

Replacing the rear crossmember bushings in a LM Corvair with the engine in place.

I bought a new Corvair Monza 110 hp, four door, four speed new in September of 1965. I drove the car for seven years as a daily driver and kept it for 20 years.

I now have a 1966 Corsa and always thought it sounded louder than I remembered my 65 being. In reading the Corvair SAE Papers I came across an interesting part about the "road and engine noise" being transmitted into the car through the rear crossmember AKA "horse collar". Without an insulator other than the engine mount the noise level was excessive. The engineers added a second bushing to reduce noise and vibration.

This led me to believe a 55-year-old dried out bushing would most likely transmit unwanted noise to the interior.

I had the engine out and neglected to replace the bushings then. I contacted a couple of mechanics that work on Corvairs and have their own shops. These men have over 50 years' experience on Corvairs and neither one had ever replaced a rear crossmember bushing with the engine in the car.

I was told you needed to remove the crossmember from the car and press the bushings out, then put it back. This requires lowering the engine a considerable amount to get clearance for the removal.

After looking at the layout of the crossmember and seeing the way it is captured by a bracket at each end, I thought the bushing could be pulled in place.

I made a puller and installer tool from items I had on hand. The bolt was 6 1/2 "long.

Here is a step by step of how two of us replaced the two bushings in about two hours using a lift and professional tools.

- I. Jack up the rear of the car and support it on jack stands.
- II. Place a jack under the bellhousing and remove some of the engine weight from the front crossmember.
- III. Remove the heater duct where it goes into the tunnel to get access to the right bushing.
- IV. Remove the two-emergency brake cable supports that are connected to the rear crossmember.
- V. Remove the rear tunnel access cover.
- VI. Remove the throttle shaft at the transmission pivot.
- VII. Remove the clevis pin from the transmission input selector shaft.
- VIII. Remove one fastener from the transmission selector shaft support inside the tunnel.
- IX. With the jack carrying the engine load remove the two nuts from the transmission mounts.
- X. Lower the engine just enough to let the transmission mount studs clear the top of the transmission crossmember. This allows the rear crossmember to be moved rearward.
- XI. Remove the nuts off the crossmember bushing through bolts. Do not remove the bracket holding the crossmember to the chassis. (Figure 3)

XII. Starting with the left bushing use a bushing puller (see figure 1) and pull the bushing out from the bottom.

XIII. Place an installer tool (see figure 2) and push the new bushing in place, move the crossmember back in place and install the bolt. Do not tighten the bolt until you have replaced the right bushing. (Figure 4)

XIV. Once both bushings have been installed and the crossmember is in place tighten the two through bolts and reverse the above sequence to finish up the job.



Figure 1 Removal tool



Figure 2 Install tool



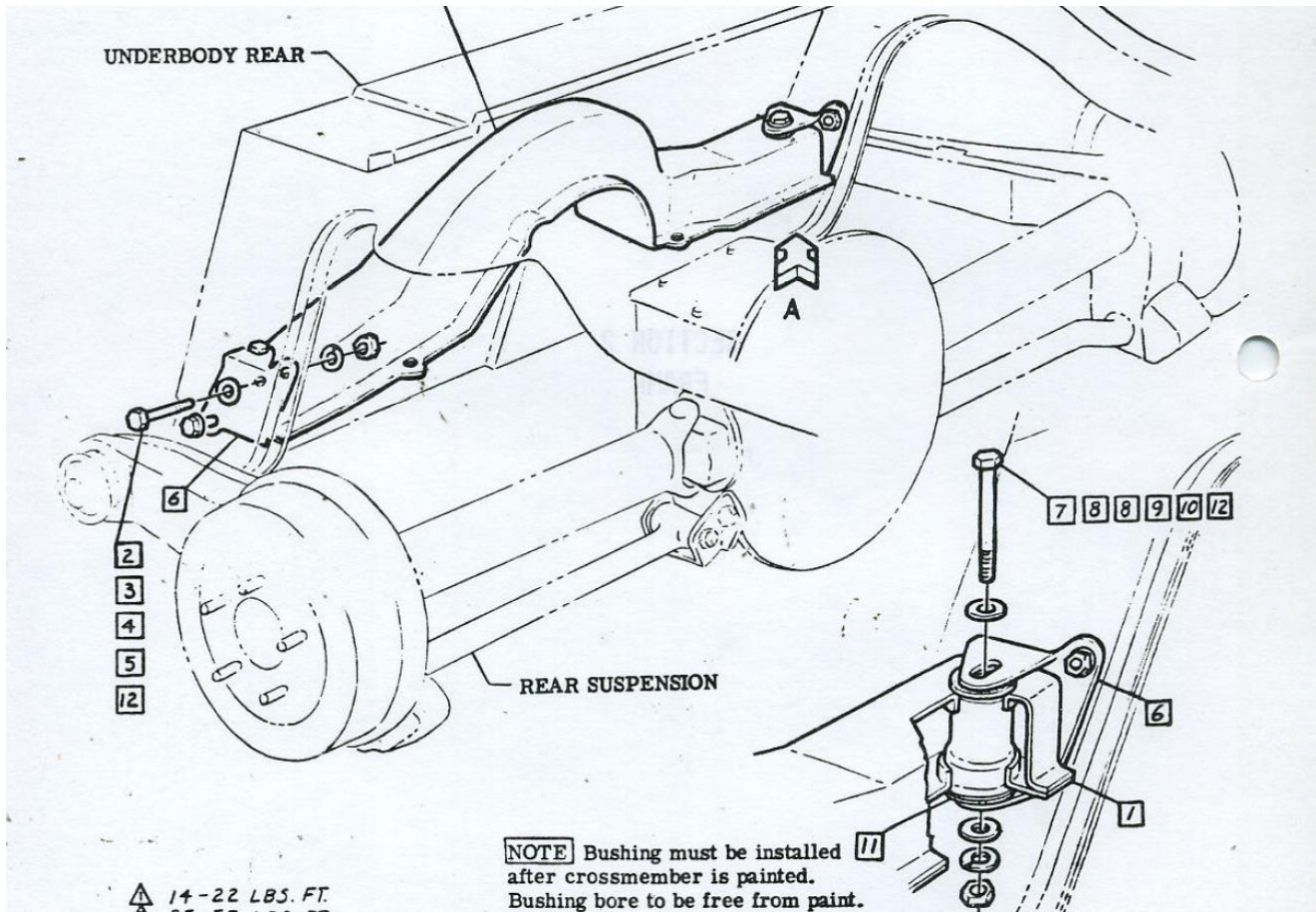
Figure 3 Left side crossmember moved rearward, left side.



Figure 4 Insert tool, the top two nuts are spacers, right side.

As I thought there was no give to the old bushings we removed, they were hard as a rock.

A preliminary assessment is that the new bushings do reduce the noise in the car.



The above illustration from the assembly manual shows the crossmember captured by the brackets bolted to the chassis.

These brackets are made in such a way as to allow the crossmember to slide to the rear when the through bolt is removed.