

Installing Aftermarket Bonnet Struts

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Background

Like everything else, bonnet struts eventually wear out. Sometimes they fail by no longer holding the bonnet open. My original ones did that after about 15 years, and the tech that did my work at the time finally just replaced them and told me later. Guess he figured he had his neck on the chopping block! After another 10 years that set were still holding the bonnet up, but had become so stiff on the uplift that sometimes I had to really struggle to get it up. Time to replace them again.

The first replacements were aftermarket struts that were plug-compatible with the OE. When I decide to replace them again in late 2004 I discovered that the aftermarket units all had the *eye-type end* rather than the *ball-type end* used on the early XJ-S, Figure 1. Not wanting to fuss around with trying to fit the new style, I ordered a pair of Jaguar struts from my usual Jaguar parts supplier. Much to my surprise the pair that arrived was not really a pair; one was the new style and the other the old style! Not happy with this, I called the supplier and was told that Jaguar now listed the new style as the correct part for my car, even though there was no proper way to attach it. Moreover, they had only one of the old style. They sent it since I had told them that's what I wanted, and threw in one of the new to get a "pair.". I returned them both, deciding I didn't want a different part on each side, and if I had to live with the new style I might as well shop for price among the several vendors on www.eBay.com.

This story is about how one can attach these new struts to the early XJ-S. This is not big science. Many people have fitted various aftermarket struts or ones for Hondas etc. without any help from me. However, most reports have been from owners of later models that have the eye end struts as OE and didn't have to deal with the issue of switching. So this is primarily for those with early cars like mine who will have to throw out the ball sockets and find new bits to bolt them on with. Hope it helps.



Figure 1 New (left) and old (right) bonnet strut ends

Which Struts to Use

The XJ-S Lovers mail lists regularly has threads on this issue. Some have taken the old ones to Auto Zone or Pep Boys and picked the closest match. Kirby Palm's *Experience in a Book* has a complete discussion of the options, including units for a Chrysler LeBaron Hatchback, Mighty Lift no. #95018. Earlier, he had recommended those for a 1984 Honda Accord hatchback, e.g., Pro-Lift #92307, but some list members reported bonnet damage due to the high opening force of these units. Going this route will cost about \$60 for the pair.

If you want to try to match a strut from another car be very careful regarding closed and open length. If the open length is not enough the bonnet will not open as far as it should. If it's too long it will be hard to install, and the hinges may damage your bumper cover. If the closed length is too long it will be hard to latch, and some have reported that their bonnet became bowed as a result. Consequently, I recommend that you try to measure these lengths for the current struts if you feel they fit OK.

Measuring the closed length is the hard part, because off the car even a tired one will be very difficult to collapse. You can't do it directly while on the car because, obviously, you can't lay a tape measure on the strut with the bonnet down. I did the best I could by closing the bonnet almost all the way, and then judging where the attachment point *on the bonnet* would fall on the body when closed. This allowed an estimate with a measurement to that point followed by a little arithmetic. I got about 11 $\frac{3}{4}$ ". For the new ones about all you can do is measure the length of the barrel and make a guess as to how far the rod can be pushed in.

Or, you can avoid all of this by either (a) calling your trusted Jaguar parts supplier (See jaguar Parts Suppliers at this Web site), or (b) visit www.eBay.com and search for "XJS Hood Struts" (if you are in the UK, replace Bonnet for Hood in the search). Option (a) will cost you about \$80, the and (b) about \$60 plus \$8-\$10 shipping. I got mine on eBay. They are made by a German company (HAP), and carry the markings "Typ 162 016 10247A 210N 11/04." However, there are at least two vendors there, and I don't know if they both sell the same product. I believe the "210N" means the force to close is 210 Newtons. Mine fit very well. The open length is so similar that after propping it up for removal of the old ones I did not have to move the bonnet at all to get the new ones on. The closed length is the same as the old ones too. They present no closing problem, and seem to lift the bonnet with the same force as the ones removed. No, they don't pop it full open without manual assist, as some people report with the Honda struts, but I for one would not consider that to be a desirable feature.

Mounting Hardware

If your XJ-S is later than 1978 or so you probably have the eye style struts as OE. Even if an earlier model like mine they may well be that style because someone else has already replaced them. In either case you will have all the needed mounting hardware already in place. On the other hand if you have the ball and socket attachment you will need new bolts, spacers, and some washers.

If your car is like mine, the attachment holes on body and bonnet are threaded. The replacement bolts you need are 5/16 -24 (NF), 1" long. These are available in any hardware store, probably in their selection of Grade 8 bolts and nuts (gold color). For later models, the attachment holes are apparently not threaded, as the parts book shows bolts with nuts. In this case you can use the old hardware.

The eye style struts need either a spacer or a shoulder bolt to allow tightening without binding the strut. The parts book shows the spacer as part number BD 48028, Figure 2 (left). If you are replacing the old ball style struts with the eye style you can order four of these from your Jaguar supplier. Alternatively, you can make your own from a length of 3/8" brake tubing, Figure 2 (right). The brake tubing can be purchased at any auto parts store for about \$5.

You will find that these spacers (Jaguar or homemade) are a very loose fit the eye of the strut, as the spacers are 0.375" while the eye is about 0.410". I worried a bit about this, thinking it was not nearly as precise as one would want on a fine piece of machinery. But the truth is some slop is *needed* here, because the attachment points on bonnet and body are not perfectly aligned. If there were no slop the strut would be put under bending stress as you closed the bonnet. Indeed, that's probably why the ball type ends were used in

the first place, and why the eye in the newer style is not straight-sided; it is bigger at the faces than at the middle.

If you decide to make these spacer you will have to cut them to ½” as accurately as you can. I held the length of tubing in a vice and used a Dremel cut-off wheel, working to a scribed line. If the cut isn’t square dress it with a file. Don’t clamp too tightly or you will collapse the tube.

The shoulder bolt idea is an attractive alternative at first thought, but in the end wouldn’t work for me. The problem is these bolts typically have coarse threads, whereas the early XJ-S needs fine. Neither McMasterCarr nor my local industrial hardware store had a fine thread shoulder bolt.

You will also need a washer under the bolt head. A single, standard 3/8” steel washer is too loose and will rattle. I solved this by putting a rubber washer between the bolt head and the steel washer. At that point it shouldn’t get too much wear, and grips the steel washer tight enough to prevent rattle with out binding the strut end as the bonnet opens.



Figure 2 Jaguar and homemade strut spacers.



Figure 3 Cutting spacer from brake line.

All these parts are shown in Figure 4.



Figure 4 Mounting hardware

Installation

With all the parts at hand you can do the installation in about ½ hour. Begin by propping the bonnet open on one side, Figure 5. You want to prop it high enough to take the lifting load off the strut, but not so high as to put it in tension. If propped well, you can easily remove the bolts by hand after loosening. Be sure the prop is solid so it won't pop out while you're working. Depending on the length of your broomstick or dowel rod, you can jamb the lower end down in the engine bay somewhere, or against one of the wing bolts in the rain gutter. Small blocks of wood are handy for getting it just right. I sometimes lash it to the garage rafters as a back up.

Note that the bolts on early XJ-S are actually large flat head Pozidrive screws. But if all you have is a big Philips, or anything else that will break it loose, and damage, them that's OK as you will not be using them anyway.



Figure 5 Supporting the bonnet

Now carefully loosen the bolts. If they don't come out easily, readjust the prop to take all pressure off the struts. Once removed, slip the new one in its place, insert the bolts with spacer and washers, and tighten. Repeat on the other side and you're finished!