

# **Servicing a Webasto Thermo Top C Diesel Boiler**

## **By Chris Wyles.**

I have just serviced my Webasto ThermoTop C today and took quite a lot of photos so that I could post them here for the benefit of anyone wanting to have a go at doing their own servicing. It is not difficult providing you have a reasonable "engineering" brain and are happy to disassemble and reassemble stuff and have an innate ability to remember which screw went where!

It took me about an hour and a half from tools out to tools back (that included stopping to take photos). This is the third time I have done it so I am pretty familiar with it now. If you allow yourself a good couple of hours so that you don't have to rush then you should have no problem. Don't start work on it if it is still hot - allow the circulation water to cool down first.

***Usual disclaimer: what I am about to describe worked for me..... If it doesn't work for you.....tough. I have no idea if my method of servicing the unit is Webasto's way. Only attempt having a go if you feel confident and capable. (EBay have all the spare parts if you break something!).***

1. The first photo shows my Webasto as it looked before I started and afterwards (!). The meter thing to the left is an hour meter that I fixed up a few months ago and which senses when the Webasto's water pump is running. I have clocked up 321 hours of Webasto running, since 16th October last, but I am not a liveaboard. That works out at about 80 hours a month which is mainly weekends so typically 5 hours in the morning and 5 hours in the evening on Saturdays and Sundays. I usually service it every 500 hours.



Note the air intake pipe at the top (the whitish pipe). That simply pulls off the air intake spigot. The lower whitish pipe is the exhaust pipe which needs a small socket to release the jubilee clip and a bit of tugging. The two black pipes are the water in and out of the unit, the one nearest you in the photo is the outlet pipe. Coming in from the left and ending under the outlet water pipe in the photo, is the fuel inlet pipe. This has a small jubilee clip on it which should be undone and the pipe eased off its spigot and gently eased upwards so that no fuel runs out. The pipe is very flexible but don't put any drastic kinks in it. Just ease it out of the way; it won't leak fuel providing you have it pointing upwards.

The next photo is the exhaust pipe's being removed



There are a couple of plugs on the top of the unit which unclip by depressing a plastic catch and the plug pulled upwards. There is a black cover which needs to be removed too, whose catch is immediately to the left of these plugs. You may not be able to remove it until the unit is off the backwall, because there is a catch on the backside too. No matter. Under the cover are three further mini plugs - they simply pull out. Although, the plugs only fit in their own respective sockets, it's probably a good idea to make a sketch of which plug goes where. The two visible plugs connect the unit to the outside world (power, fuel pump and timer). The plugs under the cover connect the integral parts of the unit (water pump, air pump and glowplug)



2. The next photo shows the unit from the left hand side and allows you to see the water pump, which is the small black cylindrical jobby to which the black rubber water inlet hose attaches. We shall be removing the water pump imminently.



3. Next photo is the removal of the outlet water pipe. You do NOT need to drain the whole heating system. We will only drain out what was in the header tank and the in and out pipes. It was about 2.5 litres in my case so have a container large enough to catch the water but small enough to fit in the confined space to enable you to catch the water. I used an old 3 litre ice cream container.



You WILL spill some, but no matter. The system can be topped up later with water because the water/antifreeze mix is only 80% water: 20% antifreeze so the loss of a bit of the mixture is not significant. Undo the jubilee clip, ease the rubber pipe off its spigot and get ready to catch the water - it runs out fast and it's a big bore pipe! Allow the pipe to bend down to drain as much as possible and then, either clamp the pipe with a G-cramp or tie the pipe upwards out of the way to avoid its dribbling anymore water. Repeat for the inlet pipe.

4. The next photos show the fuel pipe tucked upwards out of the way and the bowl of mixture to give you an idea of the amount. You can remove the water pipes before the fuel pipe if you so desire.



5. Having drained the water from the unit, remove it from the backwall. It is usually held by 4 screws into an 'X' shaped carrier. You do not need to remove the carrier itself from the back of the Webasto unit. As you remove it from the wall, tip it up into your collecting

bowl to drain out any remaining water still inside the unit. If you didn't remove the black cover previously, you can now do so and also ease out the three plugs underneath it.

The next photo shows the complete unit on the bench, ready for disassembly. NOTE THAT ALL SCREWS ON THIS UNIT ARE OF THE TORX (star) VARIETY AND YOU WILL NEED A SET OF THESE TO DO THE JOB (actually only 2 sizes are used). All the ones on the unit are the same size with the water pump disassembly screws being slightly smaller.

The screw being undone in the photo is the one which releases the water pump, which you should now do. The screw holds an aluminium clip around the water pump. The other end of the clip is just that.... it clips under a small bar behind the water pump. It can be a bit fiddly to release the clip but just twiddle it around and it will come out OK. You then just need to release the sprung clip which holds the water pump outlet pipe to the main unit. This needs a mole-grip to compress the clip while you pull the water pump off the pipe. Use a mole-grip, a pair of pliers will keep slipping off because the clip is very strong and will have you swearing.



Note that there are 4 screws around the face of the unit. One is just below the fuel inlet pipe in the photo, or would be if I had not already removed it! If you look down on the unit as in the photo, you will see the other three.

Remove the water pump and gently undo the 4 screws in its base to disassemble it. Mark the case first so that you know the orientation of the base to the pump body on reassembly. The unit is plastic so don't go mad when you reassemble it. Note how much effort is required to release the screws and try to imitate that on reassembly.

The next photo shows the water pump with its bottom off. Check the impellor rotates freely; it will feel "notchy" due to the magnets inside but it should be easy to turn and offer no resistance other than the magnetic "notches". Check also that the base of the water pump contains no swarf or detritus etc. If all is well, reassemble the water pump and place it to one side.



6. Remove the 4 screws mentioned above in the face of the unit and gently ease the face away from the body of the unit. The fuel pipe passes through a rubber grommet in the face but gently pulling and easing will ensure it slips through the grommet and the face is released as per the next photo.



The next photo shows a close up of the inside of the unit. You will see 4 more screws which hold the burner unit in place. Remove these and also release, from their clips, the blue and white wires which go to the glow plug. Note the position of the wires so that you know where to put them on reassembly.



7. Having released the 4 screws and wires above, gently ease out the burner unit. Take a look inside and note the carbon bits. The first is the inside of the burner unit and the second is the main housing itself.



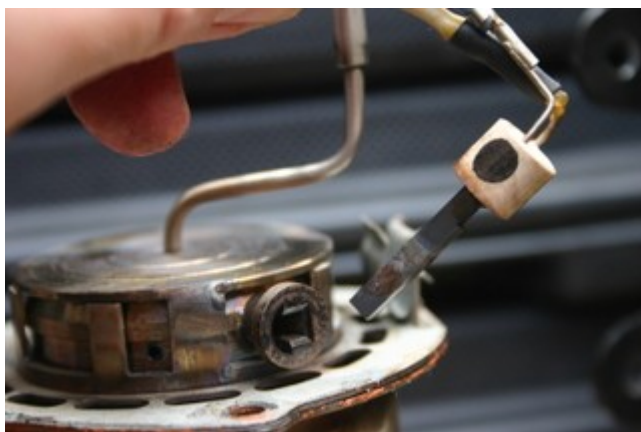


BEFORE scraping these out you need to very carefully remove the glowplug. Here's a close up of the glowplug (the white thingy) still in the burner unit. Note the orientation of the black dot marking so that you can replace the glowplug correctly later.



To the right of the glowplug, in the photo, there is a small metal clip. Pull it up and it will come away - it might need a little gentle wiggly persuasion. Then VERY gently start to pull the glowplug out. Use tiny wiggly motions if it is stubborn. Do NOT put any angular force on it or it may snap and it's expensive to replace (£60!!).

The next photo shows it removed. Wipe it ever so gently, scratch off any carbon with your nail, and place it to one side (the glowplug, not your nail!)



8. Now clean out the main housing. You need to remove the carbon from between all the little ribs. You will find the carbon comes away easily and it's like brittle cigarette ash. I use a small screwdriver to get rid of the bulk of the carbon, passing it down every rib. I then use a small wire brush (a spark plug cleaning brush is great) to give it a good brushing followed by the screwdriver again if there are any stubborn bits left. Shake the unit out to get rid of all the, now loose, carbon. It cleans up very well. Compare the finished unit next with the photo above and you will see what I mean. Don't remove the screws that hold the water jacket to the main housing.

Webasto warn against doing this and there is no need anyway. I did do it the first time and suffered no ill effects on reassembling it (with gasket goo) afterwards. The orange ring around the main unit orifice is the gasket goo from the last servicing. Yours will not have this but will have a gasket. The gasket MUST be replaced either by purchasing a gasket set from EBay (~£10-15) or using gasket goo as I have done.



9. Now clean out the burner unit by gently easing out the lumps of carbon. Note that there is gauze at the bottom of the inside of the burner unit, which apparently aids the burning of the diesel. It is fragile and should not be damaged. The carbon sticks to it and it will get a bit damaged. My gauze has been damaged a lot after 3 services but the unit works perfectly still so no need to panic if you do injure it slightly in some way. The next photo shows how much carbon I got out of my burner unit. You will get a lot more out of the main housing.



You will never get it as clean as the main housing, because it's difficult to get inside it owing to restricted access. Shake it out well afterwards to ensure all the loose stuff is out. Check on the outside of the unit that the 4 small holes around the circumference of the base are all clear.

10. Once you are satisfied that everything is as carbon-free as is practicable, insert a new gasket on to the main unit or a bead of gasket goo. This is what I use.....



This is high temperature gasket goo and will easily withstand the temperatures involved in the Webasto's operation. Make sure it says "Copper" on the tube, as per the photo. When I re-service the unit, I leave the old goo in place as it compresses right down and helps the new seal, providing it is sound.

BEFORE replacing the burner unit in the main housing, replace the glowplug gently into the burner unit and replace the glowplug's retaining clip too.

Replace the 4 burner unit screws and feed the glowplug's wires into their retaining clips.

11. Now check the inside of the face you removed earlier. This where the combustion air gets sucked in to. Note the thin rubber gasket. Assuming it is not broken, you can re-use it.



12. This part also contains the air (combustion) fan. You can remove the black cover at the top by gently releasing the clips with a screwdriver. The photo shows the cover just starting to lift.



Under the cover is the air fan itself. Ensure it revolves very freely when spun by hand and then replace the cover. Here's a photo of the air fan.





13. Now reassemble everything in reverse order to disassembly. The water pump's outlet pipe needs to be reinserted into the main housing pipe and the "mole grip" clip reinstated. Don't forget the water pump's retaining clip and ensure the water pump itself is the right way round. Push the water pump's wires back into the correct socket on top of the unit and ensure the wires are placed neatly into their guide.

14. Screw the whole Webasto unit back to the bulkhead wall and push the water pipes back over their respective spigots. Tighten the inlet pipe jubilee clip but not the outlet pipe jubilee clip yet. Reattach the plastic top cover. Reattach the last two plugs with their wires on top again. Reattach the fuel pipe and tighten its jubilee clip too. Reattach the exhaust pipe and tighten its clip.

15. Refill the header tank with the saved mixture and top up any small difference with fresh water.



As an aside, note that my header tank has 2 water pipes flowing in and out rather than just being tee'd in, as is usual with heating systems. This is the recommended method advocated by Webasto and is apparently much better at removing all air from the system. Instead of being tee'd off the return pipe, the return pipe is cut and the header tank inserted in-line, as per the photo, so all the water flows *through* the tank releasing air on the way if any is present.

16. Now..... On the main unit, ease the outlet water pipe back till it is only just on its spigot. Switch on the Webasto (or have someone switch it on) and ease the outlet water pipe half off its spigot at the same time. After about a second, a big whoosh of water will come out of the Webasto as the Webasto fills with water. Push the outlet pipe back on and tighten its jubilee clip. This ensures there is no air inside the Webasto unit. This last process takes a second or so... once you see a flow, push the pipe back on quickly or you will be soaked. Top up the header tank again if necessary.

17. Allow the Webasto to heat up. Here comes the SCARY bit. The Webasto will inevitably have some of the water/antifreeze mixture splashed on it and especially and definitely so will the exhaust pipe fibre heat cladding. As the exhaust and the Webasto heat up, you will get copious (huge) amounts of white smoke for about 30-40 minutes. Don't panic.... its normal and it's simply the spilt mixture, mainly on the exhaust cladding, evaporating away. It will eventually subside and cease but it takes a good half an hour or so. It's actually a good sign that the Webasto is indeed heating up. This photo does not show enough smoke!!



Check the header tank level after about half an hour too. It should have risen slightly as the water expands. If it has dropped a bit, top it up slightly.... it never has with me.

I hope this is useful but if anything is unclear, you know what to do.....

Chris