PRECISION · ACCURACY
VULCAN

USER'S MANUAL

SC 350

Thank you for choosing a VULCAN SC-350. To ensure high cutting quality and optimal productivity, please read this User's Manual thoroughly prior to use.

WARNING

Manual

- No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, without the prior written permission of VULCAN Corporation.
- The product specifications and other information in this manual are subject to change without notice.
- While every effort has been made to provide complete and accurate information, please contact your sales representative or nearest VULCAN vendor if you find any unclear or erroneous information or wish to make other comments or suggestions.
- Not with standing the stipulations in the preceding paragraph, VULCAN Corporation assumes no liability for damages resulting from either the use of the information contained herein or the use of the product.

Cutter

All external data interface cables and connectors must be properly shielded and grounded.
Proper cables and connectors are available from vulcan's authorized dealers or manufacturers of computers or peripherals.
VULCAN is not responsible for any interference caused by using cables and connectors other than those recommended or by unauthorized changes or modifications to this equipment.
Unauthorized changes or modifications could void the user's authority to operate the equipment.

Machine Caution Label

The following Warning Label is located on this cutting plotter. Please observe all the warning on the label

Warning; Electricity
Taking care to avoid coming into contact with electricity

Warning; Sharp element
Taking care to avoid injury from sharp elements (e.g. needles, blades)

After Turning on the Sheet cutter

During operations, immediately after completion of operations, and when setting the cutting plotter functions, the carriage, will move to the origin position, and other parts which are not fixed, may move suddenly.

Do not let your hands, hair, or clothing get too close to the moving parts or within their range of movement.

Do not place any foreign objects in or near these areas either. If your hands, hair, clothing, or the like get caught in, or wrapped around moving parts, you may be injured and the machine may be damaged.

Definitions

- In this instruction manual, the word "cutter" refers to operating the machine and using either the plotting pen or the cutter plunger to cut.
- In this instruction manual, the word "media" refers to paper, roll media, sheet media, or marking film.

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Chapter 1 Product Summary

1.1 Machine Specifications
1.2 Accessories List
1.3 Product Introduction
1.4 Control Panel
1.4.1 Screen (LCD)
1.4.2 Control Key

1.1 Machine Specifications

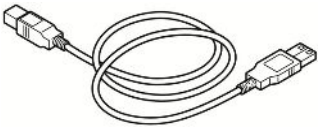
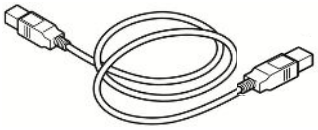
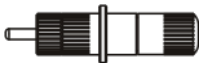
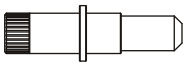
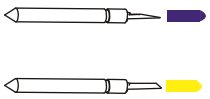
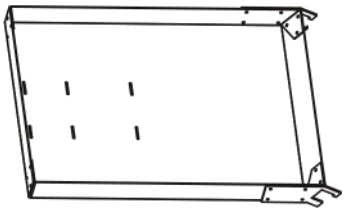
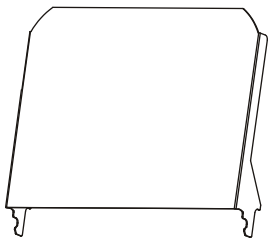
Item	SC-350
Configuration	Automatic feeding sheet cutter
Media size	Width:185 to 350mm Length:150 to 500mm A4,A3,SRA3,Extended A3. Custom sizes for a maximum cutting length of 500mm
Maximum cutting speed	1200 mm/s (High speed mode)
Max force	400g
Minimum character size	Approx. 5 mm square
Sheet weight	Up to 0.35mm (350g/m²)
Auto-sheet capacity	Up to 200 sheets
Feeding time	2 seconds
Marks detecting time	4 seconds
Mechanical / Programmable Resolution	0.01254mm / HP-GL: 0.025 mm
Standard interfaces	USB2.0 (Full Speed) / U-Flash / Ethernet
Command sets	HP-GL
Number of tools	1 tool
Tool types	Cutter blade
Operating screen	4.3-inch touch LCD
Power supply	100 to 240 V AC, 50/60 Hz (Auto switching)
Power consumption	60W

Operating environment	Temperature: 10 to 35 degree, Humidity: 35 to 75% RH (non-condensing)
External Dimensions(mm) (W × D × H)	Exit tray : 406 x 462 x 186 mm Exit tray+Cutter+Media support tray: 1109 x 747 x 594 mm
Weight	33kg/36kg
Dimensions （W x D x H)	870 x 550 x 580mm
Compatible OS	Windows and Mac

*1 : HP-GL is a registered trademark of the US Hewlett Packard Company.

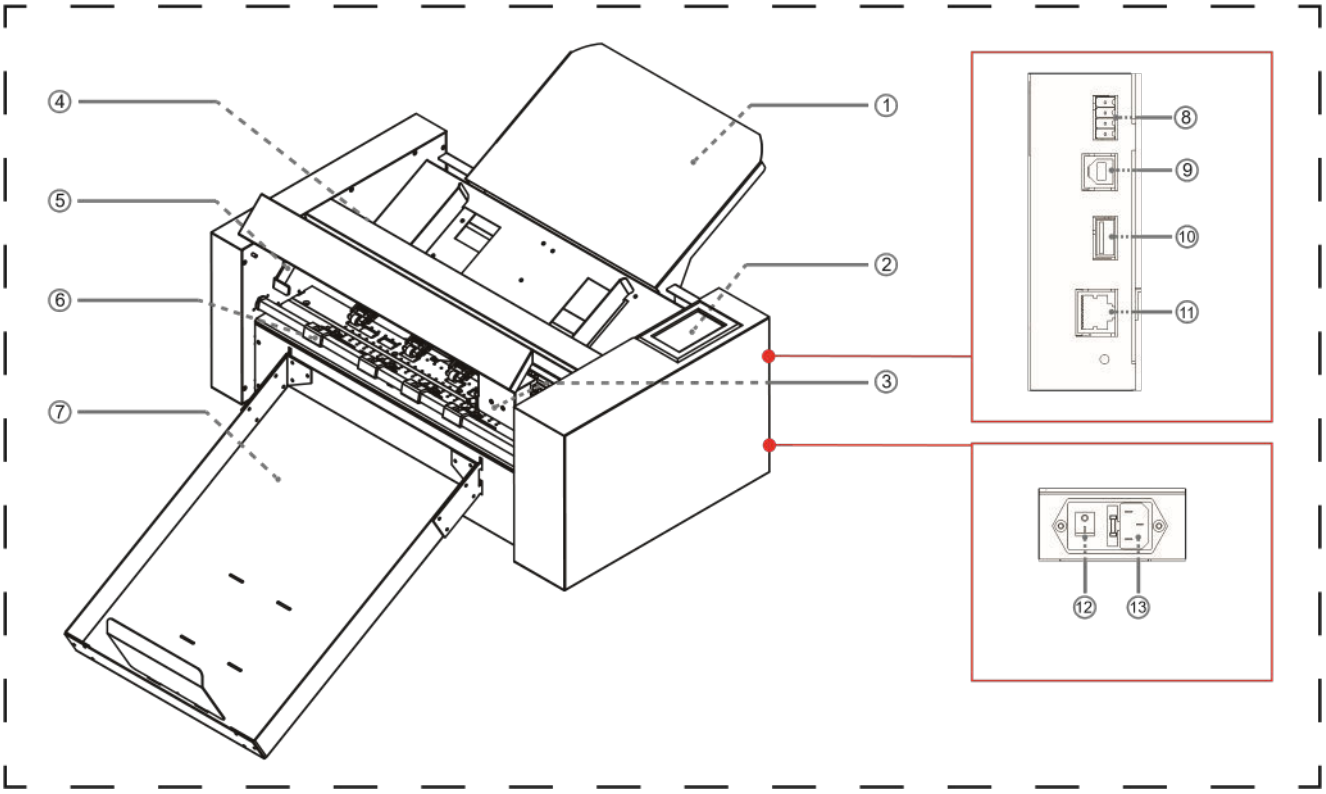
*2 : It depends on our specified paper and conditions

1.2 Accessories List

Accessories for sheet cutter		
Power cable x 1pc	 USB cable x 1pc	 Ethernet cable x 1pc
 Blade holder x 1pc	 Pen calibration tool x 2pcs	 30°Blade x 1pc 60°Blade x 1pc
USB disk x 1pc	Pen x 5pcs	
Accessories for stand		
 Exit tray	 Media supply tray	
Rear media guide		

*Other guide for the accessory may be attached.

1.3 Product Introduction



(1) Media supply tray.....Support the media to be cut by cutting plotter.

(2) Control panel.....Used to access various cutting plotter functions.

(3) Tool carriage .....Part to drive the cutter/pen.

(4) Feeding roll system.....Separate the media, and delivery the media into the cutter section.

(5) Pinch roller handle.....Raise and lower pinch roller.

(6) Pinch roller.....During working, fixed the media.

(7) Exit tray.....Place the cut media.

(8) Inactive connector

(9) USB interface connector.....Connect computer with USB cable

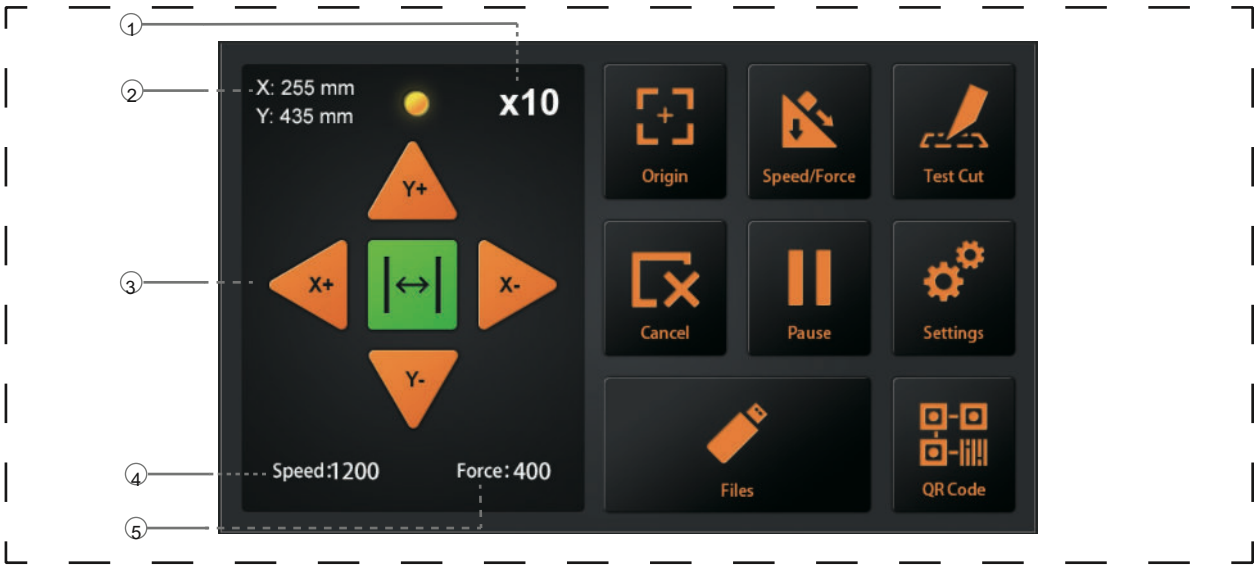
(10) U Disk port .....The port that is used only for the USB memory.

(11) LAN port…… to connect network cable

(12) Power switch.....Used to turn the cutting plotter on and off.

(13) AC line inlet.....Inlet where the power cable is connected.

1.4 Control Panel



Screen (LCD)

(1) Acceleration display .....Arrow key speeds for carriage control, Fast (x10) / Slow (x1).

(2) Carriage coordinates.....The coordinates of carriage on the table.

(3) Arrow keys.....To move carriage to different positions.

(4) Speed.....Carriage moving speeds (tool1/tool2) during working.

(5) Force.....Carriage down forces (tool1/tool2) during working.

Control Key

Origin.....To set work origin.

Speed/Force .... To set speed/force of tool1/tool2.

Test cut.....To cut one square and one triangle for testing force of tool1/tool2.

Cancel.....Cancel the job after the work is paused.

Pause.....To pause the cutting job when we find anything wrong.

Settings.....Machine calibration and system information.

Files.....To choose file from USB-disk

(PLT-files saved on USB-disk can be used for direct output).

Chapter 2: Installation

2.1 Cutter Installation

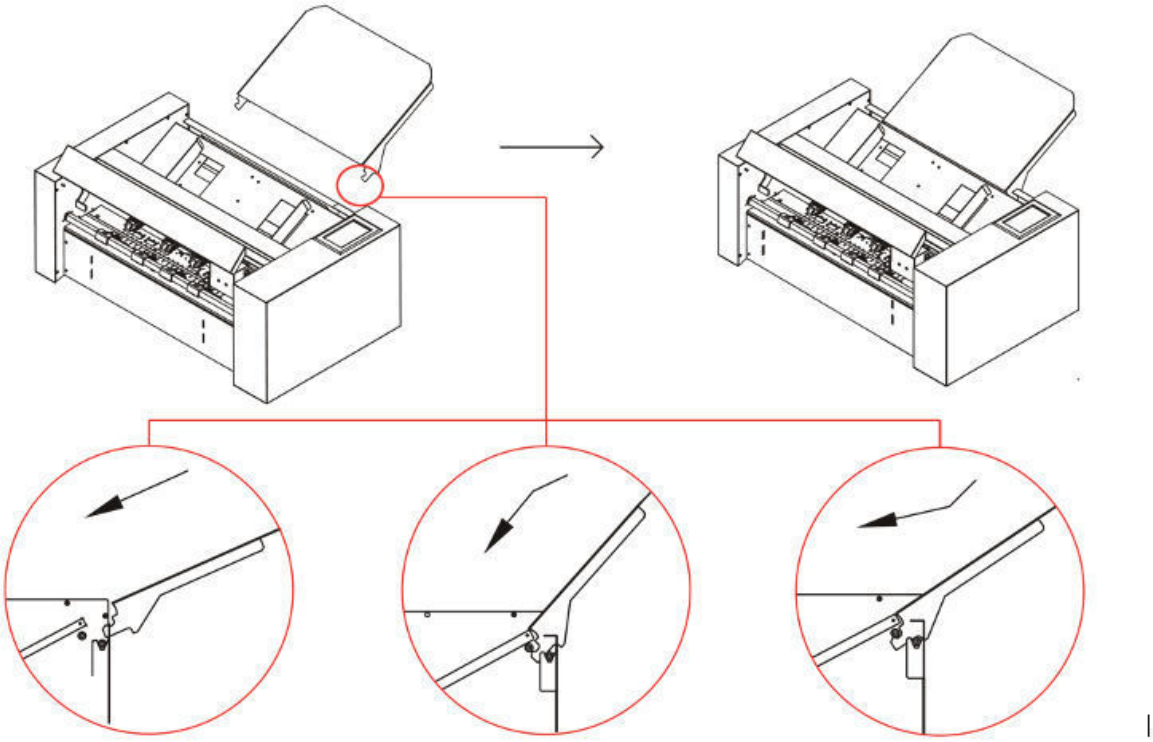
2.2 Use of Tools

2.3 Attaching a tool

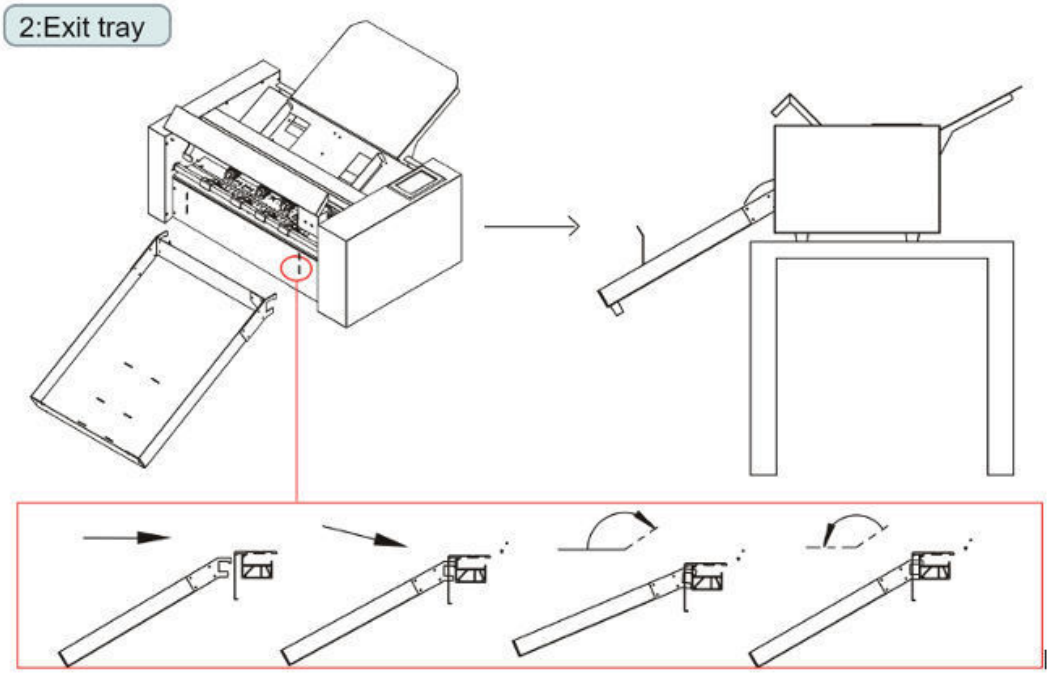
2.4 Connecting to the computer

2.1 Cutter Installation

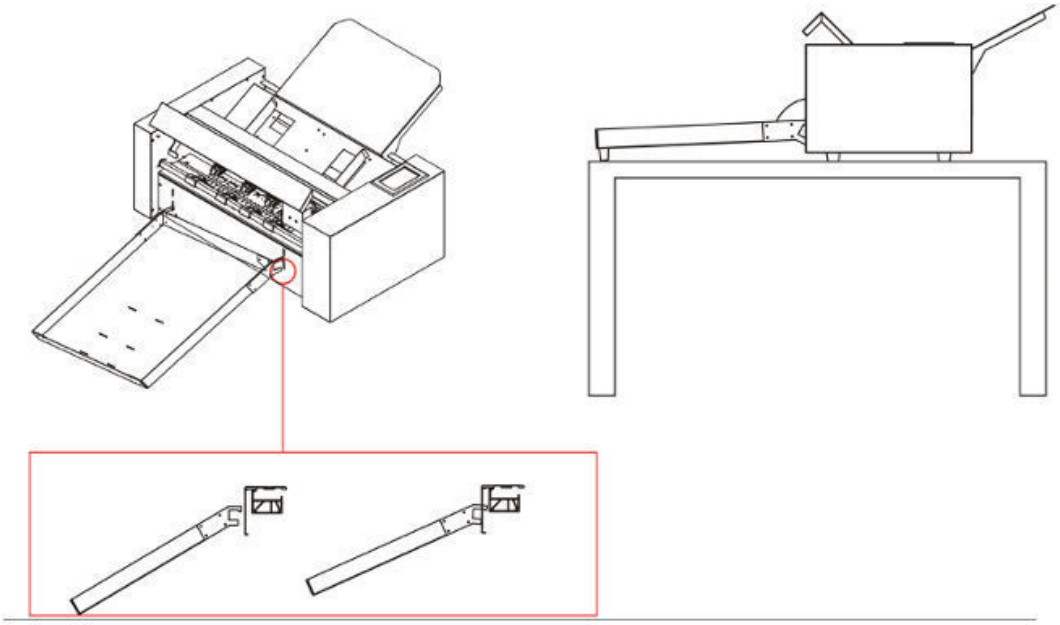
Media Support Tray



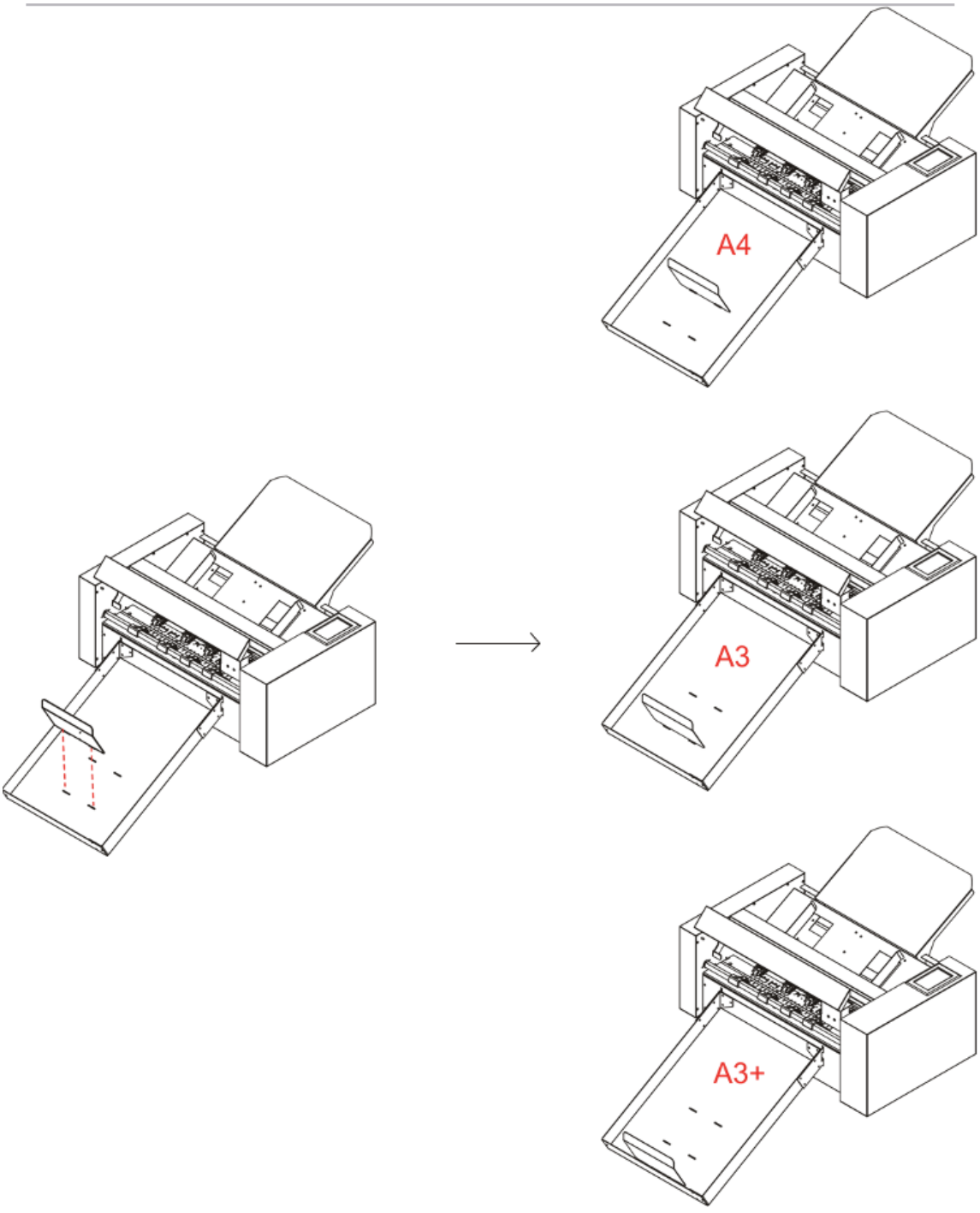
- insert the media support tray into the machine
- push it down in the direction.
- lift media support tray up again, you will hear a click.



- insert the exit tray into the machine. (Vertical direction)
- put down the exit tray, the exit tray will be stuck on the machine.



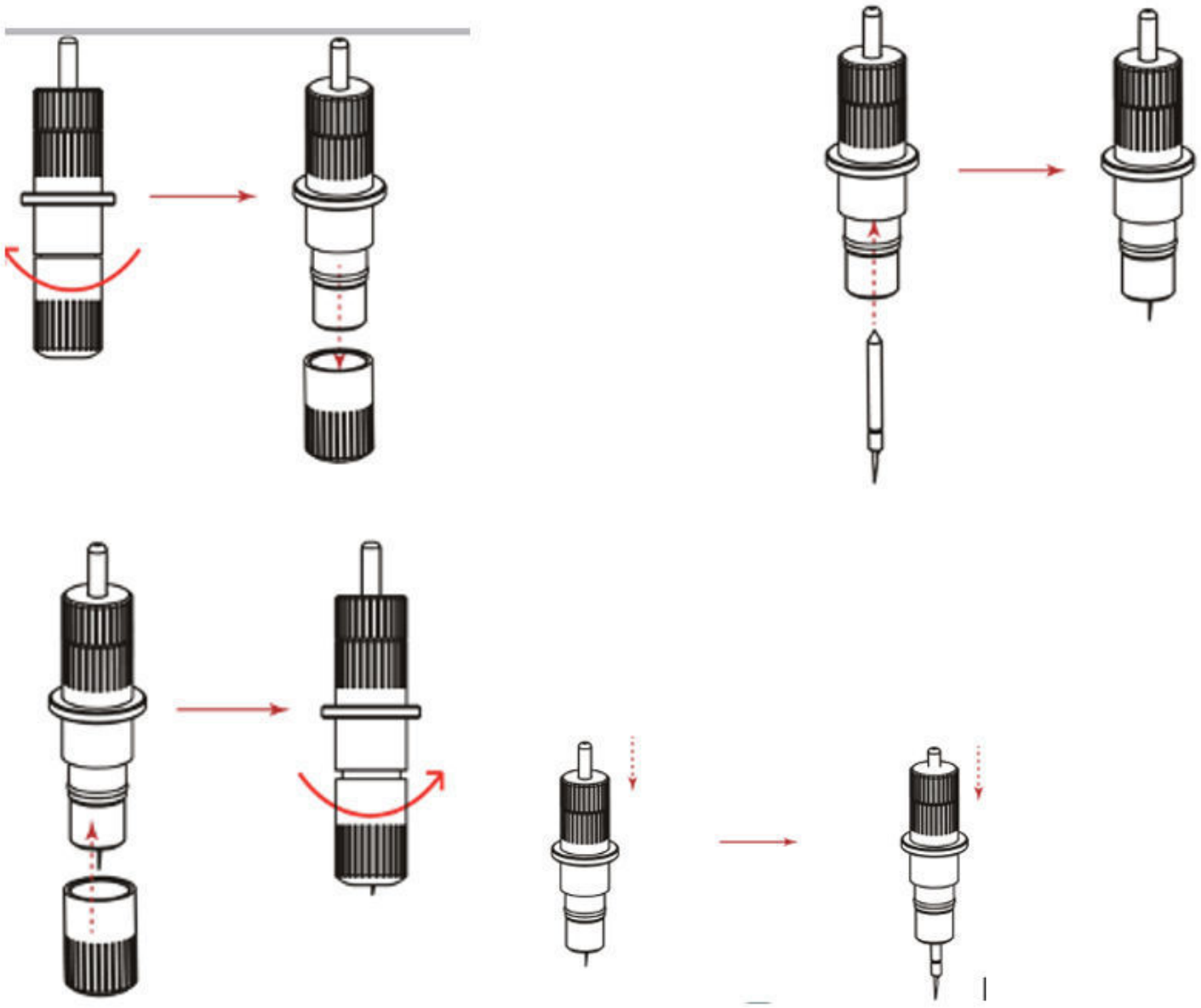
Media holders



2.2 Use of Tools

Blade holder

- unscrew the blade holder cap,as shown.
- place the blade (as shown) into the slot of the blade seat.
- screw the blade holder cap to complete the installation and replacement of the blade.

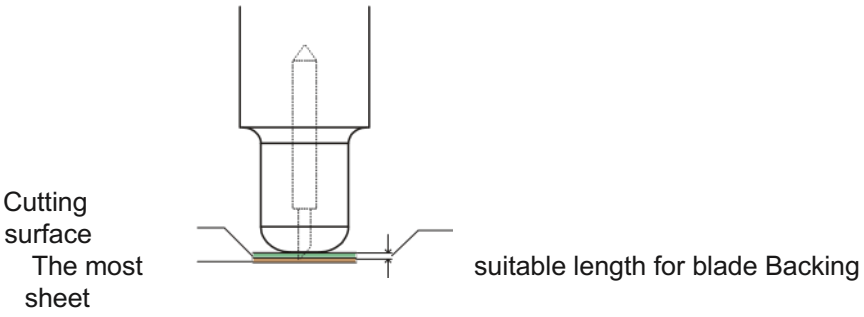


Adjust the right setting of the blade

Gradually increase the blade length to suit the thickness of the medium being used.

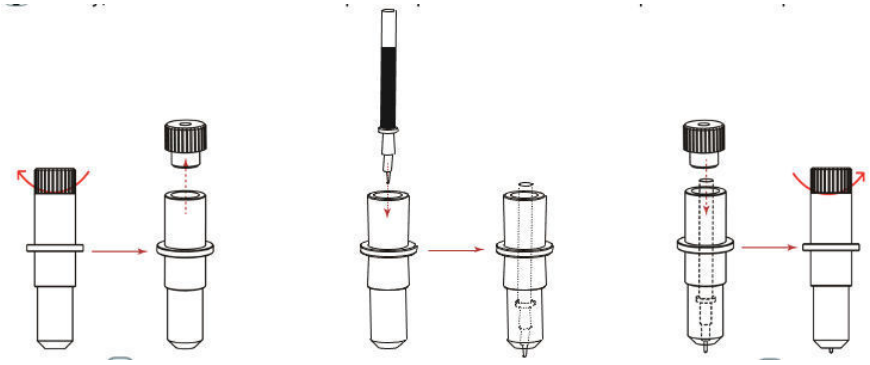
*Adjust the blade length so that only traces of the blade appear on the backing sheet when a cutting test is performed. *The ideal blade length is a length that is slightly less than the combined thickness of the film and its backing sheet, but greater than the thickness of the film itself.

*If the blade cuts right through the backing sheet, decrease the blade length. If the blade does not cut the film cleanly, increase the blade length.



Pen holder

- unscrew the Calibration tool cap,as shown.
- place the pen (as shown) into the slot of the pen seat.
- screw the Calibration tool cap to complete the installation and replacement of the pen.

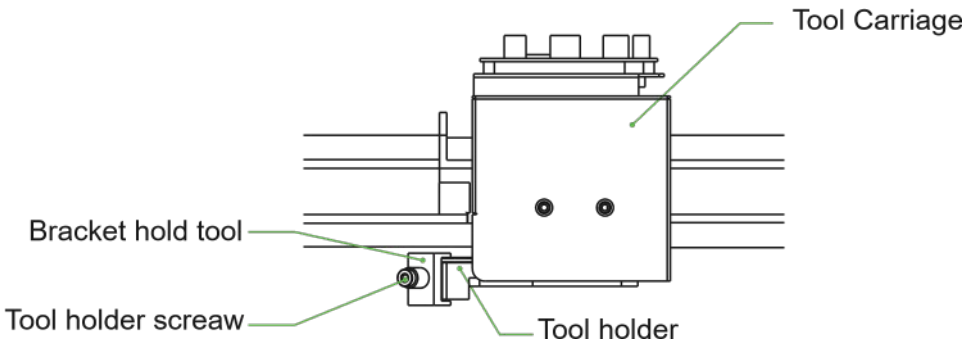


2.3 Attaching a tool

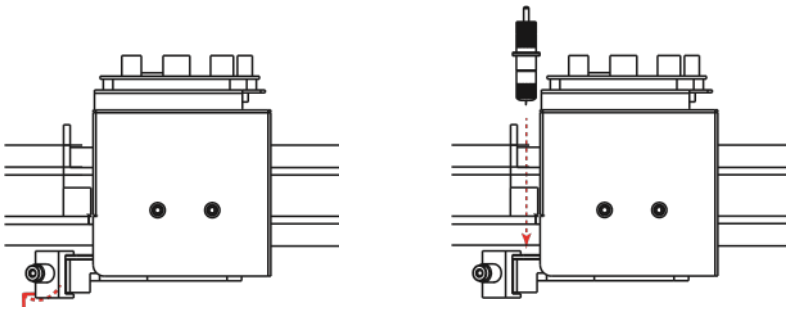
⚠ When pushing the tool holder with your fingers,the blade tip may be protruding.

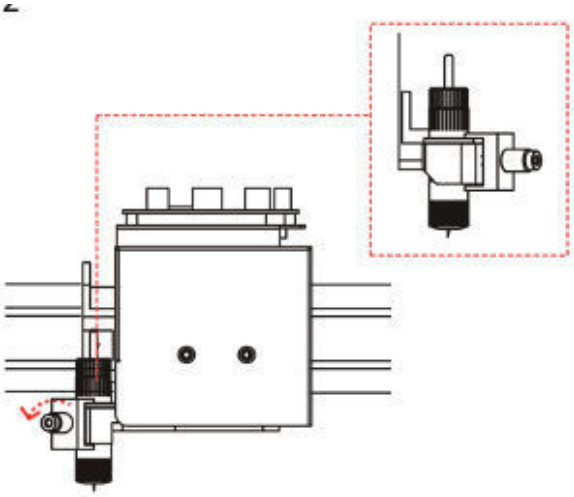
When mounting the tool in the tool holder, please note the following.

- Push the tool all the way into the holder until its flange contacts the upper part of the holder and then tighten the screw firmly.
- To prevent injury, avoid absolutely touching the tool immediately after the cutting plotter is turned on or whenever the tool is moving.



- Loosen the tool holder screw.
- while pushing up the tool holder, push the tool into the holder until the flange of tool completely touches the upper part of the holder.
- make sure that the tool bracket is engaged on the tool's flange, and then tighten the screw





Removing the tool

When removing the tool, turn the tool holder screw counterclockwise to remove the tool.

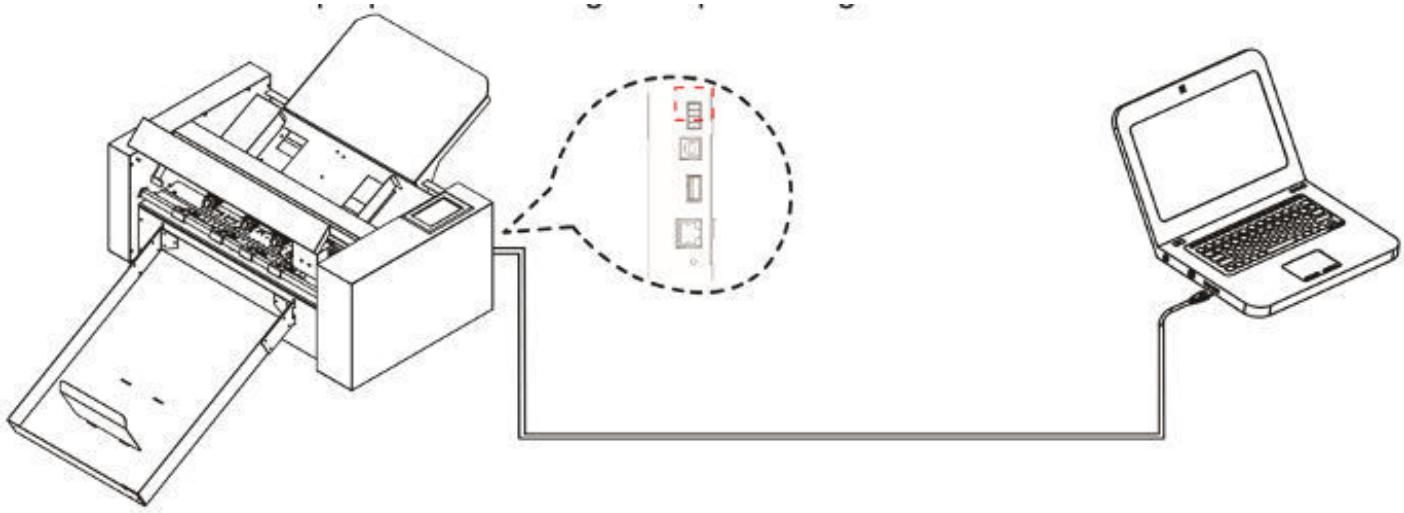
2.4 Connecting to the computer

Connect the plotter to the computer using the communication cable. Use either the USB interface, network (LAN) interface to connect the plotter to the computer. Select the port depending on the specification of the software to be used and the availability of the interface port on the computer. Depending on the port used, use either the USB cable (standard accessories), network (LAN) cable (standard accessories) to connect. Use the cables specified by Vulcan, matching the computer that is to be connected

Connection via USB interface

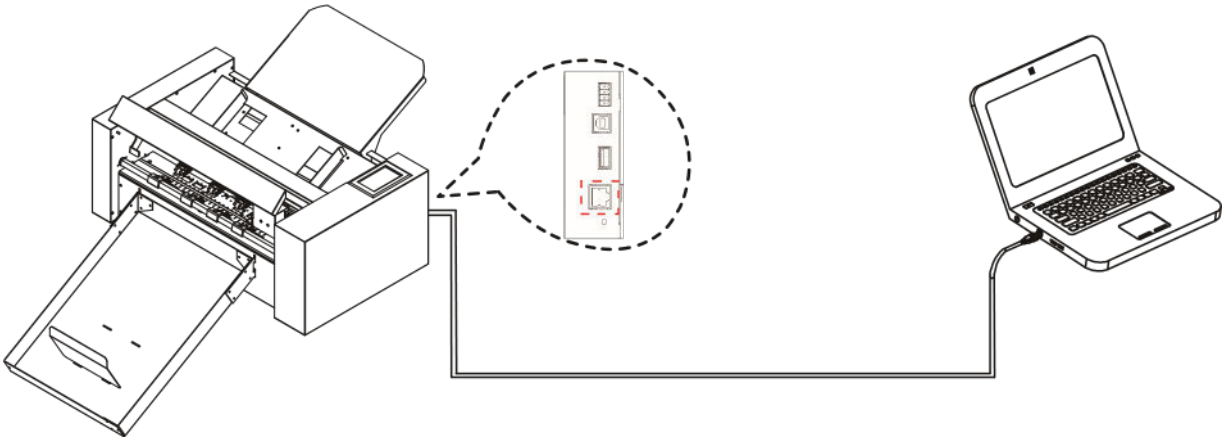
Do not perform the followings:

- Do not connect or disconnect the USB cable when the computer or the plotter is performing an initialization routine.
- Do not disconnect the USB cable within a 5-second period of connecting it.
- Do not disconnect the cable during data transfer.
- Do not connect multiple plotters to a single computer using the USB interface.



Connection via Ethernet (LAN) interface

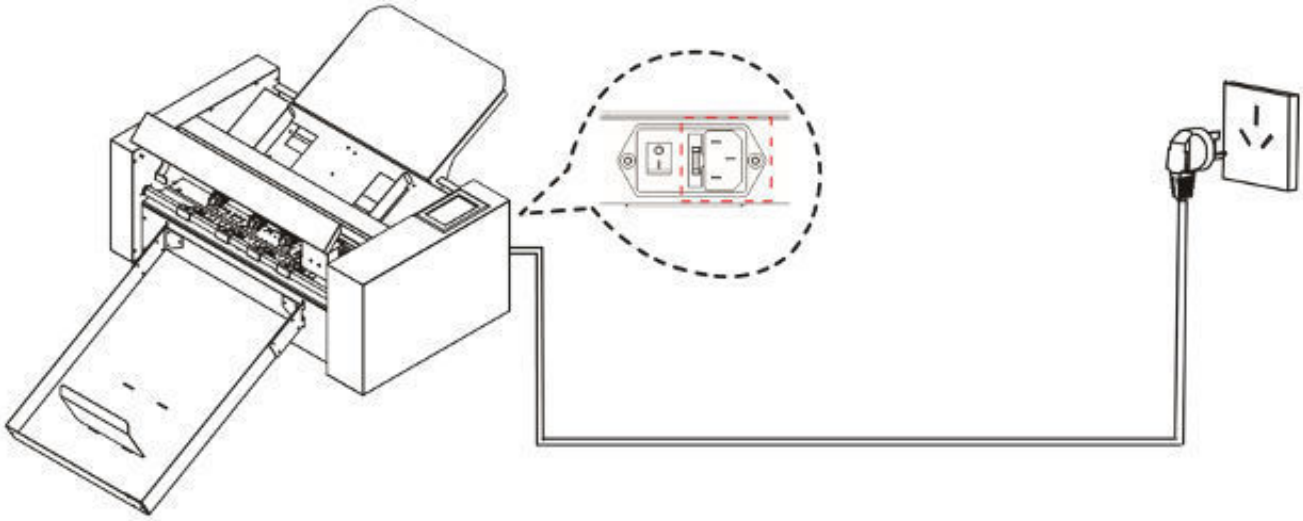
- To use the network (LAN) interface, the environment that can connect the computer to the network must be established.
- temporarily turn off the firewall function during the use, or change the setting.if you want to turn off the firewall function,discounnect the network from the internet.



Connecting the power cable

Supplement

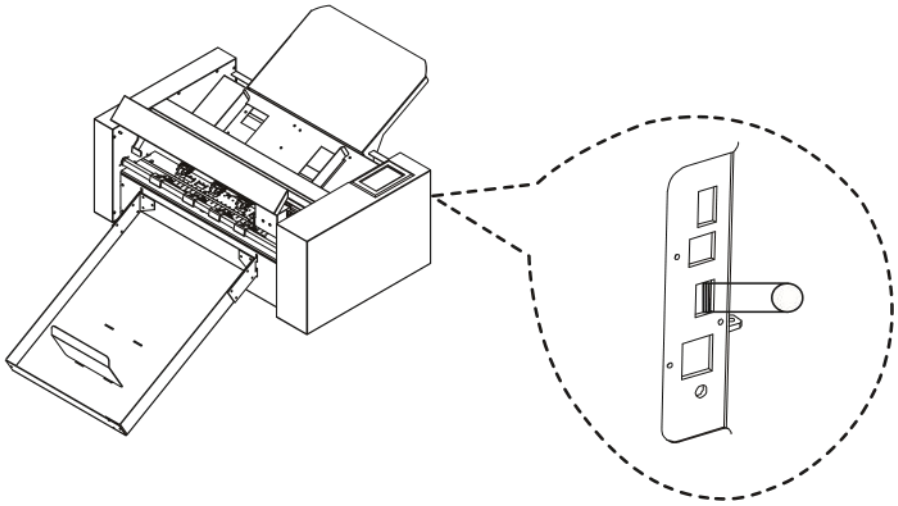
When turning off the power, wait over 10 seconds before turning on it again, otherwise problems may occur with the display.



Connecting via USB Drive

The USB disk is supplied as a standard accessory.

* There are manuals, software and test files on the USB-Drive



Chapter 3: Functions

3.1 Loading the Media

3.2 Move the Tool Carriage

3.3 Setting the Origin Point

3.4 Running Cutting Tests

3.5 Stop Cutting

3.6 Offline Output

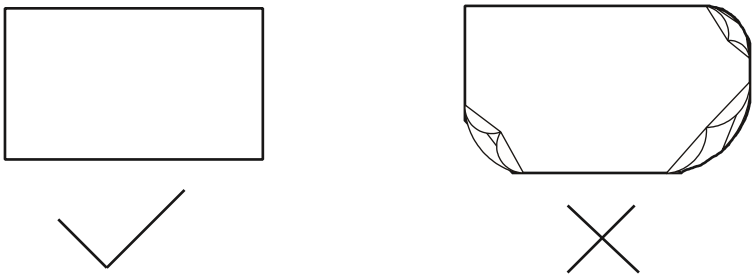
3.7 QR Code

3.8 Settings

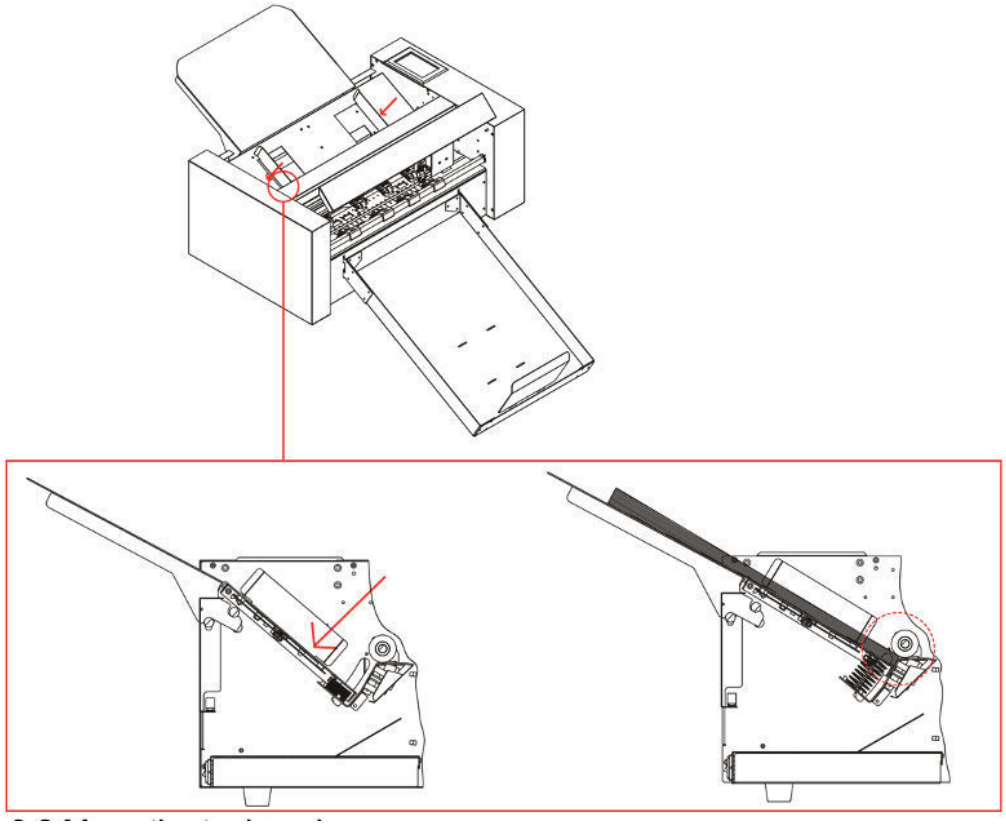
- Calibrate Cutter Size
- Offset Calibration
- Operating Mode
- Sensor Condition
- System Information

3.1 Loading the media

• Do not use warped or twisted media.Make sure the material is flat.



- press the feeding platform down.
- Place the media in the feeding platform. Note that the paper fully enters the platform.
- Loosen the feeding platform, the paper feeding platform will rise and Move the left and right baffles to the edge of the paper the media will be placed finish. (Note: The loaded media is under the paper feed roller).

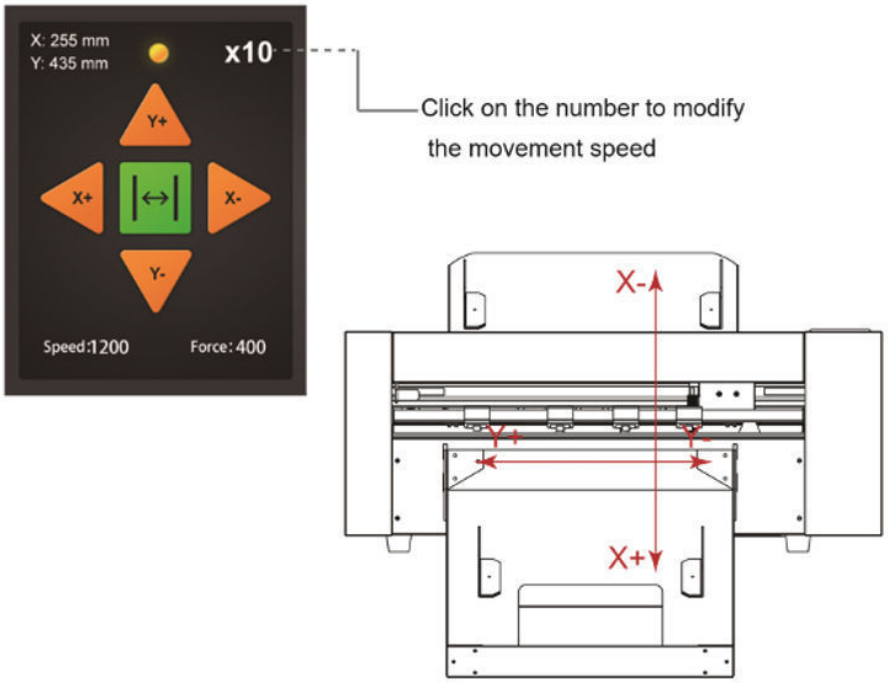


3.2 Move the tool carriage

Tool carriage can be moved manually using the POSITION key. It also can move the tool carriage to the origin, or move it certain distance to keep it away.

As the machine feeding system automatically, this function is to used when the force and other parameters need to be tested

When there is no file in progress, Press the white number to modify the moving speed. The speed 1 can be modified to 1 or 10 and there will be a white number in the upper right corner showing the speed value.



You can press the buttons “ ▲▼◄► ” to move the tool carriage.Tool carriage will move toward the direction of the pressed POSITION key,Movement speed will also change.

3.3 Setting the origin point

Press the “Origin” key. and the new origin has been set.

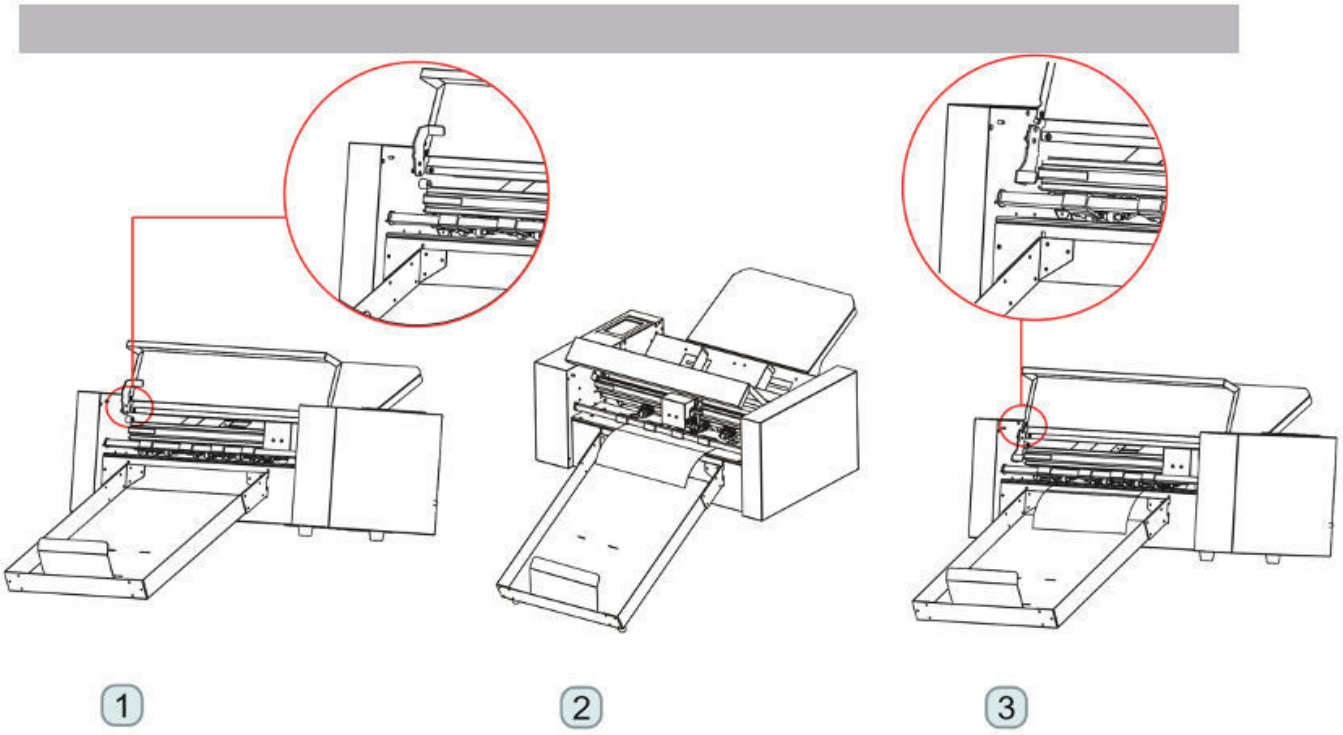
The white text in the upper left corner will show the distance of the new origin point from the original origin point.

3.4 Running Cutting Tests

With cutting tests, the correct speed and force can be adjusted for the media:

Load the desired media for testing

- Open the locking system for media handling and lift the pinch rollers
- Insert the media into the cutter
- Close pinch rollers again by lowering the lever
- Place the blade holder with blade in the carriage
- Move the carriage to the middle and confirm origin
- Press the Test Cut button on the control panel
- Press the front and back buttons (▲▼) to remove the media from the machine and check whether the force is appropriate
- If you find that the force is not suitable, you can turn on the speed and pressure buttons and adjust
- To adjust speed or force, either move the slider on the touchscreen or click the number and enter the desired speed or force.
- Move the carriage to the center of the media and press “Test cut” again.
- Check the force is OK. Raise the pinch roller handle,take out the media and put the pinch roller handle down.
- The cuttings tests is complete.



Speed and Force

3.5 Stop Cutting

During the work, if you need to pause and press the "Pause" button. To continue cutting, press the “Start” again.

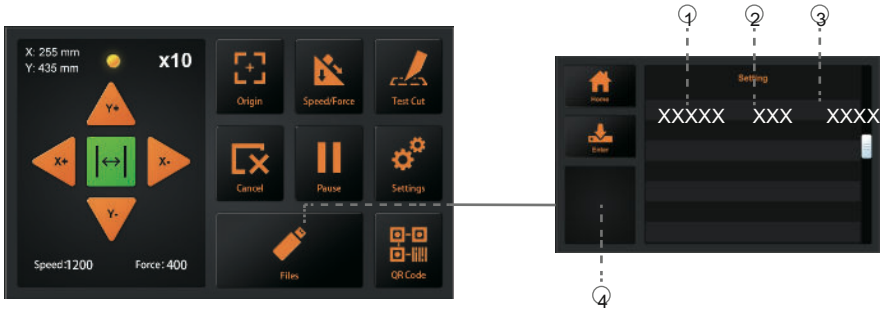
After the work is paused. Press the “Cancel”, if you want cancel the job.

3.6 Offline Output

Dedicated data that was preliminarily created by the application software can be saved to the USB disk and can cut directly from the cutter without the need of a computer connected. You need to create PLT files, e.g. from SignCut or DrawCut.

Select the PLT file by pushing the files button on the control panel

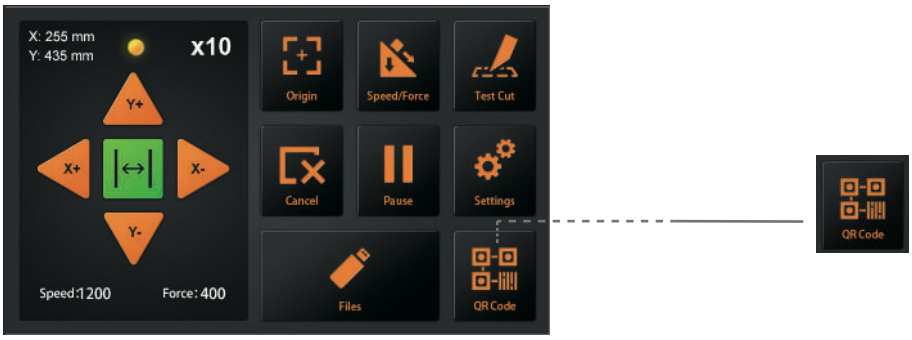
- The Windows prohibited characters (¥, \ , /, ;, *, ?, “, <, >, |, etc.) cannot be used.
- Limit of the number of display characters is 8 characters.
- Extension is "plt".
- Preview.....Once the file is selected, click here to see the contents of the file.
- When the file is selected, click “Enter. The cutter will work.



(1) File name (2) size (3) Create data time

3.7 QR Code

QR code working mode, when offline, the machine automatically cuts different files.



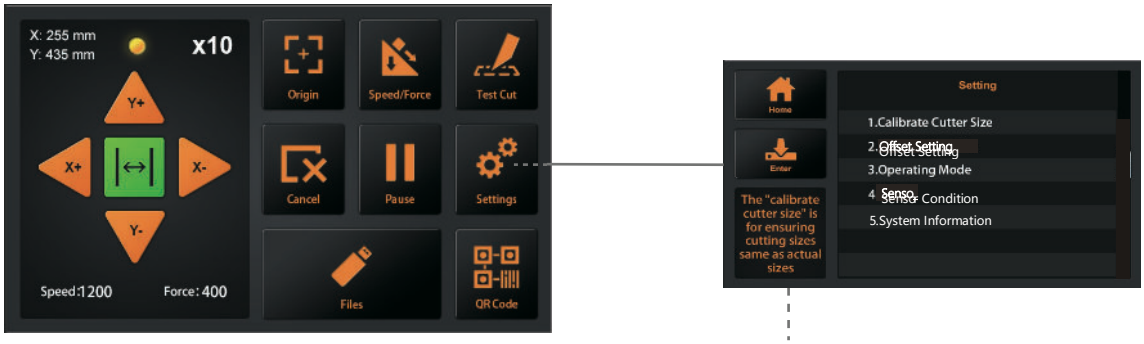
The PLT file (including the QR code) made by the software is put on the USB thumb drive
Then put the USB stick into the machine. Click QR-CODE and the machine will automatically feed and cut QR-CODE files. It is required that the contents of the QR code matches the file name without the file extension. E.g. the QR-code contains 123456, the file needs to be 123456.PLT in the root folder of the USB drive.

3.8 Settings

Click on the parameter and the Preview box will show the meaning of the parameter.

Under normal circumstances, these parameters don't need to be modified.

Please refer to the following instructions If need to modify.



Preview

Calibrate Cutter Size

Calibrate Cutter Size: The "Calibrate Cutter Size" is for ensuring cutting sizes same as actual sizes. After a while when the machine is not cutting precise sizes, it will be necessary to recalibrate it.

Please load any test media first ,and set the origin.(Refer 3.4)

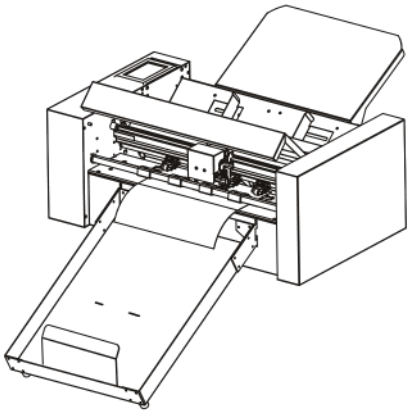
- Press "Calibrate cutter size",then press "Enter".
- Enter a size in "Draw Rectangle",then press "Draw".
- The cutter will draw a rectangle according to the input size.
- Use a ruler to measure the rectangle of the draw and input the measurement result to "Measured Rectangle".
- Press "Calc".it's finished. The program will automatically calculate the exact value.

Offset Setting

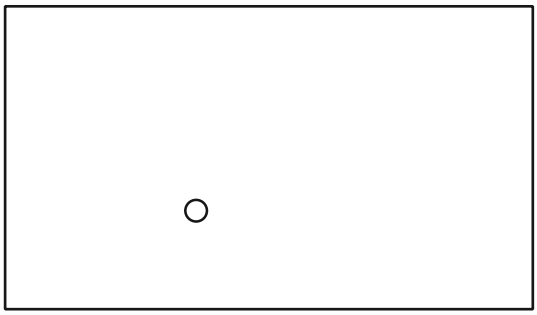
The offset shows the X and Y distance between the center oft he cutting head and the camera. It is required for precise cutting of printed media. If your printed media is not cut precisely you need to adjust the offset and/or calibrate it.

The machine is equipped with an automatic calibration system which requires a pen calibration tool and a piece of paper.

- Load the test media (A4 paper|) in the mahcine and Blade holder replaced with pen calibration tool first.(Refer 3.4)
- Press “Auto”,then machine will be draw one circle.
- Then machine will automatically input the calibrated parameters.
- Press“Return”,offset calibration is completed.

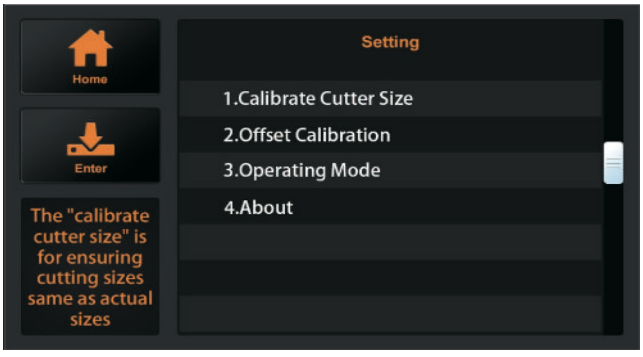


1



2

3



4

Operating Mode

The machine has three operating modes:

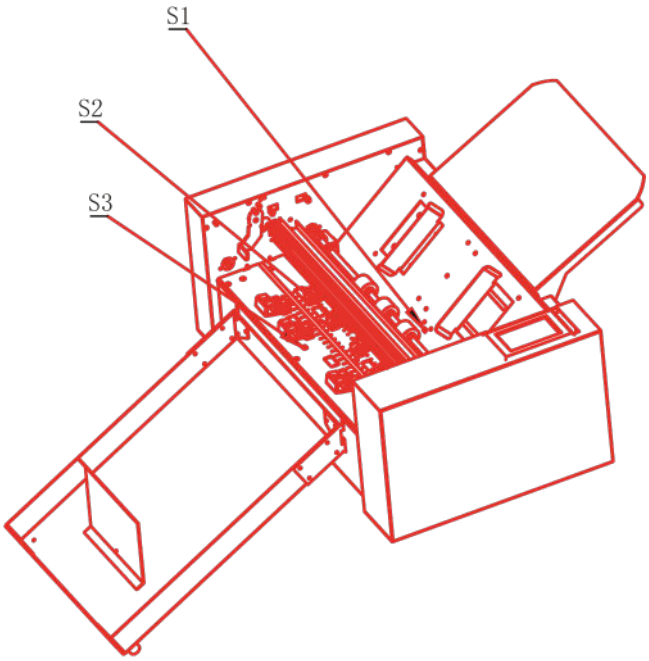
Normal: Common mode, Perfect speed and precision.

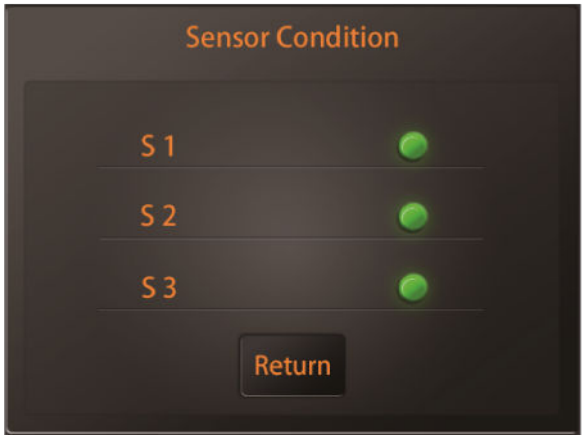
Precision: It is suitable for high-precision work. The accuracy is priority, and the speed will be slowed down.

Hi-speed: It is suitable for large format work. speed will be fast and the precision will decrease.

Sensor Condition

Sensor Condition shows the status of the 3 media sensors the machine is equipped with:





System information

Model: The model of cutter.

Machine SN: The serial number of the cutter,every machine has a unique number.

MB Ver: The version of the mainboard.

MB SN: The serial number of the mainboard.

Cut len: The mileage the cutter has worked

IP: IP address.When connecting via a network cable,

check that the IP address is same with the computer.

FW Ver: The version of firmware.

Chapter 4: Troubleshooting and Maintenance

4.1 error messages

4.2 maintenance

4.3 technical documentation

4.1 Error messages

LCD Display	Cause	Solution
• No Paper !	Media support tray is empty.	Please load media in media support tray.
• Paper Feeding Error!	The material cannot enter the cutter normally.	1:Check whether the material is installed correctly. 2: Whether the 3 sensors are normal.
•Loading...	File loading	
	Interface loading	
•Cutter is busy!	The cutter is working and cannot perform other operations	Perform other operations, after the work is completed,
•Drawing...	The cutter is drawing a calibration file.	
•Oversize!	Working width exceeds the actual working width of the machine	Modify the working size, please pay attention to the actual working size of the cutter.
•Unsuccessful!	Calibration offset job failed	Confirm that the pen holder can write normally, and force of both tools are set to 60g.
•Read file error!	Read file error when work via USB drive	Please try to insert the USB drive into the cutter again
•X Motor Error!	Motor Error!	Stop cutter. 1:Check whether the motor is affected by other resistance during operation. 2:Check the motor circuit connection. 3:Replace with new motor.
•Y Motor Error!		
•Image does not fit the machine size!	When using the RESET function, the remaining working size of the cutter is smaller than the size of the document to be cut.	Change the material position and reset the starting point.

LCD Display	Cause	Solution
.S1 Cover!	The S1 sensor is covered.	1: Whether there are foreign objects (materials, paper scraps, etc.) blocking the sensor. 2: Is the S1 sensor normal? 3: Check if there is a light source directly on the sensor.
.S2 Cover!	The S2 sensor is covered.	1: Whether there are foreign objects (materials, paper scraps, etc.) blocking the sensor. 2: Is the S2 sensor normal? 3: Check if there is a light source directly on the sensor.

4.2 Maintenance

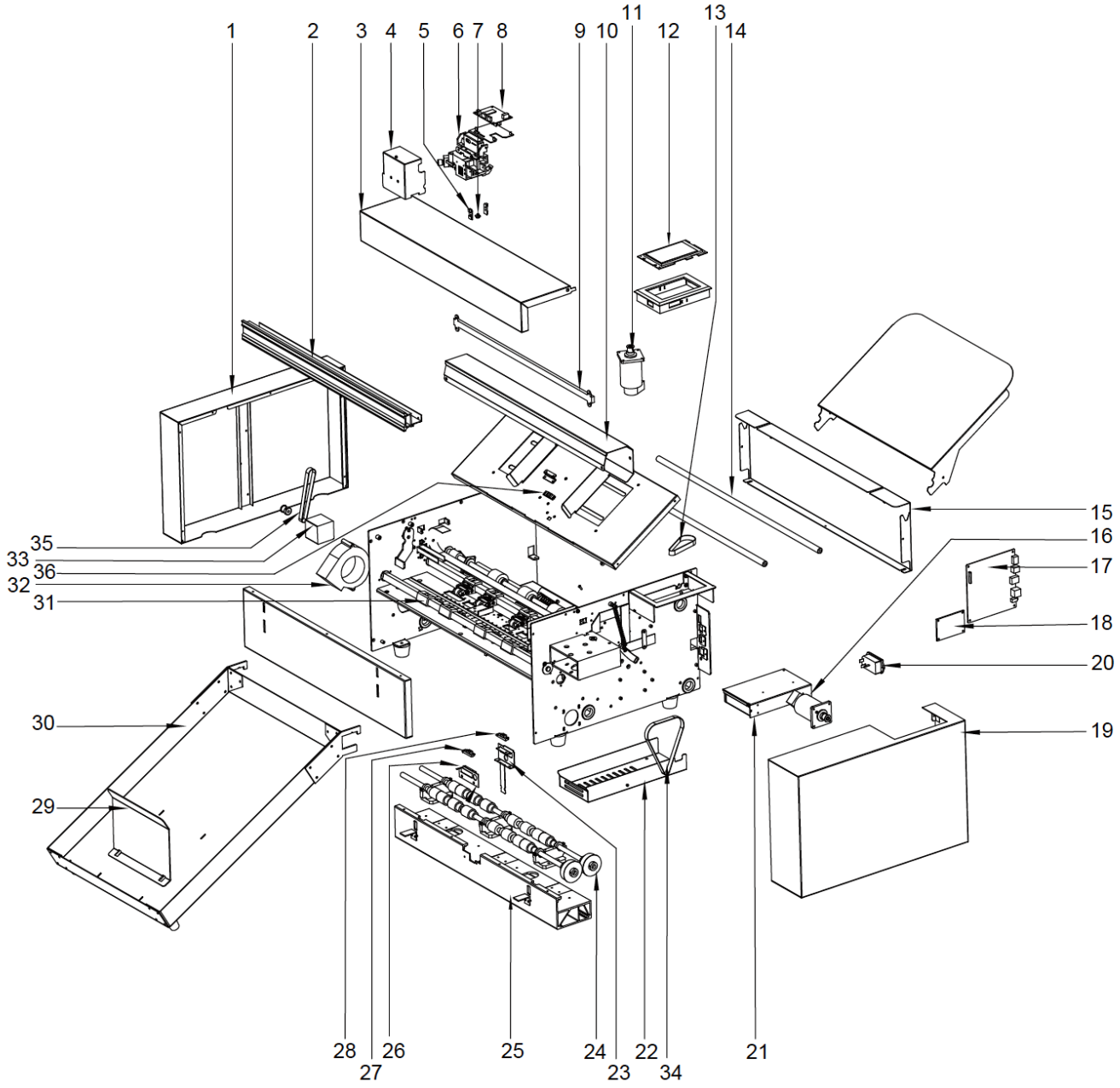
Daily Maintenance

During the course of daily maintenance be sure to observe the following precautions:

- Never lubricate the mechanisms of the plotter.
- Clean the plotter's casing using a dry cloth that has been moistened in a neutral detergent diluted with water. Never use thinner, benzene, alcohol, or similar solvents to clean the casings; they will damage the casing's finish.
- If the control panel is dirty, please clean using a dry cloth.
- Do not use benzine, thinners, or similar solvents to clean the writing panel.
- (4) When the Y rail sliding surface gets dirty, gently wipe the dirt away with a clean, dry towel.
- The sliding surface has lubricant on it, so be sure not to wipe all the lubricant off as well.

4.3 Technical documentation

Explosion drawing



Parts list:

Item	Part Number	Description
1	SC350-031	Left cover
2	SC350-032	Slideway
3	SC350-033	Top cover
4	SC350-034	Carriage cover
5	SC350-018	LED light (camera)
6	SC350-013	Camera
7	SC350-012	Carriage
8	SC350-020	Carriage board
9	SC350-007	LED light.
10	SC350-035	LED cover
11	SC350-009	Servo motor
12	SC350-021	Panel
13	SC350-026	MXL191 Belt
14	SC350-036	Support pole
15	SC350-037	Rear cover
16	SC350-039	Servo motor
17	SC350-011	Mainboard
18	SC350-019	Transfer board
19	SC350-038	Right cover
20	SC350-022	Switch
21	SC350-040	Power
22	SC350-009	Power cover
23	SC350-008	Rear sensor cover
24	SC350-041	Roll
25	SC350-042	Pedestal
26	SC350-043	Sensor board
27	SC350-014	S1 sensor
28	SC350-014	S2 sensor
29	SC350-044	Rear media
30	SC350-045	Exit tray
31	SC350-005	Pinch roller
32	SC350-046	Fan
33	SC350-010	42 Stepper motor
34	SC350-028	MXL173 Belt
35	SC350-027	MXL128 Belt
36	SC350-014	S3 Sensor

CE

Statement of Conformity

We herewith declare under sole responsibility that the under „technical data“ mentioned product meet the provisions of the following EC Directives and Harmonized Standards:

EC directives:

2014/35/EC Low Voltage Directive

98/37/EC Directive on machinery (from 2009-12-29: 2006/42/EC)

Standard: EN 60204-1:2006

Oliver Tiedemann

Geschäftsführer

Technische Dokumente bei / Technical documents at: Nepata Vertrieb GmbH, Hochstatt 6-8, 85283 Wolnzach, Germany