Production System V3.x

27th June 2023
(Manual version 1.2)

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Introduction

Why this? Three reasons. The first, well, I was getting fed up with having to wash up the two cylinder beakers I own too frequently. I have at this point nine perfumes and if I need to bottle more than two in one go I have to wash up the only two measuring cylinder beakers in between. Along with them the transfer pipettes and maybe a funnel too. It was just such a pain. Of course I could just buy more of them, but see next point.

Second reason it wasn't just the washing up, using measuring cylinders are laborious for each and every bottle. Now you could be thinking why not just pour directly into the perfume bottles? Yes, I had considered that, but the bottles have slight internal dimension differences and the same level across a number of bottles won't be the same volume – not a huge difference but still not great for consistency and planning how much to mix up in the first place and over a large number could mount up quickly.

No, I needed something to solve both of those issues, and that gives the third reason: because I can. I have a background in manufacturing automation and electronic/engineering skills. Having a clear technical and repeatable problem to solve, my technical skills just kicked in with little effort...

Once I had solved the primary bottling conundrum, I found other production aspects I could resolve such as having more magnetic stirrers and something to help with the constant topping up filtering, especially for the really really slow perfumes. These won't be the end, coupled with the recently discovered joy of 3D printing parts for this, I hope to add distillation pump, bottle washing and drying controls in due course. Just without thinking deeply.

The world is my (and your) oyster as they say!

This being the third iteration in making this work, it is still early in development and production, and as such things develop quickly as challenges are identified and resolved. I am using this machine myself so I'm finding little things I like to change often to make my life better – and hopefully yours too.

Any ideas are welcomed too, and I seriously mean that. The joy of being this close to the developer and of course I developed for my use case, yours may vary, and I might not have anticipated a specific situation that could be dealt with in one way or another. Always good to learn something new too from my point of view. Feedback is always welcome.

Getting Started

I know, you have a brand new bit of kit and lots you need to do. I get that. Usually in all equipment manuals you will read the line 'please read all of the documentation thoroughly before use'. Do we do this? Nope, I don't and I don't expect you to either. I've made this so it is really, really, simple because that I how I like things to be. Good design and all.

If you want to launch right in, the section on is worth jumping to as there is little to setup. I've more-or-less done all that for you and tested with the pump etc.

If you have purchased or have equipment that you are integrating with mine, then perhaps jump to Maintenance & Repairs to understand how electrical connections are made.

Any questions then check the main User Guide and perhaps the Parts & Assembly if something doesn't hang together correctly. Of course if you do get stuck, just talk to me, again if I've not explained something well enough or made it obvious to others then you might not be alone. Anything new I can learn I will update in this document for the benefit of all.

Talking of which, if there is an unexpected menu item, text, prompt or a physical difference to what is here. That is my bad. Keeping documentation in line with reality is a continued challenge for all developers and designers. Just let me know, or

check for any new updated details on my website. Hopefully I will email out notifications of updates to whatever as they happen.

Parts & Assembly

The equipment will come more-or-less fully assembled, you might just need to slot a couple of bits together if you have purchased the *Rig Kit*, or make adjustments to various components to fit into your existing setup as required. Any questions just ask.

What follows is a general explanation of the key parts of this setup. It should mostly be obvious, but for some parts I need to explain my reasoning for doing something a particular way.

Should something not be clear enough, confusing or completely at odds with how you do things, talk to me. I don't mind admitting if your way is better.

Base Box 'Controller' And Cables

This black box is how you make things happen. Three buttons and the context of what they can do are displayed on the little screen

to the left. The User Guide is your best source of how that works. Out of the box it is wifi enabled for funky things so again look at later sections.

On the back there are three sockets. The left one is the power supply, the middle is the external switch and the one of the right connects to the pump. All of the sockets are very different so there is no way you can accidentally plug the wrong cable into the wrong hole.

Between the external switch and pump socket is a fan. Depending on how version of the circuit board inside, it may either be on all the time or only come on when it is feeling a bit too warm.

Keeping the theme of simplicity the external switch cable provides a large plug which fits the box and two prongs which will plug into a number of 'switches' that ultimately control the pump. At this point,

the only switches I provide are the filtering float switch and the filling push switch. You are of course, if you have suitable skills free to wire up any kind of switch. For example I chose the large phono plug because I have a drum kit foot pedal that I sometimes use so I can work hands free.

The 5 pin round DIN socket has four prongs at the other end to fit the pump or the stirrer motor as required.

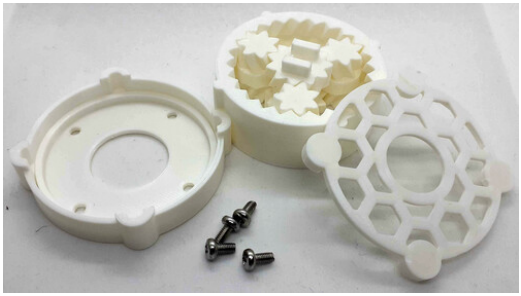
While for the external switch the polarity of the pins does not matter, it does for the pump. The DIN plug will obviously ensure that end is correct, however for the other end, the colours of the wires should match between both the lead and the pump. If the colours vary from the sequence shown then just be consistent otherwise the pump direction may change.

Pump Set

We need to talk about pumps now. This might sound a boring topic but it is important.

While normal impeller based pumps will generally work, the most significant flaw in them is that the perfume or whatever

liquid is used will be in contact with internals of the pump. This makes for very challenging cleaning and cross-contamination control.

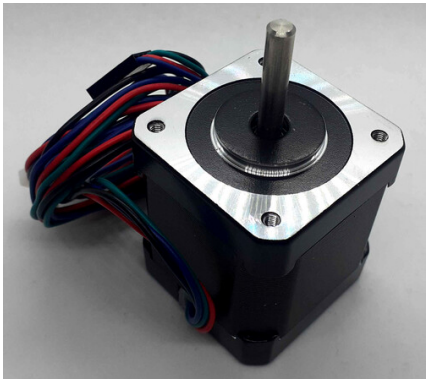


I seriously recommend the use of peristaltic pumps (as this photo shows). These are similar in that there is a motor involved, but the primary difference is that instead of the liquid going through the rotary pump mechanism, it remains in the feed tube and is propelled along by bearings or more commonly rollers that push/pull small pulses of liquid along the tube. This means that nothing is in contact with the pump; everything stays in the tube. Makes for very easy cleaning and completely prevents cross contamination.

I have tested with two types of peristaltic pump. The first is a simple DC motor with rollers. The good thing about them is that they are fast, but unfortunately due to just 'being a motor' any slippage on the tubing can result in an uneven dosage to the bottle.

For a more accurate and reliable pump, I prefer to use one that instead of a simple DC motor has a stepper motor (like this one here). These are more electrically complicated but they are

consistent due to only turning a fixed amount per pulse. The downside, as far as I can find with the pump I'm currently using is that the fill time is slower due to having to pulse. But that may be minor factor when compared with the next topic...



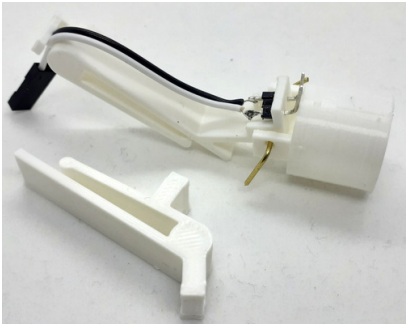
Tubes

Tube selection has shown to be quite important. I use transparent (for ease of cleaning) silicone rubber and the pumps (and more importantly the rotating head) require 4mm outer diameter (OD) tubing and this is fine for the bottles I use for reaching inside the neck of some of my smaller bottles. If you require a larger diameter tube, let me know and I can always 3D print a pump head that can handle it.

Another important aspect is consistency in tube. The slightest difference with the tube will result in a different volume delivered. Therefore I advise when

replacing or adding new tubes to the system that the tubes are sourced from the same supplier so as to ensure tube specifications are maintained and your programs won't suddenly over or under deliver. That has happened to me. Quite annoying.

Filter Set



Filtering can be a very tedious process, even with a fast flowing liquid. Unless you can setup some kind of slow release drip feed into the funnel, it requires constant topping up by hand.

Some of mine take hours to filter and I really don't want to sit there watching it. After my bottling need, this was the next thing I had to resolve. In this case (in the above photo) we have a simple float switch.

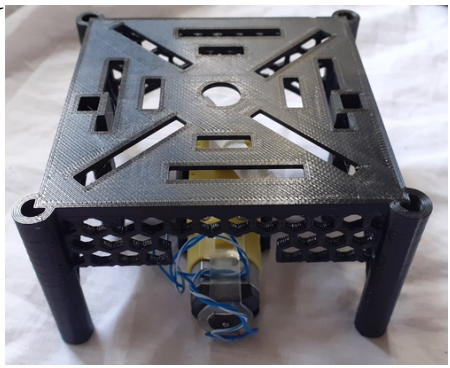
Essentially the float sits in the liquid and when the level drops and breaks causes the foil surface (not shown) to no longer touch two probes, the pump will bring in some more liquid until the level reaches the limit and then it will cut out.

At some point I will add some notifications about the state of the filter process as I can infer from the state of the float switch some situations. (a) If the pump is constantly wanting to fill up

for say 20min, then its possible we may have run out of supply liquid. (b) if there hasn't been a call to top up for half an hour then perhaps the filter paper is clogged. Notifications sent could be handy.

This is an example of the setup. You can see it in action in the promotional video I made.

Stirrer Set



I have a wonderful magnetic stirrer and heat mantle. However, I need more magnetic stirrers, as I tend to make a few different perfume batches at a time and each one needs a go on the stirrer for some hours. An orderly queue then forms and that just adds to the time. Not now. The Controller can support up to two stirrers (though it powers both at the same speed – individual speed controls are coming).

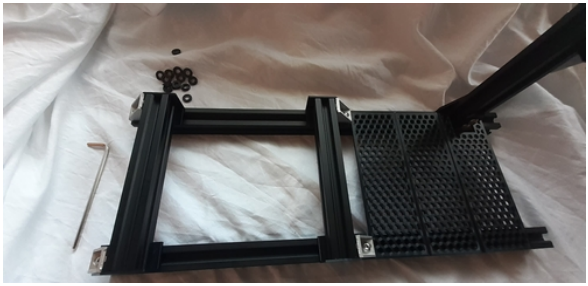
Again, check the promotional video for it being used.

Do check the weight of your vessels too. I use 500ml bottles per batch and they are fine with them, anything larger I can't confirm so test first with something unimportant. I can always add extra support as required.

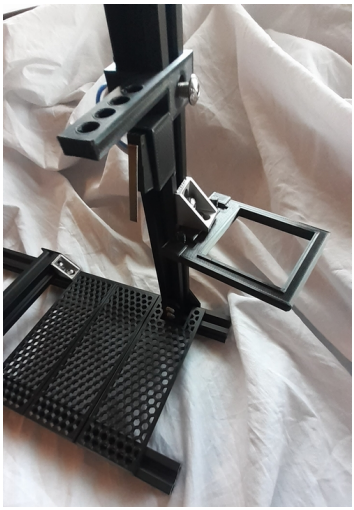
Rig Kit

For a long time I used my laboratory stand and clamps to hold everything together. It was cumbersome as the clamps don't grip the bulky motor correctly. The rest of it just gave a clunky feel.

I then explored something called aluminium extrusions which allow me to build structures easily, and more importantly, allow for future adjustment should I need it. Coupled with 3D printed parts I now have a wonderful rig that provides flexibility to attach all the above items and room for further equipment too.



This is a completely optional bit of kit, I provide it in case you don't have much room (neither do I), or even any previous laboratory equipment you can repurpose.



Above, funnel holder for filtering. On the left a view of the pump motor holder (square bit) and above it the bottle filling tube holder and fill switch.

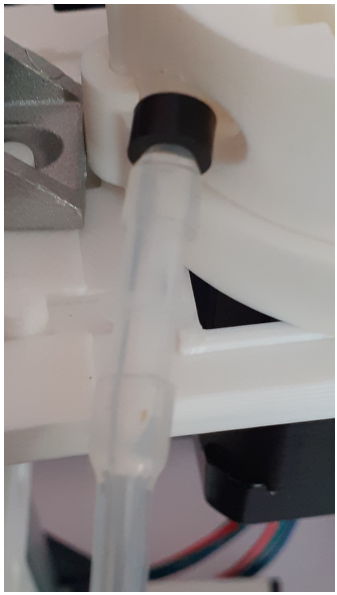
First Use & Calibration

Fitting The Tubing

Here are a few points you need to watch out for when fitting the tubes:

- Only fit tubes when the device is not running any programs and ideally with the pump physically disconnected. A finger caught in a motor and in particular the more powerful stepper motors will cause SERIOUS INJURY. A motor lid is provided to prevent accidental finger insertion when it is running. I advise using it.
- The tube runs in the middle of the rollers.
- Make sure the tube is not pinched by anything other than the rollers and there are no kinks in the tube along its whole length as this would affect the flow.
- Any covers are used and there is freedom of movement of the rollers.

- It is advisable to use the tube connector and collar to prevent the tube being dragged through the pump due to friction. This picture shows the pump head at the top.

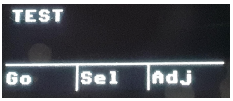


  The tube leading up from the bottom meets a connector which takes another tube through the pump head. The black collet pushes against the connector and the pump head and acts as a clamp for the tubing preventing it being taken through the pump. Its a nice little trick I learnt from a pump I had previously purchased, although in this case the collet I'm finding should be on the outgoing end which differs from the other pump which was on the supply side. Weird.

See also any YouTube videos I may have recorded showing me fitting one.

Starting up

Before running the pump for the first time we need to make sure everything is setup. I will have done most of the configuration for you when you purchase, especially if you have also bought the pump from me as I will have made sure it is all working together. If you didn't then you really need to follow these next steps. What I won't have done is configured any Wifi settings (if you want to make use of the features it provides).



At start-up with a new machine you will eventually end up seeing this or similar. By default there are three demo programs, one for each of the main features. Now, the ***Go*** button will be the left hand button on the front panel. It won't be labelled on the panel, as the context of the button will change depending on what is on the screen. The three section grid at the bottom of the screen shows what those three buttons will do in the given context.

It is worth mentioning before you go too far that you may see something like this displayed on the screen time-to-time. This signifies something important is happening in the background, and it is best you don't power off until it has gone away. In fact, it is generally safe to power off the device at any point other than

when this is showing, and perhaps when the pump is running too to be extra safe.

OK, now jump over to the ***Settings Page*** and familiarise yourself with that, making any relevant changes and then return back here.

Calibration

I advise before using for a production run for the first time, and quite possibly if it has been unused for a while too, that you just do a quick check of the filling process using either water or a solvent. i.e. Nothing expensive should it go horribly wrong!

Pressing the ***Sel*** button select a program, or even the first program test program if this is a new machine (see ***Creating Programs*** section later) and be ready to press the ***Go*** button.

Before pressing the ***Go*** button, just continue reading for the moment. The idea of this is to ensure that the tubing is seated correctly and everything will run smoothly. Unlike normal pumps, peristaltic pumps can run without anything in them so it is safe to run without liquid. Having some liquid handy though helps make sure everything is OK before you put anything expensive through and it go everywhere. I've don't that. It's not a good thing.

With the correct pump setup we are ready to hit that ***Go*** button now. See the ***Using Programs*** section for what to experience there.

Hopefully the pump will run and eventually stop. Should the pump make odd noises and/or not work, just press the ***Stop*** button, reseat everything and try again. Should you not have any luck just give me a quick shout and I will help troubleshoot.

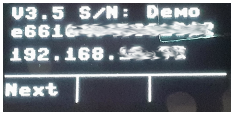
If all goes well, then all yours now! Have fun filling bottles. Yeah, I know, tedious isn't? This is why we have this machine...

User Guide

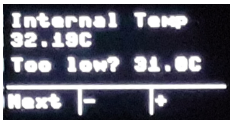
Settings Page

Pressing the ***Sel*** button will cycle through available programs until the 'Settings' page is found:

Pressing the ***Go*** button with open the settings section.

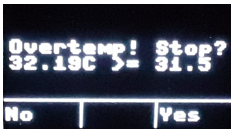


The first screen displays the current software version, your reference Id and a nice long machine Id. If you are using the wifi then the the IP address will be shown below them if it is connected to the network.

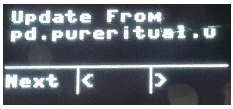


There is an over temperature monitor built-in. The motor controller can warm up quite quickly so this feature will bring any process to a stop should the alarm level be reached. This screen is showing the internal temperature of the device is 32C but the alarm is set to 31C.

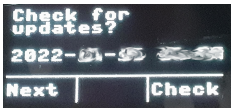
That means by pressing the [–] and [+] you can adjust the trigger level. When the alarm is higher than what the temperature is at you will see this screen. The maximum temperature you can set is 40C.



During run time, should the alarm level be exceeded the program will stop and this will be displayed allowing you to continue or end the program.



You can select the source of updates. Generally this will be only one place, but using the [<] and [>] buttons you can cycle through the list if applicable.



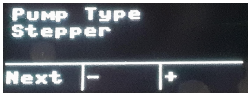
The date of the last update is displayed. Pressing the [***Check***] button will imitate a connection through the Internet and report if any new updates are available, if they are you will be prompted if you want to download and apply them.

Pressing - and + will change the contrast/brightness of the display.

To prolong the life of the OLED display it is recommended to use the screen saver option. Pressing the - and + buttons will cycle through 10s steps.

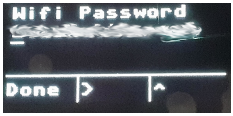
Filling programs use a concept of how many pulses to run. Select the duration of the pulse you wish. A a rule of thumb I personally have a low (0.25s) pulse for a simple DC motor because they run quickly, and for the stepper motor as long as possible, usually 200 steps. I will have configured this to match the pump if you purchase it all together from me. Using the - and + buttons change pulse length by 0.25s.

This only applies to the stepper motor and is the length of time between each stepper pulse. Longer the pulse the more torque you have on the rotation. I would advise not changing this too much as the pump can do strange things and if you have purchased from me, then I would have adjusted it to the best for that pump. Each - and + adjusts the step by 0.001s.

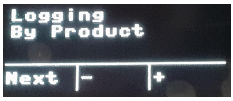


The pump type selection is of course dependant on the one connected. Be sure to not set this to something else – it could at the very least make the pump behave erratically and at worse damage it.

Using the < and > you can go through the list of Wifi access points within range to connect to.



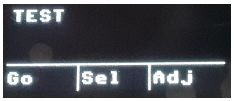
Enter your wifi password here. Using the ^ button will allow you to cycle through the various letters, numbers and symbols. Using the > will move the underlined cursor to the right by one until it wraps around to the start again. This is the most tedious bit if making changes. Sorry.



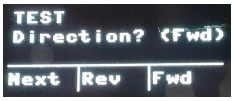
You have three options which can be selected with - and + buttons. This relates to the data logging of the filling events (see Web Front End). You can disable this feature by fulling going to the left most option.

Creating Programs

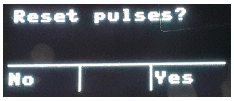
Using the ***Sel*** button you can cycle through all available programs you want to use. But of course how do you want to use them? You will need to work out how best to arrange things but I personally setup my programs by increasing volume size: 2ml, 5ml, 10ml, 30ml, 50ml, etc



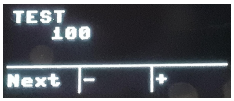
Use ***Sel*** to find a program you wish to change (or cycle until you see the option to add a new one). Once there, press the ***Adj*** button.



The choice to run the pump in either direction (can be useful if you want a program to pull everything in the tube back into the supply vessel, though I tend to just dump the bottle end of the tube and run it forward)



If the program has a lot of pulses, it can be tedious resetting it back to zero, so you can do that here quickly.



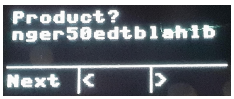
The current number of pulses will be displayed and using the - and + will change that number as well as run the pump in that direction. Watch out for that! Handy if you need to adjust a program and add a little to the program that has just run.

You can then adjust the label for the program. Using the [^] will cycle through letters, numbers and symbols. The [>] will move the cursor to the next position until it wraps around to the start.

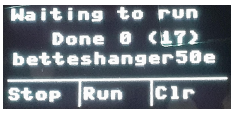
Using Programs

Pressing the [***Sel***] button will cycle through all available programs.

Once you find the program you want to actually use, press the [***Go***] button to begin.



If you have enabled *Logging → By Product*, this selection box will appear allowing you to select the product you want to log against this filling program. See Wifi Features for more details.



Now we are ready to actually fill bottles. The screen shows that it is '*Waiting to run*'. Underneath that a running count is kept, the first number ('0' in this case) shows we've not filled any bottles on this session – which will end when you press the [***Stop***] button. The number in brackets following it is the total number of times the program has been run.

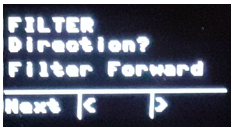
That total number can be reset by pressing the [***Clr***] button.

When ready to fill a bottle press the ***Run*** button. The ***Stop*** button will return to the program selection and end the current session count.

Pressing the Run button will start the pump and a progress bar counting down (95 left in this picture) of the total number of pulses (100 in this picture) on the right. Should it be necessary to abandon the process, press the emergency ***Stop*** button.

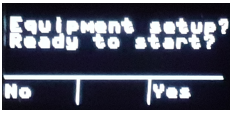
On completion the '*Waiting to run*' screen will be displayed ready for another bottle to fill.

Filtering

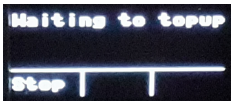


The filtering feature works also identically to the filling one. This feature is selected by cycling through the first option pump selection and finding the *Filter Fwd* or *Filter Rev*.

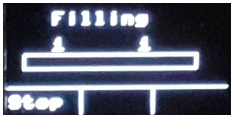
The pulse count is no many times the pump will run, like filling, but to top-up the liquid. Ideally keep this low so as not to over flow the funnel/filter paper.



At program run time, when you use the ***Start*** option, there will be a prompt to ensure everything is setup correctly just in case you jumped ahead and the pump could accidentally start.



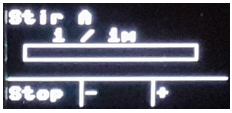
When you confirm that everything is ready to go then you will see (perhaps briefly at first) this screen. This will be displayed all the while the float switch is closed.



As soon at the float switch drops due to the liquid level falling, then you will see this one, and the pump will fill things up until the float switches it off. When you are done, just press the ***Stop*** button.

Magnetic Stirring

Again, much like the filter feature, skip past the motor selection and you will find the *Stir A*, *Stir B* and *Stir A & B* options. These allow you to have individual programs for each of the of the two magnetic stirrer bases. I personally would just choose the last one and start both up.



When the program is running you will have some extra controls though. The progress bar indicates the length of time this program will run for (as set by the usual pulse counter for the program). The **–** and **+** buttons allow you to set the rotation speed. At the moment the same speed is applied to both, hopefully I will work out a reasonable way to adjust them individually.

Wifi Features

Being connected to the local network and Internet provides a number of benefits. One is that such a device can be connected to other systems saving some effort with other processes. Now, not everyone will care, but I personally do for my own production processes, and so here is what I added for both my own and anyone else that might find it useful.

I must at this point state a very obvious thing: DON'T MAKE THIS DEVICE ACCESSIBLE OVER THE INTERNET. The web page below currently has no password protection. While there is personally identifiable information such as your device ID that they could get, information about your Wifi access point and password is only accessible via the front panel's display. They could also still mess up the program settings. For this reason I purposely haven't provided any remote pump controls because of that risk.

If you want to go against this warning then please contact me for advice. I have extensive network/internet security experience and while I aim to tighten up this aspect, there may be unforeseen technical issues to overcome due to the low computing power this device has to provide encryption.

Web Front End

The ***Settings*** page provides the IP address of the device on your local network, using this IP address in your web browser will present a web page providing a few features:

/data.csv – This URL will initiate the download of a CSV file which contains a log of all the bottles you have filled. It lists the date and time, the program used, the count, and if you enabled Logging → By Product, the product code you associated with the program.

/clearcsv – The above CSV can grow obviously, and using this URL will clear that log

Some details are shown too such as your device number, handy if you need to copy and paste that into any communications with me. Also listed are the current pump settings, device state, and another URL to list the main details of the programs you have setup which can be a useful reminder and saves on going to each program via the control panel.

You will also find a way to backup and restore your settings which is useful should you need to copy them to another machine or just need to have a copy.

Automation

The previous section's URLs are handy for casual use, however the real power comes in automation you might want to have. Again, this isn't for everyone but I have my own production system that handles all of my stock, production, batch traceability, certification and design processes and having bottle filling feeding directly into the batch creation process is really useful (I use the previous /data.csv URL with a few clever bits around it).

The webpage also supports a number of other automation applicable features with the most important in regards to the Logging → By Product using these API endpoints which are detailed in the main web page and should be descriptive enough to those of you who understand.

The API endpoints provide direct access to the program creation, update and deleting. Likewise for any product codes.

I am happy to assist with any of the above should you need it. In fact I'm currently working on removing the rough edges around my own production system for release along side. No idea yet when that will happen.

Maintenance & Repairs

I have made this machine easy for servicing. All the parts are replaceable without complicated tools. Only a single screwdriver to remove the two screws to open the box is required. Everything else can be unplugged and replaced quickly and easily – although the main processing unit might need a soft blunt rod (i.e. pencil) to help slowly prise it out of the socket and not scratch the PCB. If in doubt either don't touch or talk to me and I can advise.

Routine Maintenance

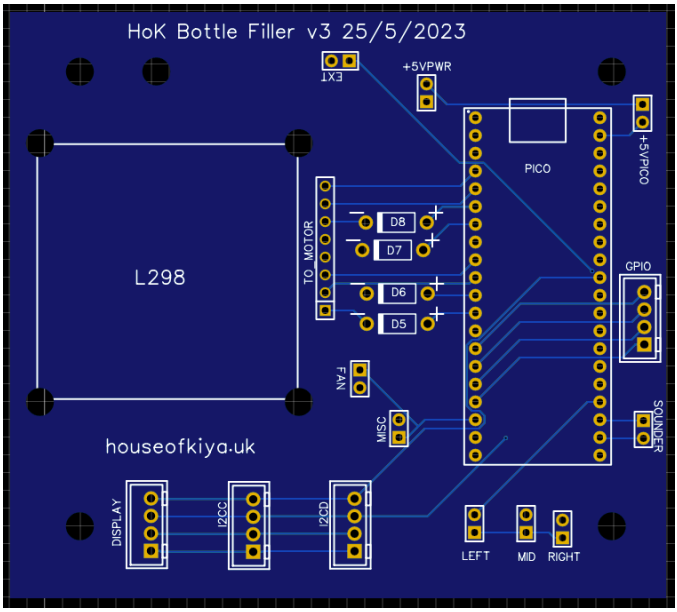
As with any equipment you may have and use regularly, it is good practice to check it over on a regular basis before and after use. In particular checking that the leads are still sound and the 3D printed parts are not wearing or cracked. If in doubt replace – it is better to replace something that might be close to failure before it fails and perhaps causes expensive damage or loss.

The 3D printed parts are most likely to fail, not because they are weak (though do be careful of shear forces across the printed layers), they are quite tough, but because they are in often being handled or in high friction contact i.e. pump head.

I've tested the PLA printed parts against 99.9% ethanol and the parts that have been completely immersed for weeks are

showing no sign of weakness. The highest risk of damage is impact or sheering across the layers. It may come to pass that I will reprint in tougher materials, but I don't see the need right now.

Controller Maintenance And Repair



Opening the case - Two screws either side of the base.

L298 H-Bridge Motor Controller – This large separate board handles the high current for the motors. There are a number of leads, and so long as you maintain their orientation you should be OK if you need to replace this part. Such controllers are

ubiquitous and I've not seen much variation in layout. Hopefully the new addition of a rear case fan and front and rear ventilation this heat can be dealt with for long periods of use.

Pico – This is the real 'brains' inside the box, and has all the code used to connect to the various devices. Should this be in need of replacement then you need to contact me so I can reflash the firmware. The web page for the device does allow you to backup your settings which I advise you do occasionally. At the moment the restore of the settings isn't working so if you need them back on then I can do that when reflashing the firmware. Hopefully won't be long before I have the restore fixed.

Display - The OLED display has four wires that connect it in a specific way to the main board, the panel will have markings to identify what each pin does. Please ensure each corresponding wire is connected to the board. I doubt you will damage the screen if anything is round the wrong way. The machine will not work if the screen is not functional. In that case you will only hear one beep at start up and not two. Pin one is closest to the front of the case working backwards.

1 - VCC

2 - GND

3 - SCL

4 - SDA

Front Panel Buttons (Left, Mid, Right) - Each of the front panel buttons is attached via a nut on the back. The leads then connect to the main board in sequence, with no particular orientation of the button's leads.

Power - 5-12V 2.5mm barrel connector. Requires centre negative. ***This is not a common configuration most power supplies are centre positive***. I chose centre negative because a number of my laboratory devices use this uncommon supply, no doubt so that I should buy their power supplies. To save on having to keep separate supplies I made it all common to my kit – sorry. I recommend a power supply that has switchable polarity so you can use it in both configurations for your kit. Just remember to check before plugging in!

Whatever you do, ***DO NOT*** connect a power supply ***GREATER*** than 12V to the supply – if you do, it will damage the pump controller board. If your pump requires something like 24V, please let me know and we can work something out.

Pump DIN Socket – For a simple DC motor then use either P1+/- or P2+/1 and select ***MotorA*** or ***MotorB*** respectively in the settings. For a four pin stepper motor connect the phases as applicable and choose the applicable ***Stepper*** in the settings (each stepper type provides a differing coil activation sequence). If you have a 6-pin stepper then that would require completely different internal electronics. Please contact me.

1 – P1+

2 – P1-

4 – P2+

5 – P2-

Ext Switch Jack **-** A simple external switch that is connected to the centre button on the front panel. You can connect anything you wish to this socket that would trigger the middle button. Most useful to me is my drum machine foot peddle to trigger the filling process once a program has been selected to run. Keep an eye out on the website for any frames which I might produce that contain automatic bottle fill triggers.

Pump Head – Fitting the peristaltic pump head to the NEMA 17 stepper motor axle can be a challenge. The shaft is 'D' shaped and not that noticeable on the pump head. To assist with aligning the flat part of the shaft to the flat part of the pump head, you will notice on the very top of the pump two large tabs around the shaft hole. These are thumb tabs that poke outside the lid and allow you to manually turn the pump. Between one end of those tabs is a small line going between them. That line is showing where the flat part of the 'D' goes.

What I do in aligning things is rotate the motor's shaft until the flat bit points to one of the locking slots for the pump head, and then placing the pump head on top, rotate until the flat indicator is approximately facing the same way and then

slowly push down turning and adjusting the pump head until it locks on to the shaft.

It will be tight. To be honest there is no reason to remove the pump head from the motor so if I've fitted it for you then leave it alone. Changing the tubing won't require you taking the pump head off of the motor.

Example Filling Process

Our processes will most likely be different, but I thought I would provide a simple outline to how I use this bottle filler as a means to trigger thinking about solutions to issues that will come up.

Cleaning Process – The main objective of this machine is to reduce the cleaning demands. What this means is that I store the tubes for each perfume in their own bags to prevent cross-contamination. On fitting a tube into the pump ready to use I will always flush it through with some solvent (e.g. the same ethonol I use in my perfume) Initially I started with a flush program, however this was annoying, instead I now use the program I will need to fill with as generally it will be running long enough to pull a small amount of solvent completely through the tube. Doesn't need to be all filled, just enough to run through. Might do that a couple of times and then issue an emergency ***Stop*** to end the flushing.

I will also repeat this at the end of the production run to purge any perfume that might have become stuck to the the sides after emptying. This prevents any residue from affecting the next run.

Remember, because we are using peristaltic pumps there is no liquid contact with any part of the system, so it is only the tubes that need cleaning.

Should you have any spills on the equipment it's self, then just a wipe down should be adequate. Obviously don't immerse the electrical equipment in any liquids!

As always, any doubt please ask.

Priming and Flushing - Because programs require the tube to be fully filled and ready to deliver from the get go, I have a priming process. Like the cleaning process, I will run the required filling program to fill the tubes ready for the proper run. At the end I will then remove the supply tube and let the program push all of the fluid in the tube back into the supply vessel.

Product Warranty

This limited warranty contains important information about your rights and obligations, as well as limitations and exclusions that may apply to you as part of the terms and conditions of sale in effect at the time you purchase a House Of Kiya product.

YOUR RIGHTS AND THIS LIMITED WARRANTY

This Limited Warranty gives you specific legal rights. You may also have other legal rights that vary by country or jurisdiction. For example, these rights may include your rights under the EC (Certain Aspects of Sale of Consumer Goods and Associated Guarantees) Regulations 2003 and other enactments governing the sale of goods.

The disclaimers, exclusions, and limitations of liability under this Limited Warranty will not apply to you to the extent prohibited by applicable law, as some jurisdictions do not allow limitations on how long an implied warranty lasts or specific exclusions. If you are unsure as to your full legal rights you should refer to the laws applicable in your jurisdiction and you may wish to contact a relevant consumer advisory service. This Limited Warranty is in addition to your legal rights in relation to the Products.

This Limited Warranty only applies to Products purchased and used in the European Economic Area (including the United Kingdom).

1. House Of Kiya (‘HoK’, ‘we’, ‘us’ or ‘our’) warrants to the owner of the enclosed product that the product contained in this box (Product) will be free from defects in materials and workmanship for a period of one years from the date of delivery following the original retail purchase (Warranty Period). This is referred to below as the Limited Warranty.

2. If the Product fails to conform to the Limited Warranty during the Warranty Period, HoK shall, at its sole discretion, either:

a. repair or replace any defective Product (or part thereof); or

b. accept the return of the Product and refund the money actually paid by the original purchaser for the Product.

Repair or replacement may be made with a new product or parts. If the Product or a component incorporated within it is no longer available, we may replace the Product with a similar product of similar function at our sole discretion.

3. Paragraph 2 above sets out your sole and exclusive remedy for breach of this Limited Warranty.

4. Any Product that has either been repaired or replaced under this Limited Warranty will be covered by the terms of this Limited Warranty for the longer of thirty days from the date of delivery or the remaining Warranty Period.

5. This Limited Warranty is non-transferrable from the original purchaser to subsequent owners, and the Warranty Period will end at the time of transfer of any Product, where permitted by law.

6. If you are the original purchaser of the Product and you are not satisfied with this Product for any reason, you may return it at your cost in its original condition and in its original packaging within thirty (30) days of the original purchase and receive a full refund.

7. Before being able to claim under this Limited Warranty, the owner of the Product must (a) notify us of the intention to claim by visiting https://houseofkiya.uk/contact/ during the Warranty Period and providing a description of the alleged failure, and (b) comply with our return shipping instructions. Please note that we will have no warranty obligations with respect to a returned Product if we determine, in our reasonable discretion after examination of the returned Product, that the Product is an Ineligible Product (defined below).

8. HoK shall bear the costs of return shipping to the owner and will reimburse standard shipping costs incurred by the owner, except with respect to any Ineligible Product, for which owner will bear all shipping costs.

9. This warranty does not cover the following (collectively Ineligible Products): Products marked as “sample” or sold “AS IS”; or Products that have been subject to: (a) modifications, alterations, tampering, or improper maintenance or repairs; (b)

handling, storage, installation, testing, or use not in accordance with any applicable user guide, installation or other instructions provided by us; (c) abuse or misuse of the Product; (d) breakdowns, fluctuations, or interruptions in electric power or the telecommunications network; or (e) Acts of God, including lightning, flood, tornado, earthquake, or hurricane.

10. This warranty does not cover consumable parts, including filter floats, unless damage is due to defects in materials or workmanship of the Product, or software (even if packaged or sold with the product). We recommend that you use only approved or recommended (by us) service providers for maintenance or repair. If undertaking self repair, any introduced fault will automatically invalidate this Limited Warranty.

11. Disclaimer and Limitations

a. Except as stated above in this Limited Warranty, and to the maximum extent permitted by applicable law, HoK hereby disclaims all express, implied, and statutory warranties and conditions with respect to any Product, including the implied warranties of merchantability, and fitness for a particular purpose. To the maximum extent permitted by applicable law, we also limit the duration of any implied warranties or conditions to the duration of this Limited Warranty.

b. In addition to the above warranty disclaimers, in no event will we be liable for any indirect, consequential, incidental, exemplary, or special damages, including any damages for lost

data or lost profits, arising from or relating to this Limited Warranty or our Products, and HoK's total cumulative liability arising from or related to this Limited Warranty or a Product will not exceed the amount actually paid for the Product by the original purchaser.

12. Please direct any questions about this Limited Warranty to House Of Kiya at info@houseofkiya.uk.

UKCA Declaration of Conformity

Declaration of Conformity

In accordance with EN ISO 17050-1:2010

UK CA

1 Product model / product:

Product	A controller operating multiple features such as bottle filling, filtering and magnetic stirrer.
Model/type	Controller
Batch/serial no.	V3.x

2 Manufacturer

Name	House Of Kiya Perfumes + Cosmetics
Address	31 Albert Road, Dover, Kent, CT16 1RD

3 This declaration is issued under the sole responsibility of the manufacturer.

4 Object of the declaration:

Product	A controller operating multiple features such as bottle filling, filtering and magnetic stirrer.
Specification	A small box, with OLED display, three push button control panel. On rear three sockets (power supply, remote switch and pump control) and fan assisted vent.

5 The object of the declaration described above is in conformity with the relevant UK Statutory Instruments (and their amendments):

2008 No. 1597	The Supply of Machinery (Safety) Regulations 2008
2016 No. 1091	
2012 No. 3032	The Electromagnetic Compatibility Regulations 2016

The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

6 *References to the relevant designated standards used or references to the other technical specifications in relation to which conformity is declared:*

Reference & Date	**Title**	**Edition**

7 *The manufacturer applied the procedure for assessment of conformity with internal checks on manufacture. A conformity assessment body was not involved.*

8 *Additional information:*

The technical documentation for the machinery is available from the manufacturer at the address(es) above:

Signed for and on behalf of:	House Of Kiya Perfumes + Cosmetics
Place of issue:	Dover
Date of issue:	27th June 2023
Name:	Kevin Groves
Function:	Owner
Signature: