

D. Jensen	<b>REMOVAL AND REPLACEMENT OF BRAKE BOOSTER ON LHD '95 XJ6</b>	V. 1.0 Nov. 26, 2005
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*The Fine Print: The following is a summary of my experience repairing a defect in the braking system of my X300 Jaguar, a California-based, LHD '95 XJ6, VIN 750537, 98,000 miles. Some of the steps described may not be applicable to your car due to its year of manufacture, country of use (e.g., RHD), and other details. In addition, I have worked on cars and braking systems for many years so I have a reasonable understanding of their operations and the safety features that must be addressed. I accept no responsibility or liability for potential misstatements in this write-up or the manner in which it is used. Please follow all normal safety precautions when performing this work.*

As several Jag-lovers listers have noted, some '95 XJ6s, and perhaps later model years, sometimes squeal when the brakes are applied after starting the engine or upon hard braking. This has been attributed to flexing of the vacuum chamber that provides the brake boost. My '95 XJ6 has squealed for 5 years and after a hair-raising stop/squeal session during LA rush-hour traffic, I decided it was time to fix the problem.

I had previously searched the Jag-lovers archives and the JDHT CD for the 95-97 XJ6 model years, but found no reference as to how to replace the brake booster. After I finished my R&R, I found a description at ALLDATA™ under "Technical Service Bulletins/All Technical Service Bulletins/Brake Pedal - Inconsistent Return/Action/Replacing Brake Booster". While I'm sure this method works, it is far more complex than the one I used (e.g., "Drain the radiator to lower the coolant level sufficiently ...") and would likely be more time-consuming. However, there are details in the ALLDATA™ write-up that may be useful, e.g., bolt/nut torques.

The power brake specialist that examined the squealing booster from my car confirmed what I had been told: it was not repairable due to the design flaw noted above. That left me with two choices: buy a new booster at ~\$600 or purchase a used unit with a one-year warranty for \$250. Given (a) the relative ease of changing out the booster and (b) the opinion of the brake specialist that boosters fail fairly early if they fail at all, I opted for the latter. Following installation, I am now squeak free.

After completing the repair, I decided to supplement the written description I had compiled during the repair with photographs. I have done this to the extent possible with the braking system back intact. However, I have no photos of the pedal assembly coming out of the car or on my workbench. Hopefully the directions are sufficiently clear along with the other photos to complete the job as described. The JDHT CD Parts volume, Chap. 13, showing the brake parts is also useful for displaying some of the items I did not photograph.

One final note: I did not replace any of the rubber seals or gaskets as they all were soft and in excellent condition.

## Removal of Pedal Assembly from Car (~1 hour)

1. In the passenger-compartment footwell, remove the brake pedal rubber cover. This provides clearance during removal of the brake/throttle pedal assembly (see Step 18 below). Remove the four screws holding the underscuttle pad to the dashboard (Fig. 1). Carefully pull down on the left side of the pad and then pull left. Be careful not to let the underscuttle get hung up on the dashboard lighting rheostat or steering-column adjuster switch located on the left side of the steering column.

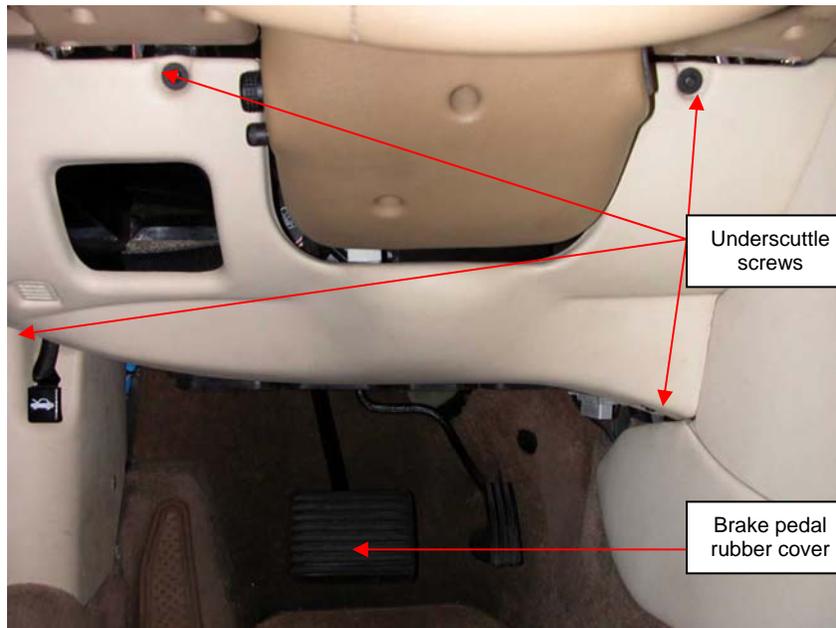


Fig. 1

2. Separate the white connector to the in-car temperature-sensor aspirator motor (Fig. 2) and remove the underscuttle. (As an aside, you might want to remove the motor and clean out any lint/debris that has accumulated behind the louvers.)

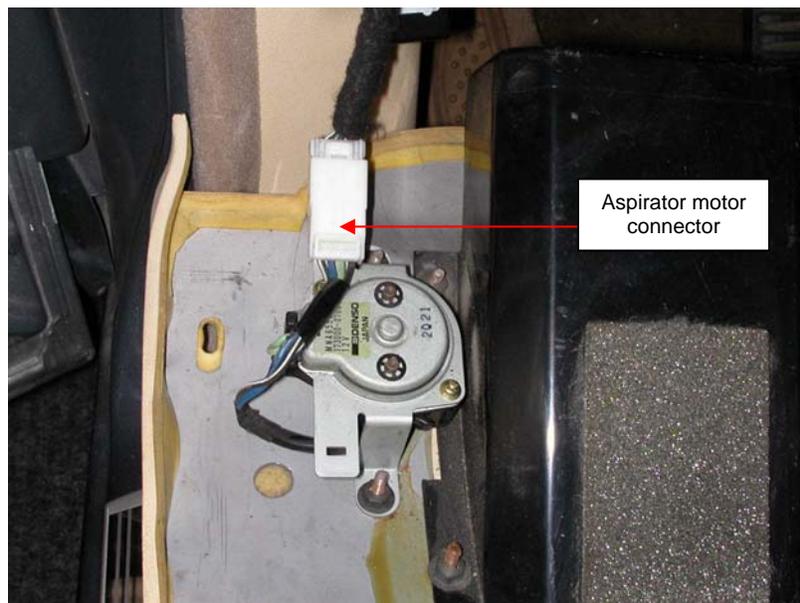


Fig. 2

3. Pull the black-plastic heater duct rearward on the left side and then pull it left off of the heater outlet (Fig. 3). Note the brown retaining pin (see Step 25 below).



Fig. 3

4. Snip the tie-wrap holding the brake-pedal switch lead to the adjacent wire bundle and separate the connector (Fig. 4).



Fig. 4

5. Remove the six 13-mm nuts (three shown in Fig. 5) and one 13-mm bolt (not shown) securing the pedal assembly and steering-column bracket to the body. Removal of the nut near the steering-column bracket requires an open-end wrench. The other nuts and the bolt can be removed with a ratchet/socket/wobbly. Mine were only very-lightly torqued.

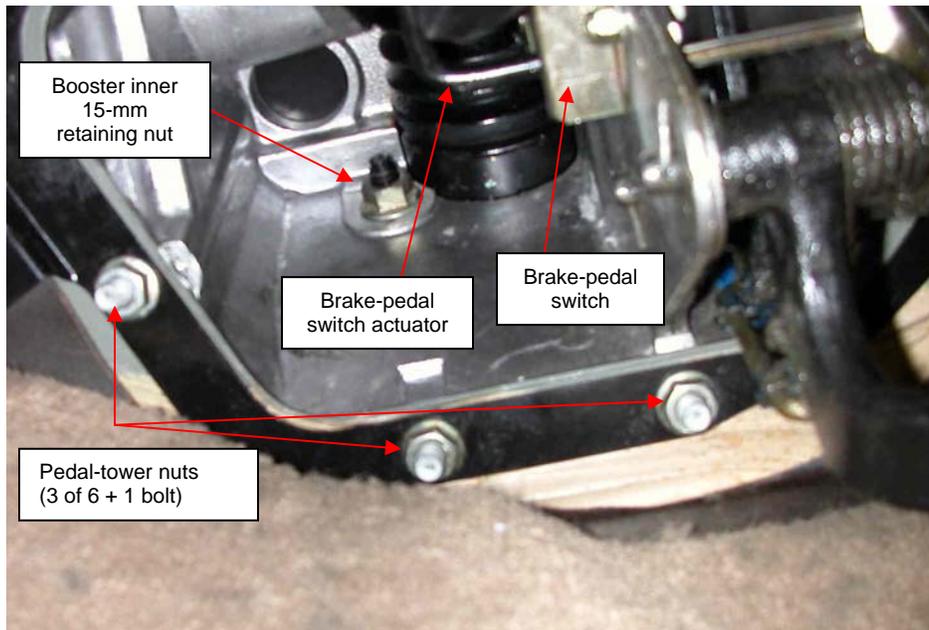


Fig. 5

6. Raise the hood/bonnet. Remove the plastic fascia attached beneath the hood/bonnet rubber strip on the fender (Fig. 6).

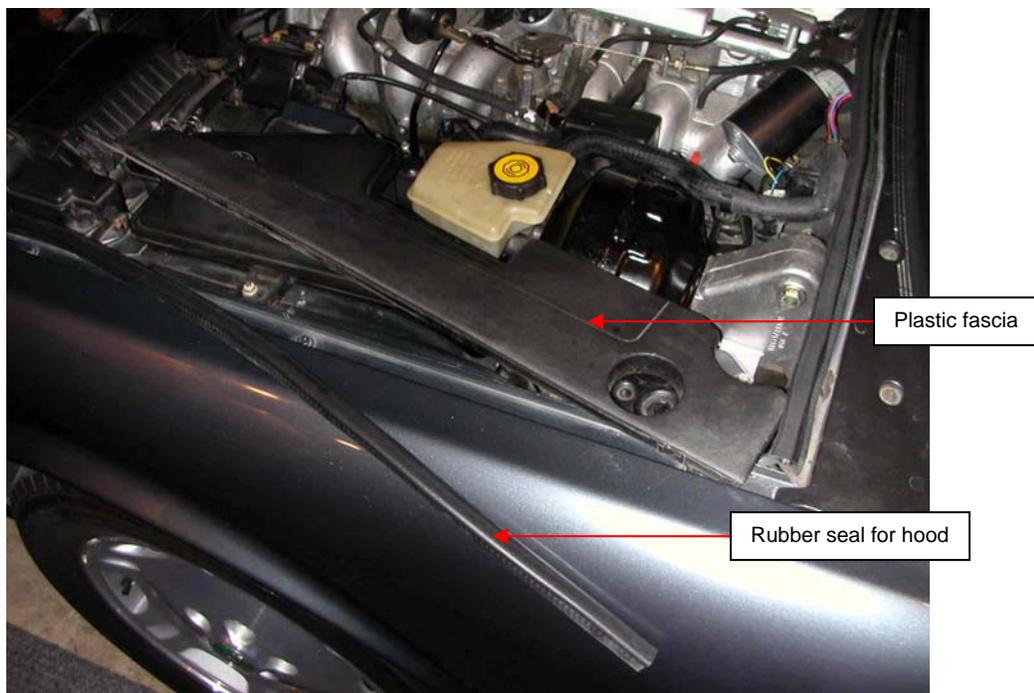


Fig. 6

7. Remove the 10-mm nut and fitting securing the expansion tank to the fender (Fig. 7).

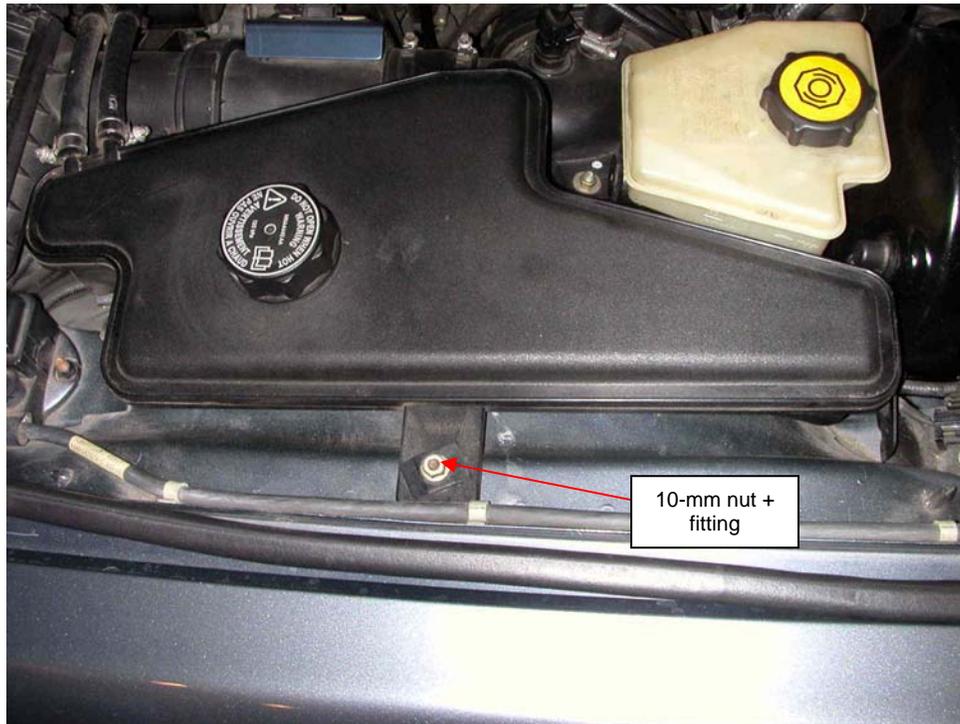


Fig. 7

8. Lay a thick fender cover over the fender. Move the expansion tank forward. Do not disconnect any of the coolant hoses (Fig. 8).



Fig. 8

9. Place a cloth beneath the master cylinder brake lines. Disconnect the master cylinder fluid-level connector (Fig. 9). Using a hand-held suction tool or similar device, withdraw the brake fluid from the master cylinder.



Fig. 9

10. Loosen and withdraw the forward, 13-mm, and rearward, 11-mm, brake-line fittings. Catch any brake fluid that drips from the master cylinder or lines in the cloth. (Fig. 10).

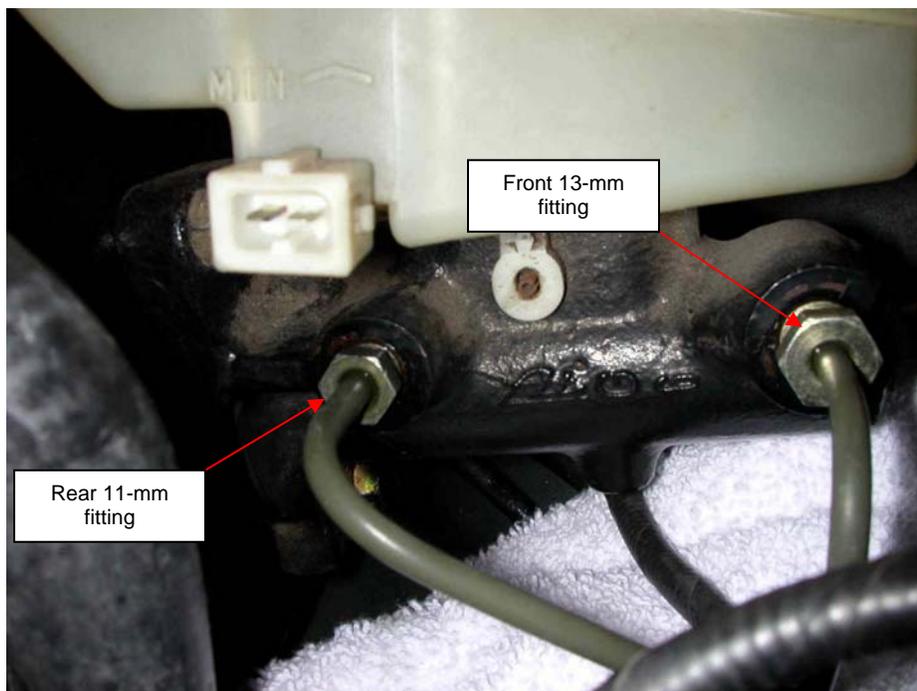


Fig. 10

11. Remove the throttle-cable end from the throttle-body pivot. Loosen the forward nut securing the throttle-cable sheath to the mounting bracket (Fig. 11). Remove the cable from the bracket.

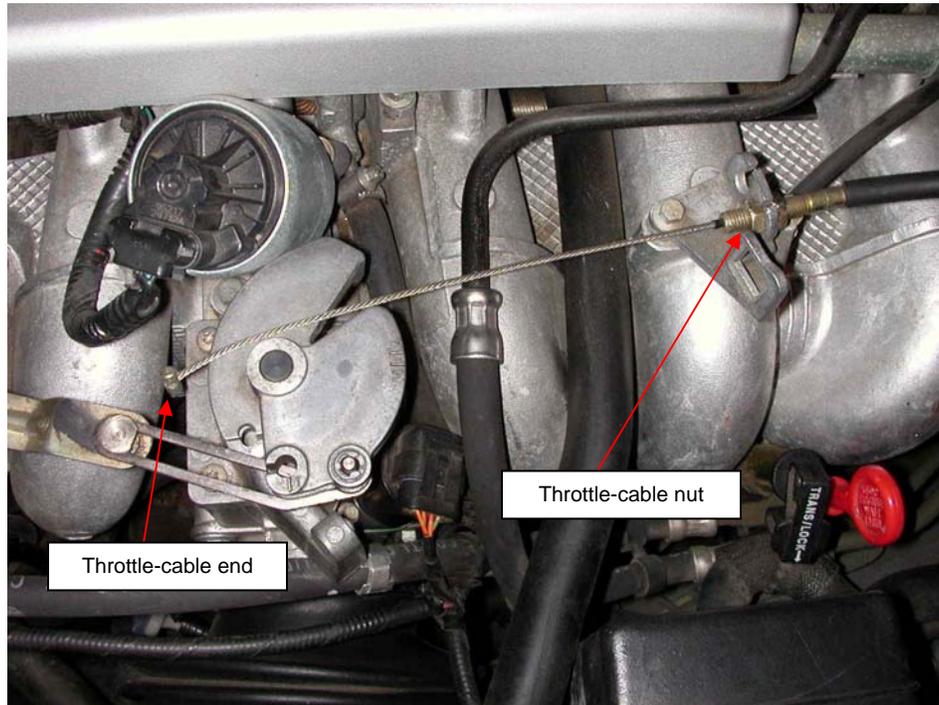


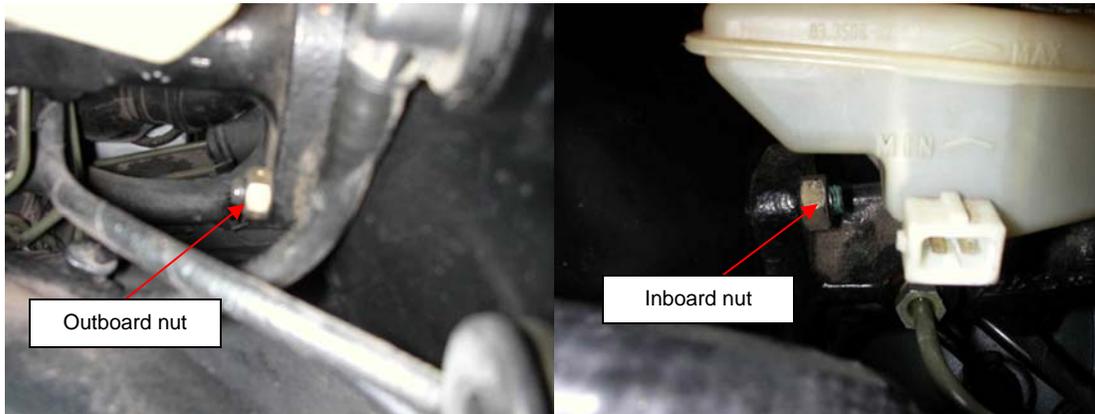
Fig. 11

12. Remove the vacuum line from the booster using a flat-bladed screwdriver (Fig. 12) and gently push out of the way.



Fig. 12

13. Remove the two 13-mm nuts securing the master cylinder to the brake booster (Figs. 13 and 14) and remove the master cylinder.



Figs. 13 and 14

14. Loosen the two outboard, 10-mm nuts securing the heater flow-control valve to the rubber mounts attached to the pedal assembly (Fig. 15).

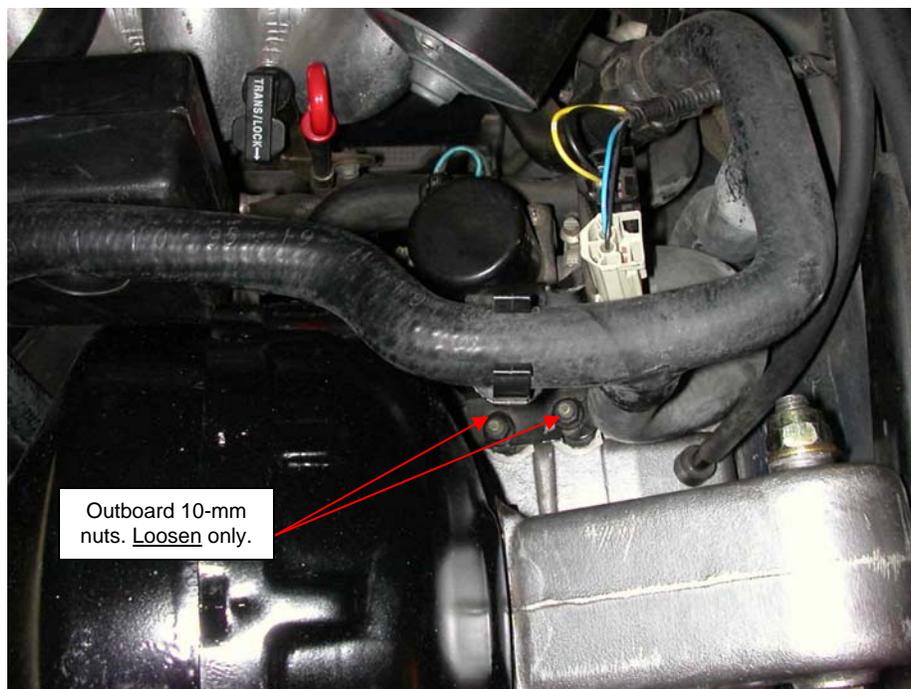


Fig. 15

15. Remove the inboard, 10-mm nut securing the heater flow-control valve (Fig. 16)

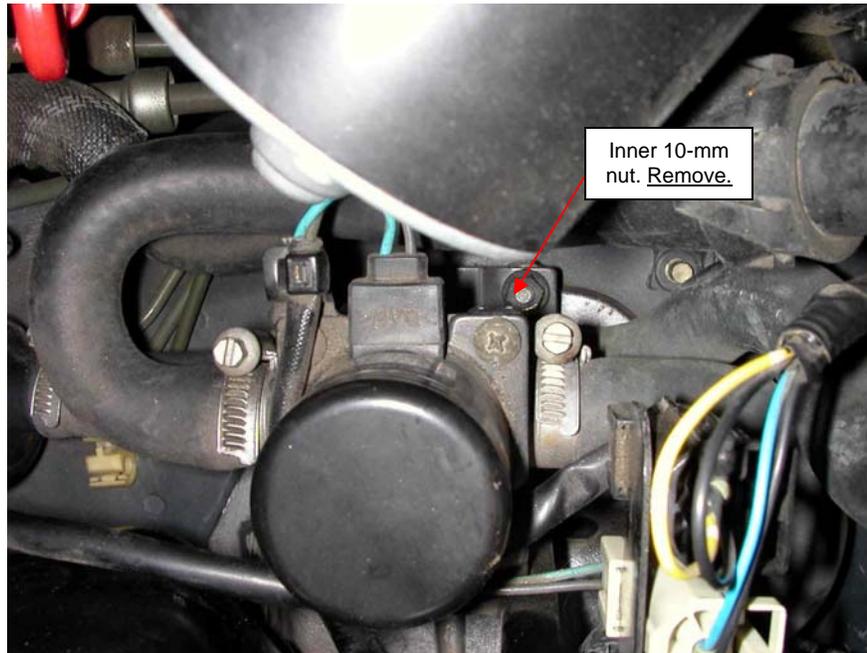


Fig. 16

16. In the passenger-compartment footwell, insert a stubby flat-bladed screwdriver between the pedal assembly and the body (Fig. 17). Pry the pedal assembly up  $\sim\frac{1}{4}$  in. to break the seal to the body. The rubber seal between the assembly and body causes the two to stick tightly together. I could not loosen the pedal assembly from above prior to taking this step.

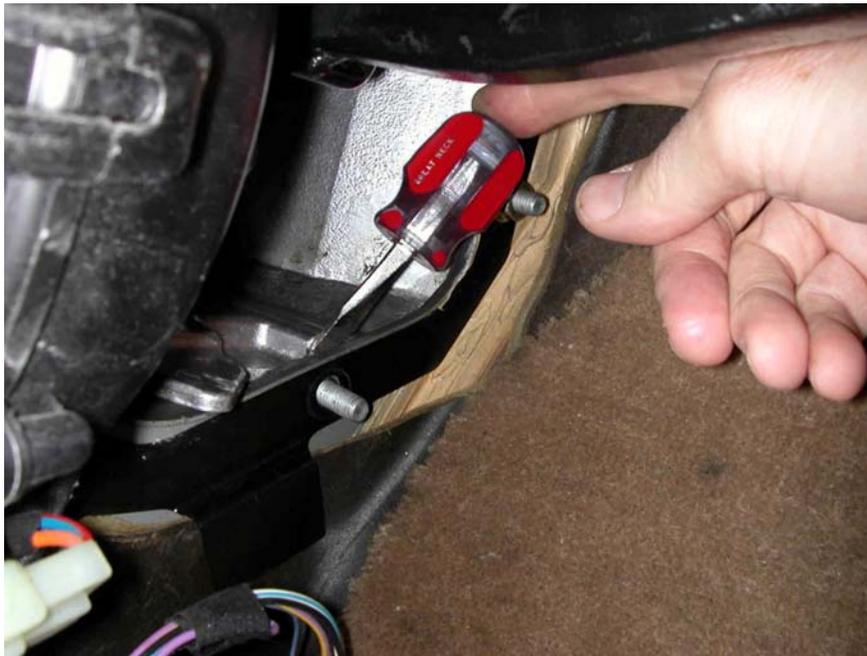


Fig. 17

17. Push the heater flow-control valve and attached hoses toward the engine and lift the pedal assembly. This may require a bit of pushing and pulling to get the base of the pedal assembly past the heater flow-control-valve mounting bracket. Take your time. It will come out without removing any hoses.
18. With a light in passenger-compartment footwell, look down at the throttle and brake pedals through the opening while the pedal assembly rests on the fender cover or adjacent hardware. With a minor rotation of the pedal assembly and slight compression of the brake pedal, lift the pedals through the opening in the body and remove the pedal assembly from the car. Ensure that the lead to the brake-pedal switch is not hung up while removing the assembly from the car.

### Removal of Brake Booster from Pedal Assembly (~15 minutes)

19. Set the pedal assembly on a work bench. Remove the three rubber plugs from the tower (Fig. 18).

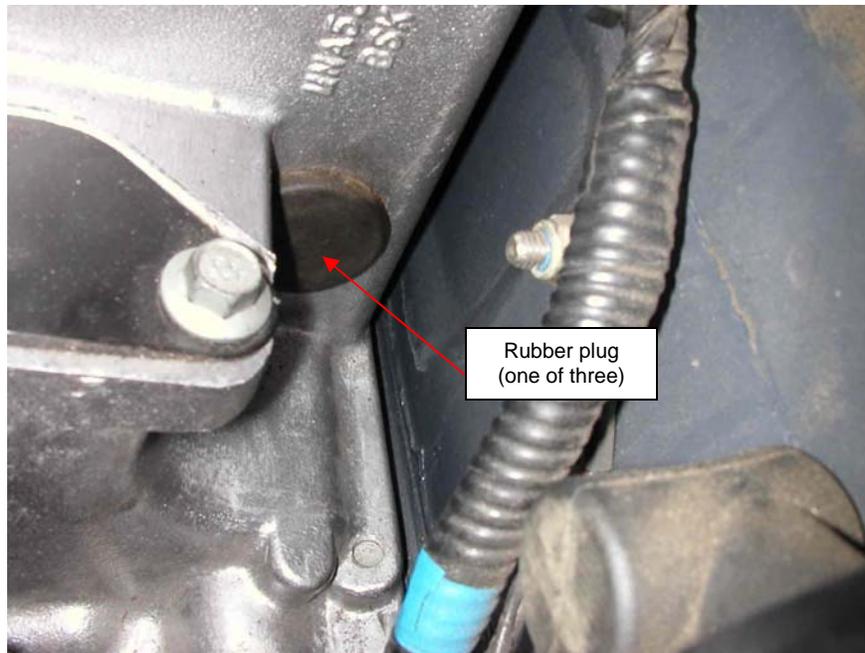


Fig. 18

20. Remove the two accessible 15-mm nuts securing the brake booster to the pedal assembly, one outside and one inside (see Fig. 5) the tower.
21. Using needle-nose pliers, lift the edge of the clip on the pin securing the brake-booster clevis to the brake-pedal arm and slide the clip off. Remove the clevis retaining pin.

22. Remove the 17-mm nut on the bolt serving as the upper pivot shaft for the brake-pedal arm (Fig. 19). Note that the bolt head has only two flats. Remove the pivot bolt.

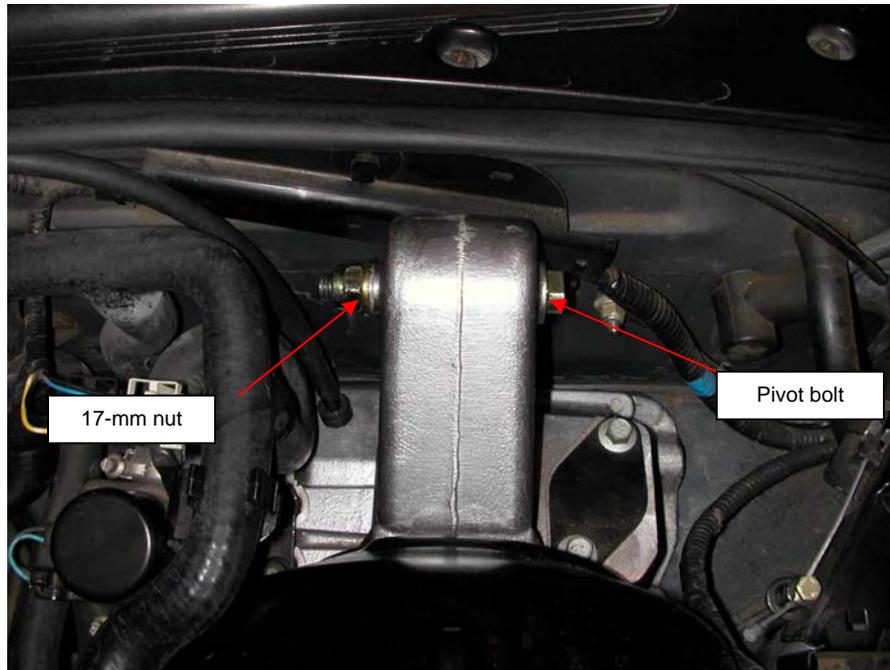


Fig. 19

23. Lower the brake pedal (it will not come out entirely until the brake booster has been removed) and remove the remaining 15-mm nut securing the brake booster to the assembly. Withdraw the brake booster from the pedal assembly.

Reinstallation is the reverse of the steps above with the following exceptions.

24. Before installing the heater/AC duct, turn the key to the “run” position and verify that the brake lights are not on. For a reason I don’t understand, the brake pedal switch actuator (Fig. 5) on my car no longer pushed the brake switch to the “open” position, even though the booster internal spring pushed the clevis/pedal arm fully rearward. Because of this, (a) the brake lights were always on, (b) there was no interlock to prevent movement of the shift lever out of Park when the brakes were not applied, and (c) the cruise control would not have worked had I tried it. I solved this by sliding a tie-wrap over the switch actuator, tightening it, and snipping off the tail end. This provided sufficient added thickness to the actuator to push the switch to the “open” position.
25. When reinstalling the heater/AC duct (reverse of Step 3 above), pull the brown-plastic retaining pin from the duct with needle nose pliers. Slide the pin into bracket on the car (Fig. 20). Position the duct inlet on the heater/AC outlet, push the duct forward such that the hole for the pin is beneath the pin, and push the duct upward into place onto the pin. I could not get the duct back into place without this step.

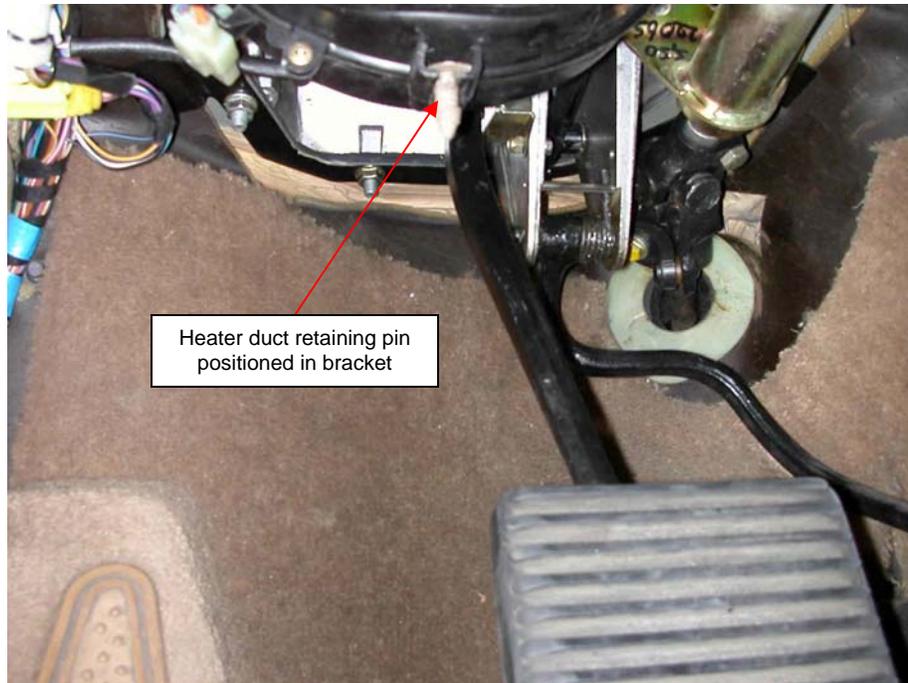


Fig. 20

26. Bleed the brakes. I find a hand-operated vacuum pump designed for this purpose very handy.
27. Start the car and verify that the throttle cable is properly adjusted, i.e., the idle speed is correct and there is no excess slack. If only the front nut holding the cable sheath in place was loosened and slid forward, everything should be as it was before you started.
28. Enjoy squeak-free driving, without having to explain to friends, valets, etc., "Don't worry, the brakes are fine".