V-ONE

USER MANUAL

For consumables and replacement parts, please contact our sales team or visit our online store:

✉ sales@voltera.io   📱 +1 888-381-3332 Ext. 1   🌐 voltera.io/store

For technical assistance, please reach out to our technical support team:

✉ support@voltera.io   📱 +1 888-381-3332 Ext. 2   🌐 voltera.io/support

VOLTERA

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Safety

The V-One is a precision tool for electronics prototyping. As with any such equipment, the V-One and the accompanying materials and accessories should be handled with care.

Please review the following material to ensure a safe work environment and to maintain optimal machine performance.

The V-One is not only an excellent tool for the seasoned electrical engineer but it is also a great way to teach electronics. Never leave the V-One unattended while in use and supervise young and inexperienced users to ensure safe operation.

The V-One is for use as-is. Any modifications to the machine or improper use without explicit approval and direction from Voltera may damage the machine, may cause bodily harm, and will void your warranty.

In case of emergency or prior to performing any maintenance, please ensure power cable is disconnected from the V-One.

Printing Platform
The heated bed is a multipurpose heater with a maximum temperature of 240°C that is used to dry printing materials and reflow solder paste. When the heater is on, the LEDs on either side of the V-One will glow red. While the LEDs are red, the printing platform is unsafe to touch and can cause burns. Remove any combustible materials from the area unsafe to touch and can cause burns. Remove any combustible materials from the area when heater is in use.

Printing Materials
The V-One comes with 2 mL cartridges of printing material: conductive ink and solder paste. Do not ingest and keep these materials away from mouth and eyes. Be sure to wash hands well with soap and water before eating or drinking after handling.

The conductive ink is a combustible liquid and must be kept away from heat/sparks/open flames/hot surfaces. No smoking. In case of fire, suitable extinguishing agents are: CO_2, powder or water spray. Fight larger fires with water spray or alcohol-resistant foam.

Please refer to the MSDS at voltera.io/msds for detailed information on proper handling and disposal procedures.

Sharp Tools
The accessories included with the V-One contain sharp tools such as the probe and dispensing nozzles. Always keep the tip caps on the probe and the dispenser while not in use to prevent damage to the equipment and accidental injury.

Moving Parts
The V-One is an electromechanical device with motors, gears, and belts. Keep fingers away from moving parts.

Protect the Probe
The probe is an essential accessory for dispensing. To ensure optimal performance:

- Do not drop the probe or attempt to disassemble it.
- Ensure the probe is in a safe place with the cap securely in place when it is not in use.
- Ensure the contact pads on the probe cap are clean. If necessary, use a cotton swab and use isopropyl alcohol to clean them.

Cleaning the V-One
Wet conductive ink can generally be wiped off using a paper towel or tissue. If inks get on your skin, wash thoroughly with soap and warm water. Before handling the materials, be sure to refer to the material safety data sheets available at voltera.io/msds.

Dried conductive ink that has not been baked can be cleaned by applying a small amount of isopropyl alcohol and rubbing with a paper towel.

Conductive ink that has been baked is much more difficult to remove. Apply isopropyl alcohol to a burnishing pad and rub vigorously. Repeat until the ink has been removed. Using sharp tools to remove the ink may result in damage to the surface below or injury.

The V-One uses several limit switches for self calibration. To ensure optimal performance, clean these switches regularly with a cotton swab and isopropyl alcohol. Failure to do so may result in poor dispensing quality and broken nozzles. It is recommended to perform cleaning before starting a workflow to avoid calibration errors.

Transporting the V-One
When moving the V-One, do so by lifting by the base with two hands. Avoid lifting the machine by the bridge. For long distance transportation or shipping, it is recommended to store the V-One upright in the original packaging to avoid any damage during travel.

Replacement Fuse
In the event of a blown fuse in the power inlet, contact technical support as a blown fuse may be a symptom of a more serious issue. Use the table below to select a suitable replacement.

	100-120 ACC	200-240 ACC
Ratings	5 A 250 ACC	3 A 250 ACC
Fuse Style	5 X 20 mm	
Response Time	Fast	
Approvals	IEC 60127	

Replacement Power Cable
Please check the product label on the back of the V-One before using the table below to select a suitable replacement.

	100-120 ACC	200-240 ACC
Length	>= 1,8 m	
Ratings	> 250 V, > 10A	
Termination	C 14 to Plug Type B	C 14 to Plug Style F

Prepare the Dispenser Assembly

The V-One comes with 2 identical dispensers for the 2 ink cartridges: conductive ink and solder paste. Be sure the dispenser's plunger is fully retracted before assembling. If the plunger is too far out it can push ink out during assembly.

1. Remove the dispensing cap from the cartridge sheath. Remove the green lids from the conductive ink cartridge.
2. Insert conductive ink cartridge into the sheath with the ink level visible through the viewing window.
3. Twist the dispensing unit back into the cartridge sheath.
4. Carefully twist the nozzle onto the end of the cartridge.

Run the Software

Note: The V-One may require a firmware update on startup. Do not disconnect or turn off the V-One during the firmware update!

1. Connect the V-One to your computer with the provided USB cable.
2. Turn on the V-One by pressing the power button.
3. Open the desktop application software.

Maintenance

Protect the Nozzle

The golden rule of high quality dispensing is to protect the dispensing nozzle. If the nozzle tip is dented, bent, broken, or contaminated with dry ink, print quality will suffer. To ensure optimal performance, follow the guidelines below:

- Gently wipe the nozzle with a clean tissue to remove material build-up before and after use.
- Always store the dispenser with the tip cap on to prevent accidental damage.
- When removing the tip cap, twist to loosen and then pull straight away from the nozzle.

A clogged nozzle can be identified by either no or inconsistent material flow. A clogged nozzle can be the result of many factors including improper material storage, expired material, or a damaged nozzle.
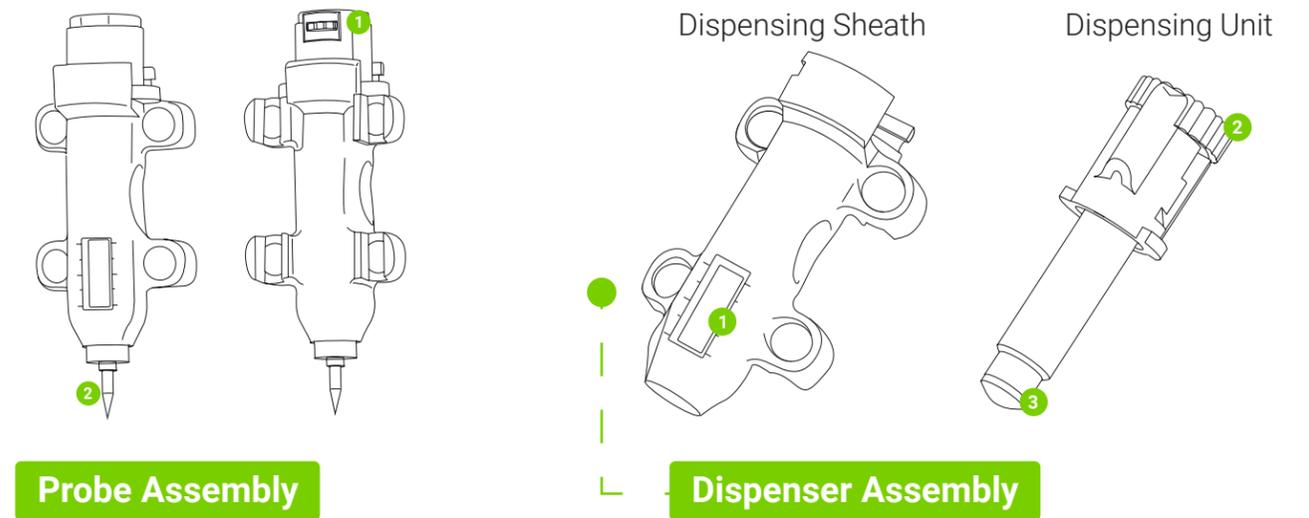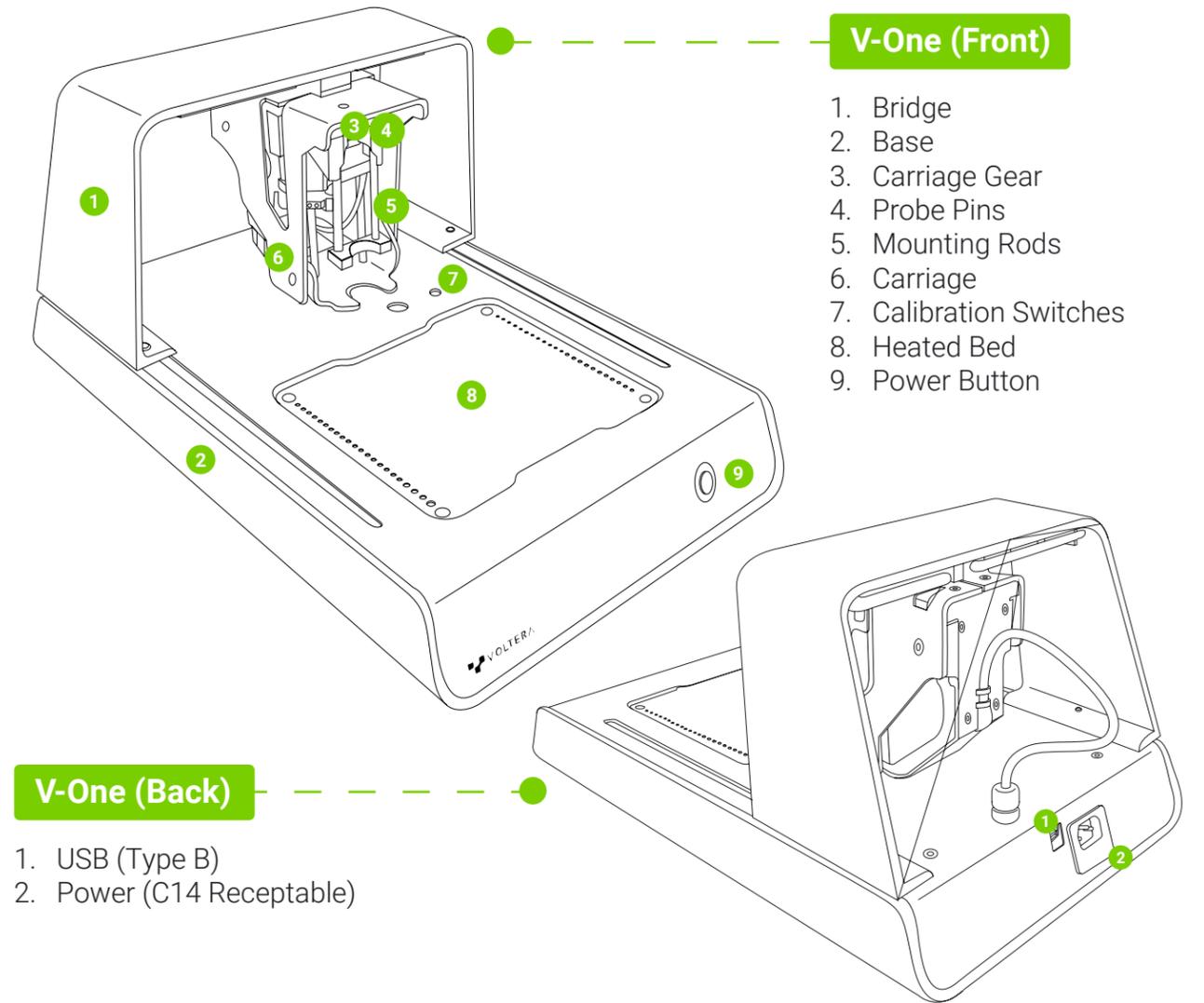
Note: Do not try to clear the clog by force. This can puncture the piston in the cartridge. Before replacing the nozzle, be sure to inspect the clogged nozzle for damage and inspect the material cartridge for its expiration date.

Refrigerate the Inks

If the inks were left out by accident, we recommend that you purge the fluid in the nozzle by manually turning the dispensing gear gently. If no fluid is coming out you must replace the nozzle.

The conductive ink and solder paste must be stored in a refrigerator or a cool place between 4-10°C (40-50°F), with caps on, to preserve their shelf life. The probe can be stored at room temperature.

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Printer Anatomy

V-One (Front)

1. Bridge
2. Base
3. Carriage Gear
4. Probe Pins
5. Mounting Rods
6. Carriage
7. Calibration Switches
8. Heated Bed
9. Power Button

V-One (Back)

1. USB (Type B)
2. Power (C14 Receptable)

Dispensing Sheath   Dispensing Unit

Probe Assembly

1. Contact Pads
2. Probe Tip

Dispenser Assembly

1. Ink Level Window
2. Dispensing Gear
3. Dispensing Plunger

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V-One Technical Specifications

Disclaimer: Voltera reserves the right to change or update the following specifications at any time without notice. Please visit voltera.io/store or contact support@voltera.io for the most up-to-date information.

Hardware

Maximum Dimensions	40 x 26 x 21 cm	16 x 11 x 9 in
Weight	7 kg	16 lbs
Environmental Conditions		
Operating Temperature	15 – 30º C	59 – 86ºF
Maximum Altitude	2000 m	1,24 miles
Relative Humidity	80%	
Pollution Degree	2	
Maximum Temperature	240ºC	464ºF
Ramp Rate	2º C/s	3,6ºF/s
Power Requirements		
Voltage	100 – 120 ACC	200 – 240 ACC
Current	4,7 A 50/60 HZ	2,5 A 50/60 HZ
Power	575W	

Software

System Requirements	Windows 7 and up(64 bit)	Mac OSX 10,11 and up
Input File Type	Gerber	
Connection Type	Wired USB	

Printer Properties

Technology	Direct-Write Dispensing	
	Magnetically Interchangeable Print Head	
Height Control	Active Height Mapping With Detachable Probe	
	20 um Repeatability	
Print Area	13,5 x 11,4 cm	5,3 x 4,4 in
XYZ Resolution	10 ; 10 ; 0,625 um respectively	
Feature Size		
Minimum Line Dimensions*	0,2mm Space/Trace	8 mil Space/Trace
Minimum Dot Diameter*	0,5 mm	0,019 in

With standard 9mil (inside diameter) nozzle

Consumables & Accessories

The items below are compatible consumables. Please visit voltera.io/store to view or purchase additional consumables.

- 2 ml Conductive Ink Cartridge
- 2 ml Solder Paste Cartridge
- 3 g Flux
- 10 g SniAg1 Solder Wire
- Precision Dispensing Nozzles - Pack of 4
- Burnishing Pad – Pack of 4
- 3" x 4" Substrate – Pack of 6
- 2" x 3" Substrate – Pack of 10
- 4" x 5" Substrate – Pack of 6

The items below are the compatible accessories. In the case of damaged or lost accessories, please contact support@voltera.io for replacements.

- Probe Assembly
- Dispenser Assembly
- Substrate Clamps
- Thumbscrews

Setting Up Your V-One

Install the Software

Drivers: Before you install the V-One software it is important to install the printer drivers. Most connection issues experienced are because the wrong drivers are being used.

- **Windows 7 and up (64-bit only)** – Visit support.voltera.io/desktop-application to download the drivers. Remember to install the drivers with administrator privileges.

- **Mac OSX 10.11 and up** – Apple's native drivers work with the V-One out of the box. There is no need to install a separate driver.

Application: Visit support.voltera.io/desktop-application to download the desktop application.

Unbox And Choose a Location For Your V-One

1. Place the V-One on a flat, level, and non-flammable surface. Be sure to position the V-One so that the power inlet is easily accessible.
2. A well ventilated area is recommended.
3. Remove all items from the box. Place the ink and solder paste in the fridge for storage.
4. Make sure you keep all packaging in case the product needs to be transported in the future.
5. Check the voltage rating on the back of the unit to make sure it matches the power provided in the country of use.
6. Connect the provided power cable to the C14 receptacle at the back of the V-One, then to an earthed socket outlet.
7. Connect the provided USB cable to the V-One, then to your computer.

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