



DUOBLADE.....

DB-320

13" DIGITAL DUAL-BLADE FINISHER

USER MANUAL

Version 1.4



Please read this manual carefully before you use this equipment

Valloy Incorporation. January. 2017.



Copyright statement

© 2016 VALLOY Inc., This document, attachments, and information contained herein are the confidential and proprietary property of VALLOY. and their suppliers. As such, this document, attached files, and information contained herein are subject to all nondisclosure and proprietary information agreements currently in effect with your organization. Copies of this document, any portion of this document, or attachments may not be transmitted or disclosed to any third party without the prior written permission of VALLOY Inc.

© 2016 VALLOY Inc. All content is the confidential property of, or licensed to, VALLOY Inc. ("VALLOY," "we," or "us") and is protected under Rep. of KOREA and Foreign copyright, trademark and other intellectual property laws.



OVERVIEW

- DuoBlade does not retreat back!



Comparing with other blade die-cutters, DuoBlade feeds media in uni-direction without moving it back. This means media moves one direction only and cutting blade moves in X-Y plane on the flatbed system. This unique feature differentiates DuoBlade from others fundamentally to enhance the cutting accuracy by stable media feeding in exact registration.

- DuoBlade adjusts side edges of feeder automatically!



Advanced automatic feeding adjustment system keeps high accuracy of the web parallelism. Two sensors are monitoring both edges of media on the feeding roller and directly drive motors of rollers in the feeding system forward and backward in real time. Very straightly rewound output rolls can be achieved easily. No need to worry about web alignment for long production job.

- DuoBlade is Easy to Learn and Operate!



DuoBlade is designed to install, learn and operate at ease. Digitalization starts from the easiness by replacing skillful operators for complicated machines by generally skilled person or owner to take over the job. Intuitive user interface in the control panel and software will reduce your time and efforts required to run the machine.

- DuoBlade maximize the production speed!



DuoBlade is equipped with 2 knife cutting heads, to double the production speed of general single blade knife die-cutter. It can support maximum 4 cutting heads to increase the production speed 4 times higher. DuoBlade is all-in-one solution including laminating, Matrix removal, slitting and trimming functions together and there's no other process required to reach to final product.

- Slitting only mode



DuoBlade has a separate operation mode for operation with laminating and slitting only. With this mode, production speed can each max. 60 meter per min. This feature will provide ultimate flexibility in your various applications.



Table of contents

<i>Copyright statement</i>	2
<i>Overview</i>	3
 CHAPTER 1. SAFETY	
1.1 Safety Issues to pay attention	6
1.2 Cautions labels	8
1.3 Safety attention instruction	9
 Chapter 2. HANDLING & INSTALLATION	
2.1 Crate handling	10
2.2 Crate assembly and disassembly	10
2.3 Workspace requirements	10
2.4 Machine handling	11
2.5 Electric and pneumatic specification	11
2.6 Installation procedure of the machine	11
2.7 Installation procedure Air Compressor and Blower	12
2.8 Disassemble	13
 Chapter 3. INSPECTION	
3.1 Packing	14
3.2 Outlook	14
3.3 Power	15
3.4 Motions	15
 Chapter 4. SYSTEM INFORMATION	
4.1 Functional Introduction	17
4.2 Packing list	17
4.3 Specification	18
4.4 Parts assembly	19



Chapter 5. PREPARATION WORK

5.1 Media Loading	21
5.2 Sensor setup	23
5.3 Lamination	29
5.4 Cutting Unit Setup	30
5.5 Matrix Removal Setup	33
5.6 Slitting Unit Setup	34
5.7 Vacuum System	36

Chapter 6. OPERATION WORK

6.1 Details of Control Panel	37
6.2 Getting Started	39
6.3 Functional Parameters in Setting Menu	42
6.4 Tension Control	49
6.5 Multi-Blade Cutting	51
6.6 Slitting mode	54
6.7 Split Cutting (RP) mode	55

Chapter 7. DUOBLADE SOFTWARE

7.1 File Design	56
7.2 DXF file generation (for illustrator)	60
7.3 USB driver installation and setup	67
7.4 DUOBLADE software installation	71
7.5 DUOBLADE software setup and operation	72

Chapter 8. MAINTENANCE

8.1 Maintenance	83
8.2 General cleaning and maintenance procedure	83
8.3 Errors	83
8.4 Troubleshooting	84
8.5 Notice for Warranty	85
Quick set up Parameter	86

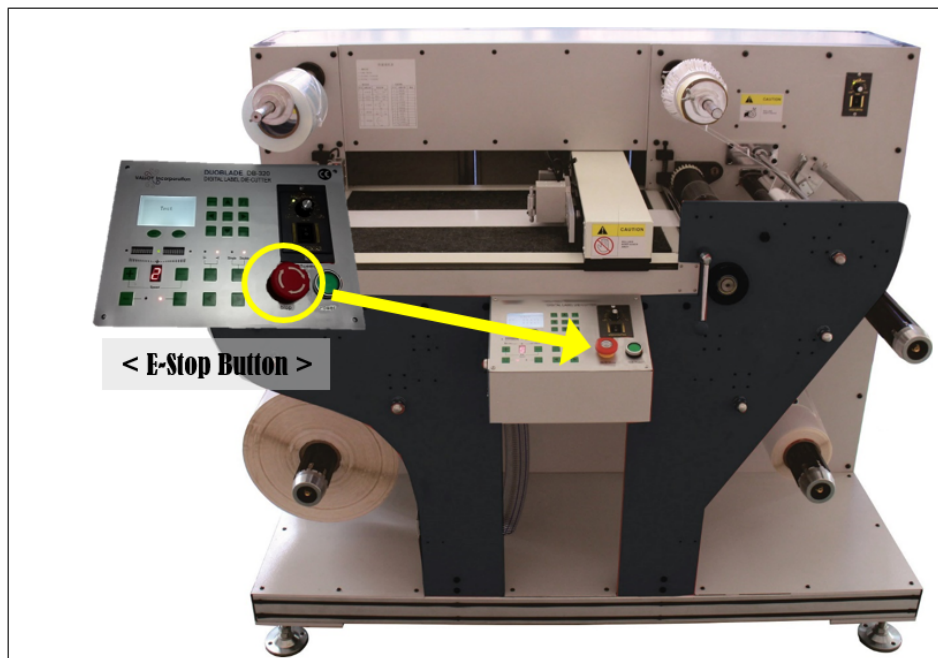


Chapter 1. SAFETY

1.1 Safety Issues to pay attention

1. The operator should follow 4 basic rules for safe operation:

- (1) The machine should be operated or maintained by trained technician only.
- (2) Read this user manual carefully and understand the contents thoroughly before operation.
- (3) For convenience, put this user manual at easy access, near by the machine.
- (4) People including operators and maintenance technicians should know the location of emergency stop button and realize its function and method.



< PICTURE 1.1 >

2. Electric power safety

When connecting power cable, please check the compatible power of your machine first. We provide 220V version as standard and 110V per request. The power cable needs to be grounded. Before turning on the machine, please check if all switches are off.

The electric power source used on this machine is 1 ϕ , 3 wires, 220V as standard. Circuit breaker needs to be 20A for the main power of this machine. The protection breaker should be in compliance with its safety relevant standards.

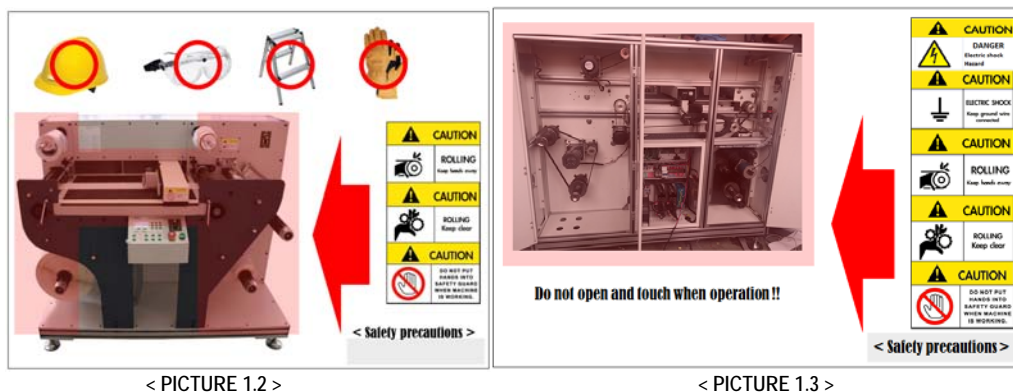


3. Safety during handling and installation

To increase the machine working efficiency, the installation environment should be ventilated well with good air quality. The surrounding temperature should be lower than 40°C, and prevented from rain and direct sunlight.

Safety precautions during handling and installation are as follows :

- (1) Make sure that the ground is strong enough to support the machine.
- (2) Lifting of the machine by lifter should be done by professional operator.
- (3) When lifting the machine, nobody is allowed to be under or near the machine.
- (4) Helmet is required during handling, installation or cleaning.
- (5) If it's necessary to reach upper parts on the machine, please use safe and secure ladder or platform. Do not climb up on the machine.
- (6) Always use proper device for heavy parts lifting.
- (7) Be sure that lifting wire rope is strong enough to handle the weight of the machine or related parts.
- (8) Please turn off the power at handling or installation. If power is required, let others know the location of E-stop device in advance. (Ref. page 6.)
- (9) Please wear leather gloves or other proper protective clothes during handling.
- (10) Please wear goggles to protect eyes during operation.



4. Safety during operation

The operator should be familiar with machine's functions, characteristics and operation methods. Don't let other untrained people approach to the machine. During running, stretching of hands into the working area is strongly prohibited. If there is any abnormal situation happening, turn off the power or press emergency stop button immediately. After that try to find the solutions. safety precautions during operation are as follows.

- (1) Don't remove any safety guarding or devices.
- (2) Don't remove any interlocking mechanisms or change location of them.
- (3) Don't use wet hands to touch switches.
- (4) Don't put any part of human body on or near the machine's moving parts.
- (5) Keep your hair away from moving parts.
- (6) Don't wear bangle, watch, jewelry or loose clothes.
- (7) Except for material loading/unloading, it's not necessary to wear gloves.
- (8) Generally, one operator is required for this machine. If more than one operator is working on the machine, there should be good communication between operators.









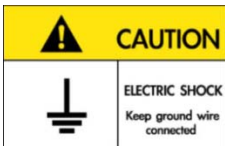



5. Safety during maintenance

Please turn off the power before maintenance.

Safety precautions during maintenance are as follows

- (1) Turn off the main power before inspection or maintenance.
- (2) Maintenance or inspection should be carried out by authorized technician.
- (3) It's prohibited to climb the machine.
- (4) Please use the recommended lubricant or grease.

1.2 Cautions labels

		<p>Improper operation can cause casualties and equipment damage</p>
		<p>Improper operation can cause casualties and other objects damage</p>
		<p>Improper operation can cause casualties and equipment damage</p>
		<p>Improper operation can cause casualties and equipment damage</p>
		<p>Improper operation can cause casualties and equipment damage</p>

< PICTURE 1.4 >



1.3 Safety attention instruction

	<p>Don't touch the top end of knives. Otherwise, fingers will be received a wound.</p>	
	<p>Don't damage and change original power wire and plug. The power cord should not be excessively bent, strong tension, bundling and compression under heavy loads. This will make power supply damaged, and cause electric shock and fire.</p>	
	<p>As a long time, please put down the power cord from the wall socket. Otherwise cause the fire.</p>	
	<p>Machine running, don't put hands on axis, this will cause injury.</p>	
	<p>When the power cord from the socket, you should pull the plug, should not pull the cable. Stronger pull the cable can result in electric shock or fire.</p>	
	<p>Pease wear a safety helmet, google and gloves.</p>	

< PICTURE 1.5. >



Chapter 2. HANDLING & INSTALLATION

2.1 Crate handling

Use forklift with capacity of 1 tons to transport the machine crate.

2.2 Crate assembly and disassembly

Crate assembly (Packing)

When we were packaging, put the bottom board first. Then fix the machine's 4 wheels. After that, install the 4 side boards. Finally put on the top board.



< PICTURE 2.1 >

Crate disassembly (Unpacking)

The procedures are in reverse order of the crate assembly.

2.3 Workspace requirements

Workspace area : min. 2m x 3m space will be required

Condition of workspace : temperature at 10-40°C and humidity at 30~90%



2.4 Machine handling

The machine transportation should be carried out by means of more than two persons. One person stands behind to push the machine and the other stands on machine front side to control the direction.

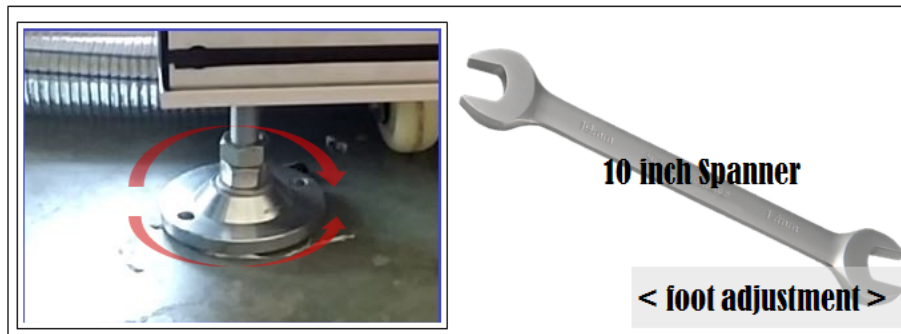
2.5 Electric and pneumatic specification

Electric power: 1 ϕ / 220V / 50 or 60Hz as standard. 110V model is available per request.

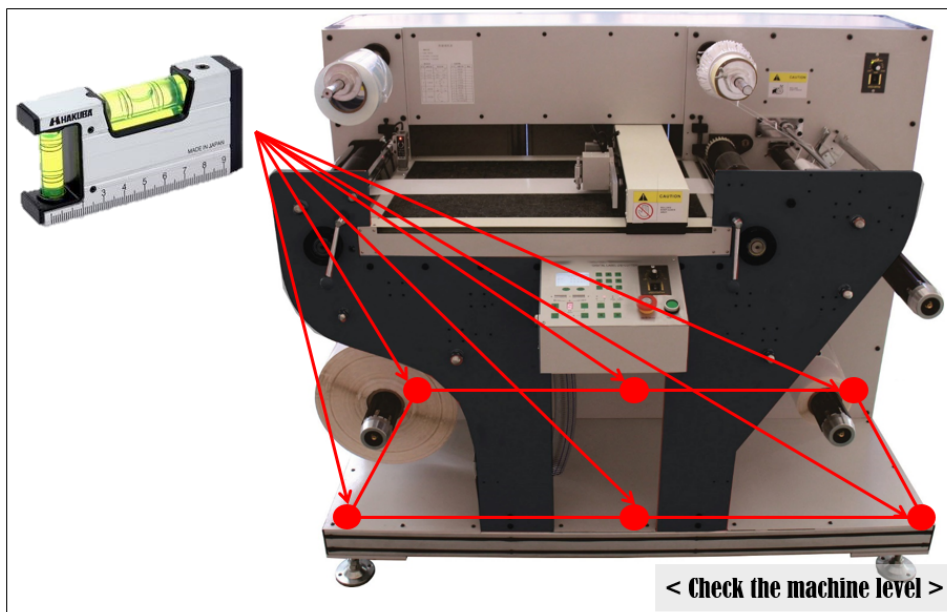
Required compressed air : Min. 0.4 Pa, low capacity, 8mm hose connection

2.6 Installation procedure of the machine

- (1) Move machine to stable level floor
 - (2) Lift the machine by stacker, put 4 feet on the floor.
 - (3) Use spirit level check the level of 4 feet, machine will be stable on the floor.
- You can use the Wrench when you adjust the machine balance of height.



< PICTURE 2.2 >



< PICTURE 2.3 >



2.7 Installation procedure Air Compressor and Blower

Air compressor and Blower will operate the media keeps flat during cutting.

We provide the blower as a set of the machine, but we don't offer the air compressor so please prepare it locally.

How to setup air compressor

- (1) Keep the compressor on flat floor.
- (2) Connect the **8mm tube** of compressor to the machine.
- (3) Please refer to connecting position of below picture's compressor tube position.

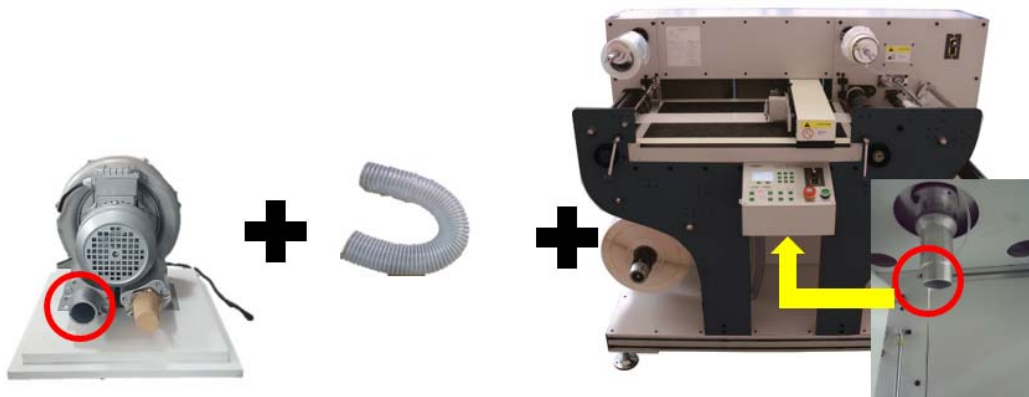


< PICTURE 2.4 >

How to set up blower.

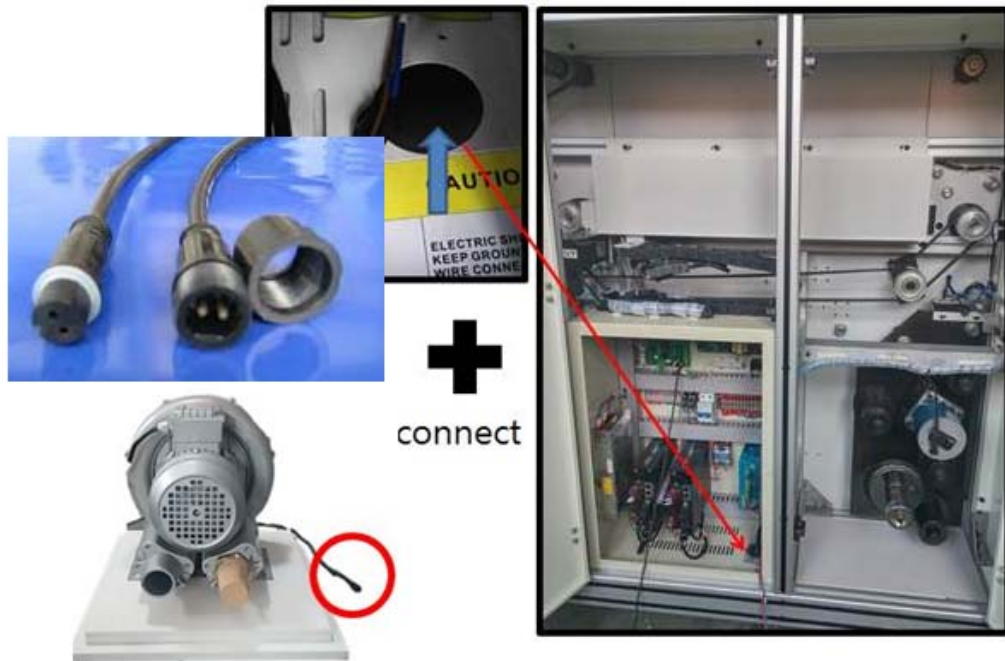
Keep the compressor on the flat floor.

- (1) Connect the tube with blower. You can fix the tube by attached clamp.
- (2) Connect the tube to the machine. You can fix the tube by attached clamp.



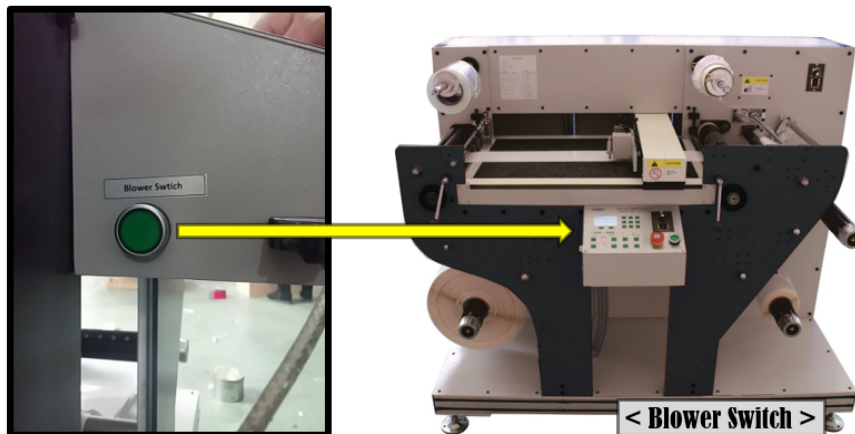
< PICTURE 2.5 >

- (3) Connect to cable to the machine.



< PICTURE 2.6 >

- (4) Please refer to connecting position of picture 2.6
- (5) When you turn on/off the blower, please use the button of side face of the control panel of DuoBlade.



< PICTURE 2.7 >

<Notice>

We strongly suggest you install blower **in the wooden box** we deliver together, because it makes **big noise** and gets very hot during operation. It is safe to keep it in the box during operation.

2.8 Disassemble

The procedures are in reverse order of the installation

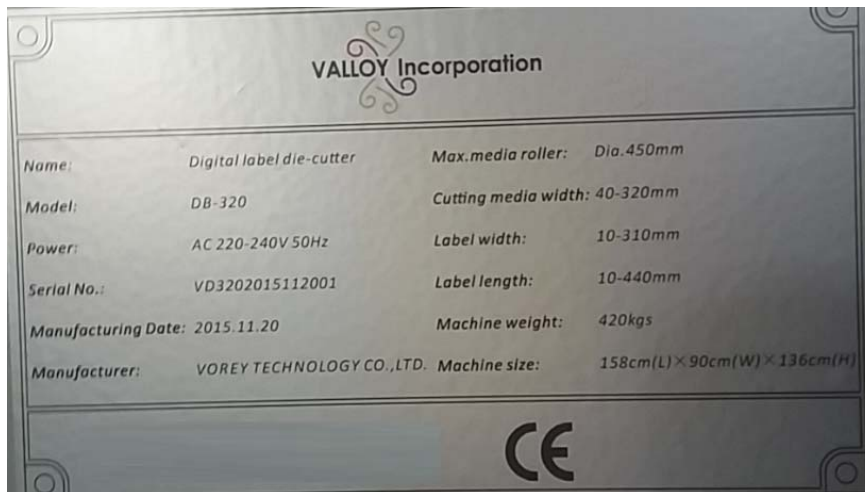


Chapter 3. INSPECTION

3.1 Packing

Please check the status of wooden box before opening it when you receive DuoBlade. If there's any trace of impact or damage on the wooden box packing, there is a possibility of damage on the machine itself. It is important to have transporter's confirmation and make the record like photos for future compensation from the insurance company.

3.2 Outlook



< PICTURE 3.1 >

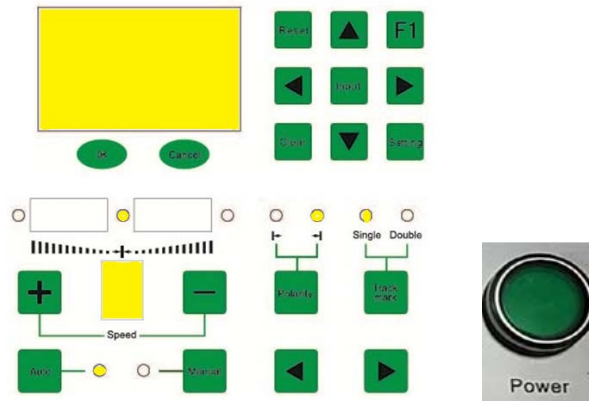
- (1) Please check your product label on the left side of the machine as <Picture 3.1>.
- (2) Please check the outlook of the machine meets the specification like color and size of what you ordered.
- (3) The machine is wrapped by vinyl initially. Please check if there're serious damages or scratches on the machine surface after getting rid of vinyl wraps.
- (4) Please check all bolts are tightly fastened.
- (5) Please check all parts are in ordinary state (please refer to the part list in page 19).
- (6) Please check all items are included without missing items (please refer to the packing list in page 17).
- (7) Please check all electric wires and cables are tightly connected.
- (8) Please check if there's any cable has peeled off skins carefully.
- (9) Please check inside of the back door of the machine to see if any wires are loosened or not tied well, with a risk of getting in touch with any motion parts like motors, belts or gears.



3.3 Power

If everything is ok, connect the blower power, air compressor power and main power.

Be sure to use the right power. Standard DuoBlade is compatible with 220V single-phase, 50~60Hz. 110V single-phase 50~60Hz power can be supported per special request. Please check if LCD and LED lamps turn on when you press main power button. <Picture 3.1> label shows your power spec of the product.

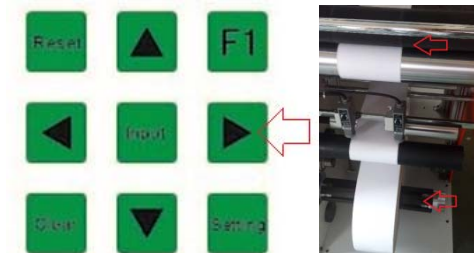


< PICTURE 3.2 >

3.4 Motions

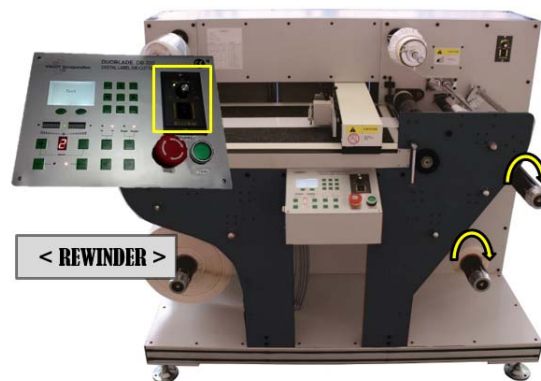
Please check if each motion part is working correctly when specific switches are turned on.

- (1) Please check if feeding roller is rotating when you press right arrow button on the middle-top of control panel. Main feeding roller and rubber roller in the feeder will rotate in forwarding direction.



< PICTURE 3.3 >

- (2) Switch on the main motor switch in right-top side of control panel. Blue light will turn on in LED lamp beside of the speed adjusting dial. Please check if 3 take-up rollers are moving properly – rubber roller and 2 main take-up rollers. Please check speed of rotation is varying when you adjust the dial clock-wise and counter clock-wise direction.



< PICTURE 3.4 >

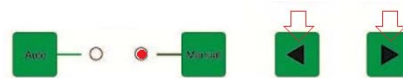


- (3) Please check matrix rewriter is rotating and its speed is varying properly when you switch on the rewriter motor button and adjust the speed dial.

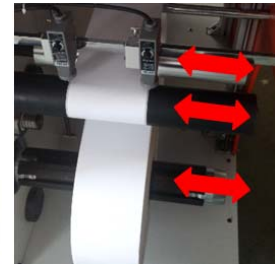


< PICTURE 3.5 >

- (4) Please check motion of AFDA (Automatic Feed Edge Adjustment) system. Press 'manual' button and press left-right arrow on the bottom of control panel. Then whole feeding system including 3 rollers are moving together. Please check if they move properly.



< PICTURE 3.6 >

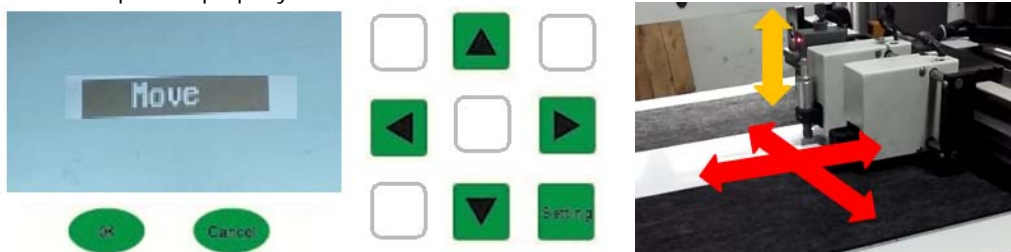


- (5) Blower power button is on left side face of the control panel. Please press it to control on/off of the blower and check if it works properly. If it does not work, please check the blower cable with main power turned off.



< PICTURE 3.7 >

- (6) In the control panel, press "Setting" button to get into parameter setup mode. Use up-down arrow buttons to select "CUT TEST" mode. Press OK button and there will be 2 sub menus as MOVE and CUT. Select MOVE and press OK button. You can use up/down/right/left arrow buttons to move knife head(s). Please check if the cutting knife head(s) moves properly. Press CANCEL button and select CUT button. Press OK button to move cutting knife head down. Press OK button once more to move the cutting knife up. Please check if the cutting knife head(s) moves up/down properly.



< PICTURE 3.8 >



Chapter 4. SYSTEM INFORMATION

4.1 Functional Introduction

Multifunction digital die-cutter

DuoBlade label die-cutter is designed and developed for flexible operation in many kinds of different applications. It can be used from very short run jobs to very long run jobs.

DuoBlade is getting digital data to cut any kind of shapes which you design. In-time delivery can be done to the customer. DuoBlade is the best choice in this level of finishing products.

DuoBlade is fully functional. It can laminate, die-cut, full-cut, remove matrix, remove trimmed waste, slit into multiple mini rolls, rewind finish rolls separately and etc. The operation is very easy and intuitive. DuoBlade can be used to produce labels, tags and packing cardboards and etc.

Suitable media

DuoBlade supports various self-adhesive labels or non-adhesive substrates including PP, PET, PE, PVC, cardboard paper, art paper and other soft media.

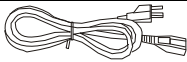
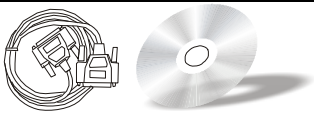
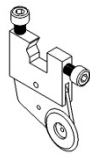
Example of applications

Adhesive labels, decoration stickers, hot-fix labels, hang tags, paper boxes, ribbon strips and etc.





4.2 Packing list

When you open the package box, please check following items are all included safely.

If there is anything missing, please contact your seller (local distributor of VALLOY Incorporation).

No.	Item	Qty.	Picture
1	Power cable	1	
2	232 signal connection wire with USB driver CD	1	
3	Slitting unit and blade	4	



4	Blades unit	2	
5	Blades	15	
6	Suction tube	5m	
7	Blower & wooden box	1	

< TABLE 4.1 >

4.3 Specification

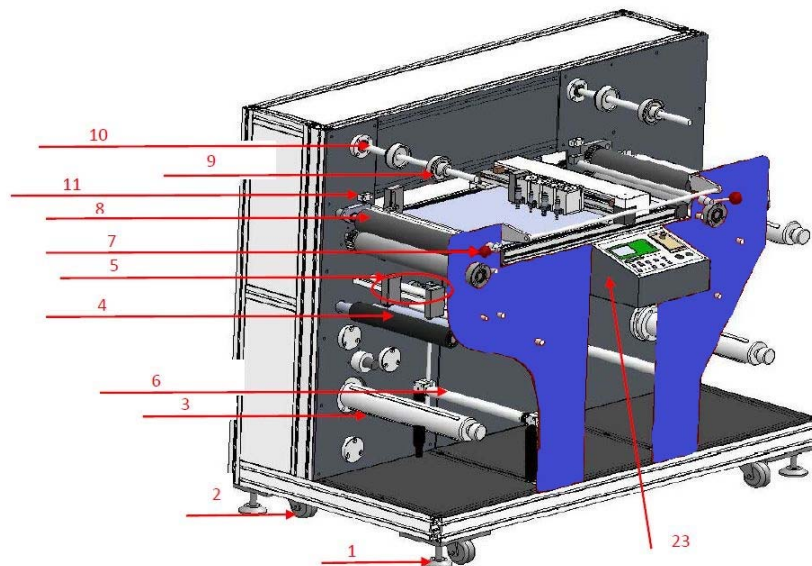
Machine Model.	DB-320 (DuoBlade Digital Label Die-Cutter)
Serial No.	(different to each model)
Max. media roller	Diameter 450mm
Roll media width	40-340mm
Max. cutting width	310mm
Min. label length	10mm
Max. label length	400mm
Cutting speed	Max. 5m per minute(depend on label shape and size)
Cutting blades	2 pcs (Standard) // Max. 4pcs.(with extension supporting bar, option)
Slitting blades	4 pcs (Standard) // Max. 15pcs.(option)
Die cutting technology	Tungsten steel rotary blades
Cutting Precision	±0.1mm(Duplicate)
Cutting tracking	By sending of single mark or double mark selectively.
Roll width for slitting	Max. 340mm media roll can be supported for slitting
Slitting Speed	Max. 60m per minute.
Slitting precision	±0.2mm
Slitting width	10-320mm
Machine Size	1,580mm(W) X 900mm(D) X 1,360(H)
Weight	Approx. 450 kg
Power	220 – 240VAC 50–60Hz Single phase, 1KW (standard), (110V optional)
Warranty	1 year (Excluding consumable parts)
Option	Cutter units
	Slitter units.

< TABLE 4.2 >

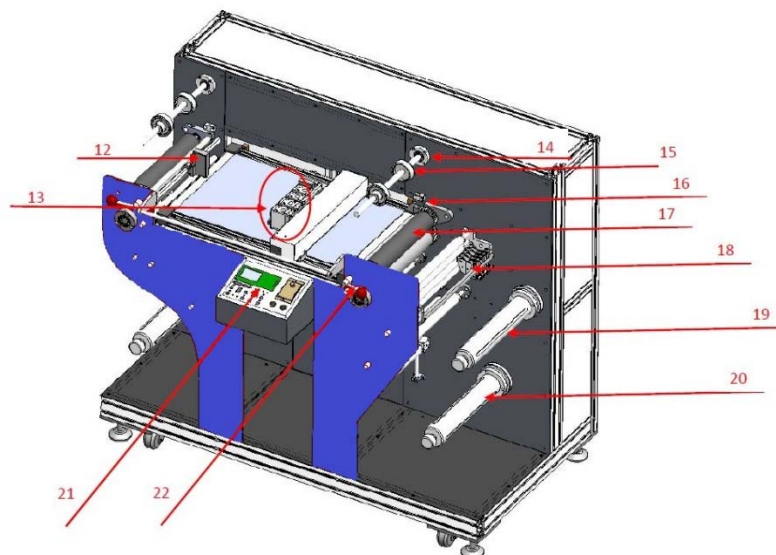


4.4 Parts assembly

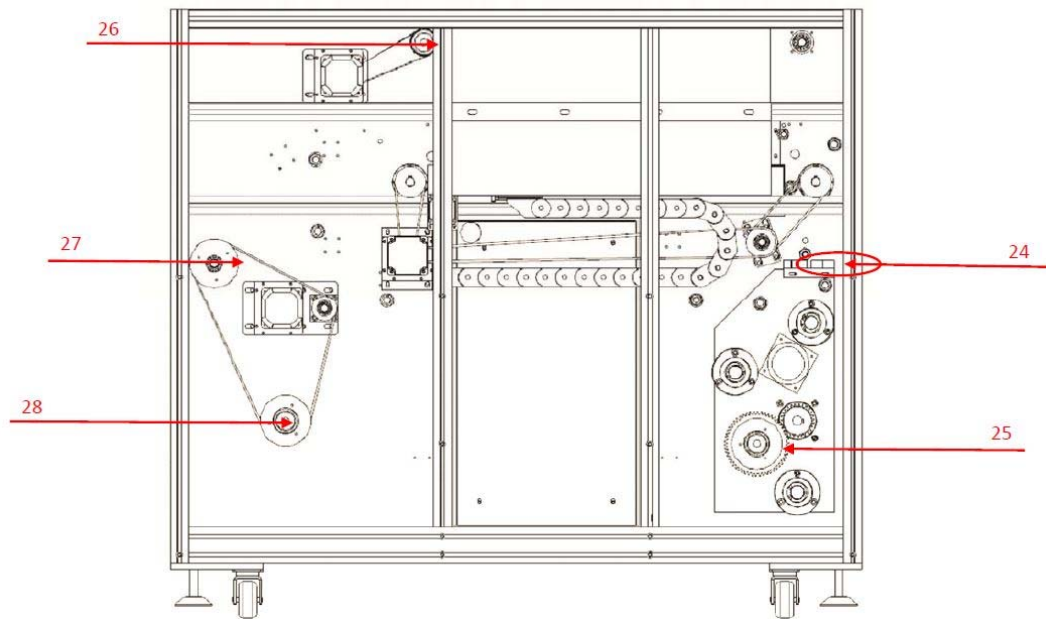
Please refer to below pictures and table to understand name and position of each important part which composing DuoBlade.



< PICTURE 4.1 >



< PICTURE 4.2 >



< PICTURE 4.3 >

No.	Name	No.	Name
1	Foot holder	2	Foot wheel
3	Media tense shaft	4	Adjusting sensor system
5	Adjusting sensor	6	Tense shaft
7	Laminating shaft released bar	8	Laminating shaft
9	Laminating position board	10	Laminating rubber roller
11	Laminating pressure adjusted nut	12	Tracking sensor
13	Die-cutter system	14	Waste removing shaft
15	Waste removing position board	16	Feeding pressure adjust nut
17	Main feeding roller	18	Slitting unit
19	Rewinding tense shaft (up)	20	Rewinding tense shaft (down)
21	Control Panel	22	Main feeding roller released bar
23	RS232 Data interface	24	Adjustment limited switch
25	Feeding tense adjust nut	26	Waste removing tense adjust but
27	Rewinding shaft tense adjust nut (up)	28	Rewinding shaft tense adjust nut (down)

< TABLE 4.3 >

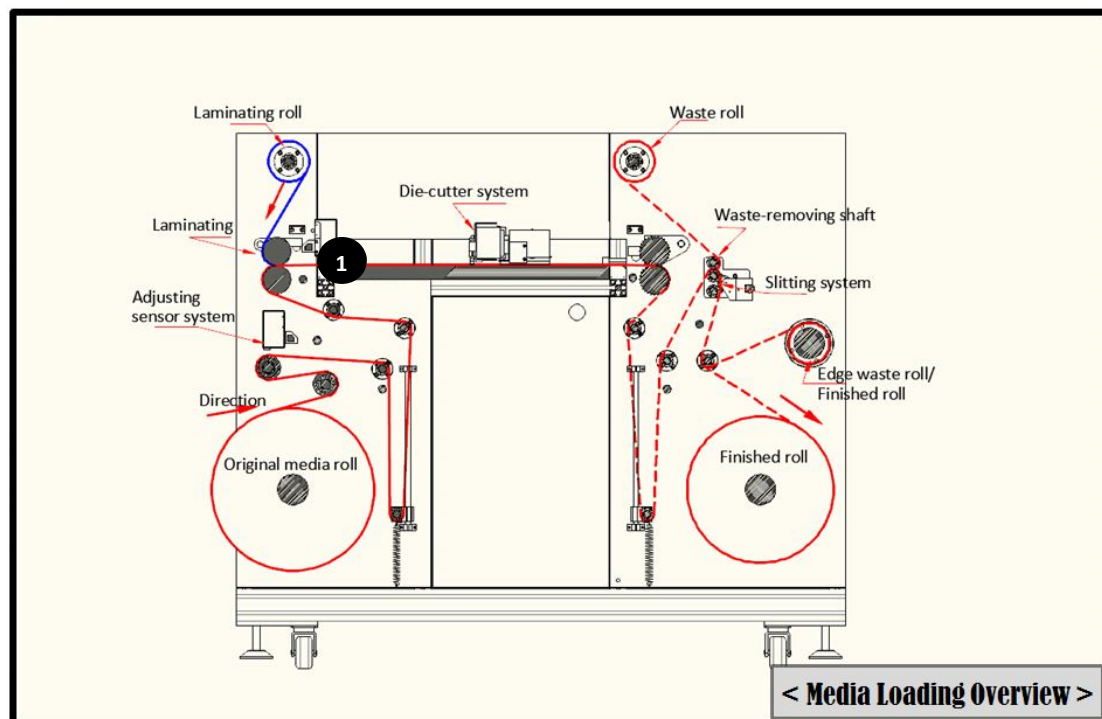


Chapter 5. PREPARATION WORK


5.1 Media Loading

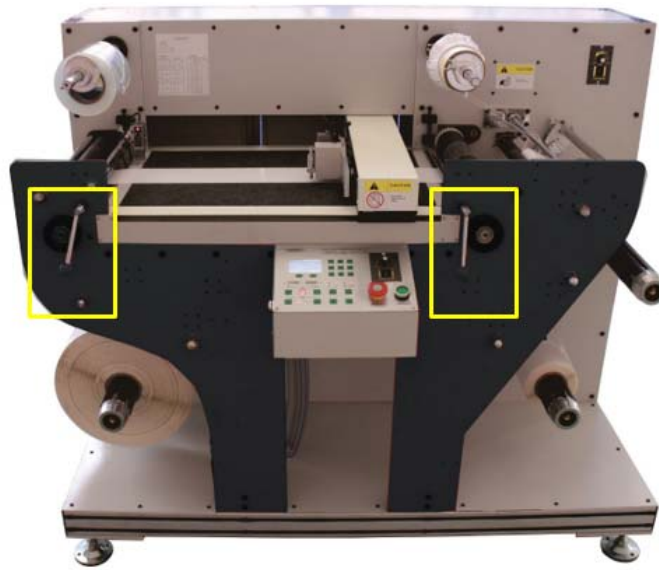
Selection of proper media

Core	3" (1", 2" and 4" is optional)
Width	Min. 40mm ~ Max. 340mm
Length	about Max.1000m (Max. 450mm in diameter)
Weight	60~350 gsm for paper. (Max. 350 micron thickness)
Type	Adhesive label with liner or hot-fix media without liner or non-adhesive media
Material	Paper, PVC, PE, PET, PU, PP, PO and etc.
Lamination	Unsupported laminating film only (no rewinder for backliner of laminating media)



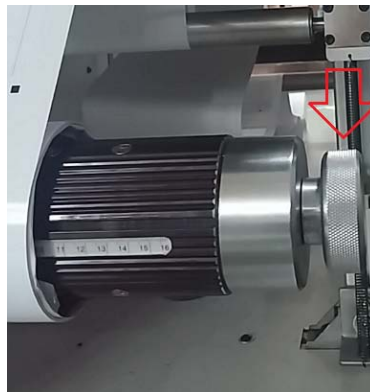
< PICTURE 5.1 >

Media loading flow diagram is provided as above. Please install media with following the arrow direction to each to ① position and fix the media by press rubber roller with rotating the lever handle to clock-wise direction (see Picture 5.2). After load the media onto the flat-bed and lock the rubber roller, you can feed the media manually by press  button in the right side of LCD. Then please load the rest of the media to the rewinding roller parts. After media loading from unwinder to rewinder, you can fix the media position by rotating 2 lever handles to clock-wise as below picture.



< PICTURE 5.2 >

Unwinding roller can grab the media core rigidly by rotating the knob located at the end of the roller. You can do the same for 2 rewinding rollers to fix the core rigidly. See <picture 5.3>.



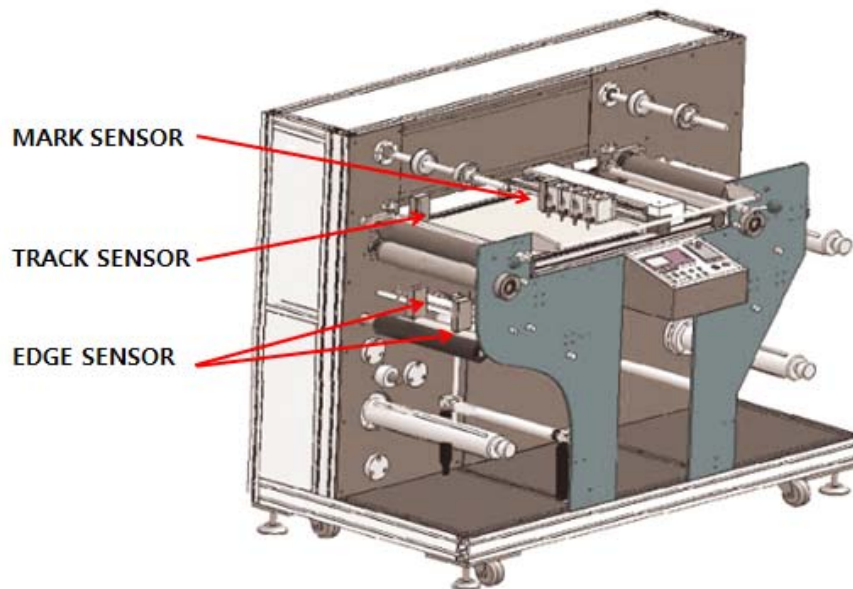
< PICTURE 5.3 >

After media loading, please check the straightness at rewinder part. Same distance from the wall should be kept from unwinder to rewinder. Initial position of core on rewinder is important to be accurate, to prevent slanting with constant edges. Proper tension should be applied in both of unwinder and rewinder. Please check more details about tension control on page 49 in Chapter 6.4. Quick test in Slitting mode will be helpful to check in fast way. See more details about Slitting mode on page 54 in Chapter 6.6.



5.2 Sensor setup

There are 4 sensors in total – 2 edge sensors, 1 track sensor and 1 mark sensor. Each sensor is important to be calibrated properly for accurate result of the job. See <picture 5.4>.



< PICTURE 5.4 >

All sensors are already setup with the best calibration condition when we deliver the product. But if you need to adjust of sensibility of sensors, just handle the dial of the sensor to get good sensitivity (so called calibration). See <picture 5.5>



< PICTURE 5.5 >

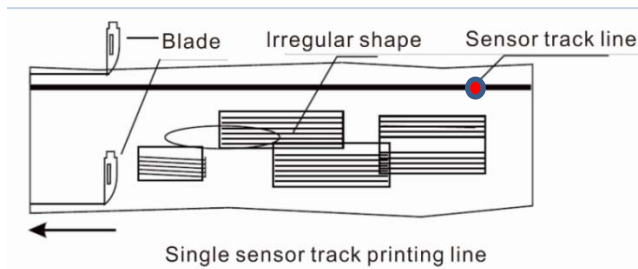
1. Edge sensor setup

One of the powerful features of DuoBlade is automatic feeding registration correction by using edge sensors. 3 rollers of feeding parts are moving inner and outer way together to maintain previous feeding straightness. 2 edge sensors are provided for this purpose. With using single or double sensors, you can track the edges of media or printed line of the media or printed object of the media selectively.



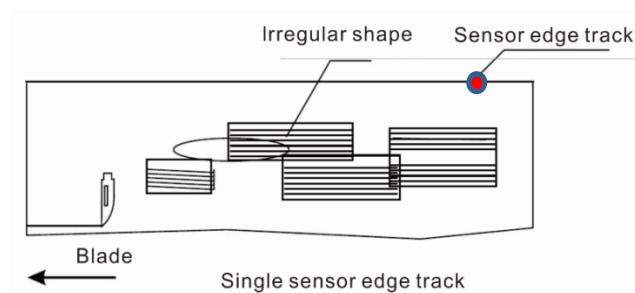
Please find some examples in picture 5.6 ~ 5.8. If roll media edge itself is not straight, you can use method of picture 5.6 or 5.8. Straightly printed line is used for tracing in picture 5.6 by single sensor and printed images (shapes) themselves are used for tracing in picture 5.8 by double sensors. In case of 5.8, 2 sensors are tracing just near outside of the both ends of images (shapes) and adjust the feeding roller's location when sensing any of printed images.

Picture 5.7 and 5.9 are showing typical applications which tracing the media edge(s). You can use one edge by using single sensor or both edges by double sensors. Generally recommended method is shown in Picture 5.9 in assumption that media roll is in good status of flat side face by good slitting and rewinding.



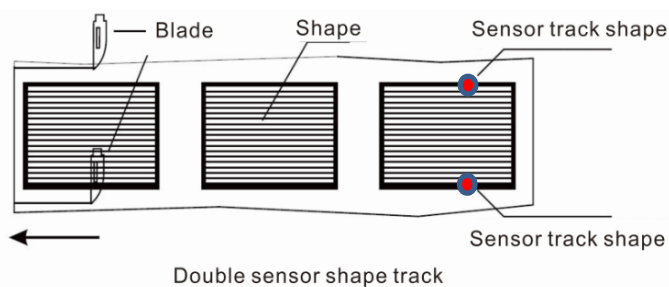
< PICTURE 5.6 >

Pola Rity "→|"



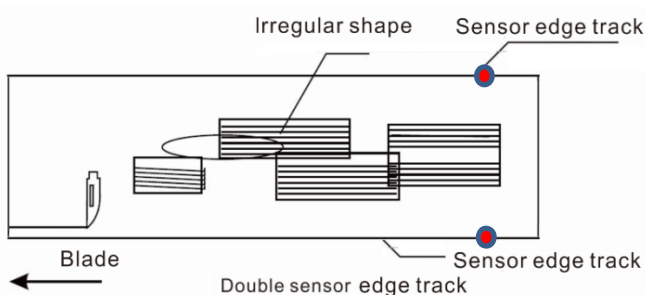
< PICTURE 5.7 >

Pola Rity "→|"



< PICTURE 5.8 >

Pola Rity "←"

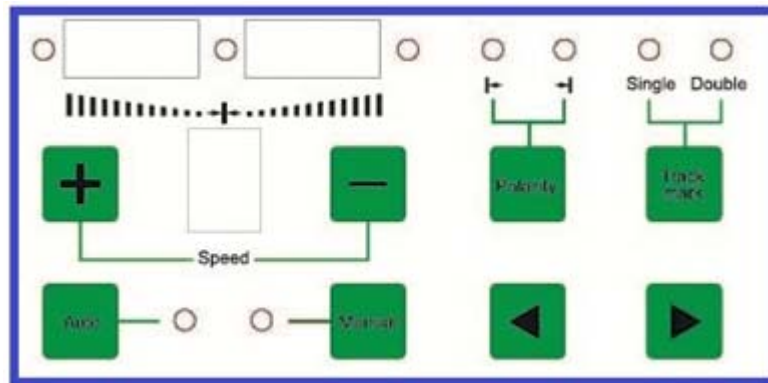


< PICTURE 5.9 >

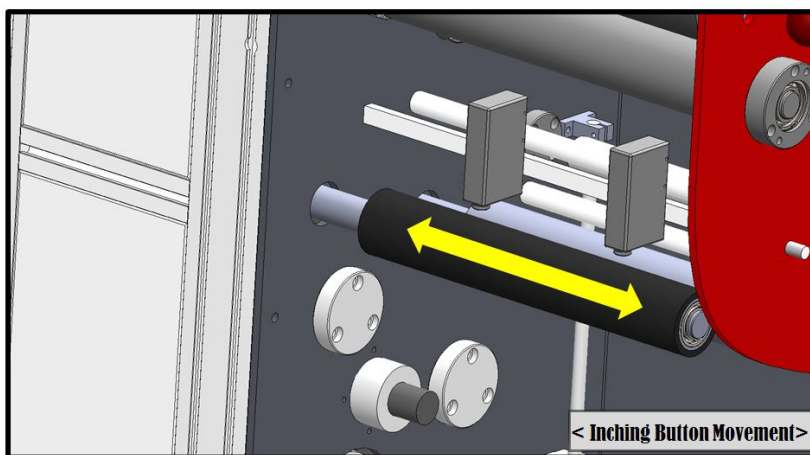
Pola Rity "→|"



- (1) Inching button: Picture 5.10 below is showing parts of control panel related with edge sensors for feeding parallel adjustment. Inching buttons are left/right arrow button in right-bottom side of picture 5.10. Press inching button to run synchronous motor forward or reverse (moving 3 rollers of feeding part inner or outer direction) like picture 5.11, whenever adjusting sensor system statement is auto or manual.

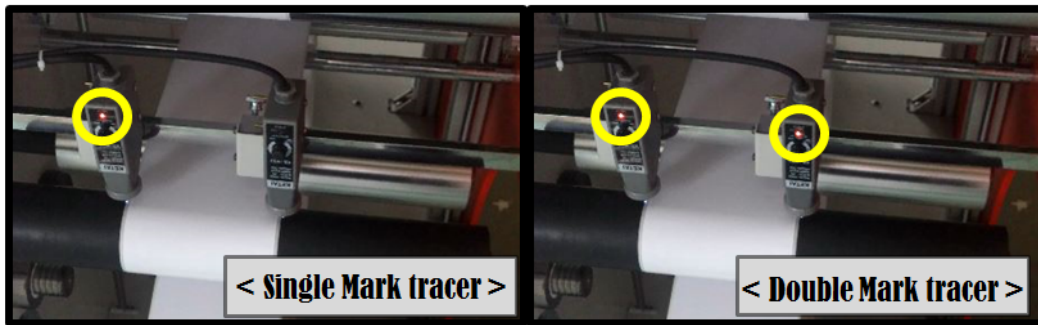


< PICTURE 5.10 >



< PICTURE 5.11 >

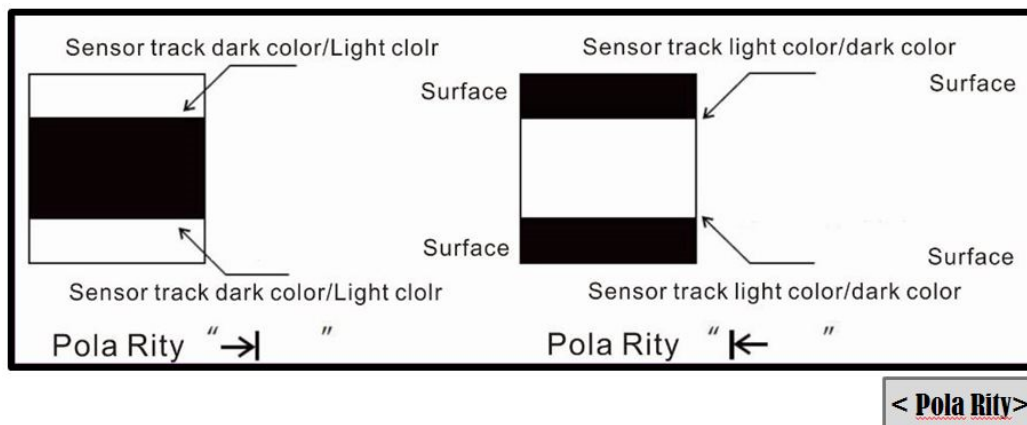
- (2) Track mark button : In picture 5.10, when pressing this Track Mark button, you can choose single mark tracer or Double mark tracer. Single mark tracer can be used when tracing printed line or single side of media edge. Double mark tracer will trace bilaterally printed lines or double side of media edge. Printed lines do not need to be continuous when tracing white color and reacting on darker color like an example of picture 5.9. Picture 5.12 is showing difference of single mark tracer and double mark tracer.



< PICTURE 5.12 >

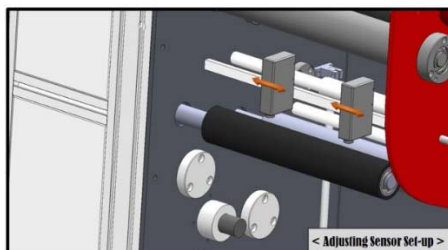
- (3) Polarity : In picture 5.10, when pressing this Polarity button, you can choose which color to trace and which color to sense and react. See picture 5.13 to understand better.

When Polarity is [Pola Rity "→| "], sensor is tracing dark color and when it senses light color, sensor lamp turns on and give signal to the synchronous motor to move it forward or reverse. When Polarity is [Pola Rity "←| "], sensor is tracing light color and reacts on dark color. Picture 5.6~5.9 is showing Polarity settings for each example.

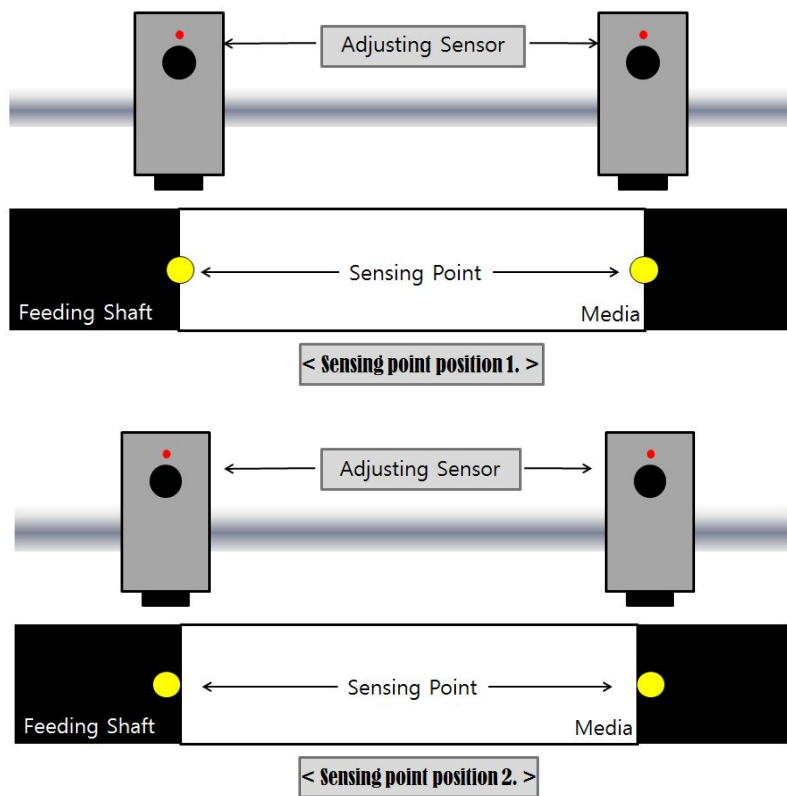


< PICTURE 5.13 >

- (4) Auto/Manual button : In Auto mode, feeding parallel adjustment by edge sensing will be done automatically. In Manual mode, this adjustment needs to be done manually by using inching buttons.
- (5) Typical sensor positioning : Below pictures are showing typical sensor positioning for examples.



< PICTURE 5.14 >



< PICTURE 5.15 >

Sensors are recommended to be positioned as close as possible to the edges. In Picture 5.15, Sensor position 1 is expected to show better result than Sensor position 2.

2. Track sensor setup

Track sensor is monitoring black marks and gives signals to recognize when to stop for cutting. Feeding can be stop immediately or after moving of a certain defined distance after sending the black mark by user selection. The position of Track sensor should be properly adjusted manually to monitor the center of black marks precisely like picture 5.16.



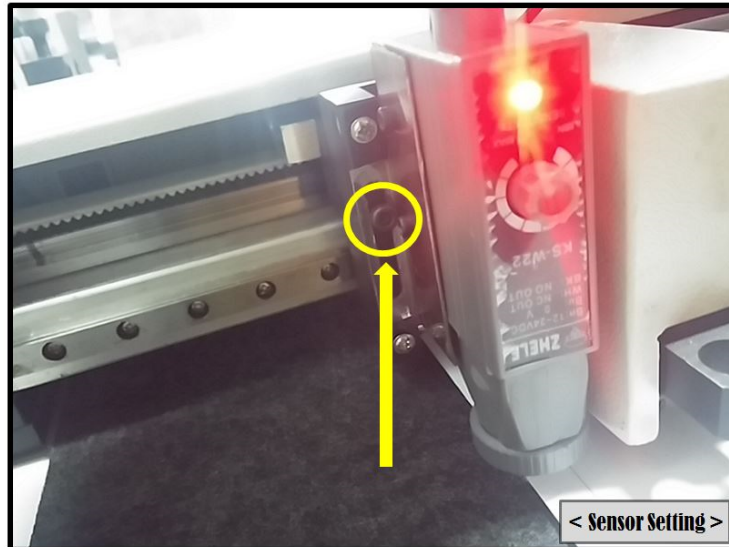
< PICTURE 5.16 >



3. Mark sensor setup

Mark sensor is combined with the cutting knife head and moves together with the cutters. It monitors black marks printed on the media to know where to start cutting precisely.

For precise die-cutting, you can adjust the gap between sensor and black mark on media. Release the bolt and adjust the distance manually to have smaller beam spot for precise monitoring. See picture 5.17 and 5.18 to understand better.

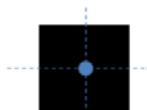


< PICTURE 5.17 >



< PICTURE 5.18 >

Mark sensor is moving across the mark in both of X and Y direction to find exact center of the mark. Generally we use 4mm x 4mm size of black mark. See Picture 5.19.



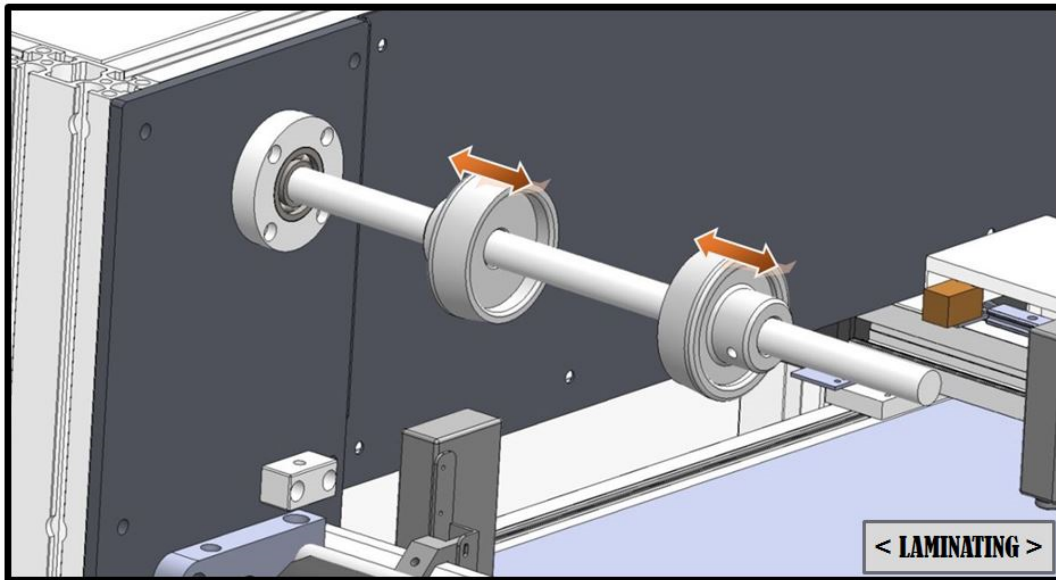
< PICTURE 5.19 >

If the sensor set wrong value not enough to check the black mark, the machine will stop.



5.3 Lamination

If you want to do lamination, DuoBlade can support it but unsupported laminating film only, because it does not have backliner rewinder for the laminating film roll. Load a laminating film roll on the laminating roller shaft, adjust the right position to cover exact area to laminate on the media and lock both sides by using core holders like Picture 5.20. Core holders can be fixed easily by each fixing bolt like Picture 5.21.




< PICTURE 5.20 >



< PICTURE 5.21 >

Laminating roller does not have driving motor connected. It is passive system using main feeding power. There is tension break on back side of the laminating roller. You can see it and adjust the tension by rotating the knob inside of the right door, which controls sprint power to increase/decrease the friction.

After loading laminating film, release the end and attach on the media before the feeding press rubber roller. Use feeding button  to feed the media and laminating film going through the rubber roller on to the flat bed enough in stable way.



5.4 Cutting Unit Setup

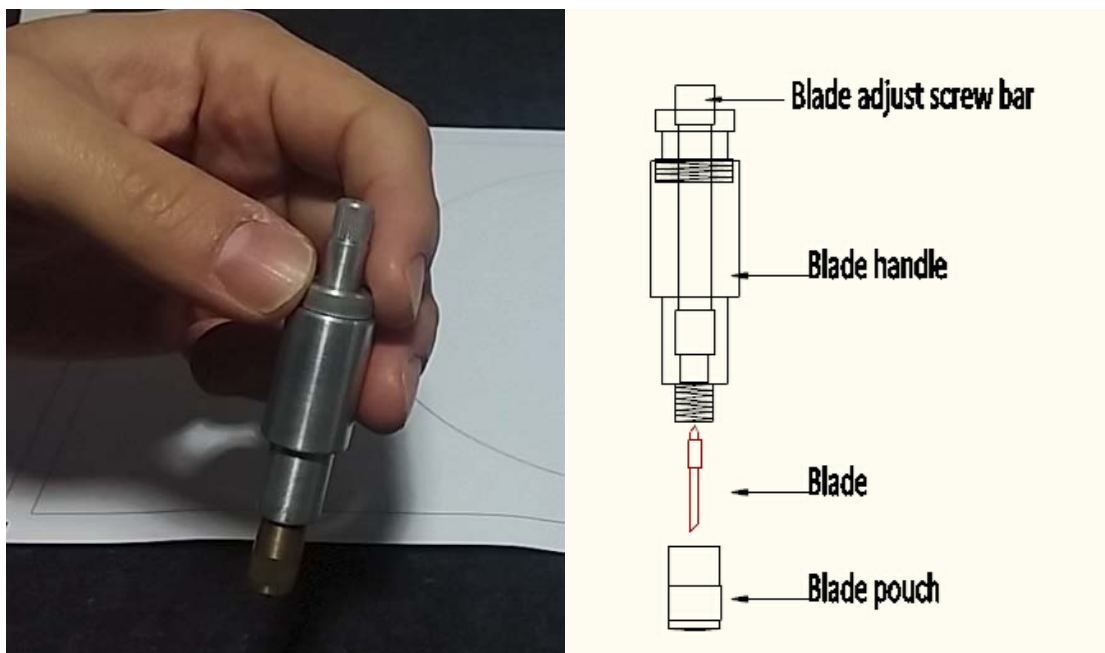


Caution : Be careful not to touch cutting knives with bare hand. They are very sharp. Please wear PPE gloves before installation of cutting knives.

When we deliver the machine we already setup the cutting units with enough testing. Please follow below explanation when you replace cutting knife or replace / add cutting units.

1. Cutter unit assembly

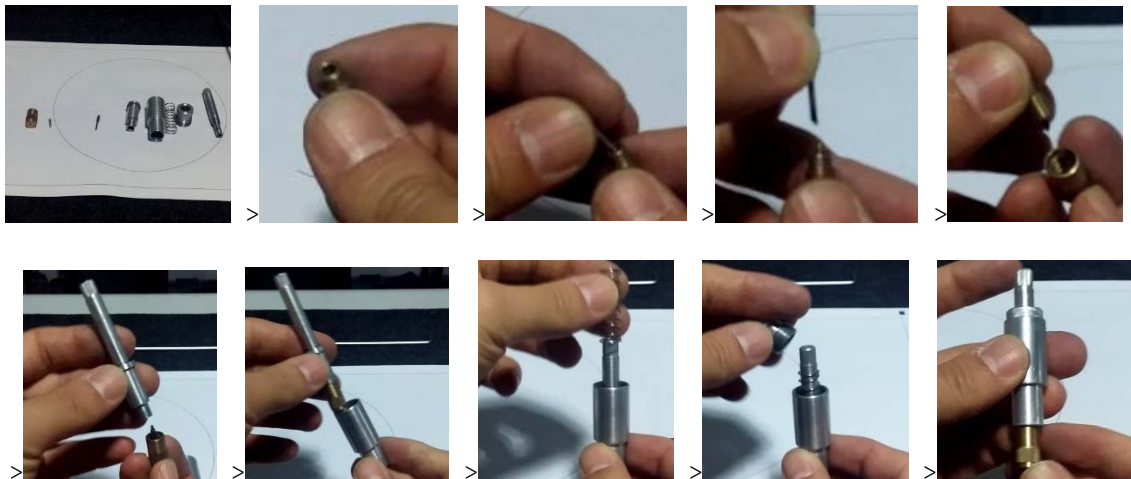
2. Cutting unit is composed with several parts as shown in picture 5.22, including knife (blade), blade pouch, blade spring, blade adjust screw bar, bar spring and blade handle. The structure of cutter unit is very simple but very efficient. Blade spring gives constant pressure and blade adjust screw bar controls depth to cut. Duo-Blade is equipped with 2 cutting units as default and you can install maximum 4 units optionally in the system.



< PICTURE 5.22 >

Picture 5.23 is showing step by step process of how to assemble cutting unit in sequence. Disassembling can be done in reverse steps. This process is very simple and frequently used for blade replacement. The lifetime of blade can be 50 hours of continuous operation depending on the working condition (about 1,400 meter life time in case of art paper labels).

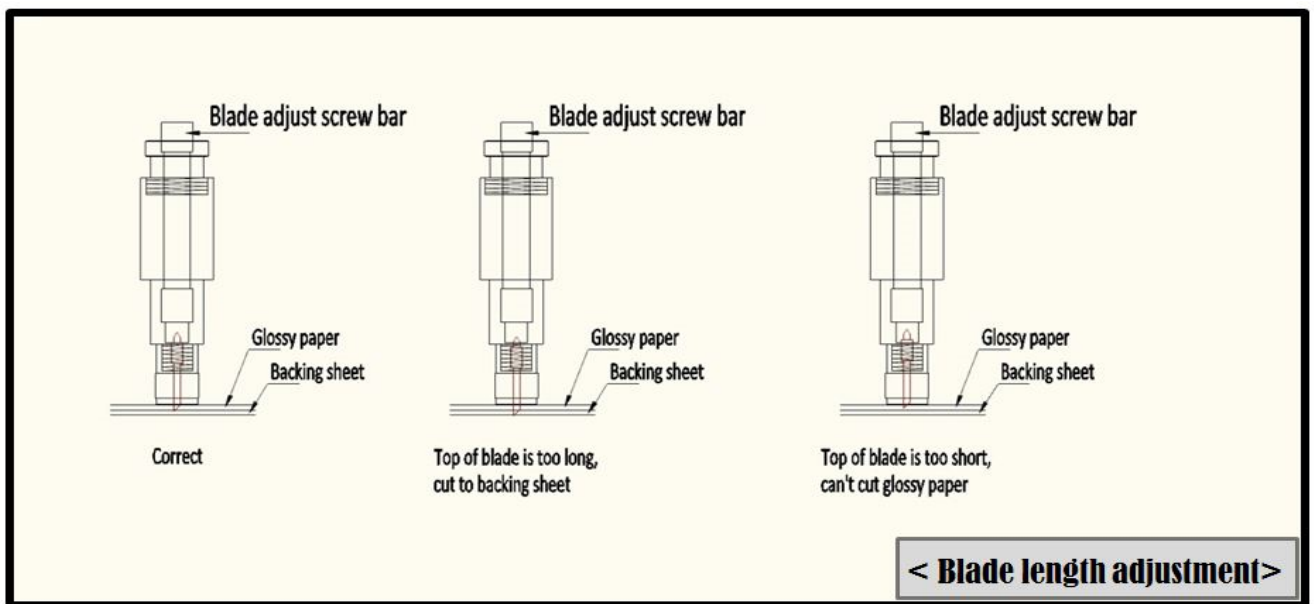
There are many small parts composing the cutting unit, so be cautious not to have missing parts during assembling or disassembling the cutting unit.



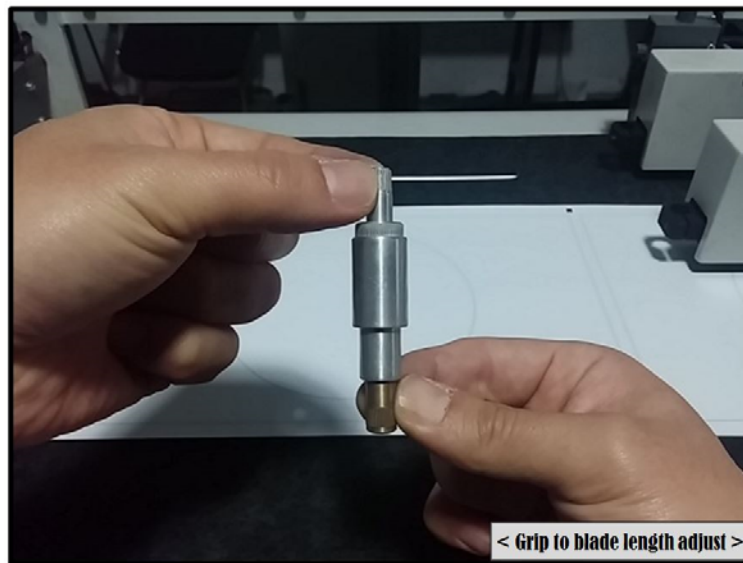
< PICTURE 5.23 >

3. Adjust the knife depth

It is possible to adjust the depth of cutting knife by rotating the Blade Adjust Screw Bar. Different media has different thickness for half cut and full cut, so find optimum depth to cut properly without scratching on the back liner. See illustration in Picture 5.24 and 5.25 as following.



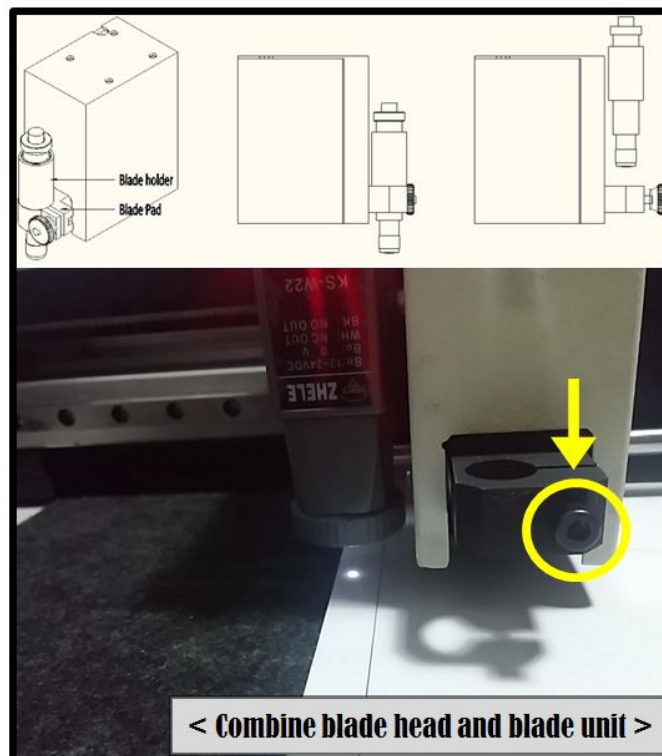
< PICTURE 5.24 >



< PICTURE 5.25 >

4. Assembling Cutting knife unit with Cutting head

Put the Cutting knife unit into the knife unit holder of each cutting head. And manually rotate the screw bolt to fasten the cutting knife unit rigidly. Refer to Picture 5.26.



< PICTURE 5.26 >

5. Cutting blade depth check after adjusting by using cut test menu.

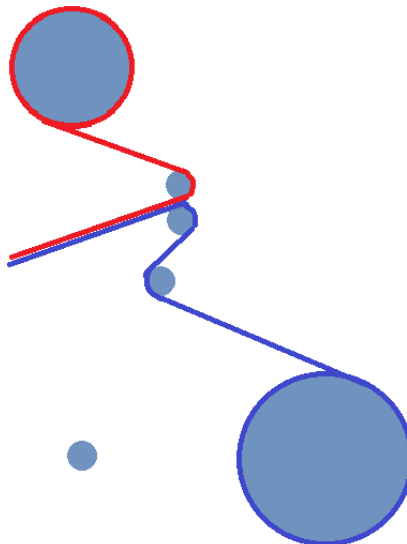


5.5 Matrix Removal Setup

You can run matrix removing roller by using on/off switch and speed control dial on the right side of DuoBlade as Picture 5.27. Before starting die-cutting, it is convenient to prepare matrix removal by half-cutting across the label media and separating label and lack liner in advance. Back liner needs to be round in rewinder and label needs to be round in matrix removing roller. See Picture 5.28 to understand better.



< PICTURE 5.27 >



< PICTURE 5.28 >



Caution : If you want to stop the machine at once, please PRESS "E-STOP" button.
Twist the "E-stop button" to release it if you want to re-start the job.



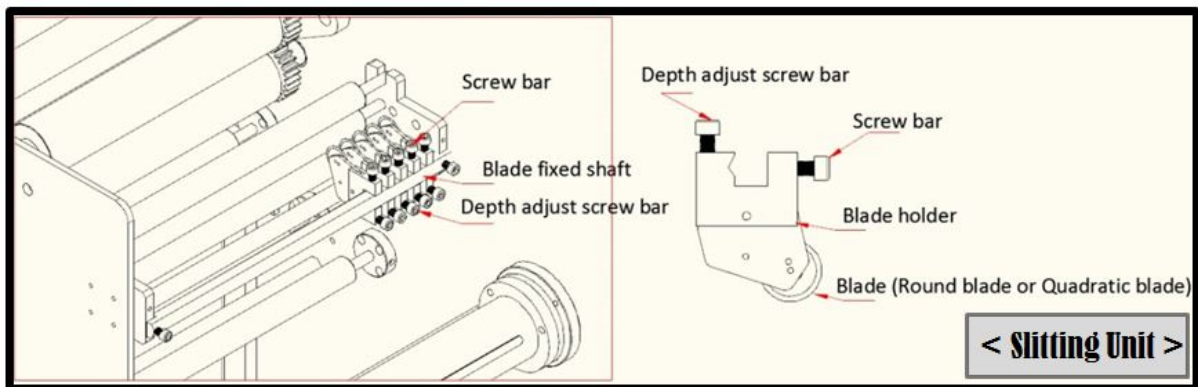
5.6 Slitting Unit Setup

1. Slitting unit installation and adjustment

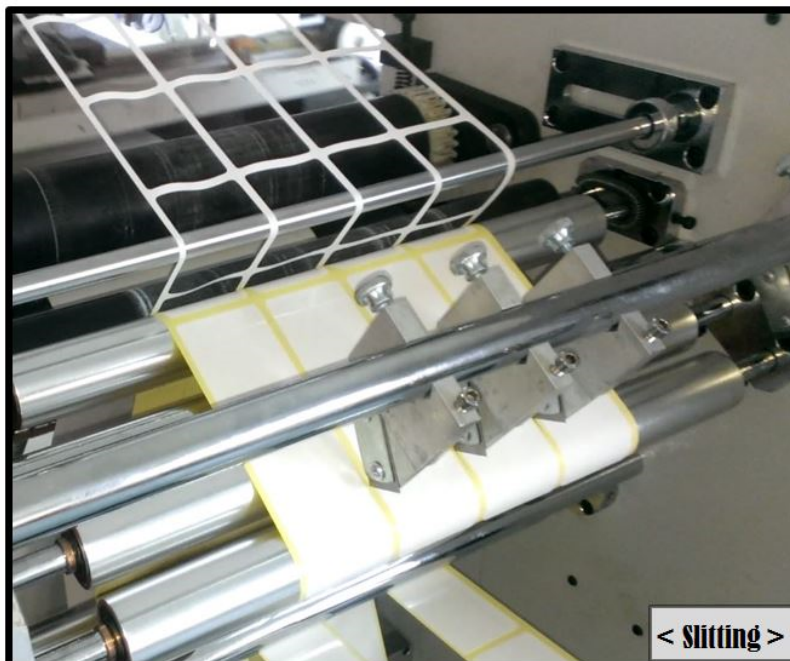
2. Slitting unit has 2 screw bars as shown in Picture 5.29 and 5.30. Loosen screw bar of slitting unit and move it and fix it on any location of blade fixed shaft. You can add slitting unit max. 15 pcs. The gap between slitting unit will determine the width of final rolls.

The depth of slitting blade can be adjusted by screwing or unscrewing of depth adjust screw bar. You need to find optimum depth for the best performance of slitting.

Slitting units can be used for edge trimming too. Trimmed waste can be round separately also.



< PICTURE 5.29 >



< PICTURE 5.30 >



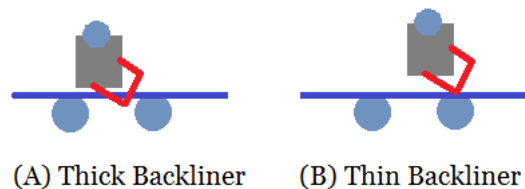
Caution : Please use security cover when slitting works.

Slitting unit has a protection cover for safety. To install or adjust slitting units, please lift it up to use. During operation, be sure to put down the cover all the time for safety. See Picture 5.31.



< PICTURE 5.31 >

Depth adjust screw bar can be moved in 2 positions. Normally we put it to slit the media between 2 holding bars beneath. You can use this position in general. However you can also move it to cut the media on 2nd holding bar beneath, for the slitting blade to contact the metal holding bar. In Picture 5.32, (A) position is preferred for relatively thick yellowish back paper and (B) for thin bluish glassine paper.

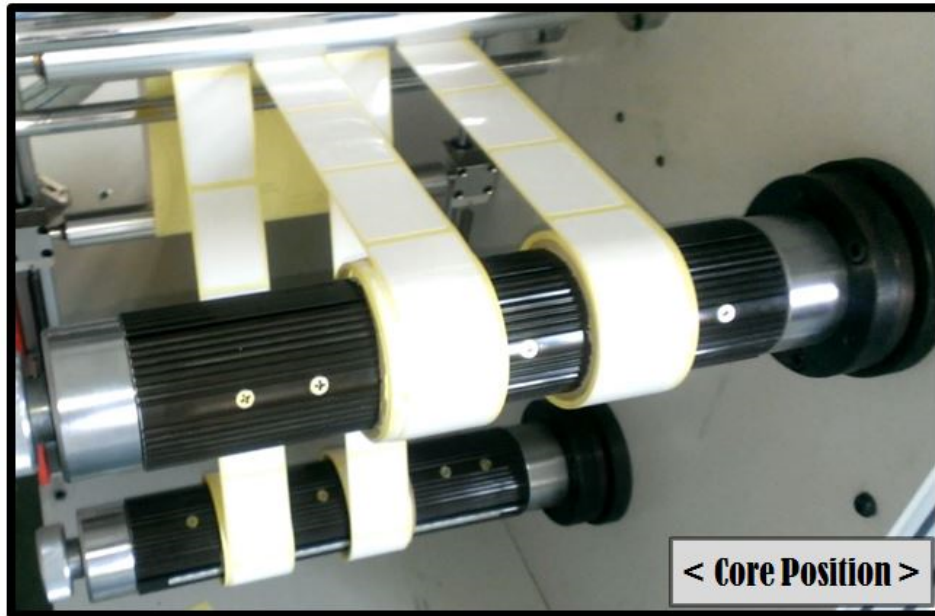


< PICTURE 5.32 >



3. Separate Rewinder

If you use slitting function, you need to have the right size of mini cores as many as required. If you have trimmed waste, use upper separate rewriter for rewinding of trimmed waste and use lower separate rewriter for rewinding of mini rolls. If you need to have multiple mini rolls as result, mini cores will be recommended in zigzag location up and down to separate each contacting cores as Picture 5.33.



< PICTURE 5.33 >

5.7 Vacuum System

Before starting a job, connect blower and air compressor and turn on their power. Blower power can be controlled by DuoBlade with using control panel side face button. Air compressor power needs to be turned on independently. Connection flow lines will be like Picture 5.34. Blower is for strong suction of air down from the vacuum pad on the flat bed part of DuoBlade. Air compressor's air is doing its role to open and close the ball valve inside of the suction pipe in Picture 5.34. During cutting, ball valve is open for vacuuming and compressed air closes the ball valve during feeding only.

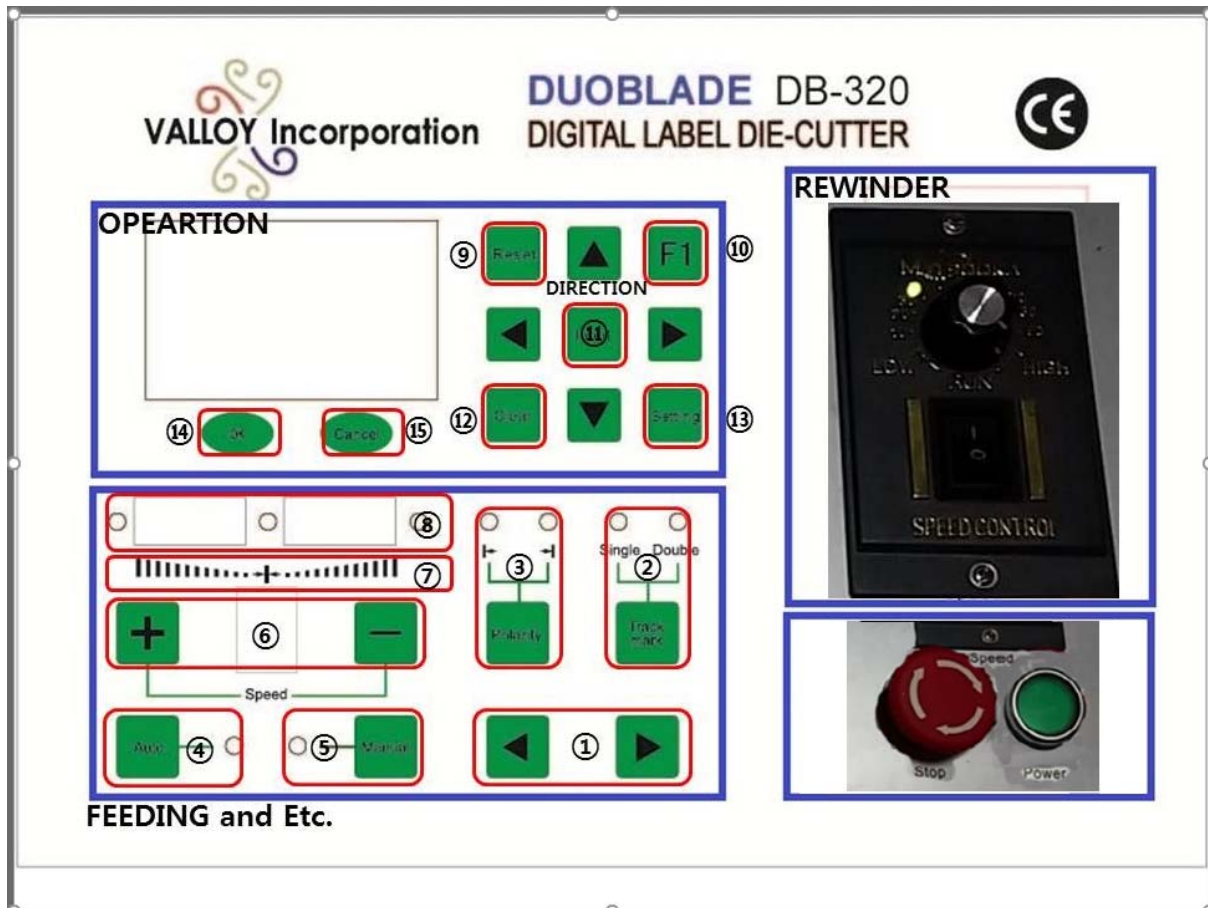


< PICTURE 5.34 >



Chapter 6. OPERATION WORK

6.1 Details of Control Panel



< PICTURE 6.1 >



< PICTURE 6.2 >


DuoBlade control panel looks like Picture 6.1 as above. It is divided into 4 sections – Operation section, Feeding section, Rewinder section and Power section. There're blower power button and serial cable port (to connect computer) on left-side face of the control panel like Picture 6.2.







1. Feeding Section

- ① Inching button : Press inching buttons to move 3 rollers in feeding part forward or backward by rotating synchronous motor. See more details on page 25.
- ② Track mark button : Press this button to choose single mark tracer or double mark tracer. See more details on page 25.
- ③ Polarity button : Press this button to choose polarity of track mark, that means whether sensor traces white or black color. Check details on page 25.
- ④ Auto button : Press this button to choose automatic feeding edge adjustment mode. This means synchronous motor will run forward or backward to move 3 rollers in feeding rollers inside or outside accordingly, simultaneously in reaction with the signal of tracing sensor(s).
- ⑤ Manual button : Press this button to adjust feeding edges manually. Synchronous motor will move forward or backward by manual control of inching buttons (①).
- ⑥ Speed buttons : Press two buttons to adjust the responding speed of the synchronous motor to tracing sensor system. If the value is increased, the answering speed is slow. If the value is decreased, and the answer speed is fast. Default value is 5.
- ⑦ Synchronous system monitoring :: This light indicates the direction and amount of movement of synchronous motor simultaneously.
- ⑧ Limit indication light : Normally center light will be on during operation. If the left or right light is on, it means the movement of synchronous motor reaches the end of limitation.

2. Operation section

- ⑨ Reset button : You must press this button before starting a new job. Previous job data is done in the firmware and you need to remove it before getting a new job data, so it is required to press this button when a job is finished and you do not want to repeat the same job.
- ⑩  button: Press this button to start cutting job. After finishing any setting, you must press this button for starting your cutting job.
- ⑪ Input button : Use this button when inputting the values for 'Cut J', 'Track J', and 'Track M' parameters. Details for these parameters are described on page 39 in chapter 6.2. This input button will move digit cursor when you adjusting values.
- ⑫ Clear button : Press this button to clear all setting values into 0.
- ⑬ Setting button : Press this button to enter into functional parameter setting mode. See more details about each functional parameter, refer to page 42 in chapter 6.3.
- ⑭ OK button : Use this button like the Enter key of computer, when confirming job adjustment or setting values. Check more details for each case in this manual.
- ⑮ Cancel button : Use this button like the ESC key of computer, when canceling job adjustment or parameter settings. Check more details for each case in this manual.

* Directions buttons (   ) : Arrow buttons can be used in various way. Left and Right arrow button can be used for manual feeding to forward and backward. All arrow buttons can be used for cutting head manual moving. Also up/down arrow buttons can be used to move up/down from LCD menu.



Left/right arrow buttons can be used to decrease/increase the setting values during parameter setting. Check more details for each case in this manual.

3. Rewinder section

Use rewinder speed dial to Adjust the speed of rewinding rollers. This speed is not related with actual production rate, but it is making effect on tension strength on to the media.

Use rewinder on / off switch to control the power of rewinding system.

4. Power section

Use main power button to on or off DuoBlade machine.

Emergency stop button : Press this button to pause the process immediately during operation if any problem occurs. After resolving the problem, twist the button to release it and resume the process.

4. 6.2 Getting Started

1. Basic settings

Basic setting parameters are 'Cut J', 'Track J' and 'Track M'. Default value for each is '0'(zero) initially like below picture 6.3.



< PICTURE 6.3 >

Refer to below Table 6.1 for the meaning of each parameter. You can choose how many jobs to cut. Also you can choose how frequently sense the mark during cutting, which is related with production speed. Generally it is ok not to sense the mark every job, but it can be better to sense the mark for every job if label length is relatively long or design is complicated. Single mark track mode can be used for most of jobs. Dual mark track mode gives better accuracy by compensation of media twist error. But DuoBlade is roll to roll machine and it already has very advanced structure for straight feeding, so double mark track mode will not be required generally, not like the sheet cutters.



Menu Name	Input Value	Function
Online		Not for editing. Just meaning that the machine is read for operation.
Cut J.	0 - 99999	Input the number of jobs to repeat, whatever you need.
Track J.	0 - 99999	Input sensing interval number, which means how often you want to sense the black marks during operation. 0 and 1 will sense the mark each time for every job and multiple number will sense the mark after cutting multiple jobs. This number is related with speed and accuracy, depending on user's preference and purpose.
Track M.	0 / 1 / 2	This means 'Track Mode'. You can select between 3 modes. 0 : Do not sense the black mark. (ex. blank cut job without marks) 1 : Single track mode – Sense single black mark, generally used . 2 : Double track mode – Sense 2 black marks for better accuracy.

< TABLE 6.1 >

* How to adjust values using buttons?

- : Adjust values for a certain digit higher or lower. (right arrow – higher, left arrow – lower).
 : Move between menus between 'Cut J', 'Track J' and 'Track M'.
 (input button) : Move the cursor between digits.

Example) Setting basic parameters as below table 6.2.

Cut J.	200
Track J.	3
Track M.	1

< TABLE 6.2 >

- Press 2 times (input button) => Cursor will move to here. 00000
 Press 2 times => 00200
 Press 1 time => cursor will move to 'Track J.' line. 00000
 Press 3 times => 00003
 Press 1 time => cursor will move to 'Track M.' line. 0
 Press 1 time => 1
 And press 'OK' (Ⓜ). => Setting is done.

* When you start your job, to avoid any mistakes,

please do test 1 job cutting like this setting CUT J 2, Track J 1, Track M 1.



Caution

Cut J and Track J can be 0, which will ask like 1. However please use 1 instead of 0 for better stability.



2. Job data sending

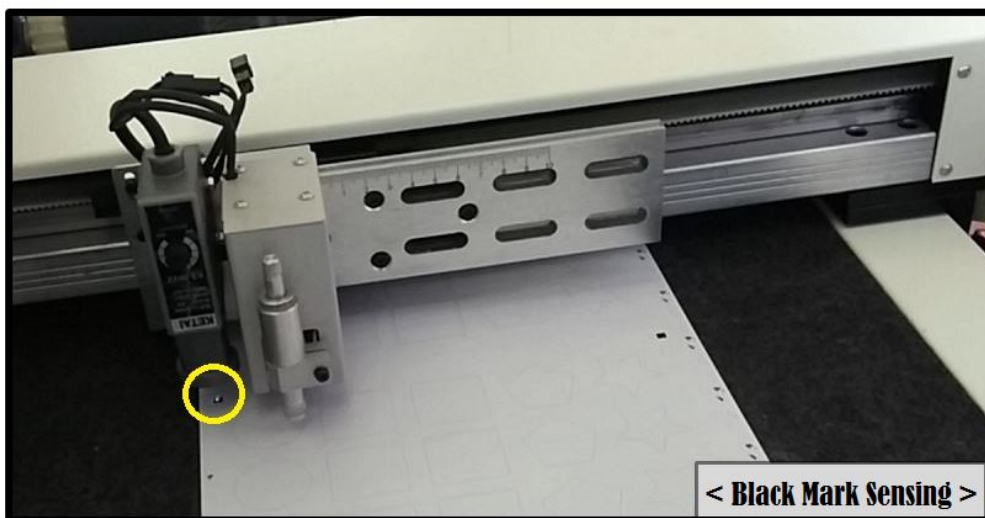
Please set the basic value(CUT J, Track J, Track M.) on the LCD panel of the machine first. Then press "Print" button from the software to send the job data (Refer to more details about software part on page 56 in Chapter 7). LCD of DuoBlade control panel will show "send file" indication during receiving the data like below picture 6.4. After completion of data receipt, the LCD will show "CUTTING" message.



< PICTURE 6.4 >

3. Start cutting

When you see "CUTTING" message on the LCD, you can move the mark sensor on the cutting head onto the center of black mark manually by using directional arrow buttons. Fit the position like Picture 6.5.



< PICTURE 6.5 >

After locate the sensor on to the center of black mark, press 'OK' (Ⓐ) button to start cutting.



Caution

If you have 2 black marks, put the mark sensor onto the FIRST BLACK MARK. The sequence of black marks is depending on the design file itself. Also cutting sequence between objects is depending on the design file, so please cautiously design the file from starting in considering orders of objects.



4. Status monitoring

There are some parameters which can monitor the current status of operation in DuoBlade. You can monitor when job data is receiving or media is feeding. Also you can monitor the current number of jobs finished or length of work accomplished so far. See more details in Table 6.3 as below.

Menu Name	Displaying Value.	Function.
Job.	0 - 99999	Count the number of job which machine did. (Not a whole history. You can see just value current running)
Len.	0 - 99999	Count the number of job which machine did. (The unit is 'meter')
Feeding Paper		After loading the Media and press button for feeding.
Print	Send file	Just display when computer is sending file to the machine.

< TABLE 6.3 >

6.3 Functional Parameters in Setting Menu

Press "Setting button " to enter to functional parameter setup menu in the LCD. Use up/down arrow buttons to select between each parameter. Press left/right buttons to edit values of each parameter and press OK button to save the parameter setting. X and Y direction is described in Picture 7.5 on page 57.



Caution

- Manufacturer already have set machine's verticality and scale parameters before shipping.**
Users only need to set the X, Y cut adjustment parameters generally.
 - When you choose track M. as 1 (Single track mode) in basic settings, you only need to set X1 and Y1 parameters. When you choose track M. as 2 (Double track mode), you only set X2 and Y2.
- * Even though you have X1 and Y1 parameters in Double track mode, those values will be ignored and only X2 and Y2 parameters will be used. So you can preset both of X1-Y1 parameter set and X2-Y2 parameter set in advance for both of Single and Double track modes.

Find more details in Table 6.4 as below.

Menu	Sub Menu.	Value	Function.	Range of Value.
	X1 vert	-99 ~ +99	X1 Verticality: Adjusting X direction verticality (angle) for single mark track mode	 +99 -99
	Y1 vert	-99 ~ +99	Y1 Verticality: Adjusting Y direction verticality (angle) for single mark track mode	 -99 +99
	X1 Scale	-99 ~ +99	Changing X direction scale for single track mode	+99 (Zoom in) -99 (Zoom out)



Parameter set	Y1 Scale	-99 ~ +99	Changing Y direction scale for single mark track mode	
	X 1 Cut Ad	-99 ~ +99	X1 Cut Adjustment : Changing X direction position for single mark track mode	+99 -99
	Y1 Cut Ad	-99 ~ +99	Y1 Cut Adjustment : Changing Y direction position for single mark track mode	-99
	X2 Vert	-99 ~ +99	X2 Verticality: Adjusting X direction verticality (angle) for double mark track mode	+99 -99
	Y2 Vert	-99 ~ +99	Y2 Verticality: Adjusting Y direction verticality (angle) for double mark track mode	-99
	X2 Scale	-99 ~ +99	Changing X direction scale for double mark track mode	+99 (Zoom in) -99 (Zoom out)
	Y2 Scale	-99 ~ +99	Changing Y direction scale for double mark track mode	
	X 2 Cut Ad	-99 ~ +99	Changing X direction scale for double mark track mode	+99 -99
	Y2 Cut Ad	-99 ~ +99	Y2 Cut Adjustment : Changing Y direction position for double mark track mode	-99
	Turn Cut R	0 ~ 99	Changing the top of blades moving radius. Offset value	
	Language	E/I	Choosing English/Italian languages	
Cut Speed	Cut Speed	10 ~ 55	Changing cutting speed when moving on straight line (Higher value, faster speed)	Linear speed
	Cut Acc	1 ~ 10	Changing acceleration level of cutting speed (Higher value, faster acceleration)	Acceleration
	Bend Speed	10 ~ 55	Changing cutting speed when moving on curves (Higher value, faster speed) * Slow down the speed in cutting of circles and polygons, less than 20.	Curve speed
	Move Speed	10 ~ 55	Changing the cutter's moving speed between label and label without cutting (value is high, speed is fast)	Jump speed
	Move Acc	1 ~ 10	Changing the cutter's moving acceleration between label and label without cutting (Higher value, faster speed)	Acceleration
	Down Speed L.	1 ~ 15	During one path cutting, changing down speed level to cut-end point.	Acceleration



	Feed P Spe	10 ~ 55	Changing media feeding speed (Higher value, faster speed)	Feed Speed
Cut Mode	Inerti 1	76	Acceleration of X shaft motor	76 : default (please don't change this value)
	Inerti 2	68	Acceleration of Y shaft motor	68 : default (please don't change this value)
	Feed P Ad	000 ~ 120	Feed paper adjustment length which means additional feeding length after track sensor is sending the black mark the gap between jobs. Unit is in mm.	Additional feeding amount in mm.
	Feed P Ac	0 ~ 250	Acceleration of media feeding speed.	Acceleration
	X Limit L	40 (default)	Max. Cutting area of X direction	Unit : cm
	Y Limit L	31 (default)	Max. Cutting area of Y direction	Unit : cm
	X sign L	40 (default)	Black mark size for X direction	40 = 4 mm
	Y sign L	40 (default)	Black mark size for Y direction	40 = 4 mm
	Model No	3201~3204	Changing the machine model to choose numbers cutter unit for working. When you set the range of head moving.	3201 : 1 head 3202 : 2 heads 3203 : 3 heads 3204 : 4 heads
	Cut Up	Open / Close	Open : Cutting knife holder will move up and down between each line of label. Close : Blade will move up and down between each label.	
Cut Test	Move		Testing moving of cutting knife heads in X /Y directions	Refer to page 16.
	Cut		Testing moving of cutting knife heads up and down.	Refer to page 16
Add. Func (Additional Functions)	Slitting		Use this function when your job is slitting only without die-cutting. Slitting and lamination can be done together in high speed. You can use this option for just laminating and rewinding only too. Use Up and Down arrow buttons to change the running speed and press cancel button to stop the operation	Max. 60 meters per min.
	RP	Continue-Separate Job	This function can be use for die-cutting of long labels, with splitting a single job into multiple jobs. The length of label can be longer than normal limitation of 42 cm.	For next version

< TABLE 6.4 >

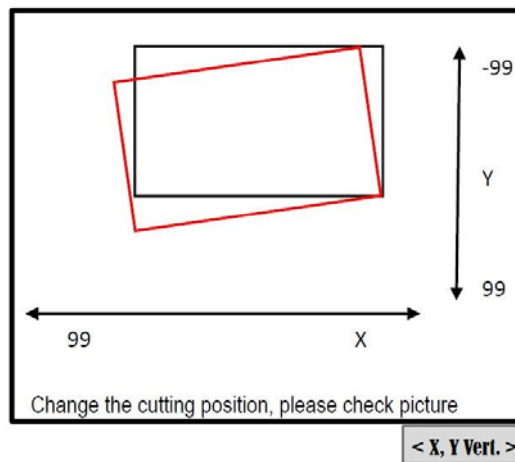


DuoBlade provides fully adjustable and controllable parameters to utilize the functionality of the machine in maximum level. DuoBlade can meet the requirements of beginners and advanced users together.

Some of parameters can be complicated to understand by short explanation in Table 6.4. Some more explanations and illustrations are provided in following for better understanding.

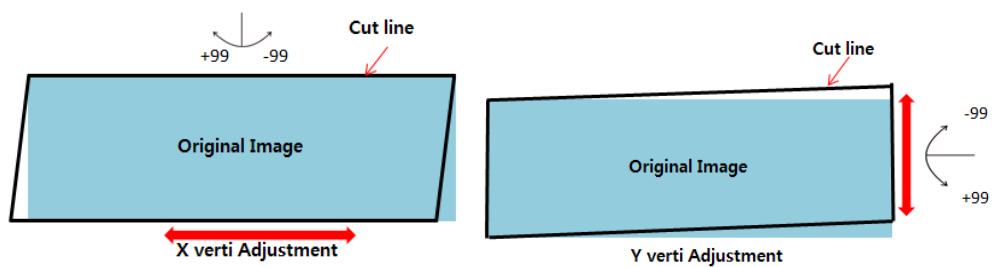
Verticality (angle)

X vert and Y vert parameters can change angles in X and Y direction as below picture 6.6.



< PICTURE 6.6 >

To understand more about Verticality, it is related with twisting the image in X and Y direction separately. Image angle can be changed by adjusting X Vert and Y Vert value together. Below Picture 6.7 is showing how X Vert and Y Vert work separately.

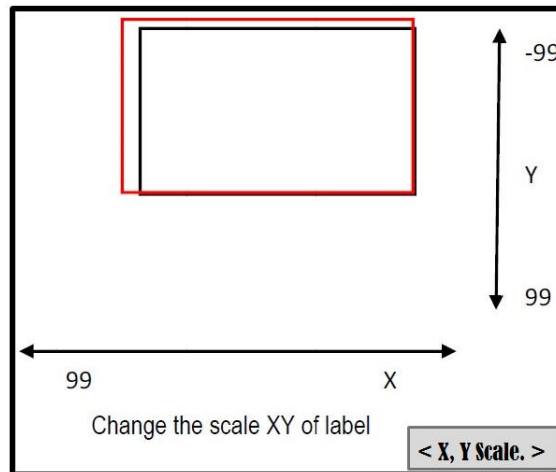


< PICTURE 6.7 >



Scale

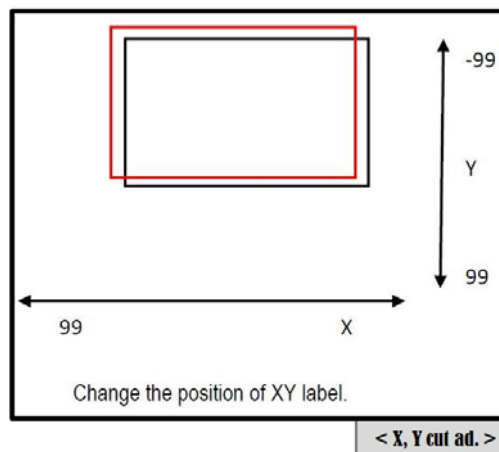
X Scale and Y Scale adjust size of image in X direction and Y direction separately and independently. You do not need to keep original X-Y ratio. Refer to below picture 6.8 for better understanding.



< PICTURE 6.8 >

Position

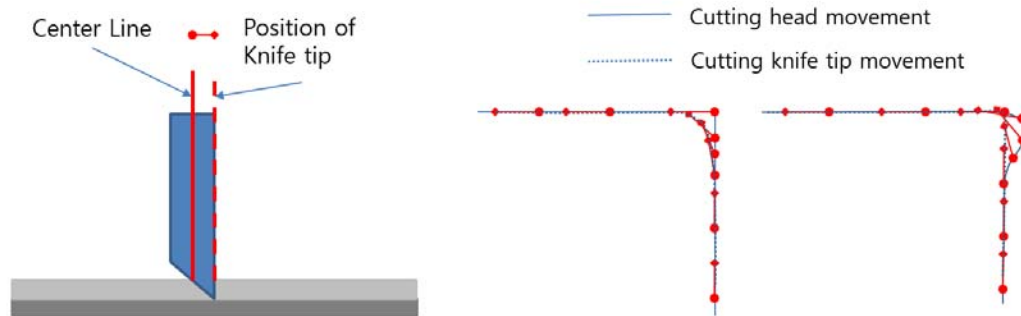
X Cut Ad and Y Cut Ad adjust position of image in X direction and Y direction separately. Refer to below picture 6.9 for better understanding.



< PICTURE 6.9 >

Corner cutting control

Turn Cut R parameter means corner moving radius. Knife has a cutting tip with a certain angle, a little apart from the center of cutting knife holder. This makes errors in moving around the corners. Turn Cut R parameter setting helps smooth cutting at the corner as good as possible. See below picture 6.10 to understand better.



< PICTURE 6.10 >

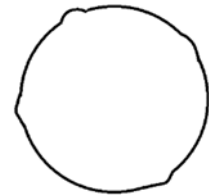
Speed and Acceleration control

Speed and acceleration can be very sophisticatedly controlled in DuoBlade. These parameters are dependent to the shape and complexity of cutting design itself. Acceleration means how fast to reach the target speed from starting point or how fast to stop cutting at end point. Speed and acceleration can be differently setup for straight lines and curves. Be sure to use less values of Bend Speed when cutting circles. Even it is possible to setup acceleration at starting of curves from straight lines. Feeding speed by rubber press roller can be adjusted separately.



Caution

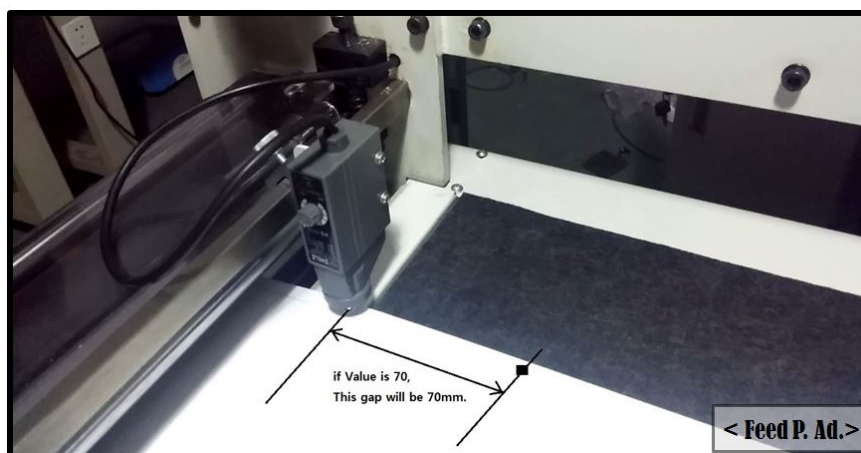
If you are cutting small circles and the result is not smooth, you need to slow down the BEND SPEED. It would be also helpful to slow down CUT SPEED together.



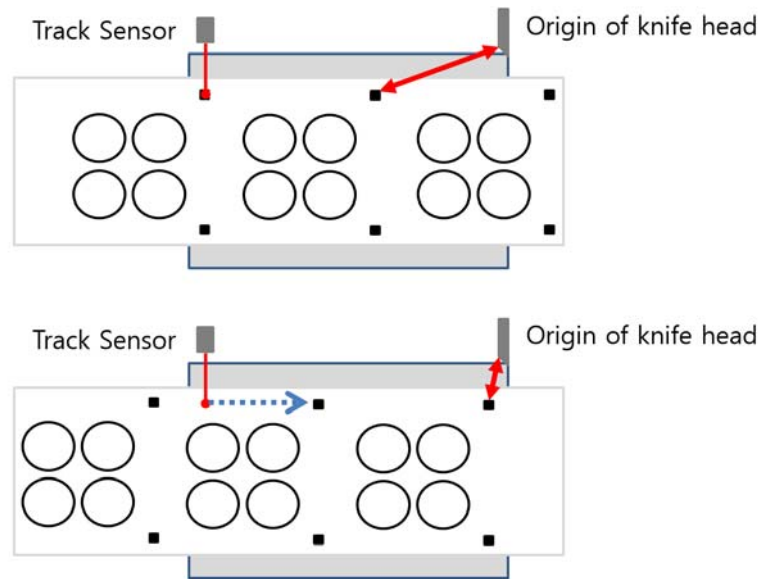
< PICTURE 6.11 >

Feeding paper adjustment

The distance of additional feeding is adjustable after track mark sense next black mark (0mm ~ 120mm). It can be used if cutting heads need to move relatively long distance for finding next black mark and starting cutting. You can minimize the moving distance of head for better speed and accuracy like Picture 6.12 and 6.13.



< PICTURE 6.12 >



< PICTURE 6.13 >

Multiple Cutting Heads

When using multiple cutting heads, you need to setup Model No. parameter in the setting menu differently. This defines how many head units to control by machine firmware. Max. 4 cutting heads can be used in DuoBlade. Learn more about how to use multiple cutting heads on page 51 in Chapter 6.5.

Additional Functions

There're 2 useful additional functions provided in the menu.

Slitting allows you to do slitting only without any cutting process. In this Slitting mode, you can do just laminating, slitting, rewinding or a combination of those jobs in high speed. Speed can be adjustable by pressing UP / DOWN arrow buttons during operation simultaneously. See more details on page 54 in Chapter 6.6.

RP mode is for split cutting of long label data. With this function, labels longer than 42cm can be divided into 2 or more sub-jobs to cut piece by piece to complete whole design. Currently, this function is under testing. We will show this function in our next version.



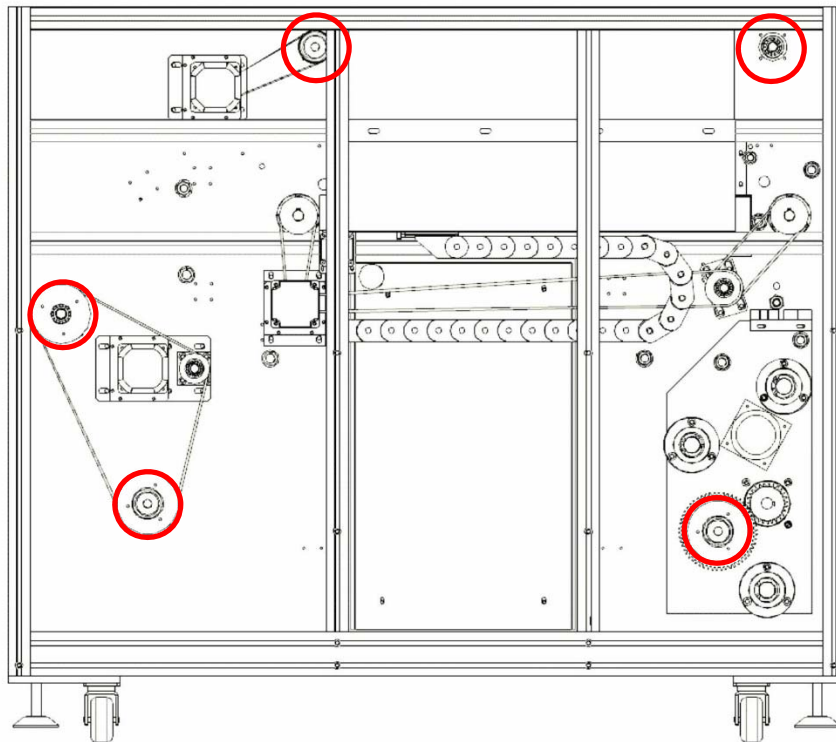
6.4 Tension Control

Tension control is required at starting and in the middle of operation, because media roll size and weight varies during the process and duty on each roller varies. So it is required to have properly adjusted tension power accordingly. Bigger roll gives heavier pressure and smaller roll gives lighter pressure.

To control the tension on media, there're 5 tension control knobs on opposite side of the rollers, which can be accessed by opening the backside doors. Clock-wise rotation will give stronger tension and counter clock-wise rotation will give weaker tension for each rollers. It looks like Picture 6.14 as below. Tension controllable rollers are 1 unwinding roller, 2 rewinding rollers, 1 matrix removing roller and 1 laminating roller. Check the location of reach tension control knob in Picture 6.15.



< PICTURE 6.14 >



< PICTURE 6.15 >

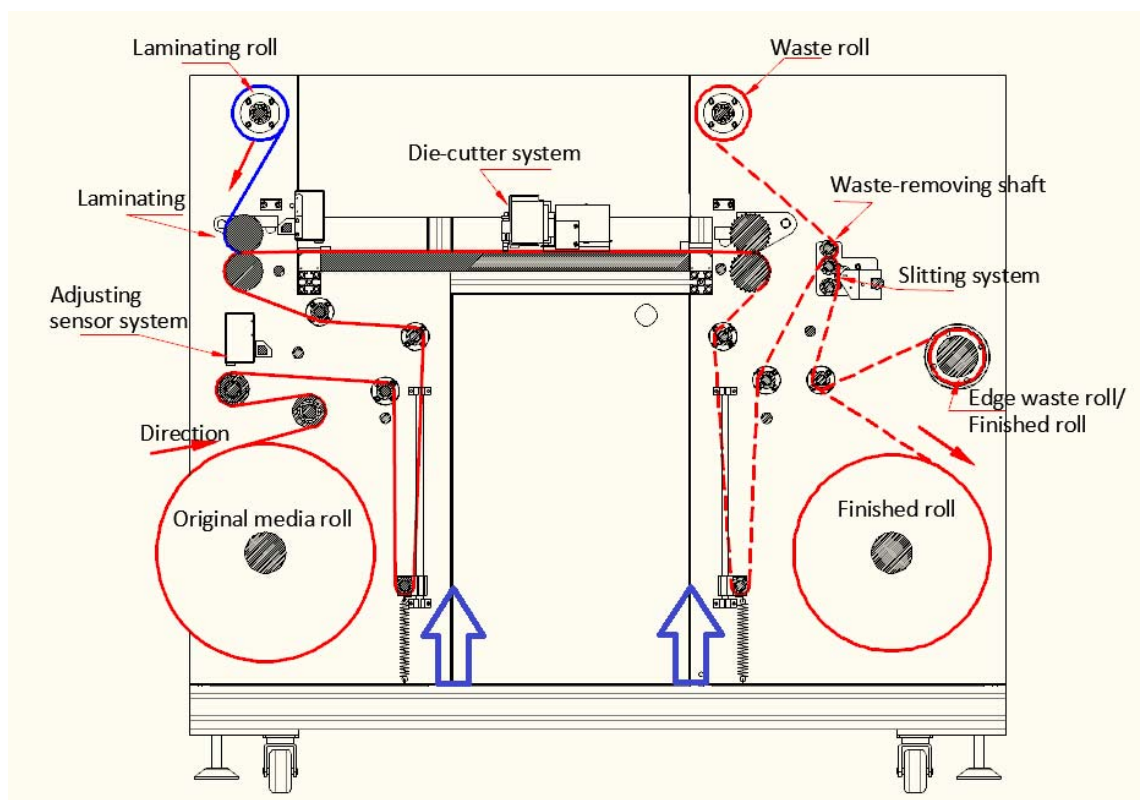


For tension control of matrix removal roller, you are advised to find proper tension to rewind waste matrix smoothly, not too weak, not too strong. Too weak tension can draw the labels together with the matrix waste and too strong tension can break the narrow strips from gutters or edges between labels.

For tension control of laminating roller, put a proper tension not too the laminating roller slippery. If tension is not strong enough slipping on the roller can make the rotation step wise eventually and tension pressure on the laminating film will not be constant. Too strong tension will break or expand the laminating film to make wrinkles or tearing problem.

Tension control of unwinder and rewinder is a little more complicated. There are 2 dancing arms moving up and down to keep the tension on unwinder and rewinder. The height of tension arm is determining the tension strength onto the media (between unwinder/rewinder and rubber pressure roller). As described in Picture 6.16, it is important to have a constant height of the dancing bars, at starting and during operation. Recommended height is in range of 30cm to 40 cm from the bottom.

It is advised to adjust the tension for unwinder and rewinder when the height of tension bars are out of the proper range. The frequency of tension adjustment can be about every 200 meters work.



< PICTURE 6.16 >



6.5 Multi-Blade Cutting

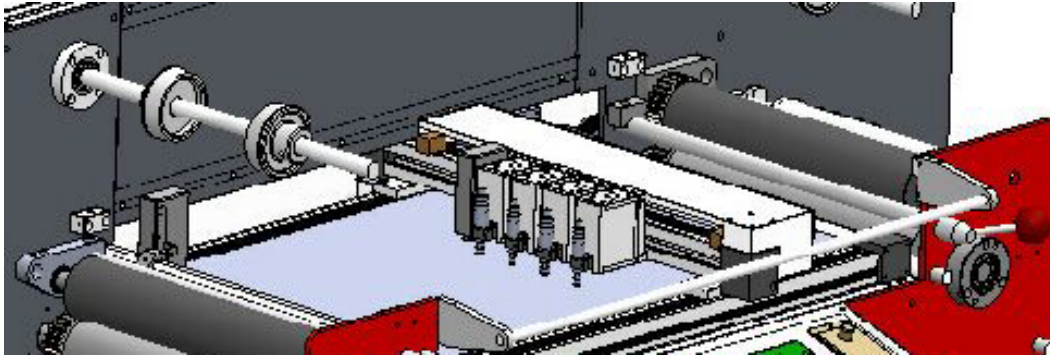
One of the strong benefits of DuoBlade is to use multiple cutting heads to maximize the productivity. Totally 4 heads can be installed in maximum. 2 cutting heads are installed as default and more cutting heads can be ordered in option.

To use multiple cutting heads, it is required to design the artwork differently. There should be duplicated designed in multiple columns. Please see Table 6.5 to understand no. of heads to be used for no. of duplicated columns in design itself. Be sure to have black marks in the position of original design for printing (no change).

No. of columns in design	Max. no. of heads possible to use	Working sequence of heads for columns
1	1 head	①
2	1 or 2 heads	①② or ①①
3	1 or 3 heads	①②③ or ①①①
4	1 or 2 or 4 heads	①②③④ or (①②①②, ①①②②) or ①①①①
5	1 head	①②③④⑤
6	1 or 2 or 3 heads	①②③④⑤⑥ or (①②③①②③, ①①②②③③) or (①①①②②②, ①②①②①②)
7	1 head	① ②③④⑤⑥⑦
8	1 or 2 or 4 heads	①②③④⑤⑥⑦⑧ or (①①②②③③④④, ①②③④①②③④) or (①①①②②②②, ①②①②①②①②)
9	1 or 3 heads	①②③④⑤⑥⑦⑧⑨ or (①②③①②③①②③, ①①①②②②③③③)
10	1 or 2 heads	①②③④⑤⑥⑦⑧⑨⑩ or (①②③④⑤①②③④⑤, ①①②②③③④④⑤⑤)

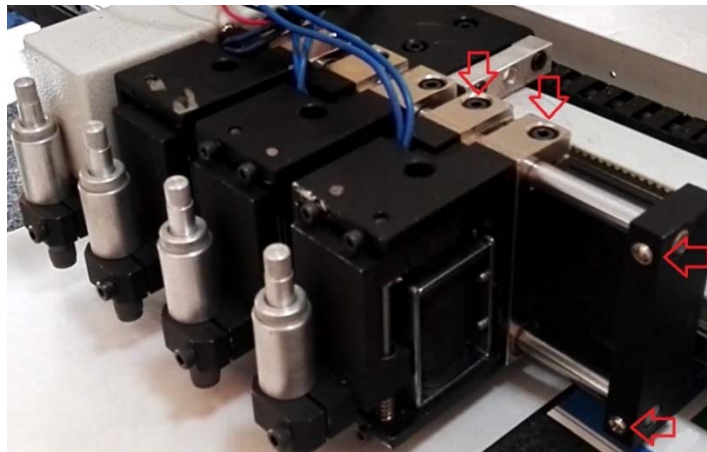
< TABLE 6.5 >

According to the label width in row, you can loosen the screw bolts of 2nd to 4th heads and adjust the distance between heads precisely. The distance needs to be the same with label width + gap value. In case that you are cutting a group of labels in series, like ①①②② or ①①①②②②③③③, the distance between heads will be 2 times or 3 times of label width + gap value. Please see below picture 6.17 when installing 4 heads in sequence.



< PICTURE 6.17 >

To install additional cutting heads, open the cover of head motion assembly box and unscrew 2 bolts on the side of head holding bar as below Picture 6.18. put the head into up and down support bars and fix it with 2 screw bolts as shown in Picture 6.18.



< PICTURE 6.18>

After installation of additional cutting heads, connect the wires like below picture 6.19 in series.



< PICTURE 6.19 >

**Caution**

If you do not use some heads, be sure to get rid of cutting knife holders from them for safety. Very sharp knives can hurt your finger and knife of 4th head can be exposed out of the bed when using single head.

Choose the right Model. No. parameter in the menu as described in Table 6.4 on page 44. If you use default Model No. as 3201 for multiple cutting heads, cutting knife holders in 2nd ~ 4th heads will not move up and down for cutting.

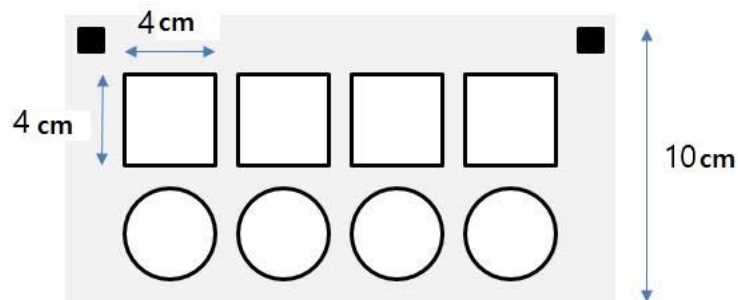
Model No. = 3201 for using single cutter units

Model No. = 3202 for using two cutter units

Model No. = 3203 for using three cutter units

Model No. = 3204 for using four cutter units

Speed comparison result in using multiple cutting heads for typical design is shown in Picture 6.20 and Table 6.6 as below for example.



< PICTURE 6.20 >

No. of cutting heads to use	Duration time per job	Linear speed
2 heads	4.51 sec	1.33n meters / min
4 heads	3.10 sec	1.94 meters / min

< TABLE 6.6 >

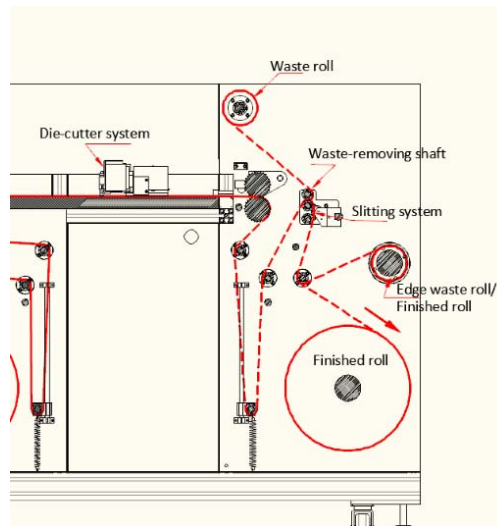


6.6 Slitting mode

For installation of slitting module, please refer to details in Chapter 5.6 on page 34.

Also please be sure that media loading is prepared properly like the Picture 6.20 as below.

Choose Slitting in additional functions in the menu as described in Table 6.4 on page 44. Speed can be controlled by up and down arrow buttons in real time during operation. Adjust the proper tension in unwinder part and rewinder part at starting and during the operation.



< PICTURE 6.20 >

Slitting mode can be used for simple rewinding, laminating + rewinding, simple slitting and laminating + slitting. It is also useful when you'd like to check straight rewinding with constant edges in final rolls. No. of black marks sensed and length of job will be displayed during operation for monitoring of the process.



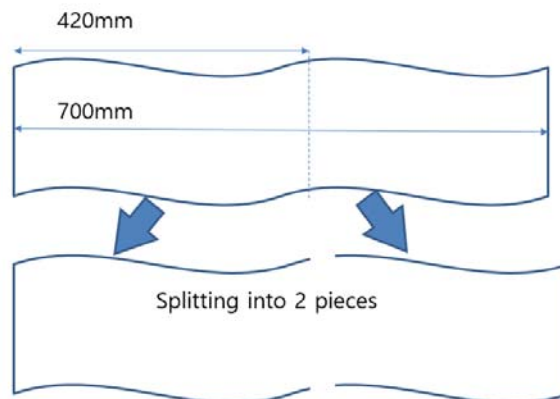
Caution

If you press E-stop button instead of cancel button, you can temporarily pause the slitting operation. You can resume the slitting job by releasing E-stop button with twisting it.

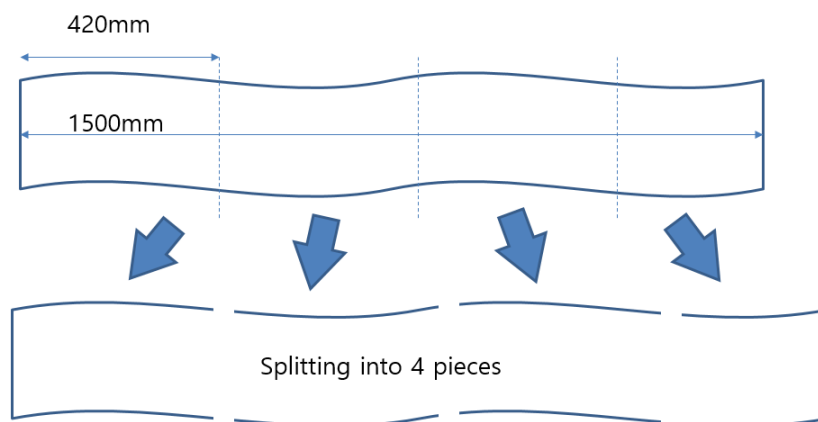


6.7 Split Cutting (RP) mode (Currently not activate.)

Choose RP in additional functions in the menu as described in Table 6.4 on page 44. Split mode is useful in cutting of labels longer than the limitation of 420mm length, by dividing it into pieces less then 420mm length. Before selecting RP (Split mode) in the control panel menu, it is important to setup proper parameters for RP in the software. Please refer to details on page 73 of Chapter 7.5. See below pictures 6.21 and 6.22 to understand the concept of splitting better as below.



< PICTURE 6.21 >

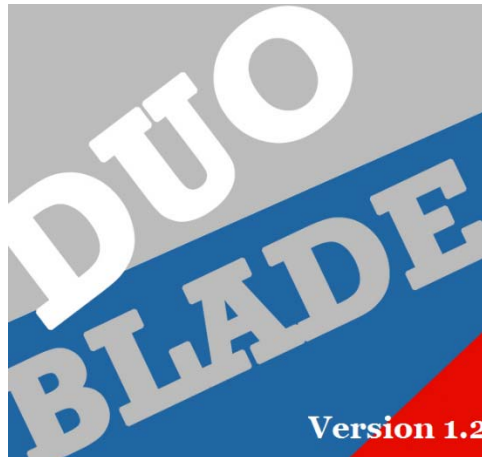


< PICTURE 6.22 >



Chapter 7. DUOBLADE SOFTWARE

DUOBLADE software is proprietary operating software for DuoBlade digital die-cutting machine only. It imports DXF, PLT file from design programs like Adobe Illustrator or Corel Draw and send the data to the machine with proper settings through USB to RS232 serial port. Learn more details about it in this chapter.



< PICTURE 7.1 >

7.1 File Design

First of all, please do not prepare design files for printing and cutting separately. It can cause registration problem if you prepare them separately. Prepare single design for printing and add cutting contours for cutting. Make contours invisible during printing and delete printable designs during exporting of cutting file.



< PICTURE 7.2 >



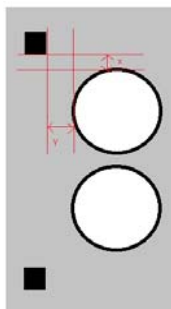
Be sure to prepare the design to have black marks in left side by rotating the layout -90° (feeding direction is right to left) before exporting the data as Picture 7.3.



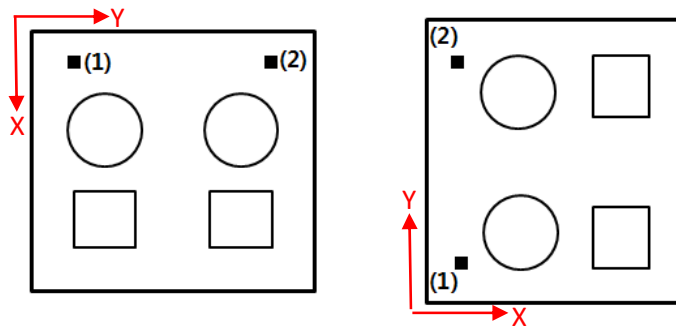
< PICTURE 7.3 >

How to put Black Marks?

It is required to put 2 black marks side by side with the design. Black marks need to be min. 1mm x 1mm size but **we recommend 4mm x 4mm size in general**. The gap between object and black marks needs to be at least 1mm in X and Y direction like Picture 7.5.



< PICTURE 7.4 >



< PICTURE 7.5 >

Sequence of black marks in the design itself is also important. We advise put left mark first and second mark later, to measure the first black mark which is closer to the cutting head origin position.



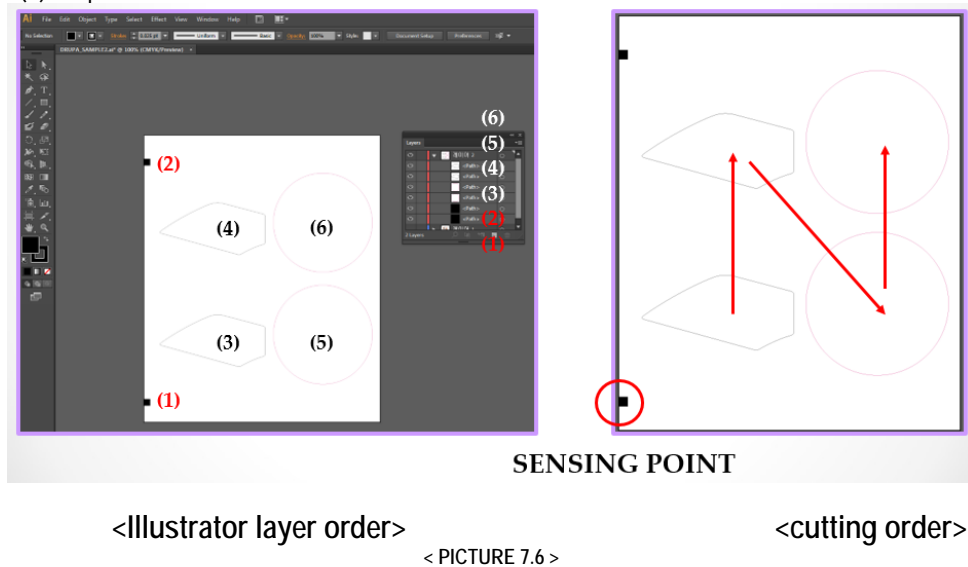
How to prepare proper design?

Objects in design file needs to have proper order, just like the sequence of black marks. It is important to make the cutting head movement path as simple as possible, to reduce the inaccuracy and maximize the cutting speed. For example in below Picture 7.6, the illustrate sequence of objects will optimize and simplify the path of cutting head movement.



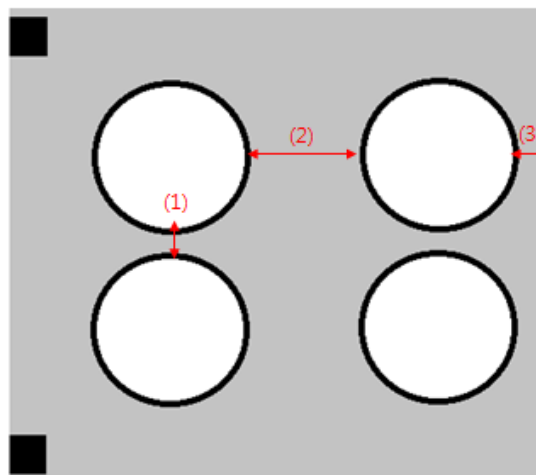
Caution

Our converting program makes a cutting order in reverse. So you arrange layer order as (1)>(2)>(3)>(4)>Top black mark>Bottom black mark.



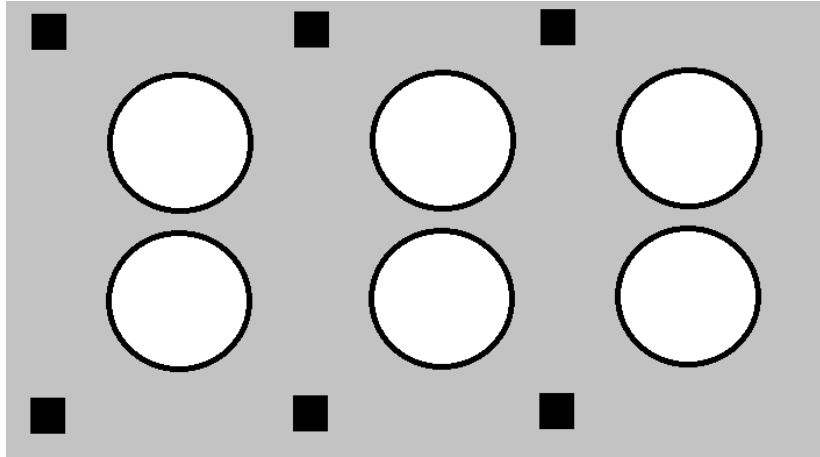
We recommend to have max. 10mm margin in the end of job – distance (3) in below Picture 7.7. If distance (3) is larger than 10mm, next mark cannot be sensed correctly.

Gaps of (1) and (2) between labels have no limitation, but recommended gap is 3mm ~ 5mm. Too narrow gap will make problems during matrix removal (weak matrix can tear easily).





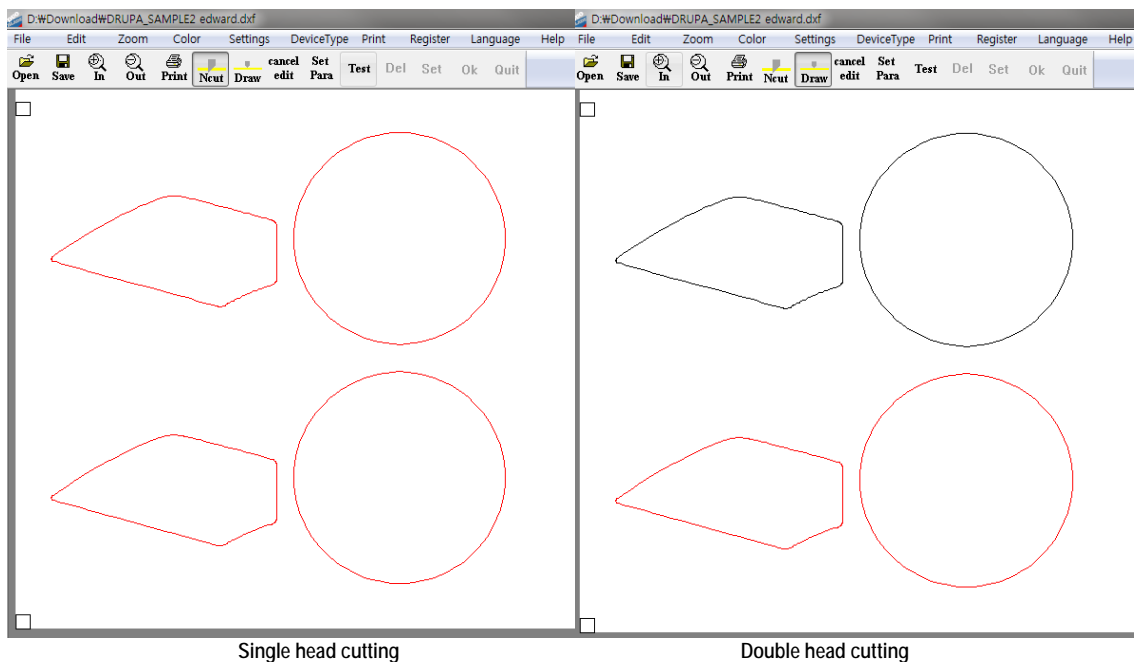
It is also possible to put multiple rows of same images in a single design like Picture 7.8. Next black mark will not be sensed until one job is finished. It gives the same effect with using Track J. parameter in Table 6.1 on page 40, as more than 2 to skip mark sensing for a certain amount of jobs to save time.



< PICTURE 7.8 >

How to prepare proper design for multiple cutting heads?

You can control multiple cutting on the software. You don't need to make the file separately.



< PICTURE 7.9 >

(Please learn more in Software page.)

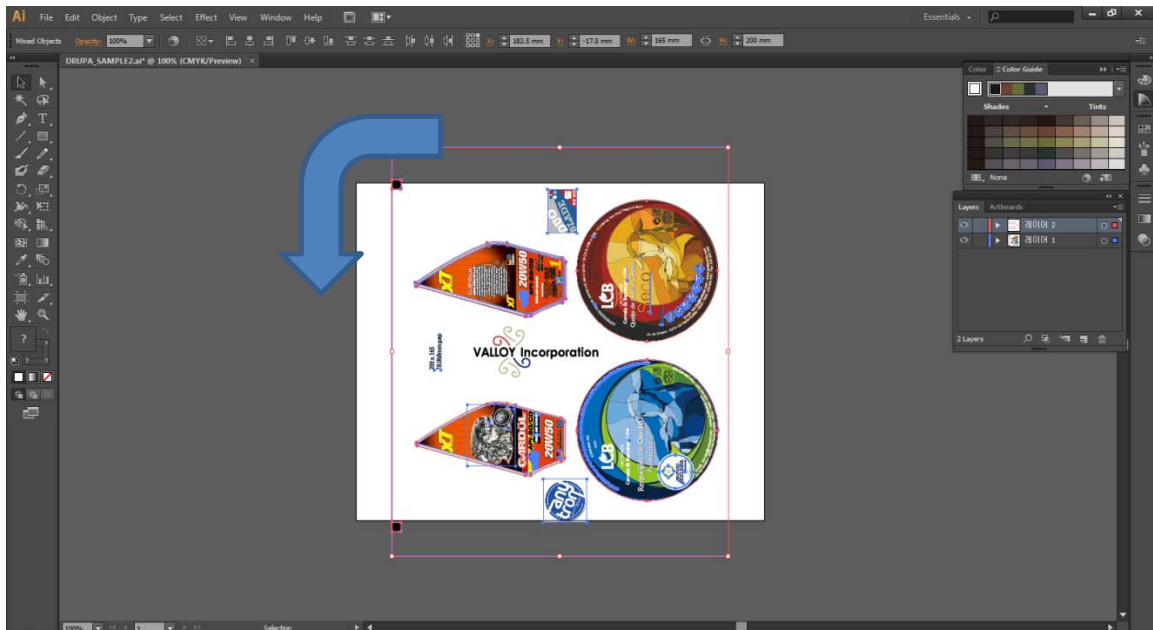


7.2 DXF file generation (for illustrator)

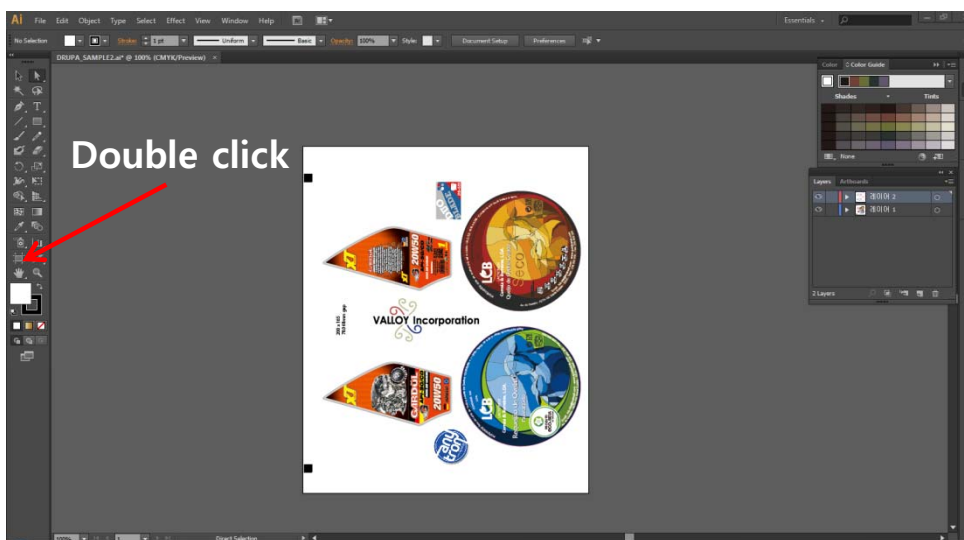
As mentioned, DUOBLADE software DXF and PLT files. It cannot read other design files directly. So it is required to save or export the design file as DXF, or PLT format from the design program.

How to create DXF files from Illustrator??

1. Rotate 90 degree to all layers.

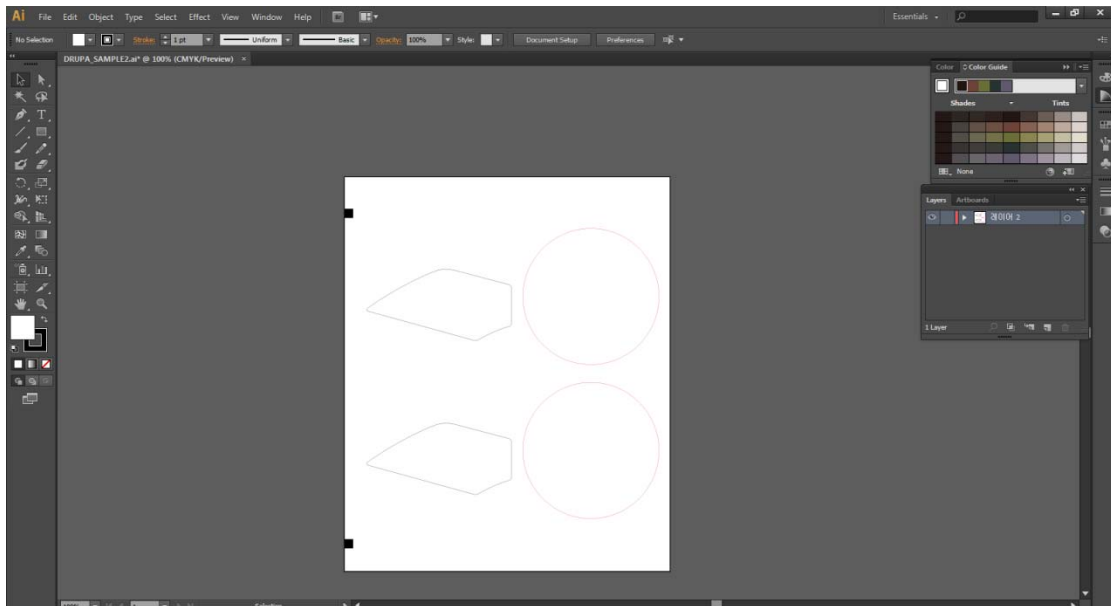


2. Back ground editing // switch between width and height



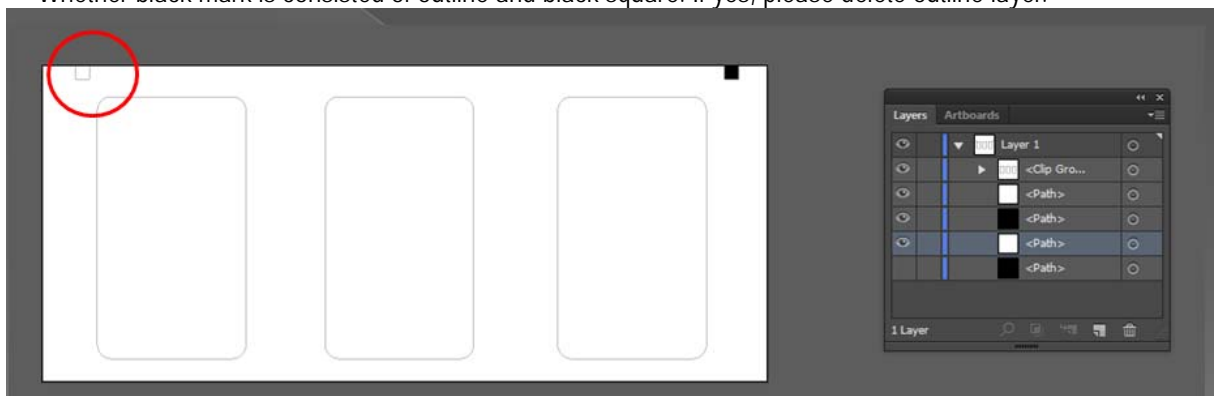


3. Delete print layer (leave only black mark and cutting line)



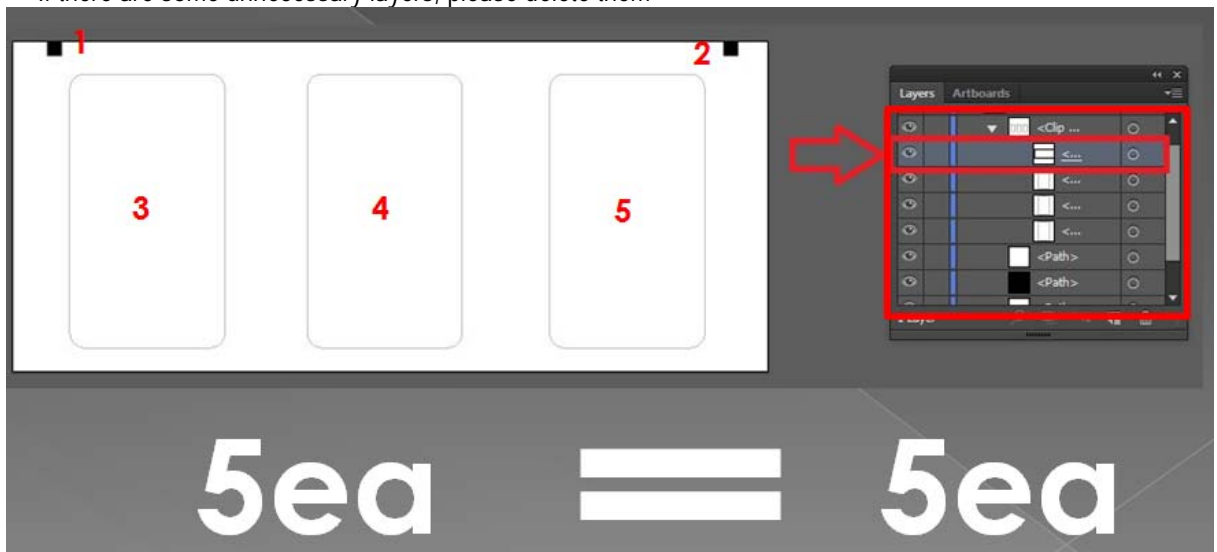
Caution 4-1. Check all layer. // black mark

Whether black mark is consisted of outline and black square. If yes, please delete outline layer.

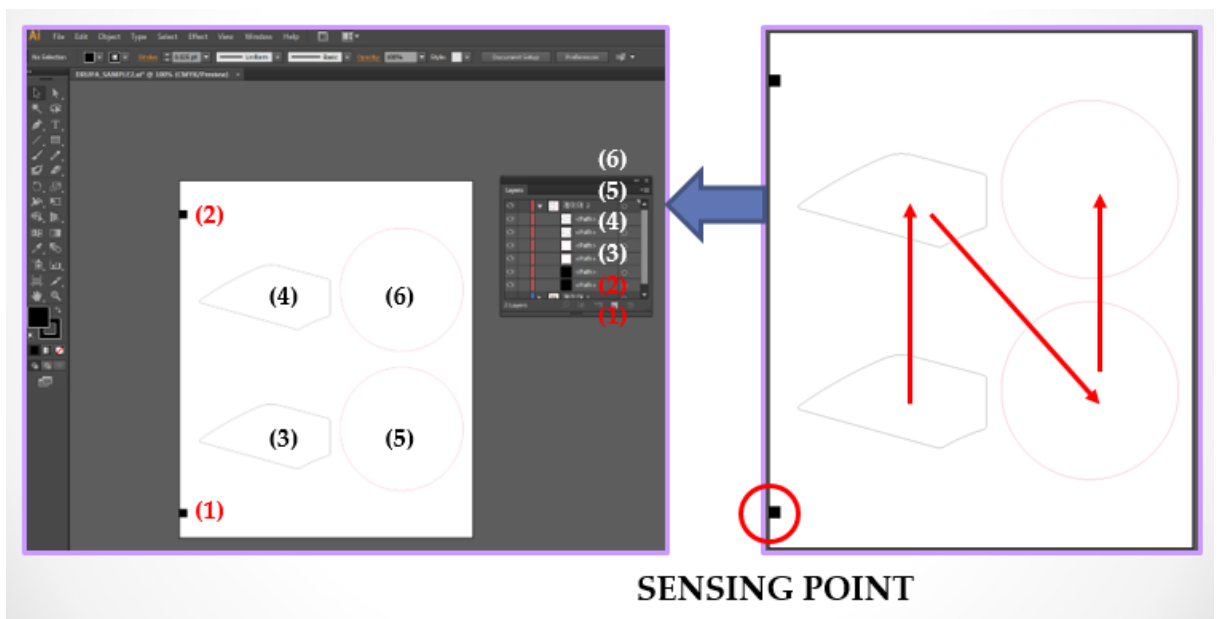


**Caution 4-2. Check all layers.**

If there are some unnecessary layers, please delete them

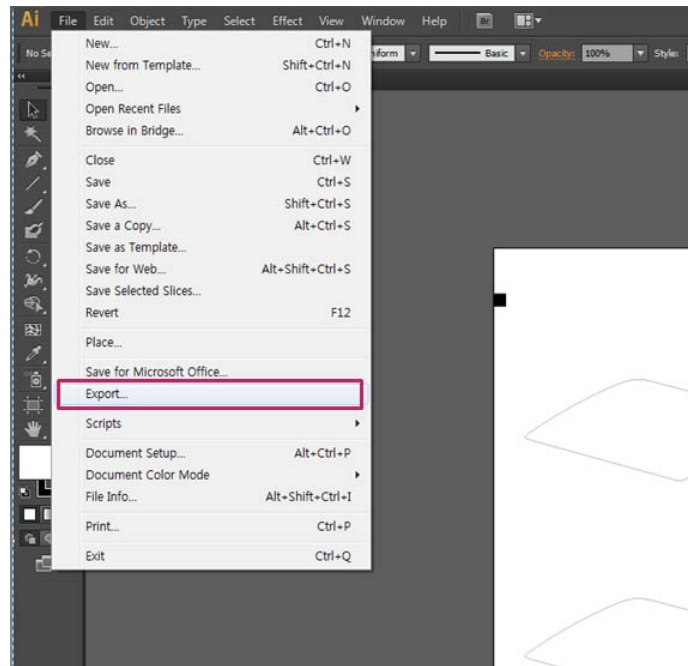


5. Assign cutting order by using layer order

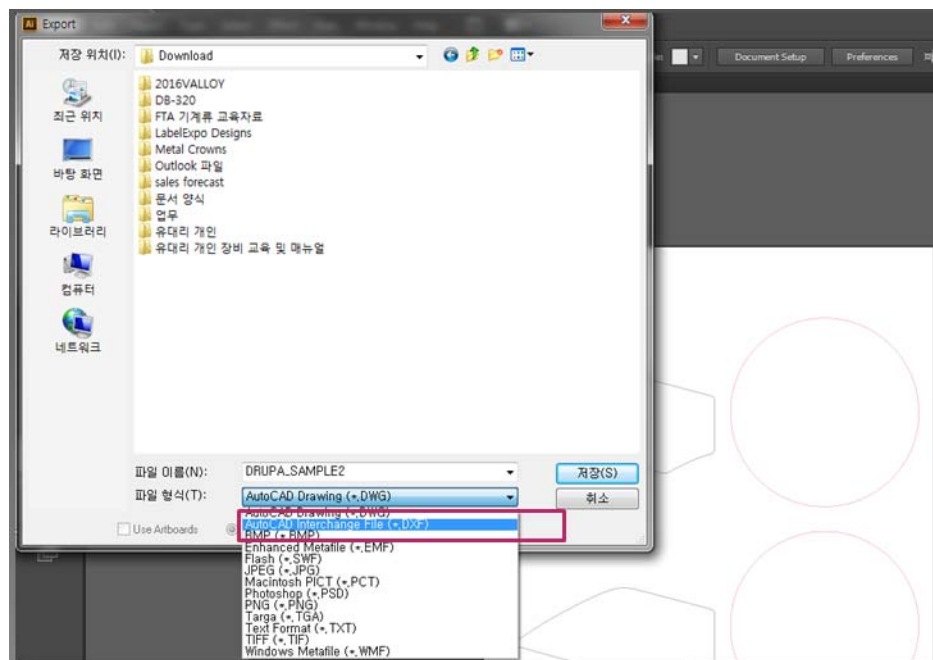




6. Export.

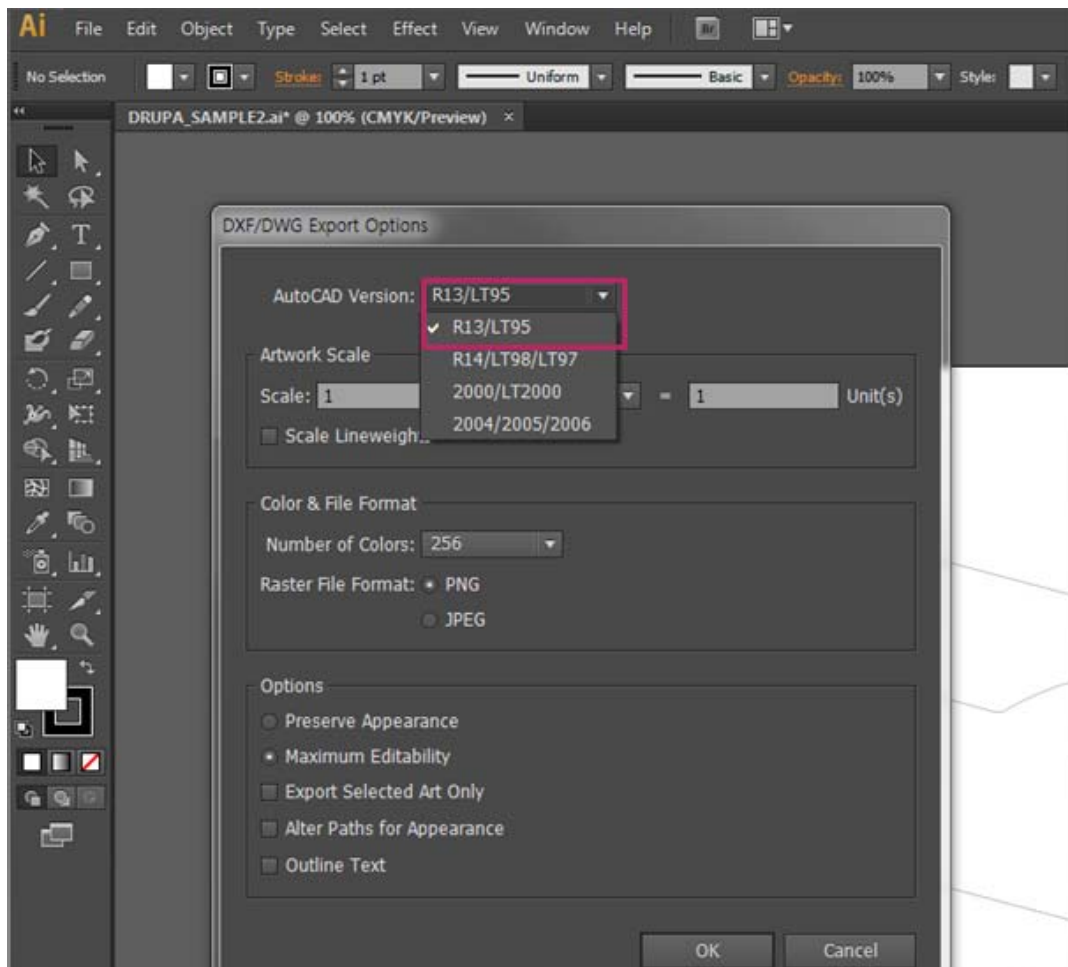


7. Save *.DXF format (not DWG)





8. Choose R13/LT95 version. (S/W can't support R14 format)

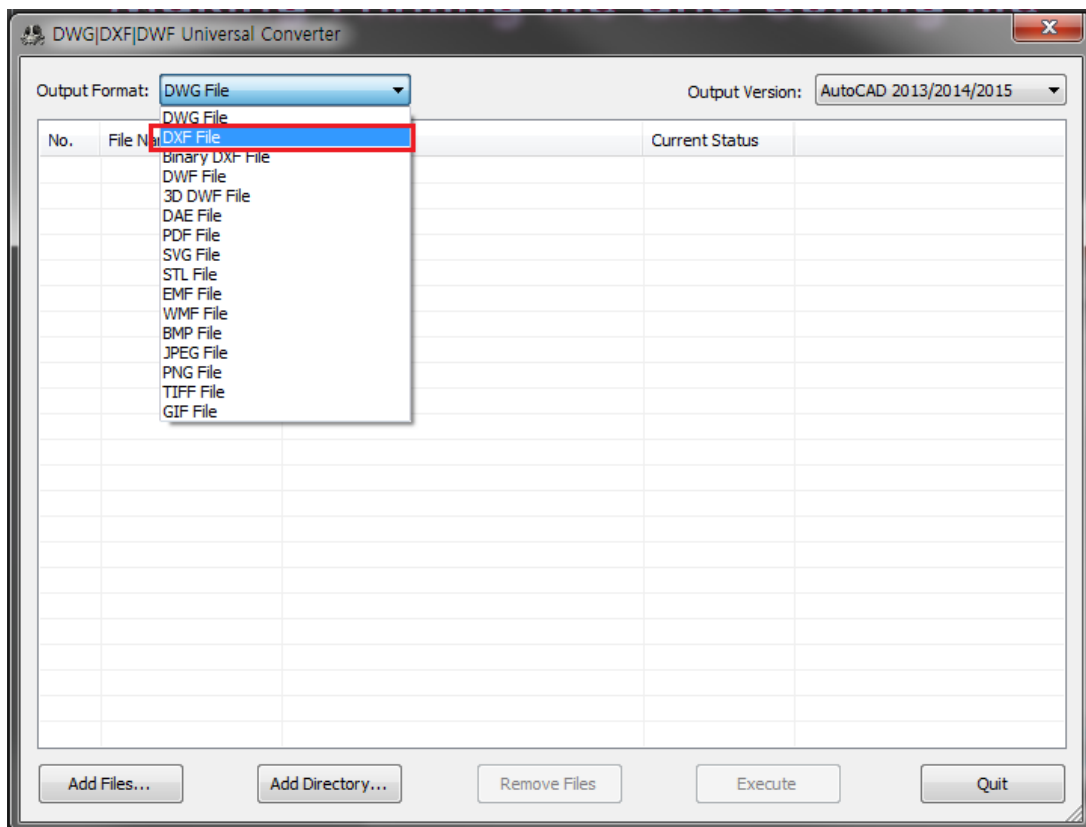




9. Open converting program.



10. Please choose Output format as DXF file.



The screenshot shows the main window of the "DWG|DXF|DWF Universal Converter" application. The title bar includes the application name and a close button. Below the title bar, there are two dropdown menus: "Output Format:" set to "DXF File" and "Output Version:" set to "AutoCAD R11/12". The central area contains a large table with five columns: "No.", "File Name", "File Directory", "Current Status", and an empty column. The table has multiple rows, all of which are currently empty. At the bottom of the window, there are five buttons: "Add Files...", "Add Directory...", "Remove Files", "Execute", and "Quit". The "Execute" button is highlighted with a red border.

You can open your cutting file on Valloy software.



7.3 USB driver installation and setup

In the product package, you will find USB to RS232 serial cable and USB driver installation CD together with the product as below Picture 7.20.



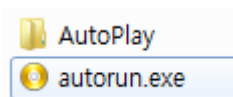
< PICTURE 7.20 >

Connect the USB to Serial cable between your computer and DuoBlade machine. There's serial cable port on side face of DuoBlade control panel as below Picture 7.21. Connect USB end to USB port of computer.



< PICTURE 7.21 >

If you put the installation CD in CD rom drive in your computer, it will run the setup program automatically. If not, please run AUTORUN.exe in the CD manually.



< PICTURE 7.22 >

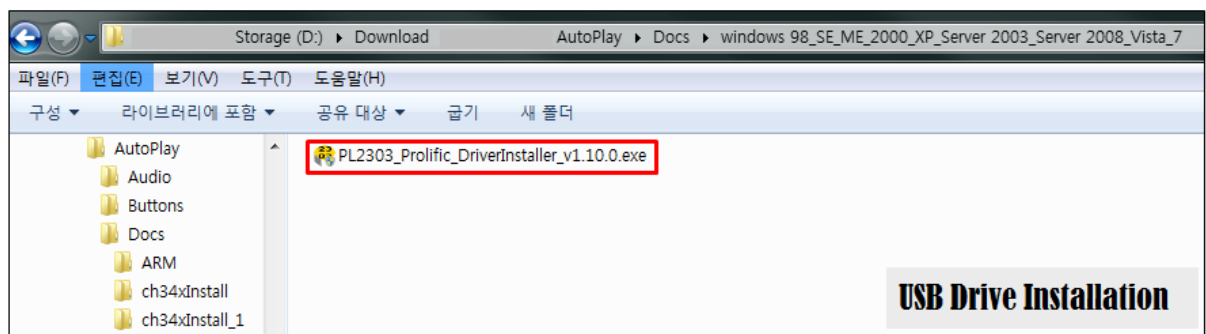


Select DT-5002A in the first popup window. Then select Windows in next step as Picture 7.23.



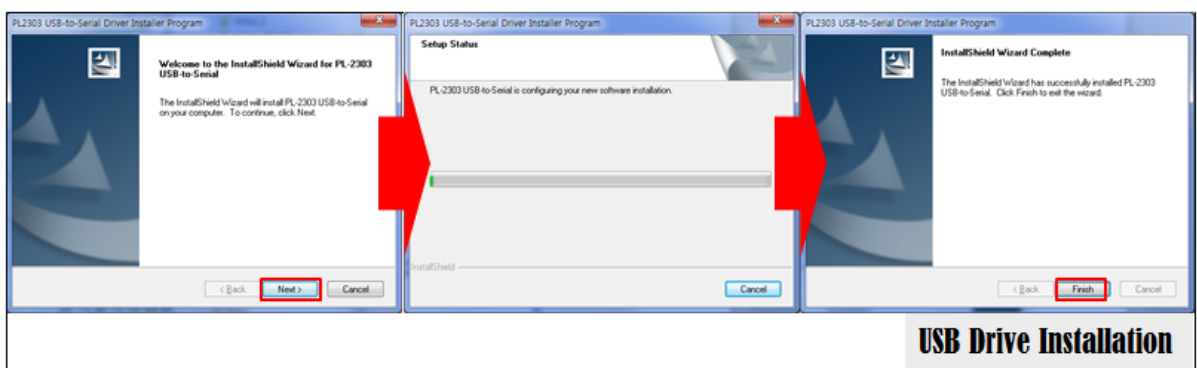
< PICTURE 7.23 >

Proper installation file will be guided automatically. Run this install program.



< PICTURE 7.24 >

Proceed steps of install program to finish USB driver installation.



< PICTURE 7.25 >



Click EXIT icon to close the setup wizard window.

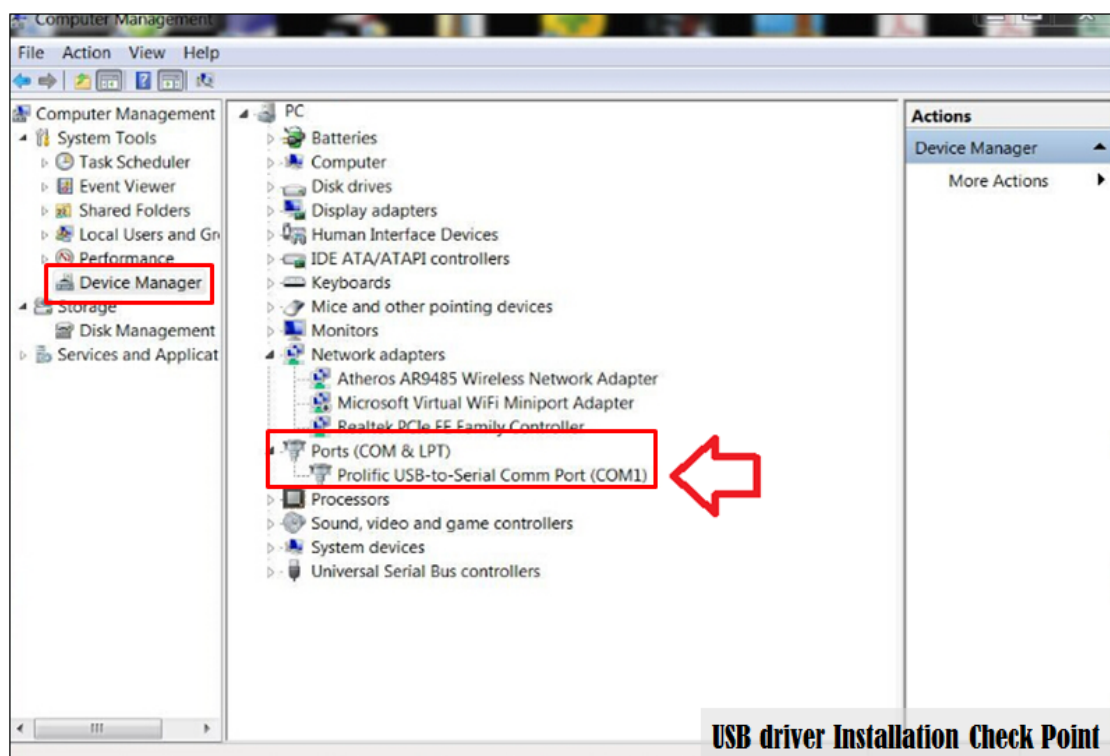


< PICTURE 7.26 >

Check USB driver is properly installed by accessing to "Control Panel > Device Manager > PORT".

Be sure to connect the USB to Serial cable because COM port is plug & play activated.

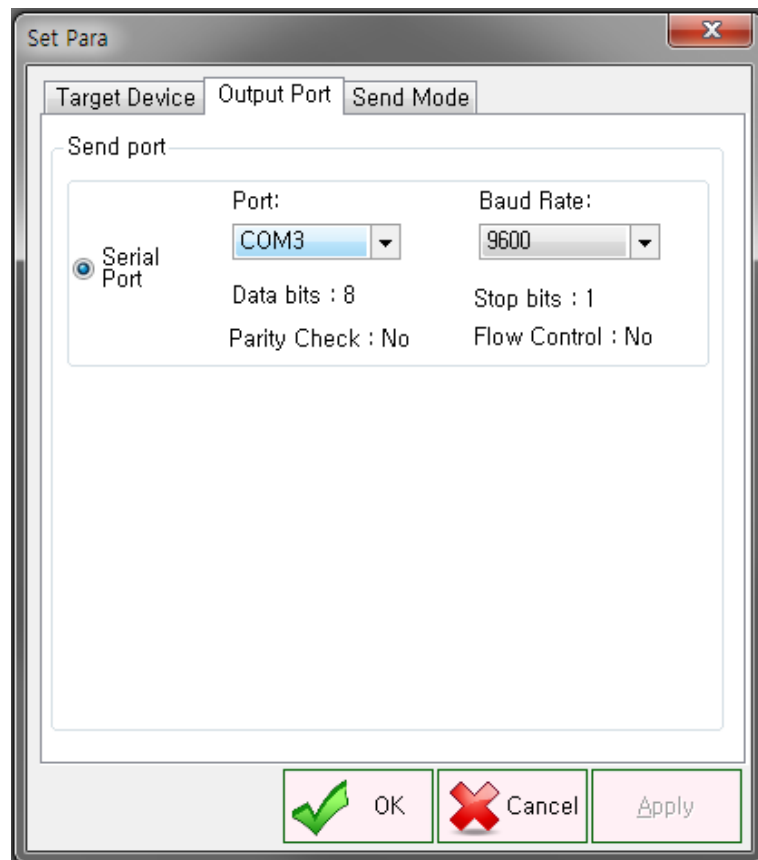
If you see "Prolific USB to Serial COMM port", USB driver is installed correctly like Picture 7.27. COM port can be any number by registering vacant port automatically. Remember this COM port number for setup in DUOBLADE software later.



< PICTURE 7.27 >



Be sure to properties of COMM port is correctly setup as below in Picture 7.28.



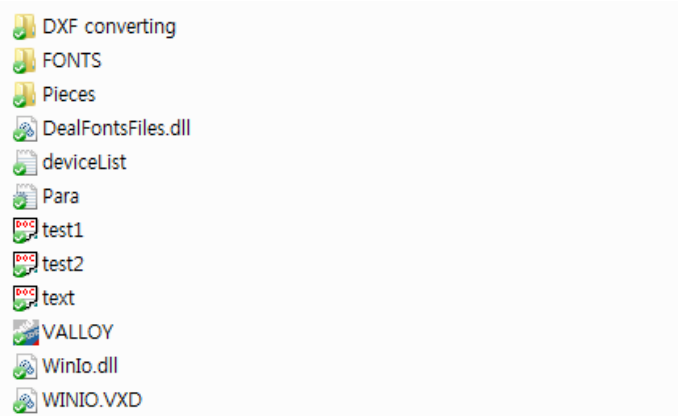
< PICTURE 7.28 >



7.4 DUOBLADE software installation

For DUOBLADE software, **there's no installer**. Please copy from CD or unzip downloaded file to local folder as below Picture 7.29.

We recommend to copy the files to D: or E: drive, not C: drive to prevent any confliction with windows resource files.



< PICTURE 7.29 >

Simply double clicking of VALLOY.exe will run the software. For easier access, copy a shortcut to desktop.

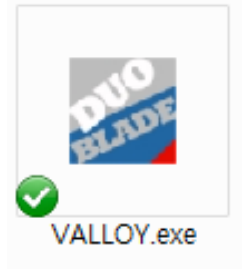


< PICTURE 7.30 >



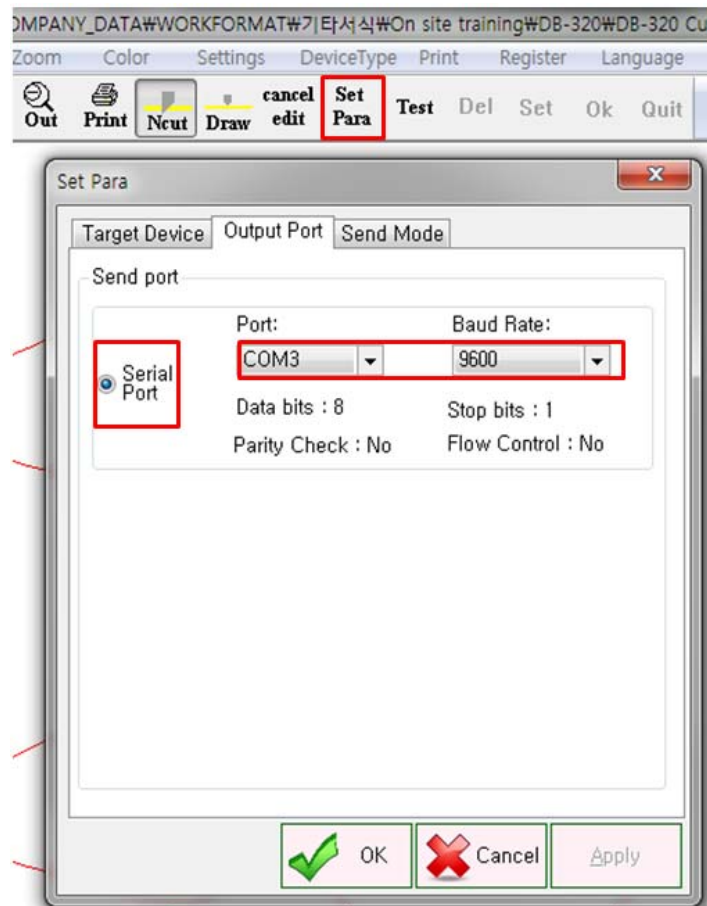
7.5 DUOBLADE software setup and operation

Run DUOBLADE software by double clicking the short cut icon or execution file.



< PICTURE 7.31 >

Click "SET PARA" icon and select Output Port tab to setup port properties properly.
Please set the value like below Picture 7.32. Check Serial port and choose with 9600 baud rate.



< PICTURE 7.32 >



Summary of software menu

Please refer to below Table 7.1 for overview of software menu.

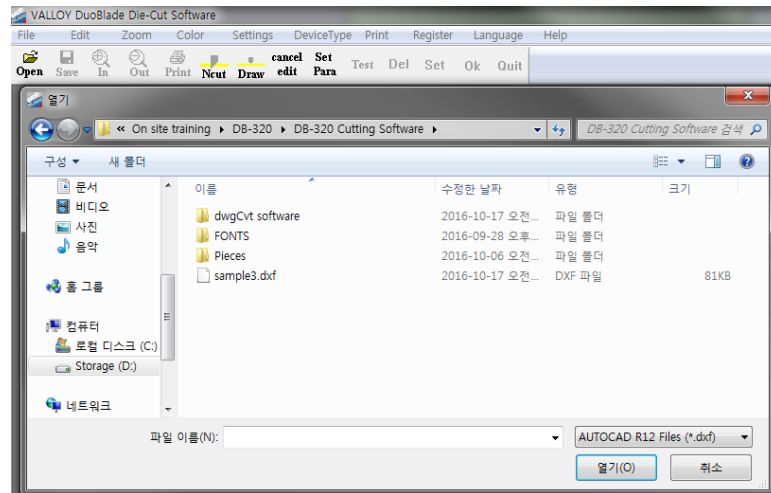
menu	sub-menu	function	REMARK
file	open	Open *.plt, *.dxf file	Icon access available
	close	Close all opened file.	-
	save	Save file.	Icon access available
	save printed file	Save file as another name.	-
	print	Job sending.	Icon access available
	exit	Exit program	X icon in title bar
Edit	Line cut	Assign object as Cutting line	Icon access available
	Line draw	Assign object as Draw line (like black mark)	Icon access available
	Cancel edit	Undo assigning	Icon access available
Zoom	Zoom in	Zoom-in the screen	Icon access available
	Zoom out	Zoom-out the screen	Icon access available
Color	Cutting color	Select color for Cutting line	Icon access available
	pen color	Select color for Draw line (like black mark)	Icon access available
	Cutting zone color	Select background color (default is White)	-
Settings	Set Para	Variable setting menu	
	Drop point knife cut	Editing starting point of object to cut	
Device type	Cutting	Cutting mode	
	Template	No use	For future use in the new version.
Print	Circle	Valid in RP split mode (long labels than 410mm)	For future use in the new version.
	Normal	Default when cutting normal label less than 410mm	-
Register	User log-in	Security checking access code of the machine when connected	For future use in the new version.
Language	English	Choice of menu language	English and Chinese
Help	about	Program version information.	V.1.2 currently

< TABLE 7.1 >

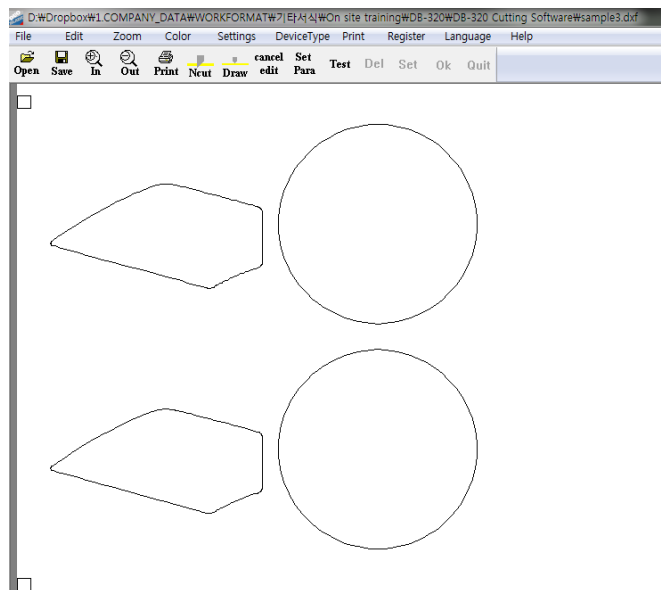


File opening

Open sample files provided together with the program as shown in Picture 7.33.
Click "file" menu and select "Open" or click OPEN icon to choose a specific PLT or DXF file to open.
For example below design of 'Sample3.dxf' file can be opened like Picture 7.34.



< PICTURE 7.33 >



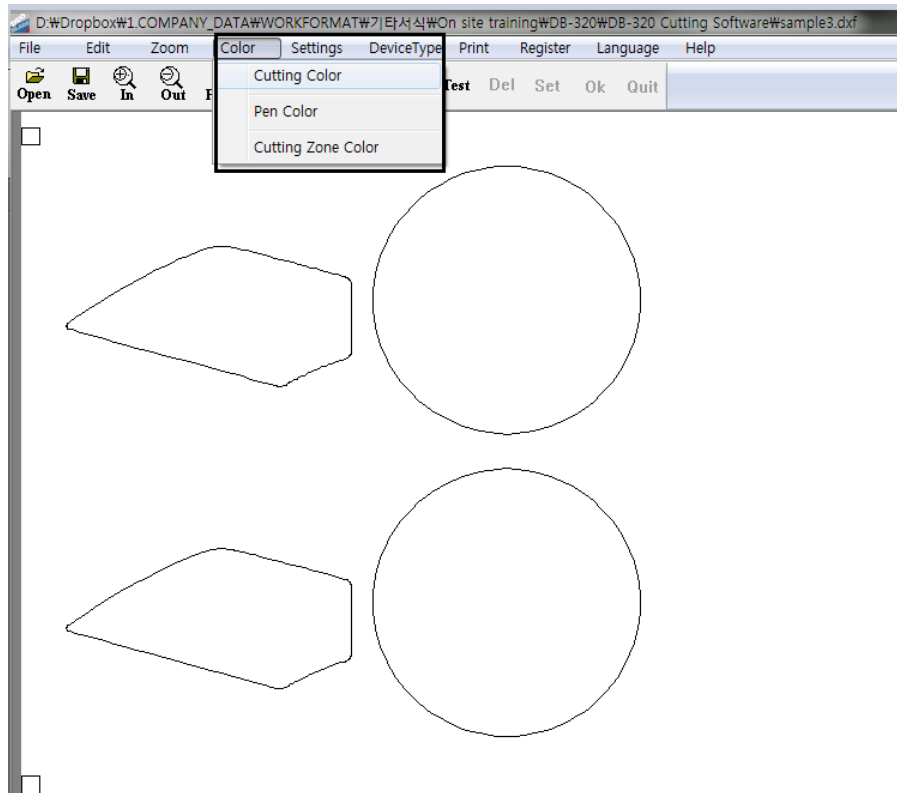
< PICTURE 7.34 >



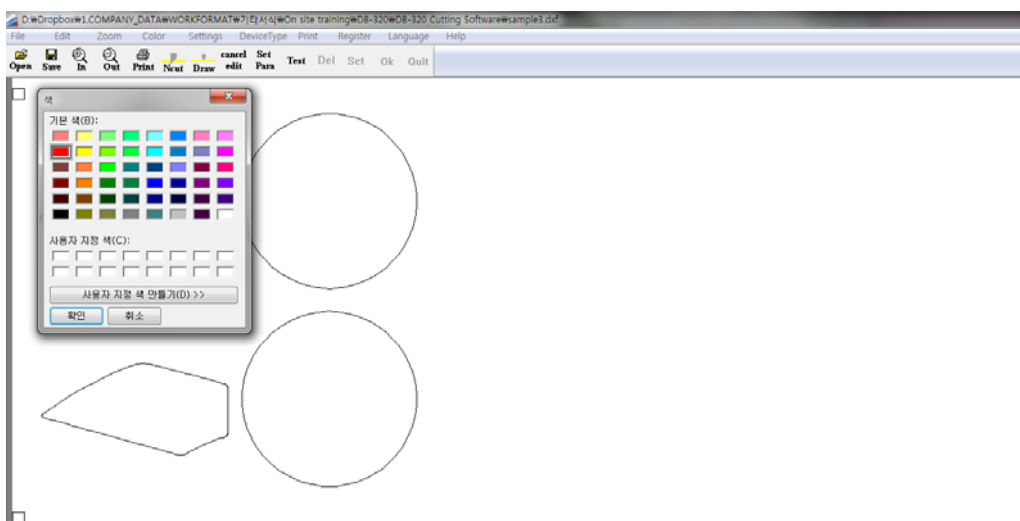
Color Settings and Object Assignment

Setup colors for marks and cutting lines separately. Select "Color" menu and setup Cutting color and Pen color. Pen color will be used for mark. Cutting color will be used for cutting lines.

Select Color in the menu and assign colors for Cutting color, Pen color and Cutting Zone color differently. Recommended colors are red for Cutting color, black for Pen color and white for Cutting zone color.



< PICTURE 7.35 >



< PICTURE 7.36 >



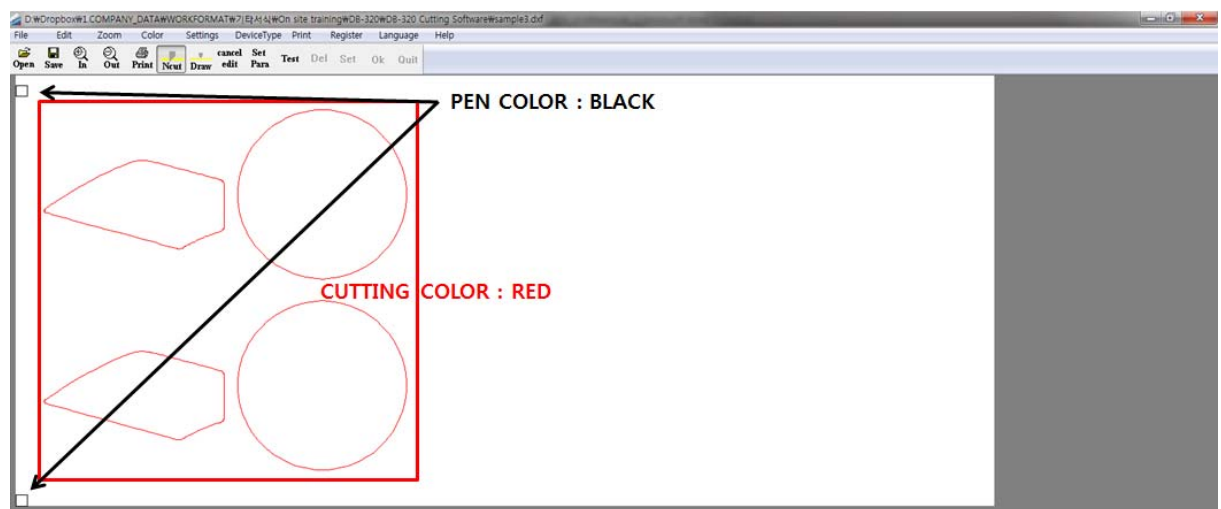
You need to assign marks as Draw and cutting lines as Ncut. Draw component means reference object without requiring cutting like black marks, where PEN color will be applied. Ncut component means actual cutting lines where Cutting color will be applied. As default, all objects are assigned as Draw initially.

Click "Ncut" icon and select the objects which you want to die-cut. Click "Draw" icon and select any object like black marks, which will not be cut. You will see objects are displayed in different color as result. (Black pen color for Draw and Red cutting color for Ncut in below example of Picture 7.37)



Caution

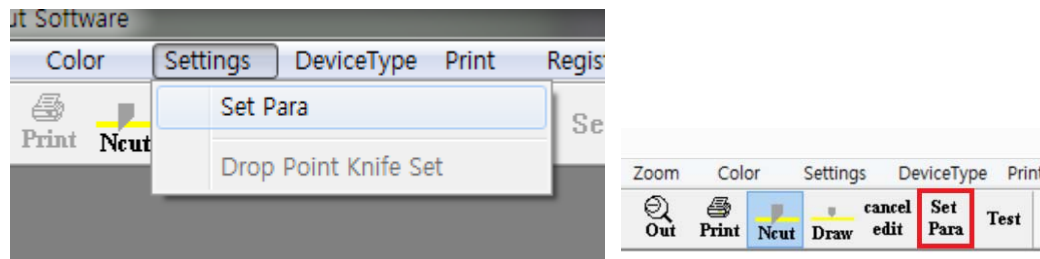
If you see Ncut and Draw icons are inactivated, please right click on the background of the layout to make those icons activated.



< PICTURE 7.37 >

Parameter Settings

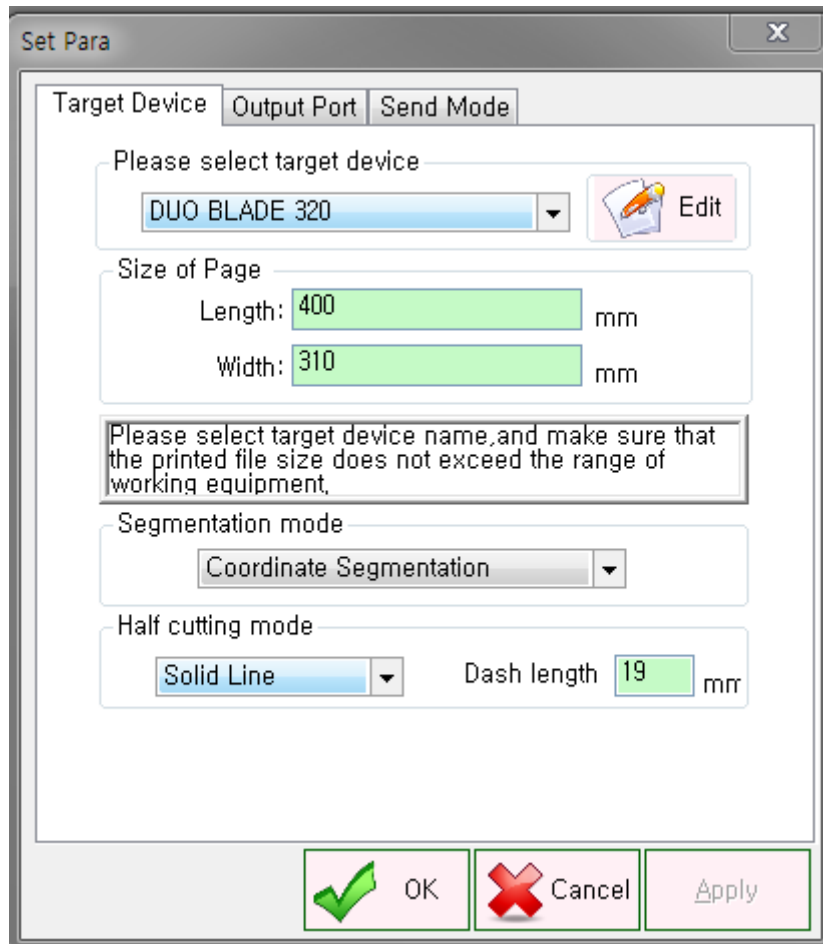
Click menu > Settings > "Set para" click [Set Para] icon in the main program GUI to access to parameter settings window as shown in Picture 7.38.



< PICTURE 7.38 >



Parameter settings window has 3 tabs. Click "Target Device" tab and you can see DB-320 is detected and page size is 400mm x 310mm as default. Please leave all the settings there as they are in Picture 7.39. (Segmentation mode should be Coordinate Segmentation and Half cutting mode is not used (no meaning)).



< PICTURE 7.39 >



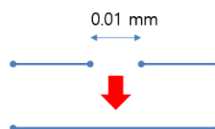
We setup all the parameters in Output Port tab already in Picture 7.32 before for communication.

Go to "Send Mode" tab and setup parameters. Default values are shown in Picture 7.40 and you do not need to edit them in general cases.

< PICTURE 7.40 >

Output type : Use Original File Type as default. SP type is for split cutting of long labels in RP mode, which is not available in version 1.2. This will be supported in next version of software.

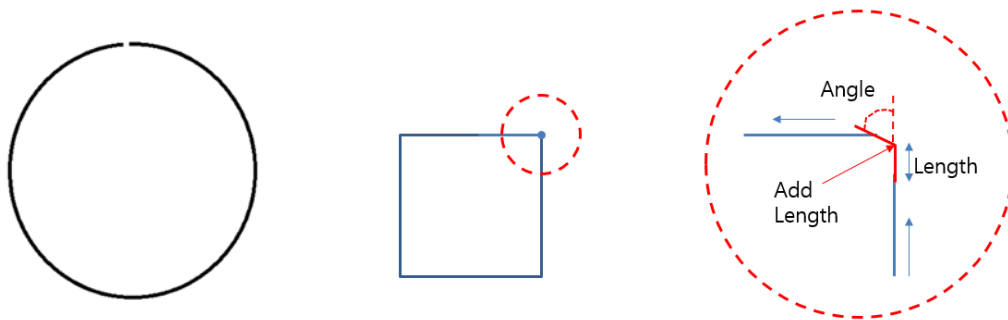
Delete close point : ignoring any points very near each other within this distance. For example, points on the line with 0.01mm distance will be ignored when setting value of 20 like Picture 7.41.



< PICTURE 7.41 >



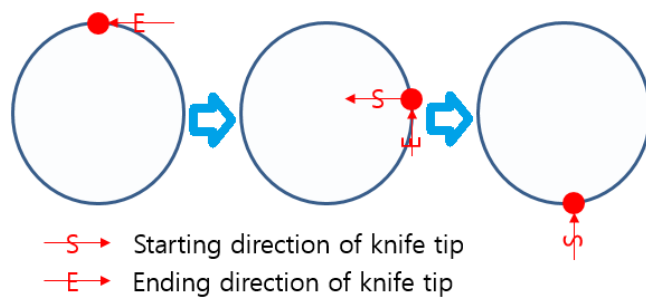
Cutting Add Length : As explained in <Picture 6.10> on page 47, center line of the knife has a slight different with actual knife tip point. So starting point will not meet ending point when we cut the closed contour by moving the center line as it is. So it is required to move additional length to make starting point and ending point meet together smoothly. Add length means additional length to move the knife in total. Length means additional length to move in original direction. The rest of the length will be moved in a certain angle as defined. Refer to Picture 7.42 to understand better.



< PICTURE 7.42 >

Adjustment Starting Point

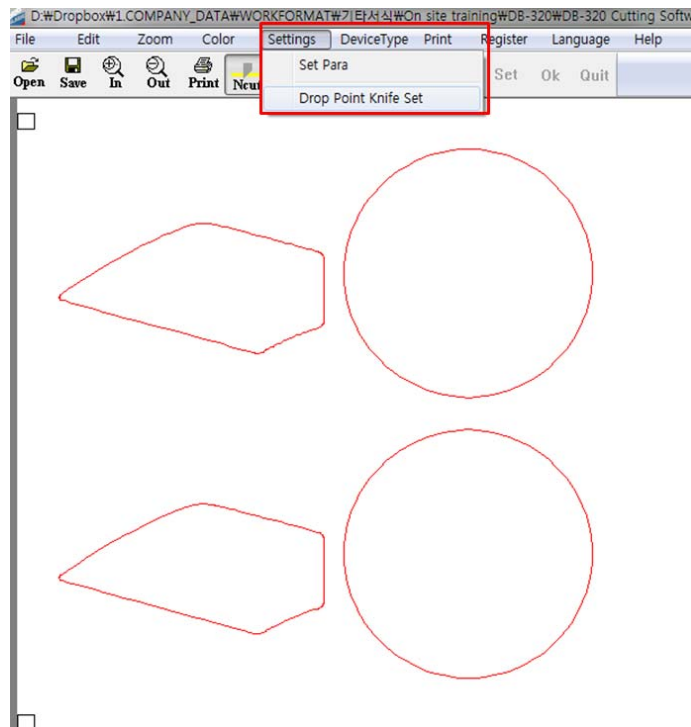
You can select starting point of cutting in each object. Adjust of starting point is important for some cases, because the direction of knife tip on starting point of new object is depending on ending point of the previous object. See Picture 7.43 to understand better.



< PICTURE 7.43 >

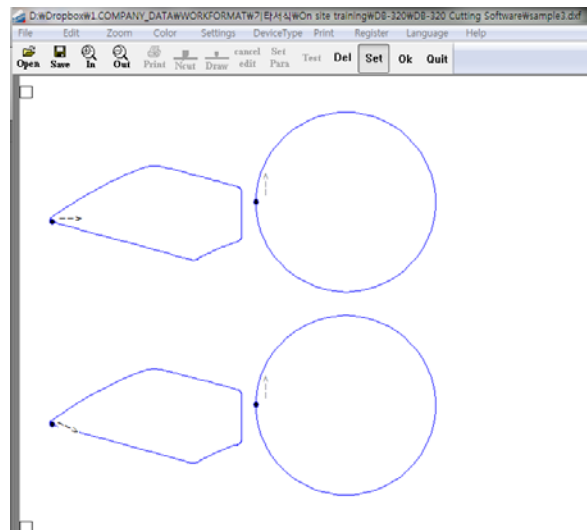


Select Setting menu and select 'Drop point knife set' from the menu, as shown in Picture 7.44. This will not be activated if you do not have cutting lines assigned as Ncut.



< PICTURE 7.44 >

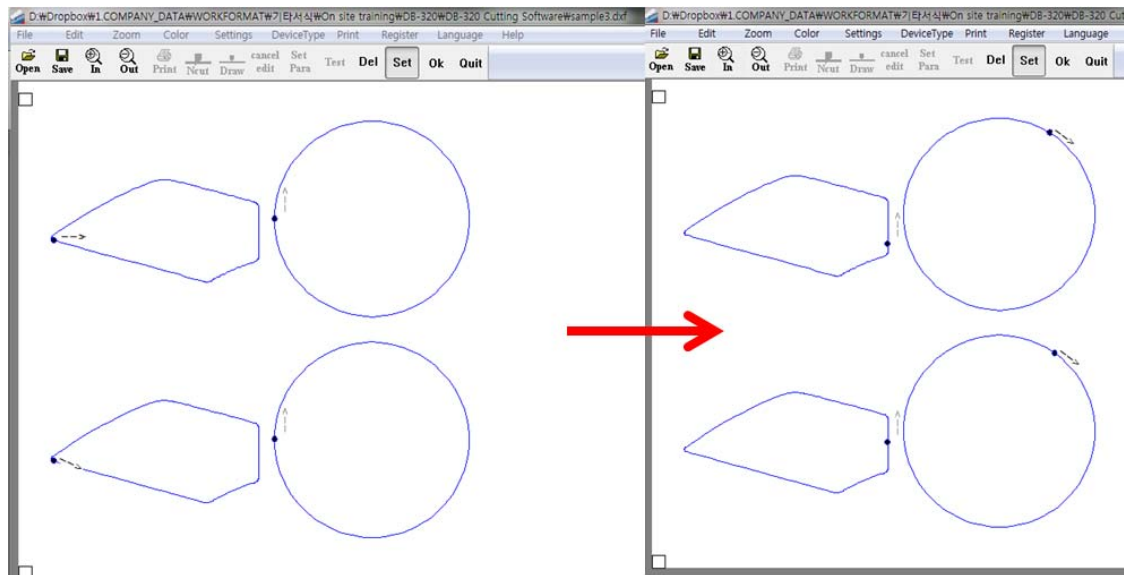
In starting point setup mode, display will be shown differently as below Picture 7.45 by indicating current starting points and directions for each object.



< PICTURE 7.45 >

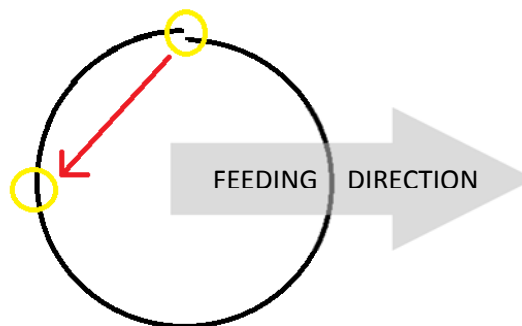


Click any point of objects to change the starting position and click OK button in right end of the GUI. If you select 'Drop point knife set' menu again, you can find starting positions are moved as below.



< PICTURE 7.46 >

If you have slightly mismatching between starting point and ending point, you may easily resolve the problem by moving the starting point to top/bottom edge against feeding direction as below.

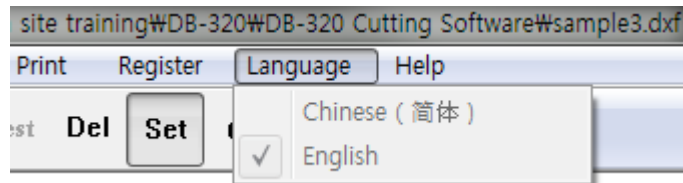


< PICTURE 7.47 >

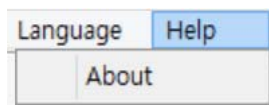


Language and About

Select Language in the menu to choose your preferred language for main GUI menu like Picture 7.48. Select Help > About in the menu to find out copy right information and the current version information of DUOBLADE software like Picture 7.49. and 7.50.



< PICTURE 7.48 >



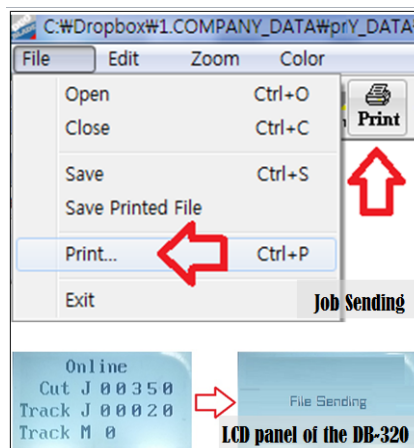
< PICTURE 7.49 >



< PICTURE 7.50 >

Job Data Sending

When everything is ready, click "Print" icon or select file > Print menu as Picture 7.51. Duo-Blade die-cutter's panel LCD will display "send file" message.



< PICTURE 7.51 >



Chapter 8. MAINTENANCE

8.1 Maintenance

Check the media feeding system parts every day before use. If there is some dust or ruins, please clean the parts like shafts, rollers, plates and back board including many control devices with alcohol on soft cloth. Vacuum cleaning on fabric pad on the flat bed is also required. You are advised to clean the system regularly and frequency of cleaning can depend on your work amount and the media type. Too much dust will make effects on the movement of cutting units and it can cause incorrect movement. Also frequent cleaning can prolong life-span of equipment.

8.2 General cleaning and maintenance procedure

1. Be sure that machine is power off and plug is out of the power socket.
2. Clean the dust and ruins inside of the machine.
3. Wipe the back board with glass cleaner, use soft cloth to wipe out.
4. Use soft cloth to wipe all of shafts and rollers with alcohol. There are three sets of moving shaft on the back board. There is one set trough out X directions, two sets in both sides of Y direction.
5. Clean wheels for the moving shaft. If there is some dust or ruins on the wheels, the moving system can be unbalanced. After cleaning the moving wheels, you must use cotton to swab with alcohol and cover the wet cotton cloth on wheel. Moving of shaft system can clean wheels and contacting face of shafts easily.
6. Adjust tension force on the belts regularly. There are 2 pcs of belts in X direction one piece in Y direction on the back board. There are two screws to fixed belt both sides. Stronger tension will be applied by rotating the screws in clockwise and you can loosen them by rotating in counter clock-wise.

8.3 Errors

Panel error info	Issue	Solution
Self-checking fail	Error in communication between the panel and main control board	Turn off the power and restart. If it cannot resolve the problem, contact support center or vendor.
Resetting	Resetting sensor error.	Check if sensors are calibrated well. And adjust the sensor height from the bottom to have smaller beam spot. If this cannot resolve the problem, contact support center or vendor
Error when open the serial port	Communication of PC and machine has an error.	Check the connection of wire. If it is correct, reinstall the USB 2 Serial driver. Check COM setting is correct (identical with device manager)
Machine lock	Machine is not running at all	Contact support center or vendor.

< TABLE 8.1 >



8.4 Troubleshooting

Problem	Reason and Solution
The cutting depth is different on media and somewhere cutting through the backing paper and somewhere top label paper is not cut well.	<ol style="list-style-type: none"> 1. The depth of knife tip is too deep: Adjust the depth of knife tip to 2/3 thickness of media. Be sure not to cut the backing paper. 2. Check if the flat bed level by leveler again.
The corner of label is warping or cutting result is not smooth.	<ol style="list-style-type: none"> 1. The depth of knife tip is too deep, so please adjust it. 2. The blade is worn out. Please replace the knife.
Label shape is not correct and not completely closed.	<ol style="list-style-type: none"> 1. Check the pressure of cutting knife holder and depth of knife tip. 2. Check if flat bed is dirty or any obstacles on the bed. 3. Check if the XY direction belt too tight. Or if gears of motor shaft is loosened, which can cause die-cutter system to move wrong. 3. Only for not closing of contour, you need to set the value of scale and Add Length parameter in the software.
Die-cutter system moves in wrong way and cutting is wrong	<ol style="list-style-type: none"> 1. Your design file is not prepared correctly in the software. 2. Output file (PLT) is not saved in proper way. 3. Software is damaged or computer is virus. 4. Check some electric welding problem in the machine or communication problem with the machine.
Media feed incorrect	<ol style="list-style-type: none"> 1. Media loading is not done correctly. 2. Flat-bed is too dirty or contaminated by glues on the surface. Side edge of media is not straight. Automatic edge adjustment is not working by setting problem. 3. The pressure on the main feeding roller and laminating roller are unbalanced. Adjust the tension by rotating the tension knob.
Track mark is not correct	The color of black mark can be very similar to the paper color. Sensitivity of sensor can be low, so please adjust sensibility of sensor again. The media side edge is not straight enough to trace.
Track length is not correct	The color of black mark can be very similar to the paper color. Sensitivity of sensor can be low, so please adjust sensibility of sensor again. The media side edge is not straight enough to trace. Media feeding can be incorrect, so adjust the speed and tension.
Rewinding incorrect	<ol style="list-style-type: none"> 1. Media loading can be incorrect. Pls check if the same distance from the wall is maintained from unwinder to rewinder. 2. Flat bed is too dirty or contaminated by glues on the surface. Check if the side edges of the media is straight. Check mark tracing by edge sensors is working correctly. 3. Check if the tension on rewinders are properly applied. Adjust the tension by rotating the tension knobs on back board. 4. Check if automatic edge adjustment meets the maximum limit. 5. Check the tension balance between rewinders and matrix removal.
Waste removing is incorrect	<ol style="list-style-type: none"> 1. Check if the top label is not cut fully. Adjust knife depth. 2. Check if the design of contour is not closed. 3. Adjust the angle of matrix removing. Make the angle wider to help better separation in matrix removing. 4. Adjust the speed and tension of the matrix removing roller. Too weak tension will not separate the matrix well and too strong tension will break the matrix waste.

< TABLE 8.2 >



8.5 Notice for Warranty

Dear User, thank you very much for your choose our products.

We provide warranty to our user when you buy our products, please contact your local distributor or dealer to get this warranty period (1 year warranty is provided by manufacturer).

In order to provide good service to you, we must ask your attention as following clause which we don't assume the responsibility and quality assurance in below cases.

- When you installed, stored, used, operated or maintained this equipment incorrectly.
- When you disassembled this equipment and changed the assembly without our permission.
- When people who have not been trained well repaired this equipment.
- When you used uncertified parts and consumables from other suppliers.



VALLOY INCORPORATION.

Rm 1017, DaeMyung Valeon, 127, Beobwon-ro, Songpa-gu, Seoul, 05836, Rep. of KOREA

Tel. +82 6082 5022 Fax. +82 445 5441 e-mail: support@valloy.net Web: www.valloy.com



Quick Setup Parameter

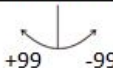
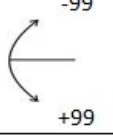


1. Adjustment Method

- 1) Set the X,Y Verticality (X Vert. and Y Vert. in the panel)
- 2) Set X, Y Scale
- 3) Set X,Y cut Adjustment (X Cut Ad. And Cut Ad.in the panel)

Notice:

- a. Manufacturer have set machine's verticality and scale before shipping.
User only set the X, Y cut adjustment generally.
- b. When you choose track M.1 (Track Mark 1), You only set X1 and Y1.
When you choose track M. 2 (Track Mark 2), you only set X2 and Y2.

2. Range of value

No.	Item	Range of value
1	X Vert.	
2	Y Vert.	
3	X Scale	+99 (Zoom in) -99 (Zoom out)
4	Y Scale	+99 (Zoom in) -99 (Zoom out)
5	X Cut Ad.	+99 -99 
6	Y Cut Ad.	-99 +99 

3. Machine parameter

No.	Parameter	Value
1	X1 Vert.	
2	Y1 Vert.	
3	X1 Scale	
4	Y1 Scale	
5	X1 Cut Ad.	
6	Y1 Cut Ad.	
7	X2 Vert.	00
8	Y2 Vert.	00
9	X2 Scale	00
10	Y2 Scale	00
11	X2 Cut Ad.	00
12	Y2 Cut Ad.	00
13	Turn Cut R.	

Machine Serial no.

Manufacturing date.