

# Ask Ronny

by Ronny Shaver @ Ronny's Garage

Answering Your Questions About Classic Car Care Service And Restoration

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## **Are My Brake Pumps Working?**

by Ronny Shaver

Last month I had a 1972 Silver Shadow come in for normal servicing and air conditioning repair. No big deal, right? Well, since I always drive cars that come in for service (unless of course they are not running or drive-able) before I check them out, I took this particular vehicle around the block to see how it drove. First time I applied the brakes I felt that uneasy mild panic feeling as I pressed harder and harder on the brake pedal to stop in time for the traffic light. The customer made no mention of this condition when he dropped off the car and no warning lights came on to alert me of possible problems with the brake pressure systems. Hmmm..... something wasn't right.

Beginning with the Silver Shadow/Bentley T series and continuing through the Silver Spirit/Spur and Bentley variants (including Corniche/Continental cars) high pressure accumulator brake systems were used to supply boost for braking. All of these cars have pressure warning lamp systems that warn the driver of possible problems in the boost systems. These lamps will normally be illuminated when first starting the car and should extinguish within a minute or two (no longer) of engine running. Once the lights turn off then the car should be safe to drive. If for any reason either of the lights come on while driving then a problem exists and the pressure systems should be checked as soon as possible.

The quickest way to check for brake pressure problems is to first check that the warning lights have good bulbs. On early cars there is a small black test button on the dash that is depressed with the ignition switch in the run position, on later cars the lights should illuminate when cranking the engine or turning the ignition switch to the start position while the gearshift is in the drive position. If the lights illuminate then the at least the bulbs are ok.

The next step is to turn the ignition to the run position without starting the car, then pump the brakes repeatedly until both lights come on. Once both lights are on start the car and let it run for a few minutes. Both lights should go out within a minute but let the car run a few minutes to get the systems built up to full pressure. Then turn off the car and switch the ignition to the run position again without starting the car, pump the brakes repeatedly counting the pumps and noting the count until the lamps illuminate again for each system. Neither lamp should come on until after at least 25 to 30 pumps. If either lamp comes on sooner, then potential pressure problems exist in that system. If neither light ever illuminates, then problems exist in the pressure warning lamp wiring or switches.

Our example vehicle had this very condition, the bulbs tested good with the test button but never illuminated when I performed the above test. I ran the car and tested the brake pressure system pressures with at test gauge and found the number one system to have great pressure but the number two system had zero pressure. Big problem. I also found the number two pressure switch wire disconnected from the pressure switch. Zero brake pressure is very serious, even if a brake accumulator has no gas pressure the system will normally build to about 2200psi but drop as soon as the brakes are applied then pump back up.

When a system has zero pressure then usually one of two conditions exist, the pump is not working or the system is bypassing somewhere (usually the accumulator inlet valve). On this particular vehicle the #2 pump wasn't working. Causes for a pump not working can be a blocked reservoir screen, collapsed feed hose, sticking check valve in pump, seized pump piston, broken pump piston return spring, broken pump pushrod or worn out pump lobe on the camshaft. Of all of these problems the last is the most expensive and difficult to correct. If the camshaft needs replacement then the transmission, front engine cover, radiator, condenser and grille must be removed for access.

The brake pumps (one for each system) are attached to a cover underneath the intake manifold which has pushrods and cam followers that run off of two extra lobes on the camshaft. A camshaft lobe lifts and lowers engine valves and also brake pumps as the engine rotates. The brake pump pushrods and followers are lifted and lowered pumping very high pressure with each stroke. Once an accumulator reaches its maximum system pressure point (around 2500psi) then the accumulator valve allows the high pressure fluid from the pump to bypass and circulate back to the reservoir. If for any reason this bypass function fails, then the system will continue building pressure until something gives (explodes or breaks!!). I have heard stories from old-timer mechanics of accumulators exploding and damaging engine blocks and or more! Rolls-Royce/Bentley corrected this potential hazard by re-designing the brake pump pushrods, see photo.



Before I get started I want to state that this is something I have never come across in 35 years of Rolls-Royce/Bentley repair. This photo shows a camshaft follower (lower left) with a bent & broken early pump pushrod (center). This early style pushrod has a uniform diameter all the way to the end below the upper larger top end. The darker pushrod to the right is a new replacement that has a smaller diameter which tapers to a very thin section near the bottom that is designed to break if an accumulator valve fails and allows system pressure to continue building beyond normal maximum pressure. When I removed these parts I immediately wondered how the old pushrod bent and broke in two without exploding an accumulator or worse? The follower also has a large section broken off which must have occurred when the pushrod failed. After cleaning the parts I found an end piece of a replacement pushrod (small piece to right of cam follower) which was stuck inside the cam follower. Hmmm....., my only explanation is that a previous mechanic or owner replaced a broke pushrod with a used early pushrod and failed to retrieve the broken piece and assembled it, started the car so the pushrod bottomed out in the pump and broke again.

This same person probably gave up and disconnected the pressure switch so the "annoying" warning lamp would go out. Scary to say the least!!!

Whenever a brake pump pushrod fails the accumulator in the associated system must be overhauled to ensure proper pressures (minimum and maximum!) are maintained. Not to mention properly operating pressure warning lamps to prevent loss of brakes or life while driving.

Thank you for the questions and keep them coming. Please send your questions to Ronny at [ronnyshaver@ronnysgarage.com](mailto:ronnyshaver@ronnysgarage.com).

Happy Motoring!  
Ronny