S ONE SERIES

User Manual
Rev 001

FCC Notice

The S One cutters have been tested and found to comply with the limits for a Class A digital device, under part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This cutter generates, uses, and can radiate radio frequency energy. If not installed and used following the instruction manual, the cutter may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

DOC Notice

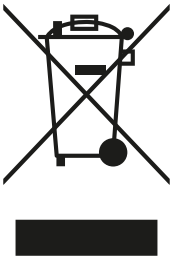
The S One cutters comply with the CAN ICES-003 Class A limits for Information Technology Equipment.

Notice

Summa reserves the right to modify the information contained in this User Manual at any time without prior notice. Unauthorized copying, modification, distribution or display are prohibited. All rights reserved.

EU Waste Electrical and Electronic Equipment (WEEE) Directive

The symbol (right) is shown on this product. It indicates that the product should not be placed in municipal waste but should be disposed of separately.
Electrical and electronic equipment can contain materials, which are hazardous to the environment and human health, and therefore should be disposed of at a designated waste facility or returned to your retailer for the appropriate recycling to take place.



If you wish to dispose of this product and the product still functions, please consider recycling/reusing it by donating it to a charity shop, selling it or exchange parts of it with your retailer.

Registering Your Cutter

Please register your cutter on the following link:

https://www.summa.com/support/product-registration/

Contact Information

All inquiries, comments or suggestions concerning this and other Summa manuals should be directed to:

Summa, nv
Rochesterlaan 6
B-8470 GISTEL
Belgium

www.summa.com

Summa America
100 Cummings Center Suite #151-G
Beverly MA 01915
USA

www.summa.com/en-us
+1-978-522-4765

S ONE

Congratulations on your purchase of the new cutter!

The S One cutters are made for sign makers, demanding only the very best cutting quality.

S One is Summa's most popular and affordable line of vinyl cutters. Their characteristics and performance match those of the most excellent cutters. They offer tracking accuracy, speed and features not found in other affordably-priced cutters.

This manual is a reference guide for installing and operating the S One Series cutters.

S ONE

Table of Contents

List of Figures

1 SETUP

1.1 Safety

1.1.1 General

The purpose of the user's manual is not only to explain the operating procedures of this machine, but it also provides the owner, users, and operators with precaution procedures for safe and proper machine operation for its intended purpose. All information in this manual must be read and understood before any attempt is made to operate the machine.

The manufacturer has no direct control over the machine operation and application. Proper safety practice is the sole responsibility of the owner, user, and operator. All instructions and safety warnings in this manual are based upon the use of this machine under proper operating conditions without alterations from the original design.

Any use of the cutter that is beyond the capabilities of the combination knife/material is considered as improper use and may result in injury and serious damage to the machine and will lead to loss of warranty.

1.1.2 Symbols used in the manual

	Warning with dark (red) symbol: Refers to immediate threat that can cause serious injuries and effects on health and safety.
	Warning with light (yellow) symbol: Refers to a dangerous situation that can cause injuries and serious damage to the machine.
	Attention with dark (red) symbol: Refers to useful information to prevent damage to the equipment and prolong the service life of the machine.
	Attention with light (yellow) symbol: Refers to useful tips to enhance the user-friendliness and make the work significantly easier.
	Note: Can be considered as a general tip; something that is useful to know.

1.1.3 Safety precautions

WARNING: This equipment is not suitable for use in locations where children are likely to be present.

WARNING: The S One cutters use razor-sharp knives. Touching the knife with bare hands may cause injury. Do not touch the knives while the machine is cutting.

WARNING: There is a risk of injury from being caught or trapped in moving machine parts.
Keep hands, hair, clothing and jewellery away from moving parts. Do not wear jewellery, loose clothing, scarves, open jackets or shirtsleeves.

The entire base plate should be considered as a dangerous area when the cutter is switched on and off. The tool carriage can move from the left to the right and the media grit rollers are sharp and can grab loose objects, clothing or body parts.

NOTE: Make sure to observe all the caution labels on the cutter.

The cutter constantly measures the current through the motors. If the machine detects the current is too high, then the current will be cut off to the motors and a fatal error message will be displayed on the control panel.

There are no user-serviceable parts inside the S One cutters. For servicing refer to qualified personnel only.

Turn off the cutter and contact a service representative in any of the following cases:

- There is visible mechanical damage.
- The power cord is damaged.
- The cutter has been damaged by an impact.
- Liquid was spilt on the cutter.
- There is a strange noise, smoke or an unusual smell coming from the cutter.
- The cutter has been dropped.

1.1.4 Electrical shock hazard

1.1.4.1 Grounding ("Earthing")

WARNING: The wall sockets, into which the cutter is plugged-in, must be of the grounded type. The grounded conductors, serving the wall socket, must be properly connected to the ground.

For emergency access, the cutter should be installed near the socket-outlet for easy access.

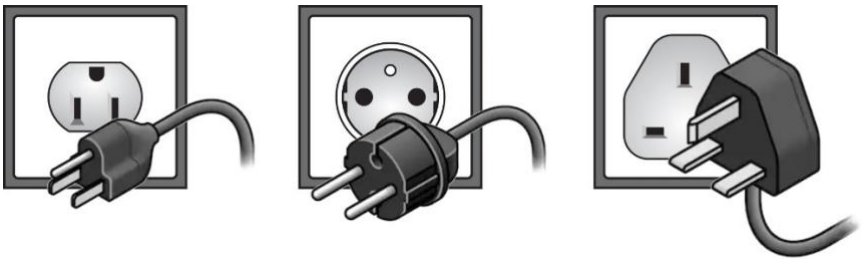


FIG 1-1
EXAMPLE OF PROPERLY GROUNDED PLUG-SOCKET COMBINATION

1.1.4.2 Operating voltage

The power supply detects the line voltage and switches automatically between 100V and 240V.

WARNING: The built-in power supply operates at hazardous voltages capable of causing serious injury or death. Unplug the equipment when not used for an extended period.

Fuse Rate: T2A H250V.

WARNING: Before changing the fuse(s), make sure that the cutter is completely disconnected from its power source.

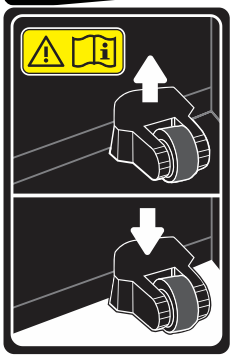
WARNING: For continued protection against the risk of fire, replace only with the same type and rating of fuses.

1.1.5 Warning labels on the machine

Fuse caution label. For continued protection against the risk of fire, replace the fuse only with the same type and rating of the fuse.

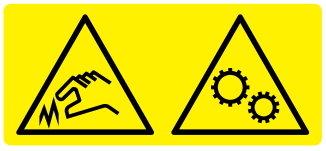
Double pole/Neutral fusing

This label is located near the power inlet, at the rear.



Caution: Always leave the pinch rollers in the upper positions when the cutter is not in use.

This label is located on the right side plate.



The S One cutters use razor-sharp knives. Touching the knife with bare hands may cause injury.

Hazardous moving part. Keep your fingers and other body parts away from this area.

This label is located on cutting head.

1.1.6 Operating environment

Environmental conditions can significantly affect the machine's performance.
The environmental conditions of the machine (without media) are as follows:

Operating Temperature	15 to 35° C	59 to 95° F
Storage temperature	-30 to 70° C	-22 to 158° F
Relative humidity	35 - 75 %, non-condensing	35 - 75 %, non-condensing

The environmental conditions of the used media may be stricter than those of the machine itself. Please refer to the documentation about the used media.
Moreover, make sure that the media has had enough time to acclimatize.

NOTE: Keep the cutter away from direct sunlight or a strong indoor light source. The optical sensors in the machine may be affected, thus causing unexpected behaviour of the cutter.

1.2 S One Cutter Components

1.2.1 The Cutter as viewed from the front

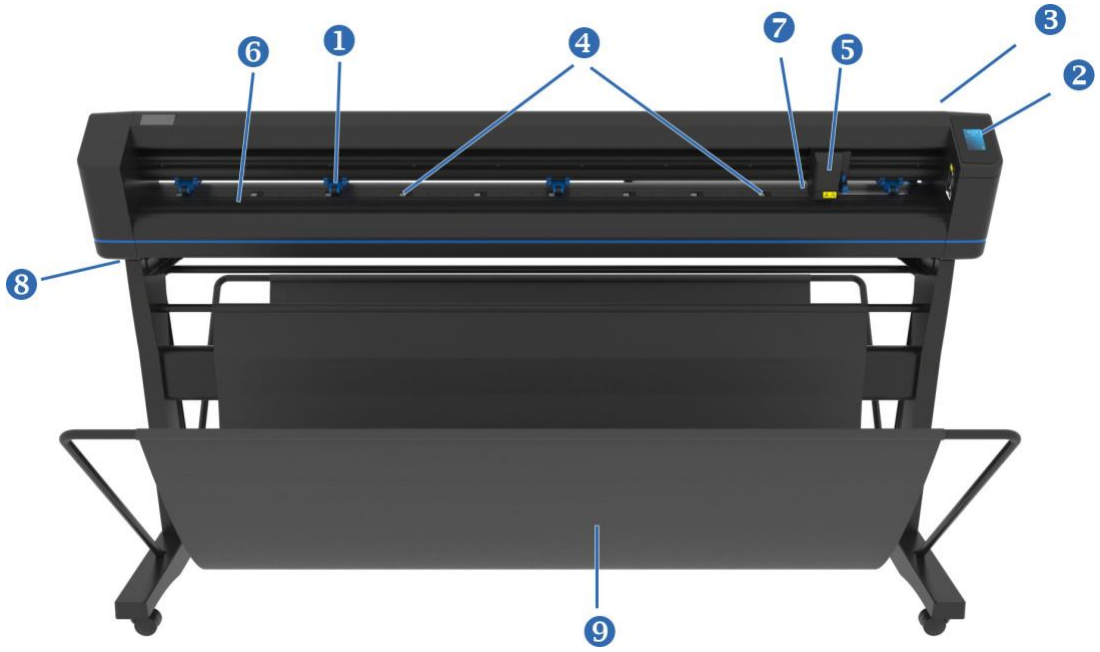


FIG 1-2
S ONE CUTTER FRONT VIEW

1. **Pinch rollers:** The pinch rollers clamp the media to the grit rollers to ensure accurate tracking. Larger models have one or two extra pinch rollers to ensure that wide media stays flat in the middle. The extra rollers in the middle can be enabled or disabled.
2. **Touchscreen:** All cutter activity can be initiated from the touchscreen. It displays information about the cutter's current status and/or actions that need to be taken.
3. **Pinch roller lever:** This lever is used to raise and lower the pinch rollers for media loading.
4. **Media grit rollers:** The media grit rollers only move the media when the pinch rollers are in the "down" position. The larger the model, the more small sleeves.
5. **Tool carriage:** The tool carriage is the mount for the knife holder, pen or pouncing tool. It also holds the Optical POSitioning sensor (OPOS).
6. **Cutting strip:** A self-healing orange strip helps avoid any damage to the knife tip when no media has been loaded. Since cutting is done on the cutting strip, the strip must remain intact.
7. **Media sensor:** A media sensor behind the right sleeve is used to detect the end of the loaded media.
8. **Screws to secure the cutter base:** Make sure all screws are secured at each side before the cutter is used.
9. **Media basket** to recover the cut material.

1.2.2 The Cutter as viewed from the back

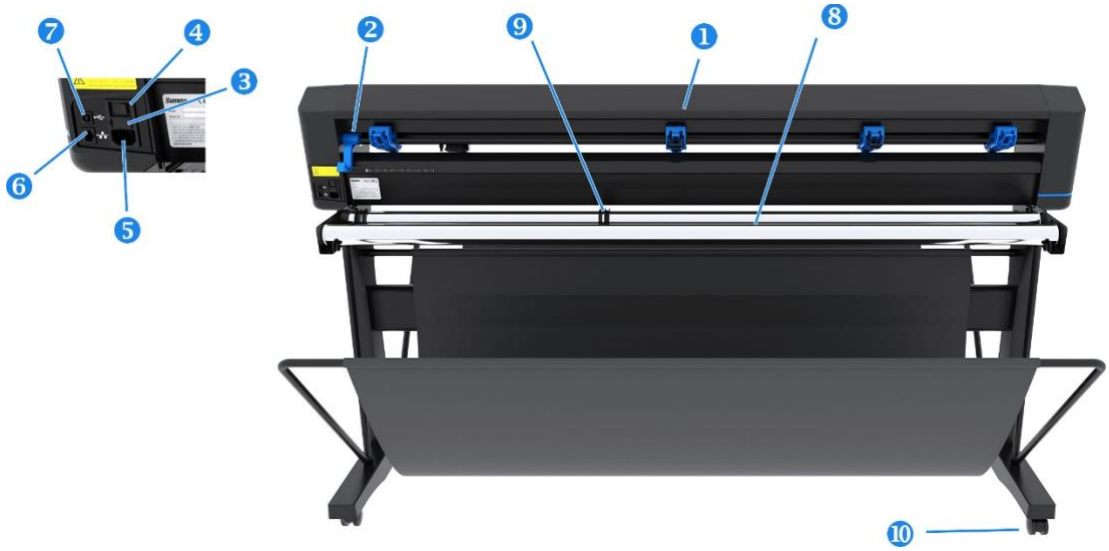


FIG 1-3
S ONE CUTTER REAR VIEW

1. **Pinch rollers:** The pinch rollers clamp the media to the drive system to ensure accurate tracking. The D120 has one and the D140 and D160 have two extra pinch rollers to ensure that wide media stays flat in the middle. The extra rollers in the middle can be enabled or disabled.
2. **Pinch roller lever:** This lever is used to raise and lower the pinch rollers for media loading.
3. **The fuse box:** The fuse is located at the right side of the power entry module. Check the specification section to see which fuse is used in the S One cutter.

   WARNING: For continued protection against the risk of fire, replace only with the same type and rating of the fuse.
4. **Power On/Off switch:** This rocker switch, situated in the middle of the power entry module, sets the cutter's power to ON or OFF. To switch on the power, press the "I" side of the rocker switch. To switch off the power, press the "O" side of the rocker switch.
5. **AC power cord receptacle**: It is located on the left-hand side of the power entry module. The power-up procedure is explained in detail in section 1.3. Always use a power cord that was delivered with your cutter.
6. **USB port:** This interface is based on the standards specified in Universal Serial Bus Specifications Revision 1.1. It allows high-speed bi-directional communication between the host computer and the cutter.
7. **Ethernet port RJ45:** For connecting the cutter to the LAN.
8. **Media support rollers:** Rotating support rollers for the media roll.
9. **Roll media core holders:** The two core holders serve to keep the media roll in place when media is pulled from the roll.
10. **Casters:** The casters on the stand are equipped with locking brakes. Once the cutter has been moved to its new location, press the brakes with your foot to lock the casters.

1.3 Powering-on the cutter

WARNING: Make sure the power switch is turned off before connecting the power cord (the "0" side of the ON/OFF rocker switch should be pressed).

WARNING: Do not use the power cord if it is visibly damaged. Disconnect the power cord by pulling the **plug**, not the **cable**.

WARNING: Keep fingers and other body parts away from the cutting area. There are **hazardous moving parts**.

1. Plug the female end of the AC power cord into the receptacle, located in the power entry module on the cutter's rear panel.
2. Plug the male end of the AC power cord into a properly grounded wall socket.
3. Power on the cutter by pressing the "I" side of the ON/OFF rocker switch, located on the power entry module on the rear panel.
4. The touchscreen will activate, and the initialization process will begin. If media is loaded, then the cutter will check the size and load the media.

FIG 1-4
MEDIA IS LOADED AND THE CUTTER IS READY

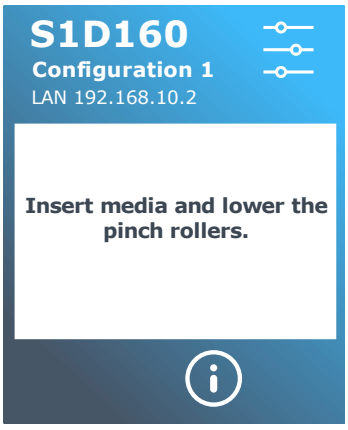


FIG 1-5
CUTTER IS READY AND NO MEDIA IS LOADED

1.4 Connecting the Cutter to a Computer

The S One cutters support Ethernet and USB connectivity. When both ports are connected at the same time, the port that receives the data first will remain active and the other port will be deactivated.

1.4.1 USB connection

The USB cable should be 5 meters (16 feet) or less in length. The connector on the cutter side of the cable should be USB series B 4-pin. The connector on the computer side of the cable should be USB A 4-pin.

1.4.1.1 Connecting the S One cutter to a PC, using a USB cable

ATTENTION: When installing a cutter, make sure the user has administrative rights and UAC is deactivated or set it to its lowest level.

1. Power-off the cutter.
2. Go to www.summa.com/en/support/software-firmware and download and install the USB device driver for the S One cutter.
3. Wait for the driver to install.
4. Connect one end of the USB cable to a USB port on the computer.
5. Connect the other end of the USB cable to the USB port on the back of the cutter.
6. Power on the cutter and return to the computer.
7. The Found New Hardware Wizard should appear on the computer screen and install the USB driver.
8. Click "OK" and follow the instructions, provided by the Wizard.
9. Restart the computer.

ATTENTION: When connecting a cutter to a computer for the first time, using the USB cable, the computer will detect the cutter and install the USB driver if the setup program was run. If the setup program was not run before connection, then install the program while the cutter is connected and switched on. After the program has run, the computer will detect a new device and install the correct driver automatically.

NOTE: To connect more than one cutter to one computer, see the section 4.5.3

1.4.1.2 Connecting the S One cutter to a Mac, using a USB cable

- Mac OSX

Most recent cutting software does not need a driver installation when a computer is connected to the cutter. The software that controls the driver is built into the cutting software.

1.4.2 Wired Ethernet connection

ATTENTION: The Ethernet cable should be a shielded CAT6 Ethernet cable.

A couple of parameters need to be set when connecting a cutter to the Ethernet. It is best to ask the network administrator whether a static address is needed or if a DHCP server is used. If a static address is used ask for the address and the subnet mask.

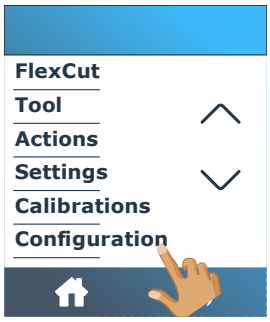
1.4.2.1 Use static address:

The static address that you received will be used in the software to drive the cutter. It has also to be set in the cutter itself.

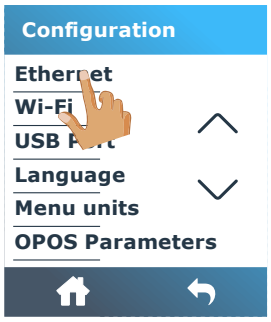
NOTE: It is recommended to use a static IP address.

1. Connect the Ethernet cable and power on the cutter (see section 1.3).

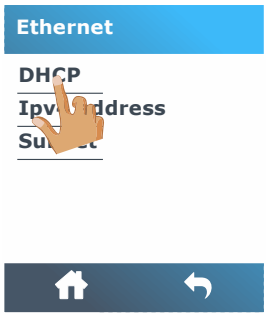
2. Press icon.



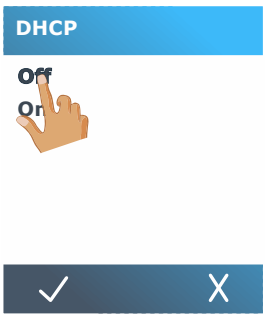
3. Scroll down with arrow and press Configuration.



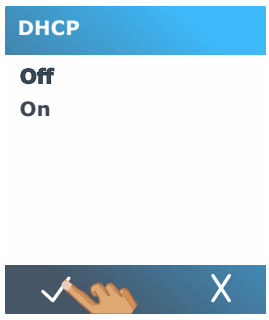
4. Press Ethernet.



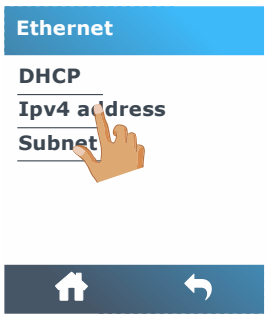
5. Press DHCP.



6. Press Off.



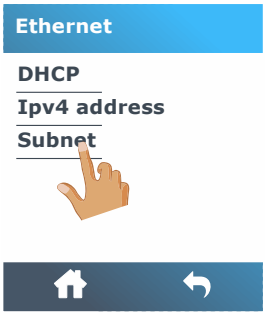
7. Press to confirm.



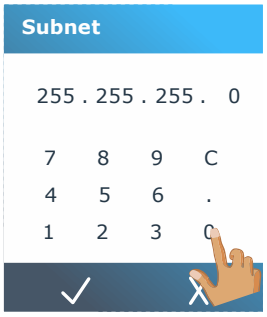
8. Press IPv4 address.

9. Set the address correctly.

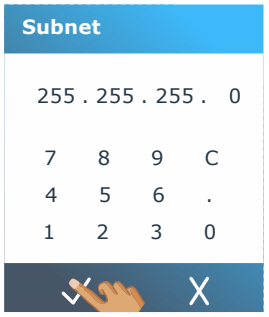
10. Confirm by pressing ☑.



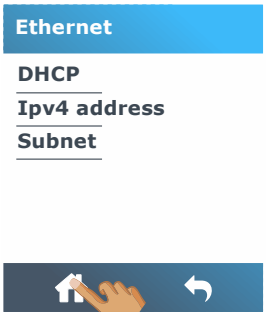
11. Press Subnet.



12. Set the address correctly.



13. Confirm by pressing ☑.

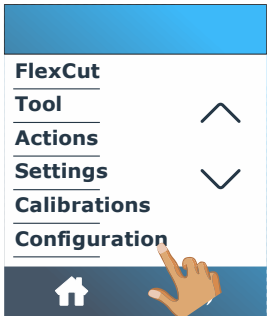


14. Press  to leave.

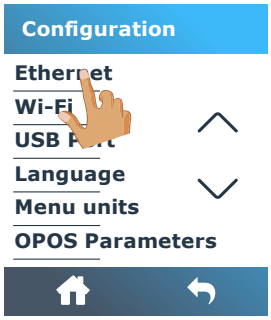
15. Reboot the cutter.

1.4.2.2 In case the DHCP server is used:

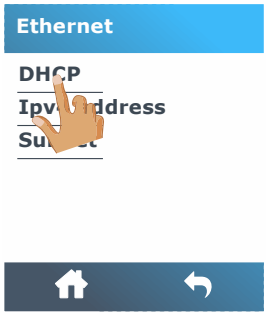
1. Connect the Ethernet cable and power on the cutter (see section 1.3).
2. Press  icon.



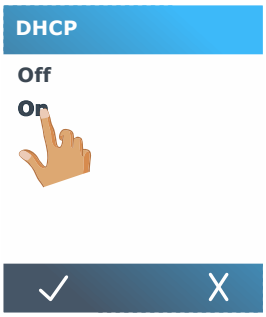
3. Scroll down with the arrow and press Configuration.



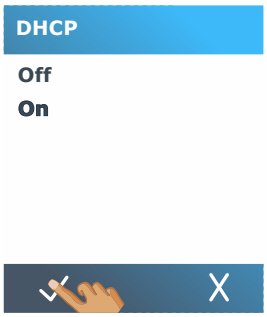
4. Press Ethernet.



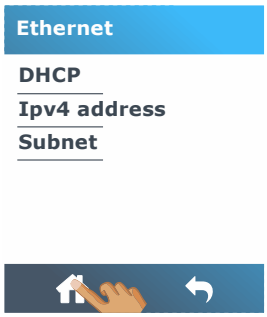
5. Press DHCP.



6. Press On.



7. Press  to confirm.



8. Press  to leave.
9. Reboot the cutter.

The assigned IP address should now be visible in the status and can be used in the cutting software.

NOTE: If the DCHP server is used, then the IP address that is assigned to it can be changed if the cutter is not used for a time longer than the lease time set in the DHCP server (check with your IT admin for details).

1.4.3 Wi-Fi (optional – region dependent)

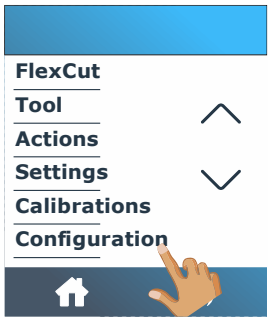
NOTE: The Wi-Fi option is standard not activated. It must be activated with a code. The code also activates the barcode option. Check section1.7. for activation.

The S One can have a Wi-Fi connection as an option in certain parts of the world. If you live in a region where Wi-Fi is not an option, then the message "Wi-Fi not available in your region" will appear.

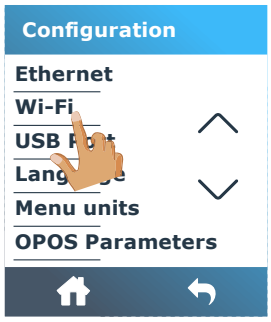
1.4.3.1 Default setting

Wi-Fi is default set to use DHCP so the only thing that has to be done is connect to the correct Wi-Fi network that is broadcasting its SSID (network name).

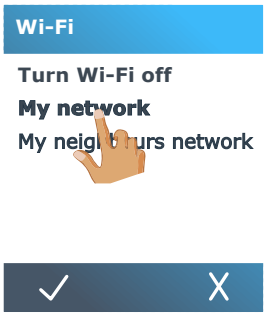
1. Power on the cutter (see section 1.3).
2. Press  icon.



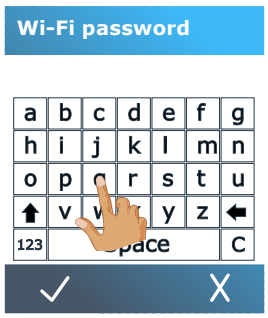
3. Scroll down with arrow and press Configuration.



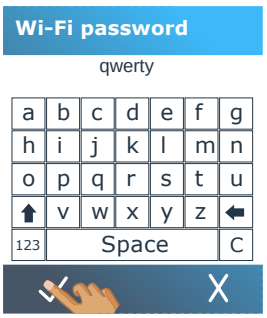
4. Press Wi-Fi.



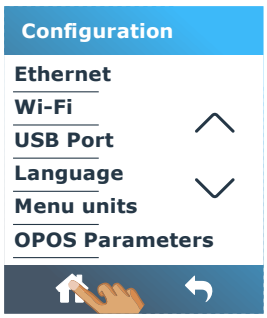
5. Press on the correct network.



6. Fill in the password.



7. Press ☑ to confirm.



8. Press  to leave.

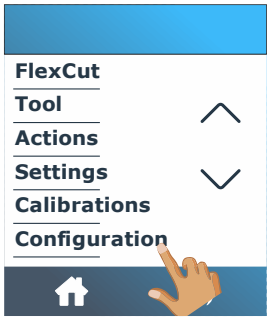
1.4.3.1 Fixed IP address setting

Ask the network administrator for the address and the subnet mask if a static address is used.

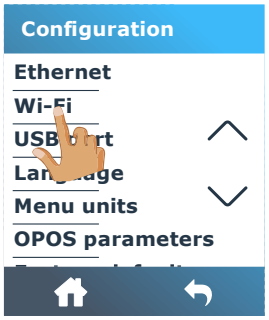
NOTE: It is recommended to use a static IP address.

1. Power on the cutter (see section 1.3).

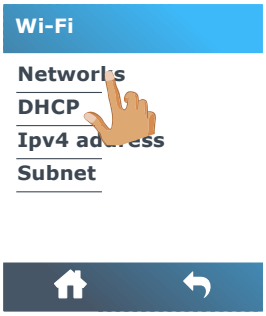
2. Press icon.



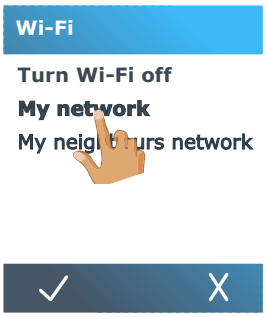
3. Scroll down with the arrow and press Configuration.



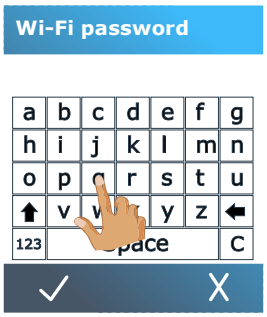
4. Press Wi-Fi.



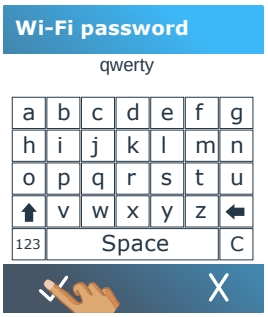
5. Press Networks.



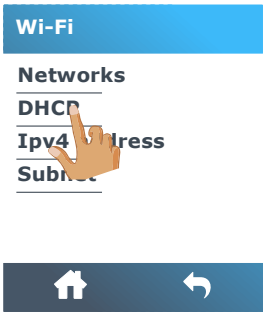
6. Press on the correct network.



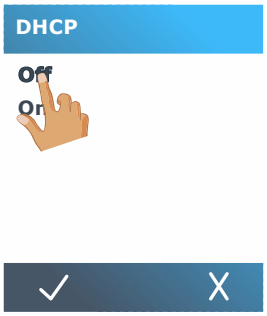
7. Fill in the password.



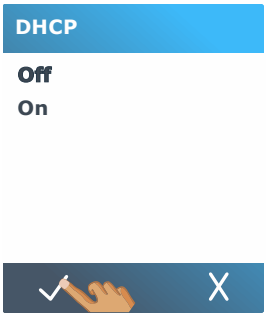
8. Press ☑ to confirm.



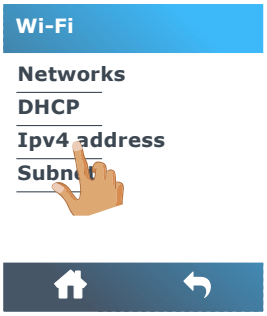
9. Press DHCP.



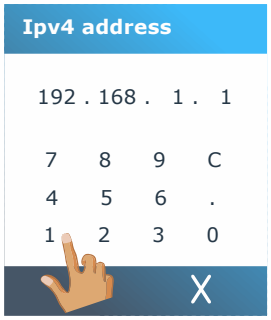
10. Press Off.



11. Press ☑ to confirm.

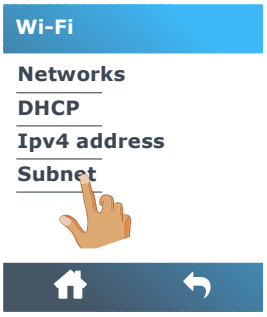


12. Press IPv4 address.

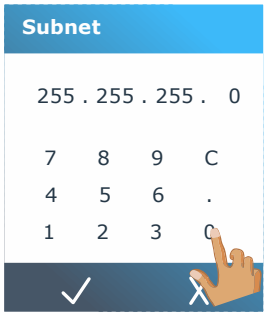


13. Set the address correctly.

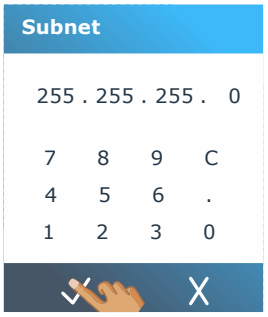
14. Confirm by pressing ☑.



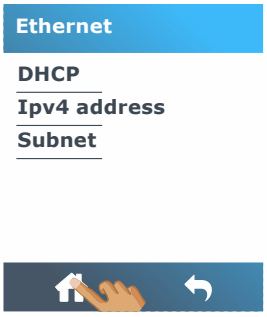
15. Press Subnet.



16. Set the value correctly.



17. Confirm by pressing ☑.



18. Press  to leave.

1.5 Loading Media

The following procedures mainly apply to the use of roll media. If you are using sheets, there are two options:

1. For long sheets: roll up the sheet, so that the alignment is identical to the one of a roll.
2. For short sheets: the alignment is not so important. If the sheet is cut off perpendicularly, it can be aligned to the front border.

1.5.1 Pinch roller positioning

Proper movement of the media will only occur if the media is driven by the two outer pinch rollers, which are correctly located over two grit rollers.

The pinch rollers are lowered or raised simultaneously using the pinch roller lever arm, located on the right-hand side of the cutter. The pinch rollers must be lifted to allow vinyl loading, during which the media is fed from the rear of the cutter to the front. When raised, the pinch rollers can be moved manually to the left or the right along the pinch roller shaft.

ATTENTION: Always make sure that the pinch rollers are fully raised before sliding them to the left or right.
Always hold the assembly at the side of the pinch roller to move it from left to right. Do not reposition the pinch roller by holding the assembly at the rear of the machine.

The pinch rollers MUST be positioned correctly and lowered onto the media before an automatic load sequence is initiated. Make sure all the pinch rollers are positioned above a grit roller. The outer left pinch roller should be positioned in one of the detents (click position), situated right under a white triangular label. The outer right pinch roller should be positioned somewhere over the long grit roller. Click positions are located at the edges of the grit roller (area marked with a white triangular label).

FIG 1-6
POSITION PINCH ROLLER

ATTENTION: Always leave the pinch rollers in the "up" position when the cutter is not in use. Leaving the pinch rollers in the "down" position for a long time will result in a flat spot in the pinch rollers, which will seriously [negatively] affect tracking performance and cutting quality.

NOTE: When the pinch rollers are raised during a job, the cutter will immediately stop and move the carriage to the right side.

1.5.2 Loading media

1. Raise the pinch rollers using the pinch roller lever arm, which is located at the right-hand side of the cutter, next to the touch panel.

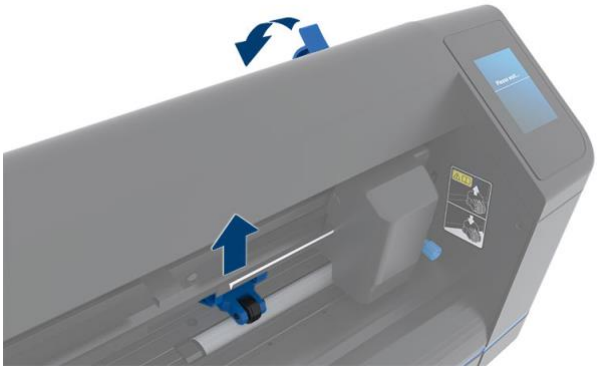


FIG 1-7
PINCH ROLLER LEVER

2. Loosen the knobs on the two media core holders. The following illustration shows a loosened core holder ❶ and a tightened core holder ❷.

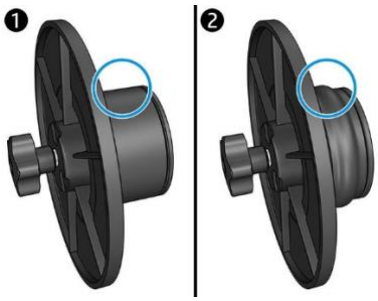


FIG 1-8
CORE HOLDERS

3. Insert a loosened core holder into one end of the media roll and tighten the knob. Verify that the core holder is secure. Then do the same at the other side of the roll.

4. Place the roll with core holders on both sides on the media supply rollers. Set the core holders inside the groove of the core holder guide. The core holder guides can be moved laterally on the roller.

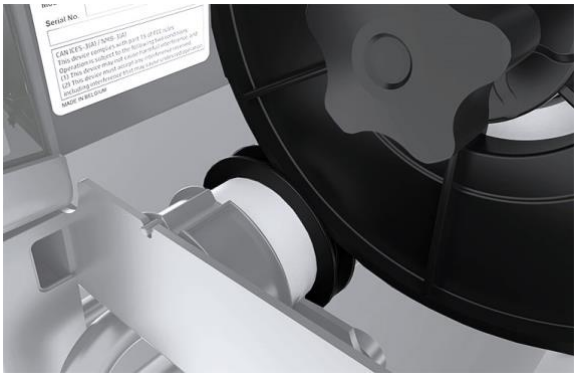


FIG 1-9
POSITION MEDIA CORE HOLDER CUTTER

ATTENTION: If the core holders are not used (not recommended – tracking is not guaranteed), then make sure that the roll is situated between the two core holder guides.

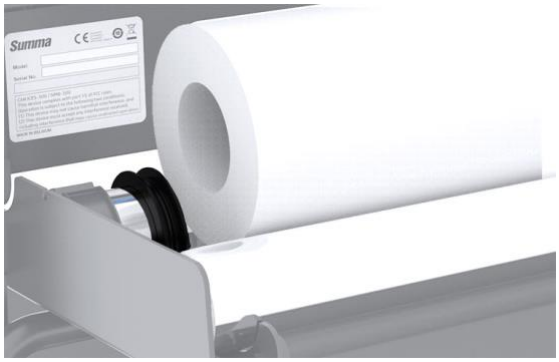


FIG 1-10
FEEDING ROLL MEDIA WITHOUT USING THE CORE HOLDERS

5. Start feeding the media from the rear of the machine. Pass the media underneath the pinch rollers towards the front of the machine.

6. Position the left media edge on the left-most grit roller and check whether the right media edge is positioned over the long grit roller. Then position the left and right pinch rollers.

   The pinch rollers should be positioned over the grit rollers about 3 to 15 mm (0.1" to 0.6") away from the media's outer edges (1). Then pull on the media while holding the core holder at the back, so the media is tight.

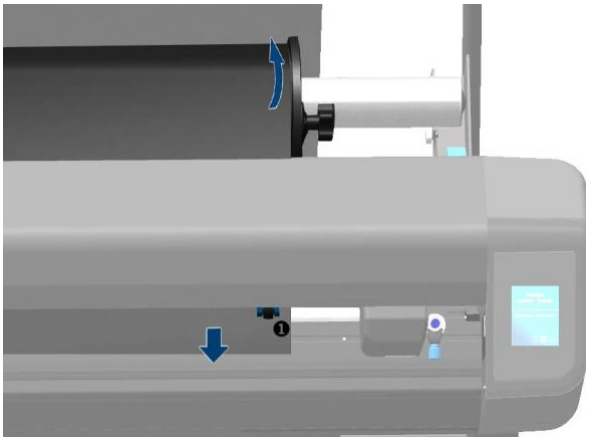


FIG 1-11
MEDIA POSITION

In circumstances where the above procedure does not work, because the media is too narrow to reach the long grit roller, try positioning the left media edge over the second left grit roller and position the right media edge somewhere over the long grit roller. Continue moving the left pinch roller towards the long grit roller until both pinch rollers are in their designated position and directly over the edges of the vinyl.

In all cases, both edges of the media must cover a grit roller. If this is not the case, reposition the material roll to cover the grit roller.

7. Make sure the media follows a straight path from the material roll. To accomplish this, slide the media roll and core holder guides from the left to the right along the media support rollers.

WARNING: Keep fingers and other body parts away from the cutting area. There are **hazardous moving parts**.

8. Lower the pinch roller lever to press the media firmly against the grit rollers. After one second the tool carriage automatically moves from the right to the left to sense the usable media width.

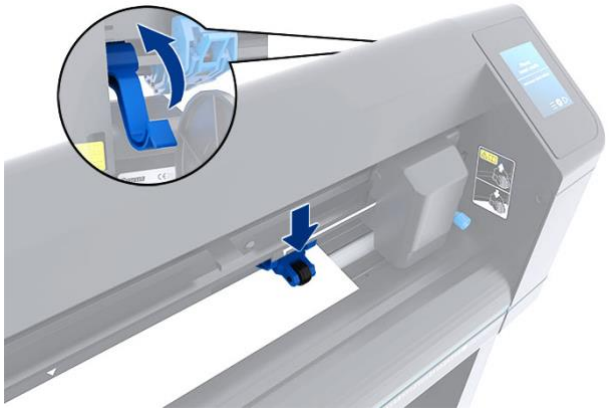


FIG 1-12
PINCH ROLLER LEVER

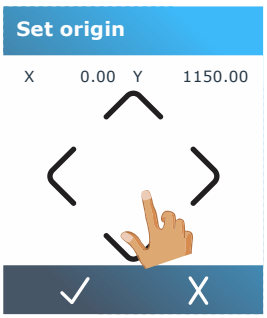
ATTENTION: It is not recommended to unroll the media manually from the roll. The cutter will unroll the media automatically during the load sequence.

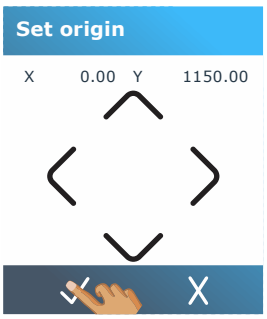
9. The positioning and routing of sheet material are identical to that of roll media.

10. The cutter is now operational.

➢ ***Changing origin.***

1. Power on the cutter and load the media.





2. Press the icon.

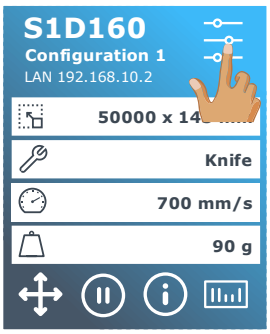
3. Use the arrows to change the origin. The value next to Y is the width that is left.

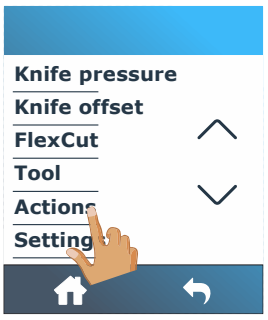
4. Press to confirm the new origin.

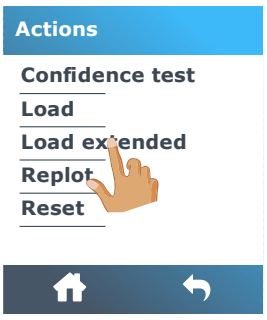
➢ ***Extended load.***

The function extended load makes it possible to define the limits of the Y-axis so that the cutter can cut outside the pinch rollers.

1. Power on the cutter and load the media.



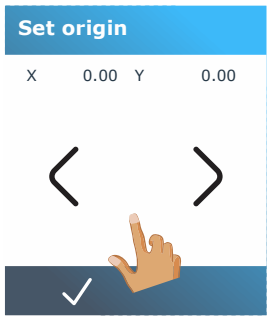




2. Press the icon.

3. Press Actions.

4. Press Load extended.



5. Set the origin with the arrows and press to confirm.

6. Set the size with the arrows and press to confirm.

ATTENTION: Tracking is not guaranteed when using this mode.

1.6 Tool Installation

WARNING: The S One cutters use razor-sharp knives. To avoid serious injury, be careful when installing, removing or handling the knife!

1.6.1 Knife installation

A knife has been pre-installed in the cutter.
For safety reasons, the knife depth has been set to zero. Simply turn out the knife (see fig 1-22 yellow arrow clockwise) to start cutting. Below is the complete description of the knife removal and knife installation.

1.6.1.1 Removing the drag knife

1. Loosen the head clamp screw and remove the knife holder from the clamp.

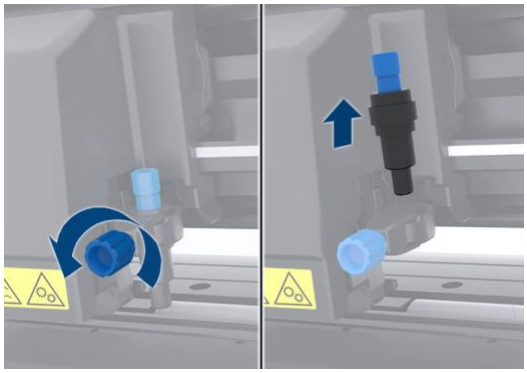


FIG 1-13
REMOVING THE DRAG KNIFE HOLDER FROM THE CLAMP

2. Turn the knurled adjustment knob ❶ clockwise to push the knife ❷ out of the holder ❸.

FIG 1-14
REMOVING THE KNIFE FROM THE STANDARD DRAG KNIFE HOLDER

3. Carefully pull the knife from the holder.

1.6.1.2 Installing the drag knife

1. Remove the aluminium piece from the plastic knife holder (5) by turning the knurled adjustment knob (3) counterclockwise until the aluminium piece comes out of the holder.
2. Insert the conical, non-cutting end of the knife into the opening in the narrow end of the holder. Gently push the knife in.
3. Turn the holder upside down and tap it lightly on a solid surface to ensure the knife is completely inserted.
4. Slowly turn the knurled knob clockwise until the tip of the blade extends the distance required for the desired cutting media (t), as shown in the figure below.

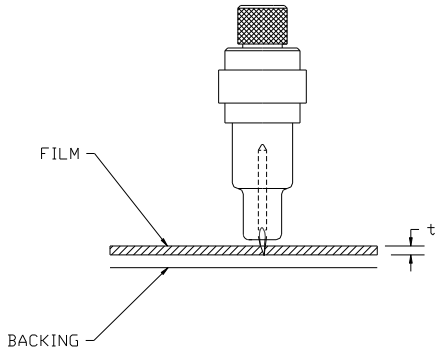


FIG 1-15
KNIFE LENGTH ADJUSTMENT

5. Insert the knife holder into the head clamp and push it down (1).

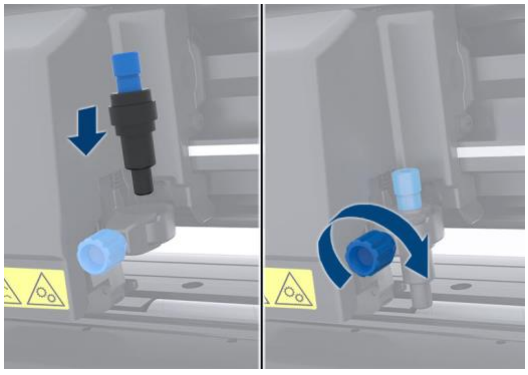
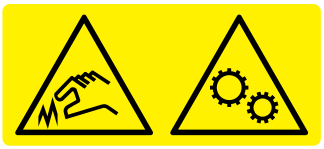


FIG 1-16
CLAMP DRAG HEAD

6. Tighten the clamp screw (2).

1.6.1.3 Setting knife depth and pressure:

(Media must be loaded in the cutter before the knife pressure can be tested).



WARNING: Each keystroke can initiate an internal test or movement of the head or media. Keep fingers and other body parts away from the cutting area. There are hazardous moving parts.

1. Power on the cutter and load the media.

2. Press pressure

3. Press the arrow up or down to change the value.

4. Or fill in the new value

1. Press  to perform the internal knife pressure test.
2. Press  to confirm the chosen knife pressure.
3. Press  to leave the pressure unchanged.

Once  is pressed, the current knife pressure value will be automatically set to the new value and the cutter will cut the knife pressure test pattern.

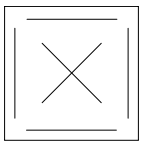


FIG 1-17
KNIFE PRESSURE TEST PATTERN

Peel out the rectangle and inspect the media backing.

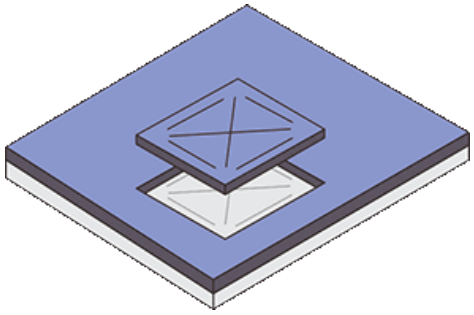


FIG 1-18
PEELED KNIFE PRESSURE TEST PATTERN

The knife depth is set correctly when the test pattern cuts completely through the vinyl, the vinyl is removed and the blade tip visibly scratched the front side of the media backing. The blade should never cut through the backing; just slightly scratch the silicon coating and first few fibres of the backing material.

Because the knife pressure setting depends on the thickness and type of media to be cut, adjusting the knife pressure will require some practice. In general, the knife depth must be increased when using thicker types of vinyl and decreased when using thinner types of vinyl.

ATTENTION: After setting the cutting depth and/or the knife pressure, perform a thorough visual check of the knife blade, protruding from the knife holder and test the cutting results on a scrap of vinyl media.

CAUTION: Do not operate the cutter if the knife blade cuts through the media backing, as this will seriously damage the cutter's rubber cutting strip and the knife.

CAUTION: For most vinyl cutting operations, the knife blade tip will be barely visible at the bottom of the knife tool. If the knife blade tip is visible, then the cutting depth must be readjusted.
To prevent damage to the cutter, check the depth of the knife blade tip and the quality of the cut each time you load a different type of vinyl into the cutter.

1.6.2 Pen installation

The S One cutters can also be operated with a kind of plotter pen. After replacing the knife with a pen, the cutter can be used as a plotter to draw draft plots of new or existing designs on paper.

1. Loosen the head clamp screw and remove the tool from the clamp.
2. Install the pen in the clamp and tighten the clamp screw.
3. The change of tool can either be done on the touch panel, with Summa Cutter Control (PC only) or with the cutting software.

Selecting pen operation disables the knife offset correction and changes the pressure to "pen pressure."

ATTENTION: The information on the touchscreen shows the currently selected tool by the cutter. Make sure the cutter's tool setting matches the actual tool in use.

FIG 1-19
KNIFE IS CHOSEN TOOL

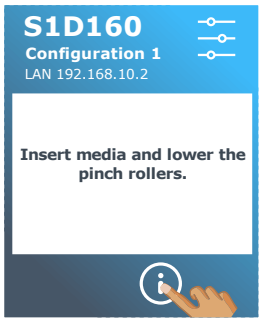
FIG 1-20
PEN IS CHOSEN TOOL

1.7 Activation of extra features

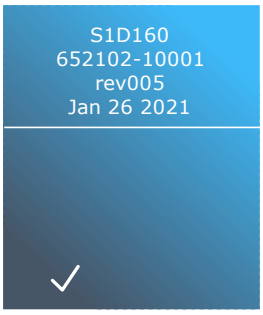
The barcode function and Wi-Fi option are both options that need to be activated before they can be used.
The activation happens through our website (www.summa.com/support/product-registration). The serial number of the cutter is needed for this activation. The serial number can be found on the serial number label on the back of the cutter or in the system setup menu. It is recommended to get the serial number directly from within the system setup menu.

Step one: obtaining the serial number

1. Power on the cutter.



2. Press the icon.

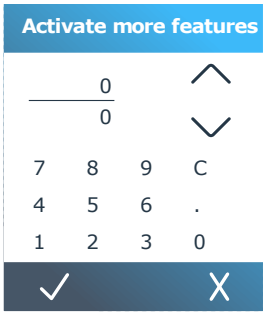


3. Write down the serial number.

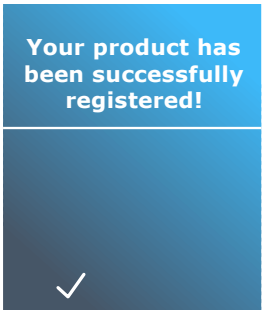
Step two: activation of the barcode

1. Go to the webpage and register your cutter. The web page will show a 6 digit code which is the activation code. A mail will be sent with the serial number and activation code. Please save this mail for future reference.
2. Power on the machine and load the media.

3. Press the barcode icon.



4. Enter the code and press .



5. Press .

2 BASIC OPERATION

2.1 Touchscreen

2.1.1 Introduction

The touchscreen provides a unique interface system that provides detailed cutter status information and offers more flexible and powerful control of the cutter's configuration.
Next to the status messages and/or menu options, displayed on the touchscreen, button symbols can be pressed to change menu items or to change the value for a given submenu/parameter.

FIG 2-1
TOUCHSCREEN

There is also a screen saving feature. After a certain amount of time, the screen goes blank and this logo appears on the screen.

FIG 2-2
SCREEN SAVER

Touching the screen once disables the screen saver.

WARNING: Each keystroke can initiate an internal test or movement of the head or media. Keep fingers and other body parts away from the cutting area. There are hazardous moving parts.

2.1.2 Basic operation

2.1.2.1 Control buttons

 The Settings button gives access to the main menu. Pressing this button will cause the cutter to go offline and suspend all operations in progress. The main menu contains all parameter settings, submenus and access to tests and calibration routines.
The chosen tool will influence the displayed settings.

 Pressing the origin button displays the current origin and makes it possible to change it by using the arrow keys (they appear once the button is pressed).

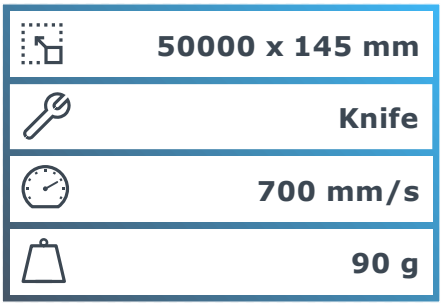
 Online and pause are two important concepts when using the S One cutters. When online, the cutter can be controlled by the host computer, which means that the cutter will execute cutting or plotting instructions, issued by the host computer's application software. As soon as any other button on the cutter is pressed, the cutter pauses and can no longer be controlled by the host computer. However, if the computer was busy sending cutting data to the cutter it will be able to do so until the buffer of the cutter is full.

 Press this to start the barcode workflow. The barcode workflow is explained in section 3.3.4.

 Press to show info about firmware version and serial number.

 This icon appears when the cutter is cutting a job. Press this to stop the current job.

2.1.2.2 Current settings



A quick overview of the most important settings is also shown on the default screen. Media size, current tool, current tool speed and current tool pressure are shown. Pressing the shown value is a shortcut to quickly change it. These parameters can also be changed in the different menu's (see section 4).

2.2 How to Set Tool Parameters

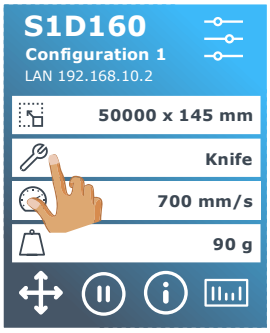
The S One cutters can work with a knife, pen or pouncing tool (optional).
Once a tool has been changed, the tool parameters must be reset or checked.
All the different tools have one parameter name in common: the pressure.
Each tool has also its specific parameters.
Tool parameters can be changed by either changing them in the current user or simply by changing the user (see section 2.4).

ATTENTION: The S One cutters will only perform according to specifications if a genuine Summa knife, pen or pouncing tool is installed. Do not replace the standard knife, pen or pouncing tool with products from other manufacturers.

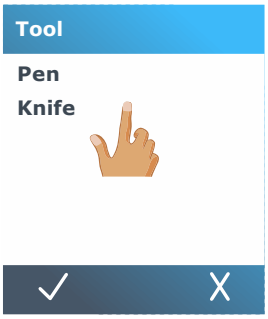
WARNING: Each keystroke can initiate an internal test or movement of the head or media. Keep fingers and other body parts away from the cutting area. There are hazardous moving parts.

2.2.1 Setting the tool type

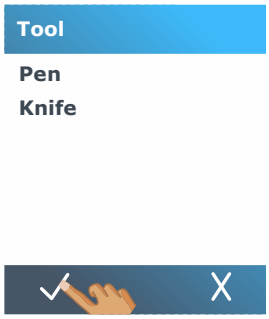
1. Power on the cutter and load the media.



2. Press Tool.



3. Select tool



4. Press ☑ to select the tool that is highlighted on screen.

If the tool type was changed, then the cutter will prompt the user to install the new tool.

Note: If no media is loaded, then access the tool menu by pressing ⚙. The cutter will prompt the user after the media is loaded for a tool change if necessary. (see section 4).

2.2.2 Changing the tool pressure

1. Power on the cutter and load the media.

2. Press on pressure

3. Press the arrow up or down to change the value.

4. Or fill in the new value

1. Press  to perform the internal knife pressure test.
2. Press  to confirm the chosen knife pressure.
3. Press  to leave the pressure unchanged.

Once  is pressed, the current knife pressure value will be automatically set to the new value and the cutter will cut the knife pressure test pattern.

Peel out the rectangle and inspect the media backing.

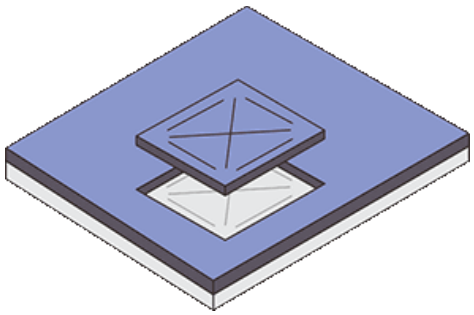


FIG 2-3
PEELED KNIFE PRESSURE TEST PATTERN

The knife depth is set correctly when the test pattern cuts completely through the vinyl, the vinyl is removed, and the blade tip visibly scratched the front side of the media backing. The blade should never cut through the backing; just slightly scratch the silicon coating and first few fibres of the backing material.

2.2.3 Changing the drag knife offset

A very important parameter for a drag knife is the offset. The offset is the distance between the knife centre and the knife tip.

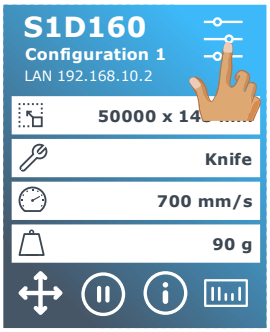
NOTE: The knife offset should be set each time the knife is changed and should be checked if the knife shows signs of wear.

NOTE: A typical knife offset for Summa knives is between 0.41 and 0.45 for standard knives, between 0.9 and 0.97 for sandblast knives and between 0.49 and 0.52 for the 60 degrees knife.

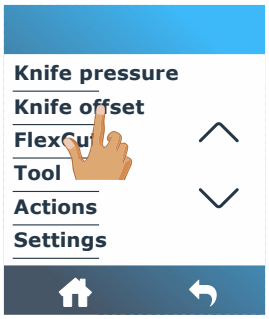
NOTE: Sandblast knives should be used when the material, that needs to be cut, is thicker than 0.25 mm.

Changing knife offset:

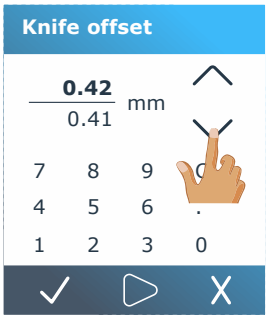
1. Power on the cutter and load the media.



2. Press the menu button.



3. Press Knife offset.



4. Press the arrow up or down to change the value.

1. Press  to perform the internal knife offset and exit the menu.
2. Press  to confirm the chosen knife pressure.
3. Press  to leave the knife offset unchanged.

When the knife offset is set correctly, the test pattern looks like this:

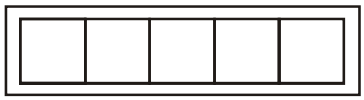
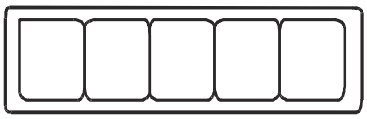
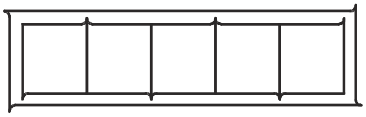


FIG 2-4
CORRECT KNIFE OFFSET PATTERN

When the knife offset is too low, the test pattern looks like this:



When the knife offset is too high, the test pattern looks like this:



Adjust the knife offset until cut pattern is correct.

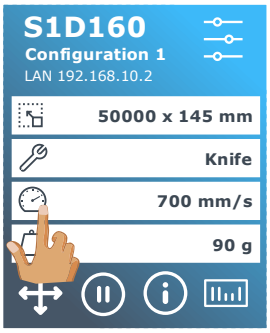
2.3 How to Set the Cutting Speed

The actual speed at which the tool moves is determined by 4 different parameters. Speed (and acceleration) while the tool is down; speed (and acceleration) while the tool is up. These 4 parameters have been bundled in one parameter to enable to change the speed fast and easy. This overall parameter is called "velocity" and represents the speed the cutter uses when the tool is down. If velocity is raised or lowered, the other parameters are also raised or lowered accordingly. The parameters can be changed individually but only with the program Summa Cutter Control.

There is one fixed speed: the speed at which the cutter pulls the media from the roll. This speed is fixed at 200 mm/s (8ips).

Setting the cutting speed:

1. Power on the cutter and load the media.



2. Press Velocity

3. Select new velocity, scroll with arrows, if necessary.

4. Press ✓ to confirm.

Note: The speed can also be set in the settings menu, see section 4 for more info on using the settings menu.

2.4 How to Change the User (Quick Parameter Change)

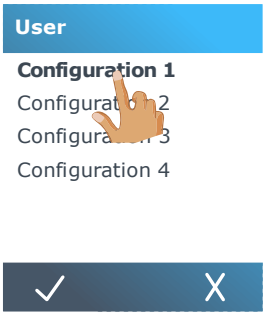
The S One cutters include 4 user configurations, all of which consist of the same parameters. Each configuration can have unique parameter settings. This allows the cutter to be quickly and easily reconfigured for different types of jobs or media.

NOTE: Factory default values for the different users are all set the same.

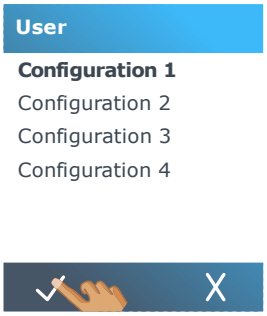
Changing the User Configuration:

1. Power on the cutter and load the media.

2. Press current user



3. Select new user.



4. Press ✓ to confirm.

NOTE: The name of the configuration can be changed with Summa Cutter Control.

2.5 How to Make Sure the Sign Has the Correct Size (Length Calibration)

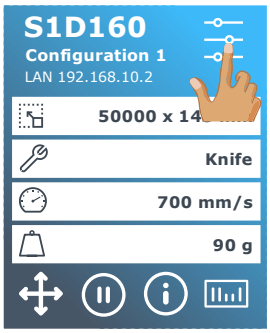
The S One cutters are friction-feed machines. This means the cutting length depends on the thickness of the material.

The cutters have been calibrated in the factory for standard 2-mil cast or 3-mil calendared vinyl. Each user (the S One has a total of 4) can hold a different calibration factor.
This is very helpful for multi-coloured signs. It ensures that the parts in different colours match up, even if different types of vinyl media are used.

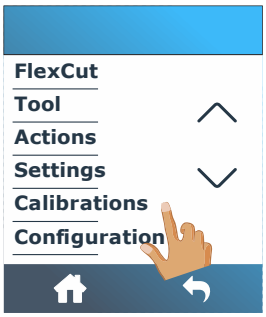
ATTENTION: For standard use, it is not necessary to calibrate the machine. With standard vinyl, the accuracy is within 0.2%. However, if high accuracy between different vinyl or colours is needed, then calibration is necessary.

Calibrating the media (Length calibration):

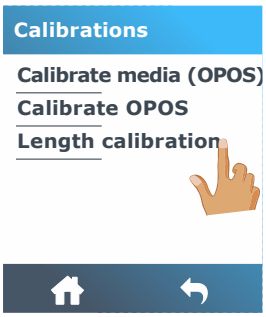
1. Power on the cutter and load the media.



2. Press .



3. Scroll down with arrow and press on Calibrations.

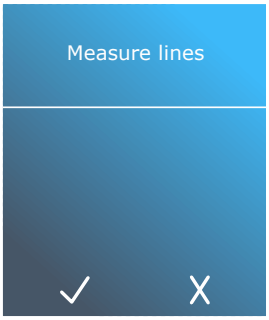


4. Press length calibration.

The cutter will reload the media and perform the length calibration test. Take out the media and measure the length of the cut line with a ruler (measuring device). The length that has to be entered is the distance between line 1 and line 2 as shown in the figure below.

FIG 2-5
LENGTH CALIBRATION PATTERN

NOTE: The cutter will only be as accurate as the accuracy of the calibration itself. If the ruler (measuring device) is inaccurate, then re-calibrating may worsen the cutter's accuracy. The accuracy of the calibration will be reflected directly in the cuts. Set the cutter to Metric to do the calibration.



5. Press ☑ to fill in the value or ☒ without changing.

6. Use the arrow to change the value.

7. Or simply fill in the value.

8. Press ☑ to confirm the value of the measured length.

NOTE: Once this user is calibrated, consider changing the user name. This makes it easy for future reference.

2.6 Cutting through

2.6.1 Procedure

The cutting through functionality is focussed on cutting simple shapes (e.g. rectangles). It is mostly used in combination with contour cutting.
An interrupted cutting line (small 'bridges') makes sure the material remains together. When the job is finished the cut pieces can be torn out.

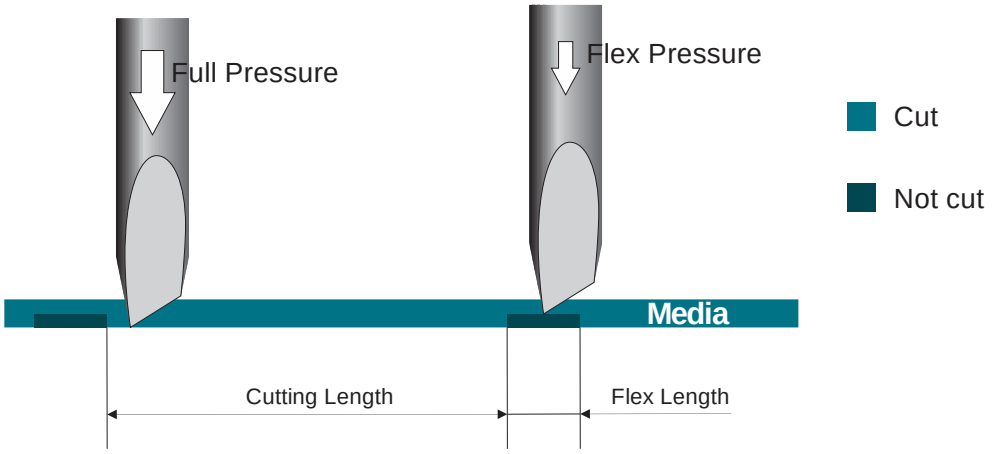


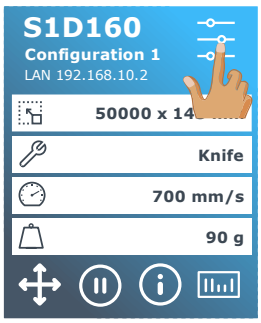
FIG 2-6
FLEXCUT PRINCIPLE

Some cutting software can recognize the difference between a contour line and a cut-through line. The software will send the data of the contour lines to the cutter first, activate FlexCut, panelling mode and vector sorting and then send the cutting through data to the cutter.
If the cutting software cannot do this, the user will have to send the data of the contour lines separately first, set the cutter manually in FlexCut mode and then send the data for cutting through.

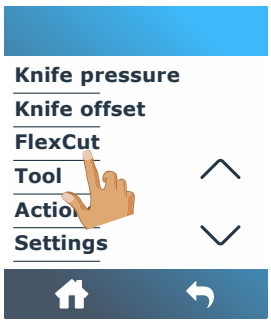
Setting the parameters for cutting through the media:

NOTE: The following procedure describes how to set the parameters for FlexCut. The parameters used are 180 gr and 10 mm for full pressure, 100 gr and 1 mm for FlexCut pressure and auto speed as an example. Section 2.6.2.2 describes how to get the exact parameters for the media that you will be using.

1. Power on the cutter and load the media.



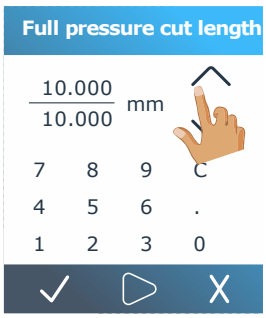
2. Press .



3. Press FlexCut.

4. Select the parameter to set.

Change the value by pressing the arrows or just fill in the value.



Change the value by pressing the arrows or just fill in the value.

Change the value by pressing the arrows or just fill in the value.

Select new velocity, scroll with arrows, if necessary.

Change the value by pressing the arrows or just fill in the value.

5. Set the parameters (check section 2.6.2.2)

6. Check the bridges. If they are too large, perform a test with a lower value. If they are too small (or non-existent) then raise this value.

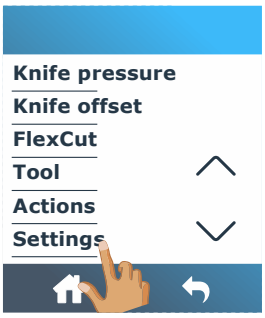
ATTENTION: It is difficult to give the recommended settings for FlexCut. Check section 2.6.2.2.

NOTE: FlexCut parameters are always metric, regardless of the value of the menu Units parameter.

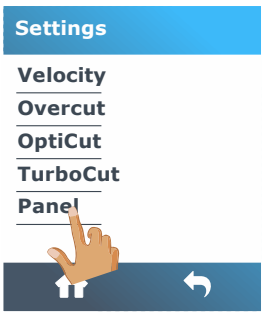
ATTENTION: When cutting through, it is recommended that parallel lines are at least 1 cm (0.4") away from each other. Otherwise, while cutting the second line, the first line may come loose and cause trouble.

7. Press ☑ to confirm FlexCut settings.

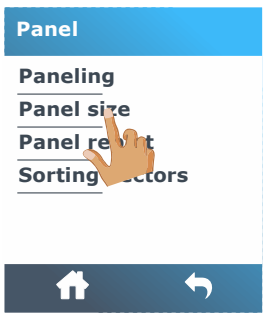
8. Press ↩ to go back to main menu.



9. Press settings.

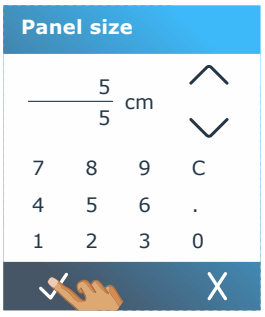


10. Press Panel.

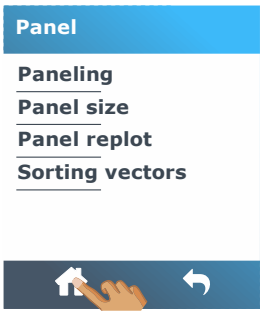


11. Press Panel size.

12. Change the value by pressing the arrows or just fill in the value.



13. Press ☑ to confirm Panel settings.



14. Press to ⌂ return.

NOTE: Recommended settings for *Panel size*: 3-10 cm.

2.6.2 Practical tips

2.6.2.1 Physical knife depth

Although very similar, there are two types of knife depth settings, one for normal cutting and one when FlexCut is used. What they have in common is that the knife is never turned out a lot.

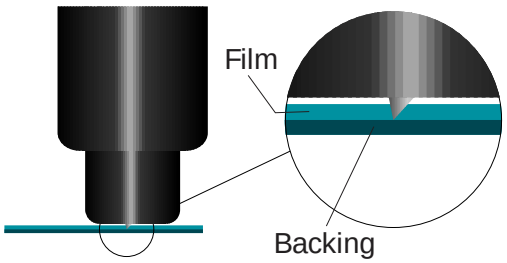


FIG 2-7
KNIFE DEPTH SETTING NORMAL CUTTING

For normal cutting, the knife is turned out just a little bit more than the actual cutting depth. Turning out the knife much further results in unstable knife pressure and bad cut quality.

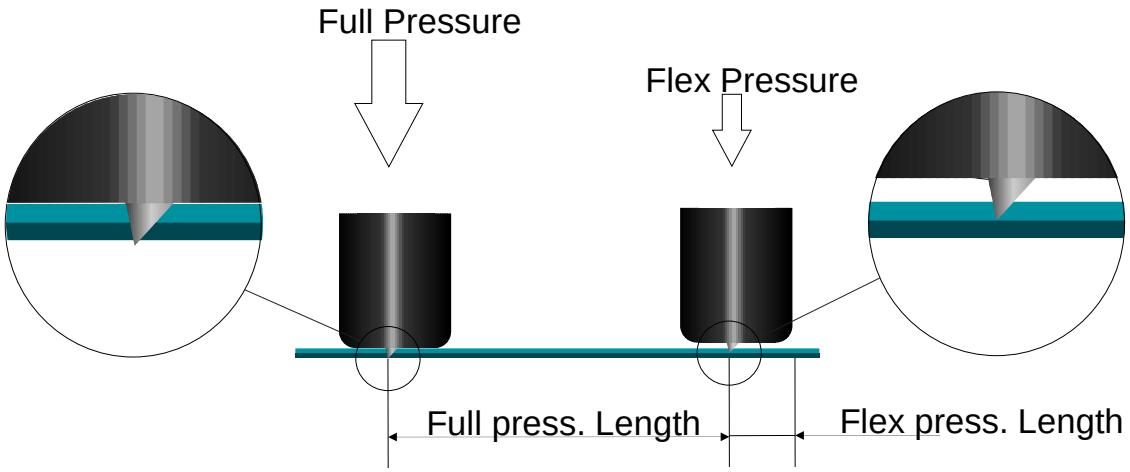


FIG 2-8
KNIFE DEPTH SETTING CUTTING THROUGH

When performing FlexCut the knife is turned out just enough to cut through the vinyl and backing. The decision to let the knife holder rest on the media at full pressure depends on the actual media you are using. If the media is prone to scratching, then make sure the bottom of the knife holder does not touch the media when using full pressure. If not, it is recommended to let the bottom of the knife holder touch the media at full pressure.

2.6.2.2 Values of the FlexCut parameters

Determining the values of the FlexCut parameters can be divided into two main steps. The first step is to determine the 'fixed' pressure values. The second step is determining empirically the length parameters.

➢ ***Step 1***

First, go to the knife pressure test as described in section 2.2.2. Determine the pressure, needed to cut completely through both vinyl and backing. Make sure the pressure is not set too high and the knife is not turned out too far.
After the needed pressure is determined, raise the knife a little bit to check if it still cuts completely through. If this is the case, do this again. If it does not cut completely through, then turn the knife out as it was.
Now lower the knife pressure a little bit to check if it still cuts completely through. If this is the case, lower it again a little bit. If it is not the case, set it at the previous value.

This is how the correct pressure to cut completely through the media is determined, as well as the correct amount the knife is turned out.

NOTE: Write down the pressure that was needed to cut completely through and do not change the physical knife depth anymore (unless the knife has worn down a little bit).

Now set the knife pressure correctly to cut just through the vinyl. Also, write down this value.

➢ ***Step 2***

Go to the FlexCut parameter setting menu as described in section 2.6.1. Set the full pressure parameter to the value that was needed to cut completely through the media (determined in step 1) and set the FlexCut pressure to the value needed to cut just through the vinyl.

NOTE: It is never recommended to use cutting speeds larger than 400 mm/s (16 ips) with cutting pressures above 170 gr. So, if the full pressure is larger, lower the FlexCut velocity.

Now go to the full pressure length parameter and set this to 10 mm. Go to the FlexCut pressure length and set this one to 0.8 mm. Perform a test. Check the bridges. If they are too large, perform a test with a lower value. If they are too small (or non-existent) then raise this value.

The FlexCut parameters are now set.
If these settings need to be adjusted, try with only changing the FlexCut pressure length. There is no need to adjust pressure settings unless the knife wears down. In that case, start again with step 1.

NOTE: It is not always easy to find the correct balance between cutting deep enough and making sure the pieces can be taken out easily and not cutting too deep, making sure the material keeps its strength while cutting. Sometimes this balance doesn't exist, meaning that this material can't be cut through with satisfactory result.

2.6.2.3 Material without a backing

Although FlexCut was designed for usage with standard vinyl (typical two-layered material), it is also used with single-layered material. In this case, the settings of the parameters are more difficult and require more trial and error tests than calibrating FlexCut for normal vinyl.
The only parameter that can be determined easily is the full pressure.

- The FlexCut pressure is very material depended.
- Plastics need a relative high FlexCut pressure. Fibrous material then needs relative lower FlexCut pressures.
- The FlexCut pressure length of plastic materials is then relatively short, whereas fibrous materials need longer 'bridges' to keep the material together to move it back and forth.

However, the principle is the same. The parameters need to be set this way the bridges are strong enough to be able to move the material back and forth. But the bridges need to be small enough, so they are practically invisible once the object is removed from the material.

A secondary help might be the adjustment of the panel size. With very weak material, lower the panel size. Overall, the parameter setting for single-layered material is difficult to do correctly.

3 OPOS

3.1 Introduction

Contour cutting is made possible by the S One's highly accurate Optical Positioning System (OPOS).

The OPOS sensor, which is mounted on the right-hand side of the tool carriage, registers printed squares that are placed around the graphic. Because of this registration process, OPOS can determine the exact position of the printed graphic.

The sensor drops automatically while registering the marks and rises again after completing this task. The improved sensor can read virtually any kind of media-mark combination.

3.2 Basic OPOS operation

In general, contour cutting includes the following steps:

1. Create the graphic and contour cut line(s).
2. Print the graphic using a RIP that supports Print & Cut (laminate afterwards if necessary).
3. Load the graphic into the cutter.
4. Load the media and register the marks.
5. Cut the graphic.

Many versions of cutting software have the built-in capability to make contour cutting user-friendly and automatic. Please refer to the user's manual that came with your software or contact your software dealer for specifics.

NOTE: Some RIP software requires that the contour lines are defined in a special colour (spot colour). Please refer to the user's manual that came with your software or contact your software dealer for specifics.

NOTE: Do not place contour lines along the edges of graphics or the slightest movement in the media may result in an unsatisfactory cut. Instead, practice one of the following techniques.

1. Place contour lines just inside the graphics.
2. Place contour lines outside the graphics.
3. Create thick borders around graphics and place contour lines inside these borders.

3.2.1 Printing the graphic

Print the graphic and its marks with a printer. When printing on a roll, make sure there is a 2 cm (0.8 in) margin at the sides and the front. For shorter jobs the edge margins might smaller, but should be at least 1 cm (0.4 in).

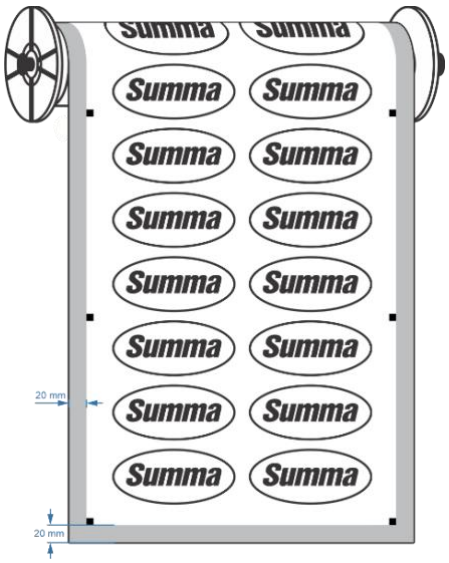


FIG 3-1
MARGINS PRINTING ON A ROLL

When printing on a sheet, then there should be at least 40 mm of media after the last OPOS mark (this is also the minimum media that should be left at the end of a roll).

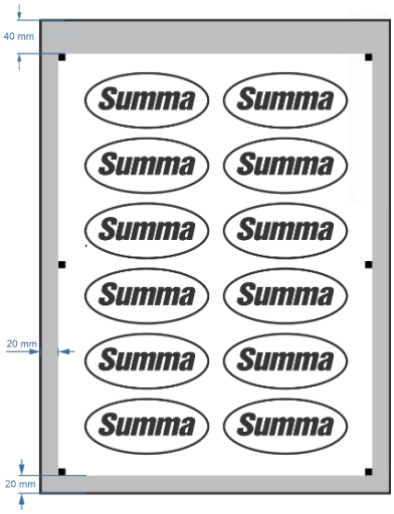


FIG 3-2
MARGINS PRINTING ON A SHEET

3.2.2 Different OPOS alignment methods

This parameter, although it is an internal parameter, should be set in the print and cut software. Following options are usually available:

OPOS X: A row of marks is printed at the left and right side of the graphic. These marks are read by the OPOS sensor and then used for compensating printing deformation.

OPOS XY: An extra line at the bottom of the job is printed (line ❶ in the figure below), the sensor reads it and can also compensate for deformations along the width of the machine.

OPOS XY2: Analogue to the bottom XY line, a line (line ❷ in the figure below) is printed at the top of the job for cutting large jobs more accurately.

OPOS XYXtra: Analogue to the bottom XY line, a line is printed between each left-right mark.

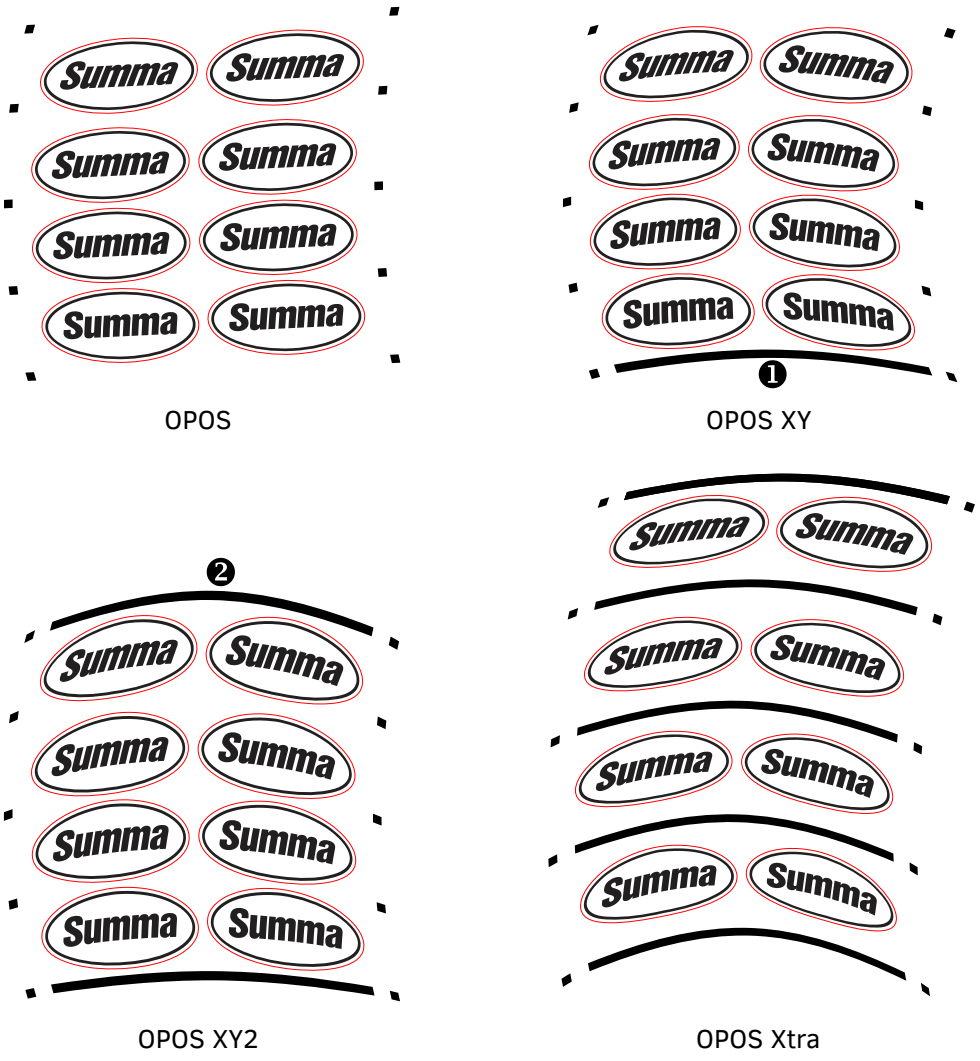


FIG 3-3
OPOS ALIGNMENT METHODS

3.2.3 Processing long jobs

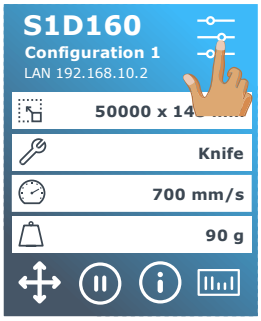
Normally the OPOS sensor registers all the marks before it starts cutting. However, with long jobs that can result in extensive back and forward feeding of the media, this could result in bad tracking. To avoid this, an extra parameter can be set in the cutter. With this option, the job can be divided into panels to avoid moving the media unnecessarily. When OPOS panelling is activated, all cut data will be cut in panels. The size of the panel will be the distance between the OPOS marks in the X-axis.

OPOS Panels can be set to OFF, ON (2 marks) or ON (4 marks). When set to ON (2 marks), the cutter will only load 2 marks in the X-direction when loading OPOS and read the marks (4 in total for the first panel). The following panels will then be cut after reading the marks at the end of that panel (so 2 for each following panel). When set to ON (4 marks), the last marks of the previous panel are re-read. This improves the connection between the panels.

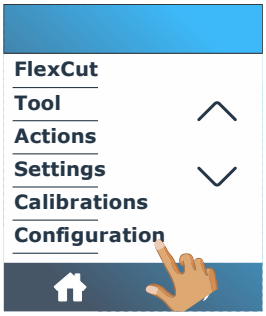
NOTE: Do not use software panelling when using OPOS panelling.

Activating OPOS panelling:

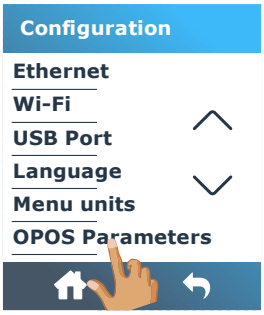
1. Power on the cutter and load the media.



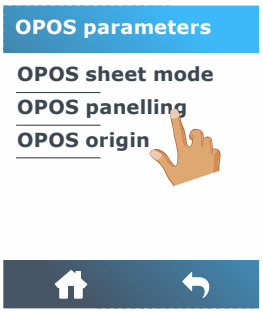
2. Press Settings.



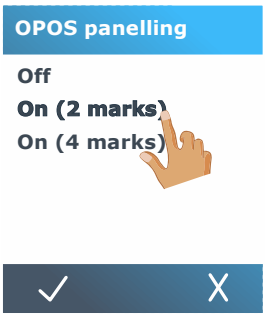
3. Scroll down with the arrow and press Configuration.



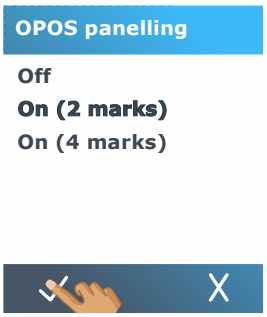
4. Press OPOS parameters.



5. Press OPOS panelling.



6. Select 2 or 4 marks.



7. Press ☑ to confirm.

3.3 Automating OPOS tasks

For standard OPOS jobs, the user only needs to set the tool above the first mark to start the job. OPOS allows the user to automate certain tasks, thus reducing user intervention and production time. There are several types of automation.

Automatic start of the OPOS job
This is controlled by the parameter OPOS origin. With a combination of this parameter setting and/or a special origin setting during the load of the media, the user doesn't have to set the tool above the first mark to start an OPOS job.

Multiple copies of the same job
When cutting multiple graphics, the user only needs to manoeuvre the OPOS sensor above the origin mark of the first graphic. Cutting subsequent graphics does not require additional user input.

There are two multiple-job situations in which OPOS can be used:

1. When cutting multiple (copies of a) graphic(s) on the same media roll.
2. When cutting the same graphic on multiple media sheets.

Most automated tasks are organized from within the cutting software. However, when the same graphic contour needs to be cut out, the automatic tasks may also involve some manual manipulation.

Unattended contour cutting (roll to roll)
A special barcode can be printed together with the job. This barcode can then be used to access the correct cutting data, so the cutter can cut one job after another without user intervention.

3.3.1 OPOS origin

The parameter OPOS origin is created to automate the start of the OPOS procedure. This parameter has 4 settings. The usage of this parameter depends on the chosen OPOS mode.
If the OPOS is OPOS barcode or OPOS Sheet, then this parameter does not affect.
The useful combinations are visible in the below table.

	OPOS X	OPOS XY
Mark	**'Indicate Mark'**	**'Indicate Mark'**
XY line	-	**'Indicate Line'**
Current Position	**'Current Position'**	**'Current Position'**
Media centre	-	**'Center of media'**

3.3.1.1 In combination with OPOS X mode

The OPOS Origin is set to 'Mark'.

This is the default setting. Upon receiving an OPOS job from the computer, the cutter will prompt the user to set the tool above the first mark and press Apply. The cutter will then start searching for the OPOS mark around that position.

The OPOS Origin is set to 'Current position'.

Upon receiving an OPOS job from the computer, the cutter will immediately start looking for the mark when it receives an OPOS job from the computer, without waiting for the user to move the tool. Therefore, the user will have to set the tool above the first mark while loading the material.

If the OPOS origin is set to either 'XY-correction line' or 'Center of media', then the cutter will react as if the parameter was set to 'Indicate mark'.

3.3.1.2 In combination with OPOS XY mode

The OPOS Origin is set to 'Mark'.

This is the default setting. Upon receiving an OPOS job from the computer, the cutter will prompt the user to set the tool above the first mark and press Apply. The cutter will then start searching for the OPOS mark around that position.

The OPOS origin is set to 'XY line'

Upon receiving an OPOS job from the computer, the cutter will prompt the user to set the tool under the OPOS XY line and press Apply. The cutter will then start searching for the OPOS XY line by slowly moving forward the media. Once it has found the OPOS XY line, it will follow this line to the right until it finds the first mark and will then start searching for the actual mark.

The OPOS origin is set to 'Current Position'

Upon receiving an OPOS job from the computer, the cutter will immediately start searching for the OPOS XY line by slowly advancing the media. Once it has found the OPOS XY line, it will follow this line to the right until it finds the first mark and will then start searching for the actual first mark. Therefore, the user will have to set the origin under the OPOS XY line, immediately after the media has been loaded.

This setting was created for jobs that are aligned at the left side and differ a lot in size on the roll. The origin/tool can then be set to the left of the media, under the OPOS XY line to be able to find the origin mark, even if it is situated far from the right side of the media.

OPOS origin is set to 'Media centre'

Upon receiving an OPOS job from the computer, the cutter first sets the OPOS sensor in the middle of the media. Then it will start searching for the OPOS XY line by slowly moving forward the media. Once it has found the XY line, it will follow the XY line to the right until it finds the first mark and will then start searching for the actual mark.

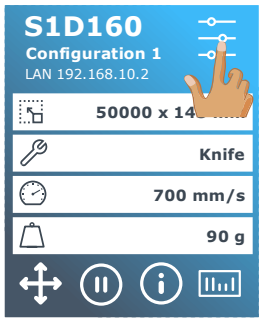
This setting has been created for jobs on a roll where the width of each job is at least half the width of the media (this is usually the case; otherwise there are lots of wasted media). This method is slightly slower than the previous method.

3.3.2 Cutting multiple copies of a graphic on the same roll

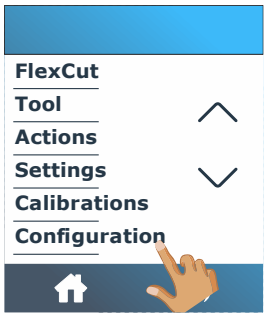
If the same graphic design has been printed on a roll with equal distance between these graphics, this feature can be used.

NOTE: The distance between the multiple copies should be at least 30 mm.

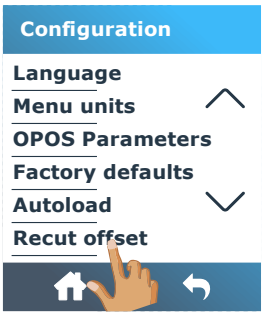
1. Power on the cutter and load the media.



2. Press Settings.

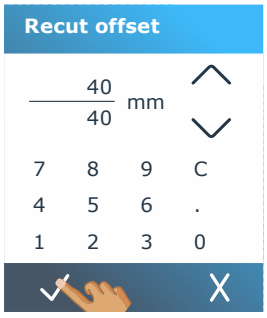


3. Scroll down with the arrow and press Configuration.

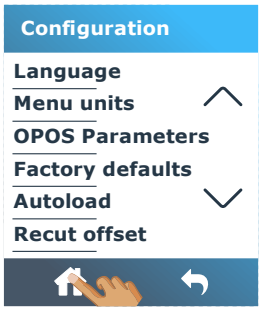


4. Scroll down with arrow and press Recut offset.

5. Press the arrow up or down to change the value or just change the value.



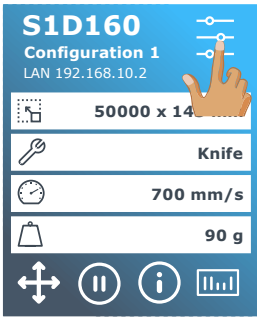
6. Press ☑ to confirm the recut offset value.



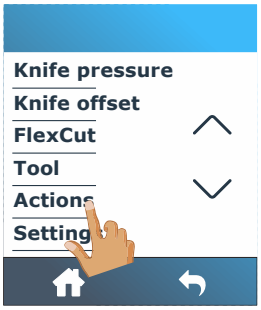
7. Press ⌂ to get online again.

8. Make the first copy as you would make a normal OPOS job.

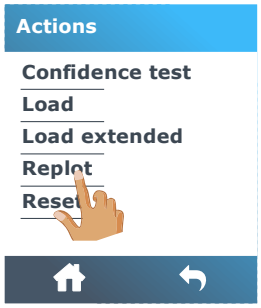
The cutter will stop after the first contour has been cut and will come online again.



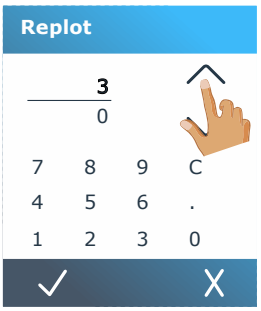
9. Press Settings.



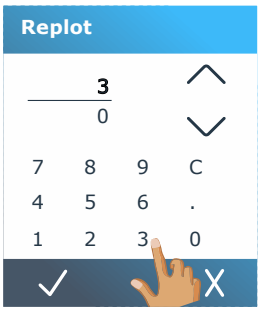
10. Press Actions.



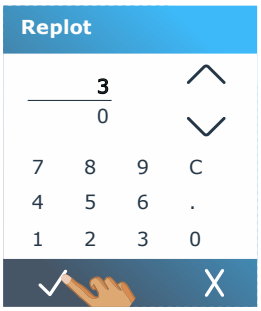
11. Press replot.



12. Change the value by pressing the arrows.



13. Or just fill in the value.



14. Press ☑ to confirm.

OPOS will sense the marks for the second contour and then cut that contour. This process of sensing and cutting will repeat itself automatically until all remaining contours have been cut.

NOTE: If the cut off command is used, the recut distance should be at least 30 mm larger than the cut off distance.

3.3.3 Cutting the same graphic on multiple media sheets

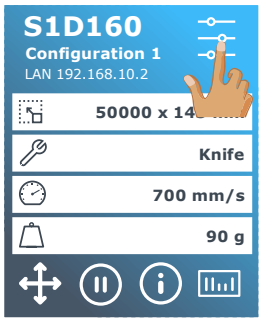
If the same graphic design needs to be printed on multiple sheets, this feature can be used.

NOTE: The sheets should have more or less the same size, and the graphics on them should be oriented and positioned the same way.

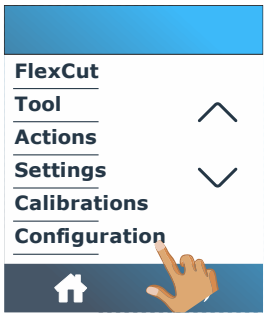
NOTE: OPOS sheet mode ignores the parameter OPOS origin, so the tool will always have to bet set manually for the first job.

First, load the media and check whether the parameters of the OPOS marks are set correctly.

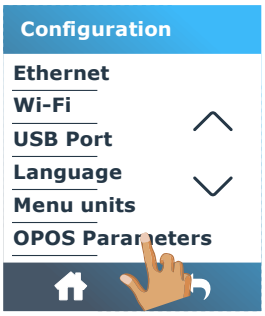
Cutting the same graphic on multiple media sheets:



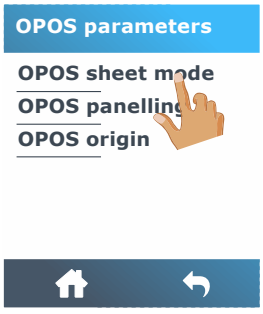
1. Press Settings.



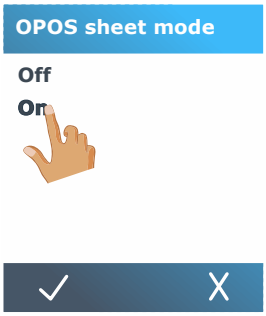
2. Scroll down with the arrow and press Configuration.



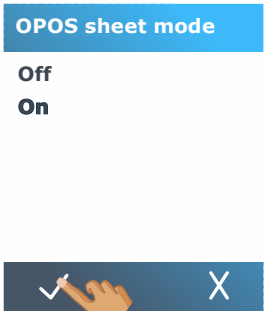
3. Press OPOS parameters.



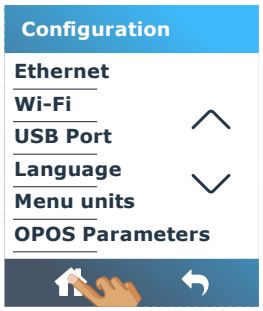
4. Press OPOS panelling.



5. Select 2 or 4 marks.



6. Press ☑ to confirm.



7. Press 🏠 to get online again.

8. Do the job on the first sheet.

9. The cutter will stop after the first contour has been cut and will come online again.

10. Raise the pinch rollers and remove the sheet manually.

11. Insert the next sheet into the cutter. Lower the pinch rollers.

NOTE: The second and any following sheet must be loaded in the cutter at the same position and orientation as those from the first sheet. When in OPOS sheet mode, the cutter stores the distance between the edges of the sheet and the first OPOS mark.

NOTE: Use easy orientation points to be able to quickly position the sheet. In the figure below, a rim of the base plate and the side of the pinch roller assembly are used to align the sheets.

FIG 3-4
POSITIONING THE MEDIA FOR MULTIPLE SHEETS

3.3.4 OPOS Barcode

3.3.4.1 Introduction

The S One cutters can also read a barcode. Certain RIP's can print a barcode together with the OPOS markers. This barcode can then be used to identify the job and retrieve the needed cut data automatically from the computer.

A program must run on the computer that will act as a barcode server. This program monitors the connection with the cutter. Once a barcode is sent from the cutter, it will search for the corresponding file with the correct cut data on a server (where the RIP has written the cut file) and then send this file to the cutter. Once the file is sent, the barcode server waits again for a new barcode. In this way, a complete roll can be cut without user intervention.

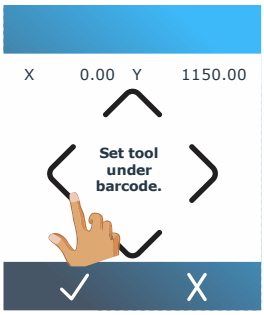
Depending on the program (barcode server), the procedure will have to be started from the control panel of the cutter or from the program (Summa's barcode server contains both options). To start the barcode procedure from the program, refer to the user manual of the program in question. To start the procedure from the control panel, follow the procedure described in section 3.3.4.2.

FIG 3-5
OPOS BARCODE JOB LOADED

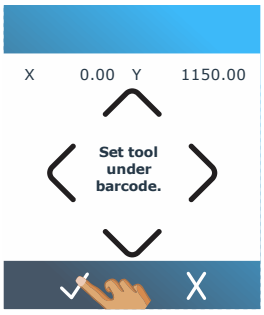
3.3.4.2 Initiating the barcode procedure

1. Power on the cutter and load media.

2. Press the icon.



3. Use the arrows to put the knife under the barcode.



4. Press to confirm.

The cutting process starts.

- The cutter will read the barcode and send this data to the computer.
- The cutting software will then automatically send the correct cutting data to the cutter.
- The cutter will start sensing the OPOS markers and cut out the job.
- The OPOS sensor will now search whether another job was printed after the one that is just finished and will continue to contour-cut.

This will be repeated until all contour-cut jobs on the loaded roll are cut out.

NOTE: If the procedure has to be started from the computer (barcode server program) then click on the start icon in the program (please refer to program manual for more info). Then jump to step 3 in the above procedure

3.4 Calibrating OPOS

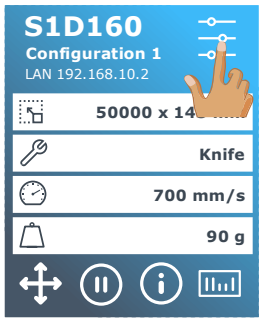
To ensure that OPOS is working accurately, two calibrations are necessary: the OPOS calibration and the media calibration. The OPOS calibration is the calibration of the distance between the knife tip and the sensor. The media calibration "teaches" the cutter the reflection levels of the mark colour and the media colour.

NOTE: Although the OPOS sensor has been calibrated in the factory, Summa recommends doing a test to determine how well the factory-set parameters work with the materials you are using. If the accuracy is not what is expected, then perform the OPOS calibration.

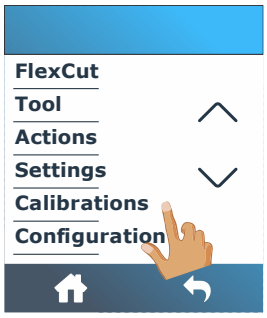
3.4.1 OPOS calibration

1. Switch the cutter on and load black vinyl with a white backing.

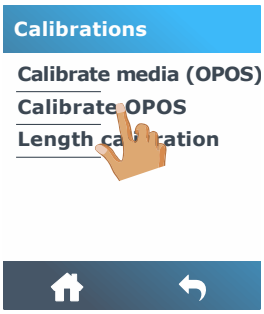
NOTE: Black vinyl with white backing MUST be used when calibrating OPOS.



2. Press Settings.

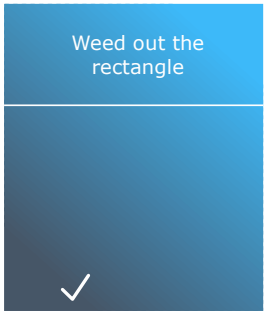


3. Scroll down with arrow and press Calibrations.



4. Press Calibrate OPOS.

The cutter will cut out a square, measuring approximately 9.5x9.5 mm and move the square forward. "Weed out Rectangle" will appear on the display.



5. Carefully weed the square, making sure the edges stay intact. Press ☑.

6. Press  to get online again.

OPOS will read the edges of the square and calibrate itself accordingly.

7. Press  to get online again.

NOTE: To keep the accuracy of the OPOS sensor as high as possible, do this calibration each time the knife is been replaced.

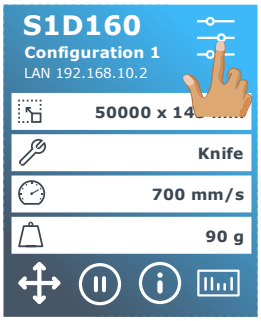
3.4.2 Media calibration

Media calibration ensures that the sensor can recognize the marks. OPOS is calibrated at the factory to work on a wide range of media. However, certain media -- such as those with a high gloss -- may not work with the default settings. Before working with such materials, perform a media calibration test. This test will alter OPOS's sensitivity so that it will read the marks with greater reliability. Print a square measuring at least 4x4 cm on the used media. Make sure to use the same ink than the one when creating the registration marks.

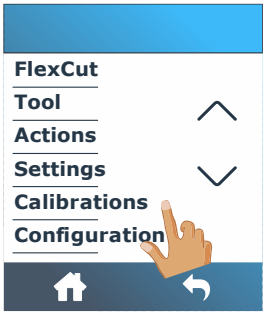
NOTE: If the media calibration is done and results didn't improve, set the media calibration value again to default.

Perform the media calibration:

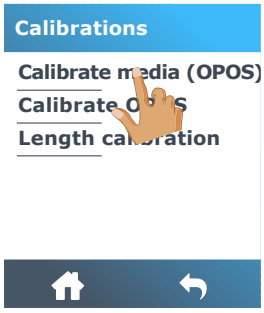
1. Switch the cutter on and load the vinyl with the printed square.



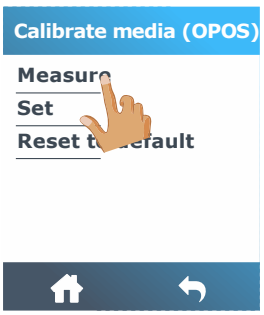
2. Press Settings.



3. Scroll down with arrow and press Calibrations.



4. Press Calibrate media (OPOS).

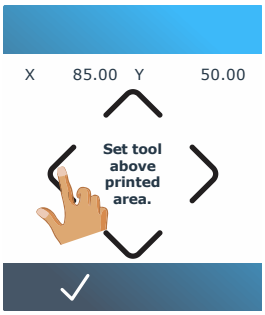


5. Press Measure.

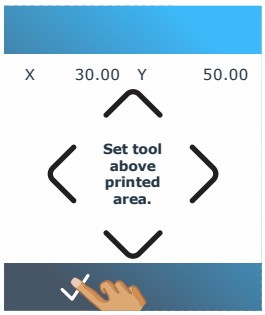
6. Use the arrows to manoeuver the knife in a white area.

7. Confirm with ☑.

The cutter will make a circular movement while it measures the reflection of the media.



8. Use the arrows to manoeuvre the knife in a printed area.



9. Confirm with ☑.

The cutter will make a circular movement while it measures the reflection of the media.

10. Use the arrows to manoeuvre the knife in a white area.

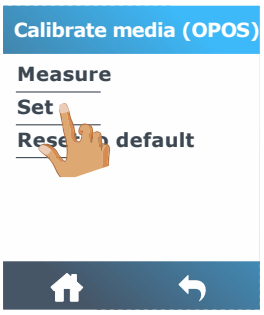
11. Confirm with ☑.

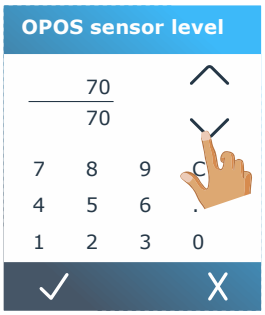
The cutter will make a circular movement while it measures the reflection of the mark colour. Then it will show a value that is characteristic of this media colour – mark colour combination. Store this value for future reference.

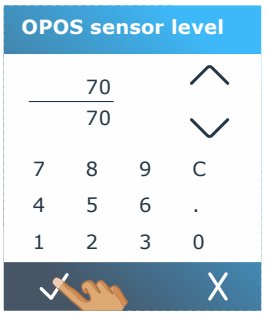
NOTE: An error message may appear if the sensor is not able to differentiate between black and white. Make sure that the test has been performed correctly.

Set value:

If a combination of media colour – mark colour has already been calibrated and recorded, Then this value can be filled in directly. Follow the procedure above until step 5.







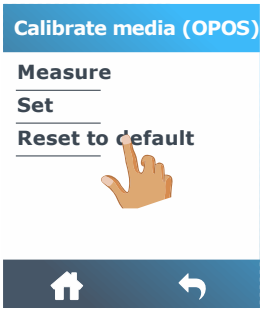
5. Press Set.

6. Use the arrows to change the value or just fill it in.

7. Confirm with ☑.

Default value:

Follow the procedure above until step 5.



5. Press Reset default.

4 DETAILED OPERATION

4.1 Introduction

This section is a detailed list of all parameters that can be changed and of tests that can be initiated from the touchscreen. Section 1 and 2 of this manual describe in detail the most commonly used touchscreen manipulation. This section can be used as a reference for locating a certain parameter setting or test. The less frequently used parameters are also explained in this section.

Press  to access the top menu.

4.2 Main menu

The main menu contains parameter settings and submenus. The complete menu cannot be shown at once on the LCD, so use the up and down arrows at the right side to scroll through the menu.

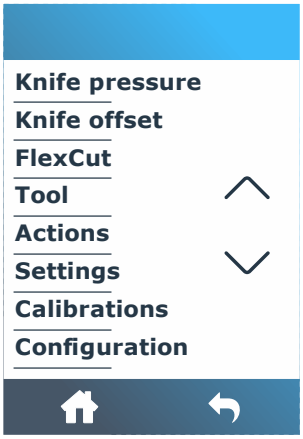


FIG 4-1
MAIN MENU

4.2.1 Pressure

The pressure is preceded by its tool name. This parameter is explained in section 2.2.2.

4.2.2 Knife offset

This parameter is explained in section 2.2.3

4.2.3 FlexCut

FlexCut can be set to OFF, Fast, or Accurate. When the cutter is set to Fast or Accurate, it will alternately cut a certain length with full pressure and a certain length with reduced pressure. The advantage of the FlexCut feature is that it cuts completely through the material. Moreover, it also allows the material to stay together using small media bridges.
Fast is the quickest mode, but it is less precise due to the pressure changes during the cutting procedure. Accurate is much slower, but much more precise because the cutter stops at every change of pressure.

There are 5 typical FlexCut parameters:

1. *Full pressure:* This parameter determines full pressure, used during FlexCut mode.
2. *Full pressure cut length:* This parameter determines the length that is cut with full pressure, usually the length that will be cut all the way through.
3. *Flex pressure cut length*: This parameter determines the length that will be cut with reduced pressure or without pressure. This is usually a much smaller value than the full pressure cut length – this is the length of the media bridges.
4. *FlexCut pressure:* This parameter determines the pressure of the Flex pressure cut length. This is usually a reduced pressure so that the knife only scratches the media or only cuts it halfway through.
5. *FlexCut Velocity:* FlexCut uses higher knife pressures. Higher knife pressures need lower cutting speed. With this parameter, the velocity of FlexCut can be set independently from the normal cutting velocity.

4.2.4 Tool

Two tools can be used on the S One. A knife or a pen. If the tool is changed, then use this menu to set the machine to use this tool. This is explained in section 2.2.1.

4.2.5 Submenus

The rest of the menu items in the main menu are submenus they are explained in the sections below.

4.3 Action menu

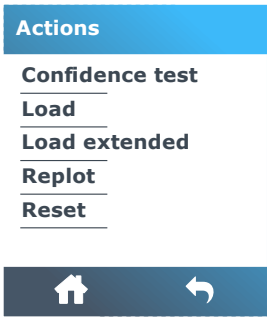


FIG 4-2
ACTION MENU

4.3.1 Confidence test

The confidence test performs a quick electrical and mechanical test of the cutter to make sure that the cutter is fully operational. A media sheet of at least A3/B-size should be used for this plot. This test is always cut at the left side of the loaded media.

4.3.2 Load

This menu can be used when loading sheet material. During loading, the maximum material length can be set.

4.3.3 Extended Load

This action is explained in section 1.5.2.

4.3.4 Replot

The RECUT instruction recuts the last file, which was sent to the cutter (provided it fitted into the buffer). Press ☑ to execute.

4.3.5 Reset

The RESET instruction performs a complete reset of the cutter. Press ☑ to execute a reset.

4.4 Settings menu

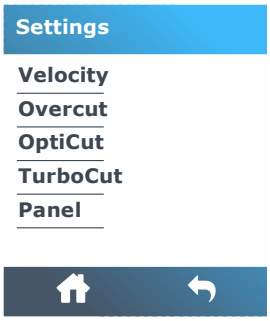


FIG 4-3
SETTINGS MENU

4.4.1 Velocity

Velocity is the bundled parameter to change the speed of the tool/media. This parameter is explained in section 2.3.

4.4.2 Overcut

The Overcut submenu enables you to generate an overcut to facilitate weeding the cut. Each time the knife goes up or down, the cutter cuts a bit further.
The overcut setting can be disabled (=0) or set to any value between 0(=off) and 10. One unit is about 0.1 mm or 0.004 ".

FIG 4-4
OVERCUT

Section 2.2.3 explains how to change the overcut value.

4.4.3 OptiCut:

OptiCut increases the cutting quality in case the knife is worn out or not calibrated correctly. OptiCut is default set to OFF.

Press OptiCut, then after pressing On or Off, press ☑ to confirm or ☒ to cancel.

4.4.4 TurboCut:

TurboCut increases throughput without raising the overall speed of the plotter by speeding up the drag movement. The cutting time reduction is significant, especially when cutting small, detailed designs. However, some thicker materials might not be cut properly when this feature is activated.

Press TurboCut, then after pressing On or Off, press ☑ to confirm or ☒ to cancel.

4.4.5 Panel

Use the Paneling submenu to enable or disable the internal panelling function of the cutter. Panelling is used for several different applications. Most common are FlexCut and long jobs with or without the roll-up option.

Panelling: Use this to set panelling on or off.
Press Panelling, then after pressing On or Off, press ☑ to confirm or ☒ to cancel.

Panel size: Use the Panel size submenu to set the size of the panel.
Press Panel size, then change size with arrows or just fill in the value.
Press ☑ to confirm or ☒ to cancel.

Panel replot: This parameter determines if the design has to be cut more than once on top of itself and panel per panel. Panel replot is used for thick media and media that is difficult to cut. The value of this parameter is disregarded if the panelling is deactivated. If this parameter is set at 0, then the cutter will cut each panel only once. If it is set at 1, it will cut each panel twice.
Use the Panel replot submenu to set the number of times it needs to be recut.
Press the Panel replot icon, then set it to the desired value.
Press ☑ to confirm or ☒ to cancel.

Sorting Vectors: There are three options on this menu.

1. *Off:* When vector sorting is set off, the cutter will not optimize vectors. This is used when the intelligence of the cutter driver is preferred.
2. *Directional:* If set to directional, the vectors are optimized for the cutting direction (media movement). This is used when the cutting pressure needs to be set relatively high (for example when cutting through).
3. *Starting point:* This option optimizes the starting point for closed curves. This is used when the user notices the curves do not close as they should.

Press the Sorting vector button, then set it to the desired value.
Press ☑ to confirm or ☒ to cancel.
Sorting vectors is default set to Off.

4.5 Configuration menu

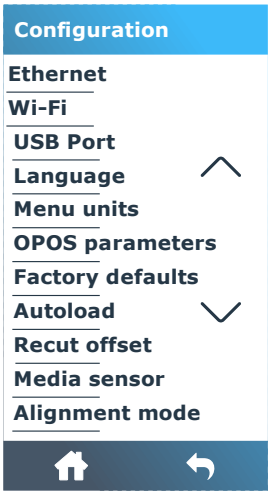


FIG 4-5
SETTINGS MENU

4.5.1 Ethernet

A couple of parameters need to be set when connecting a cutter to the Ethernet. This can be done is this menu. This is explained in section 1.4.2.

4.5.2 Wi-Fi

Wi-Fi setup was explained in section 1.4.3.

4.5.3 USB Port

USB Port can be set to USB port 1, USB port 2, USB port 3, or USB port 4.
Because of the different USB id's, the computer can make a distinction between several cutters attached to it (maximum 4).
Press USB Port, then after selecting the USB port, press ☑ to confirm or ☒ to cancel.

ATTENTION: The USB id in the cutting software needs to be the same as the chosen USB id in the cutter. Each time a new USB is selected on the cutter and connected for the first time to the computer, the wizard will be started by Windows to install a driver.

ATTENTION: The change in USB class only becomes active after rebooting the cutter.

4.5.4 Language

This submenu is used to set or modify the dialogue language on the touch screen. When the machine is new, it asks the user to choose a language. If this setting was set to the wrong language, it can be changed with this option.
Press Language, then after selecting the correct language, press ☑ to confirm or ☒ to cancel.

4.5.5 Menu units

The setting of these options determines whether the speed and size values are displayed in the metric measurement system or the ENG/US measurement system.

Press Menu units, then after selecting the setting, press ☑ to confirm or ☒ to cancel.
The panel units are chosen when the cutter is switched on for the first time.

4.5.6 OPOS Parameters

The setting of extra parameters has already been explained in previous sections.

Sheet mode
These settings are explained in section 3.3.3.

OPOS Panelling
These settings are explained in section 3.2.3.

OPOS Origin
These settings are explained in section 3.3.1.

4.5.7 Factory Def.

This option defaults all user parameters to factory default.

4.5.8 Autoload

The Autoload option enables the user to change the vinyl unroll procedure. When autoload is activated, the cutter will automatically unroll the vinyl, when needed. When the autoload option is deactivated, the operator should manually unroll enough media before starting to cut. Autoload is activated by default.

Press Autoload, then after pressing On or Off, press ☑ to confirm or ☒ to cancel.

ATTENTION: Tracking is not guaranteed when autoload is set to OFF.

4.5.9 Recut offset

The Recut offset submenu is used to set or modify the distances between the jobs when making multiple recuts. Press the Recut offset, then set it to the desired value.

Press ☑ to confirm or ☒ to cancel.
The default value is 40 mm.

4.5.10 Media Sensor

The media sensor detects whether the media is loaded. It also detects the end of the media. The sensor prevents damage to the cutting strip and knife tip. The sensor can be activated or deactivated with this menu. The cutter will stop during the loading procedure or while it is cutting as soon as the rear sensor detects the end of the media.

Press Media sensor, then after pressing On or Off, press ☑ to confirm or ☒ to cancel.
The default setting for the media sensor is ON.

5 MAINTENANCE

5.1 Introduction

The S One cutter range has several sliding surfaces made of smooth metals and plastics. They are virtually friction-free and require no lubrication. They will, however, collect dust and lint that may affect the cutter's performance. Keep the cutter as clean as possible by using a dust cover. When necessary, clean the unit with a soft cloth dampened with isopropyl alcohol or mild detergent. Do not use abrasives.

5.1.1 Cleaning the drive system

Over time, the sleeves of the drive drum may become clogged with accumulated residue from the media liner. This may cause the media to slip between the pinch rollers and the drive sleeves, thus decreasing traction.

Cleaning the drive system:

1. Unplug the power cord.
2. Apply a mild solvent (normally used to remove old glue residue) on the silver-coloured sleeves and wait for it to dissolve the accumulated residue.
3. Clean with a brush (a toothbrush is recommended)
4. Repeat the procedure for all dirty drive sleeves.

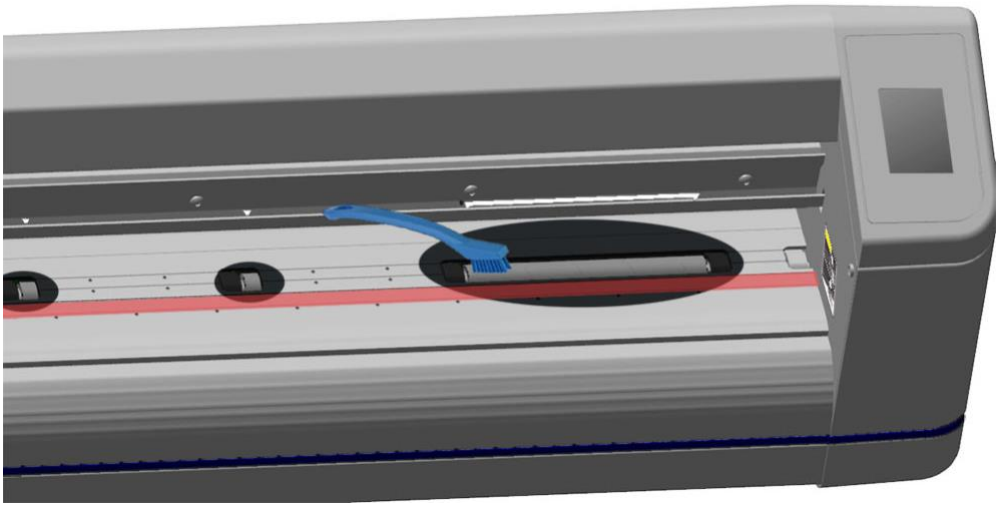


FIG 5-1
CLEANING SLEEVES

5.1.2 Cleaning the media sensors

Over time, the media sensors may become dirty with accumulated residue from the media. This may cause the cutter to malfunction.

Clean the media sensors by wiping them out with cotton swabs.

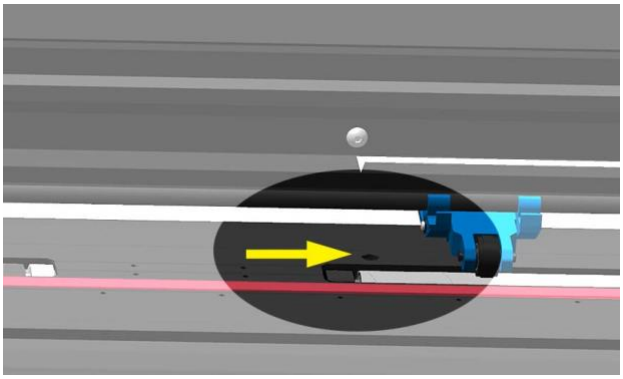


FIG 5-2
MEDIA SENSORS S ONE CUTTERS

5.1.3 Cleaning the Y-Guide Rail

There are 4 areas on the Y-guide rail on which the tools carriage slides from left to right. Two areas (1) are visible on the front side of the guide rail. The other 2 surfaces (2) are situated on the back of the guide rail, directly behind the areas that are visible at the front.
Figure 5-4 below shows these areas. Although the shape of the Y-guide rail may differ from model to model, the areas are located in the same place at the top and bottom of the guiding.

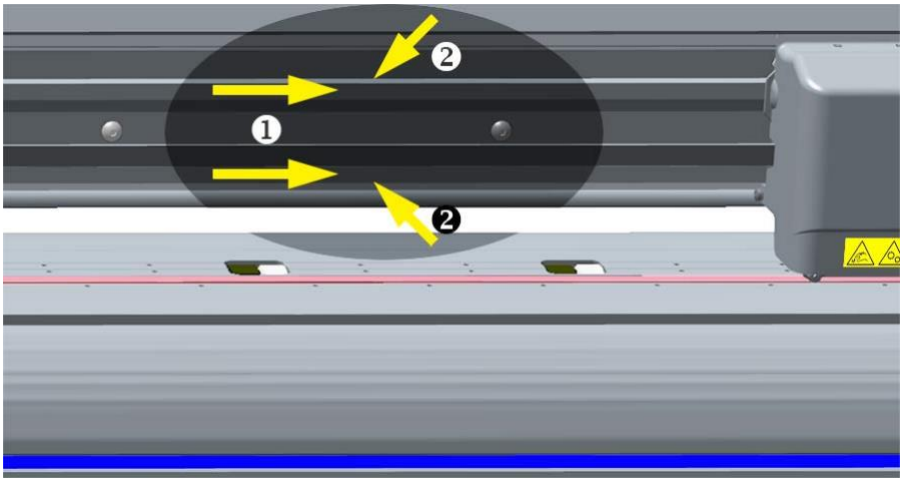


FIG 5-3
SLIDING SURFACES ON Y-GUIDE RAIL

Over time, there may be some accumulated residue on these sliding surfaces and the rollers of the tool carriage.

Cleaning the sliding surfaces of the Y-Guide rail:

1. Switch off the machine.
2. Take a soft cloth dampened with isopropyl alcohol or mild detergent.
3. Clean the surfaces. When the tool carriage is in the way, push it gently to the left or right.

5.1.4 Changing the fuse

WARNING: Before changing the fuses, make sure that the cutter is completely disconnected from its power source.

WARNING: For continued protection against the risk of fire, replace only with the same type and rating of fuse: T2A H250V.

1. To remove the fuses, lightly pry the fuse holder release clips. The fuse holder will pop free.

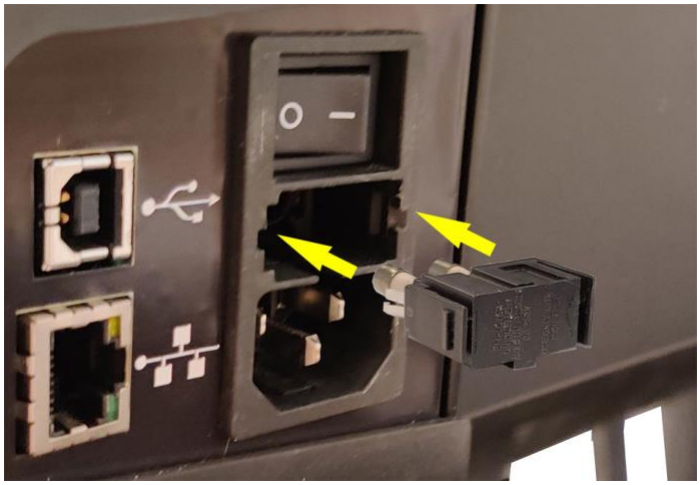


FIG 5-4
POWER ENTRY MODULE

2. Remove the fuse holder.
3. Pull the fuses from the holder.
4. Put the new fuses in the holder and clip the holder back into place.

6 SPECIFICATIONS AND GENERAL INFORMATION

6.1 General

6.1.1 Introduction

The S One range of cutters has been designed to produce computer-generated graphic designs on cut sheet or roll vinyl media. Using the integrated optical positioning system (OPOS) allows contour cutting of printed sheets of material. By replacing the knife with a pen, these cutters can also be used to produce inexpensive previews of new graphic designs on paper.
The S One series are available in different sizes and different configurations. Depending on the region, certain sizes and or configurations may not be available. Also, branding may be different. In this section, we refer to the basic model names S1D60, S1D75, S1D120, S1D140 and SD160. Where known, it is marked if a specification is configuration-depended.

6.1.2 Feature list

6.1.2.1 Hardware

- Integrated roll feed system with media core holders
- Fully adjustable media widths
- Stand with basket (Optional on S1D60 and S1D75)
- Back Media sensor for media detection
- USB, Ethernet and Wi-Fi capabilities
    - *Note: Wi-Fi only available in Europe, US and Canada*
- Integrated OPOS positioning and alignment system
    - With barcode recognition
    - OPOS X sensor automatically raised and lowered

6.1.2.2 Interface

- Portrait Capacitive Touchscreen – 320x240 pixels
- English, Spanish, French, German, Italian, Dutch, Polish, Latvian, Čeština, Portuguese
- Metric or English

6.1.2.3 Functionality

- Four separate adjustable user configurations stored in the non-volatile memory: (inclusive X&Y Calibration / exclusive OPOS parameters)
- Autoload for automatic media pull from the roll
- Concatenation and curve smoothing to obtain better cut quality
- OptiCut drag-movement optimisation
- Overcut for easy weeding
- FlexCut for cutting through
- Panelling
- Vector Sorting
- Multiple recut feature (up to 999)
- Automatic cut sheet after a job
- Flash Eproms (upgrade over communication port)
- Print & cut alignment technology : OPOS 2.0, OPOS X, OPOS XY, OPOS XY2, OPOS Extra

6.1.3 Software

- GoSign
    - Finishing software cut and print and cut jobs
    - Material Database
    - Windows 7, Windows 8 or Windows 10 (no home version)
    - Action sets to automate the workflow
    - Sorting facilities to shorten the output time
    - Vector clean-up

- MacSign™
    - Plug-in for Illustrator, for direct cutting to Summa roll cutter
    - MacOS X (10.2 or higher)
    - Connection by USB or TCP/IP
    - OPOS support
    - Registration required

- Summa Cutter Control
    - Program to control cutter parameters
    - Windows 7, 8 and 10
    - Utility to upgrade the firmware
    - Possibility to store user configurations on a hard disk
    - OPOS Barcode Server

6.2 Technical Specifications

6.2.1 Machine dimensions

	S1D60		S1D60 with stand		S1D75		S1D120		S1D140		S1D160	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
Height	304	12	1112	43.8	1112	43.8	1112	43.8	1112	43.8	1112	43.8
Width	970	38.2	970	38.2	1120	44.1	1615	63.6	1765	69.5	1960	77.2
Depth	406	16	704	27.7	704	27.7	704	27.7	704	27.7	704	27.7
Depth *Open basket*	-	-	1116	43.9	1116	43.9	1116	43.9	1116	43.9	1116	43.9
	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
Weight	18	39.7	-	-	36	79.4	43	94.8	43.5	95.9	48	105.9

6.2.2 Shipping dimensions

	S1D60		S1D75		S1D120		S1D140		S1D160	
	mm	inch	mm	inch	mm	Inch	mm	inch	mm	Inch
Height	470	18.6	470	18.6	710	28	710	28	710	28
Width	1220	48.1	1370	54	1890	74.5	2230	87.8	2230	87.8
Depth	420	16.6	420	16.6	420	16.6	420	16.6	420	16.6
	kg	lbs	kg	lbs	kg	lbs	kg	lbs	kg	lbs
Weight	23	50.7	45	99.2	68	149.9	71	156.5	74	163.2

6.2.3 Media handling

	S1D60		S1D75		S1D120		S1D140[4]		S1D160	
	mm	inch	mm	inch	mm	Inch	mm	inch	mm	Inch
Media Width Minimum	79	3.2	79	3.2	133	5.3	187	7.4	187	7.4
Maximum	705	27.7	855	33.6	1350	53.1	1500	59	1690	66.5
Pinchrollers	2		2		3		4 (3 for FX)		4	
Max .working Width	590	23.2	740	29.1	1235	48.6	1385	54.5	1580	62.2
Oversized[3]	650	25.6	800	31.5	1295	51	1445	56.9	1640	64.6

	mm	Inch
Max.Working Length	50 m	164 ft.
Minimum Margins[2]	25	1
Rear margin Sensor on	30	1.2
Sensor off	20	0.8
Tracking[3] **performance**	-8 m/26 feet max. within guaranteed specifications[1] for media less than 762 mm (30'' wide). -4 m/13 feet max. within guaranteed specifications[1] for media larger than 762 mm (30'' wide).	
Thickness	0.05 to 0.25 / 0.8 mm with optional sandblast knife 0.002 to 0.01 / 0.03 inch with optional sandblast knife	

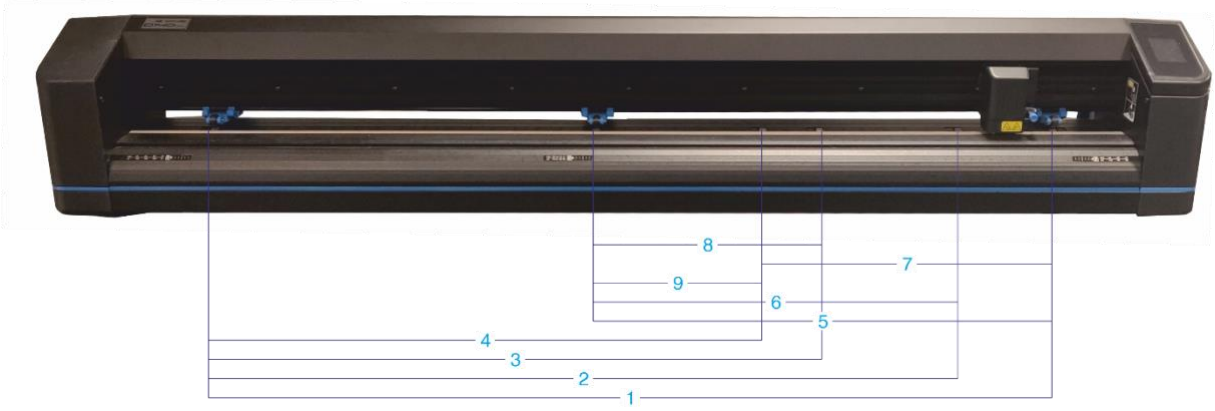
[1] Larger Media lengths can be handled, but compliance with specifications is not guaranteed (will be dependent on the media type, media size and other parameters not mentioned here.

[2] For positioning of the pinch rollers, these margins can be minimized using 'Oversized' mode[3]

[3] In 'Oversized' mode the tracking performance is no longer guaranteed.

[4] The FX-Series have different media specifications as the pinch rollers can only be set in a limited number of positions.

For the S1D140FX you have a total of 9 fixed positions



Position	Working area		Target media width (margin)	
	mm	Inch	mm	Inch
1.	1323	52.08	1372 (24)	54 (1.0)
2.	1172	46.18	1220 (23)	48 (0.9)
3.	954	37.55	1000 (23)	40 (1.2)
4.	864	34.01	914 (25)	36 (1.0)
5.	720	28.34	762 (21)	30 (0.8)
6.	570	22.44	610 (20)	24 (0.8)
7.	454	17.87	500 (23)	20 (1.1)
8.	350	13.77	400 (25)	16 (1.1)
9.	260	10.23	280 (10)	11 (0.4)
Minimum for scrap: (outer right position - not shown in picture)				
	84	3.3	105 (10)	4.1 (0.4)

* Media sensor should be disabled in order to use this position.

6.2.4 Performance

Cutting specifications on 0.05 mm (0.002") wax-backed vinyl, total media thickness not greater than 0.25 mm (0.010")

Axial speed	50 to 800 mm/s	2 to 32 ips
Maximum Speed	Up to 1131 mm/s diagonal	Up to 44 ips diagonal
Default speed	700 mm/s	28 ips
Axial Acceleration	2 G	
Max. Acceleration	up to 3 G diagonal	
Addressable resolution	0.025 mm, 0.1 mm	0.001", 0.005"
Default resolution	0.025 mm	0.001"
Mechanical resolution	0.0127 mm	0.0005"
Repeatability(1)	+/- 0.1mm	+/- 0.004"
Accuracy*	0.2% of move or 0.25 mm, whichever is greater(2)	0.2% of move or 0.010", whichever is greater(2)
Knife pressure	0 to 600 gr. (3)	
Pen pressure	0 to 600 gr. (3)	

(1) Valid within the guaranteed tracking length (see 7.3 Media Handling). Not valid in 'Oversized' Mode.

(2) Excludes differences due to media expansion, stretching, etc.

(3) Except for S1D140FX which is 400 gr.

6.2.5 Interface

Communication		
Ethernet	I/O Port connector	RJ45 female connector
WIFI (1)		802.11 b/g/n
USB	I/O Port connector	USB series "B" receptacle (female plug)
	Mating connector	USB series "B" plug (male plug)
	Version	1.1
Buffer Size		10 MB

(1) Not available on S One D140FX

6.2.6 Wi-Fi

Wi-Fi is only available in select countries.
This is due to EMC tests done according to European Directive (2014/53/EU):

- EN 303 446-1 Ver. 1.2.1
- EN 301 489-1 Ver. 2.1.1
- EN 301 489-17 Ver 3.1.1
- EN 55032:2015 + AC:2016-07
- EN 55035:2017 + AC:2019-11

And EMC tests were done according to USA & CANADA standards:

- FCC Part 15B / ICES-003 issue 6

Following is a detailed list of countries covered by these tests and thus can have WIFI enabled: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Faroe Islands, Finland, France, Georgia, Germany, Greece, Greenland, Guernsey, Holy See, Hungary, Iceland, Ireland, Isle of Man, Italy, Jersey, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, The Former Yugoslav Republic, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain, Northern Ireland, Monaco, Turkey

6.2.7 Firmware

Language	DM/PL, HP-GL (758x emulation), HP-GL/2
Supported character sets	Standard ASCII
Supported fonts	Sans serif (single stroke & medium)

6.2.8 Environmental

(Cutter without media)

Operating Temperature	15 to 35°C	59 to 95°F
Storage Temperature	-30 to 70°C	-22 to 158°F
Relative Humidity	35 – 75%, non-condensing	

6.2.9 Power consumption

Number of power cords	1
Input voltage	100-240 VAC ± 10%
Input frequency	50/60 Hz
Maximum load per power cord	2A
Power consumption during operation	0.25 A (@ 240V) (*) 0.6 A (@ 100V) (*)
Power consumption idle	0.1 A (@ 240V) 0.25 A (@ 100V)

*Typical value, may vary depending on cut file and media