



## VP-FREE OVERHAUL INSTRUCTIONS

The VP-Free is a complex machine that requires a high level of mechanical aptitude and specialized tools to overhaul. This type of overhaul is best performed by an SCB dealer or qualified mechanic. Before beginning this process, one should obtain the required replacement parts. These parts can be ordered from your dealer or SCB directly via the website [www.santacruz bicycles.com](http://www.santacruz bicycles.com) or call 831.459.7560

### The VPFree ProPack includes:

3 Short Pivot Axles	8 Pivot Bearings
1 Long Pivot Axle	8 Pivot Washers
8 Pivot Bolts (long chainring bolts)	1 Loctite 242
2 Shock Mount bolts (M8 X 45 AHCS)	1 Loctite 609
2 Shock Mount nuts (M8 Nyloc)	

**You'll also need to have the Free Bearing Press tool, which can be ordered separately from the parts kits, and isn't actually free.**

### Other tools you'll need:

Allen wrenches, two 5mm & one 6mm	1/2, 3/4" and 7/8" sockets or wrenches	Soft blow hammer or mallet
Brass punch (optional)	Rock & Roll SuperCoat Grease	Your favorite beverage
Acetone	One cotton swab (Q-Tip)	Rags

*While you're at it, you may want to source and replace the shock eyelet bushing and reducers. These can be had from the manufacturer of the shock (i.e. Progressive Suspension, Fox, Answer etc.)*

### Step 1 – Get Ready

**Read through all of the directions** first to understand what you're about to encounter. It's the right thing to do, so just go ahead and do it. If your bike isn't completely disassembled already, remove wheels, cranks, rear derailleur and brake caliper as a minimum. Cut the zip-ties to remove cable housing and brake lines from the swingarm. Clean off some of that dirt. Take a sip of your beverage. Mmmm.

### Step2 – Remove Shock and Pivot Axles

Use a 6mm hex key and 1/2" wrench to remove the two shock bolts. They will need to be tapped out using your mallet and the end of the hex wrench. Keep one hand on the shock so it doesn't drop onto the down-tube when it is freed.

Now use two 5mm allen keys to turn the bolts on the uppermost pivot axle – the one at the top of the upper link - in opposing directions. Remove one bolt. Using a punch (or 6mm allen wrench if necessary) tap the pivot axle out. This should happen without major hammering. If it seems really seized up, don't freak out and bash it or you risk damaging the frame. If it really won't move, try removing the opposite bolt and tapping the other direction, or you can always give us a call or email Scott for more suggestions – the contact info is at the bottom of the page.

**Remember, if you screw up your frame, it's your fault, so it's better to make sure you take the time to do it right now.**

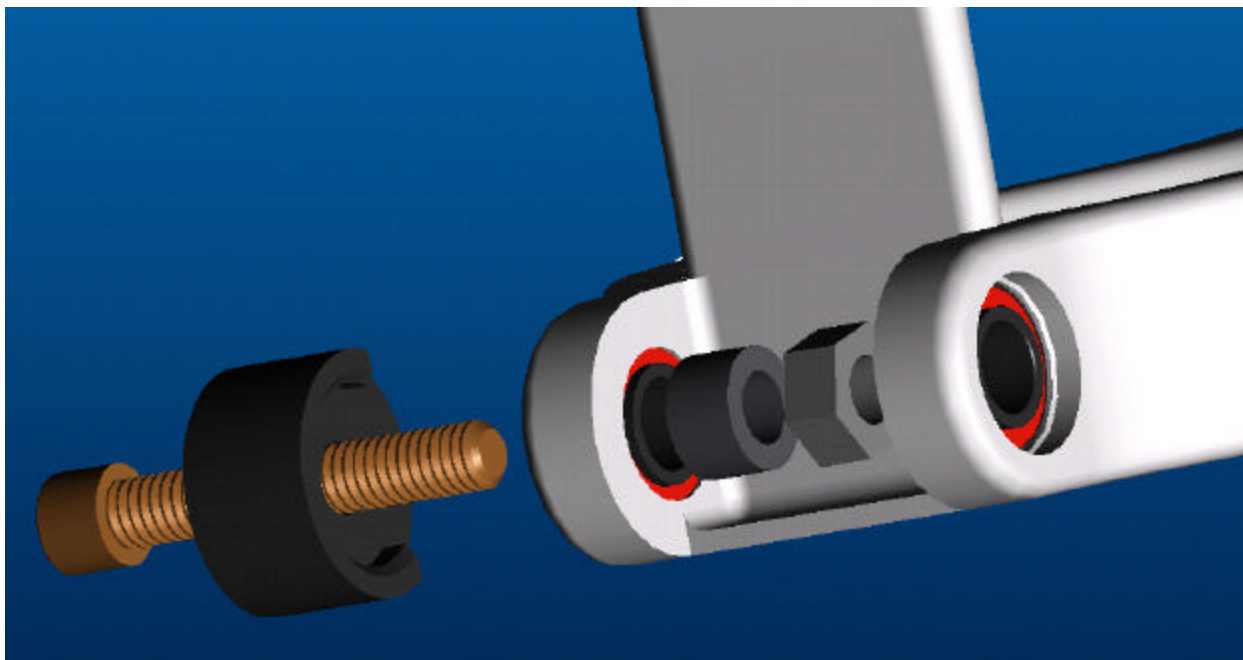
It's easiest to remove the upper link from the front triangle, then from the swingarm first. Then take out the lower pivot axles last.

### Step 3 – Removing the Bearings

Give your bearings a spin now that they are free. Are they crunchy? Is there any play or slop noticeable in the inner race? Either way, you've the frame apart now, so you can replace them or not at your discretion.

The picture below (Figure 1) shows the order of tool parts used to remove the bearings. Using the 3/8" bolt and Bearing Removal Female on one side (oriented as shown) – on the near side of the bearing you put the Bearing Removal Male and the 3/8 nut. Now tighten the bolt carefully and slowly to extract the bearing. If there is a "pop" as it gets moving that would be the Loctite bond breaking loose – don't panic. Have a sip after you get one out. Now do this same procedure 7 more times. 8 bearings, 8 sips...

But take it easy on the beverage at this point; the tricky part is coming up.



**Figure 1 – Removing Bearings**

## Step 4 – Preparation

Now is the time to achieve a Zen state. Breathe deeply. Before battle, the warrior must first prepare:

1. Take two of the short pivot axles, and apply a generous amount of SuperCoat grease to the outside surfaces in preparation. Now is not the time to use the grease you got with your Fisher-Price toolbox. If you skimp on the grease your frame is 47% more likely to creak, and we'll be back here again too soon. Get the nasty black grease for this job. And put on an apron. **DO NOT GREASE THREADS**
2. Apply Loctite 242 to the threads of the eight pivot bolts (basically long chain-ring bolts)
3. Thread one pivot bolt and one washer onto the end of both short pivot axles
4. Open the package of 609 (green) Loctite and lay the package next to your cotton swab (Q-tip)
5. Take out the Free Press Tool and find the parts shown below in Figure 2. Arrange the left side as shown – be sure to orient each of the parts correctly. The Lower Link only goes on in this way, and the tools can damage the bearings if not oriented as shown.
6. Clean each of the pivot bores thoroughly with acetone to remove old Loctite and nastiness.

You are now ready

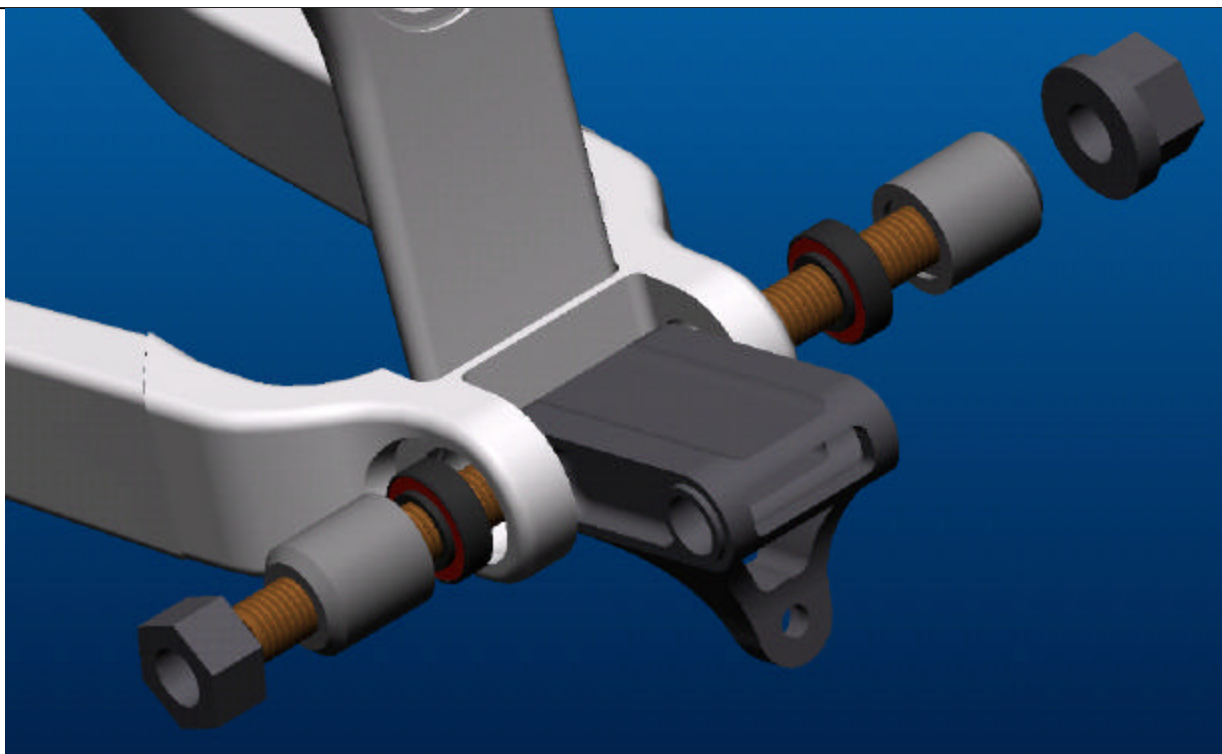


Figure 2 – Pressing Bearings into CS Yoke

## Step 5 – Pressing the Bearings into the CS Yoke

Use the cotton swab to apply 609 Loctite to the clean bearing bore surfaces in the yoke. Take the tool and arrange all the pieces as shown in Figure 2. It's easiest to turn the flange nut, so just hold the hex, and spin slowly. Watch the bearings carefully. **IF ONE IS NOT PRESSING IN PERFECTLY STRAIGHT, YOU MUST STOP AND REMOVE THE BEARING.** Use a blade to remove any burrs created by the crooked bearing and begin again. Take your time. The bearings should be pressed up against the link so there is no lateral (side to side) play in the link. Remove the tool and replace with a short axle. Put a washer and bolt on the other end and tighten it. Sweet.

## Step 6 – Centering the Link

Sometimes one bearing goes in further than the other, and the link has a larger gap on one side than the other. You want to make the gap the same size on both sides, and there is a simple way to do this. Check out Figure 3, and get your tool lined up depending on which side the gap is on.. Make sure the tools are oriented correctly.

Tighten the flange nut to pull the bearings and link to one side until you have it centered. Perfect.

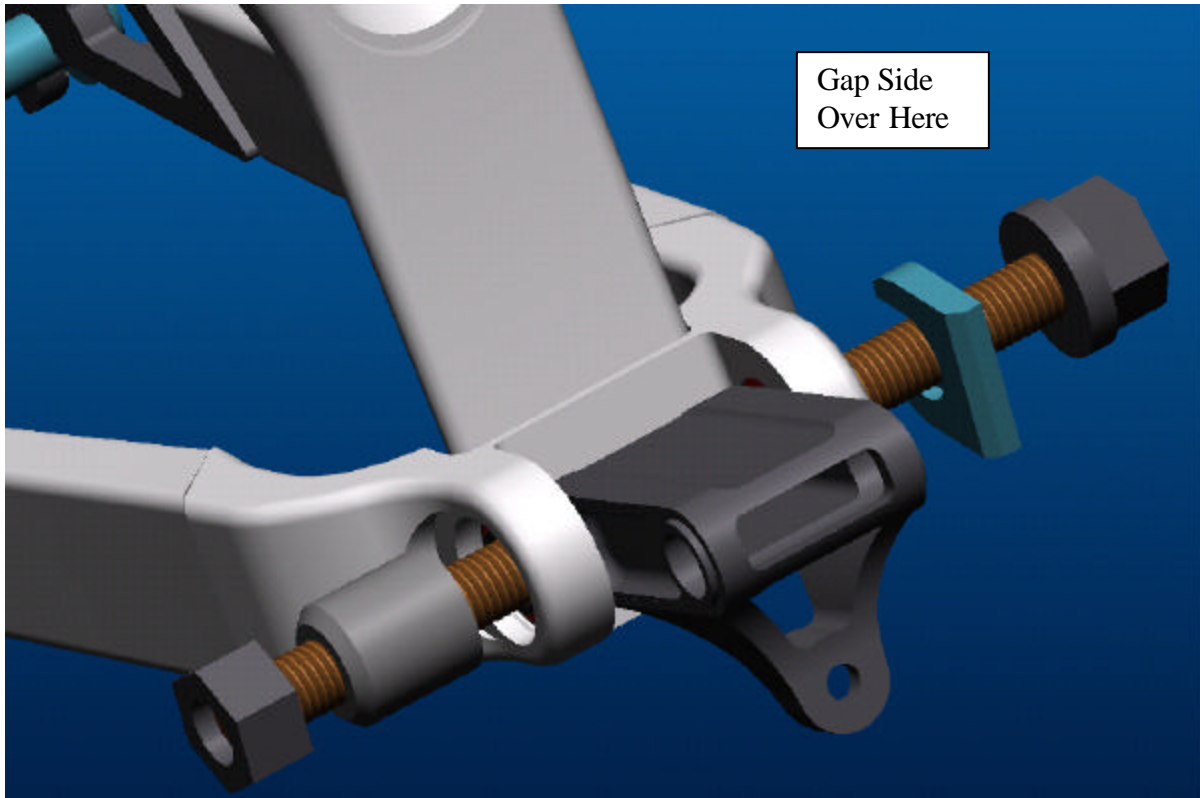


Figure 3 – Centering the Link

## Step 7 – Pressing into the BB Pivot

Go back and repeat steps 5 and 6 to join the lower link to the BB Pivot on the front triangle. You're kicking ass. The end is in sight. Go ahead and finish up that bevvie. That's nice. Crack a new one, cuz' you're gonna need it...

Let's move on to the Upper Link.

## Step 8 – Upper Link Pressing

The Upper Link is a burly part, but if you attempt to press in both bearings in the same fashion as the BB and CS Yoke there is a risk of bending the “ears” that the bearings reside in. Then you gotta buy a new one – take the extra five minutes to do it right. We’ll press in two steps, first they go in individually to a set depth, and then they are pressed against the pivot holder that is under the top tube.

Swab the clean bores with 609 Loctite, then press each bearing individually as shown. Make sure you get the part orientations correct, just like Figure 4. If you do, you just press them until they bottom out on the tool. If the tool is facing the wrong way the link won’t fit on the frame in the next step.

At this point, you should prepare the remaining two pivot axles with grease and one bolt and washer.

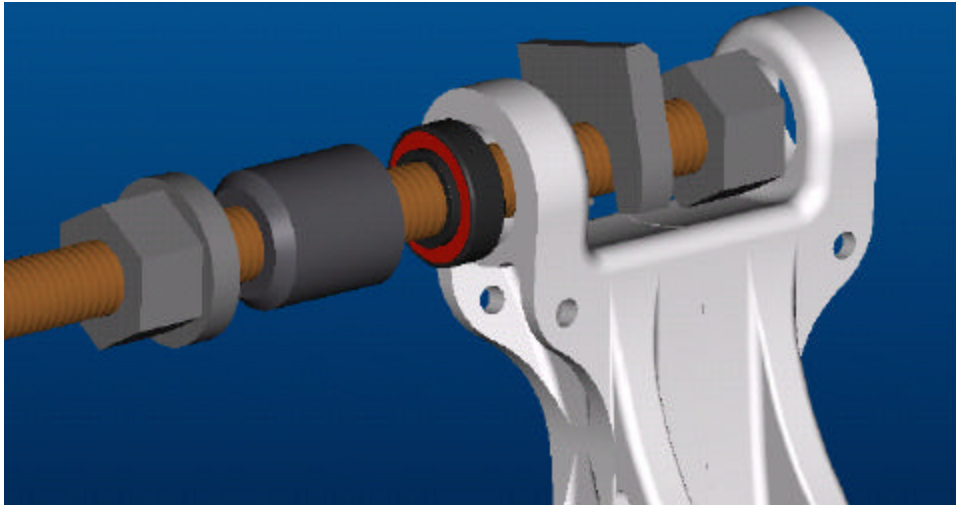


Figure 4 – Upper Link Individual Bearing Press

## Step 9 – Upper Link Attachment to Top Tube

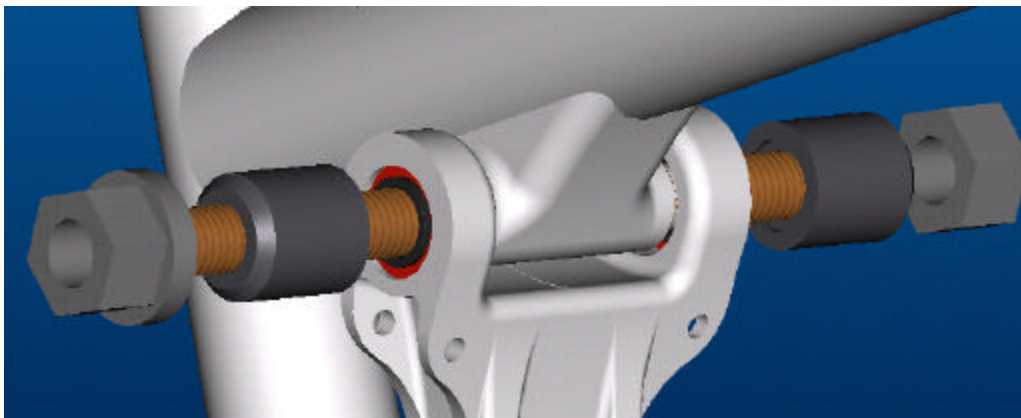
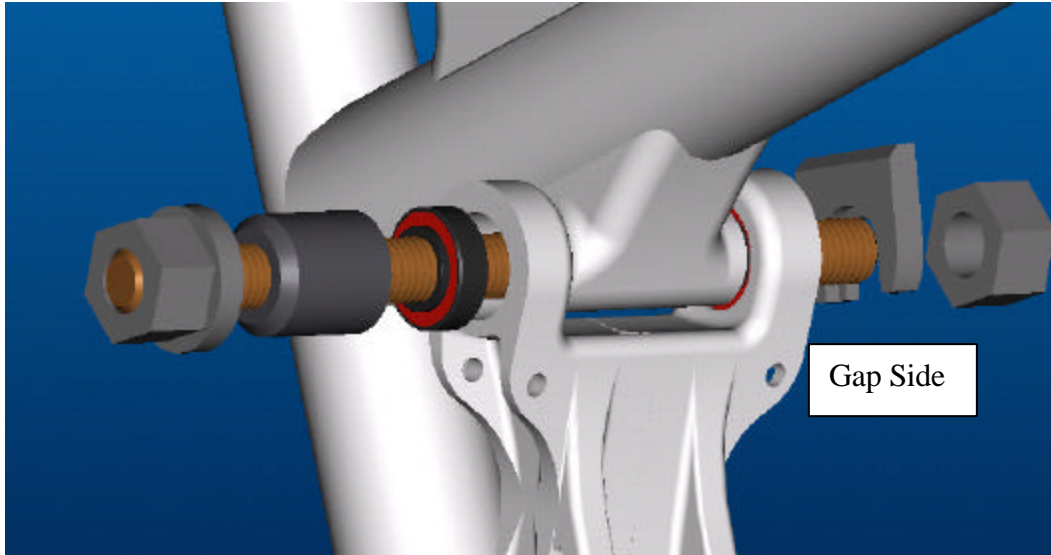


Figure 5 – Attaching the Upper Link

Not much new here, arrange the tool as shown in Figure 5 and press the bearings up against the Pivot Mount so there is no lateral play in the link. Replace the tool with a short pivot axle (you greased it, right?) and install the remaining washer and bolt. One pivot to go.

## Step 10 – Upper Link Centering

Same procedure as centering the lower link, but a new picture in Figure 6

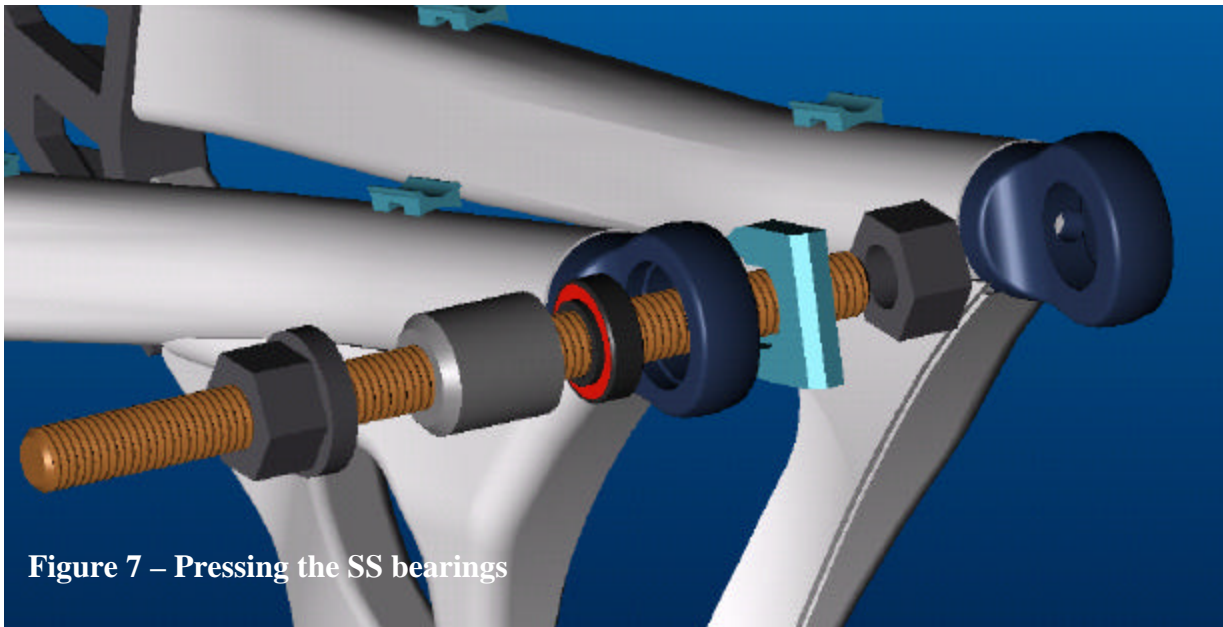


**Figure 6 – Centering the Upper Link**

## Step 11 – Install the Bearings in Seatstay Pivots

This one is just like the Upper Link Press, one at a time. But the orientation of the centering tool is different to allow the bearing to fully seat in the pivot. Pay attention to the orientation of the tools shown in Figure 7.

Once you've got both bearings in, get the swingarm oriented to install the greased long pivot axle through the bottom of the Upper Link. Attach the bolt and washer. Whew. The rest is child's play.



**Figure 7 – Pressing the SS bearings**

## Step 12 – Install Shock

Get your new shock bolts out and put your shock back in place. The piggy-back goes up and forward to have plenty of room through the stroke. You're done man!

Go back through and check each bolt to make sure it has been tightened to the correct torque specification, which is provided in the table below. For a rule of thumb, 50 in-lbs is "good and snug", 150 in-lbs. is "real tight" and 250 is stripping something.

### Torque Specifications

Fastener Description	Prep	Torque (in-lbs)
Pivot Bolts (M8 X .75 X 10 chain-ring bolt)	Loctite 242	80
Shock axle bolts (M8 X 1.25 X 45 allen head cap screws) and nuts	Grease	120
Dropout chain-ring bolt and nut	Loctite 242	80

**Congratulations, the frame re-build is complete. You, my friend,  
are a champion.**

---Cut here---

# Certificate of Mechanical Superiority

***This certifies that \_\_\_\_\_  
has achieved a state of mechanical superiority that most  
humans only dream of. Your mental fortitude is  
enviable and should be recognized by all.***

***This frame rebuilt on this \_\_\_\_\_ Day of \_\_\_\_\_, \_\_\_\_\_***