

## ***Flush and Bleed Your Silver Shadow/Bentley T Hydraulics/Brakes the Easy Way***

1. Turn the key to the “Run” position **without** starting the car. Depressurize the high-pressure system by depressing the brake pedal until **both** the pressure warning lamps illuminate. Depress the brake pedal at least ten more times (more is better in this case).
2. Remove the reservoir lid by undoing the setscrews. There are several different lengths of setscrews in different positions on the reservoir. Either make a diagram of what went where or have masking tape handy to tape each screw to the side of the reservoir next to its respective hole.
3. ***Check the condition of the fluid that’s currently in the reservoir before continuing.*** Remove the baffles and ***gently*** lift them out so that you can see ***all*** of the fluid. If the car has been sitting for a very long time don’t be shocked if you see something like this:



or this:



If the fluid is clear, even if it’s darker than new fluid, you can just proceed to the next step.

If the fluid contains any amount of “solids” in suspension as seen above, remove it from the reservoir before continuing. A bulb baster or a huge industrial syringe is very good for this job. Also clean the mesh filters by wiping *gently*. Clean out the reservoir. Clean or replace the sight glasses *if necessary*. If the mesh filters are very dirty, removing them and washing them in

denatured alcohol is necessary [I actually prefer to do this rather than wiping so that nothing gets forced into the system beyond the screens]. If your screens have collapsed then **gently** pop them up using your pinky or a pencil on the inside of the screen's top "lid". If you've got holes then you must replace the screens. I do not recommend the original configuration but an improved design available through [Mid-Valley Machine](#) of Staunton, VA. This design will not collapse.



Mid-Valley does not supply or apply the stainless mesh, but it is easily sourced from McMaster-Carr. One square foot of Type 304 Stainless Steel Wire Cloth, 250x250 mesh, 0.0016 wire diameter is available for \$16.80 (as of 5/2012), and that's enough to cover many more than two of these filters. I also recently learned that Jim Walters of [Bristol Motors](#) makes a similar filter that comes with the mesh already applied. These are priced at \$75 Canadian as of 6/2015:



4. If there is undercoating on any of the bleed nipples or any other coating, clean it off before proceeding. Attach clear vinyl hosing (1/4" inner diameter) to all of the bleed nipples on the brake calipers and the two for the height control rams (10 tubes in total). Place the ends of all the tubing in bottles to catch fluid. I have found bottles with broad bases to be easiest to deal with.
5. Place a piece of wood between the driver's seat and the brake pedal with a thick towel covering the end that touches the seat. Move the seat forward to push the pedal to at least the half-depressed position. Alternatively you can put about 15 pounds of weight on the brake pedal itself. This is critical, since fluid will not be sent to the calipers unless the pedal is depressed. (I've used a stick and a tool box for the weight).
6. Drain the system of all hydraulic fluid by opening the brake and height control ram bleed nipples (order really doesn't matter much). This takes a while, so now is a good time for a break. You'll know you're done when virtually all of the fluid has drained out of the reservoir. There will be a very shallow layer left. *Note:* Some cars seem to be better about draining than others. After several hours whatever's left needs to be suctioned out of the reservoir.

**Leave the nipples open.** If you had to open the nipples "wide" to get the draining to start, you might want to go back and adjust them to just slightly open before continuing.

7. If due, replace all hoses and caliper seals according to the service schedule. (Hoses and caliper seals should be replaced every 6 years, if one is going strictly according to schedule.) There are now available Teflon hoses with stainless steel mesh protective exteriors. Provided you don't kink them their functional life is virtually perpetual. If you're not a stickler for originality this would be a very good time to consider replacing the original rubber hoses with these.
8. Refill the reservoir with fresh hydraulic fluid to the maximum marks. **You can use regular DOT3 fluid at this stage of the game since you will be using it only as a system flusher. When you get to the final fill and bleed you must then use only RR363.**
9. If you ever took off whatever you were using to depress the brake pedal (see step 5 above) then put it back in place again. *This is critical*, since fluid will not be sent to the calipers unless the pedal is depressed.
10. Turn the motor on and run for *three minutes* to flush the system. During this time you ***must*** keep watch to ensure that the fluid level in the reservoir does not go below the minimum marks. If you happen to still have the reservoir lid off and the baffles out you can use the top of the filters as your minimum mark. The essential thing is that no air gets sucked into the system from the reservoir. As long as the fluid is at least covering the filters to their tops this problem will not happen. If the fluid is getting close to the minimum mark for either system add more (though you needn't go up to maximum at this point. If your system was really, really dirty you should keep the motor running longer and keep adding fluid until what's coming out of the bleed nipples appears to be as clean (or very nearly so) as what is going into the reservoir.

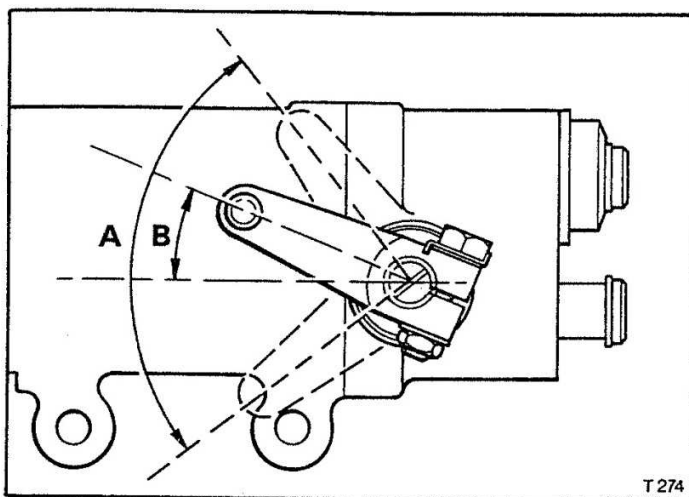
**If you've been using RR363 for this whole process, remove the weight from the brake pedal now. Don't if you've been using regular DOT3.**

Turn off the motor.

**If you have been using regular DOT3 fluid for this whole process, after you shut off the engine you should wait for all of the fluid to drain out of the reservoir and into the bottles like you did in step 4. You can also speed things up if you want to by emptying the reservoir as you did if you had dirty fluid in step 3. I'd rather let it drain to do as much flushing as possible.**

11. Close all of the bleed nipples.
12. Top up the reservoir to the maximum marks ***using RR363 ONLY from this step forward.***  
[**Note:** Some are experimenting with regular DOT3 brake fluid with pharmaceutical grade castor oil added (90/10 DOT3/Castor Oil). *This is entirely at your own risk should you choose to do this.*]
13. Replace the weight on the brake pedal if you took it off in step 10. Turn on the motor and run until both of the brake pressure lights extinguish. Turn the motor off. [If you notice either one of the pressure lights come on during the bleeding process that starts next, stop and run the motor again briefly to get the pressure warning lights to extinguish again. After I bleed each caliper I turn the key to the "Run" position to see if either brake pressure light has now come on.]

14. **If you are working on an early Shadow that has a master cylinder**, you must bleed the master cylinder and the rear brake pistons on its circuit in your preferred manner. For very early Shadows (prior to chassis number 1899) these pistons are those of the upper bleed screw on each rear caliper. From chassis number 1900 through 22117, it is the lower bleed screw on each rear caliper. If your chassis number is higher than 22117 your car has no master cylinder, since this was deleted from the system. Some bleed the master cylinder by pumping the brake pedal, but many find this method tedious and/or ineffective. Many use a power bleeder or a vacuum bleeder. If you use a positive pressure power bleeder you will need to make an adapter plate with a port that allows you to seal off the fill ports for **both** of the systems on the reservoir, since they share air space inside, and to pump air in to pressurize the reservoir. You can also obtain a spare reservoir cap and affix a tube to it, off center, that allows you to pressurize the reservoir with a power bleeder. A vacuum bleeder at the appropriate bleed screws is generally easier, but one must employ *gentle* vacuum suction. One of these methods will work for you, find it then stick with it.
15. Open the main system brake bleed nipples one at a time, and collect the discharged fluid until you see absolutely no bubbles in the discharged fluid, in the following order:
- Rear brakes, top nipple then bottom nipple on each caliper
  - Front brakes, left pair first, then the right pair, then repeat briefly on the left pair.
16. *If you're doing this task on a non-ramp-type lift*, then detach the height control valve levers from their pins before continuing. Push the control levers up, being very careful not to exceed the operating range of motion. See diagram of this range below. This makes the system think the car has had quite a bit of weight placed in the back.



**Fig. G28 Height control valve operating arm position and range**

- Approximate operating range without internal disengagement
- 22° to 20° from horizontal position (see Operation 18 of Height control valve - To assemble.)

*If you're doing this task on a ramp-lift or on the ground put about 200 to 300 pounds of weight in the trunk of the car. Personally, even when I've done this on the ground I find it far easier to use the "pop the arm off and push it up" method.*

17. Start the motor again. Put the car in park to activate fast leveling.
18. With car running and the system still pressurized, open each of the two rear suspension bleed nipples in turn and collect the discharged fluid.
19. Tighten all bleed nipples and check for leaks. Test drive the vehicle to evaluate braking performance.