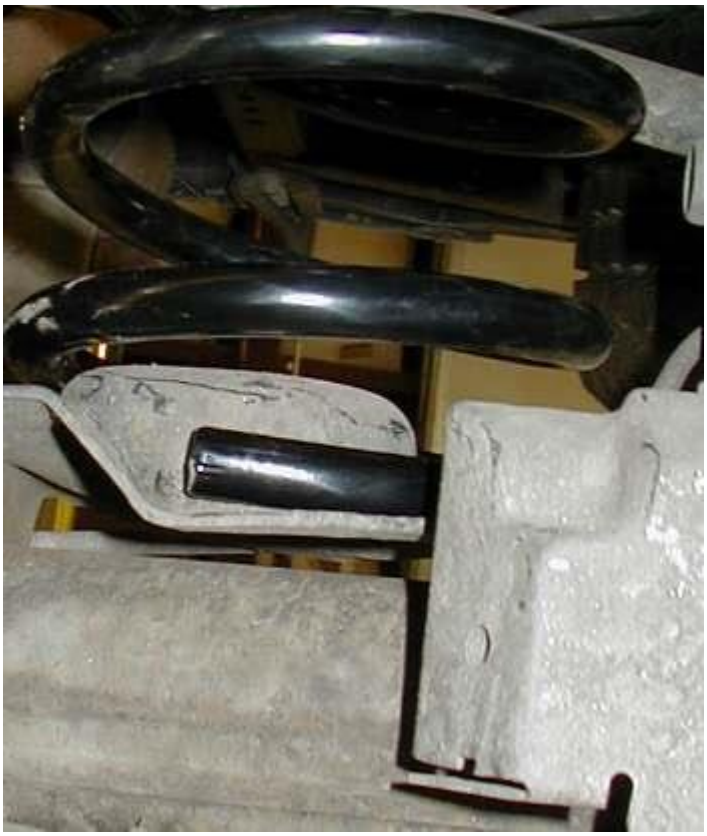
Keep the assemblies until after we have installed the springs. Make sure to keep the PS side mount on the PS and visa versa. The plates should be marked if you mixed them up.

Rear shock installed on mounting plate prior to tightening the shock nut.

Step 8:
Lower the floor jack (that should still be supporting the center of the axle) and remove the rear springs by pressing down on the axle hubs, or use the same bottle jack technique as discussed with the front axle. The rear springs have a rubber packer "washer"

that sits on top of the rear spring. This may or may not come out when you remove the spring. In certain cases they are stuck to the spring mount at the top and does not come out. If it does, re-use it on the new springs. If you have trouble keeping it located on the spring, use a small piece of masking tape to stick it down.

Install both rear springs and make sure the bottom of the springs are seated properly.



Rear spring installed and end of coil seated properly.

Step 9:
Now install the rear shocks by bolting the plates into position on the frame. This is a tricky procedure, and if the wheels are removed, it is possible to start the outside bolt in the hole, then slip the bracket in with the slotted end under this bolt. Once in position, the other bolt can be started in the hole. The shock will dangle at an angle. Do not worry about this yet.

Once both bolts are started, tighten to specs. Remember the anti-seize. Be very careful to not cross tread these bolts. Once the top plate is attached, remove the wire retainer that keeps the shock compressed.

Now move the floor jack to the PS side and jack the axle up until the bottom shock eye can be slipped over the mount. Re-install the bolt. Again, use anti-seize. Once this is done, repeat on the other side.

Do not be tempted to just raise the whole axle from the center. With the newer stiffer springs, you run the risk of unloading the frame from the jack stands.

Step 10:
Re-install the swaybar brackets (install extended

brackets if you purchased these) and re-install brake line bracket bolt.

Re-install the front wheels, and remove the jack stands. Torque wheels to spec. Re-attach the breather line that has most probably popped off.

Breather line disconnected.

Step 11:
Adjust the rear brake proportioning valve.

CASTER CORRECTION BUSHINGS

There is much debate on the use of the OME caster correction bushings with the suspensions. At Slee we install caster correction bushings with every

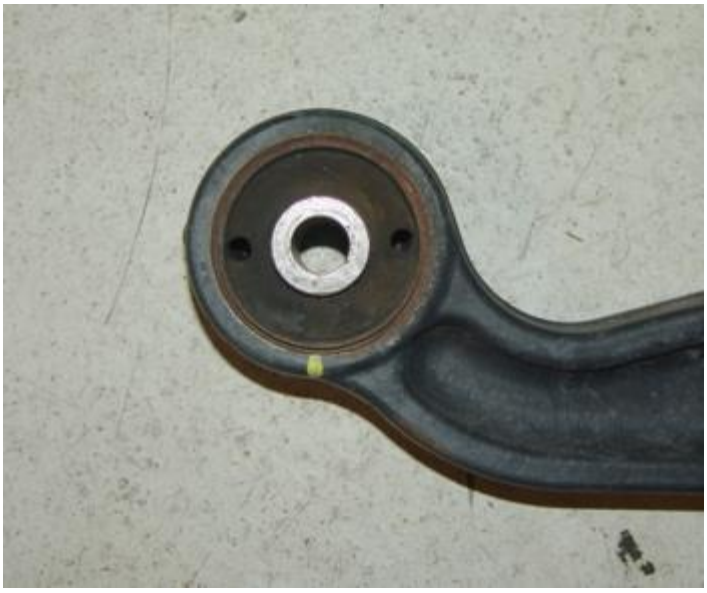
suspension we install. We feel that the improved handling far outweighs the negatives with stiffer bushings. Below is a description of how we install the bushings. This will help you if you attempt to do this at home. However please note that this procedure used a shop press and also a specially machined tool

The bushings are not easy to remove but other methods do exist. If you feel that this task is above your abilities, you can always remove the control arms and bring them to a competent off-road shop to do the work.

The first step is to secure the vehicle. The vehicle should be on the ground, at normal ride height. Secure the vehicle by blocking the rear wheels. Put jack stands under the front section of the frame. There is no need to jack the vehicle up, put make sure the jack stands are located under the frame to support the vehicle in case the axle moves or rotates under the frame.

Next step is to mark the arms as per the instructions that is supplied with the kit. Mark a vertical (plum-

bob) line through the center of the front bolt onto the arm.



Front control arm front bushing showing vertical (plum-bob) mark.

Once the arms are marked, place a ratchet strap through your front tow points and around the axle on each side. Tighten them until snug. This will stop the axle from moving.

Now loosen the front four bolts that attach the arms to the axle housing. The bolts should be loosened and not the nuts. The nuts are locked with serrations on the face of the nut. If you use an air impact wrench to do this, it will help to turn the wheels to either side to gain access to the bolts. Also note the direction of the bolts as they are removed. They

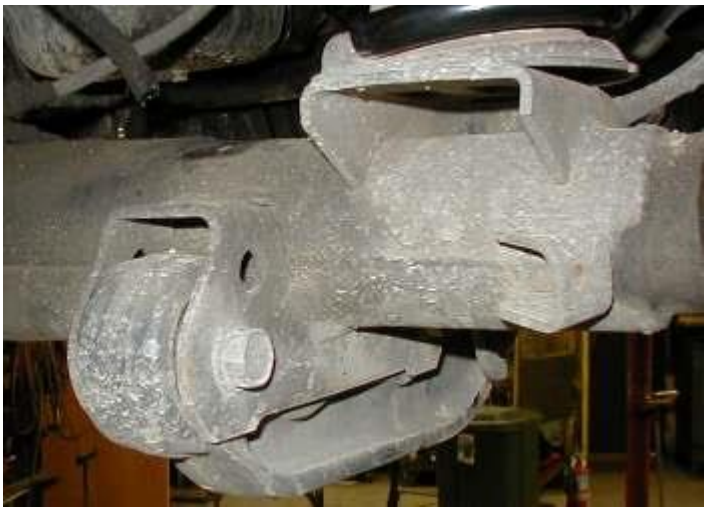
should be re-installed from the same side of the bracket.

Once the front bolts are loosened they will have to be pounded out using a drift. Be careful to not drop the arms on you when you do this. They are heavy and will hurt you. To prevent them from dropping on your, remove the first bolt, then put thinner bolt or screwdriver in it's place. Then remove the seconds bolt.

After removing the front bolts, remove the rear bolt, by removing the nut. In this case the bolt is locked in place with serrations.

Once the arms are removed, the bushings can be removed. Before doing this, either make a jig or carefully measure the center to center distances of the front two bushings. The new bushings have to be installed with the hole spacing the same as the old bushings. If this is not done, it will not be possible to re-install the arms.

If you do one arm at a time, you can use the old arm as a guide to install the new bushings.

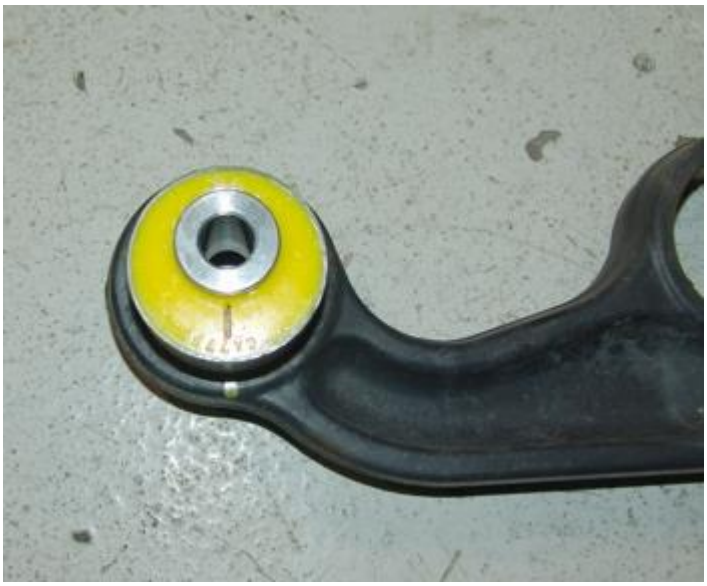


Front control arm mounting bolts. These bolts are removed by loosening the bolt and not the nut. The nut have serrations on the face and it locks in place.

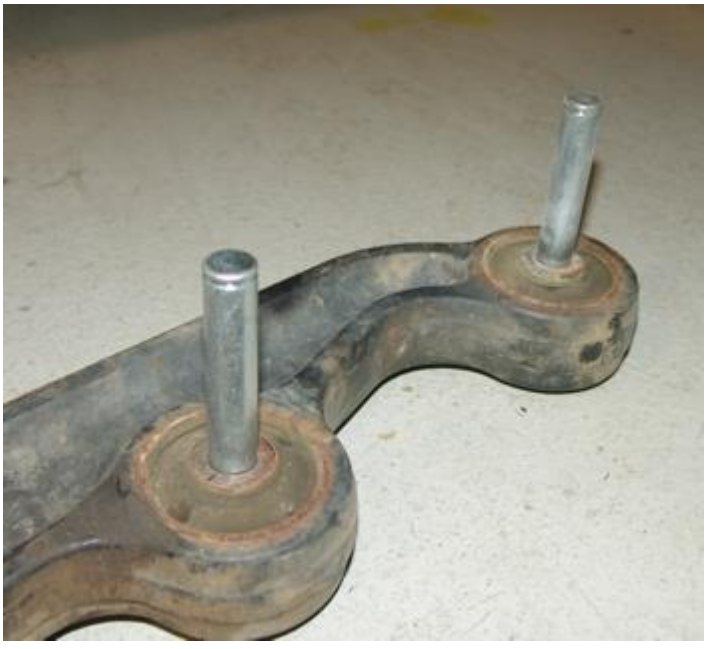
Rear bolt on the front control arm. These bolts are removed by loosening the nut.

Use the Slee Off-Road supplied press tool and remove the bushings from one arm. Install the front OME bushing by lining up the marking in the urentane with the line that you marked on the arm. The holes should be offset towards the top of the

arm. Once you have it lined up, press the bushing into the arm. Make sure the bushign is centered side to side in the arm after it has been pressed in.



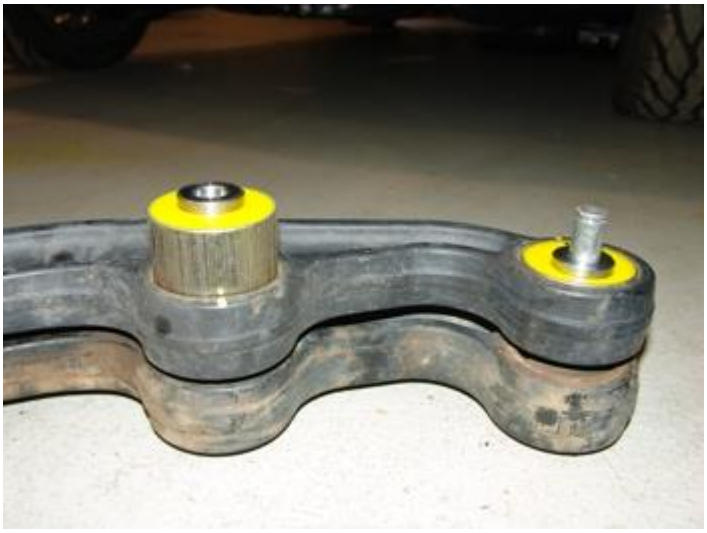
Install the front bushing with the marking on the bushing in line with the vertical mark made on the control arm.



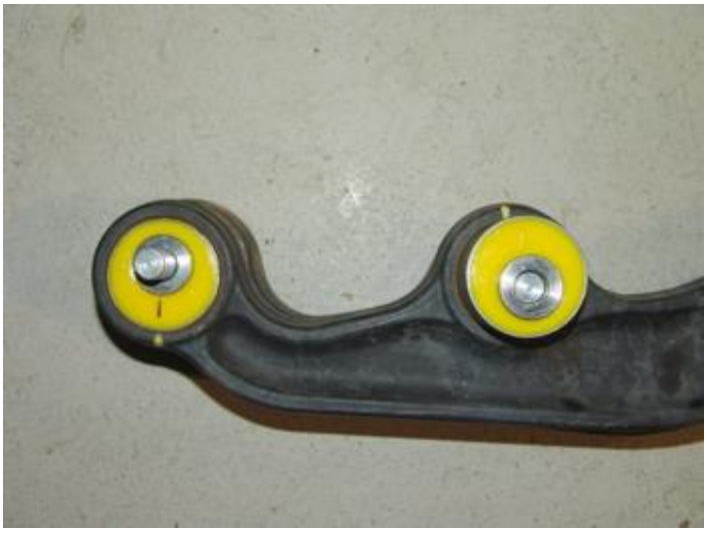
Arm with OE bushings and pins or 5/8" bolts in the original holes.

We have found that an easy way to ensure that the inter hole spacing stays the same is to use one of the arms with the OE bushings still installed as a guide. Use a long 5/8" bolt and insert it from the bottom through the bushing hole. Do this for both bushings and lay the arm down with the bolts sticking up. We have also found that Warn winch fairlead pins work well.

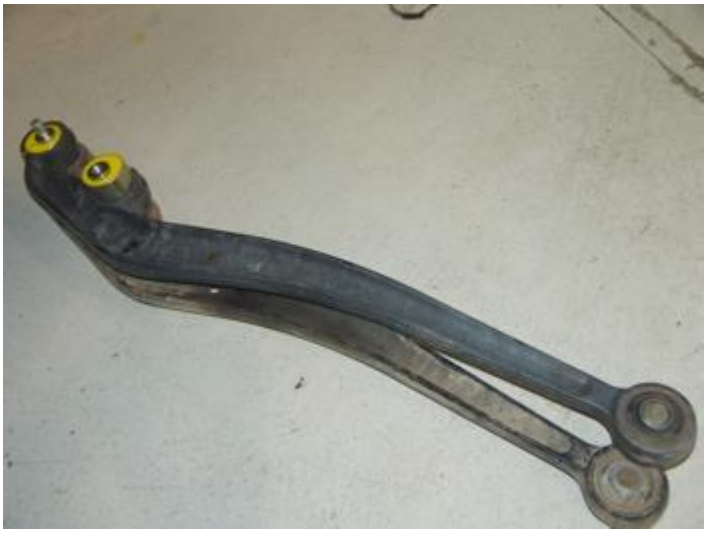
Once you have the front bushing installed, lay the two arms over each other. The arm with the caster bushings go on top. Insert the pin in the front bushing into the hole on the caster bushing (front bushing). Now use the pin in the back bushing to align the 2nd caster bushing. Rotate the bushing until it lines up with the large hole and can be pressed in. The hole in the rear bushing will be offset to the bottom of the arm. You can now use a hammer to seat the bushing slightly, or mark the bushing and arm so that you can not loose the orientation.



Two arms overlaid with front bushing already installed.



Rotate back bushing until the bushing can be pressed in.



Arms overlaid with caster bushings correctly aligned.

Now that the back bushing is aligned, press it in. Once that arm is complete, you can press the bushings out of the other arm and repeat the procedure. This will ensure that the bushings are lined up properly and the inter hole spacing stays correct.

Once the new bushings are installed as per the instructions, the installation of the arms are the reverse of the removal.