

Replacing a Stag Brake Booster

Vic Farrington

Yes we have the Corben-Farrington double diaphragm brake booster conversion worked out. You have prompted me to document what we did- at some stage will put it in pdf.

The Toyota Camry circa 2001-02 is the go, must be the 2.2L 4 cylinder not the 6, as we found out. A key issue is the height of the reservoir, which must be level with the top of the booster to get clearance with the Stag bonnet. We tried a BMW E38, the reservoir was too high, also it had only 2 mounting bolts, which didn't seem so good.

Of all the cars we looked at, at the U Pull It wrecking yard, the Camry 2.2L 2001-02 was the best fit. The same year Camry 6 has a longer master cylinder, and doesn't fit, so need to make sure it is the 2.2L version. Price was \$84, \$43 for the booster and \$41 for the master cylinder - these are the standard U Pull It prices for any car. NB The next model Camry, which looks similar, has a higher reservoir and so is unsuitable.

Key points:

1. The Camry booster has 4 mounting bolts same as the Stag. Make sure you keep the Camry nuts, and also the pin and its retainer are useful. Cut off the brake pipes to keep the connectors, as these are parallel metric whereas the Stag's are tapered, and need to be re-used. Also keep as much as you can of the Camry vacuum hose and one way valve.
2. The Stag mounting point comprises two welded firewall panels with holes for the brake booster that invariably don't align - you will probably need to drill these out with a 3/8 and the Camry unit should fit in fine.
3. The fork on the Camry rod needs to be narrowed to fit in the Stag brake pedal lever. Do this in a vice - I used a 6mm plate between the forks to ensure they finished parallel. Fitted nicely. Also the Camry pin fitted better than the Stag pin, and the slide-in retainer is easier than than the Stag's split pin.
3. Need to measure the length of the Stag rod from the centre of the fork to the booster, and use this as reference. The Camry unit was longer, by about 11mm, on my car. There is a limit on how much the Camry rod can be shortened because of the narrowed fork (see on photo later) - on my car I could only take 7mm off the Camry rod, still allowing for full thread of the rod lock nut. I then used 2 spacers total of about 4mm between the firewall and the Camry booster, to make up the 11mm difference. The spacers I used courtesy Ricky were 2 pieces of hard rubber sheet about 2mm thick, so they also become a gasket. There should be a fibre gasket behind the Stag booster to use as a template.
4. The Stag inner panel needs to be belled out to take the bigger Camry booster. We did this using a brass hammer with a piece of plastic on the panel to try to avoid damaging the paint too much. Needed to be belled out quite a way - trial and error till it fits OK. Also the Camry master cylinder has a bolt head underneath, so needed an additional small dent to accommodate this. Some cutting compound after cleaned up the panel, the paint didn't crack. It wasn't a top panel beating job, but really you don't see any of this anyway once the

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booster is installed. Also need to use some bitumen spray on the underside of panel, as the original flaked off.

5. The Stag brake line connectors need to be cut off and the Camry metric ones used. Also the Stag brake line ends are convex whereas the Camry ones are concave, so need to use a concave flaring tool. We bent and cut the existing lines to reach the new booster, in retrospect we should have taken them off completely and re-shaped them as they don't fit nicely against the firewall. Will do this later or maybe put in new brake lines to get a better finished look.

6. One final thing - the Camry unit has a level alarm, so at some stage I might connect this up. If I do this, I will use a change-over relay so the alarm light comes on with the ignition and cuts out when the engine is running (using the ignition light cable from the alternator), and comes on if the level drops.

Photos attached: 1. The installed unit, 2. The ends of the brake lines showing Stag convex end and Camry concave end, 3. The Blu-tak test to ensure clearance of the reservoir and the bonnet - about 1cm, 4 and 5. Views of the 2 units, NB the Camry fork is already modified here - you can see how the narrowing of the fork limits the rod adjustment, so can only reduce the rod length by about 7mm.

The result - much improved braking, feels more like a modern car to drive. Wife always complained about the brakes before. NB my brakes are otherwise standard.