

STORY & PHOTOS PAUL TUZSON



STOPPING A

It doesn't take much to overwhelm stock LH brakes so get the power you need

TORANA

BEING lightweight, V8-equipped and blessed with a roomy engine bay has made the LH-LX Torana a favourite with the street machine crowd. Although available from the factory with a reasonable power-assisted disc and drum brake system, performance enhancements and the improved grip of modern rubber make brake upgrades common and desirable modifications.

Another common reason for owners to perform a brake change is to get a more common stud pattern for wider wheel

selection, as there's little available to suit the original Torana pattern.

Hoppers Stoppers offers brake upgrade kits for many street machines, including LH-LX Toranas. While all its kits are similar and include everything needed, there are differences between individual vehicles with regards to fitment, so we're looking at an LH-LX kit (which also fits the UC Torana) to see how Hoppers addressed the issues with Holden's mid-70s compact.

Follow along as Hoppers Stoppers owner Peter Koning kits out a customer's LH.



STEP 01 The first step is to remove the existing brake system, whatever it may be. Jack the car up, remove the wheel and clamp the brake line. You can get cheap brake-hose clamps from any auto-parts outlet. Now disconnect the line from the caliper, remove the caliper, remove the dust cup, safety split-pin securing the spindle nut, the spindle nut itself, the disc, bearings and so on.



STEP 02 Undo the two bolts connecting the steering arm to the stub-axle. This car had been fitted with Torana drum-brake spindles and an adaptor to accept HQ brakes — the adaptor plate is visible in the shot. These stub-axles had to be removed and replaced with standard LH-LX Torana disc-brake stub-axes, as the Hoppers Stoppers kit doesn't fit the drum-brake stubs.



STEP 03 Ordinarily, the stub-axes are removed and swapped side for side so that the calipers become rear-mounted instead of front-mounted. Partially undo the ball-joint nut, so about half of the thread remains engaged, and give the side of the stub axle a couple of firm whacks with the hammer. If the ball-joints do not dislodge, use a ball-joint (tie-rod) breaker fork, as shown in the inset.



STEP 04 Before installing the stubs (or while you're swapping them from left to right), check the adaptor plate holes line up with the stub-axes. Sometimes insufficient material has been machined from the area indicated by the arrow. If necessary, grind back some metal in this raised area so they fit — remove just enough so the holes line up but do not grind the machined area.



ALTERNATIVE UPGRADES

THERE are two other common ways to get better brakes onto one of these Australian classics. One is an adaptor that bolts HQ-WB calipers and rotors up to LH-LX drum-brake stub axles, as seen on this Torana. The other is to simply bolt on HZ stub-axes and brakes. Although this works, there are problems. The HZ's spindle is 25mm higher than the Torana's, which means the car sits 25mm lower. That might be a good thing but the ends of the steering tie-rods end up 25mm higher, which induces bump-steer. That is, the wheels turn as they move up and down, which moves the car off line. A second problem is that the kingpin inclination in the HZ stub-axle is 1.5 degrees greater than in the Torana, which increases negative camber to around 2.75 degrees. While desirable for a circuit racer, that's excessive for a street car as it will aggressively scrub the inside edges of the tyres.



TORANA

HQ



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HQ



STEP 05 This is the replacement stub going in. Make sure the ball-joints are tight as they can actually snap off if allowed to move about on the taper. Note that a stand has been placed under the lower control arm to keep the spring compressed. Doing this allows you to remove the stub-axle without having to remove the spring. You could use an axle-stand to do this.



STEP 06 Once the stub is refitted and the ball-joint tightened, the stand can be removed. Refit the steering arm. The seal for the inside of the replacement hub isn't placed into the hub as in other kits. Rather, it fits onto the inner end of the spindle as shown here. Make sure the spindles are scrupulously clean before fitting anything to them as even the smallest debris will quickly kill the bearings.



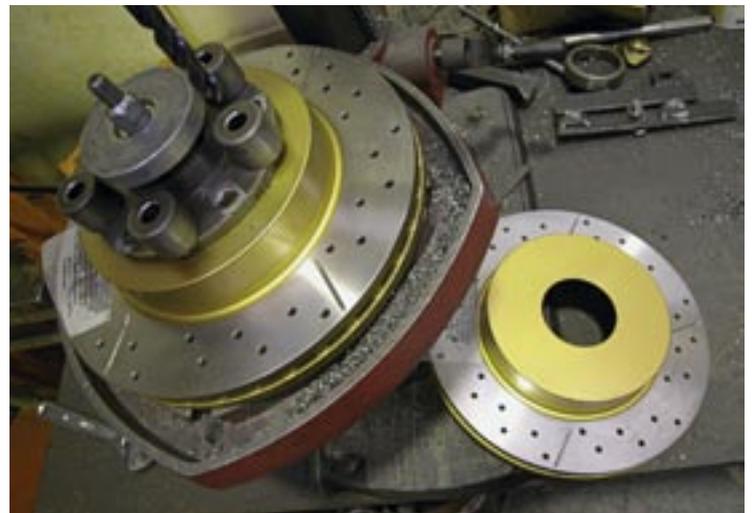
STEP 07 Before installing the Hoppers CNC-machined hub, thoroughly grease the inner and outer bearings. Put the larger inner bearing on the spindle, then, after packing the inside of the hub with grease, set it into place. Next push the small bearing firmly into the outer cone of the hub, then the retaining washer and finally the castellated nut. The photograph summarises the basic order of the steps.



STEP 08 How tight should the bearings be? The hub must turn freely but shouldn't wobble or rock — the only movement must be rotational. Very gently nip up then back off the nut a couple of times, while turning the hub. For final tightening, use nothing more than the weight of a big shifter. Flip the nut-retaining cage around until the holes line up and make sure you use a new split-pin to fasten it.



STEP 09 Bolt up the caliper bracket using the supplied spacers (arrow) and slip on the rotor. Nip up a couple of wheel nuts to snug the rotor into position so you can check if it runs in the middle of the bracket (inset arrow). If the disc is too far outboard, remove the spacers and add the supplied shims between them and the bracket until the disc runs centrally within the bracket.



STEP 10 Occasionally the disc will be too far inboard. In that case the spacers will need to be turned down in a lathe — never grind them! If you don't have access to a lathe, tell Hoppers the required thickness and it'll supply reduced spacers. Hoppers Stoppers can drill discs to any pitch circle diameter (PCD), so you can order your kit with Torana, HQ (Chev) or Commodore stud patterns.



STEP 11 Standard rubber hoses (that run up to the inner guard) have been upgraded to stainless. Whenever loosening or tightening brake lines and fittings, always use a proper flare-nut spanner. Using an open-ender commonly results in damaged fittings, especially if they've suffered past abuse. It's probably also a good idea to fit a new master cylinder, though we haven't included it in this issue.



STEP 12 Make sure the anti-rattle shims are fitted and centred in the caliper brackets (note them in Step 9) and make sure the hub face is clean before slipping on the rotor. Then bolt the caliper in place and hook up the brake hose. The calipers in the kit are marked left and right. Ignore this and ensure the bleed nipples are on top of the calipers. This is absolutely essential.



STEP 13 The brake hose has to be secured at the top of the stub-axle with a cable tie (arrow). When everything is fitted, turn the wheels from lock to lock and check clearances. Do the same with the car on the ground. The pads should also be checked to make sure they don't hang off the outer edges of the rotors. Note the new split-pins in the ball-joints — never re-use any split-pin.



STEP 14 This is a good time to renew all the fluid (which you should do every couple of years anyway). After topping up with fresh fluid, Peter prefers to gravity-bleed the system; open the master cylinder, crack the top bleed-nipple and wait. The fluid pushes air up and out through the top of the caliper. When fluid emerges, seal the system and it's likely you'll have a firm pedal.



WRAP UP

ONCE the system has been gravity-bled, pump the pedal a couple of times to get the pads hard against the discs and check for a firm pedal. If it's still a bit spongy, the system may need further bleeding. Perform a couple of slow rolling test stops or load it up against the converter before driving it down the road. While you need to confirm that the new brakes will pull the car up smartly, you should avoid punishing the new pads too hard before they've had a chance to bed in. Even with unbedded brakes, this Torana was stopping considerably harder than when it drove in.

As we noted earlier, clearances have to be checked thoroughly. On some models the steering rack extends a little further, causing the calipers to make contact. Here, a small packer can be fitted under the steering lock stop. This robs you of a little turning circle but fixes the problem. Peter says this is most likely to happen on UC models, as Holden made a slight change to the control arms on this model.

You'll note in some of the shots that the upper control arm had a section cut out of it. That had been done to fit the HQ kit but it's dangerous so repairing it was the next job. 

ALL Hoppers kits are well engineered and easy to fit. Better still, Hoppers will mail order anywhere in Australia. It can be contacted at www.hoppers.com.au or on (03) 9748 6950.

