

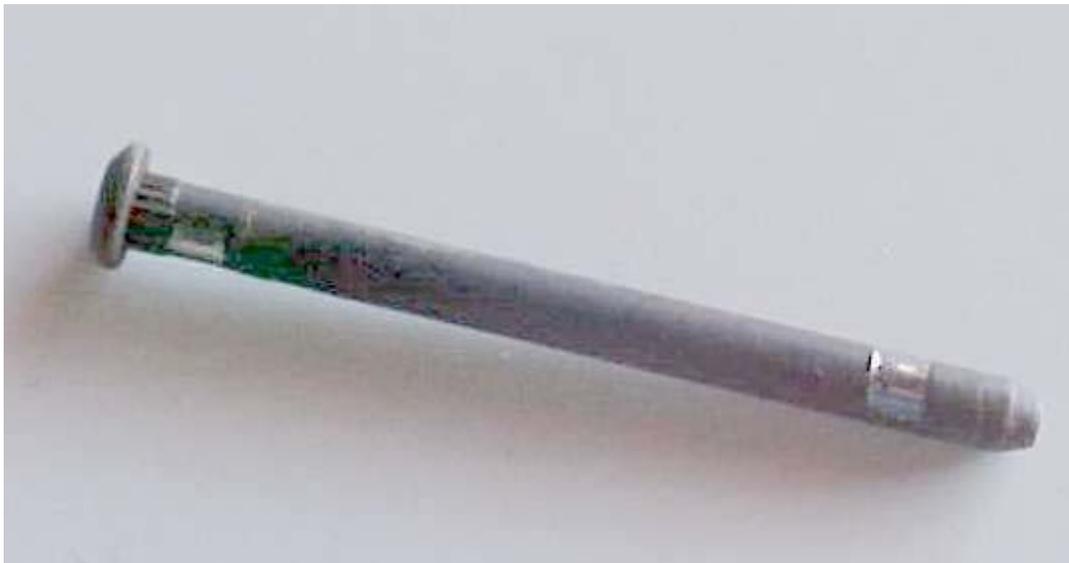
# Fixing Sagging Doors

Edward F. Sowell  
1976 XJ-S

## **Background**

Like many 28-year-old cars, my driver's door was sagging a bit and clunking against the striker when closing. Also, it would squeak as the door rubbed against the seal on bumpy roads. The problem was wear between the hinge pins and the hinges, particularly the upper pin. The upper pin from my driver's door is shown in Figure 1. The lower pin showed hardly any wear.

By the way, this pin not listed as a separate Jaguar part. You have to buy the entire hinge, or replace the pin with something else. It is 0.278" in diameter and 3 3/8" long.



**Figure 1 Worn upper hinge pin**

There had been one or two postings on the XJ-S Lovers Mail List about owners replacing the hinge pins with GM ones, so I thought I'd give it a try. That was back in 2002, and I remain pleased with the result after three years. Since questions on the subject continue to come up on the Mail List I thought I should write it up. Don't expect too many details, as I am working from memory, aided somewhat by some posting I made to the XJ-S list in the intervening time.

## **Parts Required**

I used a 4-inch aftermarket replacement for GM hinge pins from a Parts Plus store near me. The number is NEE 384002. At 0.338" diameter these pins are a little larger than the Jaguar pins, but that's what you want so you can ream the worn holes. They came with bushings, I did not use them because the flange thickness was thinner than the original bush on the top hinge, and there is no room for a bush at all on the lower hinge. The larger diameter over the original pins allows 0.060" for cleaning up the holes in the hinges. The length has to be cut back, as the original pins are only 3 3/8". I've now been told that Autozone part #38407 also works. Although it's marked as 0.342" it actually measures 0.338.

## **Removing the Door**

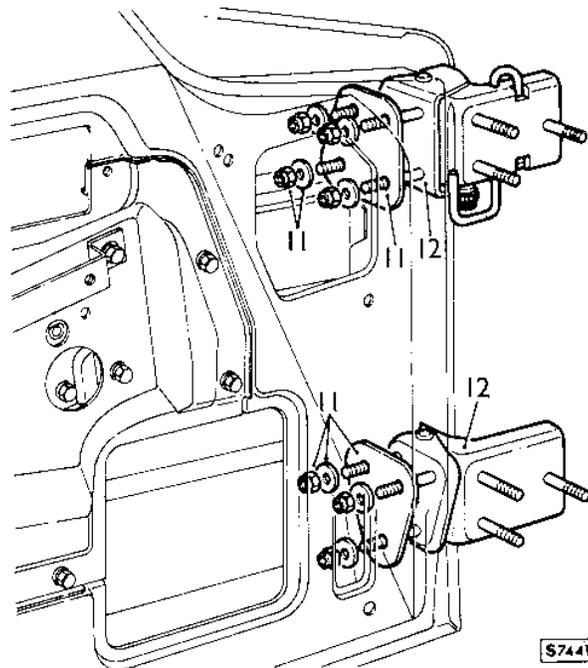
If you are going to fix just the top hinge, you can do the job without removing the door. The ROM gives the procedure, and at least one XJ-S Lovers mail list member reported doing it. Since I wanted to do both

hinges I decided to remove the door; it seemed that leaving the door standing on a jack or something, connected to the car only by the wiring harness was not a good idea. The ROM also gives a procedure for removing the door. You may want to read that in addition to my comments below.

You will need an assistant because the door is heavy and awkward. Moreover, if it is not well controlled after the hinges are unbolted it can easily chip the paint on the door and the car body. I had borrowed a transmission jack (Thanks Ned!) to carry the weight, but still needed help to balance it. Although I did not do so, it's probably a good idea to take some photos before you begin, focusing on the gaps around the door. This will help you in getting it back on straight.

Since the door trim panel will have to come off to remove the hinges from the door, it's a good idea to remove it before removing the door. I believe I also removed the window lift motor and mechanism to improve access to the nuts holding the hinge to the door. Also, you will have to remove the dash underscuttle and the foot well trim panel. While you are under there, disconnect the electrical harness that goes to the door.

The door hinging arrangement is shown in Figure 2. Although not shown, there may be shims at the joining surfaces. As I recall there were some on my car between the hinge and the door.



**Figure 2 Door hinge configuration (XJ-S ROM, 76.28.42)**

As you can see, half of the hinge is bolted to the front edge of the door, and the other half to the car body. Although the ROM procedure advises the opposite, I found it best to first unbolt the hinge from the door. My reason was that the mounting bracket to the body sits behind the rear edge of the fender, which limits the distance you can move the hinge outwards. I was concerned that the bolts might not clear the body before the hinge ran into the fender.

Before loosening the nuts holding the hinge to the door, position a transmission jack or other means of support under the open door and have your assistant ready to hold the door upright. Otherwise, you run the risk of it getting out of control and chipping paint along the front edge of the door and body! Then undo the nuts holding the hinge to the door. Note the position of any shims that might be there, and make notes or take photos if you are likely to forget these things. My car had shims between the hinge and the door.

Once the door is off the car you can remove the hinges from the body. Access to the bolts is through the foot well. First, remove the trim piece. As I recall there was some foam insulation that had to be removed

from the body cavity to get at the upper hinge bolts. To get at those at the bottom you will have to remove a relay that is mounted in the cavity. When the hinges are removed, note the position of any shims that may be present.

### ***Installing the New Pins***

As noted above, I used after market GM hinge pins, available at most auto parts stores. Some have reported just drilling out the holes to fit the new pins. From my early training in machine work I knew that it's hard to get a precision fit using a drill, so I decided to use reamers instead.

The new pins came with bronze bushings, but I choose not to use them. First, the lower hinge has no bushing to begin with, and there is no vertical space for the flange typically used in bushings in applications like this. The upper hinge is bushed, but the flanges on the new bushings were too thick for the available space. I decided to use the existing bushings in the top hinge, and none in the lower one, just reaming to the needed diameter.

Two reamer sizes are required, one to allow a snug slip fit between the pin and moving part of the hinge (i.e., the part that is bolted to the door), and another to give an interference fit where the pin presses into the lower plate of the hinge bracket that bolts to the car body. Since the pin is 0.338" and I wanted a snug slip fit, I choose a 0.340" ream for the moving joint. My machinist suggested 0.001" interference for the fixed joint, so that dictated a 0.337" ream there.

The machinist agreed to charge me \$20 to do the reaming, provided that I purchase any reamers he didn't have in his collection. As it turned out, I only had to buy the 0.337" one, for about \$15. These things are available in practically any size at tool supply stores serving the machining industry. The one I bought is shown in Figure 3



**Figure 3 Reamer**

The machinist turned out to be a very nice fellow. He not only did the reaming, but also cut the pins to the correct length reassembled the hinges and pressed in the new pins, all for the \$20.

### ***Reinstalling door***

Reversing the removal procedure, reattach the hinges to the car body first, using paint marks to get them approximately back where they were. Snug up at least one bolt at each hinge.

Now, get your assistant back into the project to hang the door on the hinges. With the hinges open, move the door into position, guiding the bolts through the holes in the door. As your assistant balances the door on a jack, put the washers and nuts on the bolts and snug up at least one on each hinge. Now, slowly attempt to close the door, watching the front edge very closely for interference with the body. Otherwise, you run the risk of chipping paint. Jockey the door around to avoid this interference, and check the gap all the way around. If necessary, loosen bolts and lift and tug till the gap is even. After the gap is good all around, look at the tilt with respect to the car body. That is, be sure the top is snug against the rubber seal. If it's not, it will leak terribly, ruining your door panels.

As you are doing these adjustments it's helpful to think about the motion allowed when bolts are loosened at the door and body mounting points, respectively. As you can perhaps see in Figure 2, when the body

bolts are loosened the door can be moved forward and aft, or rotated around a horizontal axis *perpendicular* to the main axis of the car. Therefore these bolts are the ones you want to loosen to adjust the gap around the door edges as seen when looking at the door from the side. On the other hand, when the door bolts are loosened the door can be moved inboard or outboard, or can be rotated around a horizontal axis that is *parallel* to the main axis of the car. Therefore these are the ones to loosen to adjust the pressure of the door against the rubber seal. Speaking of the seal, when you think you've got it right get in the car and watch for leaks as your assistant gently sprays around the door with the garden hose.

Part of the difficulty of all this is the door needs to be closed to see that the gaps are right, making it difficult to get at the bolts. Of course, you will have no access at all to the bolts to the door, but you can get to the ones to the body with a bit of contortion. The way to do this is to lie on your belly, stretched across the center console, with your right arm outstretched--- sort of like a "Statue of Liberty" with ratchet instead of torch. You will want your assistant to be jockeying the door around for you, as getting in and out of this position is not easy!

One other consideration in the adjustment process is the mating of the latch with the striker. If the striker is positioned incorrectly it will tend to lift or depress the rear edge of the door in the closed position. If this appears to be happening you should remove the striker from the door post until you have correctly positioned the door, then reinstall the striker and position it so that there is no "clunk" as the door is gently pushed closed. This requires removal of the rear seat and the rear quarter panel trim so you can get inside the rear door post.

## ***Finishing Up***

Once the door is adjusted you will have to replace all the things you removed to get at the hinges. This includes the window lift mechanism, electrical harness, door panel, foot well trim, and underscuttle. The striker plate needs to be reinstalled and adjusted. And do one final leak test with the garden hose.