

TECH TIP...JOHN LOGAN, TECH EDITOR

Master Cylinder Springs & Rebuilding

By Tiger Tom

When rebuilding your Sunbeam clutch or brake master cylinder, it is important to inspect the long return spring located in the cylinder for wear where it rubs the cylinder bore during use. The spring coil edges will be worn flat and shiny. In rare cases the wear is so severe the spring is broken. As a result of this wear the designed spring rate becomes reduced, preventing the piston and seal from completely returning to their parked position when the brake/clutch pedal is released.

When the piston and seal do not completely return, the fluid from the reservoir cannot replenish the last amount that was previously displaced. The symptom is, the next time the brake/clutch pedal is depressed it will likely go to the floor without the desired action. It will feel like air in the line when in fact there may be none. In rare cases residual hydraulic pressure may remain.

Typical brake problems you are likely to experience as a result of the worn spring are calipers sticking or failing to release - "hanging-up". If a servo is installed, you may think it is sticking. Problems with the clutch include incomplete disengagement or no disengagement at all. With brake and clutch symptoms, the driver will typically "pump the heck" out of the pedals. This rapid action will sometimes aid in the full return of the piston providing temporary relief.

The effects of a weak spring are especially acute immediately after a cylinder is rebuilt. This is the time when the seal is at its tightest and friction forces are the highest.

The spring wear problem is exacerbated by silicone fluid. Silicone has a lower lubrication coefficient than does our beloved Castrol fluid. The high spring rate of a new or unworn spring is required to overcome the higher forces when using new seals with Silicone fluid. I have noticed springs with flat spots worn on them had a propensity to incompletely return the piston and seal to their parked position.

Two types of springs are used in our master cylinders. The offending unit is a linear spring about 3 3/4 inches long and the same diameter as the bore, minus a couple thousandths of an inch. The other spring, which rarely poses a problem, is much smaller than the bore diameter and is attached to the piston by a small rod.

Always check the condition of the spring while rebuilding the cylinder. Replace a suspect spring with a good used or new spring.

Where to get a spring:

Used: Many used cylinders still have good springs. See who your real Sunbeam friends are.

New: No known sources yet. Rumor indicates Herb Mosley may reproduce springs for availability through CAT parts.



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