

I recently had the need to change a wheel on my Trac-tion and off came the hub cap!

It caused me to reflect upon an occasion many years back when I was confronted by the problem of tightening the wheel caps with-out distorting the profile of the cen-tral chrome centre piece during the tightening process. One had to judge how much torque to apply to the one central securing screw to ensure that the hub cap stayed put during normal operation over the roads of the period. Corrugations were more common in those days and I lost a few hub caps. It was easy to find new ones at Commonwealth Motors in those days, where stocks were plentiful to cater for the consider-able demand!

Anyway, I decided to have a tidy up by restoring the distorted centre pieces to the preferred pro-file with a turned timber domed profile and an hydraulic press [I think], followed by a smoothing up in the lathe with carborundum paper and chrome plating.

The exercise was successful and they looked good: too good in fact, to put back into service without attempting to correct for the poor design responsible for the original problem. I remember a brake service conducted by PBR who, with their pneumatic span-ners, completed the distortion where the caps were pulled right

up tight against the cross bar on the wheel, leaving a permanent local inversion of the dome profile of about 5-6mm. It overcame the operational loosening problems of the hub caps but it spoiled the look.



## HUBCAP HEAVEN

A promising solution to the problem was suggested by my PBR experience involving an up tight securing means with minimal and non-permanent distortion of the hub cap profile.

I decided that washers or tubular means could be interposed between the cross bar on the wheel and the inside of the central domed cap – a spacer to react a substantial tightening load be-



fore permanent distortion of the wheel cap area takes place. I cannot recall whether my final design involved any alternative methods, but my fix resulted in what I, and various contractors [tyres and brakes, etc.] have accommodated

the tightening load firmly after the judged firmness of the hub assembly is reached, just hard enough to stop the operational rattles. The length of the threaded spacer, I suspect, has to be right to suit each individual wheel which I must

have achieved by trial and error, but I don't remember any problems.

The proof of the pudding is that the method has worked without problems for over twenty years and if our editor hadn't prompted me to make a contribution the subject would remain in the past. However, now that he has, and upon recent inspection of my method, I suspect that the threaded spacer is not a preferred component in this arrangement.

Apart from being difficult to make, without machinery and threading tools, it could lock tight against the central cap and

cause the cap to revolve with the screw whilst tightening. The locking screw is required to revolve freely in the cap when being tightened. The fact that this problem doesn't happen with my present fix is probably because the spacer threads must bottom out just before bottoming and to pinch the central cap?

Anyway, I think the use of threaded spacer is over-kill when its purpose is only to avoid loss of the screw when the hub cap is removed.

I have accordingly explored the use of an alternative spacer a half inch 'C' spring washer, which with a bit of persuasion can be pushed over the 14mm thread without creating damage to the thread profile. The half inch spring washers I have in abundance in my miscellaneous box, all having accurate half inch bores which provide just the right frictional engagement over

the 14mm thread. I reasoned that this good frictional engagement would provide security against the loss of the bolt when the hub cap is removed. If this spring washer/spacer arrangement needs to be adjusted for length plain washers could be added to the screw ahead of the spring washer assembly [photo 3].

I was lucky, my range of half inch spring washers provided a choice of thicknesses and I found a 4.5mm thick heavy duty spring washer which required no extra washer backing.

All this provided a good assembly [photo 4], which although not tested in corrugated trials, must do for I am not prepared to look for the better solution, which one always suspects is there to be found.

And so much for my Citroën hub cap saga?  
Bernie Hadaway



Left to right: Photos 2, 3 and 4 as referenced in Bernie Hadaway's article.

## HUBCAP HEAVEN

for over twenty years without losing wheel caps or incurring distortion of the caps.

Photo 2 shows that the method used involved discarding a wire circlip that was used around the threaded holding screw on the inside of the cap to prevent loss of the screw when the wheel cap is removed. A steel tubular spacer was manufactured which had an internal thread in its bore of 14mm diameter x 1.5 thread pitch to match the screw. The spacer measures 4.5mm long which reacts

