

Refurbishing the front brakes on a Citroen H Type van



This is my van, in better condition than it is now I hasten to add. I bought it through an internet acquaintance I made with Bernard Borrimans who runs a similar business in Belgium to Jeff Winterman. He was the go between a Frenchman, his charming wife and myself who kindly put me up and fed me after a long motorcycle ride to their home on the far side of Reims. With the bike in the back and an uneventful yet slow drive home the van arrived safely in England despite queues of irate drivers on the M25 late in the evening. The van managed to scrape through the MOT with some remedial welding underneath. How this miracle happened I have no idea but I drove it around for a year determined to get to grips with refurbishing it. A severe illness and the inevitable "can you just do this for me darling" jobs that always arise when there are important things to do meant that the old van spent many many months languishing under wraps.

This year has seen progress. New tyres have been fitted, although they are the nearest modern equivalent and new inner tubes were bought back from France. My thanks must go to Simon Doe, John Sobey, Jeff Winterman and Bernard Borrimans for the assistance they have given over the tyre and brake saga. The engine is superb, being a factory exchange unit it is relatively new. It starts and runs very well as long as the needle in the float chamber is not stuck up (a recent problem). I only have a small drive to test the brakes but is big enough to reveal the problems that I will recount.

I purchased a set of new rubbers for all the brakes from Jeff Winterman. The pistons and cylinders were cleaned out as best as could manage without a total dismantling as the idea of removing the front assembly was not an attractive proposition although I did make a crude but very effective slide hammer arrangement to pull off the front drum. I also had new brake pipes made up for the rear brakes and compensator which I refurbished. Surprisingly the original rubbers were in reasonably good condition with only a minor leak from one cylinder. The cylinders and pistons were cleaned with a fine wet and dry and flushed out with copious amounts of brake fluid that I let drain from the fluid reservoir.

Not being too happy with removing the seat every time I needed to fill the reservoir I decided to run a pipe from the master cylinder, which on mine is single, to a point just behind the steering column, make a bracket and fix the whole lot to the bulkhead. With a clean reservoir, a new rubber connector from Jeff and a length of 8mm copper pipe I can now top up quite easily which has been a great asset when working on, testing and bleeding brakes. Contrary to common advice I reuse the brake fluid that I bleed. Of course I bled off all the rubbish that had been residing in the pipes and just collected what was clean. I poured this through coffee filters, usually three or four one after the other, ready to use again.

I apologise for the preamble but now for the serious bit.

Having fiddled with the brakes over period of time I could not get them all to rotate freely. They seemed to adopt maniacal desire to frustrate my every attempt to get the van fit for the road. Eventually after a period of stagnation one the front off side brake refuse to release after the brakes had been applied. I tried everything I knew but I could only get them to release after opening the bleed valve. After a total strip down and rebuild the problem was not resolved. A set of new return springs was ordered from Jeff and the process repeated. The rebuild was repeated and as if by magic the problem was solved. Then the other side decided it was its turn and it is the refurbishment of this side that I recount. Whilst carrying out this work on both sides it became evident that at sometime one of the wheel bearings had been changed as one side has two taper roller bearings and the other a single large bearing. I will assume the front is supported and the wheels have been taken off.



Once the hub cap has been removed the main nut with the security washer tab folded over can be seen. This can be removed quite easily with the right socket after the tab has been straightened out. There are two holes opposite each other and through these six retaining bolts must be located. They are situated three at the top and three at the bottom, remove them and don't worry about dropping the washers.



inside. You will need to make a puller. As you can see mine is made of sections of steel channel welded together with a long steel rod threaded and nutted at both ends and a sliding weight. Attach it on three wheel nut locations and bang away until the drum comes free with its bearing. The splined drive shaft will become loose at this point and the universal joint will allow the shaft to be pushed back. This is important in order to remove the pinch bolts that

hold the hand brake levers in place. It would have been easier if the engineers at Citroen had put the nuts on the pinch bolts on the inside so that the bolts could be drawn out easily. You will see what I mean when you come to undoing them. On my first attempt I cut the heads off the bolts with a hacksaw blade until I realised that with sufficient wangling the universal joint could be moved sufficiently to withdraw the bolts. It can just be done if the handbrake arms are loose as well. Tap the arms off and the springs will jump off as they come free. There are two bolts retaining the bottom cylinder which need to be removed. There are also two others, a large one on the top centreline with a folded tab and a smaller one on the bottom centre line these need to be removed too. The brake pipe is easily disconnected but to preserve fluid undo the reservoir and place a piece of plastic over the opening and screw the cap back onto seal out the air. A small amount of fluid may be lost but the vacuum thus formed in the reservoir saves most of it. At this point everything should be free for the whole assembly to be prised off the hub.



The following two pictures show the shoe side and reverse side. On the shoe side the springs can clearly be seen. The circular shapes of the eccentrics are located adjacent to the cylinders and on the reverse the castellated nuts and split pins that hold them in place. One of the nuts is in a deep recess so the split pin has to be removed by bending and pulling. Undo the nuts and tap out the eccentric retaining bolt but be careful not to damage the threads.

Remove the two bolts that hold the top cylinder on and the two plates will come apart. Watch out for the small spring retainers just under the cylinders between the plates.



The splined shafts of the hand brake mechanism can be seen on the reverse side as can the brake adjusters. As the assembly is dismantled the splined shafts will come free. The actuating lobes have a wheel held in with a loose pin. Note which way the lobes are as the mechanism is handed. Take this opportunity to clean everything. Apart from the cylinders and pistons I have used a handful of washing powder dissolved in boiling water and a scrubbing brush to get rid of

grease and dirt. Rinse in boiling water and dry, the heat from the water will aid drying. If you have an airline finish by blowing all around the nooks and crannies to get the remaining water off. Wire brush and or emery cloth to get rid of the flaking paint and rust and then spray with a good quality primer with a top coat of choice.

The following photographs show the different parts after they have been cleaned up. The pipe joining the two cylinders looks like copper but it is in fact copper coated steel. Replacement copper units can be obtained from Jeff Winterman. The pistons and the cylinders were cleaned with fine wet or dry paper to get rid of the lacquer like build up which prevents the proper function of the system. Clean thoroughly with brake fluid and blow out with the airline if one is available.





The small bobbin shaped things at the bottom of the picture on the left above are the spring retainers and in the middle are the eccentrics and their bolts. The brake shoes above right have bronze inserts in their pivot holes – a nice touch. The new retaining springs are shown alongside the old ones below. The eccentrics have semi-circular cut-out for a special tool to adjust them. I found it easier to file the cut-out into a square and make up a new tool to fit from a bit of steel pipe as shown below right.



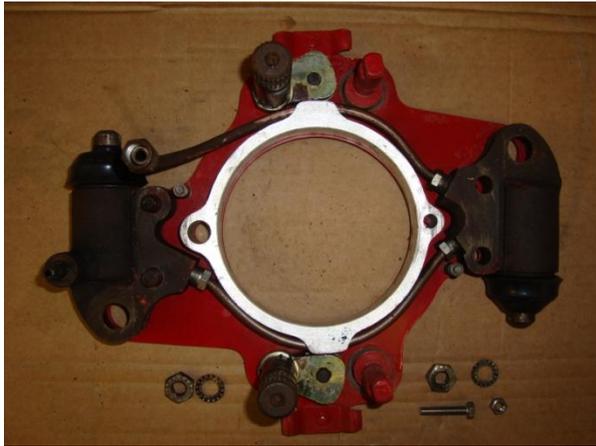


It is helpful to put a saw cut in line with the hole in the eccentric retaining bolt so when you come to reassemble the whole lot, you can judge where the split pins go without resorting to a magnifying glass especially if you are working alone and have to hold the assembly. To get the pins through the slot of the castellated nut in that part of the backplate that is deeply recessed you will need to fold the end of the pin first to engage it and follow this with a screwdriver to push the pin down and in. Repeat this

several times until the pin is fully home and can be bet back over the nut. The following series of photographs show the assembly at various stages. I found it easiest to working from the back and building towards the front but putting the back plate on last.



Note the spring retainers snuggling beside the cylinders. They fall out with devilish regularity! Best to have a clean old sheet or something similar to work on to catch the parts that tend to fly off when least expected.



The brake pipe that wraps around the central aluminium spacer does tend to get bent out of shape when you are taking things apart and becomes a real problem when trying to connect up again when the assembly is bolted back to the hub. Be careful not to bend it too much.

The following two pictures show the assembly from the front on the left and back on the right. It is best to fit the eccentrics and their bolts without the return springs in place. It is quite a fiddly job getting everything to line up and free to move. Do not tighten anything apart from the nuts that hold the top piston in place. I used a small nut and bolt to hold the pieces together just above the bottom piston until the eccentric were tightened.





I made this centring tool from Perspex and used it to set the pivot end of the brake shoes to be the same by using the eccentric to adjust movement. The adjusting cams on the back of the assembly are turned so that the shoes are released.

Below is the complete assembly ready to be bolted onto the hub. The deep recess with the nut from one of the eccentrics can clearly be seen. The bottom piston has two bolts which fix into the hub, likewise the hole under the top piston.





The brake drum from the inside showing the large one piece bearing. This was quite difficult to get back on once the brake assembly had been bolted up. After hammering to no avail with a wooden mallet I bolted up the puller I made and used it in reverse. Make sure the splines from the drive shaft enter the bearing before you try to bang the drum on too far. Once enough of the threaded section of the drive shaft protrudes, use the retaining nut to finish pulling the shaft through and forcing the

drum into place. I had to bolt up the six smaller bolts as well before the drum was fully back into place. The brake fluid pipe was teased back into position and the brakes bled. At this point everything was working just as I had hoped. But you never can tell with a H van !!!

There is a very good website that has the complete parts list with illustrations for H vans. It is in French as you would expect but the illustrations are excellent and need little explanation. It is good though, to check nut sizes and torques which are tabulated.

<http://www.classic-citroen-tech.co.uk/models/H-van/model-specific-cct-H-Parts.htm>