

UrS4 Central Hydraulic Fluid Flush

I was having two annoying problems with my '94 Audi S4.

1. The red brake warning light indicating low hydraulic pressure would come on in the morning after the car sat overnight and stay on for 20 seconds or so. This gradually got worse until the light came on after the car had sat for a few hours and was staying on longer, indicating the bomb wasn't holding pressure and was taking a long time to recharge.
2. There was a "slack" spot at dead centre in the steering where there was no steering feel or feedback. It felt like worn tie rod ends, but all suspension components were tight and the rack preload was properly adjusted.

I solved both these problems by changing the Pentosin in the central hydraulic system and cleaning the screen in the reservoir.

The procedure I used is as follows:

1. Lift the car (I use ramps) and remove the belly pan. Take the car off the ramps.
2. Discharge the pressure in the "bomb" (brake servo hydraulic accumulator) by repeatedly pumping the brake pedal (with the engine off) until the pedal effort gets hard and the pedal engagement gets very high. It took 48 pumps to discharge the pressure from my 9-year-old bomb. Don't restart the engine after the bomb has been discharged. **WARNING!** Working on a charged bomb can lead to severe personal injury – pressures exceed 2000 psig.
3. Jack up the left front of the car until the wheel is off the ground. Support the car securely on a jack stand – you'll be turning the steering lock to lock later on in the procedure. I removed the wheel, but it is not necessary. I left the right front wheel on the ground.
4. Remove the cap and float assembly from the hydraulic fluid reservoir. Put the assembly in a plastic bag to keep it clean.
5. Crawl under the car and locate the bomb (ahead of the front left wheel well). It is a black semi-spherical metal container that looks like, well, a bomb. There is a rubber hose secured with a gear clamp to a barb fitting on the back of the bomb (see Photo 1). This hose connects to the bottom of the reservoir. I used it to drain the reservoir.
6. Place a large drain pan under the bomb.
7. Use a pinch clamp on the hose to close it off while you remove it from the bomb. This is not necessary, but it prevents getting a face-full of Pentosin or getting Pentosin stains on your favorite Hawaiian shirt. Loosen the gear clamp and remove the hose from the back of the bomb. Loosen the pinch clamp and drain the reservoir into the drain pan.

8. Turn the steering wheel lock to lock at least 5 times. This forces the fluid out of the rack – you'll hear it splashing into the drain pan. When no more fluid comes out, the rack is empty.
9. Remove the screen strainer from the reservoir. This is the plastic tube the float assembly sits inside. Just pull it out – it is not clipped in, the pressure from the spring on the float assembly holds it in place. Note that there are two sets of fine stainless steel screens on the lower end – one on the outside and one on the inside. Flush these well with a degreaser – I used a water-soluble citrus engine cleaner followed by a hot water detergent rinse, followed by a hot water rinse and a methyl hydrate flush to remove the water. Let the screen dry – you don't want to contaminate the new Pentosin.
10. Add a bit of fresh Pentosin CHF 11S (Audi P/N G 002 000) to flush out the old stuff. Stir what's left around and suck it out into a vacuum jar. Photo 2 shows the colour of the stuff I took out of my reservoir – this is after it was diluted 3:1 with new fluid.
11. Install the hose back onto the bomb and tighten the clamp.
12. Insert the strainer back into the reservoir.
13. Fill the reservoir with fresh Pentosin CHF 11S (this is the synthetic stuff, not the mineral oil used in pre 1989 Audis). Make sure it is full to the "max" mark. This will fill both chambers in the reservoir. You'll need about 1.5 litres of new oil for this procedure.
14. Turn the steering wheel lock to lock 5 times. This will fill the rack. Check the reservoir level – it should have dropped. Fill it back up and crank the steering wheel again.
15. When the level no longer falls, make sure it is at "max" and install the float switch and reservoir cap. Put the transmission in neutral and start the engine. Check the oil level and top up – running the engine will pump oil into the bomb.
16. Crank the wheel lock to lock several times to bleed the steering rack. Top up the reservoir to "max".
17. Shut off the engine. Check the hose on the bomb for leaks.
18. Put the wheel back on, re-install the belly pan, and enjoy!

Fred Munro
'94 S4

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Photo 1 Hose on back of "bomb".



Photo 2 Old oil removed from bottom of reservoir