A Visit to the **AACA Museum**

AUTO ENTHUSIAST

WORLDCLASS

BUILT TO **COMPETE** WITH THE **BEST**

ALSO INSIDE:

- **1963 CORVETTE**
- **MY FIRST CHEVY**

PREVENTING FLUID LEAKS

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READY TO EXPIRE? IF THE DATE ON YOUR LABEL IS DEC 12, IT'S TIME TO RENEW.

AMOS AUTO ENTHUSIAST

BENT OUT OF SHAPE

HARD LINE REPLACEMENT BRINGS IMPROVEMENTS IN FIT AND FINISH

STORY JEFFERSON BRYANT

HAVE YOU EVER NOTICED HOW OLD CARS ALWAYS HAVE REALLY DARK BRAKE FLUID?

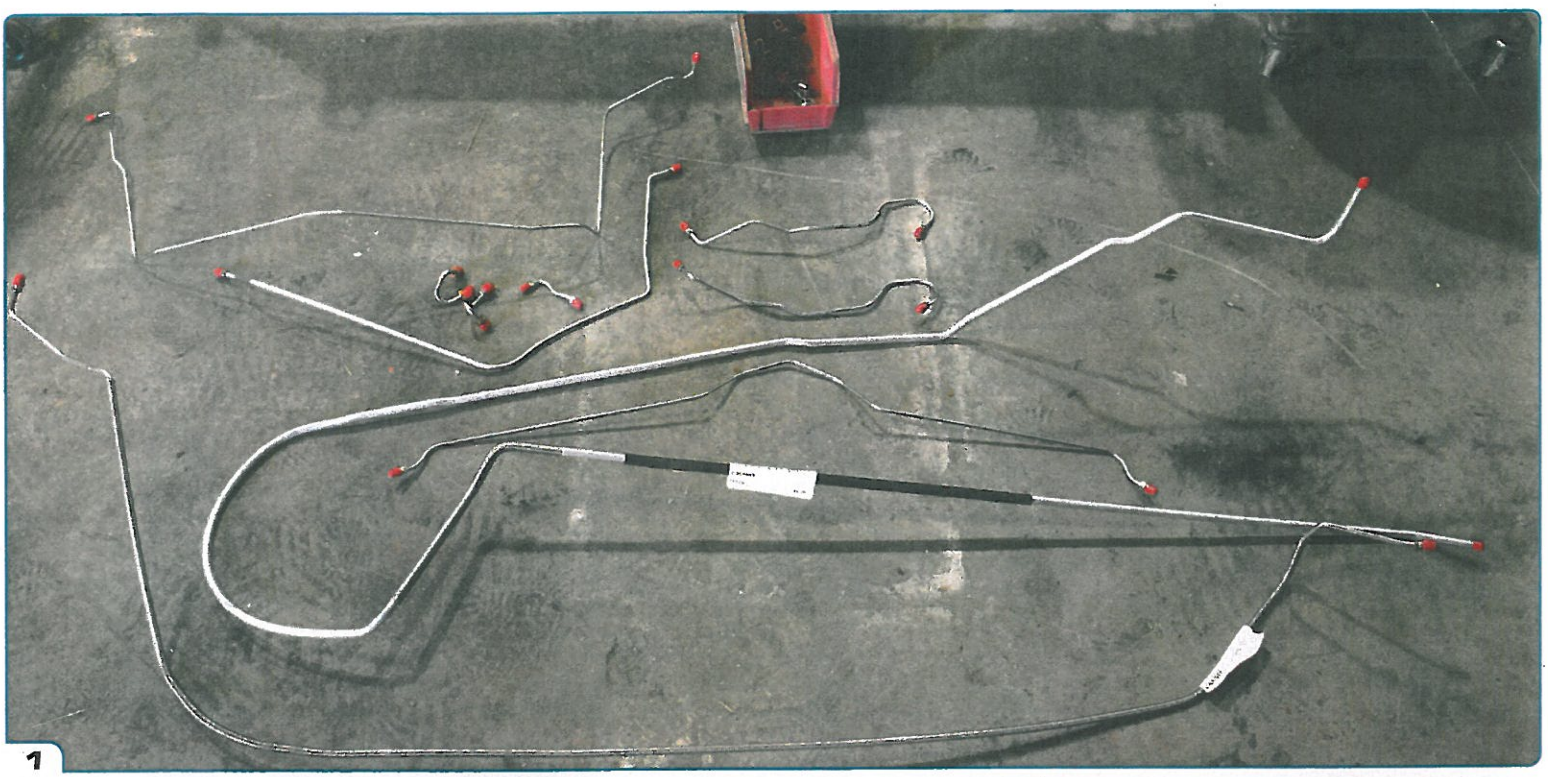
Unlike all the other fluids, brake fluid rarely gets changed, and that actually creates a little bit of a problem. Most brake fluid (DOT 3 and DOT 4) is alcohol based, more specifically glycol-ether. Being alcohol based, these fluids are hydrophilic, meaning they attract and absorb water. Over time, the moisture begins to rust the inside of the steel hard lines, turning the fluid dark. The contaminants from the rusty lines wear out other components faster and diminish the fluid's ability to resist boiling. Changing the fluid is just another part of proper maintenance, especially on a car that has been sitting for a long time.

The fuel lines have a similar problem, particularly with ethanol-blend fuel. If you drive a modern car (less than 20 years old), you won't have a problem with running 10 percent ethanol-blended fuel, but we are not talking about new cars here. Just like alcohol-based brake fluid, ethanol fuel is hydrophilic. Combine the water absorption with the corrosive nature of ethanol, and the protective linings in the gas tank and mild steel fuel lines are in trouble. Fortunately, the fuel in the lines doesn't remain static nearly as long as brake fluid, but over time, the effects of corrosion become evident.

Replacing the entire hard line system is a large undertaking, but the benefits go beyond safety. Old, rusty and crusty lines don't look very good against nice clean paint. This is precisely why we decided to replace all of the hard lines on this 1967 Corvette project.

To ensure the new lines stayed sharp, we placed a call to The Right Stuff and ordered a full set of stainless steel brake lines and fuel lines. Even though the brakes on the Corvette are aftermarket upgrades from SSBC, the factory hard line locations still work. With that in mind, we opted for pre-bent lines instead of bending our own. Pre-bent lines eliminate the guesswork and difficulty of bending and flaring your own lines. With the pre-bent lines, the entire replacement job took less than a day; if we had bent and flared our own lines, this would have taken several days, especially with stainless steel, since it is much harder to bend and flare compared to mild steel.

While most of the time the lines will arrive at your door perfect, ready for install, there is some room for error on these things. The long lines, such as the front-to-rear lines, are typically rolled in half in order to



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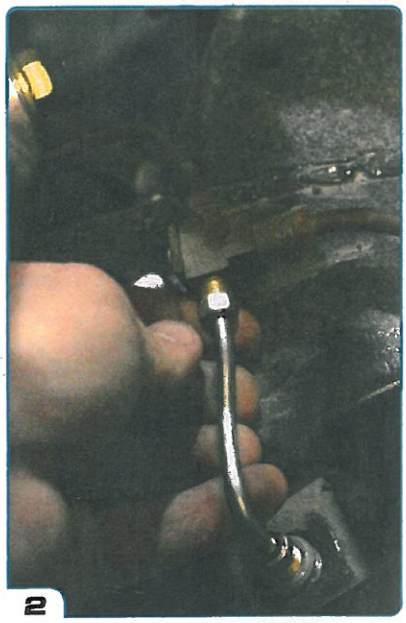

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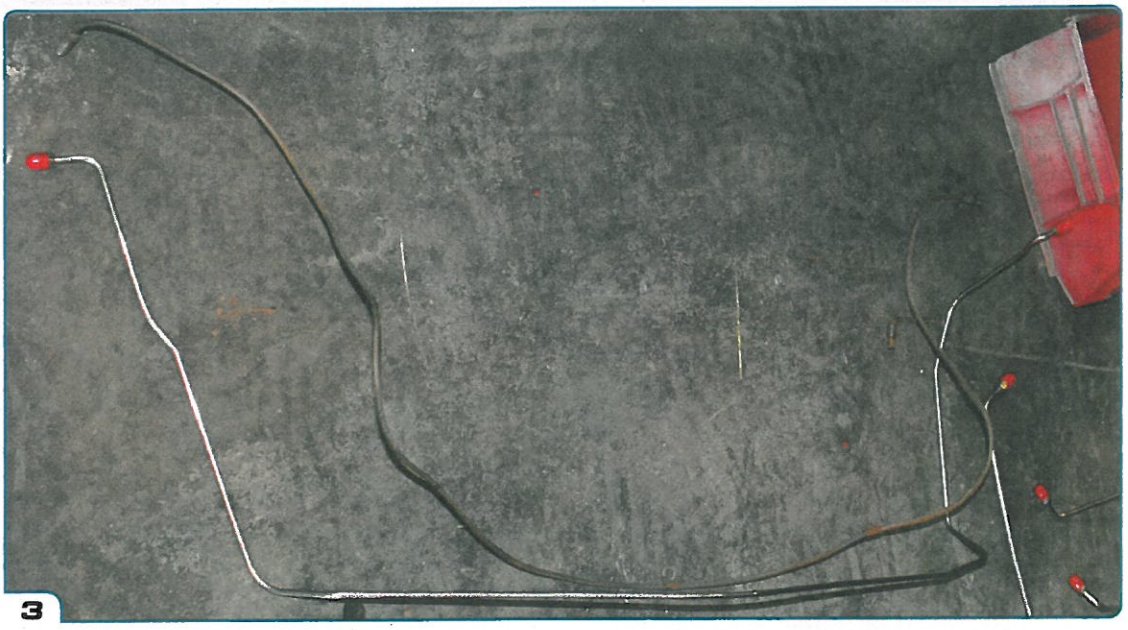

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1 Out of the box, this is what you get. These lines are for a 1967 Corvette, but this is representative of what you will get for most cars. Note how the fuel line (larger line in the middle) is bent in half for shipping. The stock lines on this car have been drained of fluid for at least three years, so they are heavily corroded inside. This isn't just a pretty makeover, it is a necessary task.

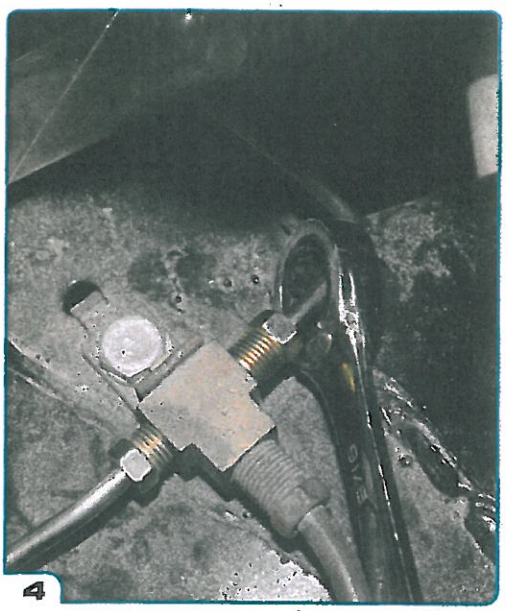
2 This Corvette project is a full restomod, so the body has been removed. There are several small lines in this system. Here is the front T-block on the driver's side. The new stainless steel line is a perfect match.

3 Across the front crossmember runs the passenger side brake line. This line has been removed several times and the bends are not as crisp as they used to be. Here you can see how mangled the factory line really is.

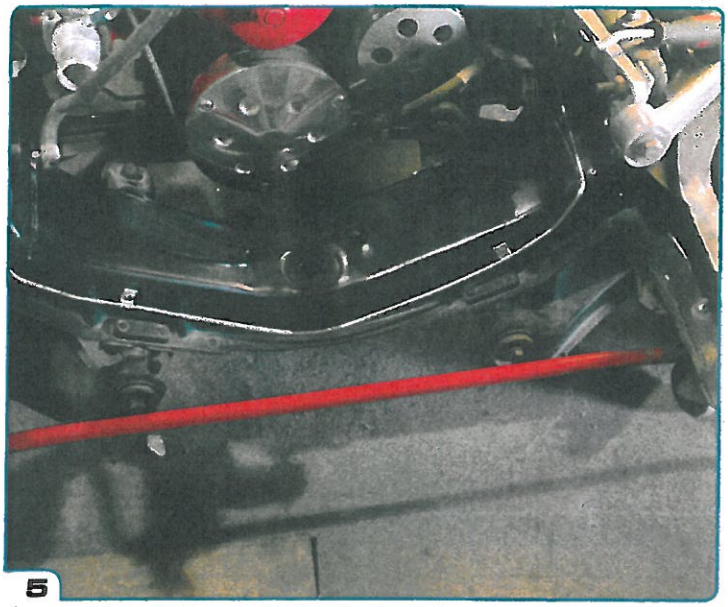
facilitate shipping. This long gentle turn is easily straightened; just make sure you unroll it slow and easy, you don't want to kink it.

The key to installing new hard lines is to take it one section at a time. If you can avoid removing all of the lines at once, you can match each line and install them as you go. Some vehicles will require you shipping your old lines to the manufacturer to be copied, so it may not be possible for everybody. In this case, take a lot of pictures and label each line to match tags you place on the car so that you don't struggle with placing the new lines.

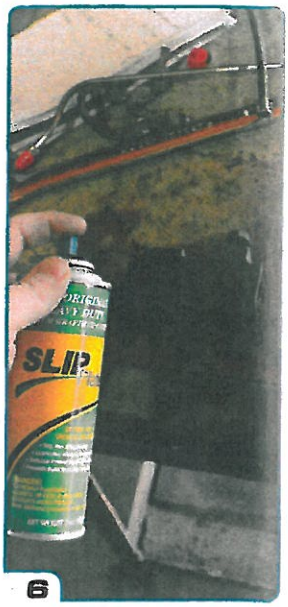
A final note on brake fluid: if you take the time to replace the lines, now is a great time to upgrade to DOT 5 silicone-based brake fluid. This will



4 There are occasionally slight adjustments needed to get the fit just right. A wrench on the line works great. Keep in mind that mild steel is much softer than stainless and will kink easier.

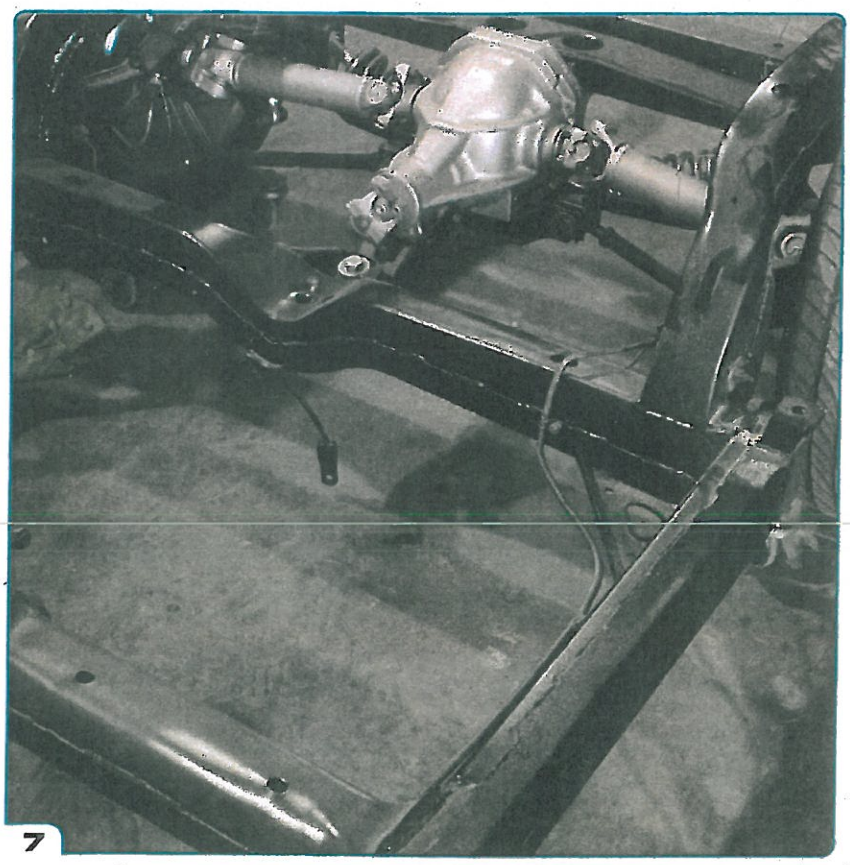


5 We used the original mounting holes, but opted for brand new line clips and bolts to secure the lines. Here is the new line for the front crossmember.

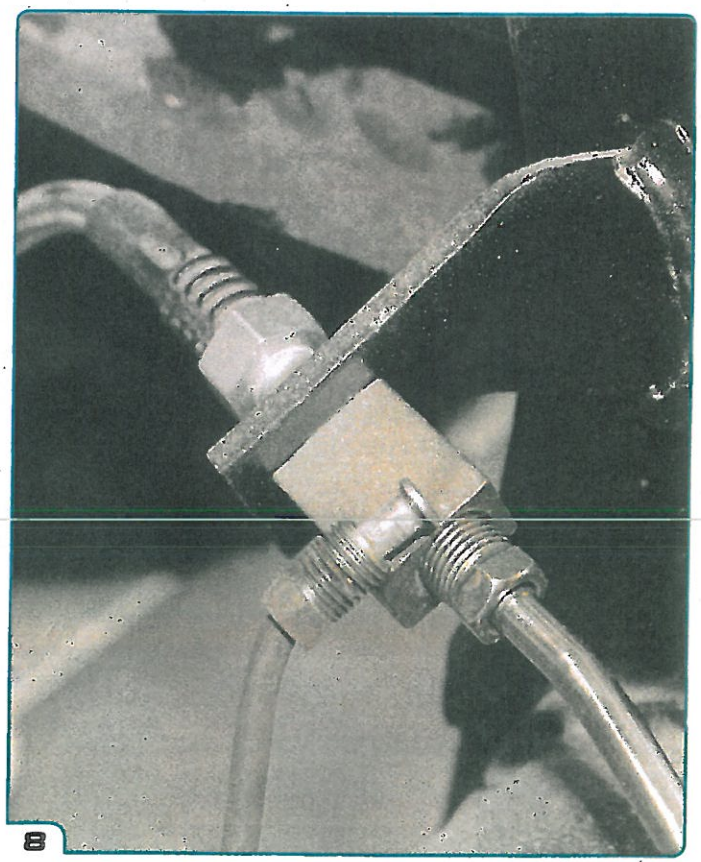


6 We pulled the distribution block to give it a little clean up. We used a spray-on graphite product called Slip Plate to bring back the cast iron color. It will handle temperatures up to 400 degrees, resist gas and brake fluid and will last for years.

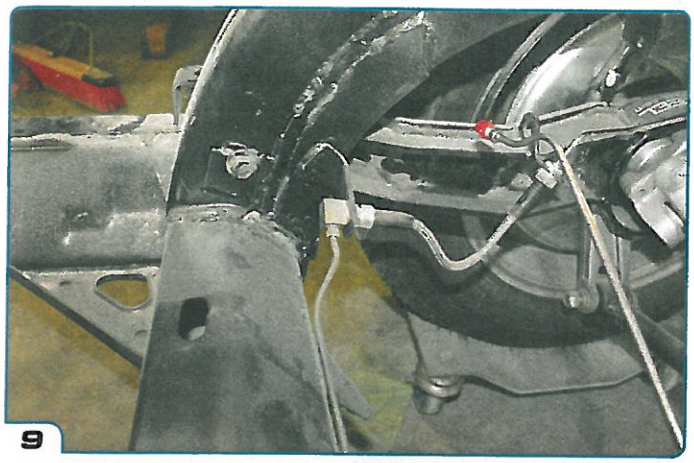
eliminate the hydrophilic alcohol fluid, and silicone fluid lasts much longer and is better in all facets of use. There are, however, two caveats for DOT 5 fluid. First, all components must be new; the benefits of DOT 5 fluid is negated with even a small amount of DOT 3 or DOT 4 fluid mixed in. Secondly, DOT 5 fluid aerates easily and traps air. This means you need to let the bottle settle before adding it to the master cylinder and pour it slowly. Other than that, it is much better than the lower grade (DOT 3 and 4) fluids.



7 The front to rear brake line runs along the driver side frame rail, through the transmission crossmember and over the rear crossmember. It takes a little maneuvering to remove it, but it is easy enough.



8 The new line was run front to back. We threaded the lines to the T-blocks before installing the line clips. This allows for any adjustment to be made.



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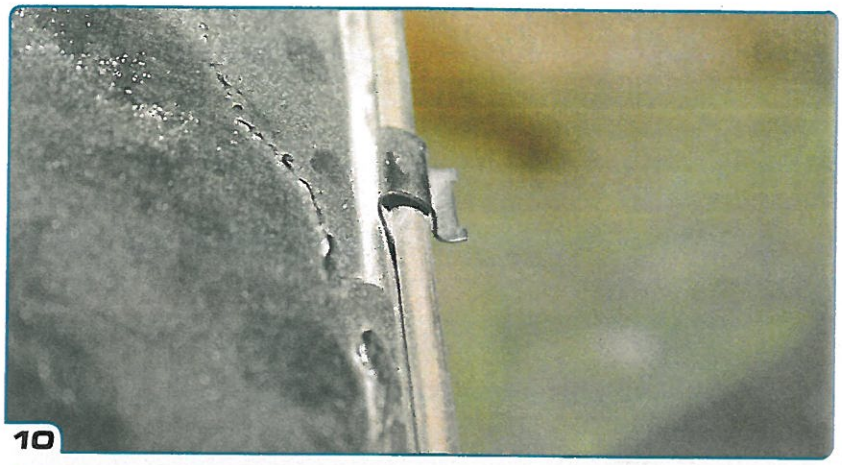

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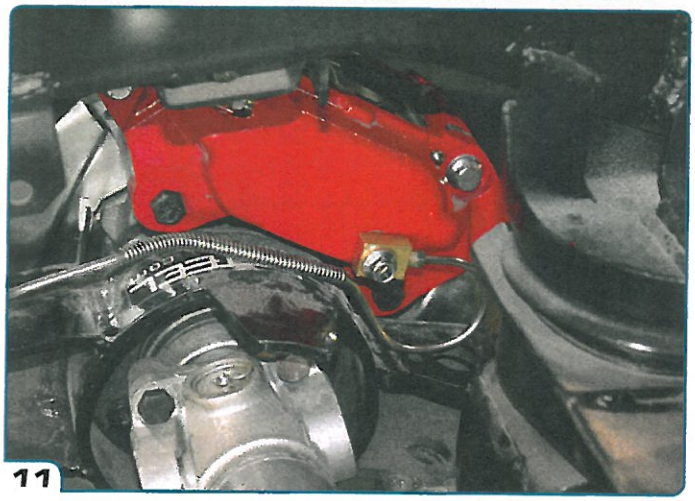

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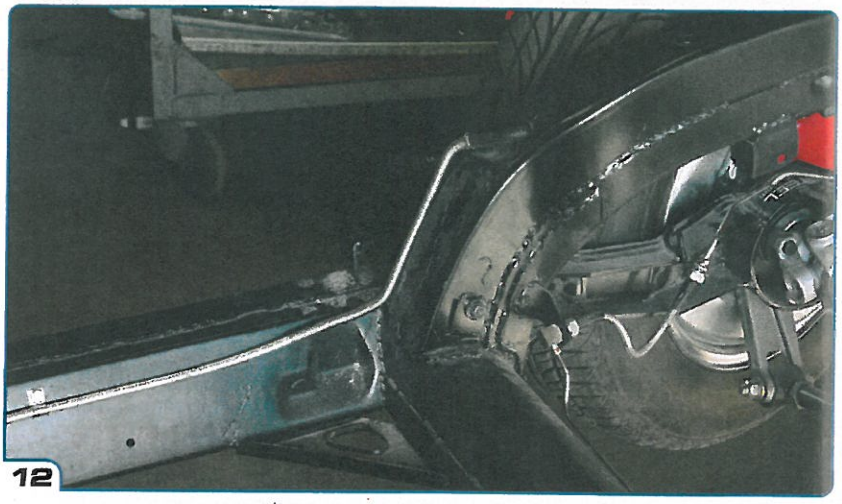

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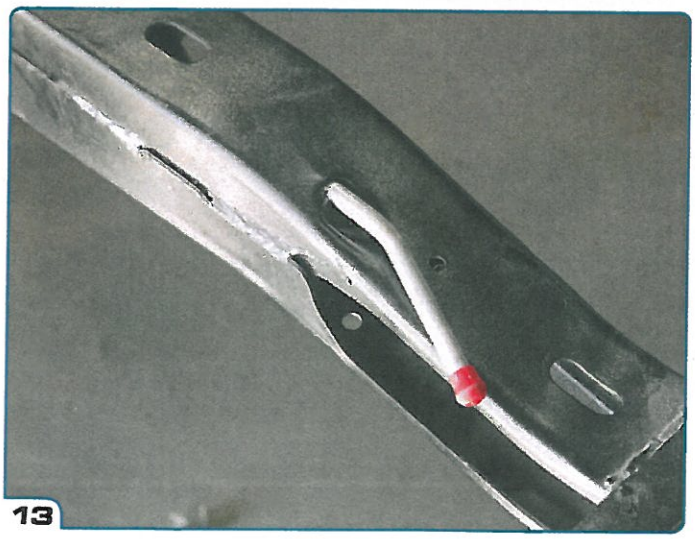

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9 The rear crossover line attaches to brackets on either side of the car. Note the new line to the right; the lines are not always perfect.

10 The factory clips hold the new lines just like the originals as well as giving clues to how the lines should be routed.

11 The Corvette has been fitted with a set of four-piston disc brakes from Stainless Steel Brakes. The lines we got from The Right Stuff matched up with the new calipers, just like the factory lines.

12 The factory line was not on the car by the time we got it, so we didn't have the original routing. Luckily, we had a chassis manual on hand. The line runs through the passenger side rear frame rail. Note the cloth wrap around the tube; this is there to protect the line from rubbing through on the frame.

13 The end of the line comes out just in front of the end of the frame. It takes two people to maneuver the line through the frame and out the holes.

14 Unlike the brake lines, the fuel line runs over the transmission crossmember. The line is bent to accommodate this.

FOR YOUR INFORMATION:

THE RIGHT STUFF
(800) 405-2000
www.getdiscbrakes.com

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