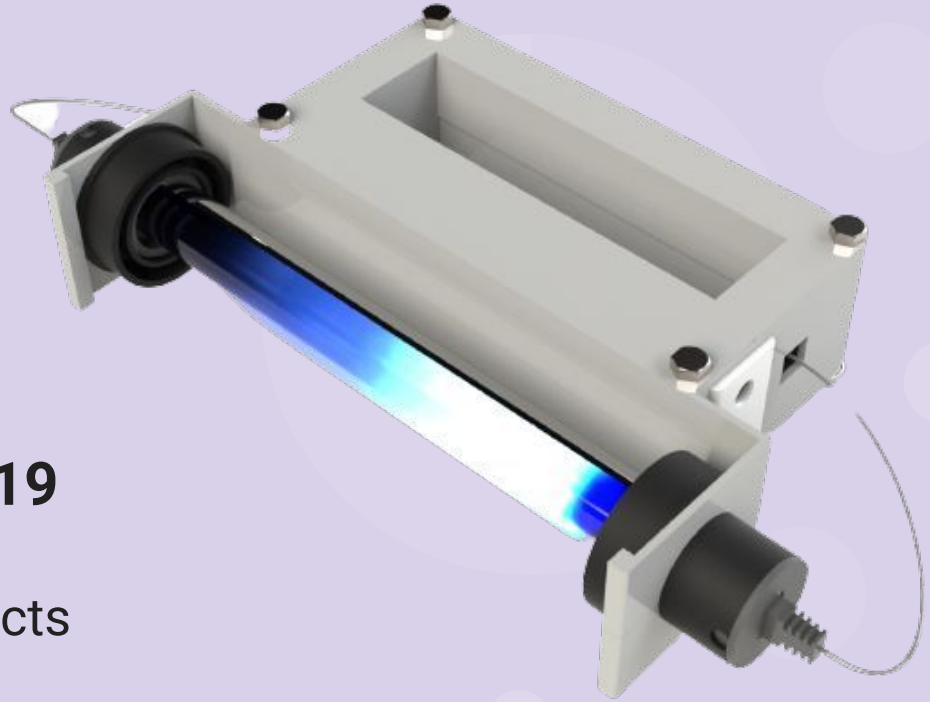
VIGYAN ASHRAM



UV Torch

PREVENTION FROM COVID 19

for Sanitization of Daily Use objects

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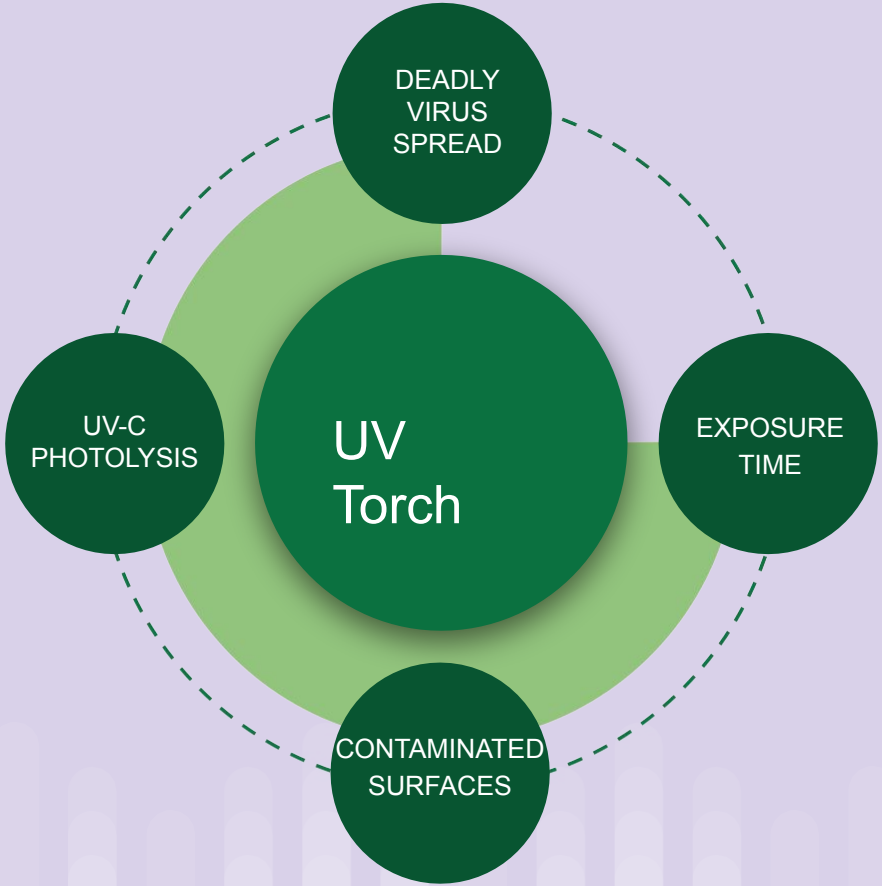
Introduction

Contaminated surfaces spread viruses. Viruses can persist on surfaces like metal, glass, or plastic for upto a couple of days.

Therefore, contaminated surfaces that are frequently contacted in day-to-day life are a potential source of coronavirus transmission.

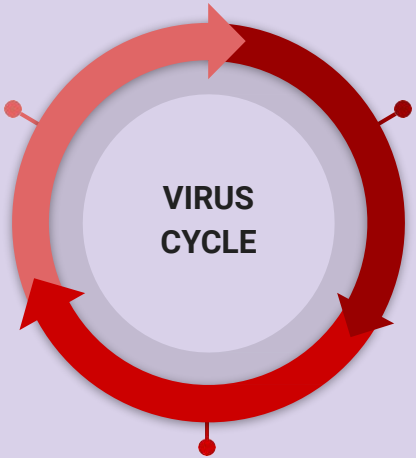
Unlike other photolysis techniques, UV-C rarely produces potentially dangerous by-products. Air can allow UV-C to attack microorganisms present.



How does UV-C destroy germs?

Source of contamination	Contaminated surfaces that are frequently contacted in day to day life are a potential source of SARS-CoV, MERS-CoV or HCoV transmission	
Daily Usables	Laptops, mobile phones, coffee mugs, pencils, pens, medical devices, card swipe machines, ID cards, diaries and many other day-to-day objects	
UV-C Light	Use of UV-C light allows for disinfection. The high energy from short wavelength UV-C light is absorbed in the cellular RNA and DNA, damaging nucleic acids and preventing microorganisms from infecting and reproducing	
Application	Right dose for right amount of time exposure of UV-C rays kills almost 99% bacteria and inactivates virus like Covid-19, salmonella, influenza, and more	

Purpose of Project



ATTACKED BY VIRUS

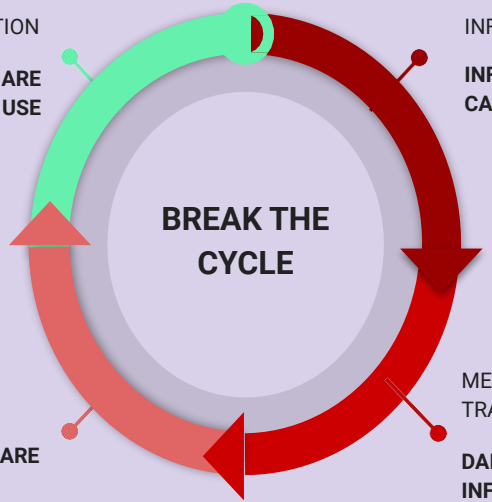
SOMEONE USING SAME OBJECTS GETS INFECTED TOO

INFECTIOUS PERSON

INFECTIOUS PERSON CAN CARRY VIRUS

MEDIUM OF TRANSMISSION

DAILY OBJECTS USED BY INFECTIOUS PERSON IS CONTAMINATED



NO INFECTION

DAILY OBJECTS ARE SAFE TO USE

INFECTIOUS PERSON

INFECTIOUS PERSON CAN CARRY VIRUS

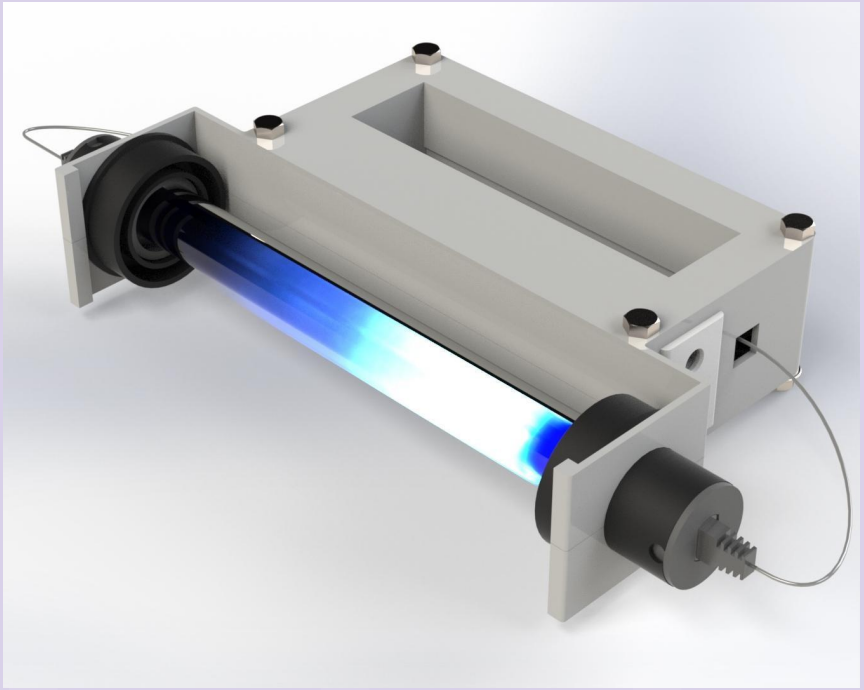
MEDIUM OF TRANSMISSION

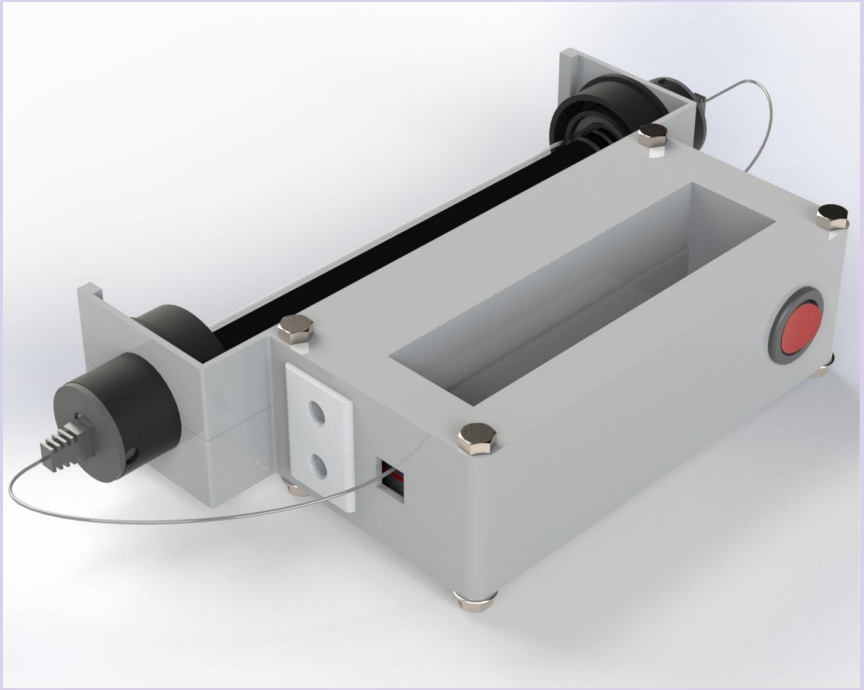
DAILY OBJECTS USED BY INFECTIOUS PERSON ARE CONTAMINATED

++ UV Torch

ALL OBJECTS ARE EXPOSED TO UV RAYS

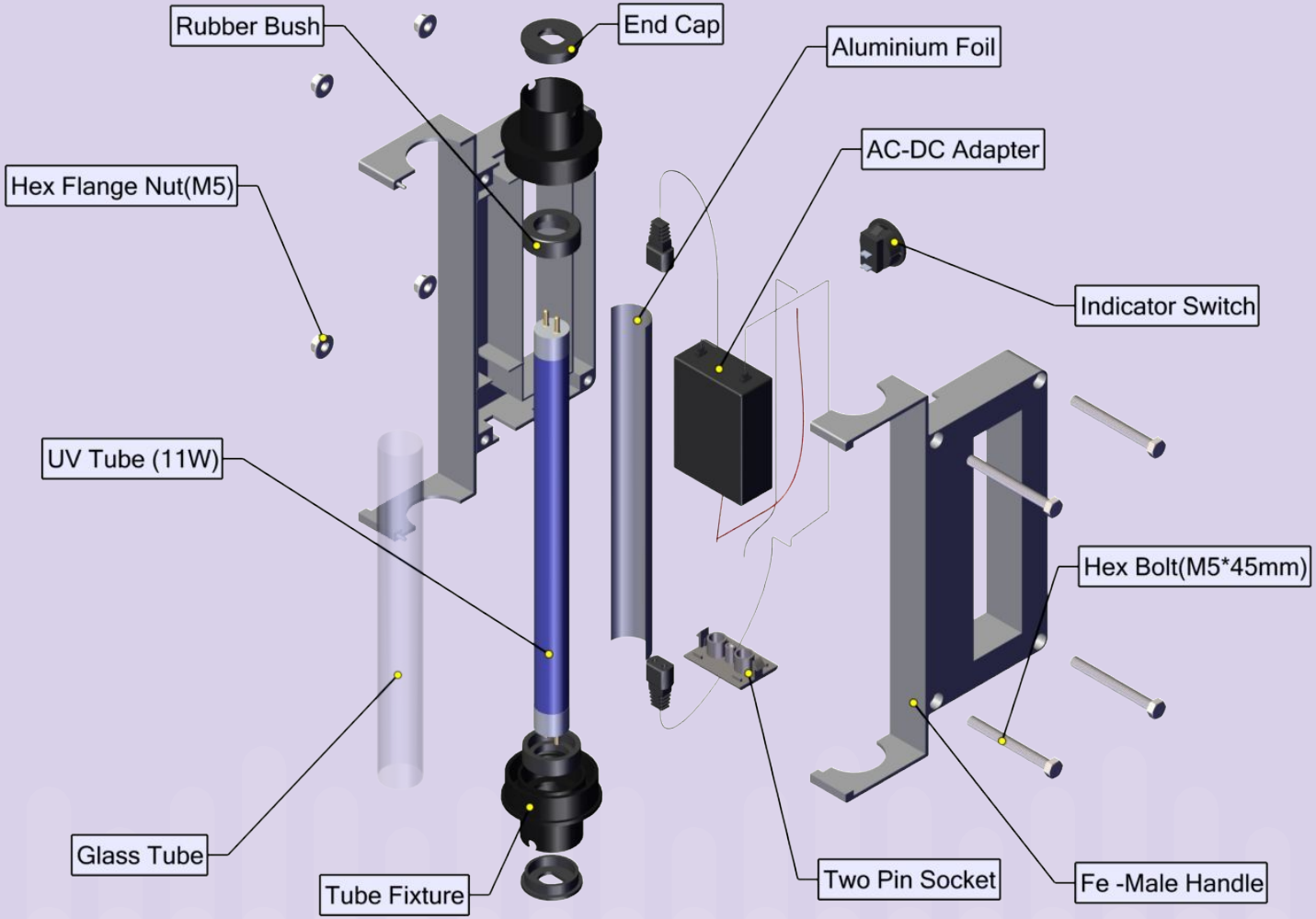
Overview





UV TORCH

Parts Overview



Product Description

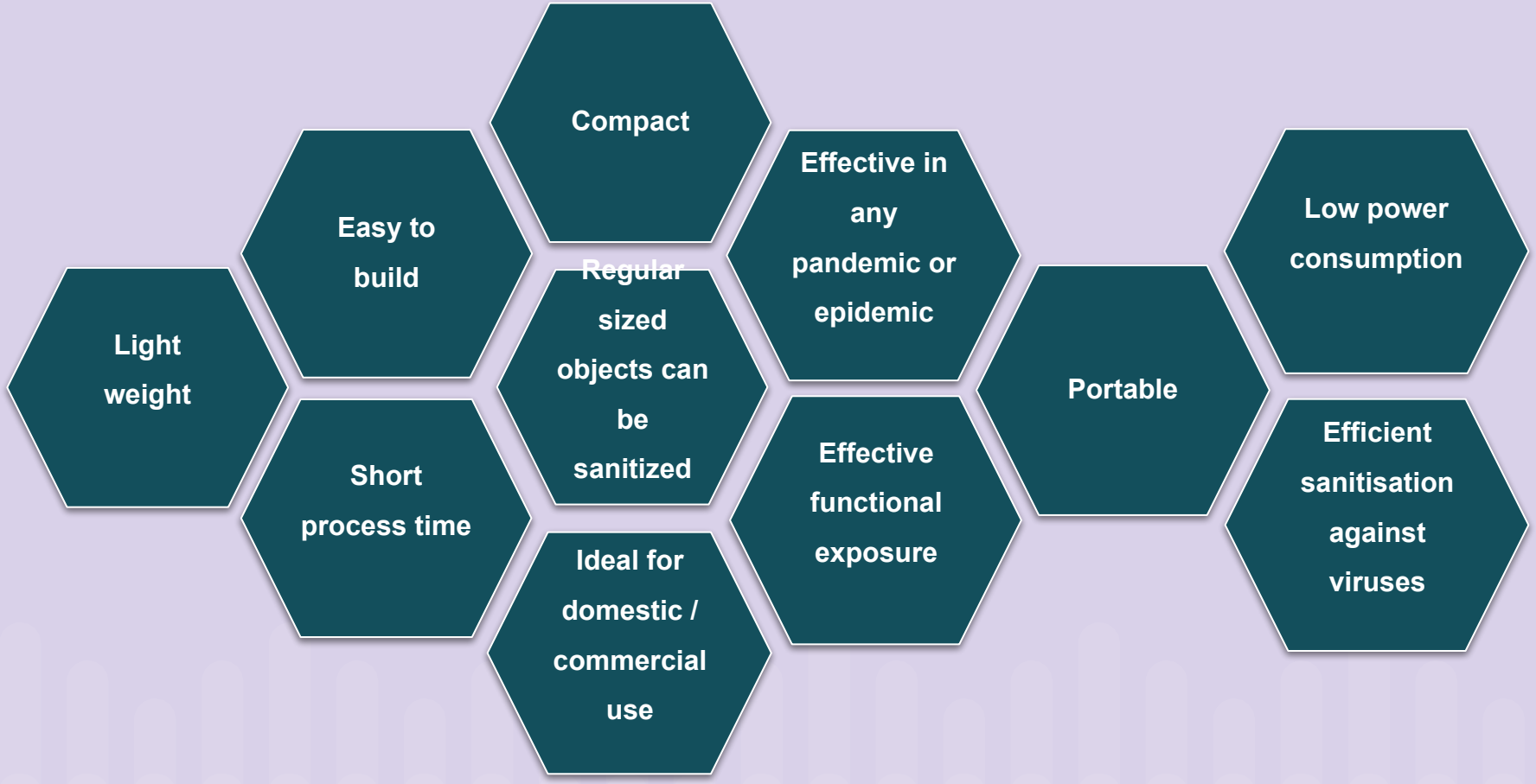
UV Torch- PREVENTION FROM COVID 19

The UV Torch is a compact multi functional disinfecting machine.
A Torch with handy structure made to disinfect day to day objects. Utilities are exposed to the high energy from short wavelength UV-C light.
The light is absorbed in the cellular RNA and DNA, damaging nucleic acids and preventing microorganisms from infecting and reproducing.

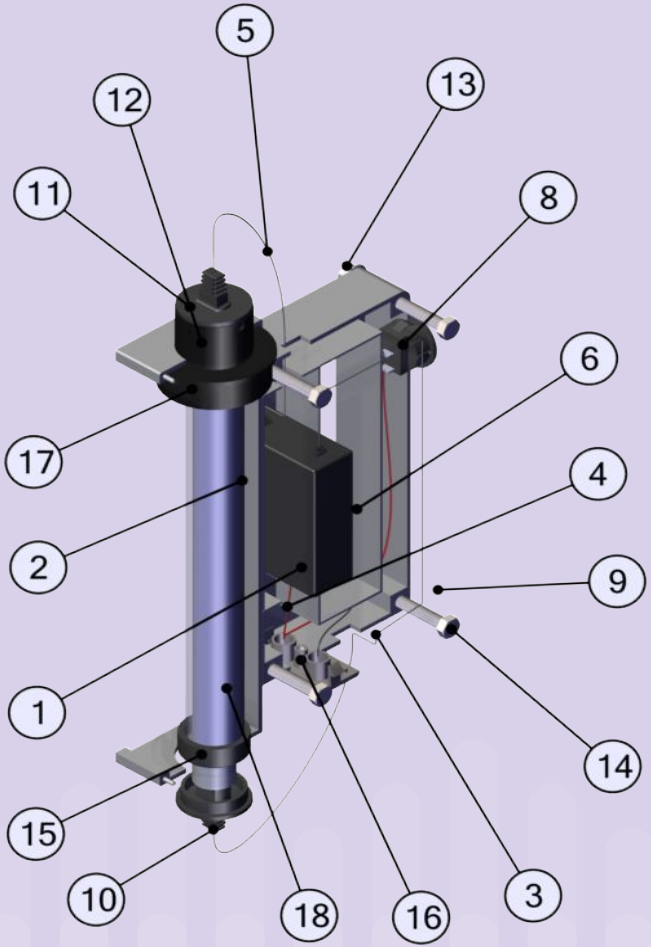
Once the objects are kept in the Torch space power button is switched ON.
After 3 minutes of UV light exposure, one has to switch OFF power.
The objects are disinfected and ready to use now.
This product is portable, user friendly and cost effective.

The manufacturing process is very simple; the material used is standard and easily available in local market.
It is made up of a box of 3D printed handle.
The power button and warning procedure is applied on handle of unit. There are one UV lights installed inside of handle fixture and electrical wiring are kept under the handle inner space.
Power specifications are as 11W.

Features

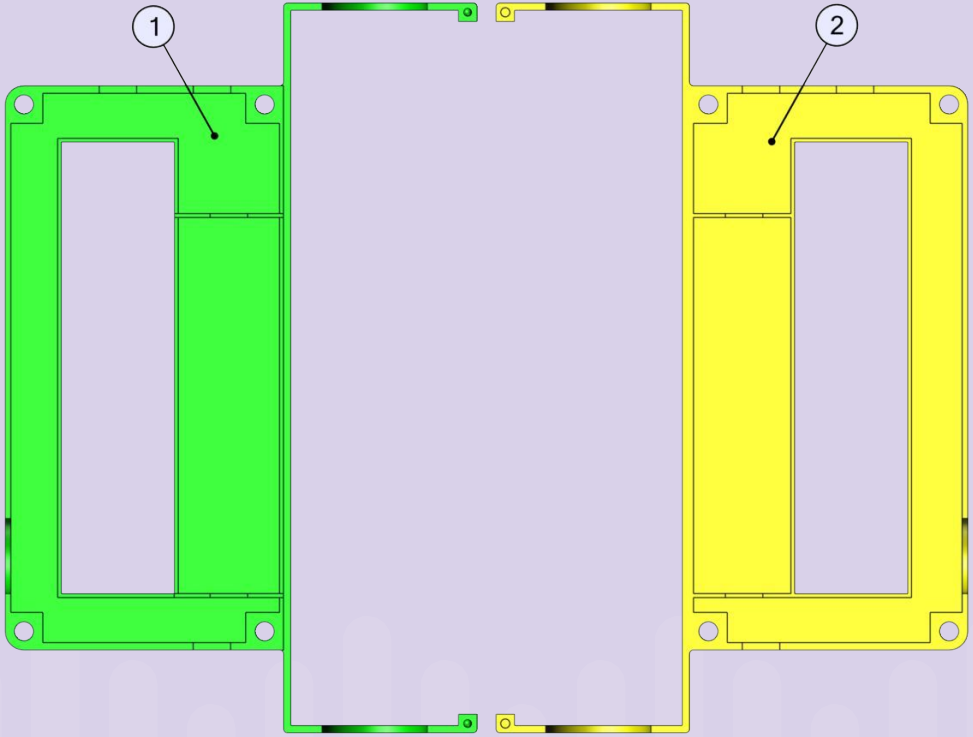

Compact
Easy to build
Effective in any pandemic or epidemic
Low power consumption
Light weight
Regular sized objects can be sanitized
Portable
Short process time
Effective functional exposure
Efficient sanitisation against viruses
Ideal for domestic / commercial use

Bill of Materials (BOM)



BOM ID	Description	Qty
1	AC-DC Adapter	1
2	Aluminium Foil	1
3	Cable 1	1
4	Cable 2	3
5	Cable 3	1
6	Cable 4	1
8	Indicator Switch	4
9	Male Handle	1
10	UV Female Pin	2
11	End Cap	2
12	Glass Tube	1
13	Hexagon Flange Nut(M5)	4
14	Hex Bolt(M5*45mm)	4
15	Rubber Bush	2
16	Two Pin Socket	1
17	Tube Fixture	2
18	UV Tube(11W)	1

Parts to Make

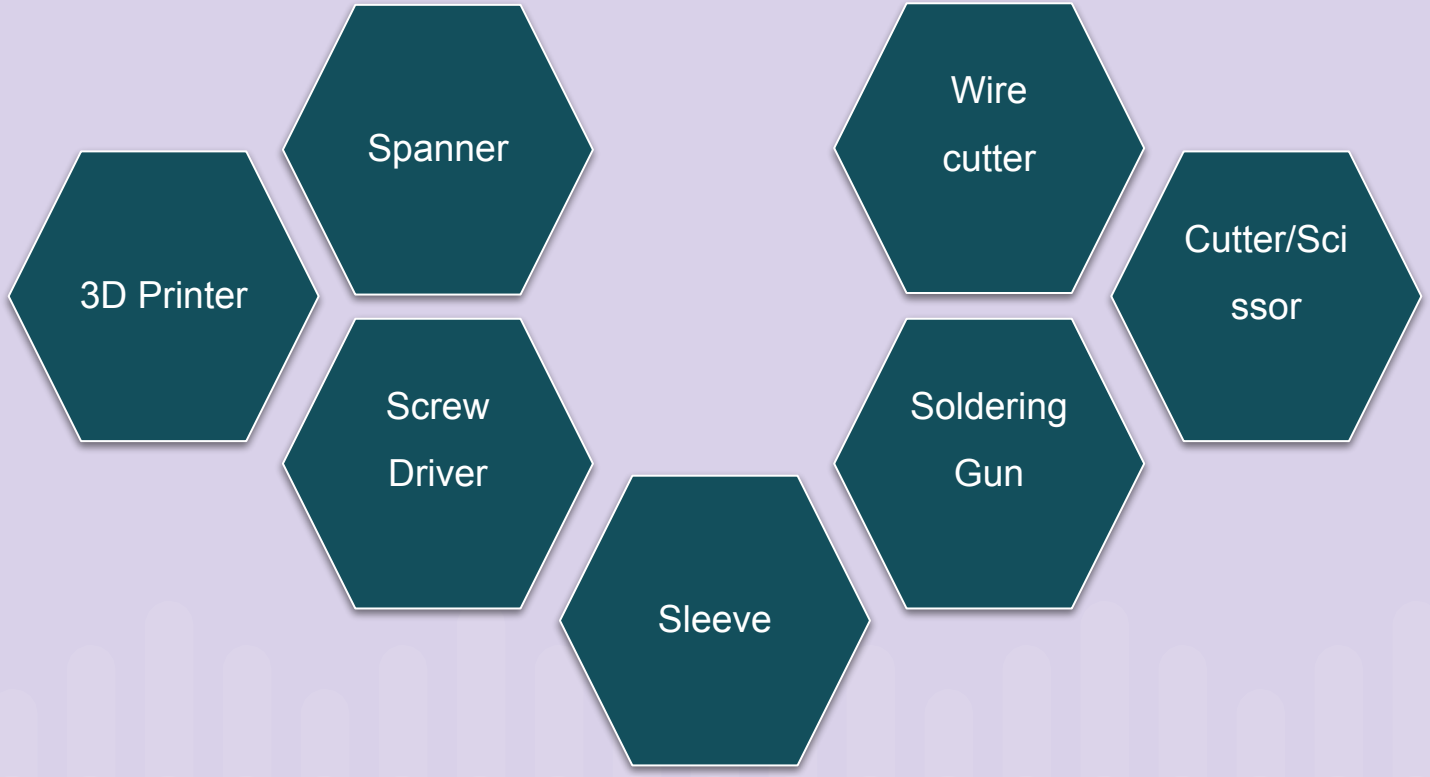


No.	Part Name	Ref (.stl)
1	Male Handle	Male .stl file
2	Female Handle	Female.stl file

Parts to Purchase

No	Part Name	Qty
1	UV Tube (11W)	1
2	AC-DC Adapter	3
3	Aluminium Foil	2
4	Indicator Switch	1
5	2 Pin Socket	1
6	Tube Fixture	1
7	Rubber Bush	2
8	Hex Bolt (M5*45mm)	4
9	Hex Flange Nut(M5)	4
10	Glass Tube	1
11	Electric Cable (2Sq. mm)	2m

Tools required



Safety Instructions : For Assembly

Always Wear Safety Equipment

This might seem like a common sense kind of rule, but it's an important one to remember. During usage of loud power tools like routers and surface planers, wearing ear protection is a noted advantage. Similarly, wear latex gloves while applying finishes. Never be without your safety glasses. These should be the first thing you reach for when entering the shop.

Avoid Using Anything That Can Impair Your Reaction Time and Judgement

It's like when you're driving a car: you want to stay out of the alcohol and drug cabinets to avoid accidents. In the wood shop, the dangers are even higher by inadvertently using the wrong tool because you're too out of it to see what you are doing wrong. Never mix alcohol with work, even if it's just a beer.

Wear The Right Clothes

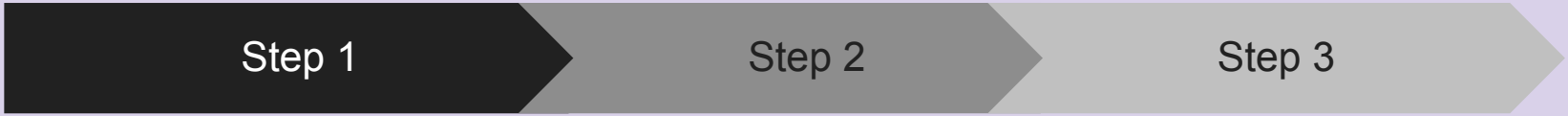
The problem with wearing baggy or loose clothes is the very high chance that a part of them might get caught in a cutting head or saw blade.
As a result, try to always wear clothes that are a better match for the woodworking environment, but also protect you. Always ensure that any dangling jewelry or metal such as chains or bracelets, are removed before commencing work.

Safety Instructions : For Assembly

Disconnect Power Always remember to disconnect the power source itself before changing blades or bits on your power tools. In addition to ensuring the switch is off, make sure there is no electricity being powered to the tool, since the switch can malfunction and/or accidentally get turned on.	**Use A Single Extension Cord** Using one heavy duty extension cord for all your power tools will ensure that you switch off the power for each tool. Too many cords can get confusing and be a tripping hazard.	**Never Use Blunt Blades & Bits** While this might seem obvious seeing as how dangerous a dull cutting tool can be. Dull tools will need to be made to work harder to cut and as a result can bind or kick back. Sharp bits and blades will ensure cleaner cuts as well.

Flowchart | Process of Assembly -1

Male
Female
Handle-3D print

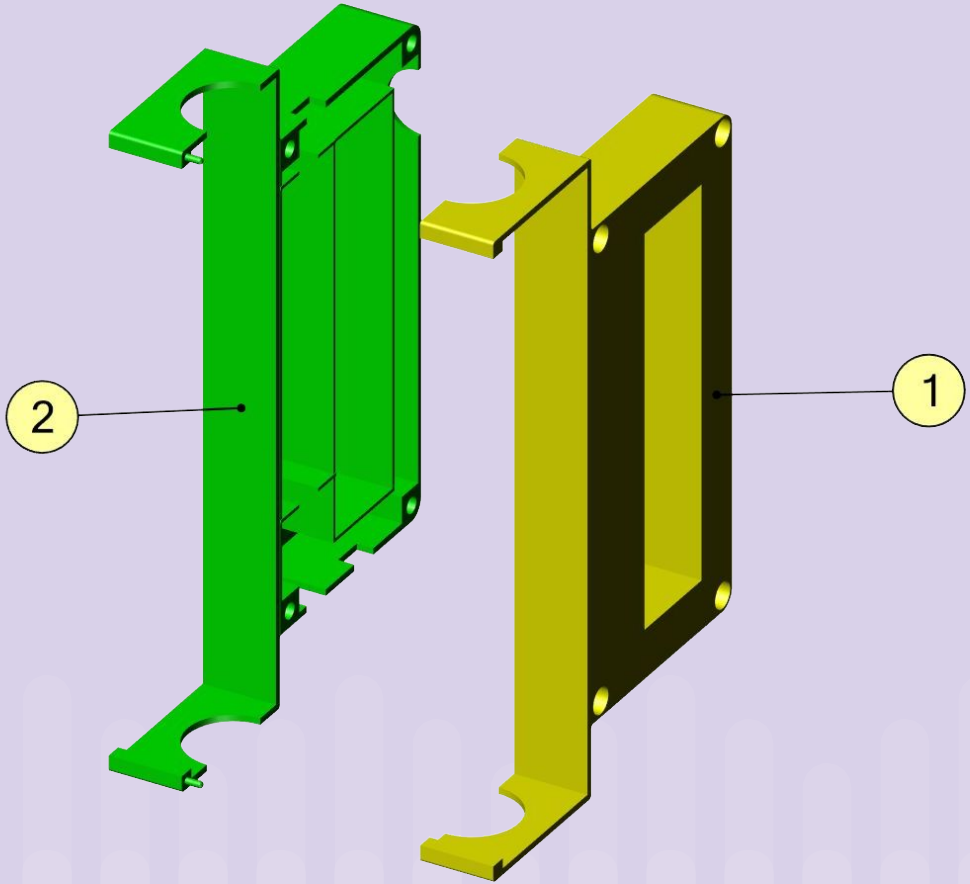


3D print design of Handle

Adding self/press fitting features & holes in 3D print

Adding electrical, mounting and UV tube bracket feature holes, slot, etc

Process of Assembly -1



- 3D print design of Handle
- Adding self/press fitting features & holes in 3D print
- Adding electrical, mounting and UV tube bracket feature holes, slot, etc

Flow chart | Process of Assembly -2

Attaching accessories to UV tube

Step 1

Sub assembly with Glass tube, Aluminium foil & Rubber Bush

Step 2

Adding lower & upper tube fixtures

Step 3

Adding UV Tube (11W)

Step 4

Adding top & bottom end cap

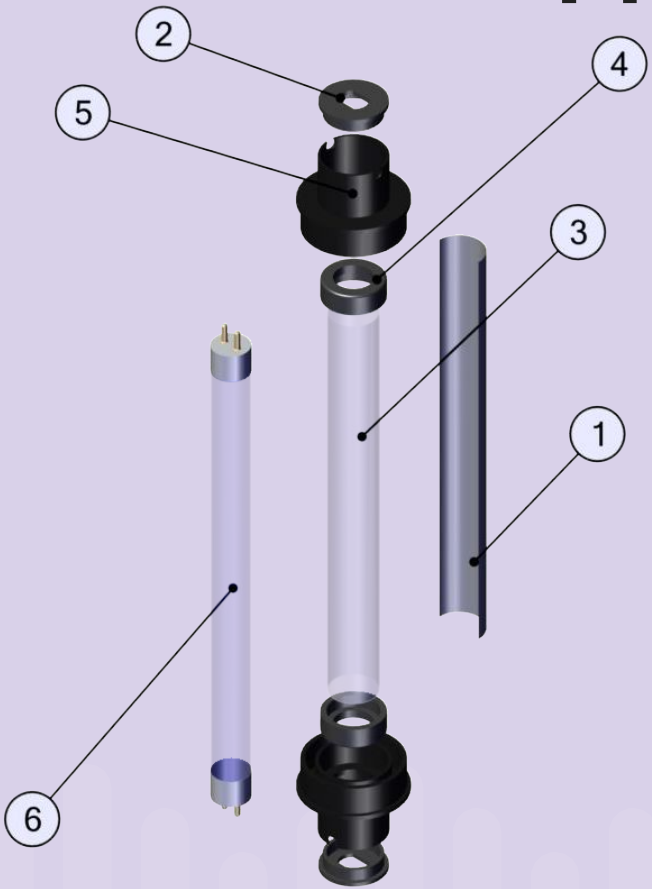
Step 5

Make connections with male connector power supply to UV tube circuit

Step 6

Make connections with indicator switch

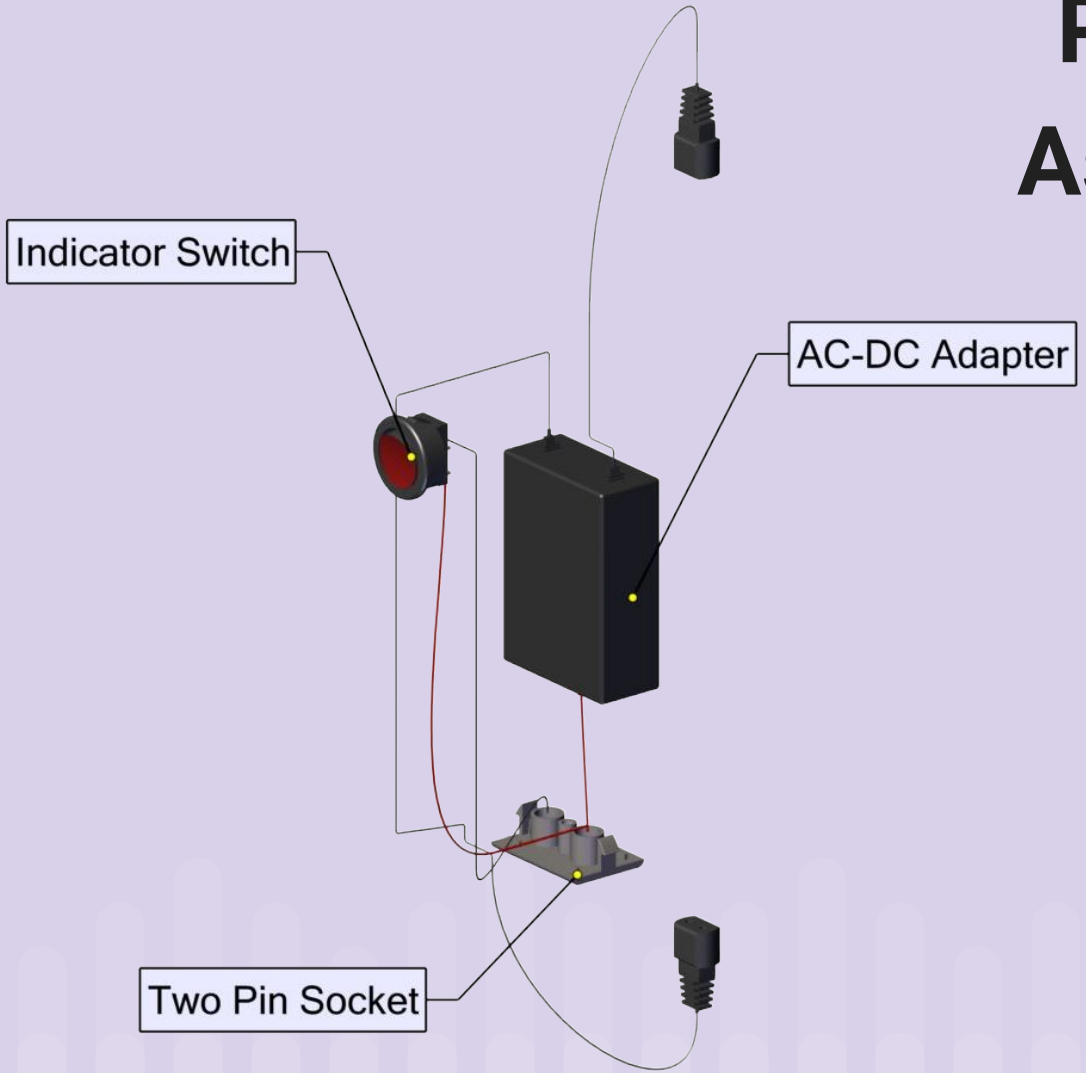
Process of Assembly -2



BOM ID	Description	Qty
1	Aluminium Foil	1
2	End Cap	2
3	Glass Tube	1
4	Rubber Bush	2
5	Tube Fixture	2
6	UV Tube(11W)	1

- Sub assembly with Glass tube, Aluminium foil & Rubber Bush
- Adding lower & upper tube fixtures
- Adding UV Tube (11W)
- Adding top & bottom end cap

Process of Assembly -2



- Make connections with male connector power supply to UV tube circuit
- Make connections with indicator switch

Flowchart | Process of Assembly -3

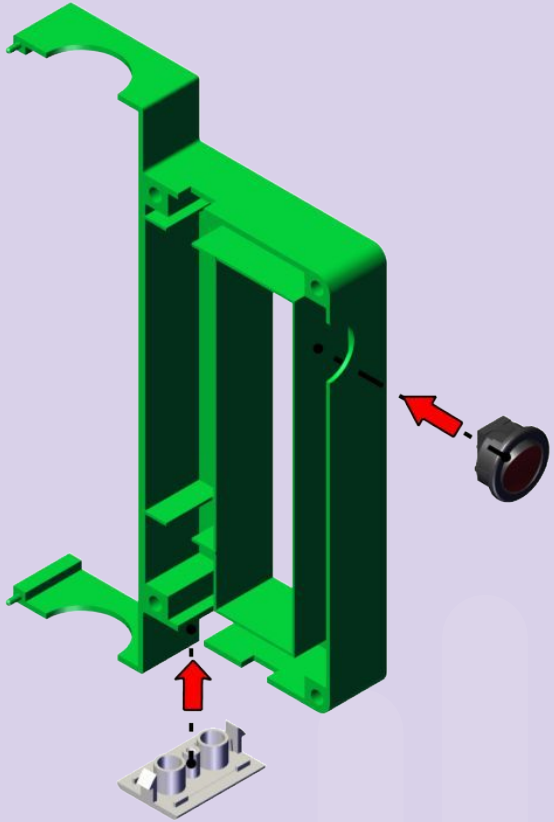
Sub assemblies

Step 1	Step 2	Step 3	Step 4	Step 5
Handle back surface sub assembly with indicator switch	Handle bottom surface sub assembly with two pin socket	AC-DC Adapter sub assembly with handle	UV Tube sub assembly with handle	Attaching fasteners with Handle

Process of Assembly -3

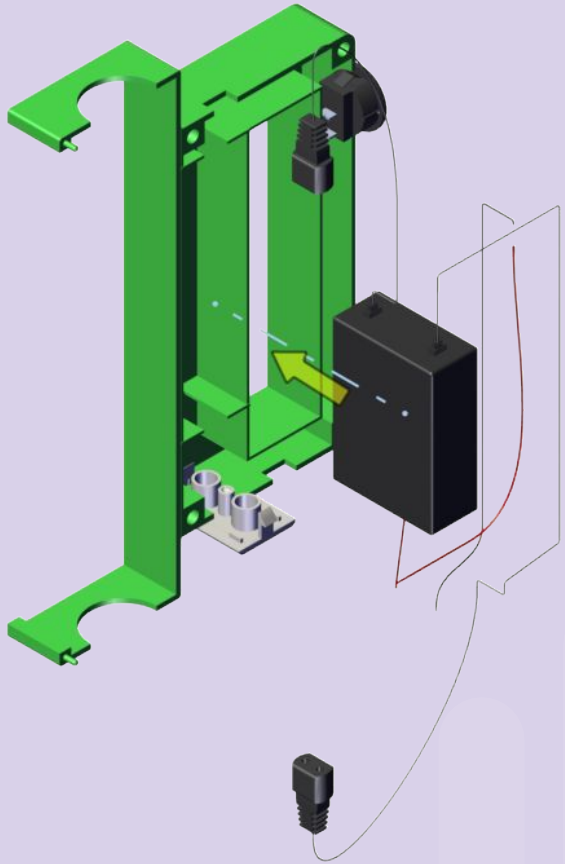
1. Handle back surface sub assembly with indicator switch

2. Handle bottom surface sub assembly with two pin socket



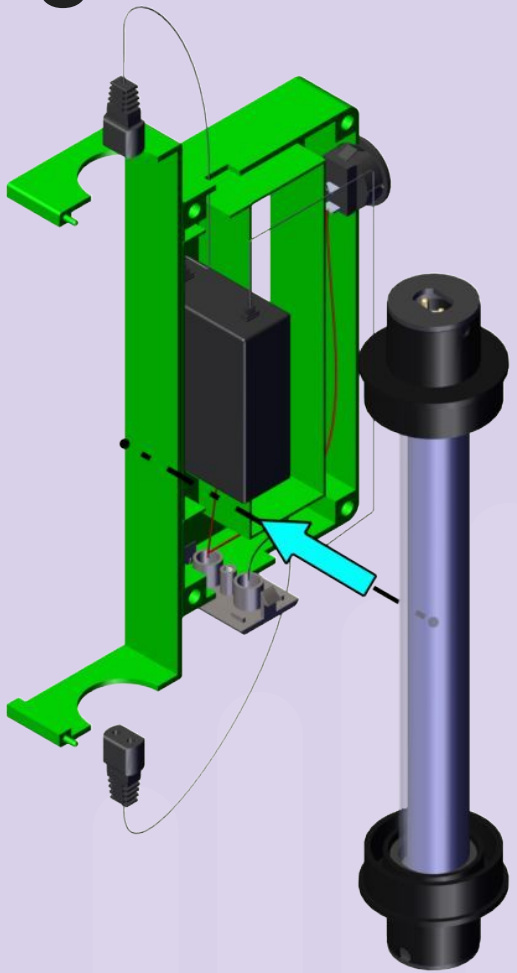
Process of Assembly -3

3. AC-DC Adapter sub assembly with handle



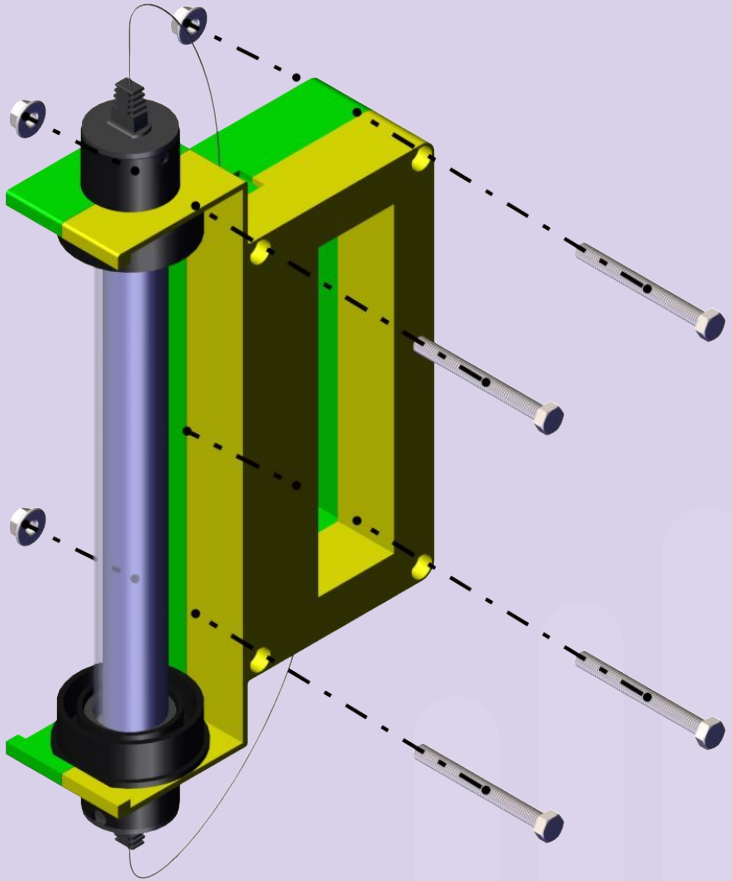
Process of Assembly -3

4. UV Tube sub assembly with handle



Process of Assembly -3

5. Attaching fasteners with Handle



Commissioning of System: Safety for usage

General Instructions

- Press fit parts to assemble the torch handle in an appropriate way
- Ensure that all add-on components are secured in their places
- Ensure that It should be the out of reach from children
- Make sure it is away from damp & wet surfaces, Place the Torch in a dry area
- Make a Electrical connections properly for UV Tube, two pin socket as well as indicator switch with AC-Dc Adapter circuit
- Ensure that the UV Tubes are functioning without any issue
- Do not expose hand, skin or any body part into the cabinet during operation of UV Tube
- After use of UV Tube please insure that indicator switch is turned OFF

Commissioning of System: Safety for usage

Operational Instructions

- Make sure that the two pin is plugged in and the main switch is ON
- Once the indicator switch is ON, the sanitization process takes 3 min complete.
- Turn OFF the indicator switch after 3 min, before you retrieve the items..

Maintenance of System

- Check electrical supply & UV tube condition for proper functioning of UV radiation.
- Check the UV tube condition after six months of use (or as recommended by the UV tube manufacturer)
- The UV tube might need to be replaced if blinking happens or tube is fused.
- Disconnect the power supply & clean up the cabinet properly once in a month.

Disclaimer

- The content in this DIY manual is the developed by Vigyan Ashram. All instructions are merely for educational purpose and to create a sharable open source D-I-Y document.
- While the information in this document has been verified to the best of our abilities, we cannot guarantee the performance. All the observations and data are taken from various experiments on system at Vigyan Ashram.
- We reserve the right to change the design. Please contact our website or our expert team for any clarification.

Thank you