# HOW TO: Rebuild the Bendex-Treadlevac Master Brake Cylinder

*By Ross Miller*

Whenever Packard had a design or manufacturing lapse, the correction showed up in the Service Bulletins and Letters, even if it affected only a few cars. These documents are notably quiet on the subject of power brake troubles. I'm quite reluctant to call Packard engineers stupid or negligent--and apply the same labels to the engineers at Lincoln, Hudson, Nash, Mercedes, et al. If Treadlevac failures were not common then, but are now, then the units are not being rebuilt to standard condition.

This article will deal with rebuilding the hydraulic side of the unit. I will cover the vacuum side sometime later as there are two types used and failure on that side, while annoying, is not usually life threatening. A failure on the vacuum side means you have to either push really hard, or hardly at all. If you are already pretty happy with the pedal feel of the unit, you can leave the power piston and its valving alone.

**When to rebuild?**

- When the condition of the unit is unknown from long sitting, or you just got the car. Pretend you worst enemy used to own it.
- Mysterious loss of fluid means the internal seals are leaking. It is being sucked (eventually) into your engine.
- The fluid in the reservoir has gone "off"--is murky, lumpy etc.

I do a thorough bleed of the brakes in my cars with standard fluid about every two years. The components seem to last indefinitely with this regimen. The new parts shown in the pictures all came from Kanters. I have used dozens of their kits with great success so have not bothered to look further.

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This is not a hard rebuild, but must be carefully done. If you feel shaky about it, better give the job to a reputable rebuilder--and not just some schmuck down the street who feels confident.

Pulled this off the shelf in the basement. It's a '55-'56 though last used in a '53.

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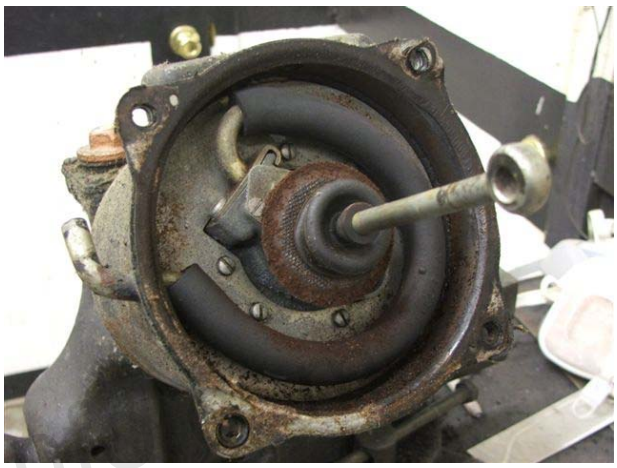
With the reservoir cover removed we can see the nasty old brake fluid.

Remove the bolts holding the vacuum cover plate on and remove the cover and gasket.

Note the thick original vacuum hose. Keep if it is still in good shape. Otherwise a suitable thick vacuum hose should be used.

This power piston is stuck from sitting.



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Remove the breather and the suction pipe from the housing.

Purists note the original plated finish.

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Clean away any rust and goop from around the edge, and spray on some *PB Blaster* to help persuade the power piston to come out.

Grab the spring seat and push in. Slide the C-clip off the piston rod and remove the spring and seat.

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Remove the three bolts that hold the booster to the master cylinder.

Notice the telltale track of brake fluid below the piston.

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Remove the screws holding the vacuum section to the master cylinder.

Now we can disassemble the master cylinder.

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Now you can pry out the outer seal. Behind that is a snap ring that needs to be removed.

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Remove the fitting, check valve, and spring.

Before you pull out the piston, unscrew the compensator valve from inside the reservoir. This is the part that is most likely to cause sudden brake loss if it is damaged or somehow stuck open.

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Now you can remove piston. Here are the parts the make up the shaft seal.

A) Guide
B) Inner Seal
C) Phenolic Washer
D) Steel Washer

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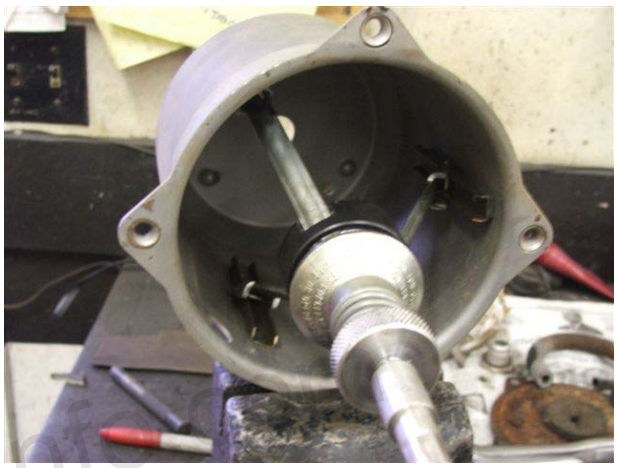
This piston is pitted and must be replaced or it will eat up the new seal. Kanters is reproducing these.

After washing and bead blasting, I like to hone the vacuum cylinder. Pits are not a problem, but roughness is. A vigorous rub with Scotchbrite will make a good surface for the vacuum piston.



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I use hot soapy water, bead blasting and compressed air to clean the master cylinder. Only this outer machined portion must be in good shape for the seals. The piston never touches the casting.

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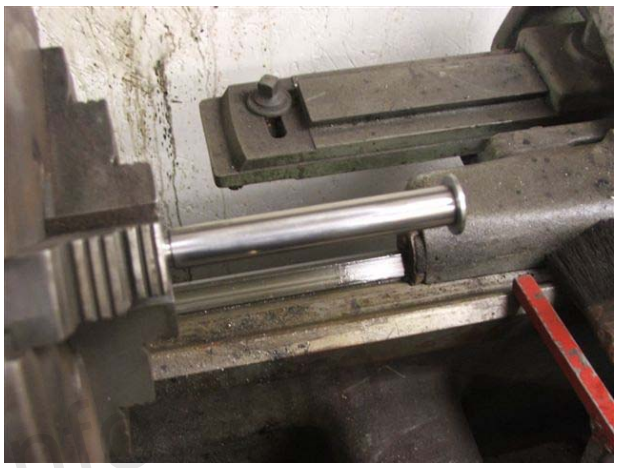
I like to bring the new piston to a very good finish with 2000 grit sandpaper and some light oil. This will minimize the wear on the seals



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This is the lineup of the new and cleaned components.

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The smallest seal ring goes to the compensator.

The middle sized seal ring goes to the check valve.

Lubricate all the parts with brake fluid or brake assembly lube.

Install the piston, guide, and then the inner seal with the seal lips facing in.

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Install the phenolic washer and the steel washer.

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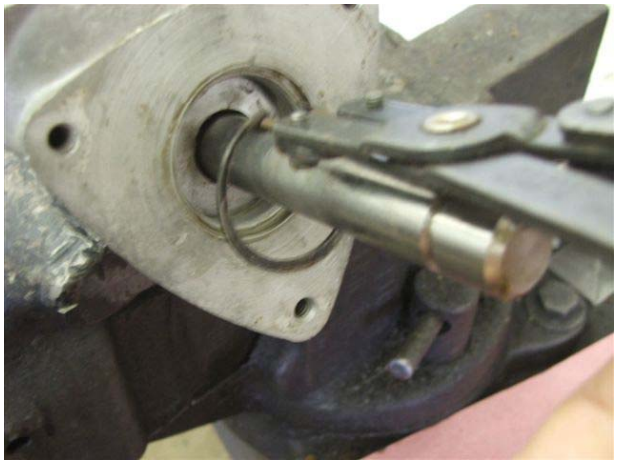
Then install the snap-ring. Did you check the snap-ring for rust? Better get a new one if its dodgy.



To help install the outer seal, I wrap tape around the piston and use lots of lube. Be sure the seal lip faces in, and does not roll under when you work in onto the shaft. This has a very snug fit.

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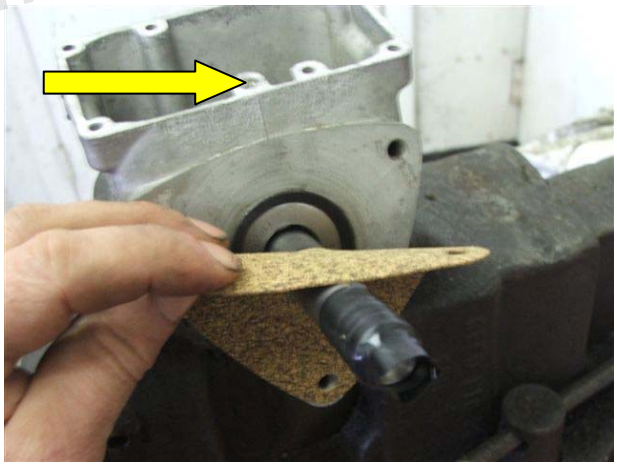
IMPORTANT – This hole allows any fluid that leaks part the inner seal to return to the reservoir. Be certain it is not plugged or covered.

Next install the large seal ring, and then the gasket.



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Install the vacuum cylinder, spring, retainer, and the C-clip. The bottom end of the spring fits between one of the vacuum cylinder bolts and a num stamped into the cylinder bottom.

Install the spring, check valve, and fitting. Use lube so the seal ring does not tear.

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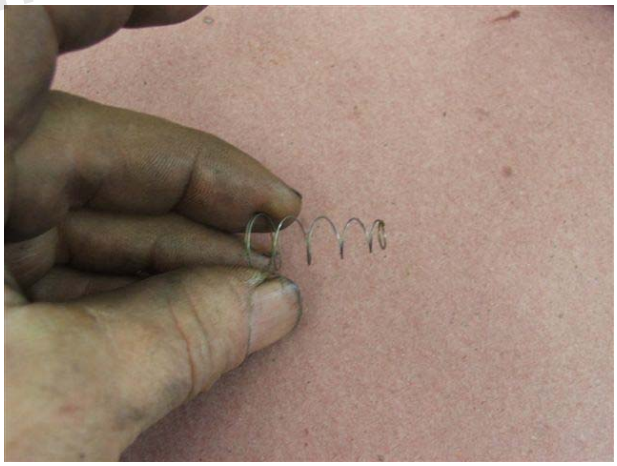
Be certain the compensator spring is not rusted or deformed. When in doubt, throw it out. The springs are made of stainless wire, and not usually corroded unless something nasty was in the reservoir.



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Assemble the compensator valve. Be certain the retainer is clamped nicely in the groove on the stem and is not fatigued. DO NOT install the compensator now.

Remove the packing from the power piston and clean it.

I like a 50/50 Mix of ATF and STP to lube the packing. Soak the wick and leather with it. Others like to use Lubriplate.

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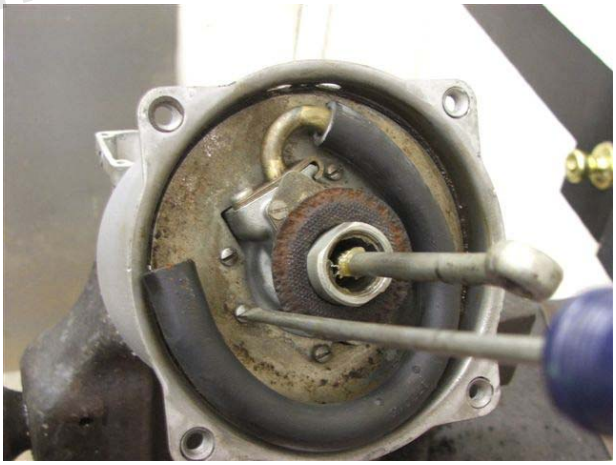
Reinstall the packing.

Install the packing cover plate, but leave the screws loose.

Smear the inside of the vacuum cylinder with some lube and insert the power piston so the end of the hose is at the 9 o’clock position.

The piston must return to the top when released. This might take more lube and fiddling. Wiggle the piston from side to side and push it in and out to center up the packing. Then tighten the screws.



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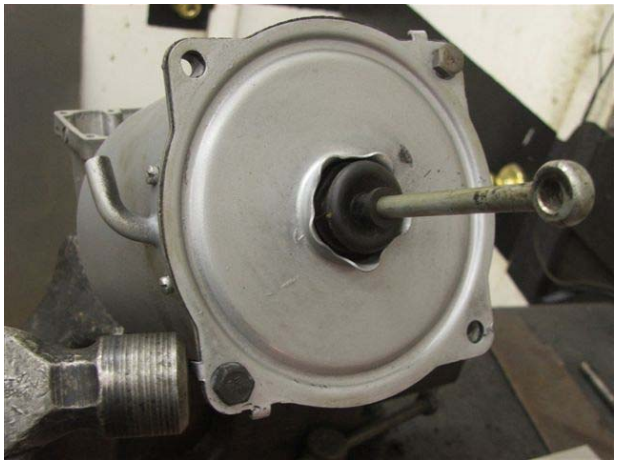
Install the vacuum connection, vent, cover plate, gasket and screw the cover on. Bend the tabs down securely. If missing, drill a couple holes in the flange and wire or screw the on. You don't want the cover coming off when the unit is handled.



The flange on the end of the piston shaft operates the compensator valve. If the vacuum cylinder cover is not installed first, the piston could come back too far and bend the compensator valve.

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Press the piston partly down before screwing in the compensator. When the piston is released, it should tip the compensator slightly.

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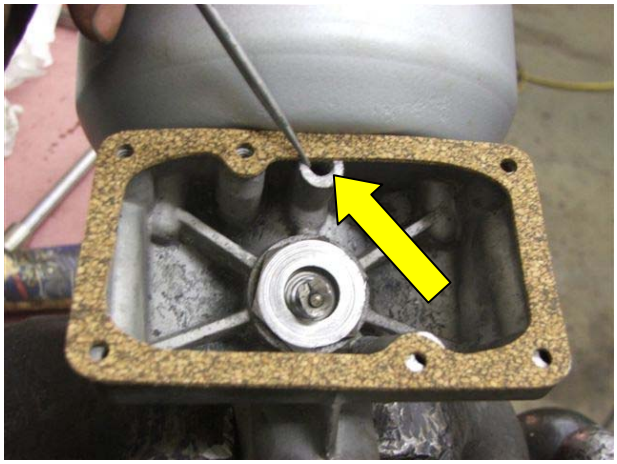
The gasket should not cover this hole.  Cut the gasket to clear the hole if it does.



Ready for installation and looking (mostly) like it was in 1955. This unit was then installed in a 55 Caribbean and the owner is pleased.

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